OFFICIAL

Department of Biodiversity, Conservation and Attractions

SWAN CANNING RIVERPARK

Form 1 – Application for Approval of Development

Swan and Canning Rivers Management Act 2006 – Part 5 – section 72(1)

1. Applicant details

The applicant is the person with whom the department, on behalf of the Chief Executive Officer, will correspond, unless an authorised agent has been appointed to act on behalf of the applicant, in which case correspondence will be sent direct to the agent.

Name	SLR Consulting Australia Pty Ltd				
Position (if applicable)					
Organisation (if applicable)					
Contact person	David Read - Technical Director - Planning				
Postal address	Level 1, 500 Hay Street				
Town/Suburb	Subiaco	State	WA	Postcode	6008
Telephone	Work		Mobile	[redacted]	
Email	[redacted]				

I give authority for an agent (as identified at item No. 3) to act on my behalf during the assessment of the application ☐ YES ☐ NO

If 'YES', please provide Agent's details at item No. 3

Applicant signature	[redacted]	Date	10/09/26

2. Landowner details

All owner(s) of the land **must sign this application**. Where land is owned by the Crown or has a management order granted to a local government or other agency, this application must be signed by the relevant landowner or management body as required under section 72(5)(a) of the Act. If there are more than two landowners, please provide the additional information and signature(s) on a separate page.

Details of first landowner

Name	Golden Sedayu Pty Ltd				
Position (if applicable)	DIRECTOR				
Organisation (if applicable)	~~SUBIAPUTRA~~				
Contact person	Andrew ~~Boulias~~ - ~~Development Director~~				
Postal address	Level 8, 32 St Georges Terrace				
Town/Suburb	Perth	State	WA	Postcode	6000

I consent to this application being made.

First landowner signature	[redacted]	Date	30/9/26

Details of second landowner (if applicable)

Name	Golden Sedayu P/L				
Position (if applicable)	DIRECTOR				
Organisation (if applicable)					
Contact person	LARENA KUSUMA				
Postal address					
Town/Suburb	[redacted]			Postcode	

I consent to this application being m

Second landowner signature	[redacted]	Date	01/10/2026

Department of Biodiversity, Conservation and Attractions

SWAN CANNING RIVERPARK

Form 1 – Application for Approval of Development

Swan and Canning Rivers Management Act 2006 – Part 5 – section 72(1)

1. Applicant details

The applicant is the person with whom the department, on behalf of the Chief Executive Officer, will correspond, unless an authorised agent has been appointed to act on behalf of the applicant, in which case correspondence will be sent direct to the agent.

Name					
Position (if applicable)					
Organisation (if applicable)					
Contact person					
Postal address					
Town/Suburb		State		Postcode	
Telephone	Work		Mobile		
Email					

I give authority for an agent (as identified at item No. 3) to act on my behalf during the assessment of the application ☐ YES ☐ NO

If 'YES', please provide Agent's details at item No. 3

Applicant signature		Date	

2. Landowner details

All owner(s) of the land **must sign this application**. Where land is owned by the Crown or has a management order granted to a local government or other agency, this application must be signed by the relevant landowner or management body as required under section 72(5)(a) of the Act. If there are more than two landowners, please provide the additional information and signature(s) on a separate page.

Details of first landowner

Name	Swan River Trust (SRT)				
Position (if applicable)	Manager Swan Canning Waterways Branch				
Organisation (if applicable)	Department of Biodiversity Conservation and Attractions on behalf of SRT				
Contact person	Glen McLeod-Thorpe				
Postal address	17 Dick Perry Avenue				
Town/Suburb	Kensington	State	WA	Postcode	6151

I consent to this application being made.

First landowner signature	[redacted]	Date	

Details of second landowner (if applicable)

Name					
Position (if applicable)					
Organisation (if applicable)					
Contact person					
Postal address					
Town/Suburb		State		Postcode	

I consent to this application being made.

Second landowner signature		Date	

3. Authorised agent details (if applicable)

The applicant must sign the form and tick the authorisation under item No. 1 to provide authority for an appointed authorised agent to act on their behalf.

Details of authorised agent

Name					
Position (if applicable)					
Company/agency (if applicable)					
ACN/ABN (if applicable)					
Postal address					
Town/Suburb		State		Postcode	
Telephone	Work		Mobile		
Email					
Authorised Agent signature		Date			

4. Location of proposed development

Certificate of title information	Volume		Folio	
	Diagram/plan/deposit plan no.			
Lot No.(s)	Refer to Appendix A			
Location				
Reserve No.(s) (if applicable)				
Street No.(s) and name				
Town/Suburb				
Nearest road intersection				

5. Details of proposed development

Please provide a written description of the proposed development (refer to the Development Application Guidelines for further details on what information to include in this section).

Estimated cost of development	$8,264,740
Current use of land	Vacant.
Proposed development	Proposed Boardwalk linking Precinct A to D, Burswood Point.

Appendix A - Location of Proposed Development

Lot	Plan	Vol/Folio	Town/ Suburb	Nearest Road Intersection	Landowner
8100	403473	LR3178/696	Burswood	Shoreline Drive and Karasi Street	State of Western Australia
8000	422557	LR3178/681	Burswood	Seabiscuit Drive and Placid Avenue	State of Western Australia
3008	430016	4084/64	Burswood	Shoreline Drive and Karasi Street	Golden Sedayu
302 (Swan River)	47452	LR3151/549	Burswood	Seabiscuit Drive and Placid Avenue	State of Western Australia

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Our ref: Case 2602761
Enquiries: [redacted]

David Read
SLR Consulting Australia Pty Ltd
Level 1, 500 Hay Street
Subiaco WA 6008

Sent via email only: rivers.planning@dbca.wa.gov.au

REQUEST FOR LANDOWNER CONSENT, DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS (DBCA) - SWAN CANNING RIVERPARK, DEVELOPMENT APPLICATION FORM 1, OVER RESERVE 54905 AND RESERVE 54882 FOR THE PURPOSE OF "PROPOSED BOARDWALK LINKING PRECINCT A TO D, BURSWOOD POINT"– TOWN OF VICTORIA PARK

The Department of Planning, Lands and Heritage (Department) acknowledges receipt of the DBCA Swan Canning Riverpark- Development Application Form 1 over Reserves 54905 and 54882 for the purpose of "Proposed Boardwalk linking precinct A to D, Burswood Point", Town of Victoria Park.

Reserve 54882 over Lot 8000 on Deposited Plan 422557 is for the purpose of "Public Recreation". Reserve 54905 over Lot 8100 on Deposited Plan 403473 is for the purpose of "Foreshore Management".

Please accept this letter as confirmation of landowner consent for the DBCA Swan Canning Riverpark- Development Application Form 1 over Reserves 54882 and 54905. Kindly note that the Department will not be responsible for any fees or costs associated with the preparation or lodgement of plans, nor for any subsequent developments.

This letter does not constitute planning approval or consent under the relevant local government or regional planning scheme. Should approval be granted, this letter must not be interpreted as consent to commence development, nor as an endorsement of any changes to the tenure or reservation classification of the Crown land.

Should you have any queries regarding this matter, please contact [redacted] on [redacted] or via email at [redacted]

Yours sincerely

[redacted]

[redacted]

TOWN OF VICTORIA PARK

Swan River Trust
17 Dick Perry Avenue
KENSINGTON WA 6151

[redacted]

File Ref:
DA No.: 5.2026.405.1

Dear Sir/Madam

LOT: 8100 D/P: 403473, NO.35 RACECOURSE BOULEVARD BURSWOOD - DEVELOPMENT APPLICATION 5.2026.405.1 FOR BURSWOOD POINT BOARDWALK LINKING PRECINCT A TO D

The Town of Victoria Park has received an application for Burswood Point Boardwalk Linking Precinct A to D at the above-mentioned property.

In accordance with Part 5 of Swan and Canning Rivers Management Act 2006, as the works are located within land in the Swan River Trust's Development Control Area, the application has been lodged to the Town to be sent to the Swan River Trust for determination.

Please find enclosed the completed original copy of the DBCA Form 1 and a copy of the submitted plans.

Should you have any queries please contact me on [redacted] or e-mail [redacted]

Yours faithfully

[redacted]

WE'RE OPEN
VIC PARK

TEL [redacted] **FAX** (08) 9311 8181 **ABN** 77 284 859 739
EMAIL admin@victoriapark.wa.gov.au **VISIT** victoriapark.wa.gov.au
Administration Centre, 99 Shepperton Road, Victoria Park WA 6100
Locked Bag No. 437, Victoria Park WA 6979

SLR Consulting Australia Pty Ltd
Level 1, 500 Hay Street, Subiaco WA 6008, Australia

2 October 2026

SLR Project No.: 675.V24063.00EA1

Chief Executive Officer
Town of Victoria Park
99 Shepperton Road
VICTORIA PARK 6100

DBCA
Locked Bag 104
Bentley Delivery Centre
WA 6983
Via email rivers.planning@dbca.wa.gov.au

Attentions: Robert Cruickshank – Manager Development Services Town of Victoria Park;
and
Ms Josie Watson – Senior Environmental Officer, Statutory Assessment Unit
[Swan and Canning Rivers Management Branch]

RE: Proposed 'Boardwalk' - Linking Precinct A to D – Burswood Point

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR), on behalf of Golden Sedayu Pty Ltd ('the Proponent') seeks approval from the Department of Biodiversity, Conservation and Attractions (DBCA) under Part 5 of the Swan and Canning Rivers Management Act 2006 for a proposed Boardwalk to be located mostly in the Swan River to connect Precinct A and Precinct D within the Burswood Point Redevelopment.

In accordance with the DBCA requirements, please find enclosed the following items in support of the application:

- **Appendix A** – Completed and signed DBCA Form 1;
- **Appendix B** – Proposed Development Plans;
- **Appendix C** – MP Rogers & Associates Burswood Precinct A – D Boardwalk Concept Design Report; and
- **Appendix D** – CMW Geotechnical Report.

2.0 Site Particulars

The particulars of the land connections of the subject site are summarised in the table below.

Table 1: Certificates of Title

Lot	Plan	Vol/Follo	Landowner
8100	403473	LR3178/696	State of Western Australia
8000	422557	LR3178/681	State of Western Australia
3008	430016	4084/64	Golden Sedayu
302 (Swan River)	47452	LR3151/549	State of Western Australia

The majority of the boardwalk is proposed to be located within the Swan River.



Refer to Figure 1 – Site Plan

3.0 Background

Lot 8000 is a foreshore reserve in Precinct D that was land ceded to the Crown as part of the subdivision of Precinct D created pursuant to Condition 13 of WAPC Ref: 155402 dated 23 October 2017. Golden River Developments (GRD) subsequently entered into a Deed with DBCA to allow for subdivision clearances to be issued and the foreshore ceded provided that GRD undertook the landscaping within the Foreshore in accordance with the approved Development Application (DA) (Ref:32-50170-1 dated 10 December 2018). The landscaping has to be complete either prior to an occupancy permit being issued for the first dwelling, or 5 years from the lots being created (2030). Substantial commencement on the DA works was subsequently completed to ensure the Development Approval remained valid, but the works have not been completed.

Similarly, Lot 8100 was land ceded to the Crown as part of the subdivision of 'North Park' in Precinct A undertaken by Golden Sedayu and created pursuant to Subdivision Approval WAPC Ref: 162656 dated 9 May 2023. Condition 11 of the approval required such land to be ceded as a reserve for foreshore management and vested in the Crown free of cost and Condition 13 required the Foreshore to be landscaped. On 14 May 2025, Golden Sedayu and DBCA entered into a 'Deed of Deferral' which allowed for the creation of lots and the ceding of the Foreshore to occur subject to landscaping of the Foreshore Reserve being completed before the occupation of the first dwelling, or 5 years of the creation of Titles, whichever the earliest. The first dwelling is anticipated to be complete by April 2027. Landscape works of the foreshore are currently being undertaken and are anticipated to be complete by early 2027.

As part of the North Park 'Deed of Deferral', DBCA required a clause to be inserted for Golden Sedayu to use its best endeavours to create a boardwalk between Precinct A and Precinct D that will eventually allow for a complete pedestrian circuit to be achieved all around the Burswood Point Peninsula. The relevant clause is outlined below.

4 Pedestrian Boardwalk

(a) GS will use best endeavours to design, obtain approval for and construct at its expense a pedestrian boardwalk between the Foreshore Works and Lot 9104 on Deposited Plan 73845 (being 'Precinct D' of Belmont Racecourse) in accordance with the Belmont Park Redevelopment Structure Plan approved by WAPC on 26 March 2013 (**Boardwalk**).

(b) For the avoidance of doubt, the construction of the Boardwalk:

(1) is subject to GS obtaining all required approvals from all relevant authorities; and

(2) does not form part of the Foreshore Works under this deed.

This application seeks approval to construct the Boardwalk between Precincts A and D as envisaged by the Deed.

Precincts A and D are shown on the plan below.



Source :MP Rogers

Figure 2: Proposed Boardwalk Location

4.0 Proposed Development

The application is seeking approval from the Department of Biodiversity, Conservation and Attractions (DBCA) for a boardwalk that will link Burswood Precinct A (near 'Shoreline Boulevard') to Precinct D (near 'Seabiscuit Drive'), Burswood.

The boardwalk has been designed by coastal engineering experts MP Rogers & Associates whose technical report and plans can been appended to this document in Appendices B and C.

Refer Appendices B & C – MP Rogers & Associates Burswood Precinct A – D Boardwalk Concept Design and Report

The boardwalk will extend for approximately 340 metres and connect into the foreshore landscaping being undertaken by Golden Sedayu at each end of the boardwalk. Whilst it is possible to construct the boardwalk within the slither of Parks and Recreation reserve (Part of 'Lot 3008') between the Swan River and Belmont Park Racecourse, such construction will result in the need to remove some substantial vegetation within this reserve. There may also be future erosional issues with this location. Locating the boardwalk within the River is considered to be a more desirable solution due to the lesser impact on the foreshore environment.



Figure 3: MP Rogers Proposed Boardwalk Design.

The boardwalk design is based on a boardwalk width of 3 metres with kick rail kerbs and handrails reducing the effective width to 2.8 metres. The deck is proposed to be treated timber with steel headstocks, FRP Stringers and then secured into the riverbed by a series of steel piles that will be pile driven into the riverbed. The materials have been selected based on the visual aesthetic and walking comfort, but also based on durability to try and minimise maintenance requirements, and provide corrosion resistance, and high strength to weight ratios. The deck is currently proposed to be at a level of 1.7m AHD which is considered an appropriate level having regard to:

- Minimising the visual impact of the structure by keeping it as low as possible;
- Allowing for smooth ties ins at each end to make sure it is suitable to meet disability access requirements where the levels at each end rise to approximately 3.5m AHD;
- Minimising the potential for inundation, noting that whilst it is below the mapped flood level of 2.5m, such events are rare and 1.7m would only be reached in events above 50 year average recurrence interval (ARI); and
- Enhancing the user experience by being close to river level.

4.1 Construction Methodology

The boardwalk will be constructed from a barge with a mechanical hammer that will hammer drive the piles into the bed until the required geotechnical resistance is achieved. Piles will then be severed at approximately 1.7m AHD. Then either prefabricated sections will be transported by barge to the site and secured to the piles, or pile caps, crossbeams and girders will be secured to the driven piles to form a rigid bearing frame where the timber boards will then be secured and kick rails and balustrades affixed.

It is expected that a condition will be applied to any approval to require the preparation, approval and implementation of a construction and environmental management plan prior to works commencing.

5.0 Geotechnical Investigations

Whilst the MP Rogers report outlines relevant geotechnical information based on investigations undertaken with the installation of the jetty piles in Precinct D, CMW has obtained more site specific information based on recent geotechnical investigations undertaken in August 2026.

A copy of this report can be seen in Appendix D – CMW Geotechnical Report

In essence, the report demonstrates that the ground conditions can be highly variable, but it is still suitable for boardwalk construction, it's just that the final depth of piles (or number of piles) in the softer sections may need to be determined during installation.

5.1 Acid Sulfate Soils

As outlined in the MP Rogers report, the area is mapped with a High to Moderate Risk of Acid Sulfate Soils occurring. However given there is no excavation proposed, the amount of soil disturbed and submerged sediments will not be exposed to oxygen, no acid sulphate soil management is considered to be warranted.

6.0 Statutory & Policy Framework

6.1 Swan and Canning Rivers Management Act 2006

The *Swan and Canning Rivers Management Act 2006* (the Act) provides the statutory framework for protecting and enhancing the ecological health, landscape values and community use of the Swan and Canning River systems. Under Part 5 of the Act, proposals for development within the Swan Canning Development Control Area, including structures such as boardwalks, require assessment and approval by DBCA.

Given the two adjoining land parcels have been created and ceded to the Crown as Foreshore reserves, and all of the works are to occur in land within the Development Control Area, approval of the development is required pursuant to this Act rather than pursuant to the Planning and Development Act 2005.

6.2 DBCA Corporate Policy Statement 42 – Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area

This Policy applies to all proposals involving land use and development works or activities in or abutting the Swan Canning Development Control Area (DCA). The objectives are outlined as follows:

- *Maintain and enhance the ecological health, community benefits and amenity of the Swan Canning river system;*
- *Make suitable provisions for foreshore areas that can be reserved and protected under planning schemes and acquired as public land; and*
- *Do not create obstructions to the flow of flood waters of the river system and that appropriate provisions are made to minimise property damage by major flood flows.*

The proposed boardwalk is consistent with the objectives of this Policy. The location of the boardwalk has been specifically selected to ensure that the foreshore environs are protected from works that will result in the removal of foreshore vegetation and disturbance. The boardwalk will maintain and enhance community benefit and amenity within the Swan River system by providing improved public access to the foreshore, facilitating recreational

opportunities and strengthening connectivity along the river's edge with minimal impact on any foreshore vegetation.

The proposed 'single pile and platform' design has also been selected to minimise the impact on river flow and the potential to cause upstream flooding.

6.3 DBCA Corporate Policy Statement Policy 45 – Planning for Miscellaneous Structures and Facilities in the Swan Canning Development Control Area

The objective of this Policy is to ensure that miscellaneous structures and facilities in the DCA protect the ecological health, maintain and enhance long-term community use and enjoyment, and preserve the amenity of the Swan and Canning river system. The proposed boardwalk falls under the 'Boardwalks and Pathways for Pedestrian and/or Cyclists' definition under Policy 45:

> *Pathways for Pedestrian and/or Cyclists*
>
> *Provide public access to the river system and can enrich visitor experiences. A structured network of pathways and boardwalks currently provides pedestrian and cyclist access to most parts of the river system. There are locations that are not suitable for public access other than in an informal manner.*

The requirements for Boardwalks and Pathways for Pedestrian and/or Cyclists under Policy 45 are identified as follows.

Provision	Proposed
5.19 Require applications for boardwalks and pathways to demonstrate that they are consistent with an endorsed precinct or foreshore management plan for the area (or if there is no such plan, provide a public benefit and be consistent with the policy statements for parts of the river set out in SPP2/10 and the Land and Waterway Use Plan. Facilities are to be safe, provide convenient access and be developed as part of a structured hierarchy of connected access ways. The following matters will be considered when assessing applications:	The proposed boardwalk forms part of the broader Burswood Point vision outlined in the Belmont Park Redevelopment Structure Plan 2013 to create a contiguous pedestrian connection abutting the Swan River foreshore. The proposal delivers a clear public benefit by improving pedestrian access to the foreshore, enhancing opportunities for recreation and passive enjoyment of the river environment without unduly impinging on foreshore areas or the river edge.
Pathways and boardwalks should provide the public with the opportunity to conveniently and safely view and use the river system without impinging on informal access to foreshore areas and the river edge;	The section of the Foreshore where the boardwalk will sit out from is largely inaccessible comprising a small area of land at the top abutting the Belmont Park racecourse, before sloping steeply down to the River. Whilst the embankment largely comprises a granite rock revetment, there are a number of significant stands of trees that assist in softening and stabilizing the embankment and foreshore.
Dedicate cycle ways designed for faster-flowing traffic should, where possible, be separated from pedestrian pathways. Where possible they should be set back from riparian areas or located along side adjacent roads; Pathways and boardwalks designed solely for pedestrians may have a variety of surfaces depending on the local context and may be	Given the constrains of the adjoining topography and environmental and amenity impacts of two pathways, a separate cycleway is not being proposed. This pathway will be a 'dual use path' where both pedestrians and bicycles will need to share the path.

Provision	Proposed
constructed close to the river, including areas landward of fringing riparian vegetation; Existing uses in a locality should be considered and there will be a presumption against pathway or boardwalk proposals that adversely affect appropriate existing uses; Alternative locations, alignments or less formal means of public access will be required if a pathway or boardwalk proposal is likely to cause unacceptable impacts on the ecology or amenity of the river system; The provision of a universal access should be considered and addressed in any application for a pathway or boardwalk; and Appropriate signage or other visual means should be installed to identify pathway or boardwalk use (i.e. pedestrian, cycle or shared) as necessary.	Given the location and height of the boardwalk being considerably lower than the top of the adjoining land, there is considered to be no adverse impact on the adjoining Belmont Park racecourse. Alternative alignments have not been pursued due to impacts on existing vegetation on the foreshore. Provision has been made for universal access. Appropriate signage for shared footpath will be installed as part of any condition of approval.
5.20 Where appropriate, require pathway design and construction to comply with Australian Standard AS2156.2 Walking Tracks – Infrastructure Design and Australian Standard AS1428 Design for Access and Mobility. Pathway design should ensure that stormwater run-off does not result in erosion, and earthworks undertaken as part of construction should be minimised. Boardwalks are to be certified by a practising structural engineer and comply with relevant Australian Standards.	The proposed boardwalk design will comply with Australian Standards ensuring safety, accessibility and durability.
5.21 Construction materials and colours of pathways and boardwalks should be selected to complement the local character of the river system.	Construction materials are proposed to be predominantly timber decking due to its natural appearance, aesthetic appearance, comfort and durability. Other materials are proposed due to their durability given the harsher nature of the coastal riverine environment.
5.22 Require applications for pathways or boardwalks to demonstrate that the relevant vested authority supports its construction. The department will not accept responsibility for pathways or boardwalks unless it is the managing agency for the reserve in which the path is constructed. Boardwalks constructed over the River reserve will likely require an ongoing management and maintenance agreement with the organisation or body that was responsible for its development.	The proposed development is being constructed by Golden Sedayu at its cost to provide a public amenity and asset. Whilst the development will be maintained for 2 years with a 5 year defect period, the maintenance and liability will need to be handed to a government agency for its ongoing management.
5.23 Generally not support the development of a boardwalk over water where an alternative land-based access option is available or will soon be available.	Lot 3004 is some 6.5m wide and has a fall of some 4 metres with a very steep rock revetment in the middle. Whilst technically possible, to get a cantilevered boardwalk at the racecourse level, a land base option will result in the need to remove and/prune some substantial vegetation within the foreshore reserve.

Provision	Proposed
	Considerable piling is also likely to be required where there is little rock revetment to future proof the boardwalk from any erosion forces.

6.4 Aboriginal Heritage Act 1972

The Aboriginal Heritage Act 1972 aims to protect all Aboriginal sites. The Swan River (Derbal Yerrigan) is registered site ID #3536 that was entered into the Aboriginal Sites Register in 1997. Whilst a Section 18 Notice was previously prepared for the entire Peninsula in September 2013 to ensure that the implementation of the 2013 Belmont Park Racecourse Redevelopment Structure Plan did not adversely impact on any Aboriginal Sites, the S18 Notice and Structure Plan did not contemplate a boardwalk in the Swan River. The 2013 Structure Plan showed an indicative 'Key Pedestrian/Cyclist Link' being located within the land side of the Parks and Recreation reserve.

As noted during the Section 18 Notice consultation, the Derbal Yerrigan is a highly significant place for Aboriginal Culture and it will be necessary for appropriate consultation to occur during the consideration of this boardwalk application, and any relevant approvals obtained.

6.5 Metropolitan Region Scheme

Under the Metropolitan Region Scheme (MRS) Lots 3008, 8100 and 8000 are all reserved 'Regional Open Space'. The objective of the Regional Open Space reservation is outlined as follows.

> *To protect the natural environment, provide recreational and cultural opportunities, safeguard important landscapes and sites of cultural or historical significance and provide for public access.*

The portion located within the Swan River is reserved 'Waterways'. The objective of the Waterways reservation is outlined as follows.

> *To recognise coastal and inland waterways and lakes, provide for navigation in, and public access to, those waterways and lakes where appropriate, and to protect environmental, landscape and cultural values.*

The proposed boardwalk is consistent with the intent of both the Regional Open Space and Waterways reservations, as it enhances public access to the river environment while maintaining the ecological, landscape and cultural values of the area. The design facilitates low-impact interaction with the natural setting, supports passive recreation opportunities, and aligns with the broader objectives of protecting and celebrating the Swan River foreshore.

6.6 State Planning Policy 2.9 – Water

State Planning Policy 2.9 – Water (SPP2.9) provides an outline of how water resource management should be integrated into planning processes.

SPP2.9 General Measures

Provision	Proposed Development
a) Maintain and enhance the ecological and hydrological functions of the river system, and demonstrate detrimental impacts have been prevented.	The proposed boardwalk is designed as a low-impact structure elevated above the river to minimise impact on natural river flows and avoid disturbance to fringing vegetation and habitats. The majority of construction will be via a river barge to minimise impact on the foreshore.
b) Demonstrate a benefit to the community and a functional need to be located within the	The boardwalk provides safe public access along the foreshore connecting Precinct A and D, creating

Provision	Proposed Development
river and/or foreshore reserves, where the proposal is located on public land.	improved connectivity and a unique river-edge experience that will eventually enable contiguous access to the entire Burswood Peninsula foreshore.
c) Maintain and enhance public access to and along the rivers and its foreshores, including through the establishment of foreshore reserves.	The boardwalk improves pedestrian access along the foreshore.
d) Consider the importance of the river as a strategic water transport network for commercial and recreational use.	The boardwalk is located as close as possible to the rivers edge to avoid interference with river transport activities. The boardwalk is also located outside the nearby ski zone.
e) Maintain and enhance the natural landscape character and sense of place of the river system.	The boardwalk is proposed in the river to minimise it impact on the foreshore environs. The boardwalk is also proposed to be kept as low as possible to minimise its visual impact and uses natural timber boards to assist in maintaining as natural a look as possible whilst recognising the need to use durable materials in this riverine environment.
f) Maintain and enhance views of the Swan Canning river system from public places.	The boardwalk will assist in providing enhanced views of public spaces that are currently only obtainable from the use of the river itself. Keeping the boardwalk below the adjoining ground level of the Belmont Racecourse will ensure that no views are impeded by the development.
g) Identify Whadjuk Noongar Aboriginal heritage and use best endeavours to protect, avoid or minimise harm consistent with the Aboriginal Heritage Act 1972.	Engagement with Traditional Owners will need to occur as part of the application assessment process. Whilst the boardwalk is located within a high value cultural site of Aboriginal significance, the development does not impinge on fringing vegetation that is important to the rivers ecology and health. It is also noted that the boardwalk is simply one component of some 12 ha of foreshore reserve that is being landscaped, enhanced and handed back to the Crown, which, together with considerable improvements to water quality entering the Swan River from the site, will have significant enhancements to the natural health of the River.
h) Protect, maintain or increase vegetation coverage (preferably with endemic species).	The proposed location of the boardwalk avoids the removal existing vegetation. Again, it is noted that the boardwalk is just one component of considerable landscaping being undertaken by the developer.
i) Maintain or establish ecological and public open space linkages to the Swan Canning river system for wildlife habitat and movement and natural water flows.	The purpose of the boardwalk is to establish a public open space linkage to provide a contiguous pedestrian link around the entire Burswood Point Peninsula. This boardwalk location has been selected to minimise disturbance to the existing foreshore and a 'single post and platform' design has been selected to minimise the impact on the natural flows and ecology of the Swan River.

Specific measures also apply to the Swan Canning River System. The measures have been outlined in the table below and justified against the proposed development.

SPP2.9 Swan Canning River System Measures

Provision	Proposed Development
a) Maintain and enhance the ecological and hydrological functions of the river system, and demonstrate detrimental impacts have	The boardwalk location and design has been selected to minimise the impact on the foreshore and the removal or significant pruning of any trees, such as

Provision	Proposed Development
been prevented.	the one below. 
b) Demonstrate a benefit to the community and a functional need to be located within the river and/or foreshore reserves, where the proposal is located on public land.	The boardwalk provides a safe and continuous public walkway linking Precinct A and Precinct D, delivering a clear community benefit by enhancing connectivity, activating the foreshore and improving access to a unique river-edge environment.
c) Maintain and enhance public access to and along the rivers and its foreshores, including through the establishment of foreshore reserves.	The proposal significantly improves pedestrian access by formalising an accessible route along the foreshore.
d) Consider the importance of the river as a strategic water transport network for commercial and recreational use.	The boardwalk is located close to the shoreline and out of the designated ski zone area. The boardwalk will not interrupt any water transport activities.
e) Maintain and enhance the natural landscape character and sense of place of the river system.	The boardwalk will use natural timber which is an appropriate aesthetic to complement the natural environment. Other materials have been selected based on the need to provide structural stability, durability and safety.
f) Maintain and enhance views of the Swan Canning River system from public places.	The boardwalk improves public viewing opportunities by enhancing pedestrian amenity without impeding any views from the upper ground level.
g) Identify Whadjuk Noongar Aboriginal heritage and use best endeavours to protect, avoid or minimise harm consistent with the Aboriginal Heritage Act 1972.	The Swan River (Derbal Yerrigan) is a protected Registered Aboriginal Site of Aboriginal cultural significance. The protection and enhancement of the River is of critical importance that requires the relevant consultations to occur as part of the consideration of the development. It is noted that as part of the overall development of the Burswood Precinct that considerable effort has been made to enhance the quality and natural ecosystem of the River. This includes considerable improvements in water quality, relandscaping of the foreshore environs, and protection of fringing flora and fauna areas, whilst providing appropriate areas for public access and enjoyment.
h) Protect, maintain or increase vegetation coverage (preferably with endemic species).	The boardwalk has been intentionally aligned to avoid disturbing majority of the existing vegetation.
i) Maintain or establish ecological and public open space linkages to the Swan Canning River system for wildlife habitat and movement and natural water flows.	The fringing vegetation of the River is being minimised by the creation of a boardwalk that negates the need to remove substantial trees from the foreshore. 'Single post and platform' design is intended to minimise the impact on river flows.

6.7 Town of Victoria Park Local Planning Strategy

The Town of Victoria Park Local Planning Strategy (the Strategy) was endorsed by the WAPC in May 2022. The Strategy was prepared to provide a strategic direction to inform the future statutory framework. The Strategy sets out the long-term strategic direction for land use and development within the Town and has been prepared to reflect the community and

Council vision for the future of the Town. The subject site is located within the Burswood Peninsula Neighbourhood. The objectives of the neighbourhood are as follows:

- *To develop a regional destination with a mix of world-class visitor activities, experiences and accommodation.*
- *To develop socially inclusive and environmentally sustainable higher density, mixed use urban neighbourhoods that reflect the unique context of the Peninsula.*
- *To coordinate the planning and delivery of social, economic and environmental infrastructure across sub-precincts and planning jurisdictions.*

The proposed boardwalk represents a further step in realising the vision for Burswood Point as a regional destination. By enhancing public access to the Swan River foreshore and providing a high-quality recreational and tourism asset, the development will contribute to the creation of a vibrant waterfront environment that supports visitor activity, community engagement and connectivity across the Peninsula. As such, the proposal is considered to be consistent with the objectives of the Strategy for the Burswood Peninsula Neighbourhood.

6.8 Town of Victoria Park Local Planning Scheme

The Reservation of the land adjoining the River under the Town of Victoria Park Local Planning Scheme No.2 (LPS2) reflects the Metropolitan Region Scheme reservation of 'Parks and Recreation'.

6.9 Belmont Park Racecourse Redevelopment Structure Plan

The Belmont Park Racecourse Redevelopment Structure Plan (the Structure Plan) under Table D - Planning Requirements for Precinct D, outlines that a '*boardwalk/ pedestrian and cyclists path is to be provided at the eastern edge of the site where the racecourse is located hard against the river's edge, to connect Precinct A.'* The objectives for the Foreshore outlined in the Structure Plan are identified as follows:

- Retain and enhance vegetation and fauna habitat within an access controlled area.
- Manage recreation opportunities and maximize retention of vegetation.
- Provide for open spaces for passive and active recreation and revegetation of the fringing vegetation.
- Create functioning and useable open spaces for the enjoyment of the entire community and local residents.
- Provide for public access through a series of boardwalks.
- Allow for passive recreational activities such as recreational canoeing or kayaking along the foreshore.
- Establish a maximum of two (2) activity nodes, comprising boatsheds, swimming beaches and facilities for the local residents, to limit areas of public activity within the Precinct and protect riverine habitat.
- Establish opportunities for recreational fishing in harmony with the natural riverine habitat.
- Acknowledge and celebrate the Indigenous connection to the Swan River.

The proposed boardwalk aligns with the objectives for the Foreshore as it is providing public access via what will eventually be a continuous loop around the entire Burswood Peninsula.

7.0 Conclusion

The proposed boardwalk is considered to be an essential link to provide contiguous public access to the entire Burswood Peninsula foreshore. Whilst this component just links Precinct A to Precinct D, upon the completion of all the foreshore areas and pathways, members of the public will have unfettered access to the Burswood Peninsula Foreshore which has not been possible for nearly a century.

Providing appropriate public access is part of the vision of the relandscaping, protection, enhancement and ceding back to the Crown of some 12 hectares of Swan River foreshore around the Burswood Peninsula redevelopment area. This vision was not only reconfirmed by the 2013 Belmont Park Racecourse Redevelopment Structure Plan, but also forms part of the key purpose of having the land adjoining the Swan River within a Parks and Recreation reservation under the Metropolitan Region Scheme and a 'Riverpark' managed by the Department of Biodiversity Conservation and Attractions Swan River Trust.

We trust that the information provided above and attached assists the Minister and the Department in the determination of the application.

Regards,

SLR Consulting Australia Pty Ltd

[redacted]

David Read
Technical Director - Planning
[redacted]

Attachments

- **Appendix A -** Completed and signed DBCA Form 1
- **Appendix B** – Proposed Development Plans
- **Appendix C –** MP Rogers & Associates Burswood Precinct A – D Boardwalk Concept Design Report
- **Appendix D –** CMW Geotechnical Report

m p rogers & associates pl ABN 14 062 681 252
creating better coasts and ports

R2144 Rev 0

February 2026

Golden Sedayu

Burswood Precinct A - D Boardwalk Concept Design

marinas
boat harbours
canals
breakwaters
jetties
seawalls
dredging
reclamation
climate change
waves
currents
tides
flood levels
water quality
siltation
erosion
rivers
beaches
estuaries

www.coastsandports.com.au

ISO 9001 certified Equal Assurance
ISO 45001 certified Equal Assurance

m p rogers & associates pl
creating better coasts and ports

Suite 1, 128 Main Street, Osborne Park, WA 6017
p: +618 9254 6600
e: admin@coastsandports.com.au
w: www.coastsandports.com.au

K2263, Report R2144 Rev 0
Record of Document Revisions

Rev	Purpose of Document	Prepared	Reviewed	Approved	Date
A	Draft for MRA review	S Rathnayake	T Hunt	T Hunt	10/02/2026
0	Issued for Client use	S Rathnayake	T Hunt	T Hunt	17/02/2026

Form 035 18/06/2013

Limitations of this Document

This document has been prepared for use by the Client in accordance with the agreement between the Client and M P Rogers & Associates Pty Ltd. This agreement includes constraints on the scope, budget and time available for the services. The consulting services and this document have been completed with the degree of skill, care and diligence normally exercised by members of the engineering profession performing services of a similar nature. No other warranty, expressed or implied, is made as to the accuracy of the data and professional advice included. This document has not been prepared for use by parties other than the Client and its consulting advisers. It may not contain sufficient information for the purposes of other parties or for other uses.

M P Rogers & Associates takes no responsibility for the completeness or form of any subsequent copies of this document. Copying this document without the permission of the Client or M P Rogers & Associates Pty Ltd is not permitted.

Table of Contents

1. Introduction 4
2. Site Setting & Conditions 6
2.1 Survey 6
2.2 Boating Conditions 7
2.3 Geotechnical Conditions 8
2.4 Acid Sulfate Soils 10
2.5 Wind Conditions 11
2.6 Water Levels 12
2.7 Waves 14
2.8 Aboriginal Heritage 16
3. Concept Design 17
3.1 Functional Requirements 17
3.2 Design Life & Structural Classification 18
3.3 Deck Loads 19
3.4 Layout 19
3.5 Deck Level 20
3.6 Materiality 20
4. Construction Cost Estimate 22
5. Conclusion 24
6. References 25
7. Appendices 26
Appendix A Concept Design Drawings 27

Table of Figures

Figure 1.1	Site Location	4
Figure 1.2	Location of Proposed Boardwalk	5
Figure 2.1	Swan Canning Estuary	6
Figure 2.2	Extract of Survey	7
Figure 2.3	Boating Guide for Swan & Canning Rivers	8
Figure 2.4	Geological Section A - Precinct D	9
Figure 2.5	Photograph of Adjacent Eroding Foreshore	10
Figure 2.6	Acid Sulphate Soil Risk Map of Site (DWER-055)	11
Figure 2.7	Estimated Flood Levels (BMT WBM 2018)	13
Figure 2.8	Recommended Sea Level Rise Allowances (DoT 2010)	14
Figure 2.9	Aboriginal Heritage Places Extract	16
Figure 4.1	Precinct A Landscape Plan in Area of Connection (Hassell)	17
Figure 4.2	Precinct D Landscape Plan in Area of Connection (Place Lab)	18
Figure 3.3	Proposed Boardwalk Layout	20

Table of Tables

Table 2.1	Soil Parameters from Test Pits	9
Table 2.2	Design Wind Speed	12
Table 2.3	Key Tidal Levels at Barrack Street	12
Table 2.4	Estimated Extreme Water Levels (BMT WBM 2018)	13
Table 2.5	Estimated Extreme Water Levels including Sea Level Rise	14
Table 2.6	Design Wind Wave Conditions	15
Table 3.1	Annual Probability of Exceedance for Design Events	19
Table 3.2	Deck Loads	19
Table 4.1	Construction Cost Estimate OPC	22

1. Introduction

Golden Sedayu (the Client) is redeveloping the area surrounding the Belmont Park Racecourse on the Burswood Peninsula. The development aims to deliver a mix of entertainment, cultural, and recreational uses supported by high quality pedestrian connectivity. Precincts A and D, shown in Figure 1.1, form part of the development.

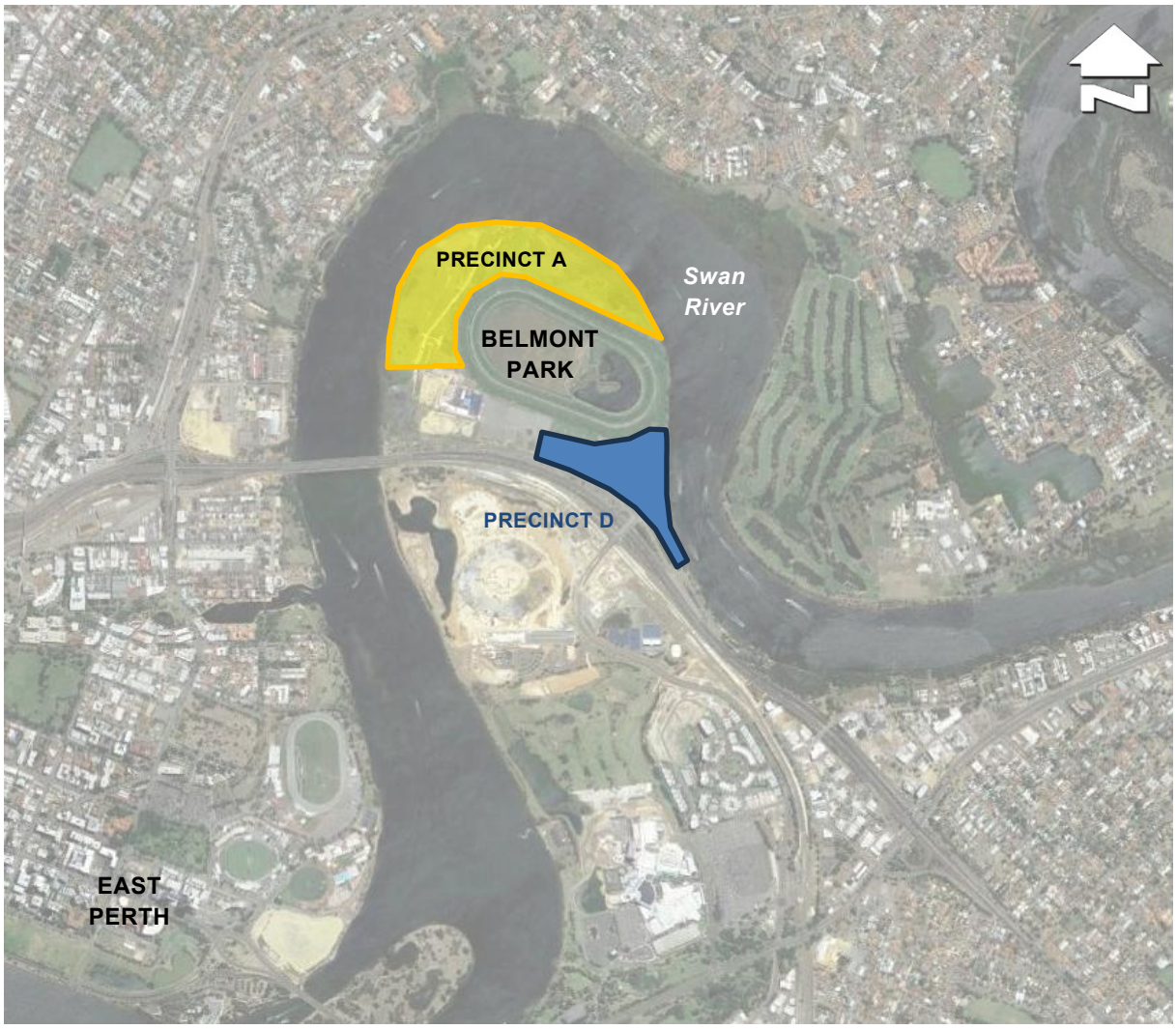


Figure 1.1 Site Location

The subdivision and foreshore works for Precinct D have been completed, and Precinct A are underway. To provide a pedestrian link between Precincts A and D, Golden Sedayu is now proposing to complete a boardwalk near the eastern side of the racecourse. The area of the proposed boardwalk is presented in Figure 1.2.



Figure 1.2 Location of Proposed Boardwalk

M P Rogers & Associates Pty Ltd (MRA) previously assessed and presented options for the pedestrian link and determined that an in-water boardwalk was most appropriate (MRA 2023). MRA has been engaged by the Client to revisit and develop the design of the Boardwalk connecting Precincts A and D.

This report has been prepared to present a concept design to support the Development Application (DA).

2. Site Setting & Conditions

The site is located on the Swan River, within the Town of Victoria Park (ToVP) and approximately 2.5 km upstream from the Causeway. The Swan Canning Estuary extends approximately 61 km from the confluence of the Swan and Ellenbrook Rivers to the Indian Ocean at Fremantle (Brearley 2005).

The lower reaches and start of the upper reaches of the Swan Canning Estuary are shown in Figure 2.1.

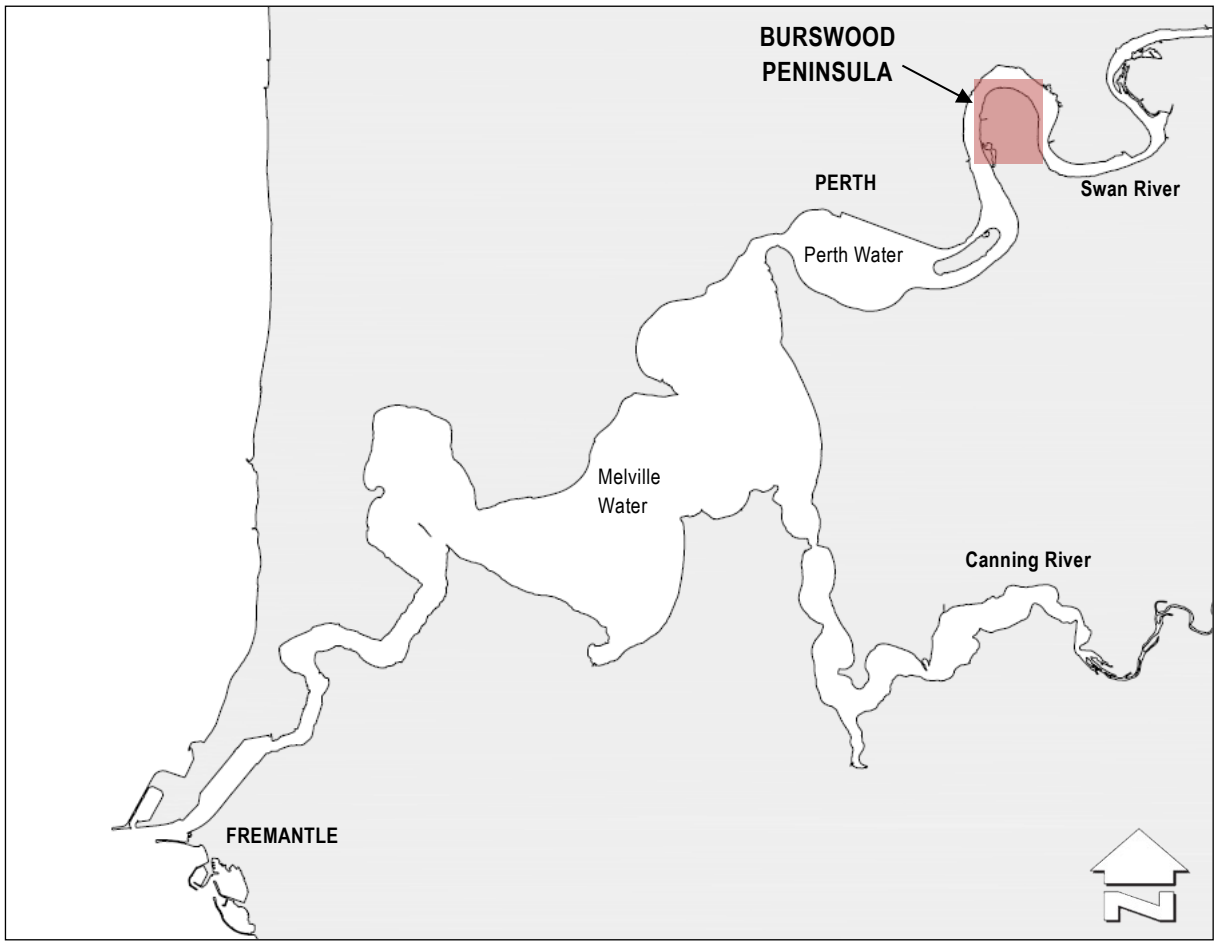


Figure 2.1 Swan Canning Estuary

2.1 Survey

The project surveyors, MNG, completed an updated survey of the proposed boardwalk location in November 2025. A snapshot of the survey is presented in Figure 2.2.

Additional survey of the adjacent river and foreshore areas are available from earlier surveys completed by MNG. The survey shows the steep bank adjacent the racecourse and the trees present along the bank.

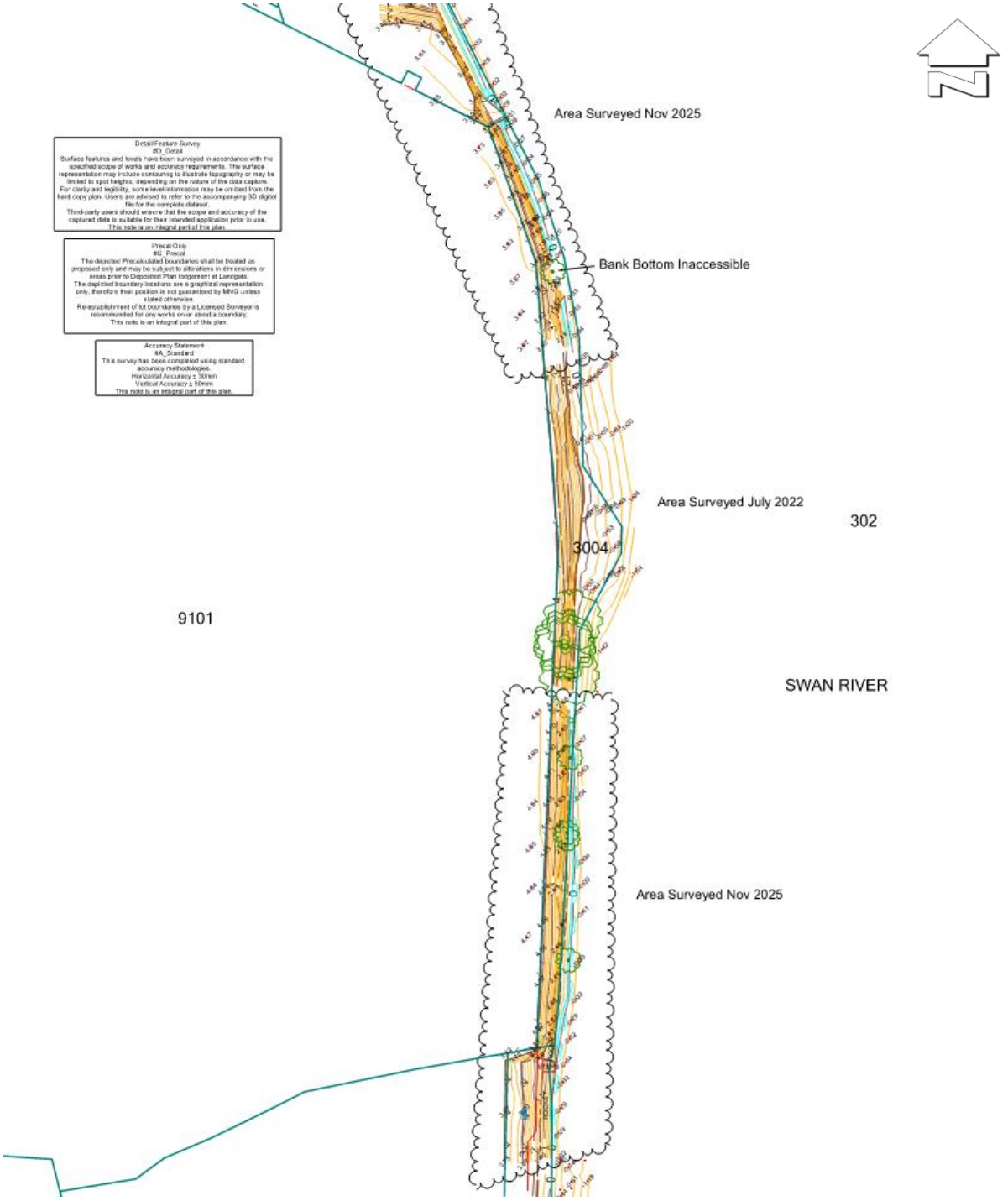


Figure 2.2 Extract of Survey

2.2 Boating Conditions

The Department of Transport and Major Infrastructure (DTMI) prepare boating guides for the Swan and Canning Rivers, indicating navigable waters, recreational boating use areas and surveyed depths. An extract of the boating guide near the site is presented in Figure 2.3.

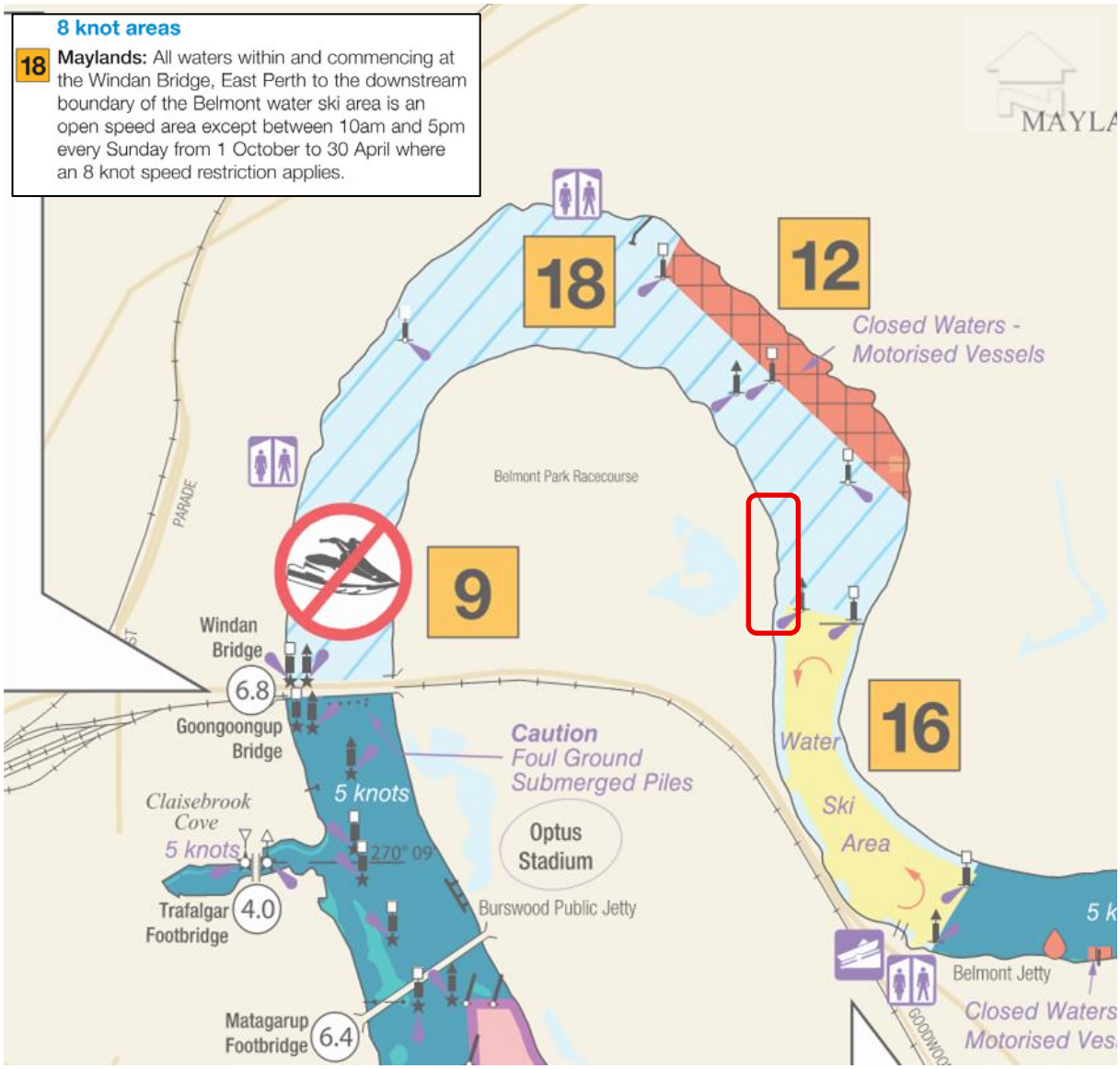


Figure 2.3 Boating Guide for Swan & Canning Rivers

The guide shows the water ski area (shown in yellow) adjacent to the southern section of the site. At the proposed location the water ski area does not extend to the shoreline and would be separated from the proposed boardwalk.

2.3 Geotechnical Conditions

Golder Associates (Golder) completed geotechnical investigations of the ground conditions across Precinct D as a part of the development (Golder 2015). The 2015 investigation included the following:

- A site walkover by a Geotechnical Engineer.
- Piezocone Penetration Tests (CPT) at 11 locations.
- Drilling of 10 hand auger boreholes.
- Dynamic Cone Penetrometer (DCP) tests adjacent each hand auger borehole.

- Geotechnical logging of 13 push tube boreholes.

Based on the investigations, Golder created a number of geological sections of the site. Figure 2.4 presents a section of this model at the southern end of the proposed boardwalk. Note that the structures shown in the figure are from a previous concept for Precinct D and do not represent the proposed boardwalk location.

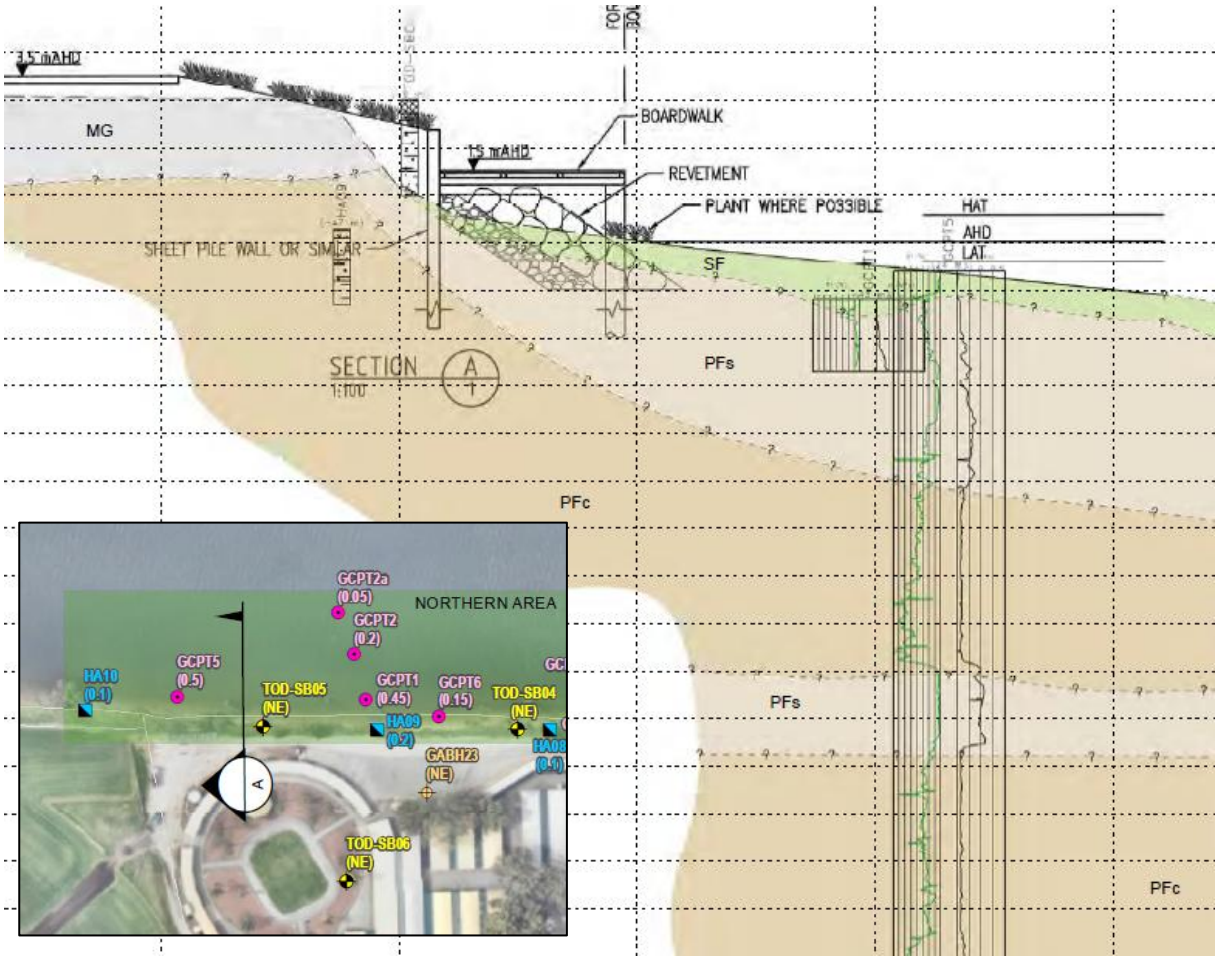


Figure 2.4 Geological Section A - Precinct D

The section shows a layer of Swan River Formation (undifferentiated) overlaying Perth Formation sand and clay. The geotechnical investigation report recommended the soil parameters for design, summarised in Table 2.1. It should be noted that the soil parameters vary with depth, however for design purposes, the most critical soil parameters will be applied over the full depth.

Table 2.1 Soil Parameters from Test Pits

Property	Critical Value
Bulk Density (kN/m^3)	19
Effective Stress Path Angle of Shear Resistance ϕ (°)	34

Golden Sedayu plan to complete additional geotechnical investigations shortly to confirm conditions across the length of the boardwalk and inform the design. The outcomes of these additional investigations will be incorporated into the detailed design.

2.3.1 Foreshore Stability

The concept options assessment (MRA 2023) reviewed proposed forms and locations of the boardwalk, including on ground and in-water. This assessment indicated that the foreshore adjacent the area and along the eastern edge of the race track had been eroding over time and was likely to continue to erode. In addition, the location of several established trees along the foreshore would require local modification of any access.

Figure 2.4 presents a photograph of this bank, showing the eroding bank and trees at this location.



Figure 2.5 Photograph of Adjacent Eroding Foreshore

As a result, the boardwalk is proposed to be located within the Swan River to avoid any impacts on the existing trees and avoid the need to protect the structure and foreshore from ongoing erosion.

2.4 Acid Sulfate Soils

The Department of Water and Environmental Regulation (DWER) Acid Sulphate Soil (ASS) risk dataset of the Swan Coastal Plain (DWER-055) was used to identify the risk of ASS occurring at the site. The map is available at https://catalogue.data.wa.gov.au/dataset/acid-sulphate-soil-risk-

map-swan-coastal-plain-dwer-055/resource/28c23597-c099-48d5-83d1-d47c960e881c. The ASS map of the site is as shown in Figure 2.6.

The map shows a High to Moderate risk (Class 1 - Red shading) of ASS occurring within 3 m of the natural surface level across the entire Belmont Park. If sediment disturbance is expected to exceed 100 m³ during the works, an Acid Sulfate Soils Management Plan will be required in conjunction with the contractor's Construction and Environmental Management Plan (CEMP) to demonstrate how potential ASS materials will be managed.

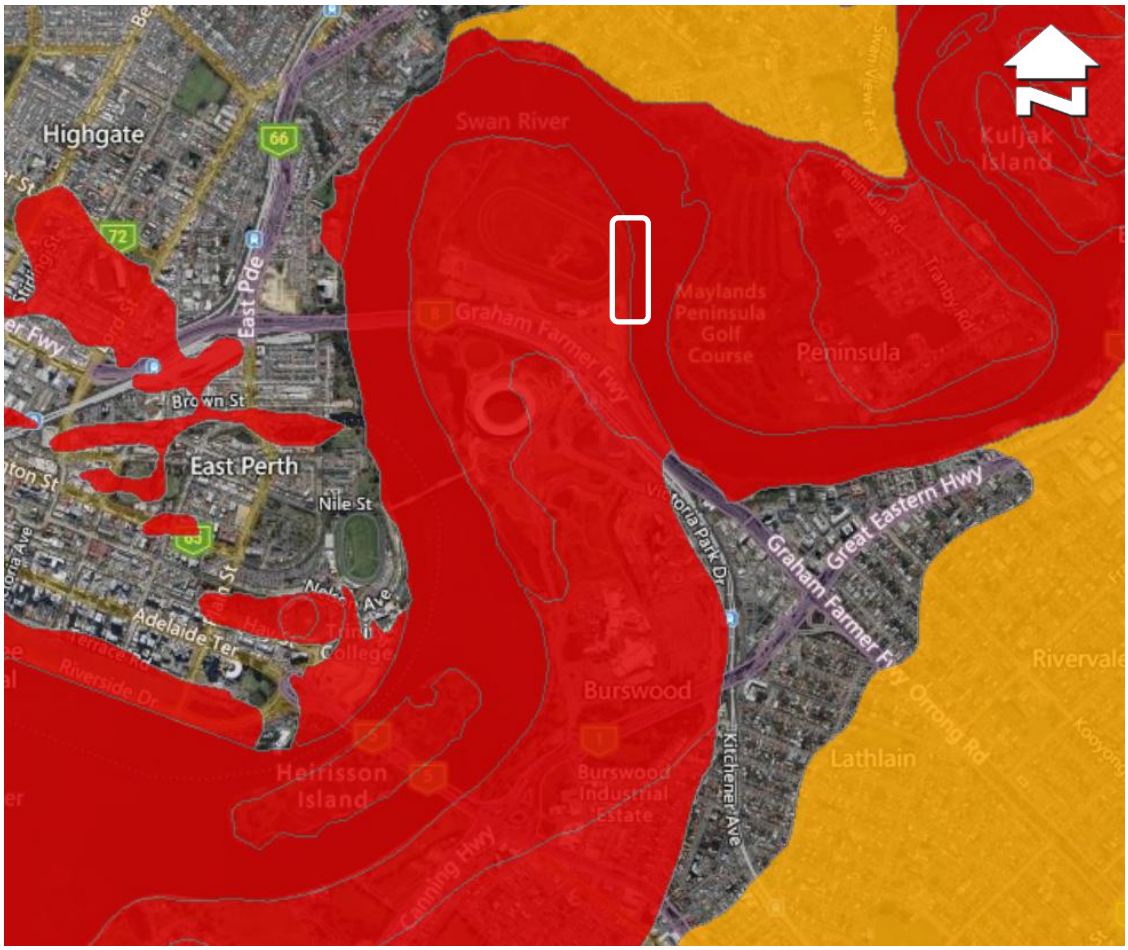


Figure 2.6 Acid Sulphate Soil Risk Map of Site (DWER-055)

2.5 Wind Conditions

Wind speeds acting on the Boardwalk structure are used to determine design loads in accordance with AS NZS 1170.2 Structural Design Actions Wind Actions.

Table 2.2 Design Wind Speed

ARI (years)	Regional Wind Speed Peak gust (m/s)
1	30
50	39
100	41

2.6 Water Levels

The estuarine nature of the Swan Canning Estuary means that the water levels at the site may be influenced by both riverine and ocean drivers. These have been considered in the concept design of the boardwalk.

2.6.1 Tidal Levels

The tides in Perth are predominantly diurnal with one tidal cycle each day and are relatively limited in range.

DTMI measures water levels around Western Australia, including at Barrack Street on the Swan River and has prepared submergence curves based on these measurements. The key tidal characteristics for Barrack Street are listed in Table 2.3.

It is expected that the tidal levels experienced at Burswood Point will be similar to Barrack Street.

Table 2.3 Key Tidal Levels at Barrack Street

Tidal Level		mCD	mAHD
Highest Astronomical Tide	HAT	1.29	0.54
Mean Sea Level	MSL	0.74	-0.01
Lowest Astronomical Tide	LAT	0.3	-0.45

Notes: 1. Chart Datum (CD) is approximately 0.75m below Australian Height Datum (AHD) at Barrack St.

2.6.2 Extreme Water Levels

In 2018, DWER commissioned a detailed flood study of the Swan & Canning Rivers (BMT WBM 2018). This included assessment of storm surges and river flood events. BMT WBM assessed the joint occurrence of marine and riverine flooding to estimate the parts of the Swan & Canning Rivers for which flooding is driven by each of these processes. At the site being considered, it was assessed that extreme water levels are driven by a combination of storm surge (marine) and riverine flooding impacts.

Outputs of the study included flood levels for various ARI events over the domain. The output flood levels for the various events over the domain are presented in Figure 2.7. The closest location to the Boardwalk is at about chainage S29. The present-day flood levels extracted from this location are provided in Table 2.4.

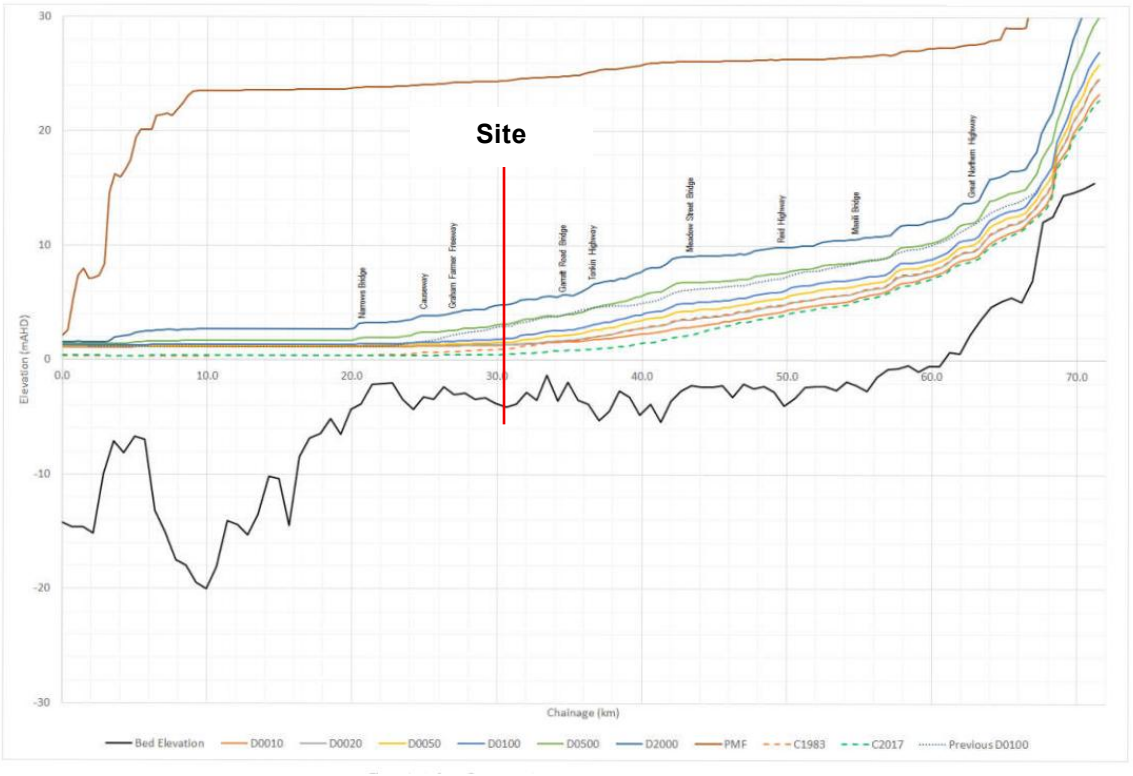


Figure 2.7 Estimated Flood Levels (BMT WBM 2018)

Table 2.4 Estimated Extreme Water Levels (BMT WBM 2018)

ARI (years)	Water Level (mAHD)
1	1.26
20	1.34
50	1.49
100	1.77
500	2.66

Note: These values do not include sea level rise.

2.6.3 Sea Level Rise

Extreme and ambient water levels are both expected to increase in the future with sea level rise as a result of climate change. DoT (2010) released recommendations on the appropriate allowances for sea level rise to be used in coastal planning and development in Western Australia. DWER have confirmed these allowances to be used in planning on the Swan & Canning Rivers. The allowances are presented in Figure 2.8.

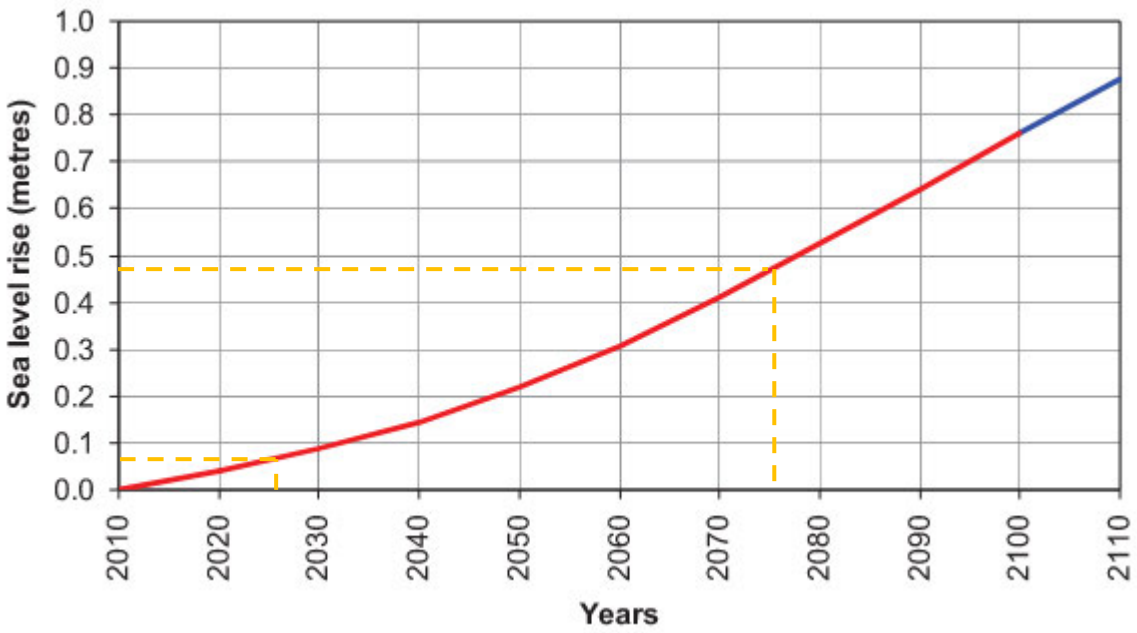


Figure 2.8 Recommended Sea Level Rise Allowances (DoT 2010)

The allowance for sea level rise to 2076 (50 year design life) has been estimated relative to 2026 and is 0.41 m. The subsequent 50 year ARI design water levels considered at the site, including the appropriate allowance for sea level rise over the design life, are outlined below.

Table 2.5 Estimated Extreme Water Levels including Sea Level Rise

ARI (years)	Water Level (mAHD)
1	1.67
20	1.75
50	1.90
100	2.18
500	3.07

These values will be considered when determining the appropriate boardwalk deck elevation and in design.

2.7 Waves

The wave climate at the site is dominated by the following wave types:

- Locally generated wind waves.
- Boat wakes from passing vessels.

These are discussed below.

2.7.1 Wind Waves

Locally generated wind waves are created when winds blow over an area of water often referred to as the fetch. The main mechanism for wind wave generation is the interaction of the wind stress with the surface tension of the water, creating waves in the general direction of the wind. The size of the waves created by the wind is determined by a number of factors, including the following.

- The size of the fetch.
- The length of time or duration the wind blows over the fetch.
- The speed of the wind.
- The water depth.

A local hindcast of wave heights was completed by MRA using the Wilson (1965) method, as revised by Goda (2003), and design wind speeds provided in AS/NZS 1170.2. Table 2.6 provides a summary of the wind wave conditions expected at the site.

Table 2.6 Design Wind Wave Conditions

ARI (years)	Design Waves	
	H_s (m)	T_p (s)
1	0.2	1.3
50	0.3	1.4
100	0.3	1.4

2.7.2 Vessel Generated Wakes

An extract of the boating guide near the site was presented in Figure 2.3, which shows vessel speeds are limited to 8 knots at the site.

The Swan River Trust, now Department of Biodiversity, Conservation and Attractions (DBCA) have completed several investigations into the impact of boat wakes on the shorelines of the Swan River (Australian Maritime College (AMC) 2009, Curtin CMST 2010). The resultant field from a vessel is largely dependent on the vessels shape, speed and the water depth in the area (AMC 2009).

Boats are limited to 8 knots adjacent to the proposed boardwalk location. CMST (2010) investigated waves under similar conditions at Ashfield Parade and estimated that waves up to 0.4 m with a period of 2.25 s may be generated when a vessel such as a Bayliner 275 travels close to shore in these areas.

On the basis of this, waves up to 0.4 m and with a period of around 2 s will be considered in the design of the structure.

2.8 Aboriginal Heritage

MRA completed an online search of Registered Aboriginal Sites using the DPLH Aboriginal Heritage Inquiry System. This search portal can be found at https://espatial.dplh.wa.gov.au/ACHIS/index.html?viewer=ACHIS

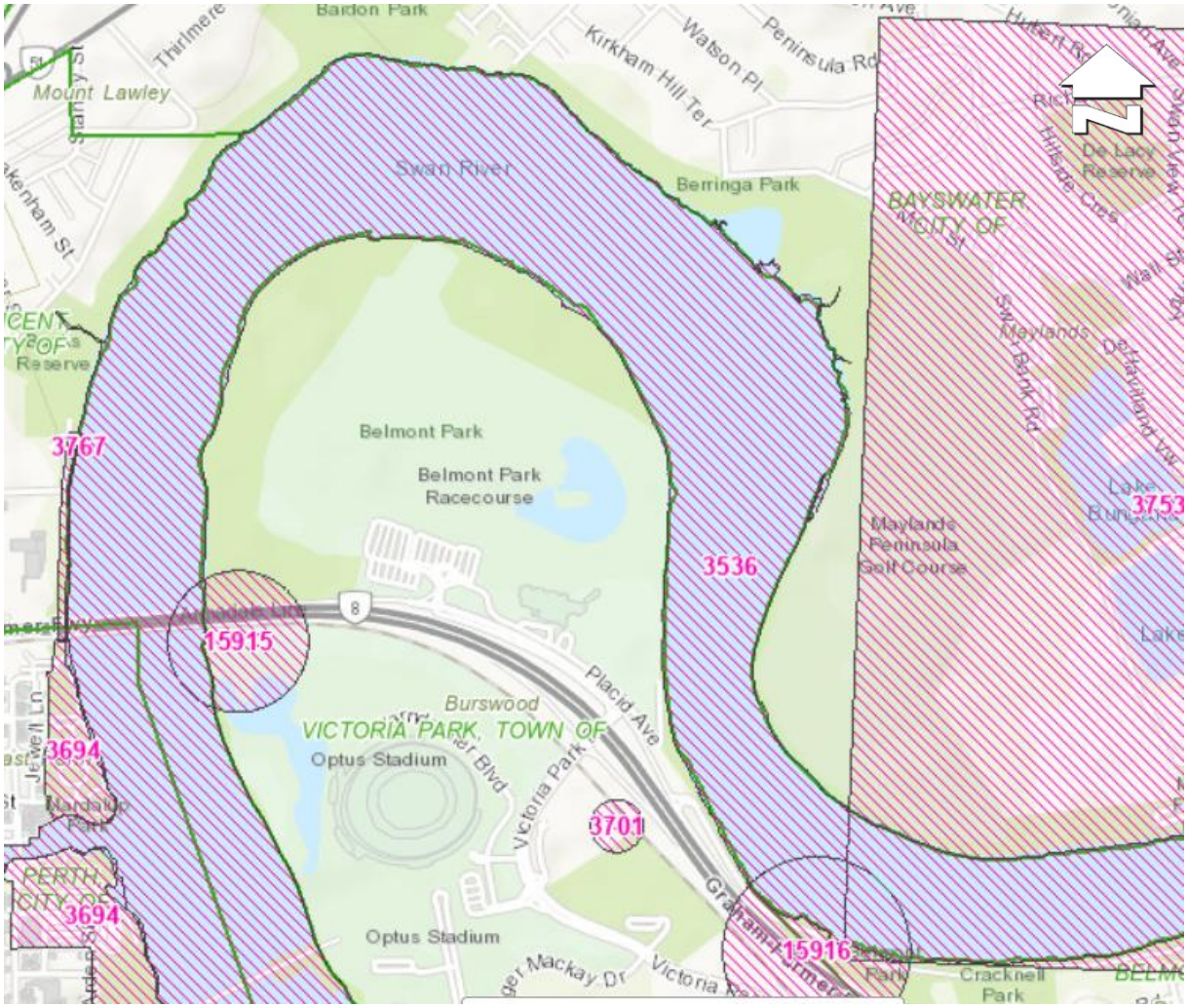


Figure 2.9 Aboriginal Heritage Places Extract

Figure 2.8 shows that the Boardwalk would potentially impact on Aboriginal Registered Site 3536 (Swan River). Appropriate Heritage consultation and approvals will therefore be required.

3. Concept Design

This section outlines the concept design of the proposed Boardwalk and the key engineering considerations that have informed its development. Concept design drawings are provided in Appendix A.

3.1 Functional Requirements

The aim of the Boardwalk is to provide safe and universal access for pedestrians and to link between Precincts A and D.

3.1.1 Landscape Design & Connections

The boardwalk will tie in to the foreshore landscape north and south of the race track. At these locations, the boardwalk would transition to a path on ground.

Precinct A

The landscape design for the adjacent section of Precinct A is presented in Figure 4.1. The figure shows that the boardwalk will connect to a pedestrian path through the precinct.

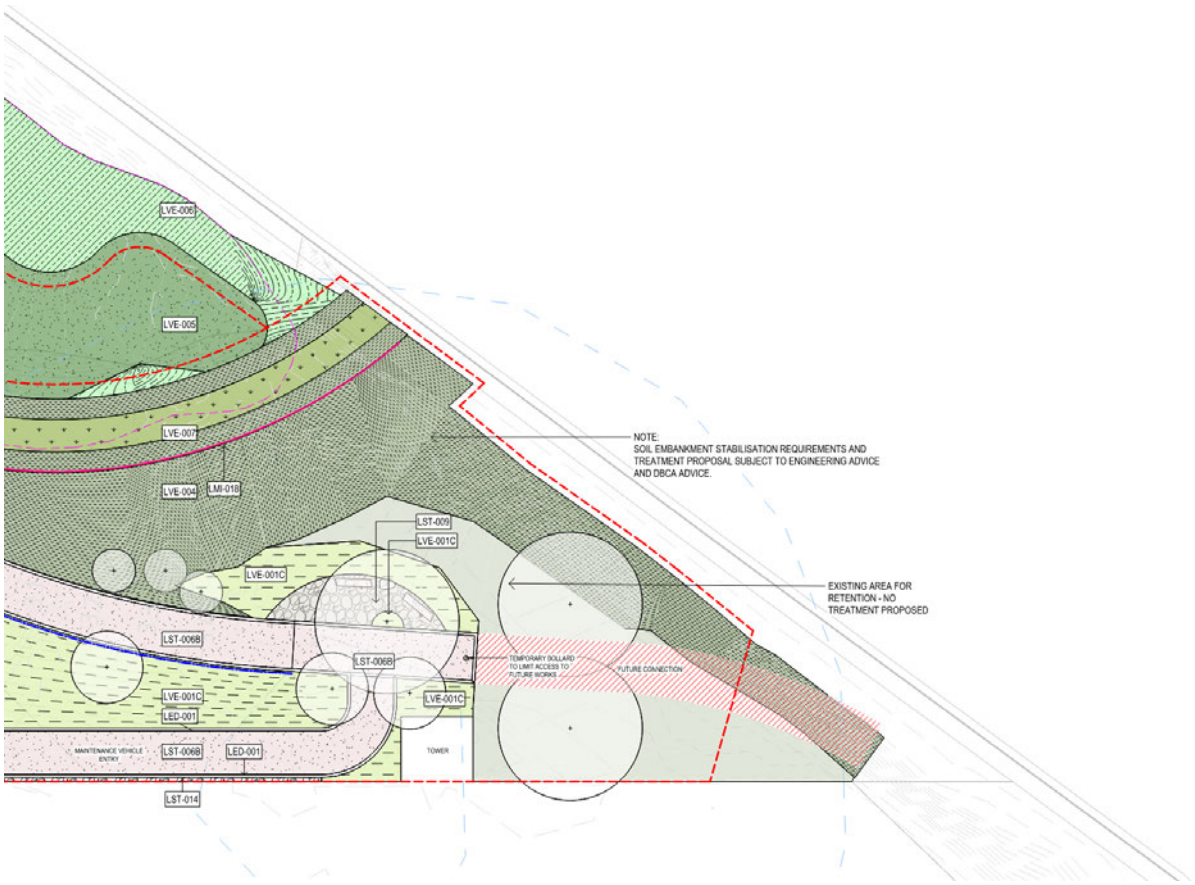


Figure 4.1 Precinct A Landscape Plan in Area of Connection (Hassell)

The foreshore levels in the area of the connection are approximately +3.5 mAHD. As a result, ramps will be required to transition from the upper foreshore to the boardwalk level.

Precinct D

The landscape design for the adjacent section of Precinct D is presented in Figure 4.2. The figure shows that the boardwalk will connect to a pedestrian path through the precinct.

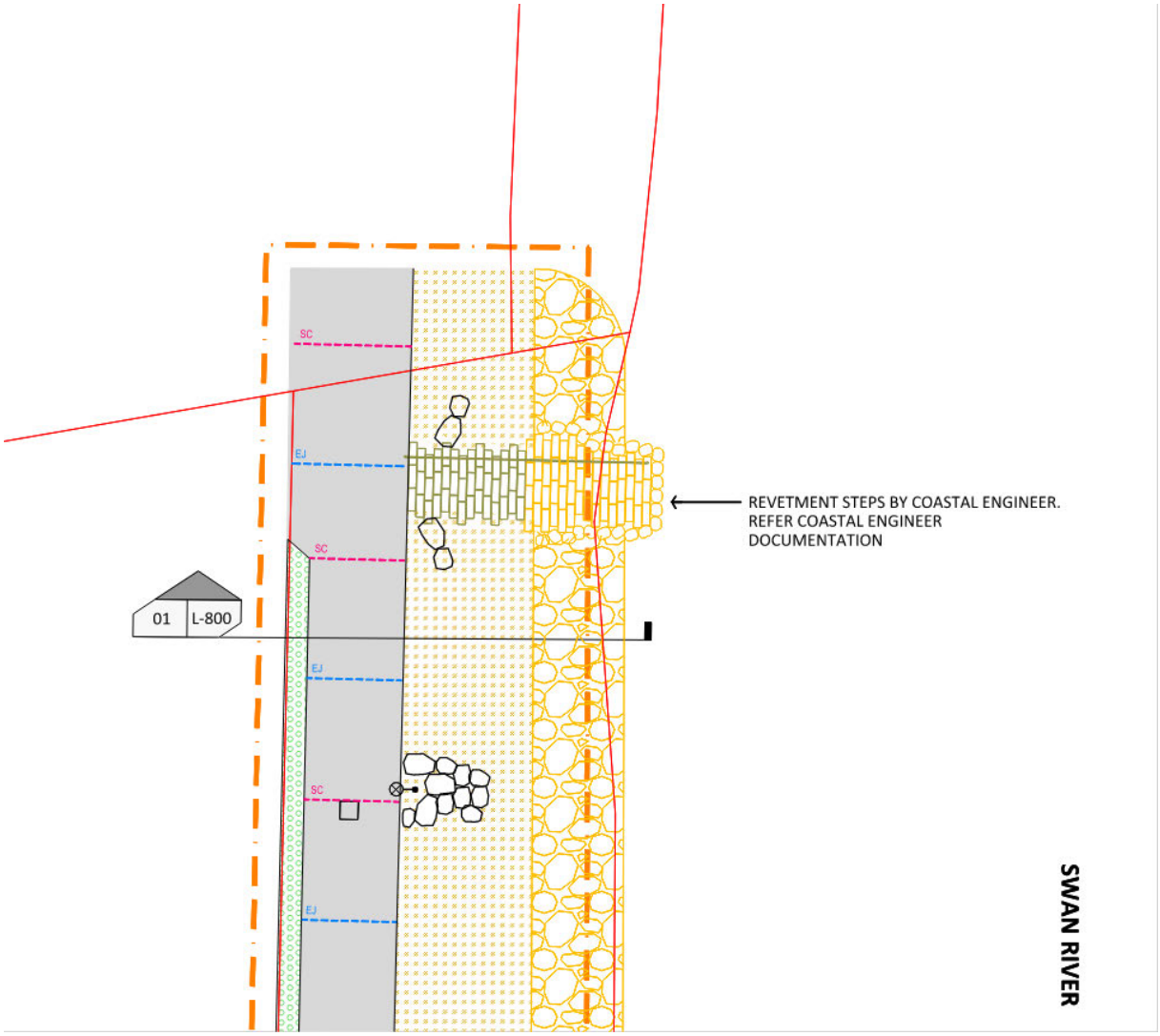


Figure 4.2 Precinct D Landscape Plan in Area of Connection (Place Lab)

The foreshore levels in the area of the connection are approximately +3.8 mAHD. As a result, ramps will be required to transition from the upper foreshore to the boardwalk level.

3.2 Design Life & Structural Classification

The design life of the boardwalk will be proposed to be 50 years. This is reasonable for a normal structure in the marine environment.

Based on a 50 year design life, a design event for the structure needs to be selected to provide a low risk of exceedance during the life of the structure. The annual probability of exceedance for the design events is determined using the following structure categories:

- Function Category 2 – Normal Structure (AS4997).
- Importance Level 2 – Normal Structure (AS/NZS1170.0).

Based on these structure categories and the intended design life, the annual probability of exceedance for the design events are provided in the following table.

Table 3.1 Annual Probability of Exceedance for Design Events

Design Event	Ultimate Limit State	Serviceability Limit State
Wave	1/500	1/1
Wind	1/500	1/25
Earthquake	1/500	1/25

Notes: 1. Wave design event from AS4997
2. Wind and earthquake design event from AS1170.0

These events will be considered in detailed design of the structure.

3.3 Deck Loads

The Boardwalk will be designed to accommodate pedestrian crowds as per AS/NZS 1170.1. The deck load design actions used in the design are summarised in the following table.

Table 3.2 Deck Loads

Deck Element	Distributed Loads (kPa)	Concentrated Load (kN)
Main Deck	5.0	3.6

3.4 Layout

The layout of the Boardwalk has been developed based on the following key considerations.

- Connecting to landscape at either end of the boardwalk.
- The boardwalk will be located in water, within the Swan River to avoid trees and the eroding foreshore.
- The alignment has been selected to avoid impacts on existing mature trees and vegetation, minimising pruning, root disturbance, and vegetation removal.
- The alignment considers the proximity of the designated water ski zone to maintain appropriate clearances from areas of high boating activity.

The boardwalk is proposed to have an overall width of 3 m and consists of a total length of around 340 m. The general layout of the boardwalk is presented in Figure 3.3.

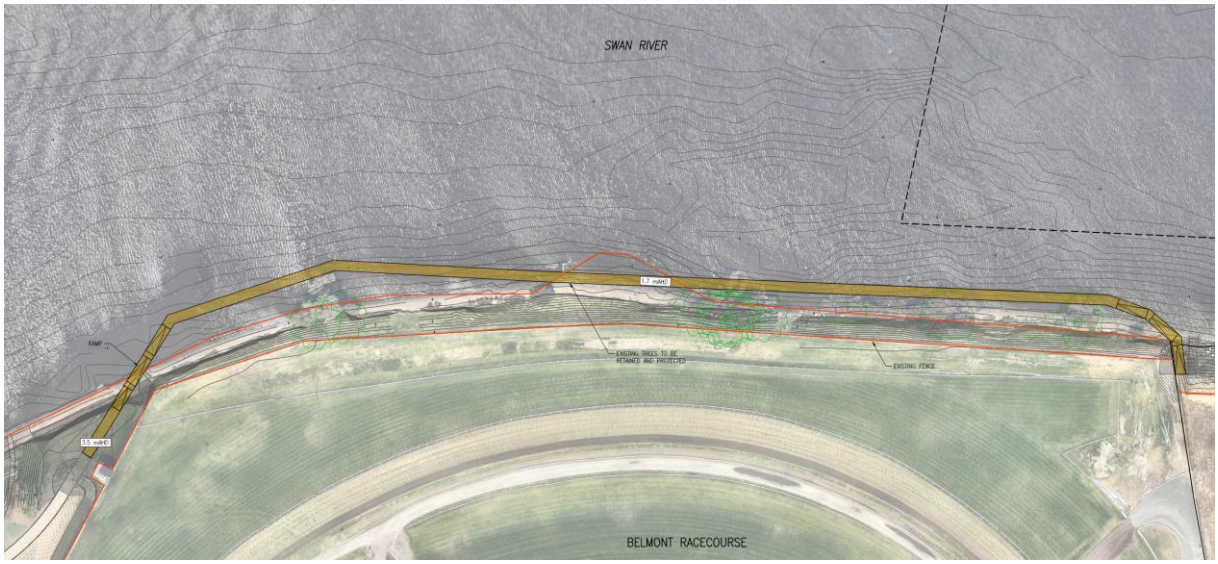


Figure 3.3 Proposed Boardwalk Layout

3.5 Deck Level

The determination of an appropriate deck level of the boardwalk needs to consider the following key aspects:

- Smooth tie in to surrounding access infrastructure such as proposed paths, the existing stairs and adjacent natural surface levels.
- Minimise the frequency of inundation during extreme water level events.
- Keep the structure as low as possible towards the river for amenity.

Based on these considerations, a deck level of +1.7 mAHD has been proposed. This would only be inundated rarely - in events above 50 year ARI in the present day and with slightly increasing frequency in the future, with sea level rise. This means that, while there is the potential for the deck to be wet or underwater, this would only be on very rare occasions such as an extreme river flood.

This provides a reasonable balance between the above considerations.

3.5.1 Universal Access

As the adjoining foreshore levels are at higher elevations than the proposed boardwalk deck level, ramps are required at both ends. These ramps have been designed to comply with the universal access requirements of AS 3962 and AS 1428. Compliance is achieved through a fixed ramp gradient of 1V:14H, with intermediate landings provided at appropriate intervals.

In addition to the ramps, appropriate kick rails or kerbs will be provided on the structure. To prevent falls from the boardwalk, a handrail is proposed on both sides. The clear width of the boardwalk access between kerbs or handrails will be approximately 2.8 m. This is sufficient to meet universal access requirements.

3.6 Materiality

The selection of materials for the Boardwalk is governed by the following criteria:

- Achievement of the required design life. The selected materials should be durable in a marine environment such that they remain functional with an appropriate level of maintenance.
- Adequate capacity to withstand the required design actions.
- Minimise maintenance over the service life of the structure.

There are many materials that fit the design requirements, such as treated timber, steel, fibre reinforced polymer (FRP), composite decking and precast concrete elements. The following combination of materials are proposed for the key structural elements of the boardwalk.

- Timber Deck
- Steel Headstocks
- FRP Stringers
- Steel piles

This material arrangement has recently been approved by DBCA for similar jetty structures, including at Mount Henry. MRA understands the concerns of DBCA regarding the use of FRP in the riverine environment and note that:

- The use of FRP members represents current best practice in marine and coastal environments due to their low maintenance requirements, corrosion resistance, high strength to weight ratio and overall whole of life cost effectiveness.
- The adoption of FRP stringers beneath the deck reduces the potential for decking abrasion and deterioration, which may otherwise result in the release of microplastics into the river environment. As the stringers are located beneath the deck and not directly accessible, they are less susceptible to wear related damage.
- Alternative materials, including structural steel, may be considered if required. However, such materials would be expected to result in increased maintenance requirements over the service life of the structure.

4. Construction Cost Estimate

A concept level construction cost estimate has been prepared for the boardwalk based on the assumptions outlined in this report. The opinion of probable cost of the concept design is presented below in Table 4.1.

Table 4.1 Construction Cost Estimate OPC

Item	Activity	Qty	Units	Unit Rate	Subtotal	Total
1	**Preliminaries**					**$800,000**
1.1	Preliminary items including insurances, management plans, mobilisation, site establishment, demobilisation, levies etc.	1	item	$800,000	$800,000	
2	**Landscape Connections**					**$74,720**
2.1	Excavation, backfill and earthworks to allow construction of abutments.	2	item	$35,200	$70,400	
2.2	Section of connecting path	36	m^2	$120	$4,320	
3	**Boardwalk**					
3.1	Construction and completion of the boardwalk, including piling, steelwork, decking, handrails, kerbs and associated works.	1070	m^2	$4,800	$5,136,000	
Subtotal 1						**$6,010,720**
	Contingencies	25	%			$1,502,680
Subtotal 2						**$7,513,400**
	Goods & Services Tax	10	%			$751,340
TOTAL ESTIMATED COST						**$8,264,740**

The following should be considered regarding the construction costs:

- The cost estimate is based on tendered rates for similar projects over several years.
- Management, design and approval costs have not been included.

- A 25% contingency has been included to allow for uncertainty for a concept level estimate. This is used to cover uncertainty such as material and mobilisation costs, site conditions and as no detailed design has been undertaken.

- Future escalation has not been included. As the marine construction industry in WA has limited resources and is currently in high demand, prices can vary significantly from one project to another.

- No allowance for services on the boardwalk (eg lighting or water) have been allowed.

These assumptions and costs would be reviewed through design development.

5. Conclusion

MRA has prepared an updated concept design for a proposed boardwalk connecting Precincts A and D at Burswood Point. The concept design has been developed with consideration of site conditions, accessibility requirements, environmental constraints, and key structural aspects, including material selection.

This report has been prepared to support a DA and inform further design development.

6. References

Australian Maritime College 2009. Investigation into the effect of wash of boats and wind waves on the Swan River, Prepared for the Swan River Trust.

BMT WBM 2018. *Swan and Helena Rivers Flood Study and Floodplain Management Plan: Hydraulic Modelling Final Report*, R.B22428.003.01. Prepared for Eastern Metropolitan Regional Council.

Brearley, A 2005. *Swanland Estuaries and Coastal Lagoons of South-Western Australia*. University of Western Australia Press, Crawley, WA.

Centre for Marine Science and Technology 2010. *Full-scale Boat Wake and Wind Wave Trials on the Swan River*, Report CMST 2010-06. Prepared for the Swan River Trust.

DoT 2010. *Sea Level Change in Western Australia – Application to Coastal Planning*. Coastal Infrastructure, Fremantle.

Goda, Y 2003. 'Revisiting Wilson's Formulas for Simplified Wind-Wave Prediction', *Journal of Waterway, Port, Coastal and Ocean Engineering*, Vol. 129, No. 2, pp. 93-95, ASCE.

Golder Associates 2015. *Geotechnical Investigation Report, Belmont Park Racecourse Redevelopment – Transit Oriented Development Foreshore Structures and Treatment*. Prepared for Golden River Developments Pty Ltd, Perth, Australia.

MRA 2023. *Burswood Peninsula Precinct A Concept Design Report, R 1785 Rev 0*. Prepared for Golden Group, Perth.

Standards Australia 2002, *AS 1170.0 Structural design actions – General principles*, Standards Australia, Sydney, NSW.

Standards Australia 2005, *AS 4997-2005 Guidelines for the design of maritime structures*, Standards Australia, Sydney, NSW. (Pending revision)

Standards Australia 2021, *AS/NZS 1170.2:2021 Structural design actions – Part 2: Wind actions*, Standards Australia, Sydney, NSW. (Current edition)

Standards Australia 2021, *AS 1428.1 Design for access and mobility – General requirements for access – New building work*, Standards Australia, Sydney, NSW.

7. Appendices

Appendix A Concept Design Drawings

Appendix A Concept Design Drawings

AT CORRECT SCALE THIS IS 100 mm



AT CORRECT SCALE THIS IS 100 mm

REV	DATE	APPROVED	AMENDMENT	REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE				

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT: GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHANAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT: BURSWOOD PRECINCT A – D BOARDWALK

TITLE: LOCALITY PLAN

SCALE AT A1	DRAWING NUMBER	REV
1:1,000	SK2263-02-01	A

AT CORRECT SCALE THIS IS 100 mm

0 2.5 5 7.5 10 12.5m
SCALE 1:250 AT ORIGINAL SIZE

SWAN RIVER

NEW BOARDWALK

1.7 mAHD

RAMP

EXISTING TREES TO BE RETAINED AND PROTECTED

EXISTING FENCE

3.5 mAHD

NEW BOARDWALK TO TIE IN TO LANDSCAPE LEVELS

BELMONT RACECOURSE

SECTION A (NA-07)

SECTION 20-02

LEGEND:

- 0.0 — CONTOUR
- NEW BOARDWALK
- FENCE
- LOT BOUNDARY
- TREE

NOTES:

1. SURVEY COMPLETED BY MNG SURVEYS IN 2014 AND NOVEMBER 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
2. LANDSCAPE PLAN PROVIDED BY GOLDEN SEDAYU ON 26 SEPTEMBER 2025 DEVELOPED BY HASSELL.
3. HORIZONTAL DATUM IS PERTH COASTAL GRID 1994 (PCG94). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).
4. AERIAL PHOTOGRAPH SOURCED FROM NEARMAP TAKEN IN NOVEMBER 2025.

CAD:SK22630301[A]

AT CORRECT SCALE THIS IS 100 mm

REV	DATE	APPROVED	AMENDMENT	REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE				

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT BURSWOOD PRECINCT A – D BOARDWALK

TITLE LAYOUT
SHEET 1 OF 2

SCALE AT A1	DRAWING NUMBER	REV
1:250	SK2263-03-01	A

AT CORRECT SCALE THIS IS 100 mm



NOTES:

1. SURVEY COMPLETED BY MNG SURVEYS IN 2014 AND NOVEMBER 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
2. LANDSCAPE PLAN PROVIDED BY GOLDEN SEDAYU ON 26 SEPTEMBER 2025 DEVELOPED BY HASSELL.
3. HORIZONTAL DATUM IS PERTH COASTAL GRID 1994 (PCG94). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).
4. AERIAL PHOTOGRAPH SOURCED FROM NEARMAP TAKEN IN NOVEMBER 2025.

LEGEND:

- 0.0 — CONTOUR
- NEW BOARDWALK
- FENCE
- LOT BOUNDARY
- SKI ZONE BOUNDARY
- TREE

CAD:SK22630302[A]

REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT: GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

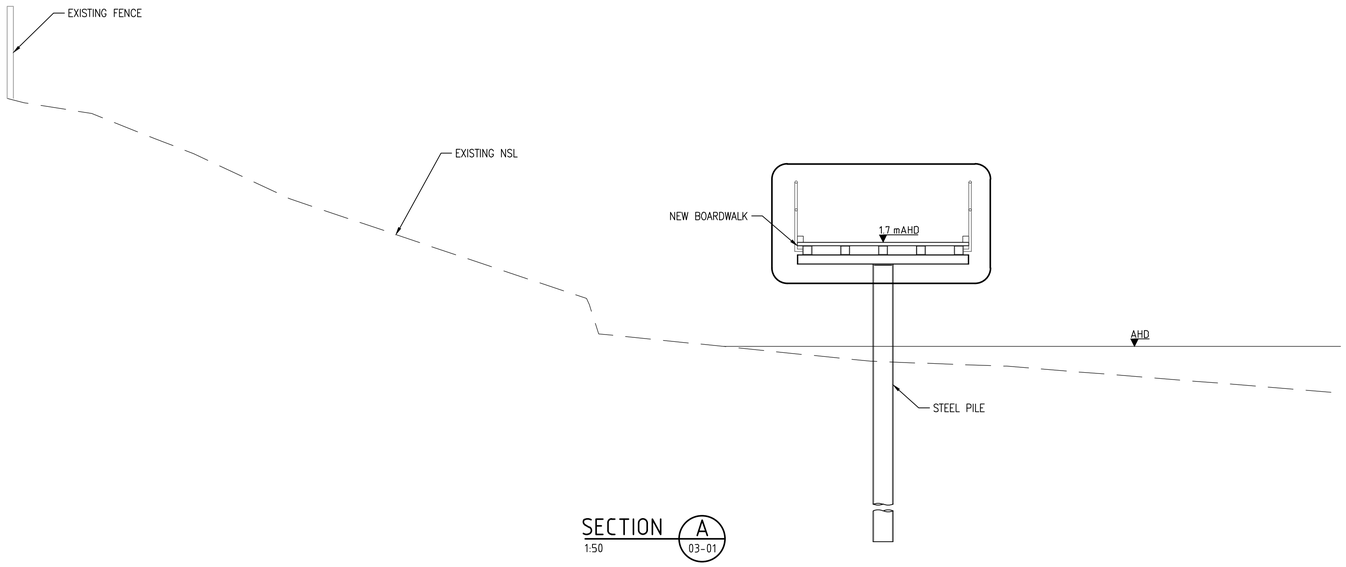
PROJECT: BURSWOOD PRECINCT A – D BOARDWALK

TITLE: LAYOUT
SHEET 2 OF 2

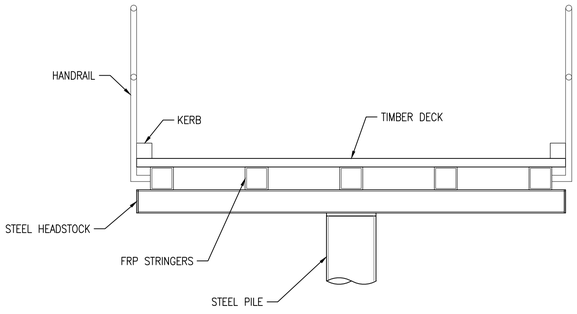
SCALE AT A1: 1:250 | DRAWING NUMBER: SK2263-03-02 | REV: A

AT CORRECT SCALE THIS IS 100 mm

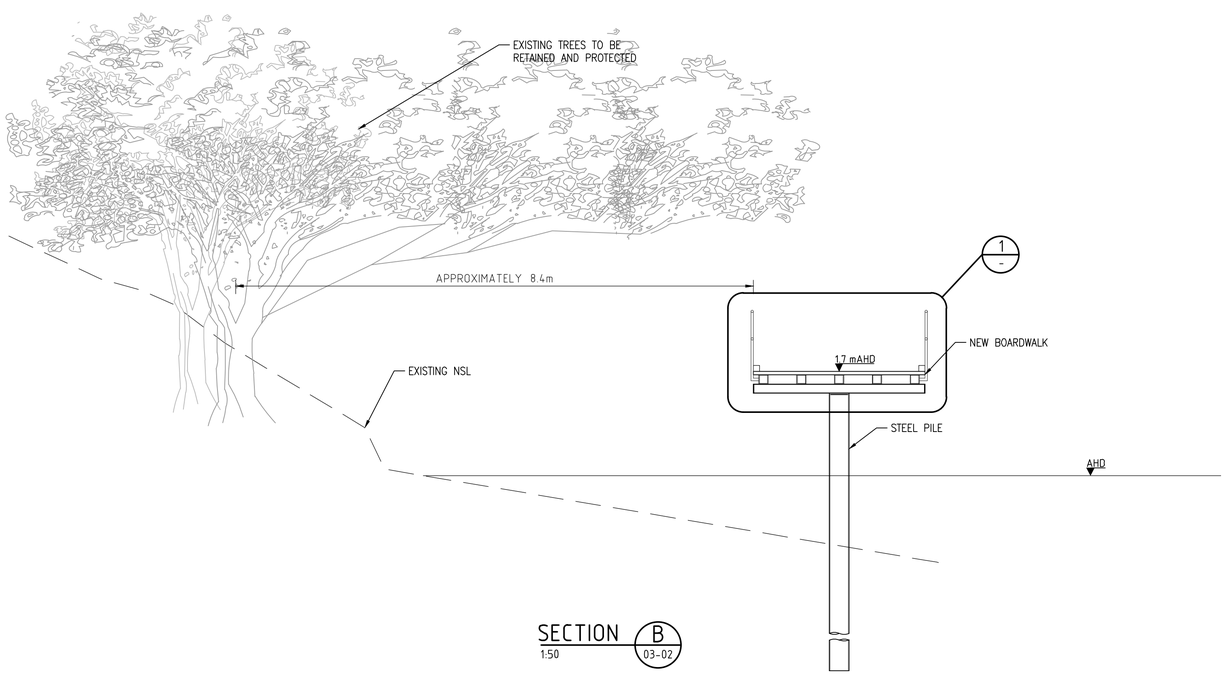
AT CORRECT SCALE THIS IS 100 mm



SECTION A
1:50
03-01



DETAIL 1
1:20
-



SECTION B
1:50
03-02

AT CORRECT SCALE THIS IS 100 mm

CAD:SK22630401[A]

REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT BURSWOOD PRECINCT A – D BOARDWALK

TITLE SECTIONS & DETAIL

SCALE AT A1 AS SHOWN | DRAWING NUMBER SK2263-04-01 | REV A

m p rogers & associates pl
www.coastsandports.com.au

AT CORRECT SCALE THIS IS 100 mm



AT CORRECT SCALE THIS IS 100 mm

REV	DATE	APPROVED	AMENDMENT	REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE				

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHANAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers

Suite 1, 128 Main Street
Osborne Park 6017
Western Australia

t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT BURSWOOD PRECINCT A – D BOARDWALK

TITLE LOCALITY PLAN

SCALE AT A1	DRAWING NUMBER	REV
1:1,000	SK2263-02-01	A

AT CORRECT SCALE THIS IS 100 mm

0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

SWAN RIVER

NEW BOARDWALK

1.7 mAHD

RAMP

EXISTING TREES TO BE RETAINED AND PROTECTED

EXISTING FENCE

3.5 mAHD

NEW BOARDWALK TO TIE IN TO LANDSCAPE LEVELS

BELMONT RACECOURSE

SECTION A-A (N4-17)

SECTION 20-02

LEGEND:

- 0.0 — CONTOUR
- NEW BOARDWALK
- FENCE
- LOT BOUNDARY
- TREE

NOTES:

1. SURVEY COMPLETED BY MNG SURVEYS IN 2014 AND NOVEMBER 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
2. LANDSCAPE PLAN PROVIDED BY GOLDEN SEDAYU ON 26 SEPTEMBER 2025 DEVELOPED BY HASSELL.
3. HORIZONTAL DATUM IS PERTH COASTAL GRID 1994 (PCG94). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).
4. AERIAL PHOTOGRAPH SOURCED FROM NEARMAP TAKEN IN NOVEMBER 2025.

CAD:SK22630301[A]

AT CORRECT SCALE THIS IS 100 mm

REV	DATE	APPROVED	AMENDMENT	REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE				

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers

Suite 1, 128 Main Street
Osborne Park 6017
Western Australia

t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT: BURSWOOD PRECINCT A – D BOARDWALK

TITLE: LAYOUT
SHEET 1 OF 2

SCALE AT A1	DRAWING NUMBER	REV
1:250	SK2263-03-01	A

AT CORRECT SCALE THIS IS 100 mm



NOTES:

1. SURVEY COMPLETED BY MNG SURVEYS IN 2014 AND NOVEMBER 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
2. LANDSCAPE PLAN PROVIDED BY GOLDEN SEDAYU ON 26 SEPTEMBER 2025 DEVELOPED BY HASSELL.
3. HORIZONTAL DATUM IS PERTH COASTAL GRID 1994 (PCG94). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).
4. AERIAL PHOTOGRAPH SOURCED FROM NEARMAP TAKEN IN NOVEMBER 2025.

LEGEND:

- 0.0 — CONTOUR
- NEW BOARDWALK
- FENCE
- LOT BOUNDARY
- SKI ZONE BOUNDARY
- TREE

CAD:SK22630302[A]

AT CORRECT SCALE THIS IS 100 mm

REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT: GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

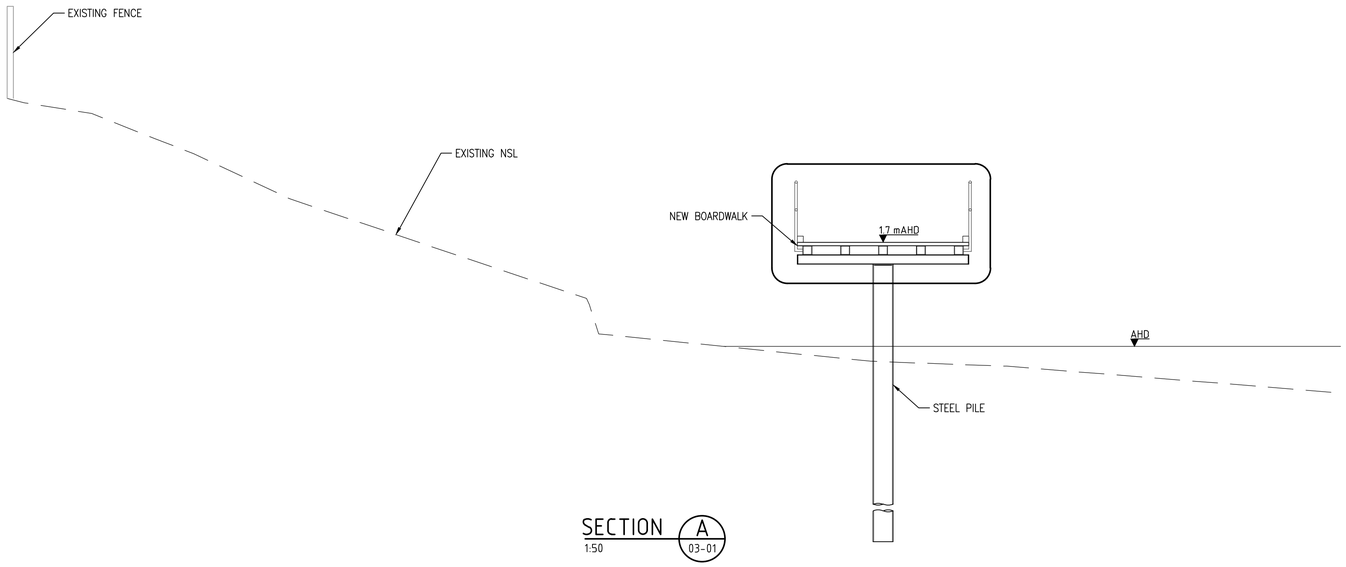
m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT: BURSWOOD PRECINCT A – D BOARDWALK

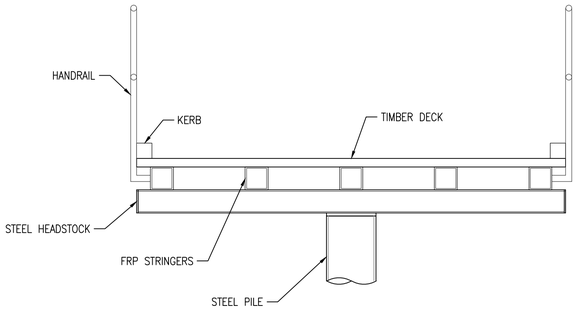
TITLE: LAYOUT
SHEET 2 OF 2

SCALE AT A1	DRAWING NUMBER	REV
1:250	SK2263-03-02	A

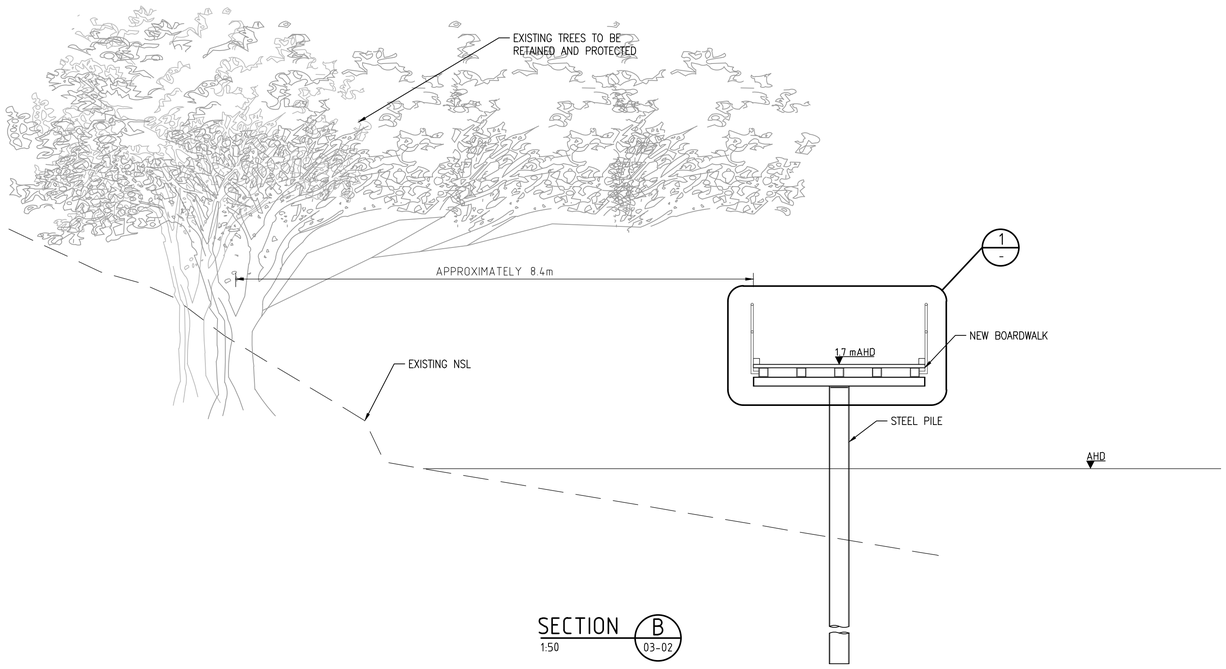
AT CORRECT SCALE THIS IS 100 mm



SECTION A
1:50
03-01



DETAIL 1
1:20



SECTION B
1:50
03-02

AT CORRECT SCALE THIS IS 100 mm

CAD:SK22630401[A]

REV	DATE	APPROVED	AMENDMENT
A	21.01.26	TSH	PRELIMINARY ISSUE

COPYRIGHT

The concepts and information contained in this document are the Copyright of m p rogers & associates. Use or copying of the document in whole or part without the written permission of m p rogers & associates constitutes an infringement of copyright.

This plan is not to be used for construction unless issued as Rev 0 and signed below

CLIENT: GOLDEN SEDAYU

DESIGNED	CHECKED	APPROVED
S RATHNAYAKE	T HUNT	
DRAWN	CHECKED	
R ENCINAS	T HUNT	

m p rogers & associates pl
coastal and port engineers
Suite 1, 128 Main Street
Osborne Park 6017
Western Australia
t: +61 8 9254 6600
admin@coastsandports.com.au

PROJECT: BURSWOOD PRECINCT A – D BOARDWALK

TITLE: SECTIONS & DETAIL

SCALE AT A1: AS SHOWN

DRAWING NUMBER: SK2263-04-01

REV: A

CMW Geosciences
Great People | Practical Solutions

28 August 2026

Burswood Point

GEOTECHNICAL INVESTIGATION REPORT: PRECINCT D PROPOSED BOARDWALK

Golden Sedayu Pty Ltd

Job No. PER2021-0032DB | Version 0



Perth

Suite 1 | Level 3
29 Flynn Street
Wembley WA 6014
Australia

Ph: + 61 8 6555 4920

www.cmwgeosciences.com

Version Control

Document version information	
Job number	PER2021-0032DB
Prepared by	Luke Stuart-Williams, Project Geotechnical Engineer 
Reviewed by	Andy Websper, Principal Geotechnical Engineer 

Review and Update History

Revision	Date	Comments
0	28/08/2026	Issue to client

CONTENTS

1.0 INTRODUCTION 4

2.0 SITE DESCRIPTION 4

3.0 PROPOSED DEVELOPMENT 4

4.0 EXISTING GEOTECHNICAL REPORTS 5

5.0 DESKTOP STUDY 5

5.1 Geological Setting and Geomorphology 5

5.2 Published Geology 6

5.3 Groundwater 7

6.0 FIELD INVESTIGATION 7

6.1 Piezocone Penetration Testing 7

7.0 GEOTECHNICAL MODEL 9

7.1 Subsurface Conditions 9

7.1.1 Holocene Alluvium 9

7.1.2 Perth Formation 9

7.2 Geotechnical Model Summary 9

8.0 GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS 10

8.1 Geohazards 10

8.1.1 Paleochannels 10

8.1.2 Alluvial Soils 10

8.1.3 Weak and Compressible Holocene Alluvium 11

8.1.4 Erosion and Scour 11

8.2 Geotechnical Design Parameters 11

8.3 Piled Foundations 11

8.3.1 Geotechnical Strength Reduction Factor 12

8.4 Design Groundwater Level 12

9.0 CLOSURE 12

Appendices

APPENDIX A Site Investigation Plan

APPENDIX B Geotechnical Cross Sections

APPENDIX C Piezocone Penetration Plots

1.0 INTRODUCTION

CMW Geosciences Pty Ltd (CMW) was engaged by Golden Sedayu Pty Ltd to carry out a geotechnical investigation of a site located along the eastern banks of Burswood Point, along the banks of the Swan River, which is being considered for the construction of a new overwater boardwalk

The scope of work is detailed in our services proposal letter referenced PER2021-0032DB, Rev0 dated 25/02/2026.

2.0 SITE DESCRIPTION

The site is located within the Burswood Point development area, approximately along the eastern boundary of Belmont Park Racecourse, on the banks of and within the Swan River. The site is primarily open river reserve and vegetated riverbanks.

The approximate location and proposed extent of this investigation are shown in Figure 1

Figure 1: Proposed extent of boardwalk development along the Swan River foreshore



3.0 PROPOSED DEVELOPMENT

The proposed development comprises the construction of a boardwalk along the Swan River, connecting Precinct A (North of Belmont Racecourse) to Precinct D (South of Belmont Racecourse). The proposed boardwalk will provide an overwater pedestrian connection between Precinct A and Precinct D along the foreshore area.

The boardwalk will likely be founded on driven piles.

4.0 EXISTING GEOTECHNICAL REPORTS

Several geotechnical investigations have been undertaken across Burswood Point. The most relevant investigation data for this development is the previous Geotechnical Investigation Report prepared by Golder Associates, which involved a similar investigation scope, but for the southern portion of the alignment. The report contents are provided under the report reference:

- Golder Associates (2015), Geotechnical Investigation report, Belmont Park Racecourse Redevelopment – Transit Oriented Development Foreshore Structures and Treatment, report number 1415708-003-R-Rev0

The scope of field investigation works completed by Golder in 2015 comprised:

- Nine over-water Cone Penetration Test (CPTs) located adjacent to the proposed boardwalk area
- Three push tube boreholes
- Five hand auger boreholes located near the site

5.0 DESKTOP STUDY

5.1 Geological Setting and Geomorphology

The site is situated on the Swan Coastal Plain near the northern extent of Burswood Point. The near surface geology consists primarily of Holocene fluvial and estuarine sediments and marine muds including soft silts, clays, and fine sands deposited across former mudflats and wetlands.

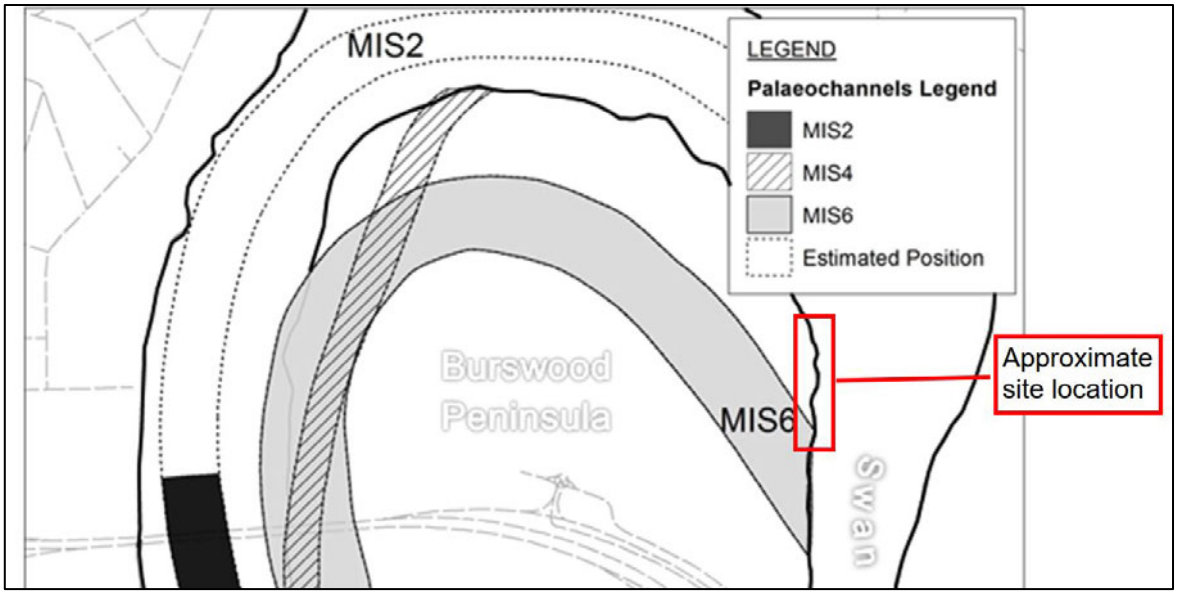
The evolution of the Swan River over time has resulted in the formation of a complex sequence of alluvial and estuarine deposits, both along the current river alignments and within the general vicinity of the modern-day Swan River. These deposits can be associated with paleochannels (old sediment infilled river channels) which have formed over long periods of time due to global sea level changes.

Based on our experience within the Burswood Point area, and as documented by Greene (2014) and Gozzard (2007), the surface Holocene alluvial deposits at the site are expected to be underlain by a multi-phase paleochannel network which has been infilled with alluvial sediments. These sediments include Swan River Alluvium (SRA), Swan River Formation (SRF), and Perth Formation.

Greene (2014) identified three paleochannels across the peninsula, designated MIS2, MIS4, MIS6. MIS6 represents the oldest channel in the area and is interpreted to be infilled by Perth Formation, while MIS4/MIS2 are significantly younger and are interpreted to be infilled with SRF and SRA.

The proposed boardwalk is located approximately North of where Greene interprets MIS6 to intersect the present day Swan River. The presence of MIS2 in this area is unclear. The relationship between the paleochannels and the Precinct D Boardwalk is presented in Figure 2 below.

Figure 2: Burswood Point Interpreted Paleochannels (Green, 2014)



5.2 Published Geology

The geology and geomorphology of the site is presented on the "Perth" sheet of the Geological Society of Western Australia (GSWA) 1:50,000 Environmental Geology Series Maps (Gozzard, 1986).

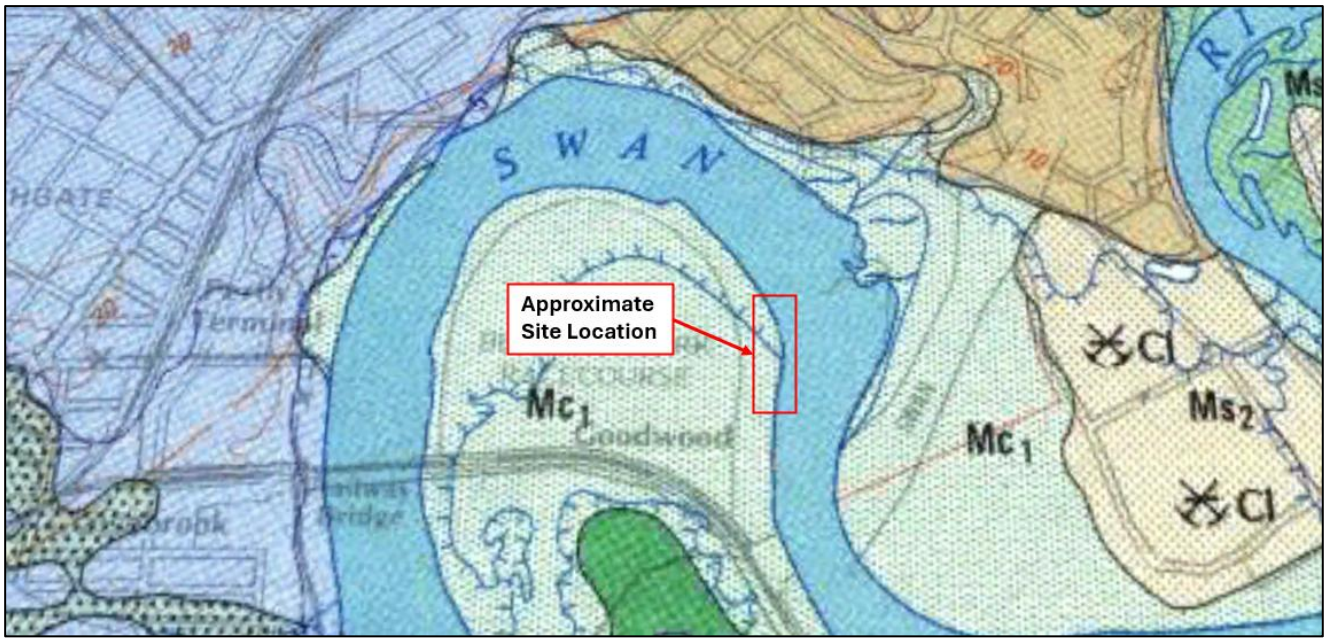
Gozzard (1986) has mapped the surface geology of the site as Holocene Alluvium, which is described as:

- **Alluvium (Mc_1):** Clayey Silt – yellow brown to strong brown, blocky, mottled, soft, with variable clay content, dispersive in part, of alluvial origin.

Before the superficial Holocene alluvial deposits, the deeper geological formations are expected to comprise interbedded Sand and Clays of the Perth Formation.

An excerpt from the geological map with the location of the site is shown in Figure 3 below.

Figure 3: Geology Map – GSWA 1:50,000 Environmental Series "Perth" Sheet (Gozzard, 1986)



5.3 Groundwater

Given that the site is located above the Swan River, "groundwater" is effectively governed by the water level within the river at any given time, and the "groundwater" surface is the same as the river level.

A review of historical measurements taken at Barrack Street Jetty (approximately 7km downstream) indicate the river level generally ranges between RL -0.25 m and RL 0.65 m AHD under normal conditions. Larger fluctuations and potentially higher/lower river levels can be expected during storm surges or low-pressure weather systems.

6.0 FIELD INVESTIGATION

The geotechnical site investigation was undertaken by CMW on 21 July 2026. The scope of investigation works included the completion of six Cone Penetration Tests along the Swan River.

All fieldwork was carried out under the direction of Geotechnical Engineers and Engineering Geologists from CMW in accordance with AS1726 (2017) – Geotechnical Site Investigations.

The scope of site investigation works undertaken is summarised below.

- A site walkover to assess the general landform and site conditions of the riverbank
- Advancement of 6 No. piezocone penetration tests (CPTu) using an amphibious CPT Rig to terminal depths of between 2.38 and 17.68m below ground level (bgl), at selected locations along the riverbank.

Investigation locations are presented on the Site Investigation Plan provided in Appendix A.

6.1 Piezocone Penetration Testing

Six piezocone penetration tests (CPTu), denoted CPTu-BW01 to CPTu-BW06, were undertaken to practical refusal using a 13 tonne "Marsh Buggy" CPT rig supplied and operated by Probedrill. Details on the CPT locations and refusal criteria are provided in Table 1.

Table 1: Summary of Cone Penetration Testing Details

Location ID	MGA 2020 Zone 50		Termination Depth (mbgl)	Termination Reason
	Easting (m)	Northing (m)		
CPTu-BW01	395552.00	6465235.00	16.14	Refusal 40MPa and no lateral rod support
CPTu-BW02	395560.00	6465244.00	8.50	Refusal 8MPa and rod friction
CPTu-BW03	395566.00	6465169.00	17.68	Refusal 50 MPa
CPTu-BW04	395575.00	6465162.00	7.52	Refusal on rod friction
CPTu-BW05	395565.00	6465009.00	21.40	Refusal 50MPa and rod friction
CPTu-BW06	395578.00	6465021.00	2.38	Refusal 8 MPa and rod friction

All CPTu were completed overwater under a mixture of floating and partial floating conditions.

The "floating" condition involved the Marsh Buggy being located on the river, supported on spud legs, with no contact between the Marsh Buggy and the ground itself. This condition allows the CPTu to be completed further from the riverbank, away from the shoreline, but limits the pushing capacity of the Marsh Buggy due to the increased buoyancy force.

The partially floating condition involved mounting the Marsh Buggy partially on the riverbank, with the front end physically supported on the riverbank, while the rear portion remains floating in the river. This reduces the

buoyancy force and increases the pushing capacity of the CPTu, but consequently limits the CPTu location near to the shoreline.

Three CPTu tests were completed under floating conditions within the river, and three CPTu tests were completed under partial floating conditions near the shoreline. Selected photographs of the marsh buggy during the field investigation are presented below.



Plate 1: View south from the rig at CPTu-BW01



Plate 2: View north-east from the rig at CPTu-BW02



Plate 3: View south from the rig at CPTu-BW03



Plate 4: View southwest from the support vessel towards the rig at CPTu-BW04



Plate 5: View southwest from the support vessel towards the rig at CPTu-BW05



Plate 6: View southwest from the support vessel towards the rig at CPTu-BW06

The locations of the test points were recorded using a differential GPS (DGPS) unit mounted on the marsh buggy. The CPTu results, including plots of cone resistance, sleeve friction, friction ratio, and pore pressure are presented in Appendix C.

7.0 GEOTECHNICAL MODEL

7.1 Subsurface Conditions

The ground conditions interpreted from the CPTu are consistent with the published geology and available literature. A geotechnical model has been developed for the site based on interpretation of the site investigation data, with reference to published geological information literature including Greene (2014), and the "Perth" sheet of the GSWA 1:50,000 Environmental Geology Series (Gozzard, 1986). The following geological units are interpreted from the CPTu data.

- Holocene Alluvium (Swan River Alluvium)
- Perth Formation

These units are discussed in further detail in the following subsections

7.1.1 Holocene Alluvium

Holocene Alluvium (colloquially known as Swan River Alluvium) is interpreted as the uppermost unit and comprises young estuarine and fluvial sediments associated with the recent and ongoing deposition and migration of the Swan River.

The observed thicknesses of Holocene Alluvium varied significantly across the site, ranging between 2.5 m to 5.5 m thick. The Holocene Alluvium was noticeably thicker in the north (CPTu-BW01 and BW02) which may suggest the presence of a deeper paleochannel in this area. Holocene Alluvium was interpreted to comprise very soft clayey soils with zones of very loose to loose sandy soils near the upper and lower extents of the unit.

7.1.2 Perth Formation

Perth Formation is interpreted beneath the Swan River Alluvium. The unit comprises mixtures of medium dense to dense sand and stiff to hard clays, with traces of loose sand/soft clay in some areas.

The Perth Formation represents late Quaternary paleochannel infill and is differentiated from Holocene Alluvium by a noticeable increase in the CPT cone tip resistance. The base of the Perth Formation was not encountered in this investigation.

7.2 Geotechnical Model Summary

With reference to the above geological units, a geotechnical ground model has been developed based on interpretation of the field investigation data. The geotechnical units and their distribution are provided in the geotechnical model in Table 2.

It is possible that some of the deeper material which has been interpreted as Holocene Alluvium material may actually be associated with the Perth Formation. However, for the purposes of this geotechnical model, where the material properties are similar to those typical of Holocene Alluvium (e.g. soft clays), then the Holocene Alluvium unit has been assigned, and Perth Formation has been reserved for materials that are considered more geotechnically competent.

Table 2: Geotechnical Model

Geotechnical Unit Soil Type (*Density/Consistency)*	**Elevation to Base (m AHD)**		
	Maximum	**Minimum**	**Average Value**
Holocene Alluvium Clay *(Very Soft)*	-6.5	-0.8	-3.3[1]
Perth Formation – Interbedded Facies Clay to Sandy Clay (*Stiff to Hard),* Sand to Clayey Sand *(Medium Dense to Dense)*	-13.5	-11.0	-12.5
Perth Formation – Lower Sandy Facies Sand to Clayey Sand *(Medium Dense to Dense)*	BNE	BNE	BNE

Notes: 1) The average elevation of the base of the Holocene Alluvium unit is skewed due to the presence of a potential paleochannel in the north. The average value therefore may not be an accurate representation of the site-wide ground conditions. See Appendix B for geological sections.

BNE = Base not Encountered

8.0 GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS

8.1 Geohazards

8.1.1 Paleochannels

The site is in proximity to several buried paleochannel features which are interpreted as former erosional drainage channels which have been infilled with alluvial material. Each separate paleochannel contains variable mixtures of sand, silt, clay, and gravel, of variable density/consistency. The geometry and infill characteristics of the paleochannel are complex and vary both laterally and vertically. It is possible that a paleochannel associated with the current migration of the Swan River (Holocene Alluvium) is present at the northern extent of the boardwalk.

The variable nature of the paleochannel represents a risk for the development due to the potential for high variation in soil composition and strength/stiffness properties over short distances. Consideration should be given to this variability when determining a suitable foundation system.

The soils associated with Perth Formation are considered favourable as a piling foundation material for this project, while soils associated with the Holocene Alluvium are not appropriate and will present geotechnical challenges associated with their lower strength.

8.1.2 Alluvial Soils

The site in underlain by soil alluvial deposits, including Perth Formation. Alluvial soils are typically characterised by variable conditions over relatively short distances which are the result of changes in depositional energy and environment. Deposits may contain mixtures of clay, silt, sand and gravel which could be described as interbedded, interfingering, or lenticular in nature.

The resulting geotechnical properties of alluvial soils can vary significantly over short distances (both laterally and vertically), which can result in variable foundation conditions or differential ground response. This inherent variability should be accounted for during geotechnical design.

8.1.3 Weak and Compressible Holocene Alluvium

Very soft Holocene Alluvium clays were encountered in all locations, nominally to 0.5m thickness, but as deep as 8m thick in some locations.

Holocene aged clays are known for being highly compressible and should not be relied upon as a founding stratum. The foundation solution should account for the presence of Holocene alluvium and piles should target the underlying more competent Perth Formation.

The thickness of this unit is expected to vary across the boardwalk alignment due to historical river migration.

8.1.4 Erosion and Scour

Erosion and Scour are potential geohazards which may affect the proposed boardwalk.

Erosion is the natural process where materials are gradually worn away and transported to a new location by external forces such as flowing rivers, heavy rainfall, or strong winds. For the proposed overwater boardwalk, ongoing erosion may result in progressive regression of the shoreline or riverbank in the areas where the boardwalk connects to land. Consideration should be given to the effects that this may have on the boardwalk, and whether foreshore edge protection will be required.

Scour is the process whereby river currents and tidal fluctuations locally increase flow velocity around structural elements (e.g. an embedded pile) which results in the progressive removal of material around structural elements. Scour may progress to an extent where significant enough material has been removed to decrease lateral and to a lesser extent, axial capacity of piles. The magnitude of scour will depend on several factors including riverbed sediment characteristics, river flow, water depth, and the geometry of underground structures. Consideration should be given to scour and the effects that it may have on piled foundations, in particularly undermining or loss of lateral geotechnical capacity.

8.2 Geotechnical Design Parameters

Geotechnical design parameters have been derived from interpretation of the CPTu data and our experience with similar materials. The following parameters in Table 3 can be used for design.

Table 3: Geotechnical Design Parameters

Geotechnical Unit	Soil Type	γ (kN/m³)	ϕ' (deg)	c' (kPa)	Su (kPa)	E (MPa)
Holocene Alluvium	Clay	16.5	22	1	10	5
Perth Formation: Interbedded Facies	Clayey soils	17	26	3	50 – 150	25
	Sandy Soils	18	35	-	-	50
Perth Formation: Lower Sand Facies	Sand	18	36	-	-	70
Notes: BNE = Base not Encountered.						

8.3 Piled Foundations

Pile foundations will be required to support the boardwalk structure and transfer structural loads to the more competent Perth Formation soils at depth. The most appropriate pile type will be dependent on several factors including architectural requirements, loading conditions, and maintenance requirements.

We understand that driven steel piles are the preferred option at this stage. Driven timber or precast concrete piles are also options which may be considered.

Preliminary pile design parameters for axial design of driven steel-tube sections are provided in Table 6 below. Parameters have been developed using a combination of methods including the UWA-05 (2005) and Bustamante and Gianeselli (1982) methods. Lateral pile design may be carried out by developing p-y springs using the geotechnical parameters in Table 4.

The pile designer should consider whether the assumption of a plugged on non-plugged pile is most appropriate. Corrosion protection or an allowance for corrosion/section loss will also be required for steel piles. AS2159-2009, Piling – Design and Installation gives advice regarding allowance for corrosion.

Table 4: Preliminary Pile Design Parameters

Geotechnical Unit	Ultimate Capacity (Axial Compression)	
	f_s (kPa)	q_b (MPa)
Holocene Alluvium	-	-
Perth Formation: Clayey Soils	35 – 50 (Avg 40)	0.5
Perth Formation: Sandy Soils	75	2.0

8.3.1 Geotechnical Strength Reduction Factor

Based on the level of investigation completed at the site, we recommend that a preliminary conservative geotechnical strength reduction factor, ϕ_g, of 0.52 is adopted. The pile designer must ensure that the design, testing and installation process is consistent with the ϕ_g value adopted with respect Table 4.3.2(A) of AS2159. The ϕ_g value may be increased where pile testing is carried out preferably prior to or during the initial stages of pile installation. It is noted that the testing may also be used to optimise the pile design at that stage.

8.4 Design Groundwater Level

Groundwater is considered to be taken as the surface of the Swan River at any given time, and therefore "groundwater" will be related to fluctuations in the Swan River Level. The Highest Astronomical Tide at Barrack Street Jetty under normal conditions is predicted at 0.65 m AHD, with higher levels expected during storm or flood events.

We recommend that a preliminary design water level of RL 1.0 m AHD is adopted to allow for tidal variation, river flow, and elevated water levels.

We recommend seeking further advice from a Hydrologist / Flood engineer if further refinement of the design water level is required.

9.0 CLOSURE

The findings contained within this report are the result of limited discrete investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, can it be considered that these findings represent the actual state of the ground conditions away from our investigation locations.

If the ground conditions encountered during construction are significantly different from those described in this report and on which the conclusions and recommendations were based, then we must be notified immediately.

Additional important information regarding the use of your CMW report is provided in the 'Using your CMW Report' document attached to this report.

This report has been prepared for use by Golden Sedayu Pty Ltd in relation to the proposed boardwalk, Swan River project in accordance with the scope, proposed uses and limitations described in the report. Should you have further questions relating to the use of your report please do not hesitate to contact us.

Where a party other than Golden Sedayu Pty Ltd seeks to rely upon or otherwise use this report, the consent of CMW should be sought prior to any such use. CMW can then advise whether the report and its contents are suitable for the intended use by the other party.

USING YOUR CMW GEOTECHNICAL REPORT

Geotechnical reporting relies on interpretation of facts and collected information using experience, professional judgement, and opinion. As such it generally has a level of uncertainty attached to it, which is often far less exact than other engineering design disciplines. The notes below provide general advice on what can be reasonably expected from your report and the inherent limitations of a geotechnical report.

Preparation of your report

Your geotechnical report has been written for your use on your project. The contents of your report may not meet the needs of others who may have different objectives or requirements. The report has been prepared using generally accepted Geotechnical Engineering and Engineering Geology practices and procedures. The opinions and conclusions reached in your report are made in accordance with these accepted principles. Specific items of geotechnical or geological importance are highlighted in the report.

In producing your report, we have relied on the information which is referenced or summarised in the report. If further information becomes available or the nature of your project changes, then the findings in this report may no longer be appropriate. In such cases the report must be reviewed, and any necessary changes must be made by us.

Your geotechnical report is based on your project's requirements

Your geotechnical report has been developed based on your specific project requirements and only applies to the site in this report. Project requirements could include the type of works being undertaken; project locality, size and configuration; the location of any structures on or around the site; the presence of underground utilities; proposed design methodology; the duration or design life of the works; and construction method and/or sequencing.

The information or advice in your geotechnical report should not be applied to any other project given the intrinsic differences between different projects and site locations. Similarly geotechnical information, data and conclusions from other sites and projects may not be relevant or appropriate for your project.

Interpretation of geotechnical data

Site investigations identify subsurface conditions at discrete locations. Additional geotechnical information (e.g. literature and external data source review, laboratory testing etc) are interpreted by Geologists or Engineers to provide an opinion about a site specific ground models, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist due to the variability of geological environments. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. Interpretation of factual data can be influenced by design and/or construction methods. Where these methods change review of the interpretation in the report may be required.

Subsurface conditions can change

Subsurface conditions are created by natural processes and then can be altered anthropically or over time. For example, groundwater levels can vary with time or activities adjacent to your site, fill may be placed on a site, or the consistency of near surface conditions might be susceptible to seasonal changes. The report is based on conditions which existed at the time of investigation. It is important to confirm whether conditions may have changed, particularly when large periods of time have elapsed since the investigations were performed.

Interpretation and use by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical report. To help avoid misinterpretations, it is important to retain the assistance of CMW to work with other project design professionals who are affected by the contents of your report. CMW staff can explain the report implications to design professionals and then review design plans and specifications to see that they have correctly incorporated the findings of this report.

Your report's recommendations require confirmation during construction

Your report is based on site conditions as revealed through selective point sampling. Engineering judgement is then applied to assess how indicative of actual conditions throughout an area the point sampling might be. Any assumptions made cannot be substantiated until construction is complete. For this reason, you should retain geotechnical services throughout the construction stage, to identify variances from previous assumption, conduct additional tests if required and recommend solutions to problems encountered on site.

A Geotechnical Engineer, who is fully familiar with the site and the background information, can assess whether the report's recommendations remain valid and whether changes should be considered as the project develops. An unfamiliar party using this report increases the risk that the report will be misinterpreted.

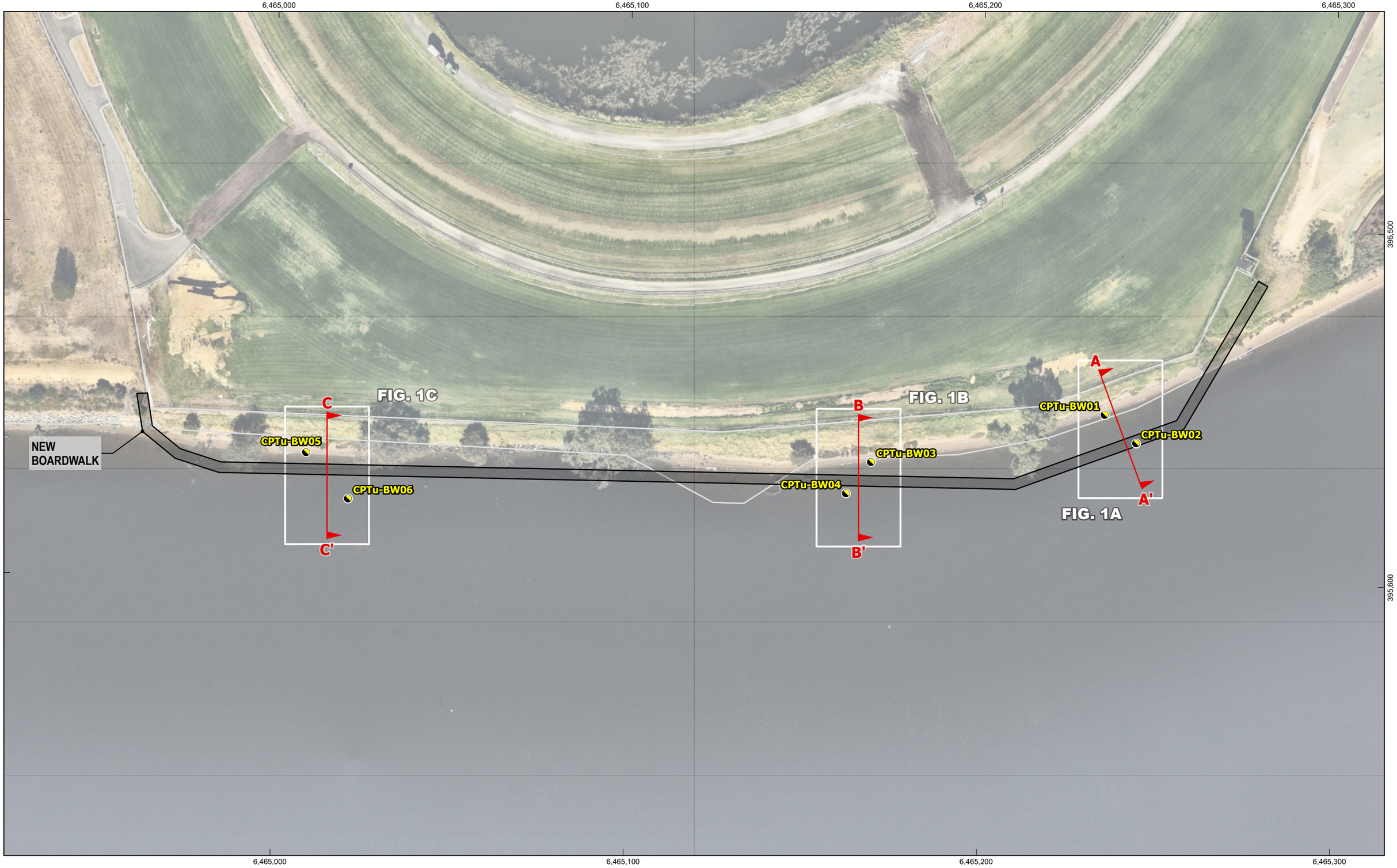
Environmental matters are not covered

Unless specifically discussed in your report environmental matters are not covered by a CMW Geotechnical Report. Environmental matters might include the level of contaminants present of the site covered by this report, potential uses or treatment of contaminated materials or the disposal of contaminated materials. These matters can be complex and are often governed by specific legislation.

The personnel, equipment, and techniques used to perform an environmental study can differ significantly from those used in this report. For that reason, our report does not provide environmental recommendations. Unanticipated subsurface environmental problems can have large consequences for your site. If you have not obtained your own environmental information about the project site, ask your CMW contact about how to find environmental risk-management guidance.

CMW Geosciences
Great People | Practical Solutions

APPENDIX A
Site Investigation Plan



LEGEND

AS-BUILT TEST LOCATIONS

- CONE PENETROMETER TEST
- SECTION LOCATION
- CADASTRE

NOTES

1. CONTOURS INTERPOLATED FROM CONTOURS IN FIGURES SUPPLIED AS DOCUMENT 260121 SK2263-02 FROM GOLDEN SEDAYU.
2. AERIAL PHOTOGRAPHY SOURCED FROM NEARMAP, JAN 2026
4. CADASTRE© WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2024)

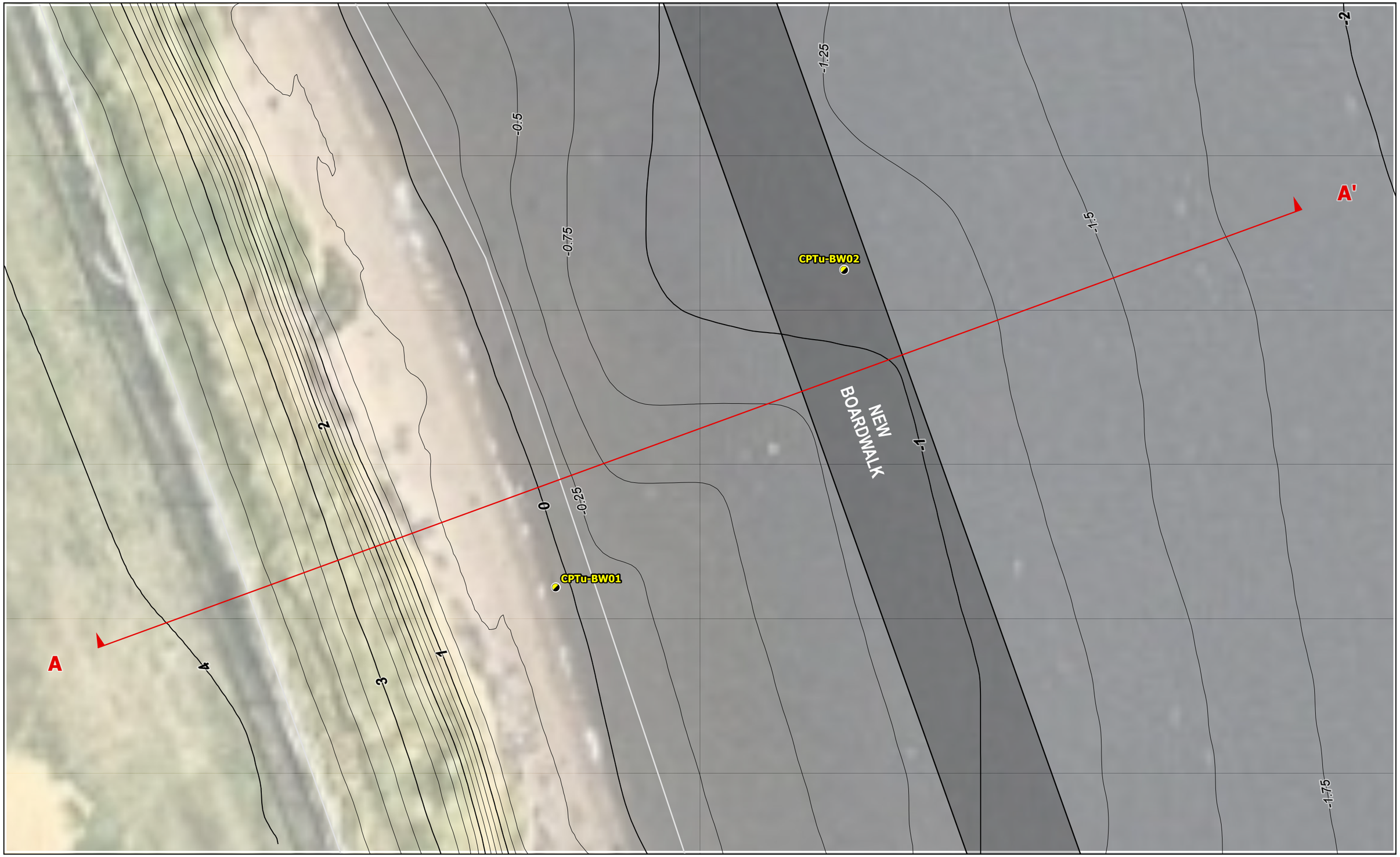
N

10 5 0 10 20 30 40 50 m

Coordinate System: GDA2020 PCG2020

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD	COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA	CHECKED:	FIGURE: 1
	REVISION: A	SCALE: 1:1,000
TITLE: SITE INVESTIGATION PLAN	DATE: 6/08/2026	SHEET: A3 L



LEGEND

AS-BUILT TEST LOCATIONS

- CONE PENETROMETER TEST
- GROUND/BATHYMETRY CONTOUR (0.25M)
- GROUND/BATHYMETRY CONTOUR; INDEX (1M)
- SECTION LOCATION
- CADASTRE

NOTES

1. CONTOURS INTERPOLATED FROM CONTOURS IN FIGURES SUPPLIED AS DOCUMENT 260121 SK2263-02 FROM GOLDEN SEDAYU.
2. AERIAL PHOTOGRAPHY SOURCED FROM NEARMAP, JAN 2026
4. CADASTRE© WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2024)

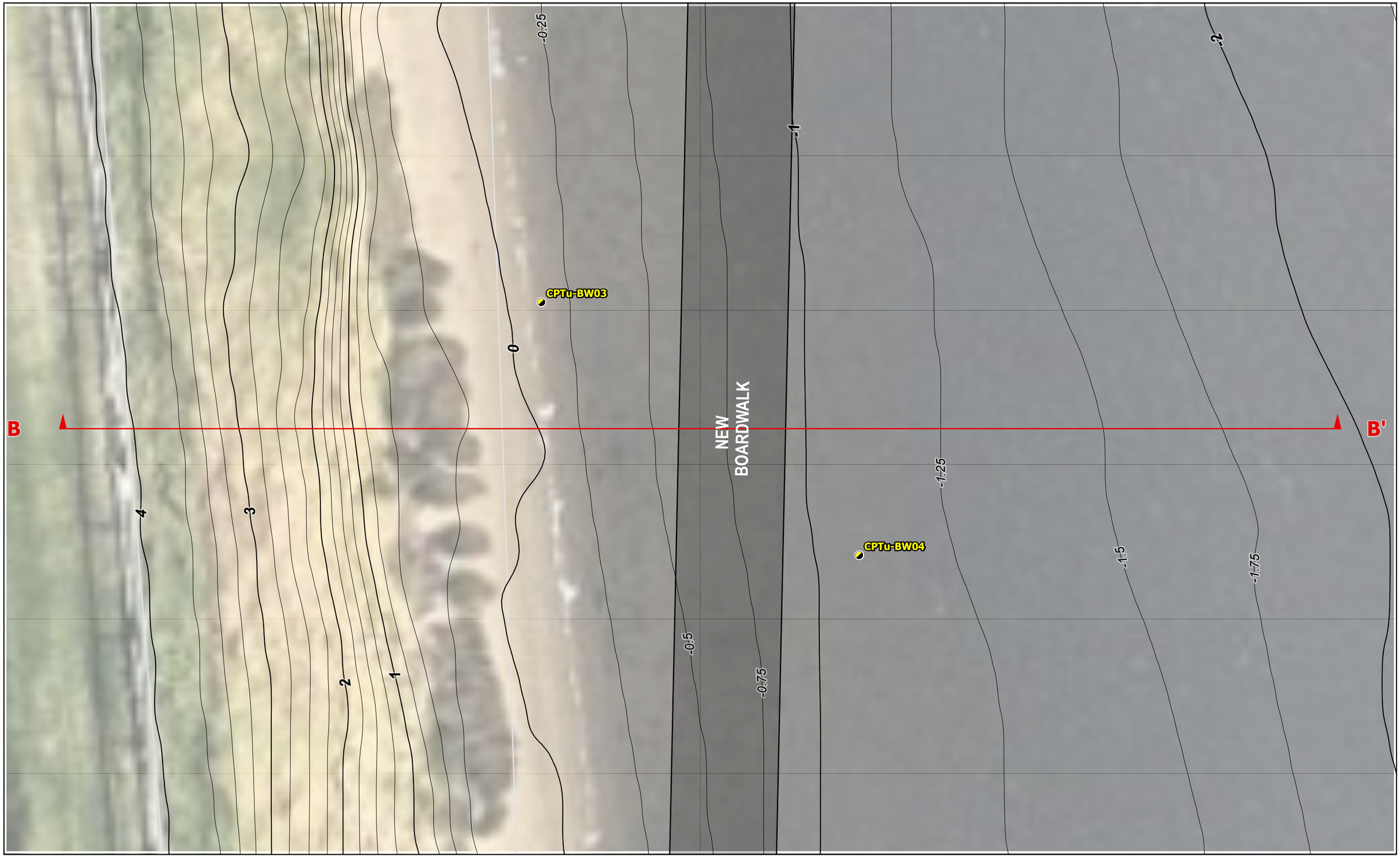
1 0.5 0 1 2 3 4 5 m

Coordinate System: GDA2020 PCG2020

N

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA		CHECKED:	FIGURE: 1A
		REVISION: A	SCALE: 1:100
TITLE: SITE INVESTIGATION PLAN		DATE: 6/08/2026	SHEET: A3 L



LEGEND

AS-BUILT TEST LOCATIONS

- CONE PENETROMETER TEST
- GROUND/BATHYMETRY CONTOUR (0.25M)
- GROUND/BATHYMETRY CONTOUR; INDEX (1M)
- SECTION LOCATION
- CADASTRE

NOTES

1. CONTOURS INTERPOLATED FROM CONTOURS IN FIGURES SUPPLIED AS DOCUMENT 260121 SK2263-02 FROM GOLDEN SEDAYU.
2. AERIAL PHOTOGRAPHY SOURCED FROM NEARMAP, JAN 2026
4. CADASTRE© WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2024)

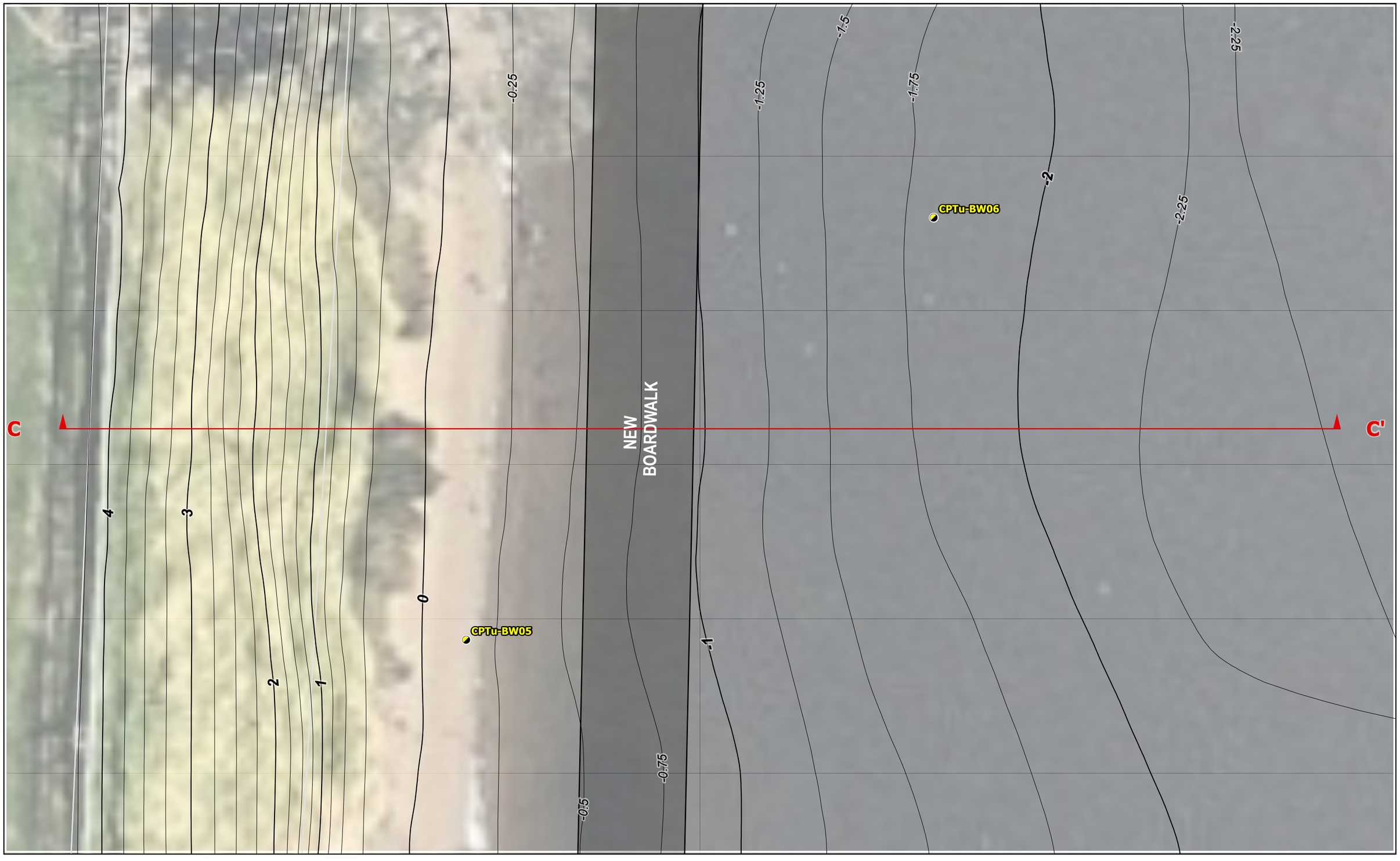
1 0.5 0 1 2 3 4 5 m

Coordinate System: GDA2020 PCG2020

N

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA		CHECKED:	FIGURE: 1B
		REVISION: A	SCALE: 1:100
TITLE: SITE INVESTIGATION PLAN		DATE: 6/08/2026	SHEET: A3 L



LEGEND

AS-BUILT TEST LOCATIONS

- CONE PENETROMETER TEST
- GROUND/BATHYMETRY CONTOUR (0.25M)
- GROUND/BATHYMETRY CONTOUR; INDEX (1M)
- SECTION LOCATION
- CADASTRE

NOTES

1. CONTOURS INTERPOLATED FROM CONTOURS IN FIGURES SUPPLIED AS DOCUMENT 260121 SK2263-02 FROM GOLDEN SEDAYU.
2. AERIAL PHOTOGRAPHY SOURCED FROM NEARMAP, JAN 2026
4. CADASTRE© WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2024)

1 0.5 0 1 2 3 4 5 m

Coordinate System: GDA2020 PCG2020

N

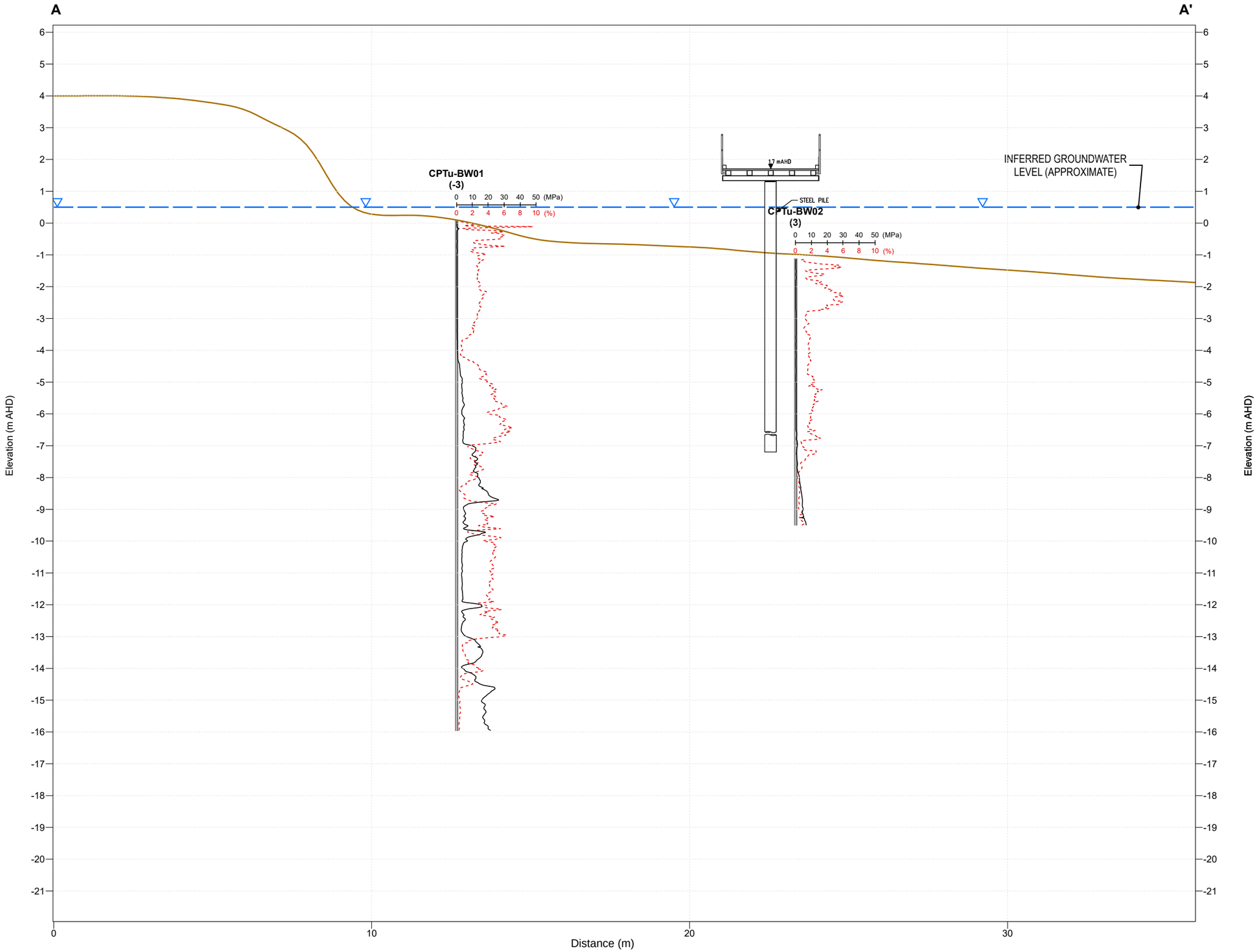
CMW Geosciences

Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA		CHECKED:	FIGURE: 1C
		REVISION: A	SCALE: 1:100
TITLE: SITE INVESTIGATION PLAN		DATE: 6/08/2026	SHEET: A3 L

CMW Geosciences
Great People | Practical Solutions

APPENDIX B
Geotechnical Cross Sections



CPT LOCATION

CONE RESISTANCE - qc (MPa)

FRICTION RATIO - Rf (%)

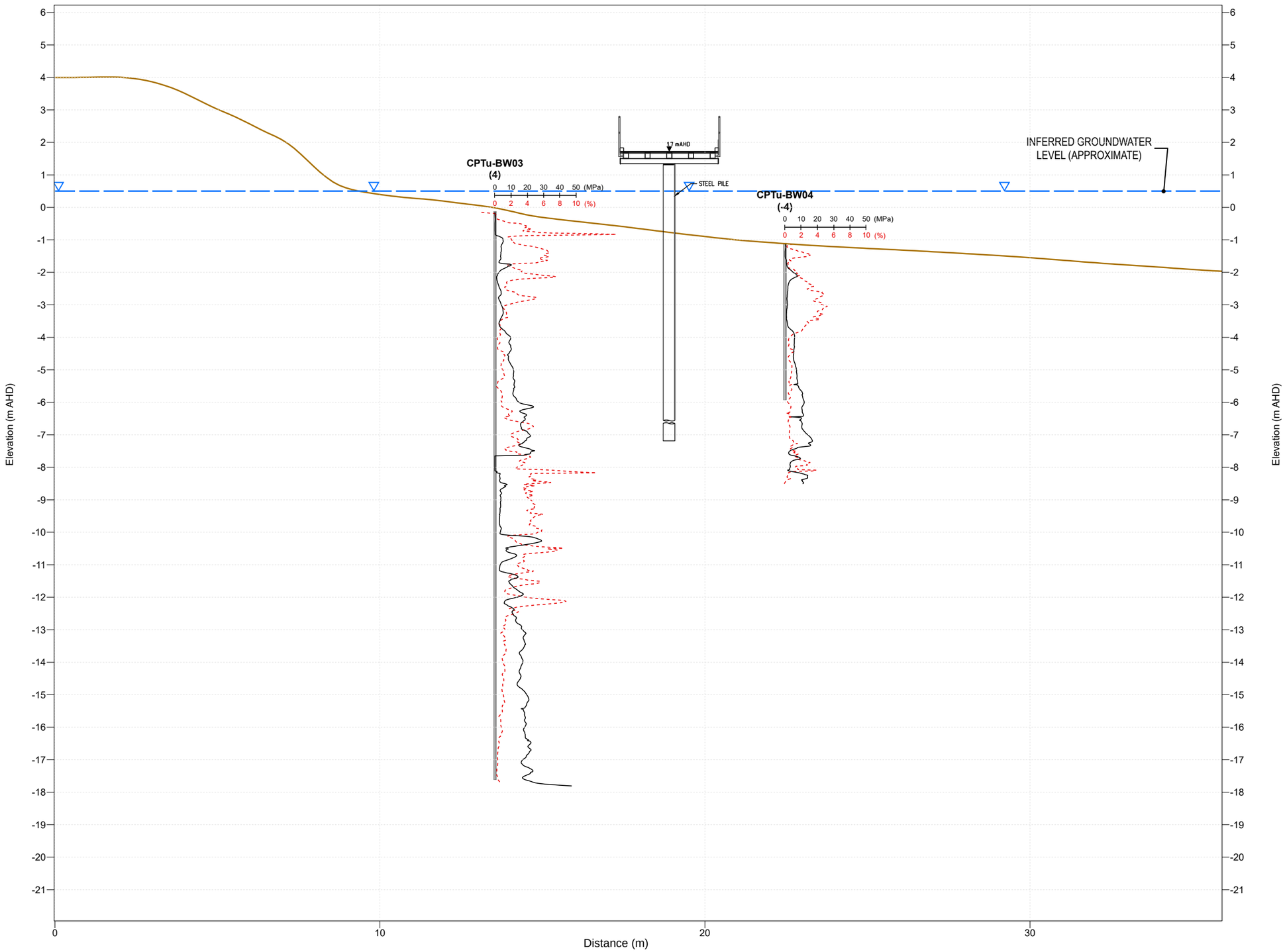
GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

NOTES

1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0.5 M AHD
3. BOARDWALK LOCATION AND FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY.

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2A
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION A-A'		DATE: 27/08/2026	SHEET: A3 L



CPT LOCATION

CONE RESISTANCE - qc (MPa)

FRICTION RATIO - Rf (%)

GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

NOTES

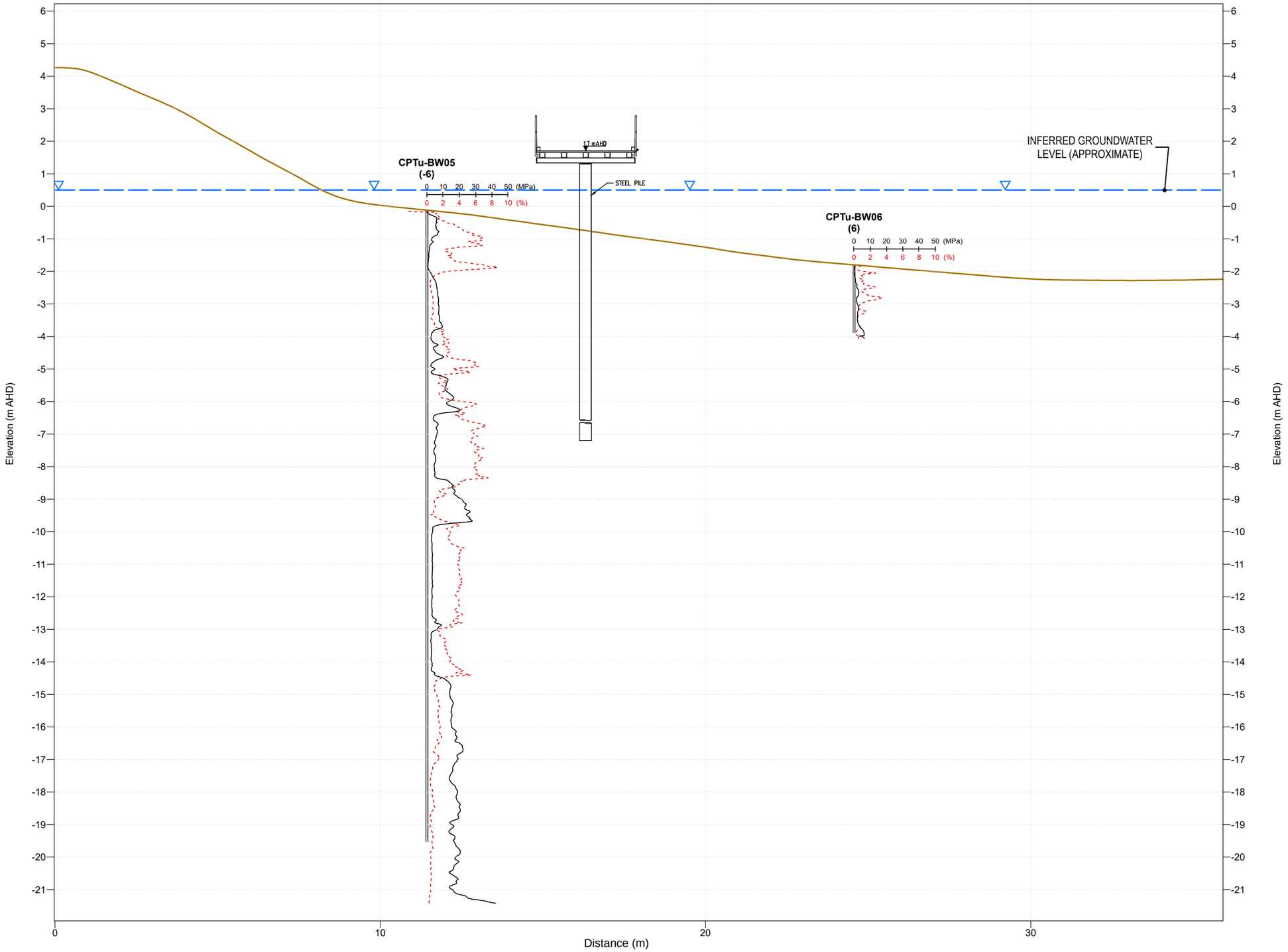
1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0.5 M AHD
3. BOARDWALK LOCATION AND FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY.

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2B
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION B-B'		DATE: 27/08/2026	SHEET: A3 L

C

C'



CPT LOCATION

CONE RESISTANCE - qc (MPa)

FRICTION RATIO - Rf (%)

GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

NOTES

1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0.5 M AHD
3. BOARDWALK LOCATION AND FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY.

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2C
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION C-C'		DATE: 27/08/2026	SHEET: A3 L

A

A'

CPTu-BW01
(-3)

0 10 20 30 40 50 (MPa)
0 2 4 6 8 10 (%)

mAHD

STEEL PILE

CPTu-BW02
(3)

0 10 20 30 40 50 (MPa)
0 2 4 6 8 10 (%)

INFERRED GROUNDWATER
LEVEL (APPROXIMATE)

Holocene Alluvium

Perth Formation
Interbedded Facies

Perth Formation
Lower Sandy Facies

Elevation (m AHD)

Distance (m)

CPT LOCATION
CONE RESISTANCE - qc (MPa)
FRICTION RATIO - Rf (%)
GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

NOTES

1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0 5 M AHD
3. BOARDWALK FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY

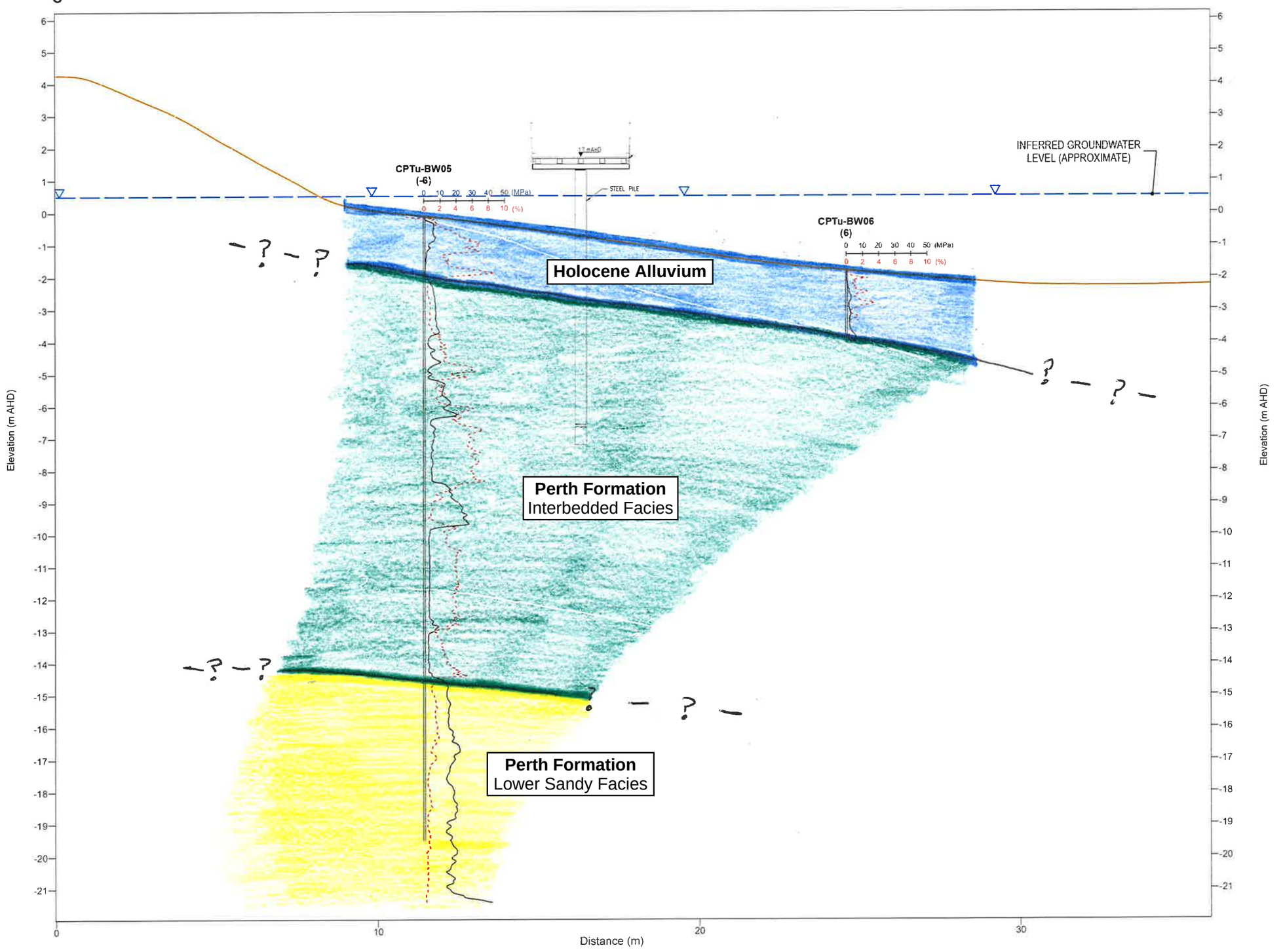
CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2D
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION A-A'		DATE: 27/08/2026	SHEET: A3 L

Z:\GIS\GoldenSedayu\SH5014_PERTH\Projects\PER2021-0032\PER2021-0032.aprx\PER2021-0032-F002_BW_SECTIONS

C

C'



CPT LOCATION

CONE RESISTANCE - qc (MPa)

FRICTION RATIO - Rf (%)

GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

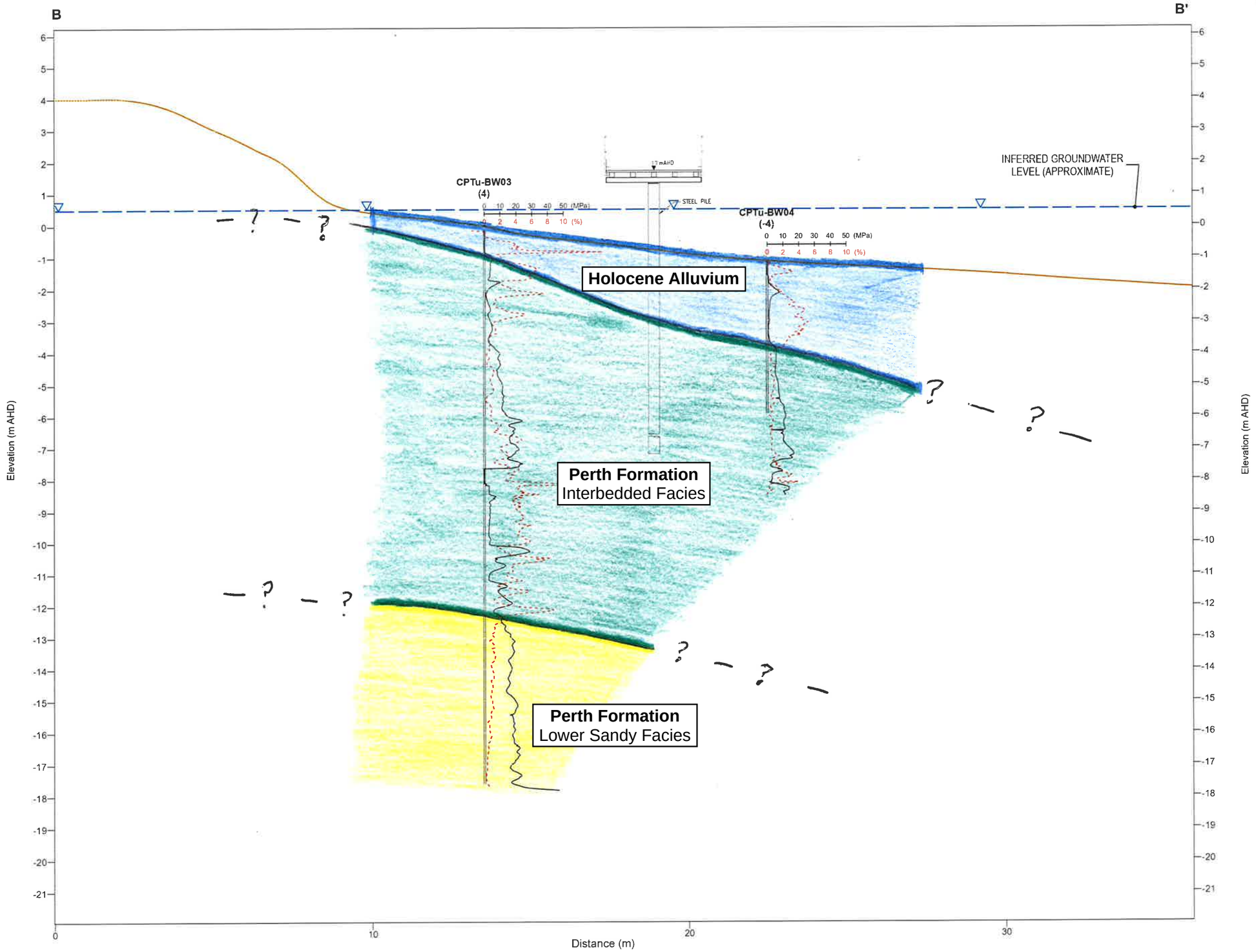
NOTES

1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0.5 M AHD
3. BOARDWALK FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY.

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2E
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION C-C'		DATE: 27/08/2026	SHEET: A3 L

Z:\GIS\GoldenSedayu\SH5014_PERTH\Projects\PER2021-0032\PER2021-0032.aprx\PER2021-0032-F002_BW_SECTIONS



CPT LOCATION
CONE RESISTANCE - qc (MPa)
FRICTION RATIO - Rf (%)
GROUND SURFACE (INTERPOLATED FROM SUPPLIED REPORT CONTOUR DATA)

NOTES

1. CPT OFFSETS IN METRES FROM SECTION LINE SHOWN IN BRACKETS. CPTS WITH LARGER POSITIVE OFFSETS LIE FURTHER AWAY FROM THE SECTION LINE AND OBSERVER.
2. GROUNDWATER SURFACE IS ILLUSTRATED AT AN ASSUMED RL 0 5 M AHD
3. BOARDWALK FOUNDATION PILE EMBEDMENT DEPTH IS ILLUSTRATIVE ONLY

CMW Geosciences
Great People | Practical Solutions

CLIENT: GOLDEN SEDAYU PTY LTD		COMPILED: SR	PROJECT: PER2021-0032
PROJECT: BURSWOOD PENINSULA BOARDWALK PROJECT		CHECKED: LSW	FIGURE: 2F
		REVISION: 0	SCALE: H 1:125 V 1:125
TITLE: GEOTECHNICAL SECTION B-B'		DATE: 27/08/2026	SHEET: A3 L

Z:\GIS\GoldenSedayu\SH5014_PERTH\Projects\PER2021-0032\PER2021-0032 aprx\PER2021-0032-F002_BW_SECTIONS

CMW Geosciences
Great People | Practical Solutions

APPENDIX C
Piezocone Penetration Plots

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Golden Sedayu Pty Ltd

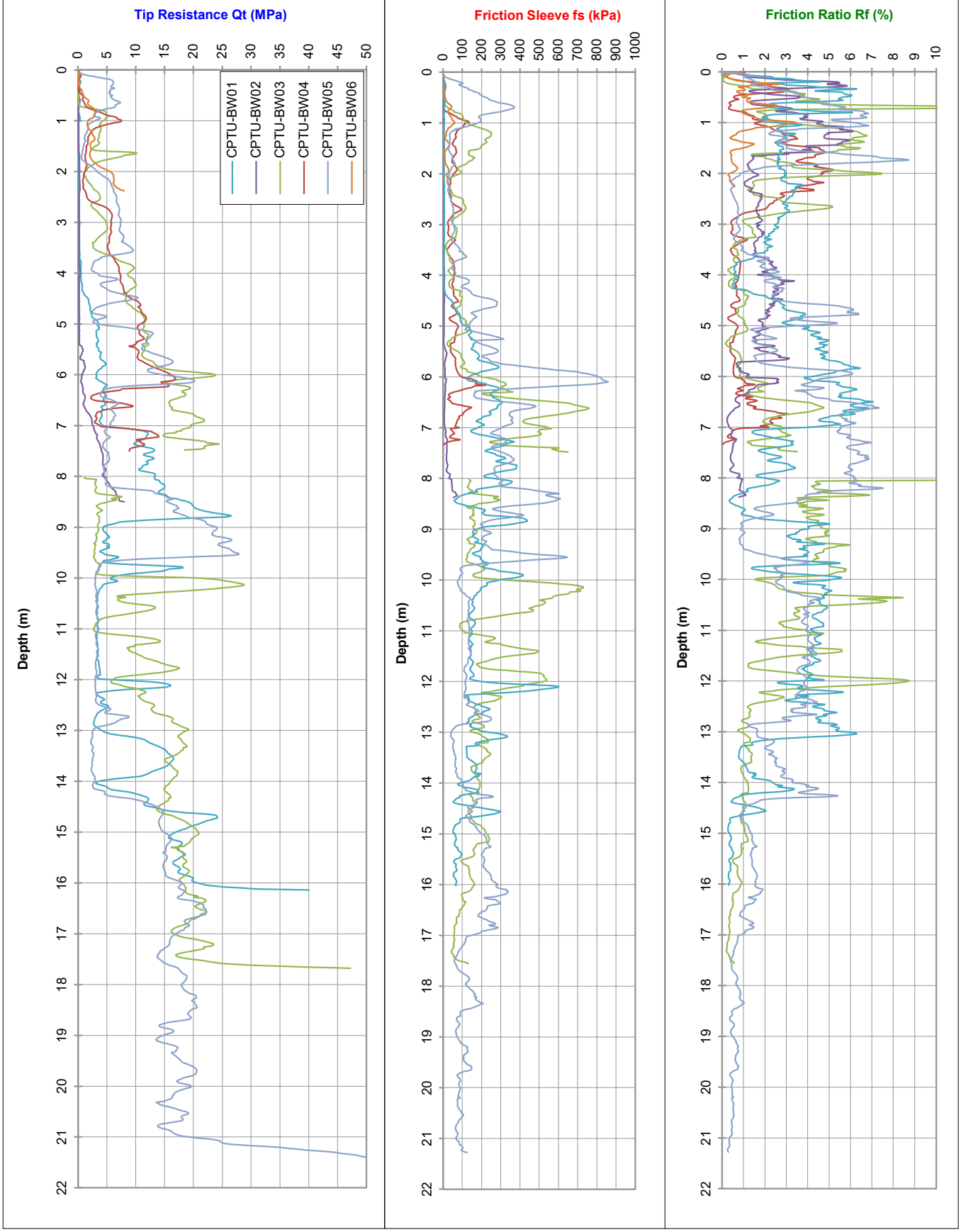
Job No.: PER2021-0032

PROJECT: Burswood Point Precinct D Boardwalk

Date/s: 20-22 July 2026

LOCATION: Belmont Race Course

ALL DATA



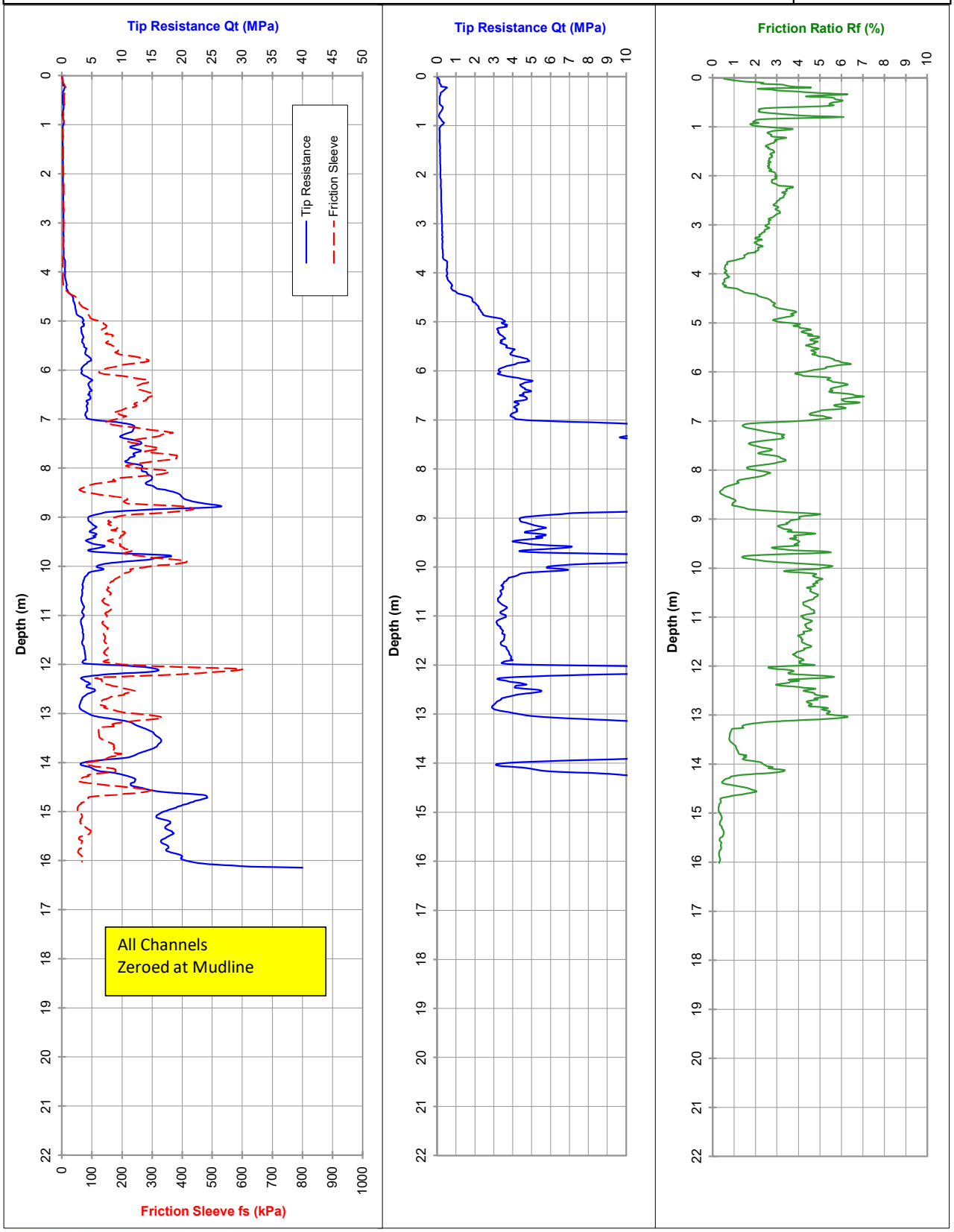
PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Rig Type: 13t Marshbuggy (MB)

ELECTRIC FRICTION-CONE PENETROMETER

				Probe I.D
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032	**CPTU-BW01**
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	0.8	
LOCATION:	Belmont Race Course	Co-ords:	395552.9mE, 6465235.8mN	21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -0.3

Dummy probe to (m):

Refusal: 40 MPa + Lateral Rod Support

Cone I.D.: EC61

File: CM0004MB

Rig Type: 13t Marshbuggy (MB)

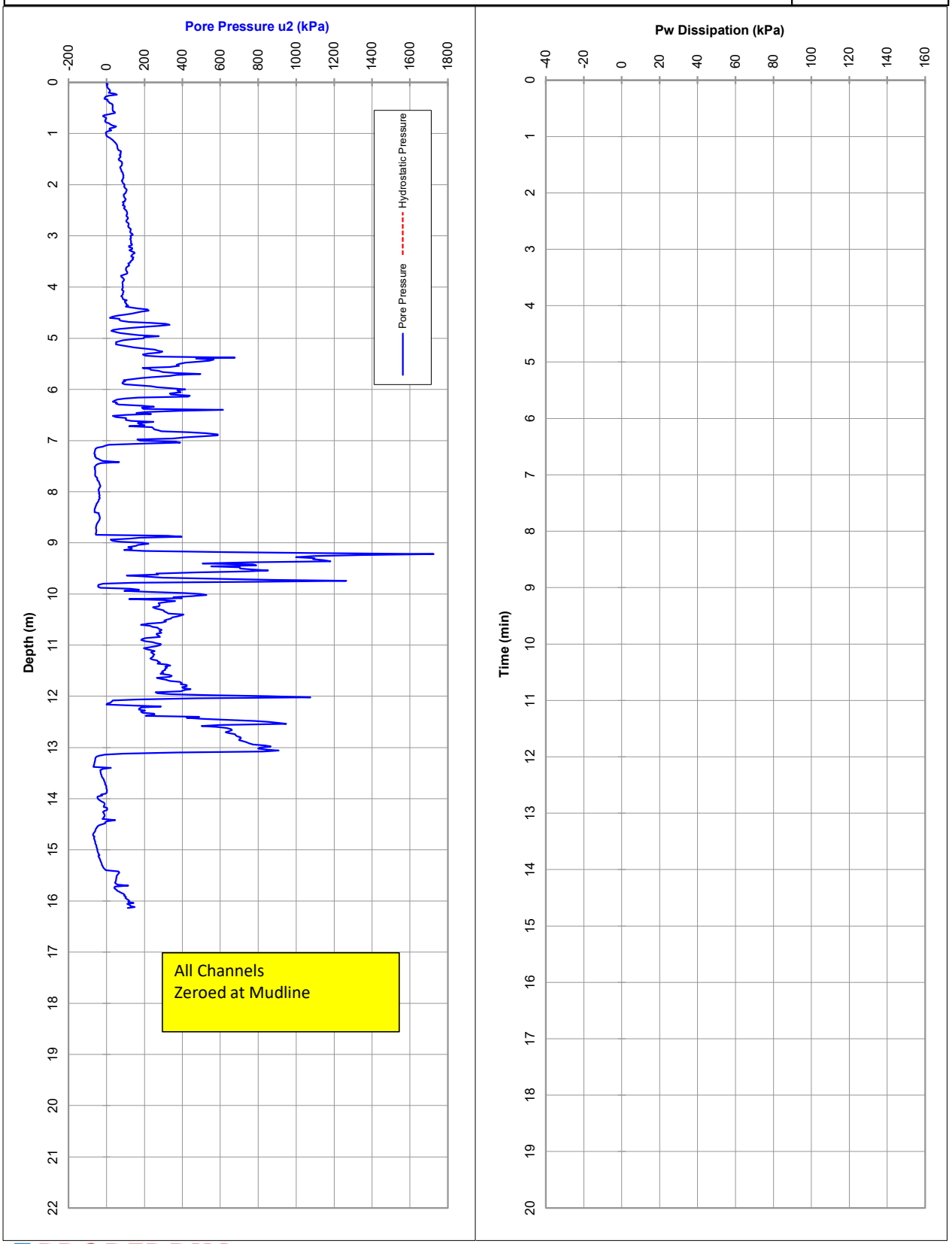
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW01

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

Approx. Water (m): -0.3

File: CM0004MB.txt

Rig type: 13t Marshbuggy (MB)

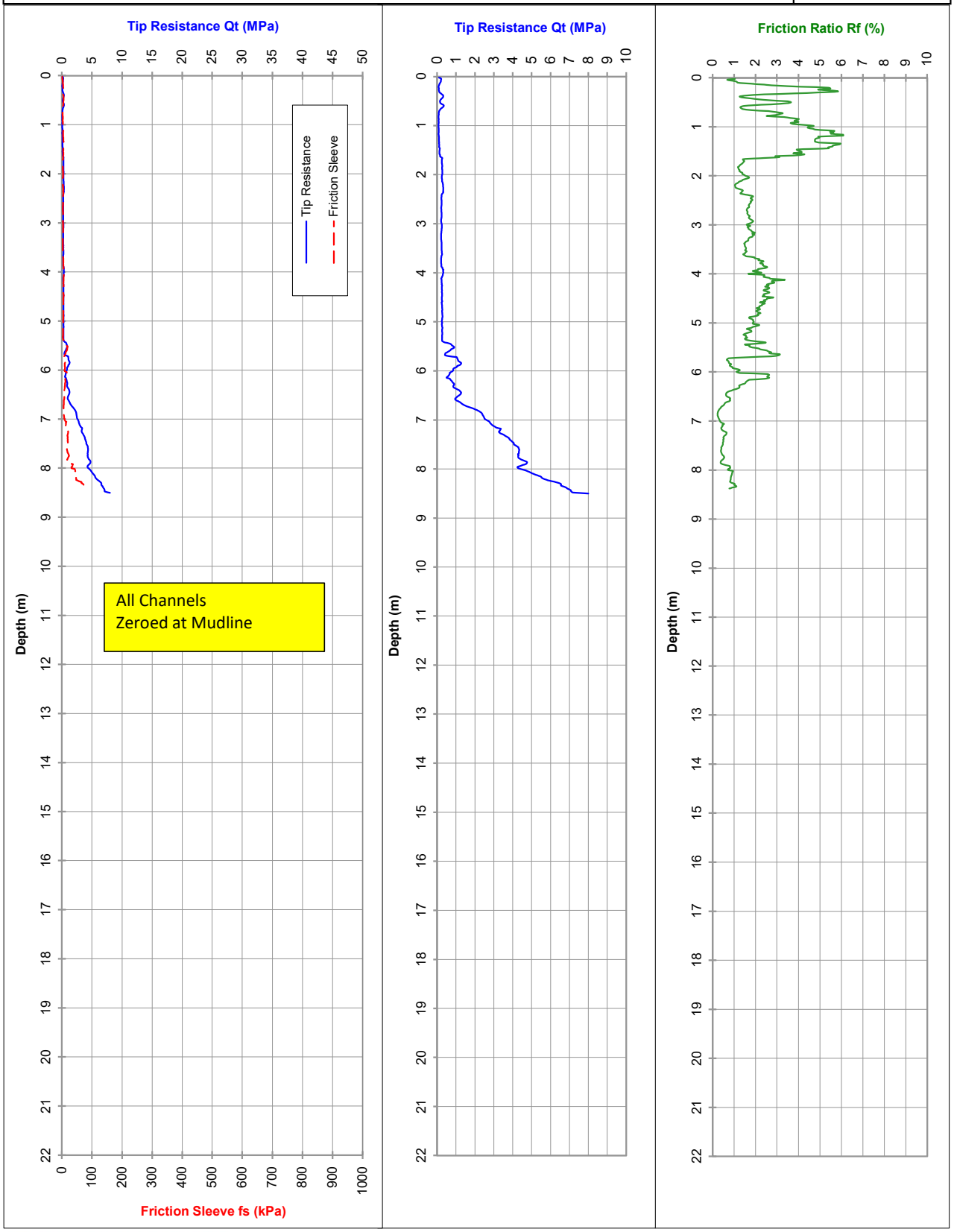
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	-0.04
LOCATION:	Belmont Race Course	Co-ords:	395560.25mE, 6465244.52mN

Probe I.D

CPTU-BW02

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -1.2

Dummy probe to (m):

Refusal: 8 MPa + Rod Friction

Cone I.D.: EC61

File: CM0003MB

Rig Type: 13t Marshbuggy (MB)

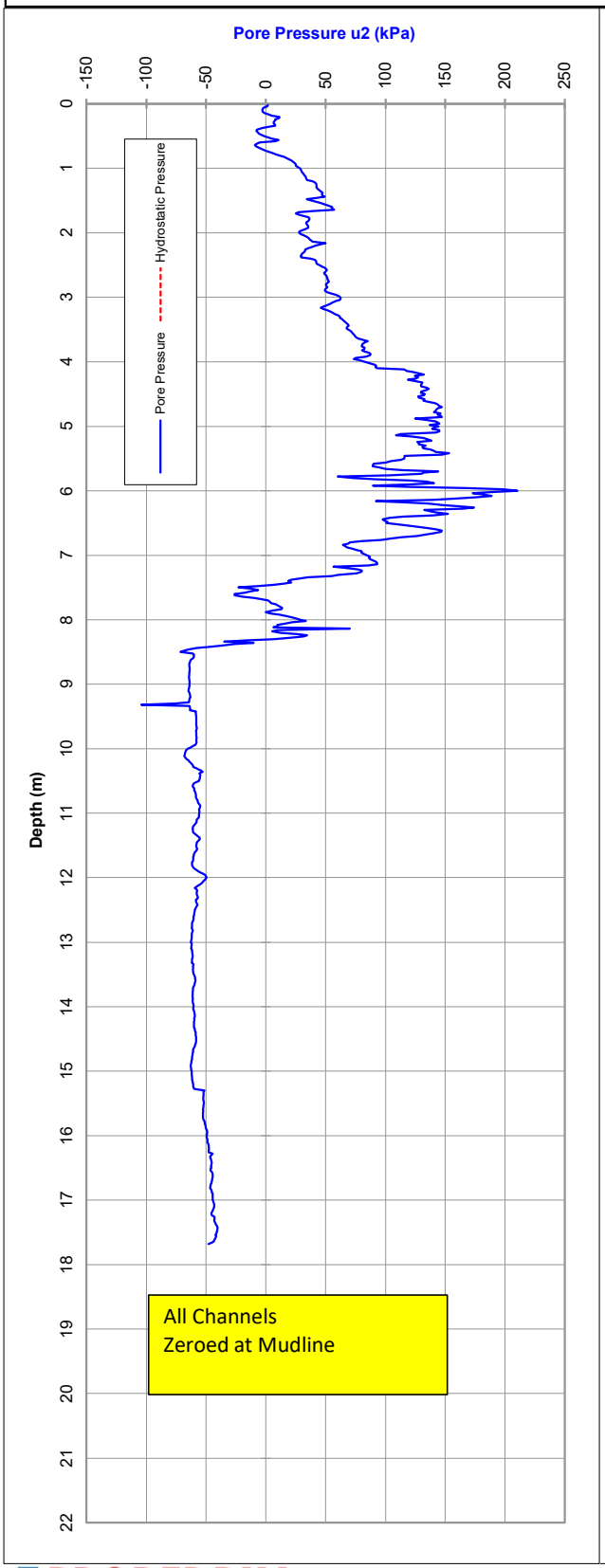
ELECTRIC FRICTION-CONE PENETROMETER

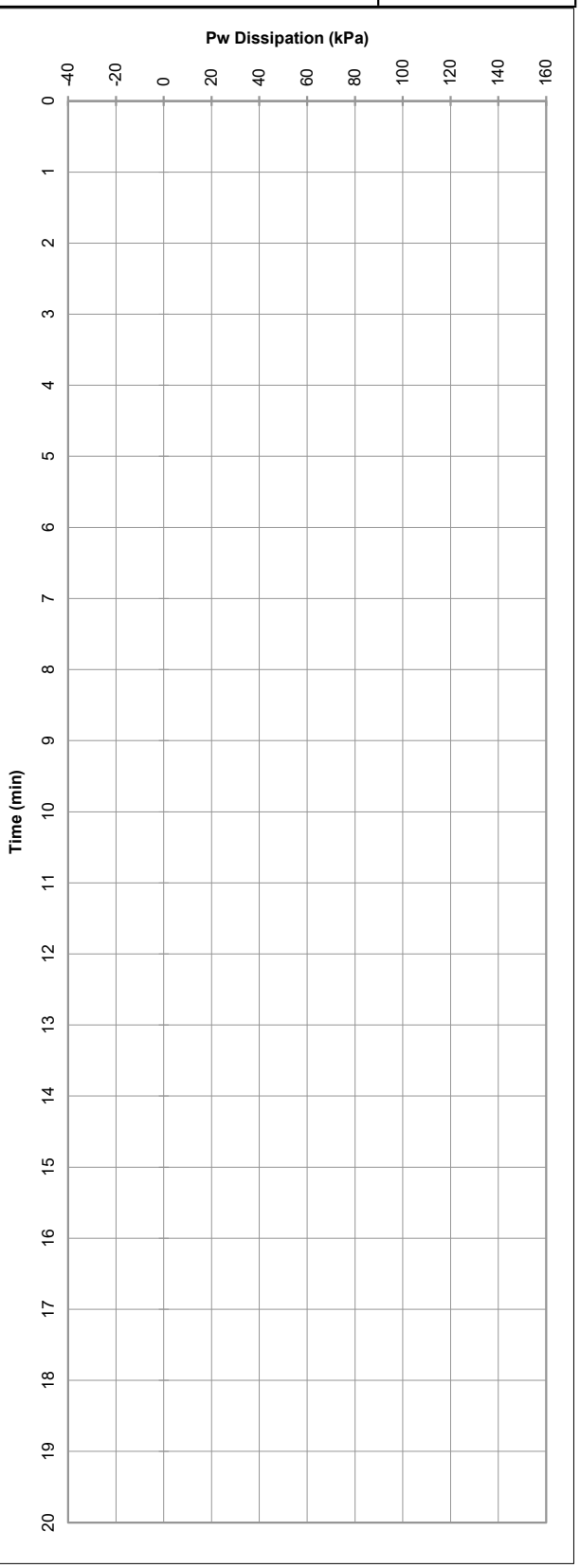
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW02

21-Jul-26





PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

Approx. Water (m): -1.2

File: CM0003MB.txt

Rig type: 13t Marshbuggy (MB)

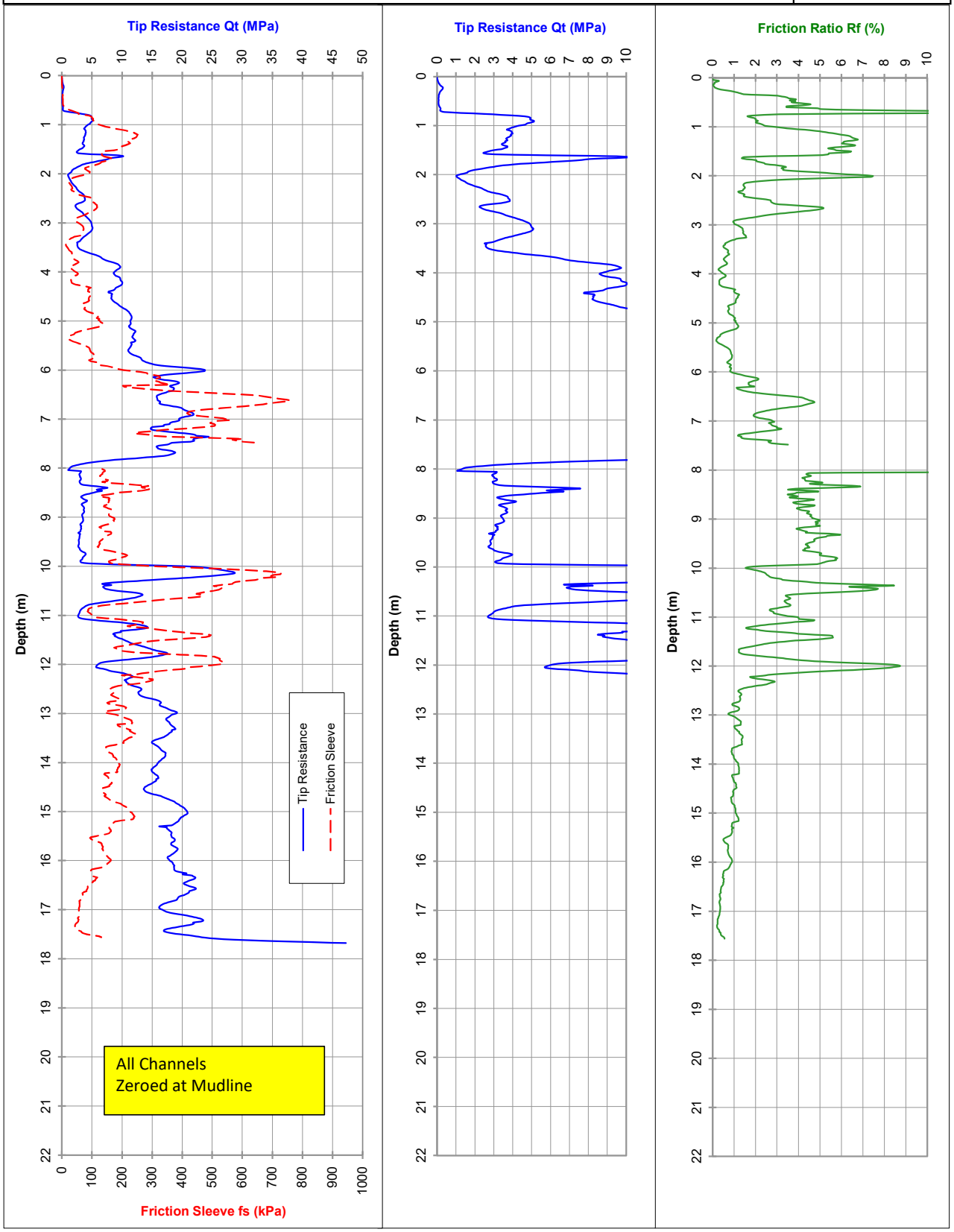
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	1.14
LOCATION:	Belmont Race Course	Co-ords:	395566.63mE, 6465169.26mN

Probe I.D

CPTU-BW03

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -0.3

Dummy probe to (m):

Refusal:

Cone I.D.: EC61

File: CM0002MB

Rig Type: 13t Marshbuggy (MB)

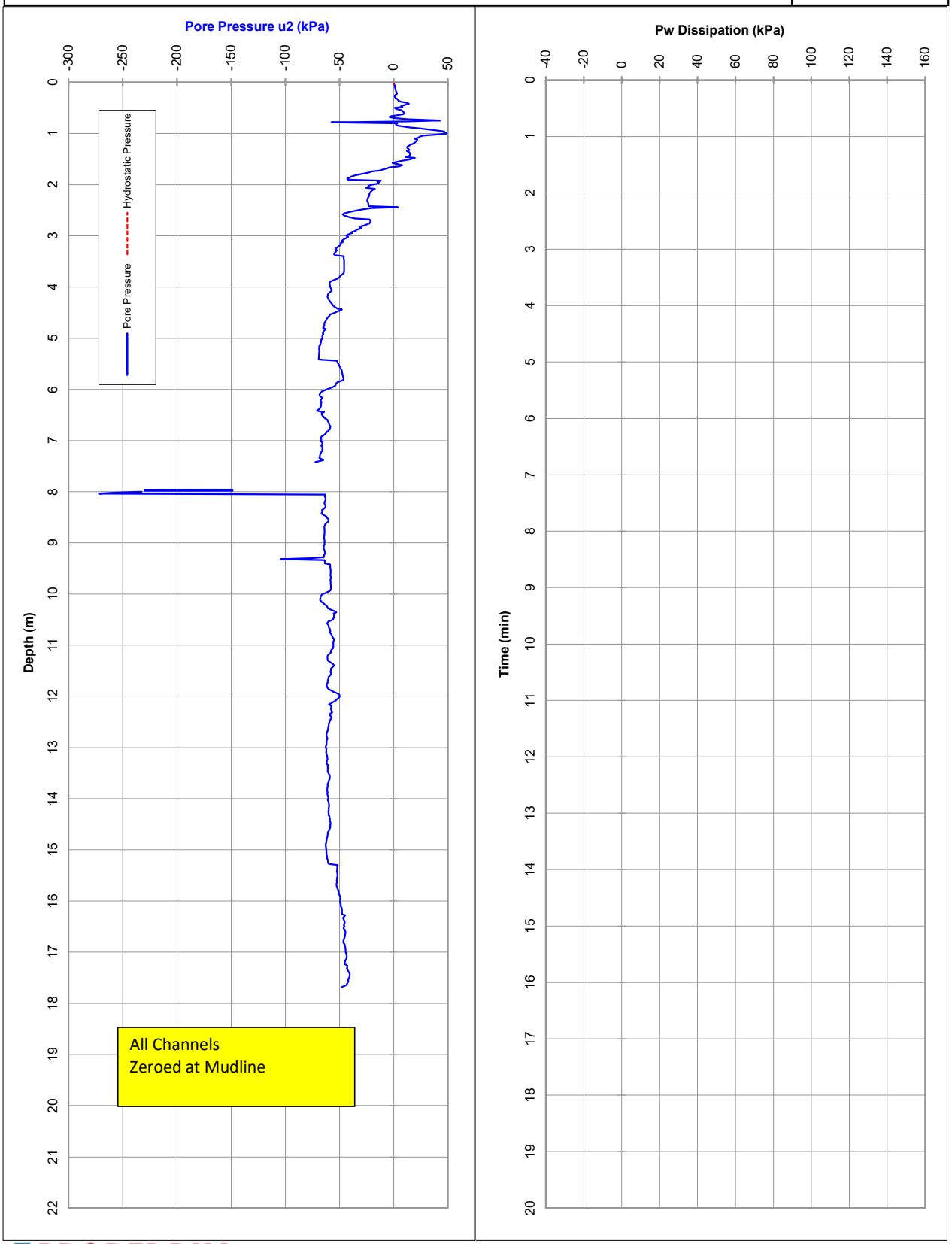
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW03

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

Approx. Water (m): -0.3

File: CM0002MB.txt

Rig type: 13t Marshbuggy (MB)

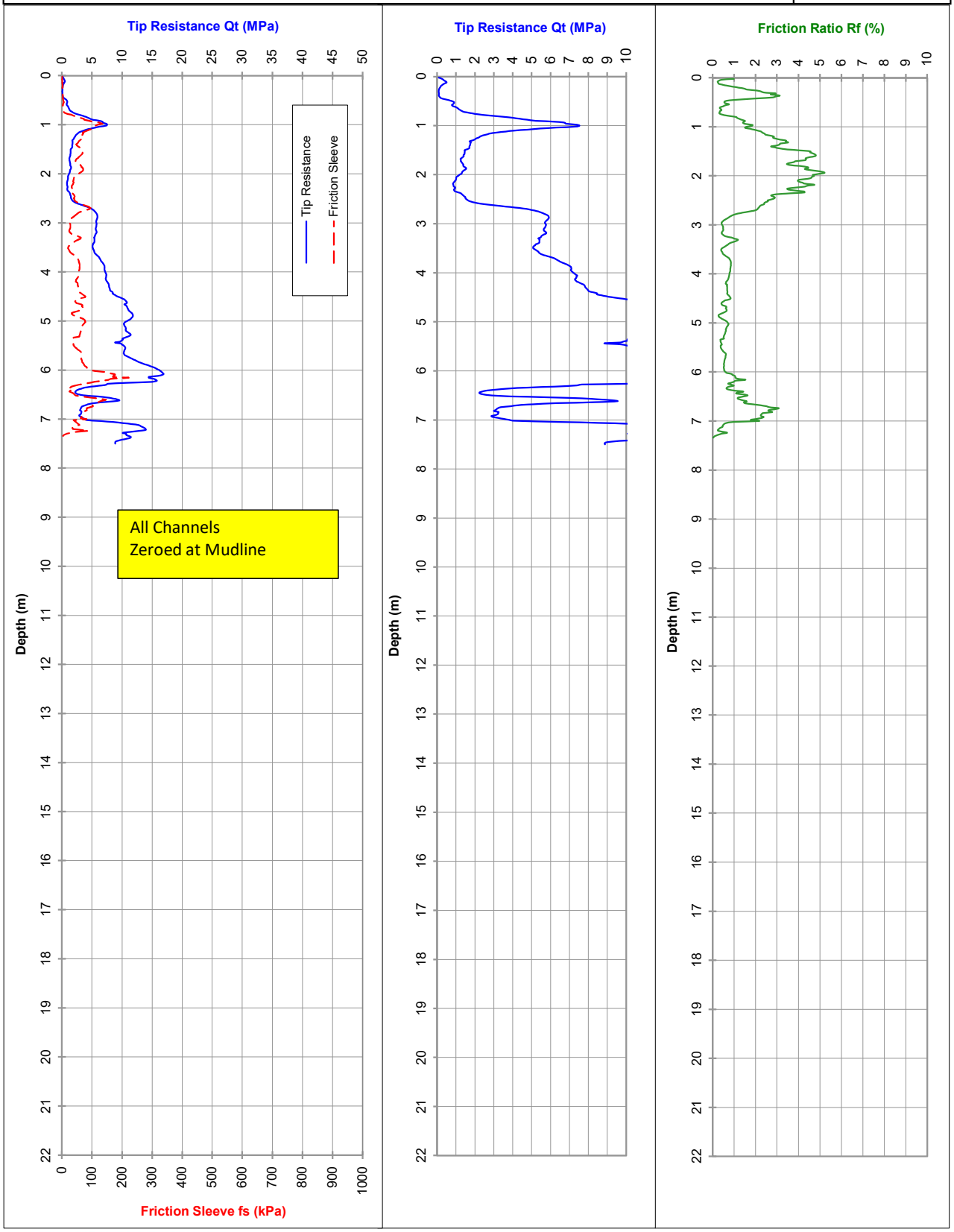
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	0.21
LOCATION:	Belmont Race Course	Co-ords:	395575.76mE, 6465162.4mN

Probe I.D

CPTU-BW04

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -1.0

Dummy probe to (m):

Refusal: Rod Friction

Cone I.D.: EC61

File: CM0001MB

Rig Type: 13t Marshbuggy (MB)

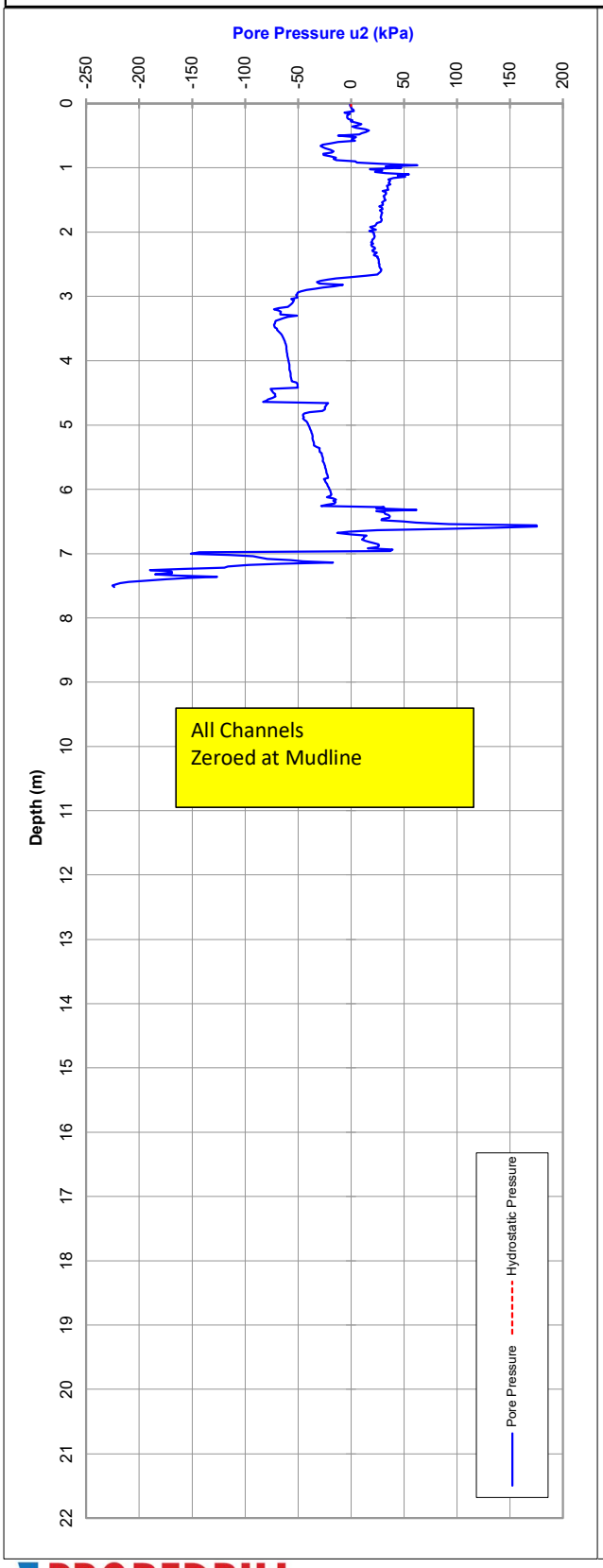
ELECTRIC FRICTION-CONE PENETROMETER

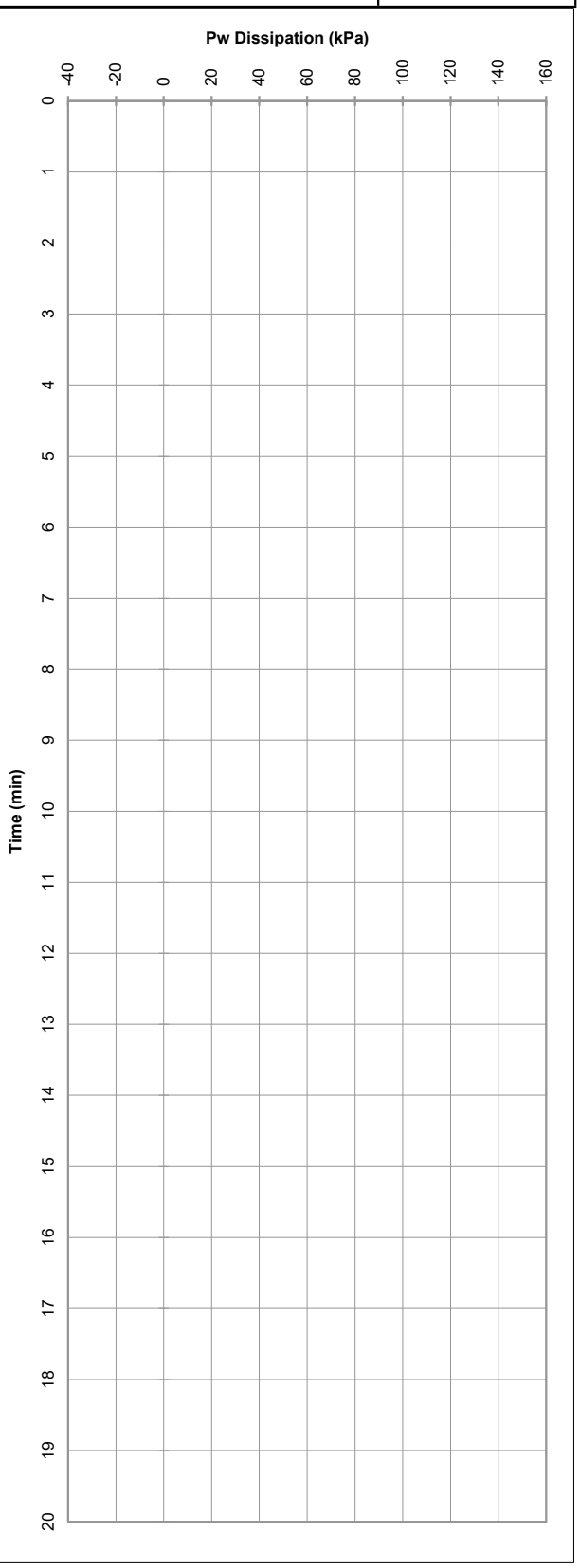
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW04

21-Jul-26





PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

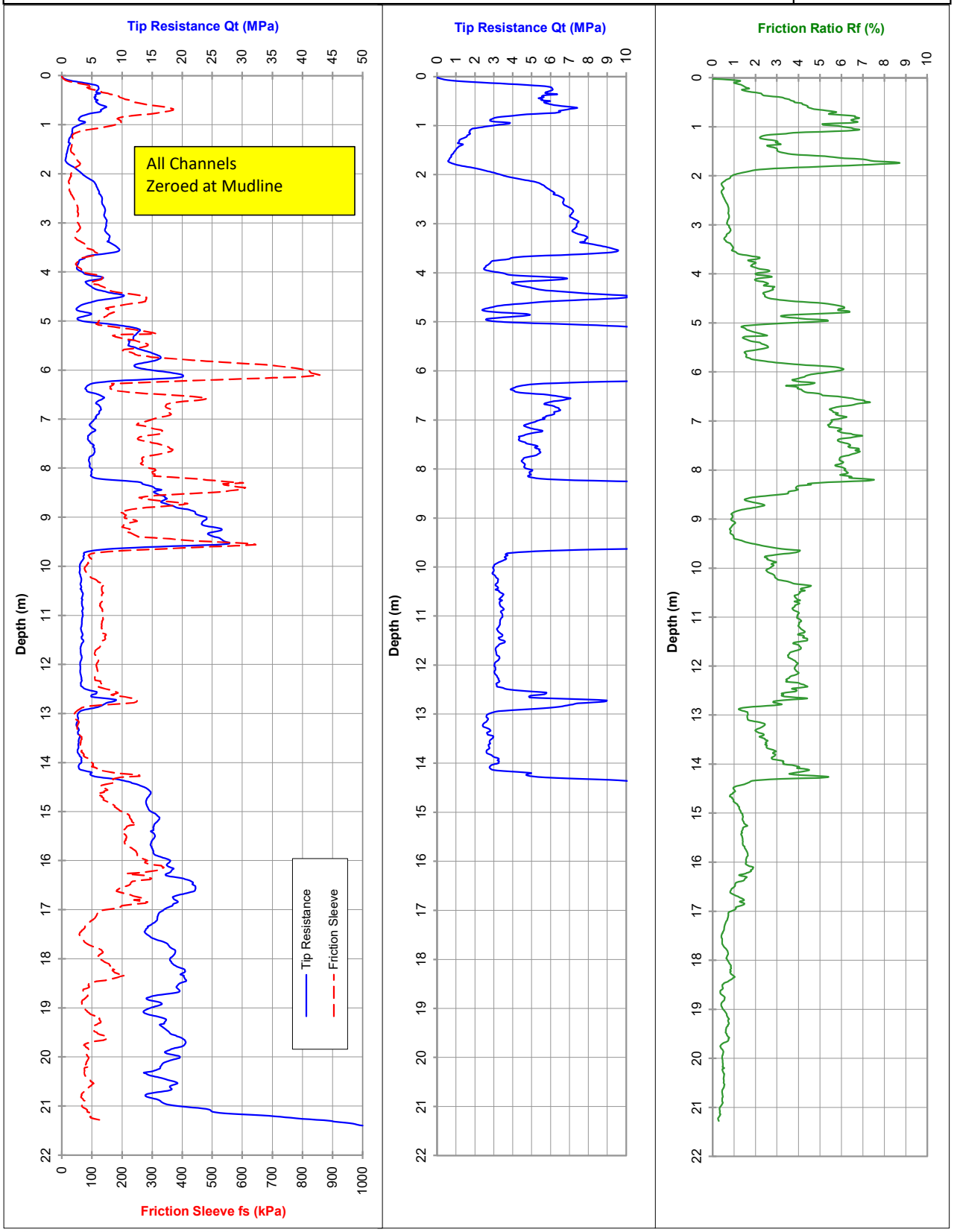
Approx. Water (m): -1.0

File: CM0001MB.txt

Rig type: 13t Marshbuggy (MB)

ELECTRIC FRICTION-CONE PENETROMETER

				Probe I.D
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032	**CPTU-BW05**
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	1.16	
LOCATION:	Belmont Race Course	Co-ords:	395565.9mE, 6465009.15mN	21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -0.2

Dummy probe to (m):

Refusal: 50 MPa + Rod Friction

Cone I.D.: EC61

File: CM0006MB

Rig Type: 13t Marshbuggy (MB)

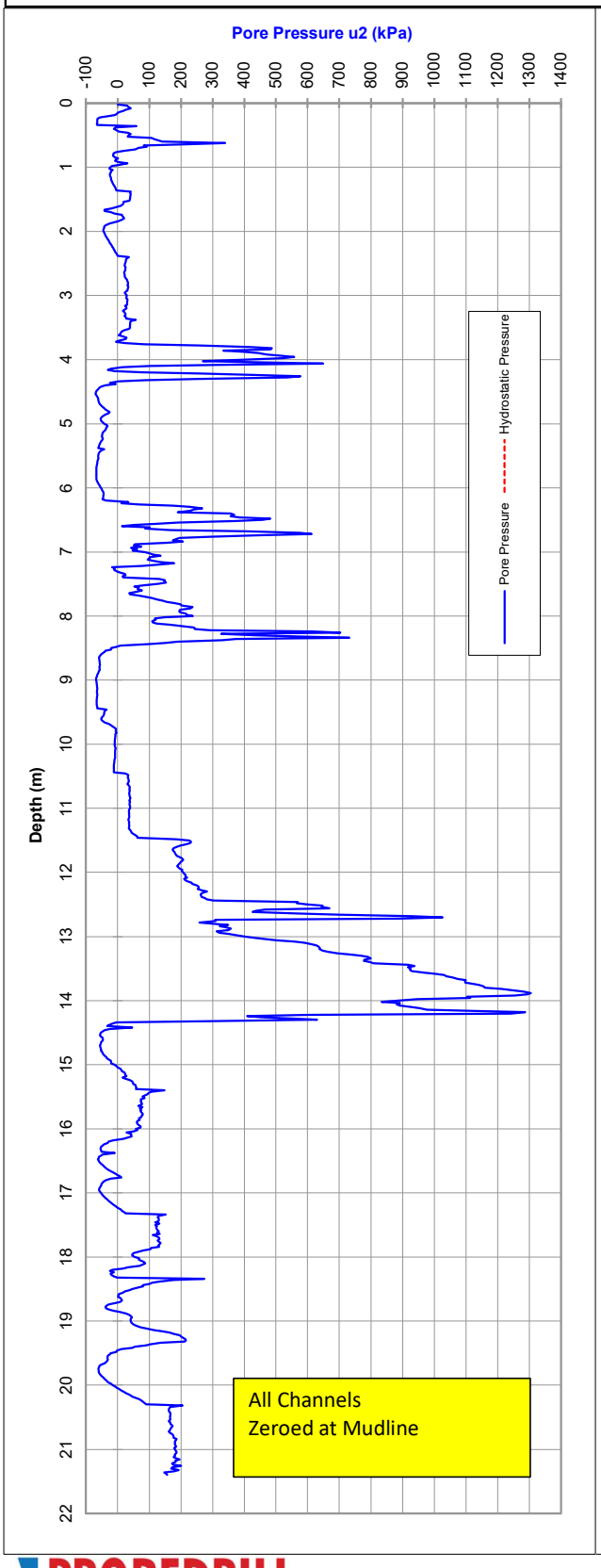
ELECTRIC FRICTION-CONE PENETROMETER

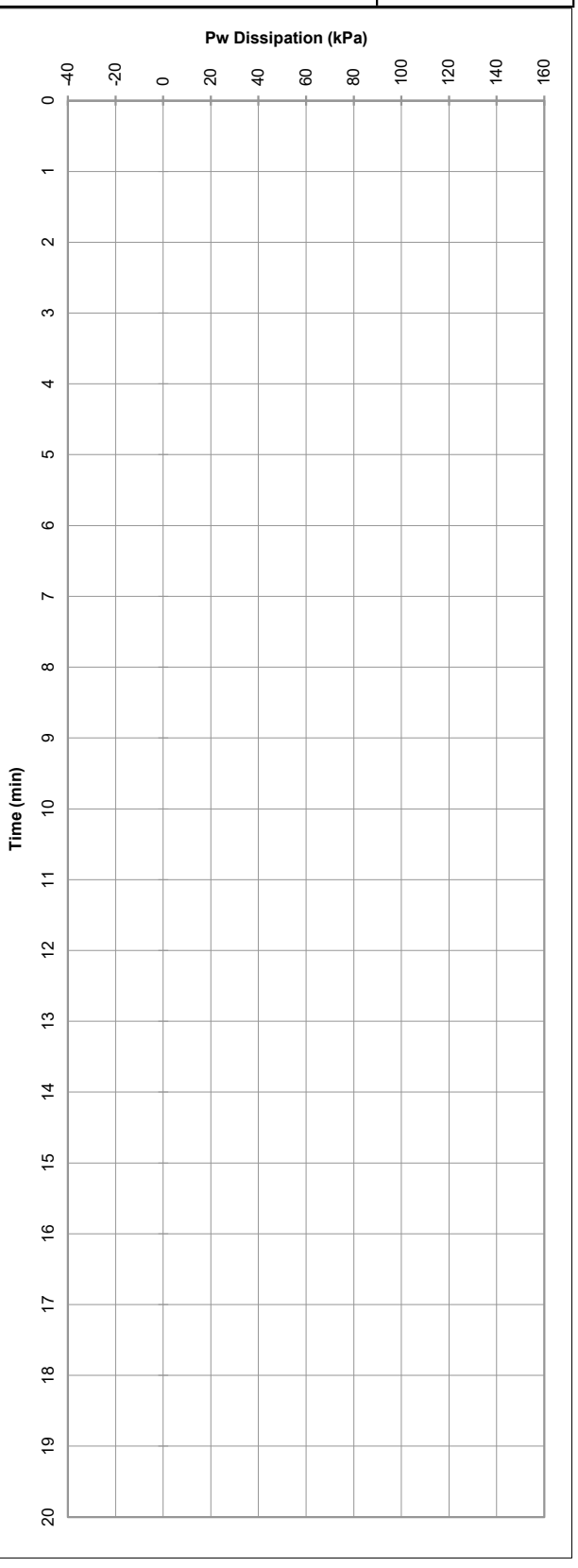
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW05

21-Jul-26





PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

Approx. Water (m): -0.2

File: CM0006MB.txt

Rig type: 13t Marshbuggy (MB)

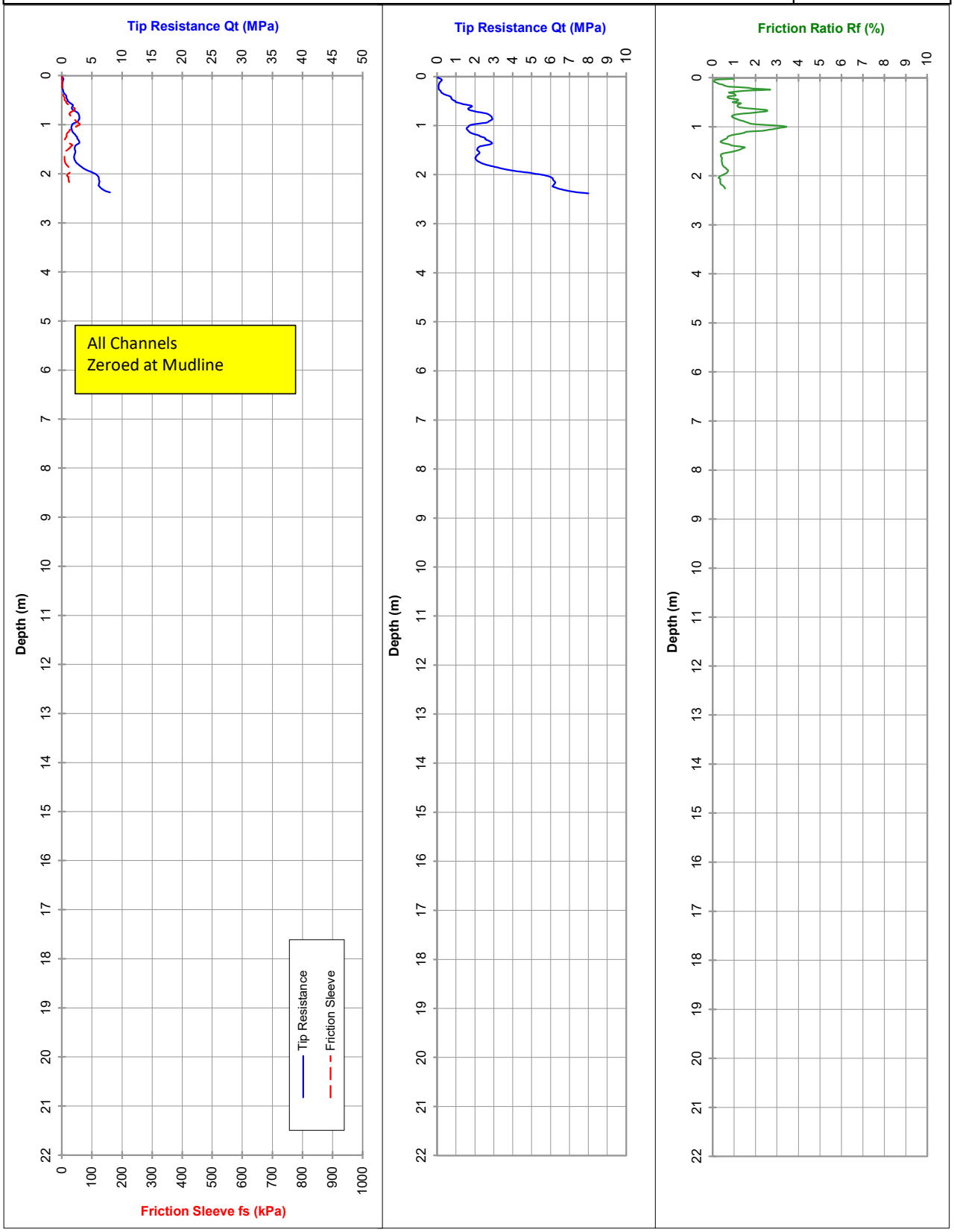
ELECTRIC FRICTION-CONE PENETROMETER

CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	-2.13
LOCATION:	Belmont Race Course	Co-ords:	395578.49mE, 6465021.29mN

Probe I.D

CPTU-BW06

21-Jul-26



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): -2.4

Dummy probe to (m):

Refusal: 8 MPa + Rod Friction

Cone I.D.: EC61

File: CM0005MB

Rig Type: 13t Marshbuggy (MB)

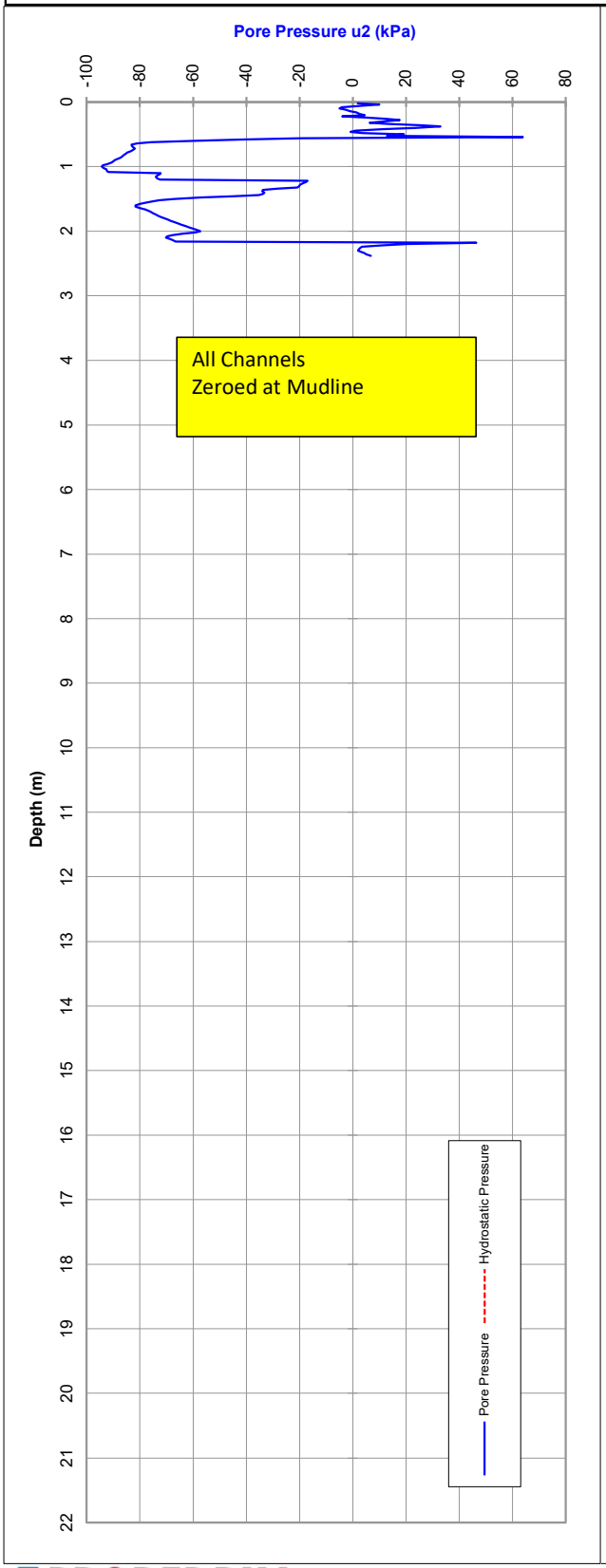
ELECTRIC FRICTION-CONE PENETROMETER

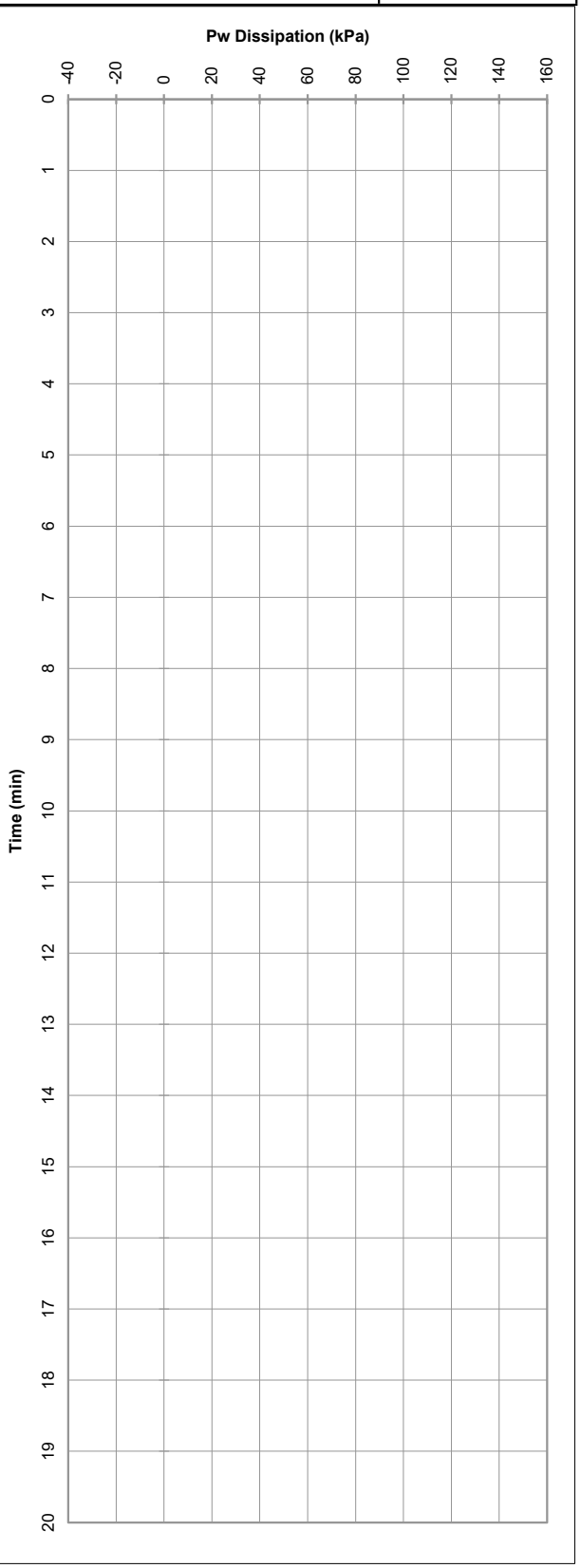
CLIENT:	Golden Sedayu Pty Ltd	Job No.:	PER2021-0032
PROJECT:	Burswood Point Precinct D Boardwalk	RL (m):	
LOCATION:	Belmont Race Course	Co-ords:	

Probe I.D

CPTU-BW06

21-Jul-26





PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Please note: Hydrostatic Line is taken from the water level manually dipped by the CPT Operator following completion of the probe and, as such, should be used as a guide only.

Approx. Water (m): -2.4

File: CM0005MB.txt

Rig type: 13t Marshbuggy (MB)



Perth

Suite 1 | Level 3
29 Flynn Street
Wembley WA 6014
Australia

Ph: + 61 8 6555 4920

www.cmwgeosciences.com