

R2069 Rev 0

May 2025

Shire of Augusta Margaret River

**Turner Street Jetty Replacement
Concept Report**

marinas

boat harbours

canals

breakwaters

jetties

seawalls

dredging

reclamation

climate change

waves

currents

tides

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K2223, Report R2069 Rev 0

Record of Document Revisions

Rev	Purpose of Document	Prepared	Reviewed	Approved	Date
A	Draft for MRA review	J Chen	T Hunt	T Hunt	19/05/25
0	Issued for Client use	 J Chen	T Hunt	 T Hunt	27/05/25

Form 035 18/06/2013

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1. Introduction

The Turner Street Jetty is a timber structure located near the mouth of the Blackwood River, in the Town of Augusta, Western Australia. The Jetty is current owned and managed by the Shire of Augusta Margaret River (Shire). Its location near the river mouth makes it a popular spot for locals and visitors engaging in water-based activities. The jetty provides some capacity for vessel berthing but is mainly used for recreational purposes such as fishing, swimming and sightseeing. The site is shown in the following figure.



Figure 1.1 Location of the Site

Following condition assessments in 2023 and 2025, the jetty was found to be in a poor condition and was closed to the public in March 2025. To restore the functionality of the jetty, the Shire is exploring both renewal and replacement options. To inform the Shire's decision, they have engaged coastal engineers M P Rogers & Associates Pty Ltd (MRA) to complete the following.

- Review of potential renewal options to extend the current service life of the jetty.
- Develop concept design and documentations for replacement of the jetty.
- Prepare a brief report summarising the renewal and replacement options, design considerations, limitations and opinion of probable cost.

This report provides a summary of the findings and recommendations.

1.1 Background

The current Turner Street Jetty is a timber structure that was constructed in 1982. The jetty consists of timber kerbs, deck, joists, half-caps, and timber piles encased in concrete.

To inform the Shire's asset renewal program, in 2023 the Shire engaged Enviro Infrastructure Pty Ltd (Enviro) to undertake a detailed asset inspection and recommend remedial actions. It is understood that the recommended remedial actions have not been undertaken.

The jetty was reinspected by Enviro in March 2025, and found that further deterioration has occurred and the jetty is no longer suitable for its intended use. The jetty was subsequently closed to the public on 19 March 2025.

2. Site Condition

The jetty is located near the intersection between Albany Terrace and Turner Street, Augusta. MRA completed a visual inspection of the site to ascertain the site conditions, opportunities and constraints. A site photograph showing an overview of the existing Turner St Jetty is provided below.



Figure 2.1 Turner Street Jetty (May 2025)

2.1 Jetty Condition

MRA completed an inspection of the visible components of the jetty to confirm the findings from previous condition assessments undertaken for the Shire.

The following table provides a description and dimension of various timber components of the structure as measured on site.

Table 2.1 Turner Street Jetty – Components

Timber Component	Approx. Dimensions
Piles	~ 200 mm dia with concrete footing
Half-Caps	120 x 150 mm
Joists	200 x 100 mm
Decking	200 x 55 mm
Kerb	110 x 110 mm

The following provide a summary of the inspection.

- The timber deck generally appears in an average to poor condition, with splits and section loss visible.
- The timber half-cap and joists appear to generally be in an average condition through most of their length, but with notable splits, deterioration and section loss evident at the ends.
- The timber piles were not fully visible at the time of the inspection. However, the visible portion appears to be consistent with the findings of previous condition assessments.

These are discussed in more detail in the following sections.

2.1.1 Jetty Substructure

The substructure elements are generally in an average condition. Although not all elements would need to be replaced, access to repair/replace deteriorated elements such as joists, half-caps and piles would require the majority of the substructure to be removed to provide access.

Photographs of some of the visible jetty substructure elements are presented in the following figure.

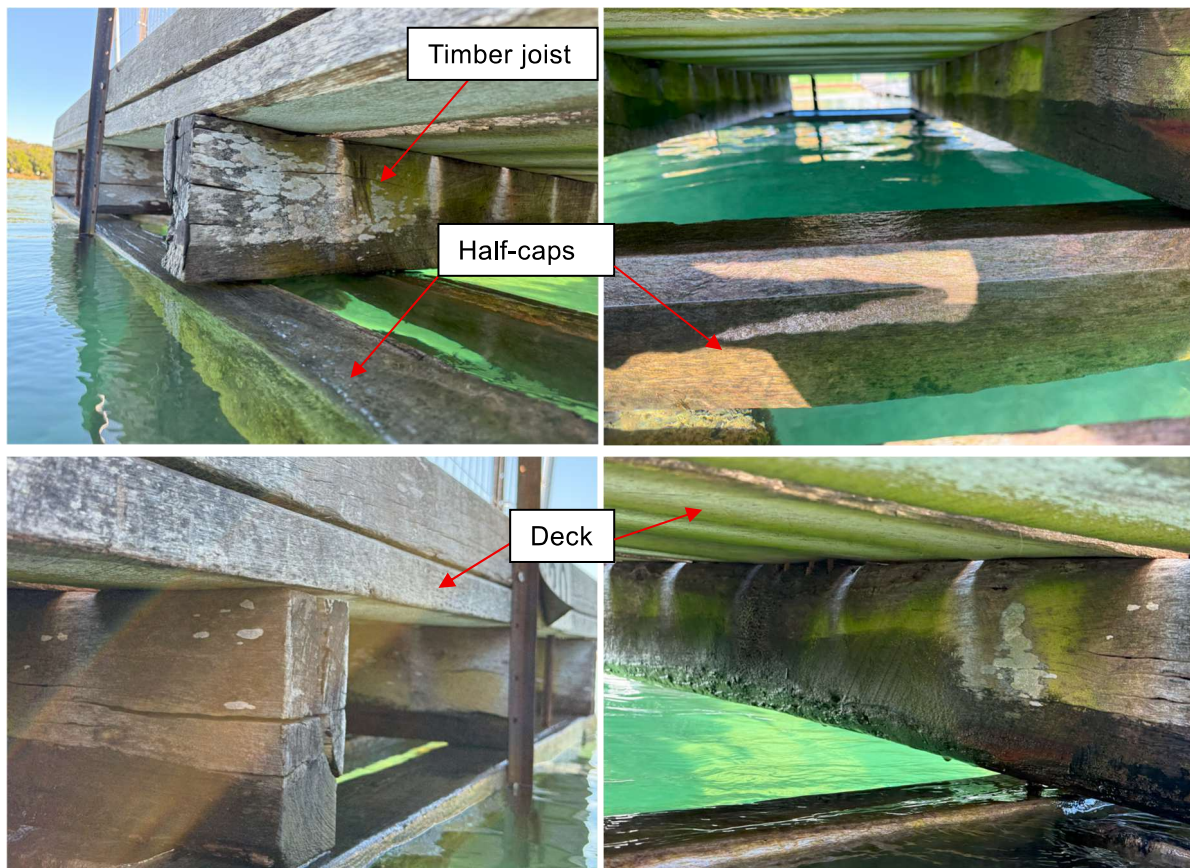


Figure 2.2 Typical Photos of the Visible Jetty Elements

2.1.2 Jetty Piles

The existing pile foundation consists of timber piles encased with concrete. Evidence of cracking was noted on site, consistent with outcome of previous condition assessment undertaken by the Shire.

Repair of concrete encased timber piles is likely to be difficult, as removal of the existing concrete encasement may be required. The removal of the concrete encasement could further undermine the structural integrity of the jetty during the repair and significant temporary support works may be required.



Figure 2.3 Typical Photos of the Concrete Encased Timber Pile

2.1.3 Abutment & Land Approach

The jetty abutment currently ties into an existing rock wall and a concrete footpath. Based on site discussions with the Shire, it is agreed that any jetty replacement option should consider locating the new abutment behind the existing rock wall to minimise any risk of undermining as a result of potential foreshore movement over the design life of the new jetty.



Figure 2.4 Jetty Abutment & Land Approach

2.2 Water Level

Water levels at the site fluctuate on varying timescales as a result of astronomical, meteorological and hydrological effects. These are discussed in the following sections.

2.2.1 Tidal Levels

The Department of Transport (DoT) measures water levels at Flinders Bay, located approximately 2 km south of the site. DoT has prepared submergence curves from these measurements. These levels are presented in the following table.

Table 2.2 Key Tidal Levels at Flinders Bay, Augusta

Tidal Level		mCD	mAHD
Highest Astronomical Tide	HAT	1.48	0.92
Mean High High Water	MHHW	1.15	0.59
Mean Low High Water	MLHW	1.04	0.48
Mean Sea Level	MSL	0.74	0.18
Mean High Low Water	MHLW	0.43	-0.13
Mean Low Water	MLLW	0.32	-0.24
Lowest Astronomical Tide	LAT	0.05	-0.51

Notes: 1. Chart Datum (CD) is approximately 0.56m below Australian Height Datum (AHD) at Flinders Bay.

2.2.2 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. The allowances are presented in Figure 2.5.

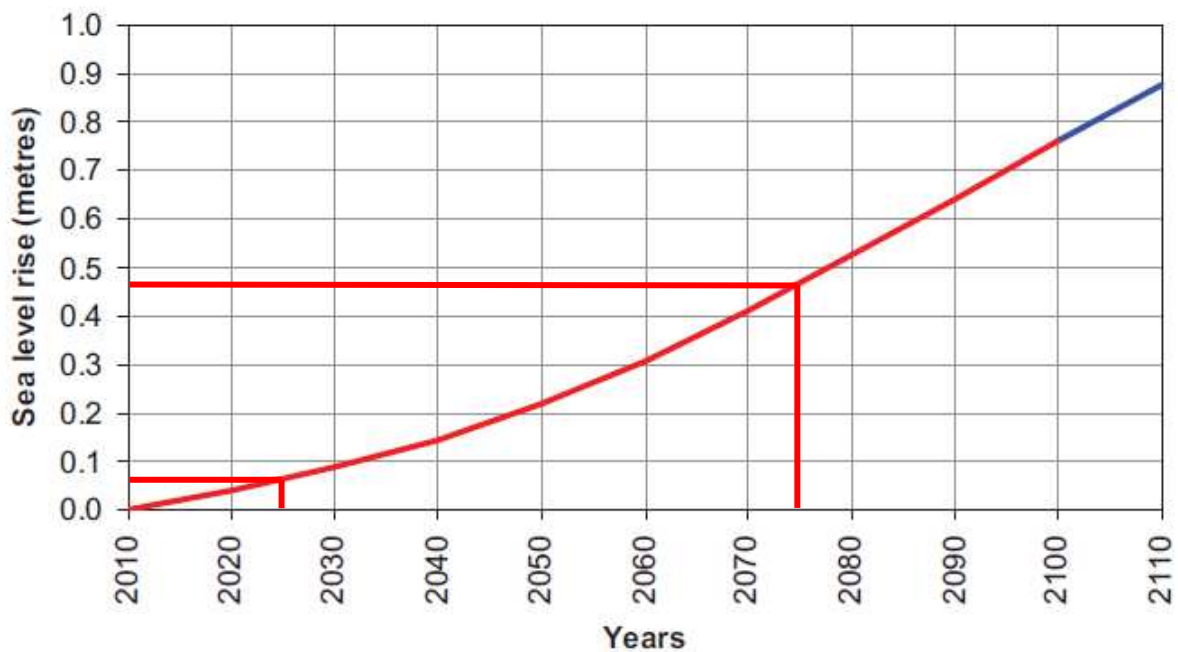


Figure 2.5 Recommended Sea Level Rise Allowances (DoT 2010)

The allowance for sea level rise to 2075 (50 year design life) has been estimated relative to the predicted 2025 level and has been adjusted accordingly. The recommended allowance for sea level rise to 2075 is therefore 0.40 m.

2.3 Survey & Existing Levels

The Shire has recently completed a bathymetric and land feature survey of the site. An extract of this survey is provided in Figure 2.6.

The relevant information is summarised by the following.

- The jetty deck varies between 1.1 and 1.2 mAHD.
- At the end of the jetty the bed level is about -1.0 mAHD.
- The concrete footpath parallel to Albany Terrace ramp down from about 2.6 mAHD to the start of the jetty.

Review of the existing levels against the tide levels and potential for sea level rise over the design life suggests that there may be benefits from slightly raising the existing jetty deck level (from approximately 1.1 to 1.2 mAHD). These include:

- Lifting the deck height reduces the frequency of inundation over the design life while, still providing an appropriate deck level for the intended use.
- A slightly raised deck level would provide better tie in to the existing concrete path and result in a less steep slope that improves accessibility.

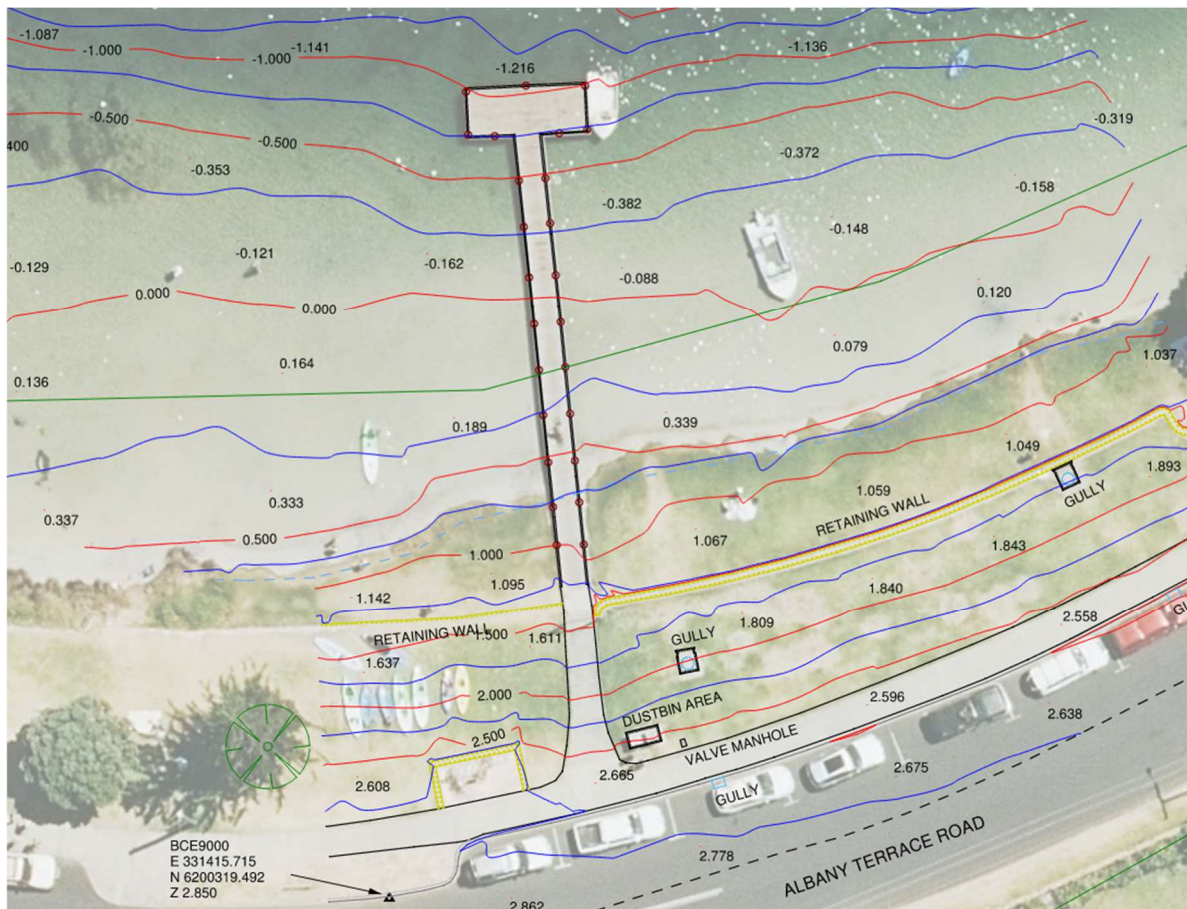


Figure 2.6 Survey of the Site

2.4 Foreshore Movement

The existing jetty, located near the mouth of the Blackwood River, is subject to dynamic coastal and estuarine processes that have led to significant changes in the foreshore area over time. These changes are influenced by factors such as river discharge, tidal action, wave energy, and sediment transport, which can cause erosion and sedimentation patterns to vary considerably over time. This is shown in the aerial photographs presented in Figures 2.7 and 2.8.

To account for the potential changes of the foreshore area over time, the following should be considered for the jetty replacement works.

- Consider additional scour allowance to account for the potential changes to the bed levels as a result of the potential foreshore changes.
- Locate the abutment landward of the existing retaining wall which is shown to be relatively stable over time.

These have been considered in the concept replacement options but would need to be confirmed during further detailed design development.



Figure 2.7 Aerial of the Site (2010)



Figure 2.8 Aerial of the Site (2025)

2.5 Geotechnical Condition

There is limited geotechnical information available at the site. Anecdotal evidence has suggested that the riverbed in this area could consist of a layer of sediment overlying rock, albeit at an unknown depth. Piling records of nearby jetty structures may provide more information on the geotechnical conditions in this area. The geotechnical conditions would need to be confirmed during further design development.

It is recommended that one or a combination of the following could be considered by the Shire to minimise the risk of latent geotechnical conditions.

- Confirm the geotechnical conditions at the site, either by:
 - Obtaining and reviewing piling records in nearby areas and design using conservative assumptions.
 - Undertake geotechnical investigation at the site. This would provide site specific information but could be costly.
- Outline the possibility of presence of rock in the request for tender documents and request provisional rates for pile driving in sand and in rock.

3. Options Assessment

Given the current condition of the jetty, the Shire requested MRA conduct an options assessment to determine the most appropriate action to restore the functionality of the jetty. These options include:

- Repair/refurbishment of the existing structure.
- Demolition and replacement of the entire structure. The replacement could be either one of the following.
 - Like for like replacement with a fixed jetty.
 - Replacement with a floating jetty.

The following sections provide guidance and information on the two options and the costs associated with each.

3.1 Functional Requirements & Intended Future Use

The Shire advised that the jetty is intended to be a key access structure for residents and visitors of Augusta. The jetty is intended to be used mainly by pedestrians in the future, with some capacity to allow berthing of small vessels.

The key functional requirements for the jetty repairs/replacement are summarised by the following:

- Maintain the existing dimension, alignment and configurations.
- Maintain a high standard of visual appearance that is similar to the existing.
- Minimisation of surface footprint and thus environmental impact of the repairs/replacement works on this area.
- Provide improved access for users.
- Provide a service life of preferably 50 years, with a relatively low maintenance cost over the service life.

3.2 Repair/Refurbishment Option

Given the age and current condition of the jetty, most of the piles would need to be repaired. A notable percentage of the deteriorated substructure elements would also need to be replaced.

Repair of the jetty structure would likely involve the following items.

- Removal of the upper structure (e.g. deck, joists and half-caps) to allow repair/replacement of deteriorated elements.
- Undertake pile repair/replacement.
- Replacement of deteriorated elements.
- Reinstatement of upper structure.

With the jetty likely approaching the end of its useful life, even following the repair works, the jetty would need to be replaced after 5 to 10 years. The cost and level of maintenance required during the period of extended service life is also likely to increase over time.

3.2.1 Pile Repair

The majority of the jetty piles are in poor condition. To extend the service life of the piles one of the following repairs may be feasible.

- Repair of the concrete encasement. This could consist of the following.
 - Removal and replacement of the existing concrete encasement. This would keep a similar footprint and visual appearance as the existing, but likely to be difficult and risky to undertake.
 - Alternatively, construct a new encasement over the existing encasement.
- Installation of new pile at an offset location to the existing pile. This would involve installing new piles outside the footprint of the existing at offset locations and installing new support elements (joists and half-caps etc).

These types of repairs are indicatively shown in the following figure.

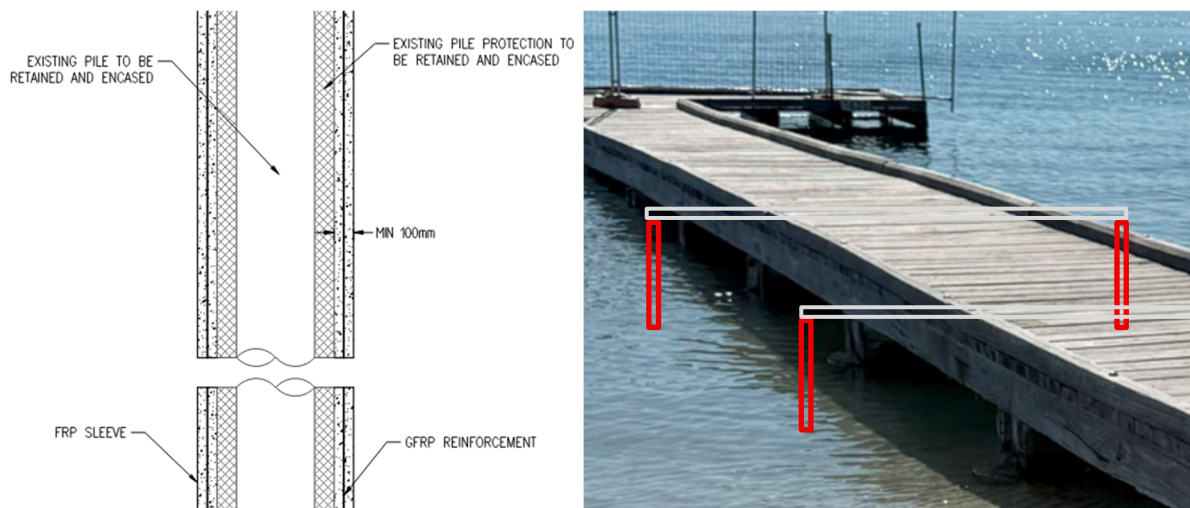


Figure 3.1 Left: Repair to existing; Right: New piles installed at offset location

Both types of pile repairs are temporary measures to slow down the ongoing deterioration. They do not necessarily improve the current condition of the piles.

Dependent on the Contractor's methodology, these works may require all elements except the piles to be removed from the jetty. During the removal process it is likely that the half-caps, joists, decking, and kerbing will be susceptible to further damage. It is therefore expected that a number of these elements will require replacement.

It is expected that with these repairs, the piles may have a remaining useful life of about 5 to 10 years.

3.2.2 Repair & Replacement of Deteriorated Elements

A portion of elements on the jetty are in a poor condition and require repair and replacement. These items include:

- Kerbs.
- Decking.
- Joists.
- Half-caps.

As mentioned previously, the repair of the piles will likely require many of the remaining jetty elements to be removed and replaced.

3.2.3 Ongoing Maintenance

Implementation of the repair option may provide an additional 5 to 10 years of additional service life. However, regular maintenance would still be required during the extended service life to maintain the repaired structure.

The maintenance cost of a new structure is generally in the order of 1 to 2% of the capital cost of construction per annum, often completed at intervals of 5 to 10 years. Given the current age and condition of the jetty, the cost of maintenance of the repaired structure is likely to be higher and could be in the order of about \$10,000 per year. The maintenance costs would be expected to increase significantly over time as the structure deteriorates further.

3.2.4 Summary of Repair Options

The benefits and constraints of this option are summarised in the table below.

Table 3.1 Advantages & Disadvantages – Repair Option

Advantages	Disadvantages
■ Relatively lower upfront capital cost compared to a full replacement option.	■ A significant number of the upper structure elements removed to allow repair may need to be replaced. ■ Only provides a 5 to 10 years extension to service life. ■ The structure still needs to be replaced after 5 to 10 years following repair. ■ Significant maintenance costs over the extended service life. ■ May not maintain the current footprint depending on the type of repair adopted.

3.3 Replacement Options

Due to the significant costs and risks associated with the repair/refurbishment option, replacement options have also been developed and discussed. The concept options for the replacement jetty structure are as follows:

- Option 1 – Replacement with a fixed jetty.
- Option 2 – Replacement with a floating jetty.

Concept sketches of the replacement structure are presented in Appendix A. Both options aim to generally maintain the same footprint as the existing jetty.

3.3.1 Option 1 – Replacement with a Fixed Jetty

Option 1 would involve a like for like replacement of the jetty with the same functionality and similar visual appearance as the existing jetty. This includes the following key features.

- An approximately 33 m long jetty consisting of the following.
 - A 29 m long and 1.8 wide walkway. The 1.8 m wide walkway is consistent with the existing footprint but does not meet the preferred width for a two-way circulation for universal access.
 - A 3 m x 7.2 m jetty end section.
- A fixed jetty deck level of about 1.4 mAHD. This is a slight increase from the existing deck level of between 1.1 and 1.2 mAHD. The raised deck level would provide improved access and tie into the concrete footpath, increased functionality over the 50 year design life and still provides a functional jetty for the intended use.
- The jetty upper structure (kerb and deck) would consist of hardwood timber suitable for use in the marine environment. This would ensure the aesthetic of the existing jetty is maintained.
- The jetty substructure would consist of the following.
 - Steel piles.
 - Steel Headstocks.
 - FRP joists.

Pros & Cons of Replacement Option 1

The benefits and constraints of this option are summarised in the table below.

Table 3.2 Advantages & Disadvantages – Replacement Option 1

Advantages	Disadvantages
■ Can achieve a design life of 50 years. ■ Maintenance can generally be undertaken by local contractor or Shire's maintenance team. ■ Maintain the existing footprint and aesthetics. ■ Improved access from raising the deck level slightly.	■ Higher upfront capital cost compared to a repair option or floating jetty option.

3.3.2 Option 2 – Replacement with a Floating Jetty

This option consists of an approximately 33 m long and 2.5 m wide floating jetty. The floating pontoon would be held in place by steel piles encased in HDPE sleeves.

From review of the bathymetric and land feature survey, the functionality of the floating jetty option is limited due to the relatively shallow bed across the footprint of the proposed jetty. This means that a significant portion of the floating jetty would likely sit on the bed for most of the time. During operation this would result in the following.

- An uneven surface to walk on when the floating pontoon sits on the bed.
- Additional wear and tear on the bottom of the floating pontoon due to frequent abrasion with the bed.

Pros & Cons of Replacement Option 2

The benefits and constraints of this option are summarised in the table below.

Table 3.3 Advantages & Disadvantages – Replacement Option 2

Advantages	Disadvantages
■ Relatively lower upfront capital cost of construction. ■ Allows use of boat/kayak berthing.	■ The floating option is not functional for a large period due to shallow bed level and clearance required for the floats. ■ Alters the existing footprint and aesthetic. ■ Floating pontoon may need to be replaced after 25 years. ■ Maintenance of floating pontoon would require special expertise.

The floating jetty option does not provide the functionality required for the intended use, therefore it has not been considered further in the opinion of probable cost.

3.4 Other Considerations

3.4.1 Design Vessel

The replacement jetty would provide capacity for berthing of small vessels. The current design has considered a maximum vessel up to 2 t. However, the size of the design vessel should be confirmed during further design development.

3.4.2 Handrails

The need for handrails has been discussed. The Shire has confirmed that this is not required as the design intent is to retain a similar look, feel and function to the existing jetty and allow for berthing of small vessels.

This is consistent with AS4997 which states that a handrail/barrier is only required where access to the water or vessel is not required.

3.4.3 Wider Jetty

The design of a like for like replacement option is to keep the existing footprint. This provides a one-way access for wheelchairs along the walkway, with circulation at the end of the jetty. The

jetty could be widened to provide a clear width of 1.8 m to allow for a two-way circulation along the jetty walkway. This is likely to result in a slightly higher cost of construction, but potentially improved circulation and function.

3.4.4 Full FRP Jetty Substructure

An alternative option for the substructure elements could be to use FRP for all elements. However, the following is noted.

- FRP piles have different material properties and strength than steel, the use of FRP sections including pile means that different FRP profiles and pile configuration may be required.
- The visual appearance of a full FRP structure or substructure would differ from the existing. While the FRP members can be painted to achieve a similar finish, the painting is likely to require regular maintenance.
- The construction methodology is likely to be similar to the like for like replacement option.
- FRP piles could be installed with typical pile driving methodology. However, a different pile installation method may be required depending on the product adopted and should be investigated further in the detailed design phase if a full FRP option is to be adopted.
- There may also be a risk of significant additional cost if rock layer is encountered and a different pile driving methodology (pre-drilling etc) is required to drive FRP piles into rock.
- There may be significant lead time required for the supply of FRP products. From past experience the lead time could be up to 10 weeks.

The use of a full FRP structure will provide better long-term durability. There may also be a potential cost saving of about 10% compared to the composite steel/FRP option. However, there exists additional risks with this, as the feasibility of fully FRP structures has not been provided in the long term for this use in Western Australia, and further investigation would be required to confirm their feasibility, cost and risks before being confirmed to be suitable.

3.4.5 Approvals

The replacement of the jetty will need to comply with relevant approvals, which are likely to include but not be limited to the following.

- Shire – Development or Building Approval (Shire to confirm).
- Department of Transport (DoT) - Modified Jetty License.
- Department of Planning, Lands and Heritage (DPLH) – Aboriginal Heritage approval (such as Regulation 10 or Section 18 consent).

The Shire understands these approvals and general requirements.

4. Opinion of Probable Construction Cost

Based on the developed concepts, we have estimated opinion of probable cost for the various options. These estimated costs are largely based on similar recent construction works in the Perth Metropolitan area, with regional pricing factors allowed. These should ideally be tested against local pricing.

The following should be considered regarding the construction cost estimates:

- A 25% contingency has been included to allow for uncertainty for a concept level estimate. This is used to cover uncertainty such as changes in site conditions and as no detailed design has been undertaken.
- Future escalation has not been included. The marine construction industry in WA has limited resources and is currently in high demand, prices can vary significantly from one tender to another.
- A factor has been applied to the cost estimates to account for the location of the site. This is to ensure freight and other costs are indicatively reflected in the opinion of probable cost.
- The estimate does not include any design, project management or approval costs.

4.1 Repair Option

The repair work for the Turner Street Jetty will include the following:

- Preliminaries including mobilisation, site establishment, insurances, management plans, environmental management and demobilisation.
- Pile repairs.
- Repair and replacement of remaining deteriorated elements.
- Reinstatement of the upper structure.

The opinion of probable cost for the jetty repairs is presented in the table below

Table 4.1 Opinion of Probable Repair Cost

Item	Cost (ex GST)
Total Estimated Repair Cost	\$210,000

It is worth noting that the mobilisation cost of the repair option is likely to be similar to the replacement options, as similar sized plant would be required to undertake the demolition or removal of existing element for repair.

4.2 Replacement Options

The works involved in the replacement of the Turner Street Jetty include the following:

- Preliminaries including mobilisation, site establishment, insurances, management plans, environmental management and demobilisation.

- Demolition of existing jetty.
- Piling.
- Construction of replacement jetty structure.
- Miscellaneous items such as decking and kerbs.

High level construction cost estimates were determined on the basis of the items stated above for the concept jetty replacement option. The opinion of probable cost of for the replacement option are summarised in the table below.

Table 4.2 Opinion of Probable Cost for Replacement Options

Option	Cost (ex GST)
Replacement with timber deck and FRP & steel substructure	\$660,000

5. Conclusion

This report details the options assessment for the repair and concept replacement options of the Turner Street Jetty.

In addition to a repair option, the replacement options have been investigated and include replacement with:

- A fixed jetty.
- A floating jetty.

The repair option generally consists of removal of the upper structure to allow access to deteriorated substructure elements, pile repair, repair/replacement of deteriorated elements, and reinstatement of the upper structure. The repair option is likely to be costly given the scope of works required and may provide 5 to 10 years of extended service life, after which the structure would still need to be replaced.

The replacement options would consist of a structure that has the same extent as the existing jetty, which is mainly for pedestrian use, but provide some capacity for berthing of small vessels. The replacement options would have a higher upfront capital cost, but are likely to be a more cost effective approach in the longer term.

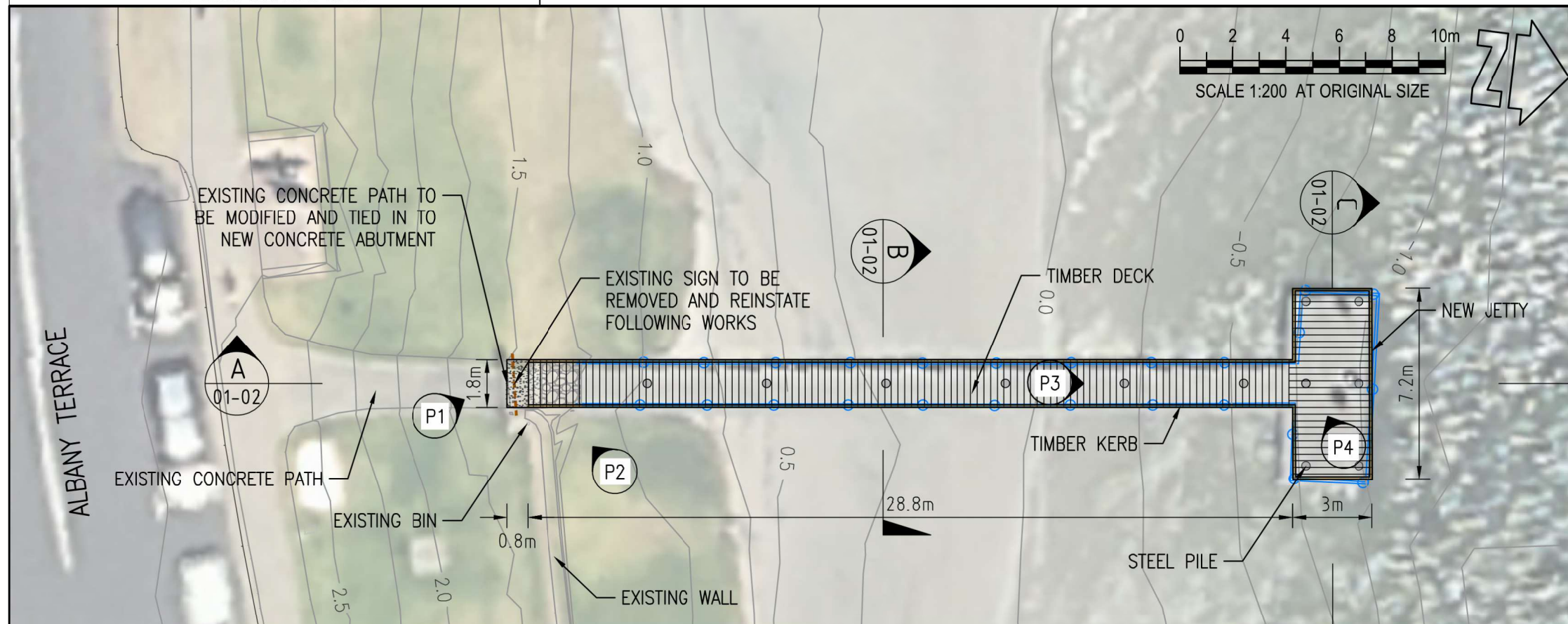
The benefits and constraints for each of the options have been detailed in this assessment, and indicative high level construction costs have been provided. It is recommended that the Shire consider the relevant merits of each of these options.

6. Appendices

Appendix A Concept Sketches

Appendix A Concept Sketches

AT CORRECT SCALE THIS IS 100 mm



LEGEND:

- 0.0 CONTOUR AT 0.25m INTERVALS
- EXISTING STRUCTURE
- NEW JETTY
- NEW CONCRETE ABUTMENT
- SCOUR PROTECTION
- P1 PHOTO LOCATION

GENERAL NOTES:

- SURVEY COMPLETED BY BCE SURVEYING IN MAY 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
- AERIAL PHOTOGRAPH FROM LANDGATE TAKEN IN DECEMBER 2024.
- HORIZONTAL DATUM IS MAP GRID OF AUSTRALIA IN GDA2020 IN ZONE 50 (GDA2020). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).

LAYOUT

1:200

EXISTING SIGN TO BE REMOVED AND REINSTATE FOLLOWING WORKS



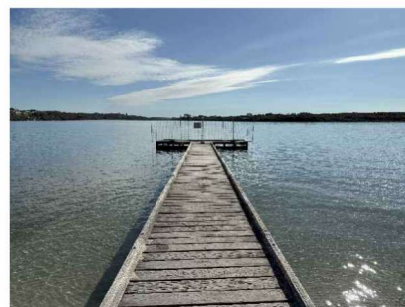
PHOTOGRAPH 1

EXISTING CONCRETE PATH

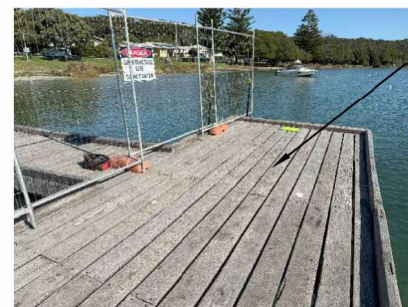


PHOTOGRAPH 2

MODIFY EXISTING SECTION OF EXISTING WALL TO ALLOW CONSTRUCTION OF NEW ABUTMENT



PHOTOGRAPH 3



PHOTOGRAPH 4

EXISTING JETTY TO BE COMPLETELY REMOVED AND DISPOSED OF

PROS:

- CAN ACHIEVE A DESIGN LIFE OF 50 YEARS.
- MAINTENANCE CAN GENERALLY BE UNDERTAKEN BY LOCAL CONTRACTOR OR SHIRE'S MAINTENANCE STAFF.
- MAINTAIN EXISTING FOOTPRINT AND AESTHETICS.
- IMPROVED ACCESS FROM RAISING THE DECK LEVEL.

CONS:

- HIGHER UPFRONT CAPITAL COST COMPARED TO A REPAIR OR FLOATING JETTY OPTION.

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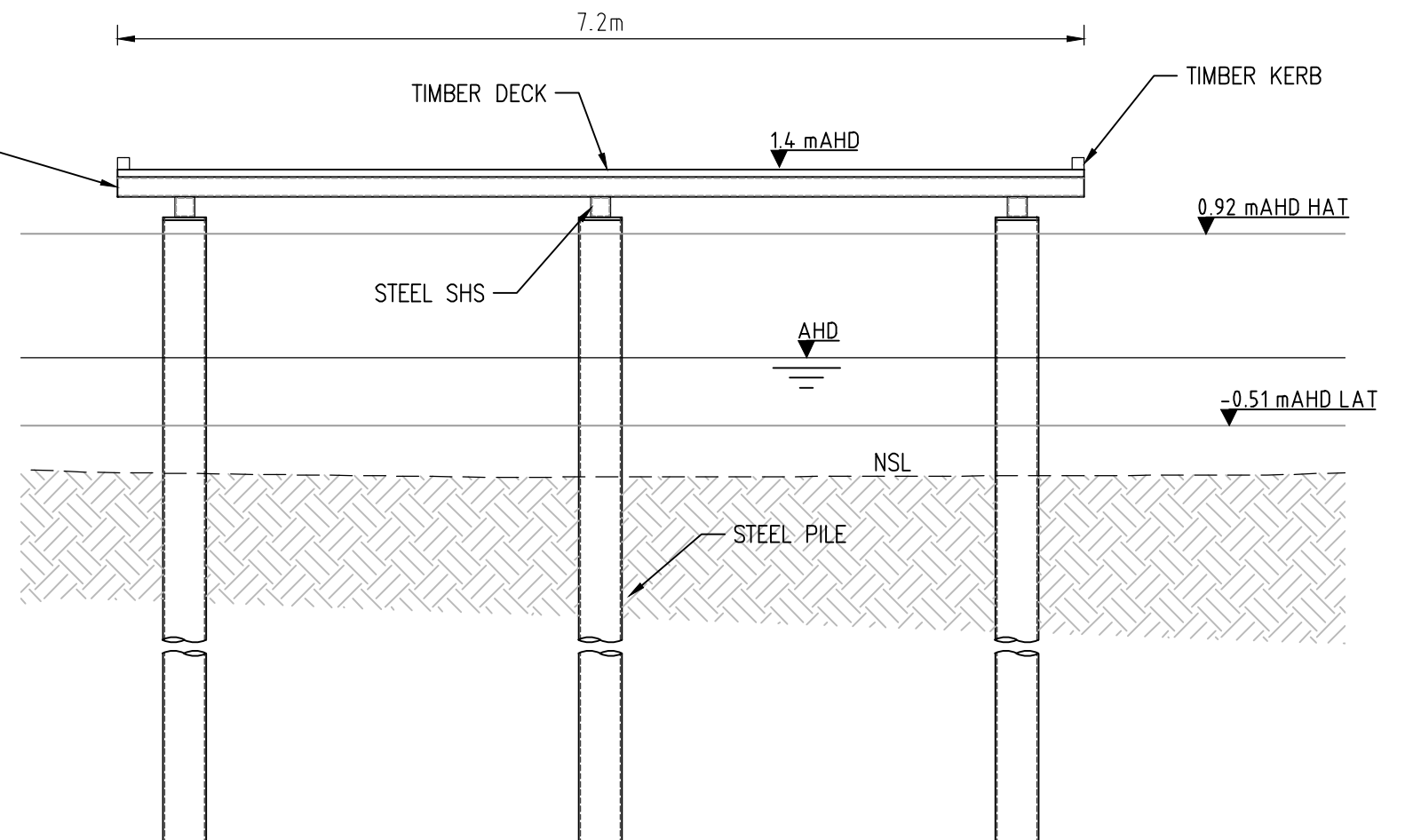
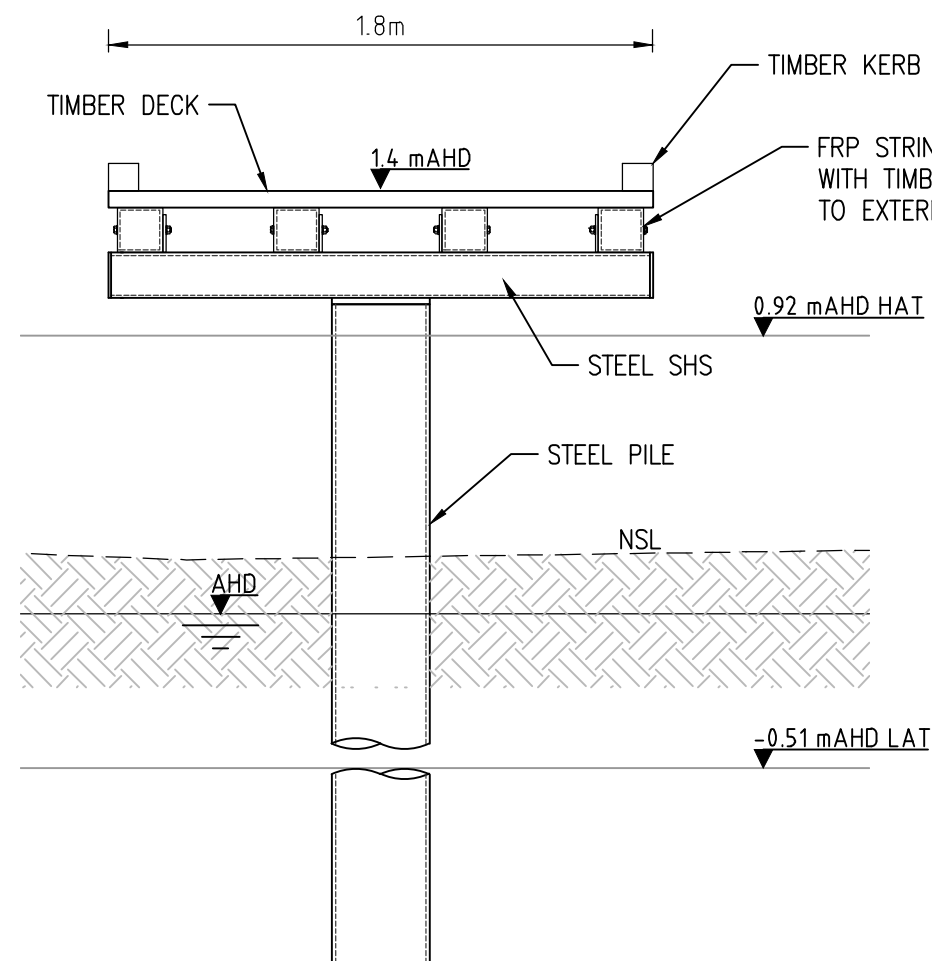
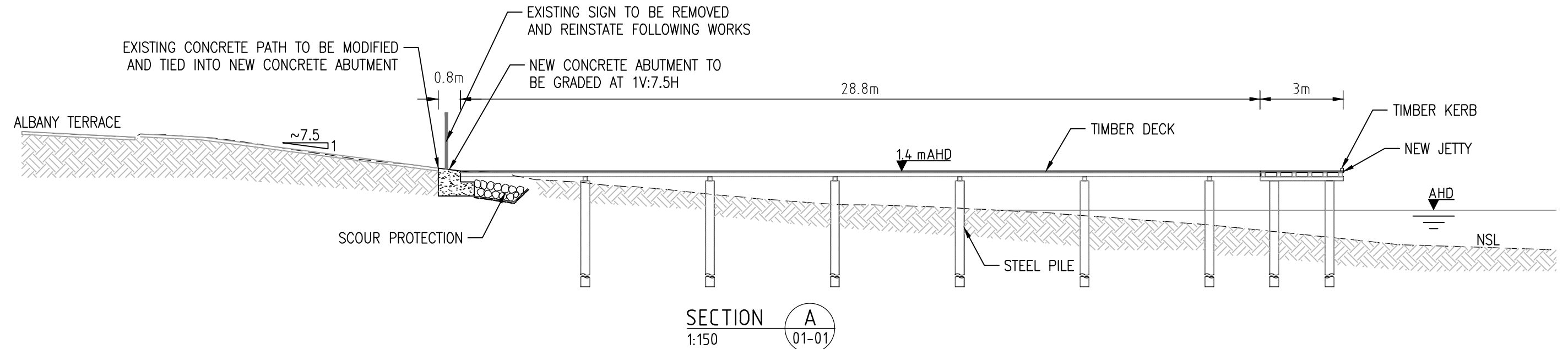
DRAWN R ENCINAS
CHECKED J CHEN/T HUNT

FIXED JETTY OPTION - LAYOUT
TURNER STREET JETTY

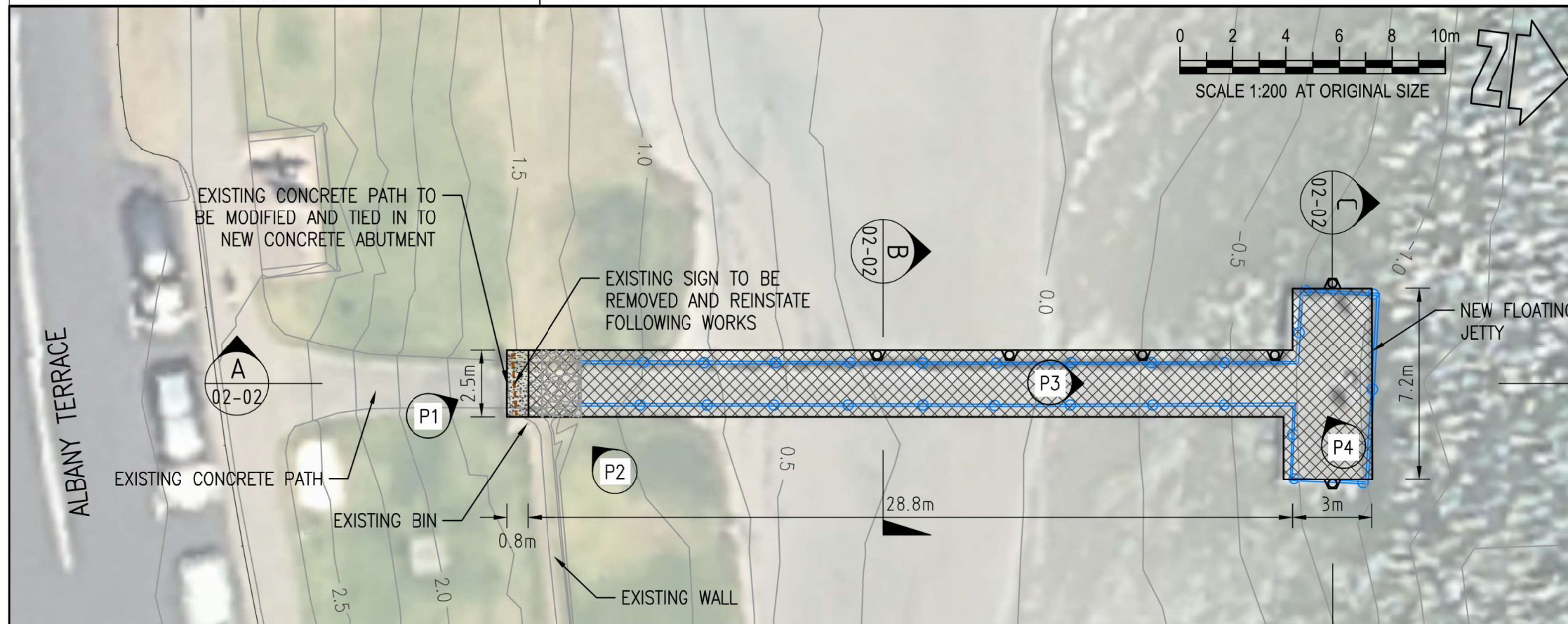
SCALE AT A3 AS SHOWN

MAY 2025
SK2223-01-01A

AT CORRECT SCALE THIS IS 100 mm



AT CORRECT SCALE THIS IS 100 mm



LEGEND:

- 0.0 CONTOUR AT 0.25m INTERVALS
- EXISTING STRUCTURE
- NEW FLOATING JETTY
- NEW CONCRETE ABUTMENT
- SCOUR PROTECTION
- P1 PHOTO LOCATION

GENERAL NOTES:

1. SURVEY COMPLETED BY BCE SURVEYING IN MAY 2025. THE LEVELS AND CONTOURS REFLECT THE SURFACE AT THE TIME OF SURVEY ONLY.
2. AERIAL PHOTOGRAPH FROM LANDGATE TAKEN IN DECEMBER 2024.
3. HORIZONTAL DATUM IS MAP GRID OF AUSTRALIA IN GDA2020 IN ZONE 50 (GDA2020). VERTICAL DATUM IS AUSTRALIAN HEIGHT DATUM (AHD).

LAYOUT

1:200

EXISTING SIGN TO BE REMOVED AND REINSTATE FOLLOWING WORKS



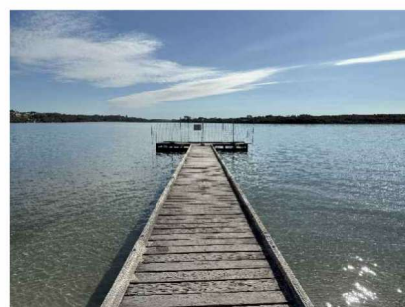
PHOTOGRAPH 1

EXISTING CONCRETE PATH

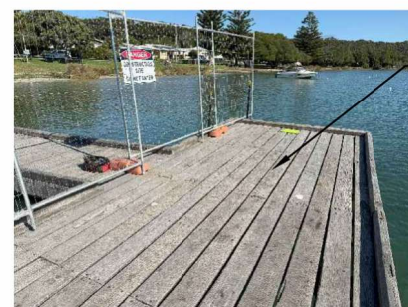


PHOTOGRAPH 2

MODIFY EXISTING SECTION OF EXISTING WALL TO ALLOW CONSTRUCTION OF NEW ABUTMENT



PHOTOGRAPH 3



PHOTOGRAPH 4

EXISTING JETTY TO BE COMPLETELY REMOVED AND DISPOSED OF

PROS:

- RELATIVELY LOWER UPFRONT CAPITAL COST OF CONSTRUCTION.
- ALLOWS EASE OF BOAT BERTHING ANF KAYAK ACCESS AT ALL TIDES.

CONS:

- THE FLOATING JETTY OPTION IS NOT FUNCTIONAL FOR A LARGE PERIOD OF TIME DUE TO SHALLOW BED LEVELS.
- ALTERS THE EXISTING FOOTPRINT AND AESTHETICS.
- FLOATING PONTOON MAY NEED TO BE REPLACED AFTER 25 YEARS.
- MAINTENANCE OF FLOATING PONTOON WOULD REQUIRE SPECIAL EXPERTISE.

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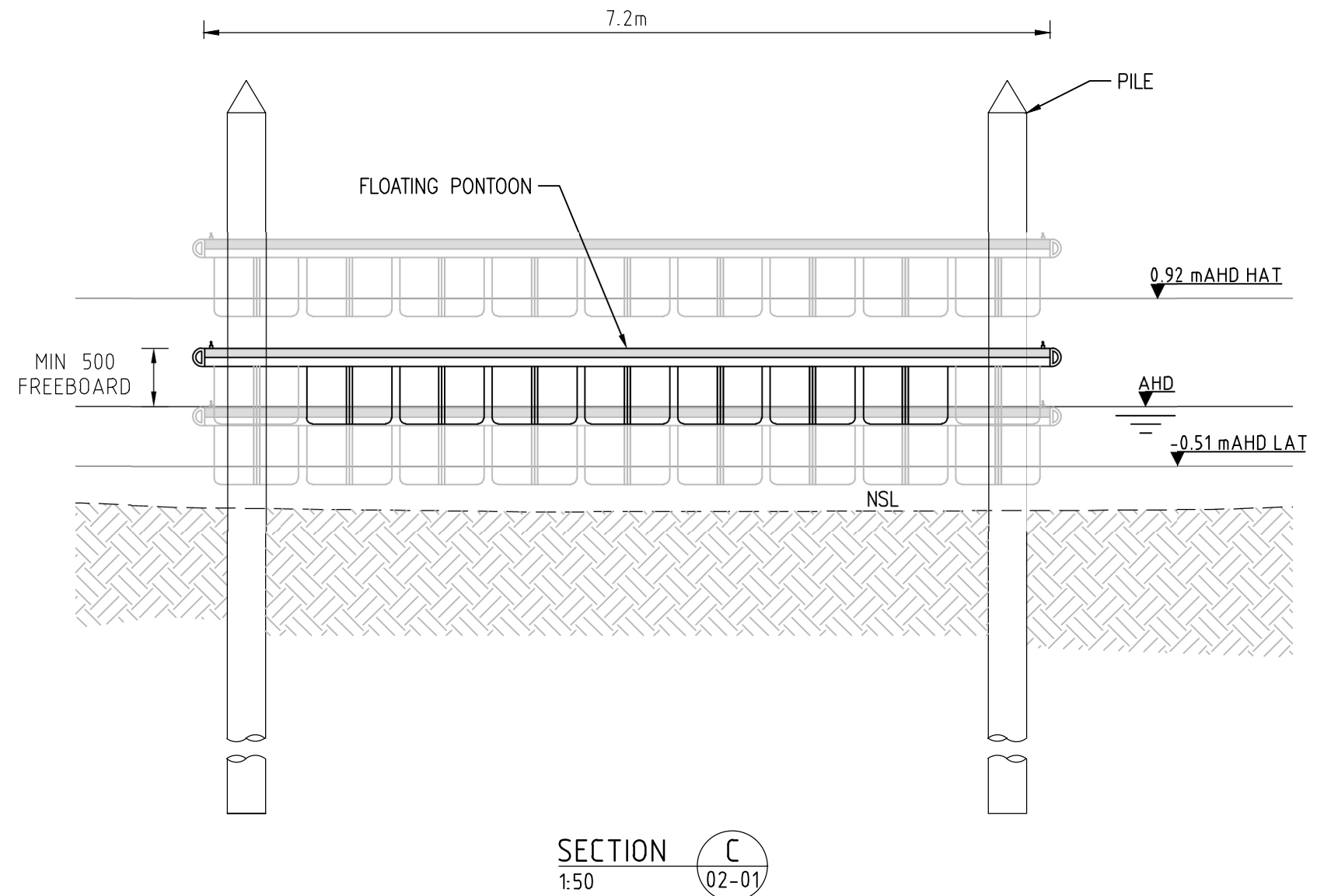
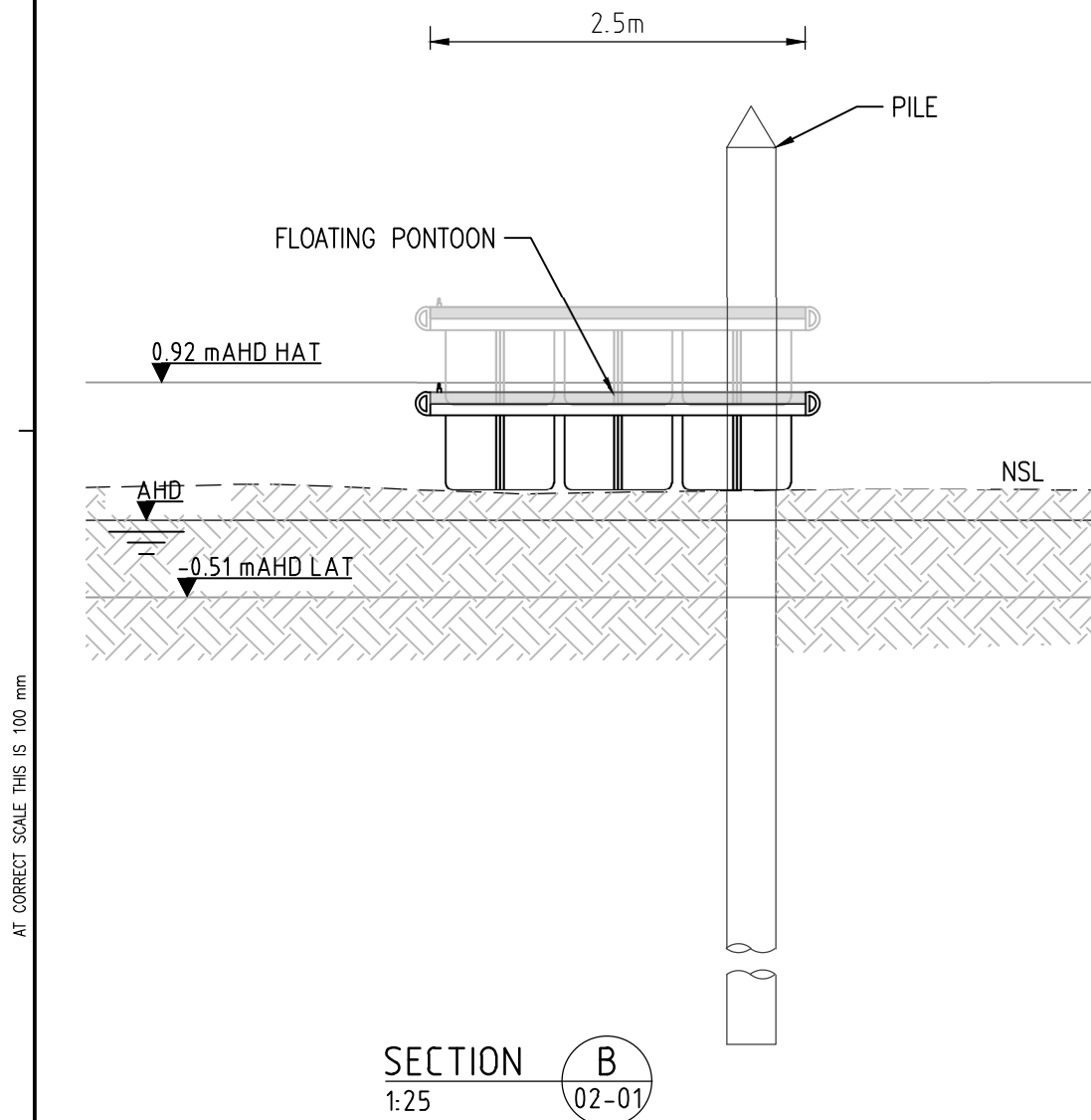
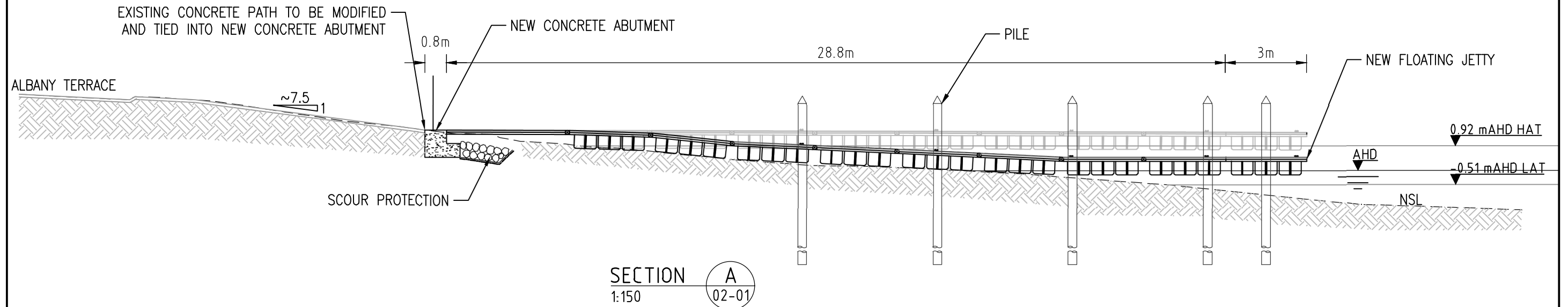
DRAWN R ENCINAS
CHECKED J CHEN/T HUNT

FLOATING JETTY OPTION - LAYOUT
TURNER STREET JETTY

SCALE
AT A3 AS SHOWN

MAY 2025
SK2223-02-01A

AT CORRECT SCALE THIS IS 100 mm



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FLOATING JETTY OPTION - SECTIONS
TURNER STREET JETTY

SCALE
AT A3 AS SHOWN

MAY 2025
SK2223-02-02A

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