



Fisherman's Jetty

PORT PIRIE

STUDY REPORT

27 APRIL 2023

Infrastructure Consulting Pty Ltd

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Revision A



INFRASTRUCTURE
CONSULTING

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1 Introduction

Infrastructure Consulting has been engaged by Port Pirie Regional Council to undertake a review of options for the Port Pirie Fisherman's Jetty. This report sets out the scope, findings and recommendations of that review.

1.1 General Description

The Port Pirie Fisherman's Jetty consists of a fixed Jetty, configured in an 'F' shaped arrangement and providing 40 leasable berths.

Of the 40 potential berths, only 26 are occupied, with annual fees set at \$346 (in 20/21).

The jetty is in an advanced state of degradation and is load limited to vessels under 6m in length.

A previous condition report completed by MACE Engineering Services completed in 2015 identified extensive repair and maintenance works to be completed on the jetty over a period of 10 years. This included critical works to secure the structural integrity of the jetty which have not been completed to date.

The low lease fees, combined with the poor state of the facilities have attracted undesirable activity, nuisance activities and derelict vessels, all of which are undesirable for council, and the Port Pirie community more generally.

1.2 Scope of Services

The scope of services is set out in Infrastructure Consulting's proposal to Port Pirie Regional Council, and includes:

- Attendance at site, liaison with PPRC representatives and other stakeholders (as appropriate, PPRC to coordinate)
- Detailed review of the previous reports and concepts against standards, taking regard of any significant changes in condition or standard since publication of those documents
- Development of a brief long list of options, and assessment of a shortlist (expected to be Repair, Replace with floating pontoons and one other)
- Assessment of vessel sizes, berth utilisation and charges at other marinas (on a desktop, publicly available basis) in order to assess likely future revenue cases.
- Summary of the findings and recommendations in a written report & concept sketches

1.3 Reference Documentation

In developing this report, Infrastructure Consulting has relied upon the following reference documentation.

Table 1: Reference Documentation

Document	Description	Revision	Date
Agenda Item 4	Fisherman's Jetty Strategic Workshop Discussion Paper		9/06/2021
MACE Report	Assessment, Works Program and Costings – Fisherman's Jetty, Port Pirie		13/03/2015
Lawrie Report	Report Re: Fisherman's Jetty Underwater Inspection, Port Pirie 11/6/15		14/6/2015
Magryn Cost Estimate & Concept Designs	Cost Estimate for Upgrade to Existing Wharf Facility at Fisherman's Wharf Port Pirie, SA	B	August 2013
MC-1015_IC_Port_Pirie_MGA2020_AHD-A3_Bathy	Bathymetric Survey completed by Maritime Constructions		28/11/22
24114-Detail-Main Rd, Solomontown	Terrestrial Survey completed by Pinksterboer	01	11/11/2022
AS3962	Guidelines for Design of Marinas		2001

2 Review of existing report/concepts

This section outlines the reviews of the existing concepts and reports undertaken. The purpose of the review is not to revisit or modify the recommendations of those reports, rather to assist with shaping the concepts and recommendations being put forward for the future use of the Jetty.

2.1 MACE Engineering Report

The report prepared by MACE Engineering was completed in March 2015. The report provided visual inspection and an overview of condition and did not make any load rating assessment. The report recommended a dive inspection of piles below water which was subsequently undertaken. The dive assessment identified significantly greater deterioration in the piles than the above water inspection. The report has not been updated since the diver report was completed.

Generally speaking, the report provided a sound overview of the key jetty elements and condition thereof. It identified a program of structural, safety and functional works to be undertaken over the following 10 years. A summary follows:

Immediate Program

The immediate program of works focused on safety issues with the walkway surface. It also recommended underwater inspection of piles to confirm condition.

- Complete dive inspection
- Remediation of decking and gratings.
- Remediation of handrail and kickrails

The dive inspection has been completed and provided to Infrastructure Consulting. It is understood that some of the more urgent of the identified works has been completed, focussed around handrails and the walking surface.

2-5 Year Program

The program put forward for 2-5 years focused on the more significant structural issues identified in the report. This included:

- replacement of missing piles and bracing members,
- replacement of structural bolts
- compliance upgrades to handrails ladders and stairs
- Lighting upgrades
- Ongoing inspections

To the knowledge of the author, these works have not been acted upon to date.

5-10 Year Program

The program between 5-10 years expands on the 2-5 year program, replacing additional piles, members and fixings as further deterioration is expected to occur in that timeframe.

2.1.1 Relevance and appropriateness of findings

The approach put forward by MACE presents a simple baseline sustainment strategy for the existing structure in materials, form and function. Three significant factors combine to make this recommendation inappropriate today.

2.1.1.1 Mono-pile construction

The most significant finding of the report was a requirement to replace a number of piles where section loss exceeded 30%. Infrastructure Consulting's assessment of the report is that the MACE inspector incorrectly identified rectangular fender piles along the structure as vertical support piles.

Figure 1 or Photo 19 below is extracted from the MACE report. The items identified as 'rectangular piles' are considered almost certainly fender piles, which are typically driven into the surficial bed only and provide no vertical or lateral support to the structure.



Photo 19 – Typical main set of pile layout with a central circular pile and two rectangular piles

Figure 1: Photo extracted from MACE report – Note MACE Caption

The MACE report appears to have accounted for the fender piles as vertically and laterally supporting the primary structure. Whilst these piles may physically provide some restraint, this is not the design intent and any load paths carried by the fender piles are secondary in nature. The use of secondary load paths to support a structure is not recommended as they are not designed and detailed for the purpose and can result in unexpected and unusual failure mechanism.

On this basis, it is considered likely that the urgency of replacement of some central piles was understated in the MACE report.

2.1.1.2 Time elapsed & Further Deterioration

The MACE report was authored in March 2015. Eight years have elapsed since the time of the report, in which significant additional deterioration is expected to have occurred.

The Ports Australia Wharf Structures Condition Assessment Manual (WSCAM) was published in June 2014 and has since achieved broad acceptance as the standard to which inspection of marine assets should be undertaken in Australia. This manual provides detailed guidance on deterioration mechanisms and design life for marine structures. Whilst the MACE report was not undertaken to the WSCAM methodology, the findings can be broadly applied and some indication of expected deterioration and remaining life of the structure provided.

The WSCAM uses a 1-7 scale, linking condition to percentage of design life remaining. Figure 2 below shows the condition rating scale for timber, describing defects, remaining life and recommended actions.

CONDITION STATE	DESCRIPTION	EXPECTED REM. LIFE (% of original design life)	RECOMMENDED ACTIONS
1	New with no visible defects/damage.	100	No repairs required. Re-inspection at next scheduled inspection may be considered.
2	As new. Minor splits and checks, no measurable section loss.	55-100	No repairs required. Re-inspection at next scheduled inspection may be considered
3	Minor marine organism attack and pipe rot, decay or necking resulting in up to 5% of section area loss. There may be minor splits or checks evident.	40-55	Planned and preventative maintenance works may be considered.
4	Moderate pipe rot, decay, marine organism attack or necking resulting in up to 5-20% of cross section loss. There may be moderate splits or checks evident.	25-40	Further testing; reactive maintenance and some minor upgrades may be considered.
5	Heavy marine organism attack, evidence of termite activity, pipe rot, decay or necking resulting in up to 20-35% section loss. Major splits or checks evident.	15-25	Structural assessment is recommended. Further investigation may be required to inform the structural assessment. Maintenance; upgrade or rehabilitation works may be considered.
6	Severe marine organism or termite attack, pipe/surface rot, decay or necking resulting in up to 35-50% section loss. Major splits or checks evident in critical zones mid and end spans.	0-15	Structural assessment is recommended. Further investigation may be required to inform the structural assessment. Rehabilitation or renewal works may be considered.
7	Severe marine organism or termite attack, pipe/surface rot, decay or necking resulting in greater than 50% section loss. Component has failed.	0	Rehabilitation required immediately or replace component/asset.. Structural assessment is recommended where rehabilitation works are to be undertaken. Further investigation may be required to inform the structural assessment.

Figure 2: Condition Ratings for Timber (extracted from WSCAM)

For timber structures, the WSCAM provides typical expected lives of 20-25 years for most structural components. Timber piles may achieve up to 50 years, however this is highly dependent on the species of timber and the conditions at the specific location (i.e. presence of borer and whether the piles are borer resistant).

As can be seen from Figure 2, section loss of greater than 50% is defined as failure, with >35% defining severe degradation. This is reflective of the material and load factors applied to structures of this type, where 35% reduction in strength would typically have exhausted any remaining factor of safety in the structure. This means that failure may occur under service conditions.

Based on this rating scale, the MACE report identifies 28 primary (circular) piles of condition rating 6 or worse. This contrasts with 3 primary piles stated in the MACE report and 6 'rectangular' or fender piles.

The eight years which have elapsed since the MACE report represents 30% of the typical design life of a timber jetty. Even for the most durable examples, this would be 15%. The effect of this time elapsing would mean that all members in the structure could be expected to have moved 1-2 condition ratings higher on the scale.

Based on the photographs and data provided in the MACE report, no members would be considered better than condition rating 4 at the time of inspection in 2015.

Based on the deterioration identified in the subsequent Lawrie commercial diving report, and combined with the time elapsed and likely additional deterioration that has occurred since that report, it is considered for the purpose of this report that all main elements on the existing Jetty are at or near the end of their effective life.

2.1.1.3 Construction Methods and Materials

The proposed works program put forward by MACE assumes the works can be successfully completed by replacing individual components to match the existing. Materials, member sizes and details remain the same with the exception of piles which are substituted for steel.

In significantly deteriorated structures, such works are challenging. The removal of decking, handrails and fendering to access the primary girders and piles can generate significant damage and de-stabilise the structure. Further, deterioration such as rot and termite damage which is not visible externally tends to be uncovered during works.

It is the experience of Infrastructure Consulting, that when works are being undertaken, the condition of any individual element will be one rating worse than inspected – either through additional deterioration or damage when disturbed. Works of this scale on a jetty of this age and condition would therefore amount to full reconstruction.

Since the report in 2015, there has also been significant change in the national supply of heavy hardwood timber. The closure of Western Australian Karri forestry in 2021 has significantly reduced the supply and quality of hardwood timber in Australia. This has increased cost and will result in lower design life for structures built in timber from this point forward. Projects observed escalations in excess of 100% on material costs during 2022-23 due to this issue. Even accounting for inflation during the 8 years since the report, the costs put forward by MACE are expected to be materially low for the works program as a result.

It is Infrastructure Consulting's assessment that the Capital Works Program proposed in 2015 is not applicable in 2023. It is considered that material degradation and construction cost changes have combined to make like-for-like replacement the most cost effective base-case assessment criterion (as opposed to repair).

2.2 Magryn Concept Drawings

The concepts proposed by Magryn Engineering Consultants are presented at a concept level only and were not accompanied with a design basis report or any detailed explanation. This makes it difficult to provide meaningful comment on the design basis, standards or logic behind the particular layouts.

Generally speaking, the concepts are sound and have formed the basis for development of Infrastructure Consulting's 'Option 1' described in latter sections.

Issues identified in the concepts which have been addressed in Infrastructure Consulting's concept development are:

- Gangway slope of 1:4, does not meet accessibility requirements.
- Potential for encroachment/reduced fairway width between seaward most berths and sand shoal
- Concepts do not provide or describe staging opportunities to manage capital outlay for council

3 Options Development

3.1 Existing Capacity and Utilisation

The Port Pirie Fisherman's Jetty provides 40 leasable berths. The berths are arranged as single berths, typically stern boarding with no pontoon access.

Of the 40 potential berths, 26 are occupied giving a utilization rate of 65%.

The marina berths are approximately 3.75-4m wide on the main fingers. Approximately 24m total width is provided between the main fingers. This can be seen in Figure 3. Based on the current standard (AS3962), this would limit the size of vessels at the marina as follows:

- Fairway width, 11m. Maximum vessel Length Overall 7.3m
- Berth width 3.75m. Maximum vessel Length 6m, Beam 2.8m

Whilst some larger capacity berthing exists on the South East face of the main jetty, these berths do not appear in the lease plans and are limited in number.

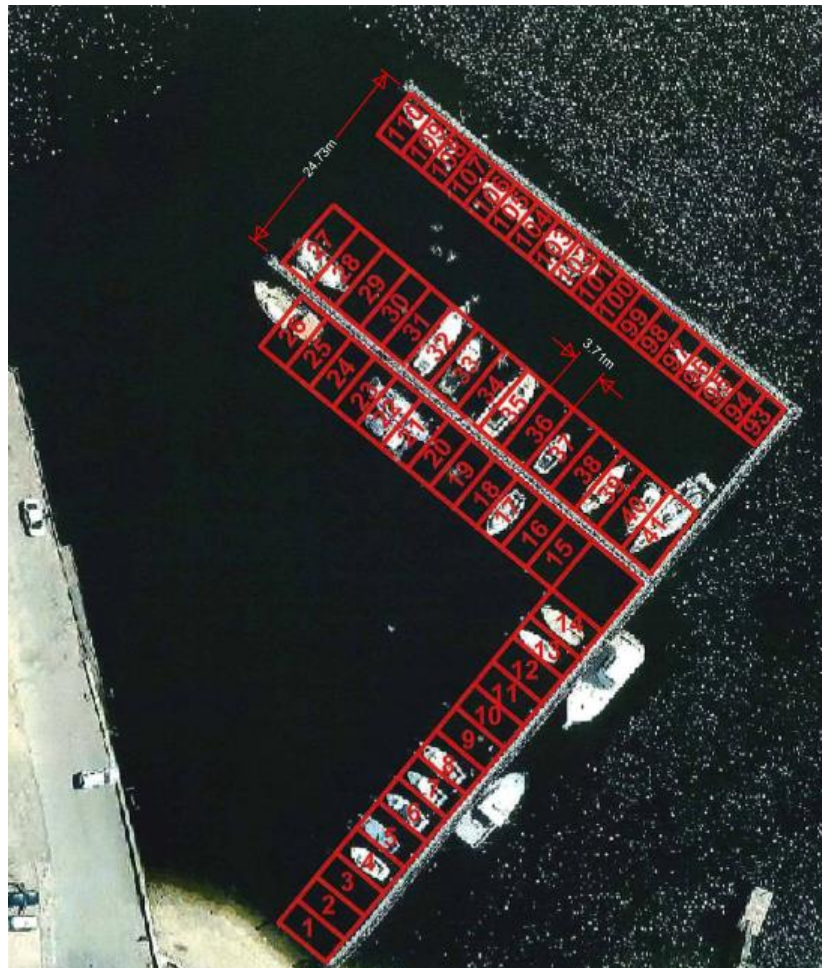


Figure 3: Existing Marina Arrangement, indicating dimension constraints.

3.2 Demand & Competition

A desktop assessment of South Australian Marinas, berth sizes, utilisation and rates has been completed in order to provide comparison and recommendations as to the vessel mix to which concepts should cater.

This assessment has shown that typically in South Australia, marinas cater to vessels up to 12m for leisure craft, with commercially focussed marinas targeting 20-24m. There is limited provision for berths below 8m, due to the increasing proportion of trailer boats below this size.

Costs vary significantly by size and location, however the lowest un-subsidised marina rate is \$1300 PA for a 12m berth at Garden Island. Perhaps the most directly comparable rate-set to Port Pirie is the Whyalla Marina where a 10m berth is \$2190 PA. Utilisation data at this Marina shows 85% utilisation for leisure craft and 73% for commercial.

This demonstrates that there is significant capacity in the market for tariffs to be increased at Port Pirie in order to fund works.

A summary of all data that could be gathered by Infrastructure Consulting for this assessment is provided overleaf in Table 2.

Table 2: Publicly available data on Marina Berth size and Tariffs in South Australia (Jan/Feb 2023)

Marina	Location	No of Berths	Utilisation	Length	Annual Cost	Note
Copper Cove Marina	Wallaroo			20	\$2500-\$2700	Commercial (20m)
Whyalla Marina	Whyalla	15	85	10	\$2190	
		15	73	12	\$5480	Commercial
Port Lincoln Marina				8	\$5880	
				12	\$8832	
				14	\$10320	
				20	\$13560	Commercial
Coorong Quays	Hindmarsh Island			6.5	\$1392	
				7.5	\$1728-\$1968	
				12	\$1968	
				12	\$4032	Double
				16	\$3696	
				18	\$4032	
Holdfast Shores Marina	Holdfast Shores	60	80	12	\$7500	
Port Adelaide Sailing Club	Largs North	100	90	12	\$2600	
Small Boat Club of SA	Garden Island	50	90	12	\$1300	
North Arm Marina	Port Adelaide	98	60			
				12	\$2745	
				24	\$672	Capped rate for fishing vessel, with 3 tenders
North Haven Marina	North Haven	150	90		\$2610	
Heritage Cove Marina					\$1808	Plus \$35K freehold
Heritage Point Marina					\$3130	Plus \$105K freehold
Royal South Australian Yacht Squadron	Outer Harbour	210	90	12	\$5800	

4 Longlist Options

Based on the assessment undertaken, Infrastructure has developed a series of long-list options. These are presented, along with a rapid multi-criteria assessment in Table 3: Longlist development.

Table 3: Longlist development

Option	Description	No of Berths	Maximum Vessel Size	Opex	Capex	Note
Demolish	Demolish the marina and do not replace	0	0	NIL	LOW	
Repair	Repair existing as per MACE report recommendation	40	6	VERY HIGH	HIGH	Not considered technically viable
Replace like-for-like	Replace the existing structure like-for-like in functionality, changing timber for FRP or steel.	40	6	MEDIUM	VERY HIGH	
Replace with floating pontoon marina	Replace the marina with a new, floating pontoon marina	Varies	12m with limited provision for larger.	MEDIUM	HIGH	
Replace with combination floating and fixed structure	Replace with a fixed jetty to allow commercial operations, as well as a floating pontoon marina	Varies	24m	MEDIUM	HIGH	

It is assumed that demolition of the marina and not rebuild is not a palatable option for council and hence it has not been progressed from this point.

Repair in accordance with the MACE report is not considered technically feasible for the reasons outlined previously.

Replacement like-for-like would provide lower amenity to users, for similar or greater capital cost than comparable pontoon options and has therefore not been progressed.

Option development has been undertaken on a floating pontoon option, and a combination fixed/floating structure to unlock commercial potential.

5 Design Development

The following sections describe the development of options. Two primary options have been developed, with staging options presenting sub-options within each.

Option 1 – Floating Pontoon Marina

Option 2 – Combination fixed and floating structure with commercial and public opportunities

5.1 General Layout Constraints and Criteria

The concepts developed by IC have been designed to meet the requirements of AS3962:2001 – Guidelines for Design of Marinas.

Requirements including Interior channel widths, fairway width, berth sizes, and walkway/finger dimensions have been achieved to the preferred dimensions documented in the standard. i.e., meeting or exceeding minimum requirements.

5.2 Berth Size Selection

The analysis of existing marinas in section 3.1 shows that the typical Marina in South Australia caters for 8-12m vessels for recreational berths. Double berths are a common feature in order to accommodate larger vessels and catamarans.

Commercial berths prioritise larger vessels in the 18-24m range due to the prevalence of these vessels in the commercial fishing industry.

Staging and flexibility are key features, with marinas featuring double berths, accommodating larger vessels at finger ends and staging construction to manage CAPEX output. These features can all be clearly seen in Figure 4 which shows Whyalla Marina. These berths are typically 9m wide double berths, catering for a maximum length of 10m to AS3962.

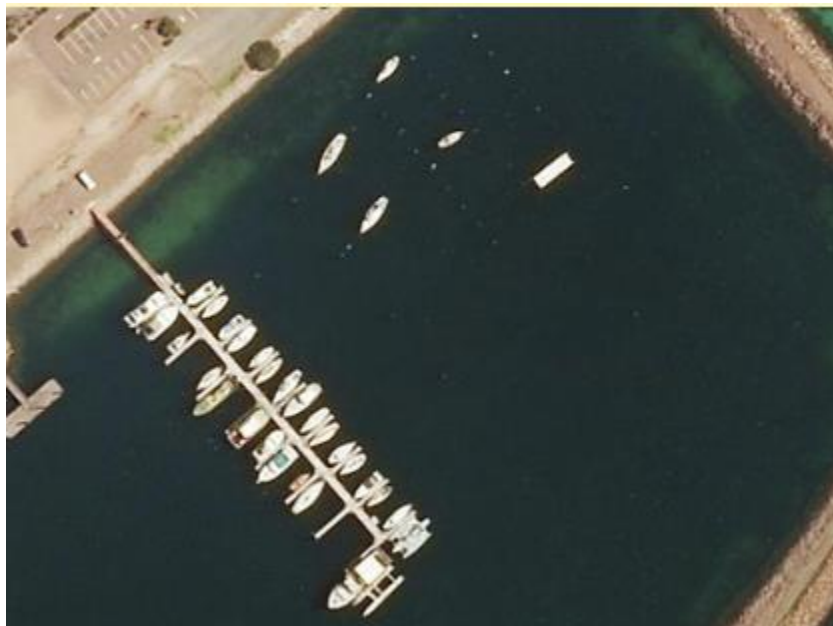


Figure 4: Whyalla Marina, note double berths and provision for larger vessels at end of finger

Berth sizes for the concepts developed at Port Pirie have been selected based on maximising flexibility and possible reconfiguration. Whilst providing a good mix of sizes to suit various vessel sizes. The options prioritise

9m and 12m berths, accommodating a range of vessels and allowing for flexibility to suit demand. These berths are sub-dividable as follows:

- 9m Double Berths can be split into 2 x 6m single berths.
- 12m Double Berths can be split into 2 x 9m single berths.

Converting from doubles to singles above simply requires the addition of a shorter centre finger. This provides additional amenity by providing access and mooring cleats to both sides of the vessel.

Similarly, larger commercial berths can be split should demand indicate a preference for smaller, higher amenity berths.

- 24m double berths can be split into 2 x 20m single berths.

Final selection of berths in the various options has followed a logic as follows:

- Provide equal or greater number of berths to the currently leased, with 80% utilisation (to allow for growth)
- Provide staging opportunities to develop with demand
- Prioritise 9m and 12m double berths as the most common and in demand leisure berths
- Utilise 6m berths as infill where depth, fairway width or space constraints limit larger berths
- For options which consider commercial berths, prioritise a small number of 24m double berths.

5.3 Staged Construction / Allowance for Growth

Concept Designs 1 & 2 incorporate a staged approach to the construction. Stage 1 represents a capacity that meets or exceeds the current occupancy of the existing wharf. Stage 2 & 3 represent opportunities for growth as demand increases. Stage 2 & 3 are interchangeable and can be done in any order. Changes to the configuration of the stage 1 or 2 berthing (as shown on the drawings) can be undertaken at this time however are not necessary.

5.4 Existing Bathymetric Survey

The concepts have been developed to take into account the existing bathymetric survey and limit the extent of dredging. Dredging of the area will be required to ensure minimum clearances to the design vessels are achieved however the position and sizing of berths was undertaken in a way to minimise the extent of dredging.

Other design considerations include proximity to the naturally occurring shoal (shallow waters) on the northern bank. Given this shoal is a naturally occurring condition it is anticipated that dredging this area will likely result in the sand reforming relatively quickly in this area and require frequent maintenance dredging to maintain the required depths. An in depth study has not been completed however we considered it best to leave this area untouched.

5.5 Public and Commercial Opportunities

Concepts 1 & 2 present an operational paradigm consistent with the current marina. Leasable berths may be provided at a fee, the design and size of berths primarily catering to private recreational vessels.

Concept 3 provides a greater degree of flexibility for the public and commercial enterprise.

- Fixed jetty for commercial and public access.
- Small vehicle access allows loading, unloading & light maintenance.
- Increases the potential funding options, with public jetties often attracting State or Federal public funding.
- Commercial berth sizes present opportunity for fishing fleet or tourist vessel home-porting.

5.6 Design Basis

The following sets out the design basis adopted for all options.

5.6.1 Common Design Details

5.6.1.1 Fixed Ramp

1.8m wide, maximum 1:8 slope

Start of Ramp Height = existing road height = +2.63m AHD

Bottom of Ramp Height = HAT = +1.61m AHD

Fixed Ramp Length = $1.02\text{m} \times 8 = 8.16\text{m}$

5.6.1.2 Primary walkway

Floating Pontoon walkway 1.8m wide.

5.6.1.3 Secondary walkway

Floating Pontoon walkway 1.8m all pile guides/piles to be position off the walkway.

5.6.1.4 Fingers

Floating Pontoon Access Finger – 900mm wide

5.6.1.5 Berth Dimensions

Berth Type	Length	Width
6m Single Berth	6m	3.8m
6m Double Berth	6m	6.6m
9m Single Berth	9m	4.7m
9m Double Berth	9m	8.5m
12m Single Berth	12m	5.4m
12m Double Berth*	12m	10.3m
24m Single Berth	24m	7.8m
24m Double Berth*	24m	14.5m

*Includes additional width for central mooring pile.

5.6.2 Concept 1

5.6.2.1 *Gangway*

1.5m clear width, maximum 1:8 slope at L.A.T. (allowing for assisted wheelchair access)
Top of gangway height = HAT = +1.61m AHD
Bottom of gangway height = LAT = -1.86m AHD
Length of gangway = 27.76m

5.6.3 Concept 2

5.6.3.1 *Gangway*

1.5m clear width, maximum 1:8 slope at L.A.T. (allowing for assisted wheelchair access)
Top of gangway height = HAT = +1.61m AHD
Bottom of gangway height = LAT = -1.86m AHD
Length of gangway = 27.76m

5.6.4 Concept 3

5.6.4.1 *Public Access - Passenger Jetty*

A 3m clear width, class 10 passenger jetty of approximately 115m in length is proposed in this concept.

Deck height to be above the 1 in 100 year high water mark = 2.6m AHD which aligns with the height of the existing paved path at proposed abutment of the jetty.

Class 10 jetty allows for light vehicle access including emergency vehicles and as such the width of the jetty has been determined based on the Austroads Guide to Road Design Part 3 Table 4.3 - General traffic lane on low speed roads with low truck volumes. Width 3-3.4m

A turnaround at the end of the jetty has been included to further facilitate the vehicle access requirements and the dimensions of the turnaround have been determined to meet the Austroads guidelines.

Fendering on the SE side of approximately 56m in length allowing up to 3 x 14m vessels (maximum length limited by depth of dredging and width of entrance channel) to temporarily moor for loading / unloading of lightweight goods. i.e., recreational vessels mooring temporarily to pick up supplies from the local supermarket.

5.6.4.2 *Commercial Activities*

It is anticipated that commercial vessels would utilise the sheet pile walled wharf to the west of the marina for loading and unloading of heavy goods. The location is in close proximity to the 24m berths which are anticipated to be utilised predominately by commercial fishing vessels.

It would be advisable to incorporate a davit crane or similar rated loading device in this location to support these commercial activities.

5.6.4.3 *Access to Private Marina Berths*

Access to the private marina berths includes a fixed ramp from Jetty deck height of 2.6m AHD down to HAT = 1.61m AHD running parallel to the public access Jetty.

Gangway to be 1.5m clear width, maximum 1:8 slope at L.A.T. (allowing for assisted wheelchair access)

Top of gangway height = HAT = +1.61m AHD
Bottom of gangway height = LAT = -1.86m AHD
Length of gangway = 27.76m

A security gate at the top of the gangway to prevent an authorized access

5.6.5 Berthing Capacity

The following table summarizes the capacity increases and final capacity over the course of construction

Berth Size	Concept 1				Concept 2				Concept 3
	Stage 1	Stage 2	Stage 3	Total	Stage 1	Stage 2	Stage 3	Total	Stage 1
6m	5	+9		15	6	+15		21	4
9m	17	+8	+1	26	8	+13		21	32
12m	10		+18	28	12		+13	25	9
14m			+1	1	1		-1	0	1
24m	1		+1	2			+1	1	5

6 Recommendations

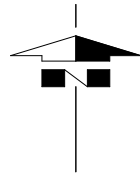
It is recommended that Port Pirie Regional Council do not attempt to repair the existing jetty in the manner recommended with the MACE report.

It is recommended that a quantity surveyor be engaged to undertake an order of cost assessment on the options presented in this report.

It is recommended that the options presented in this report be consulted with the relevant stakeholders in order to determine the following key issues:

- Implementation of a charge structure reflection of operational and maintenance costs
- Whether or not to target commercial activity
- Whether the provision of a public access jetty may be able to attract public funding (i.e. Former Building Better Regions, Priority Community Infrastructure Program or Investing in our Communities Program)

Appendix A Concept Drawings



FISHERMANS WHARF

PORT PIRIE, SA

IC PROJECT NUMBER: PPRC-22001

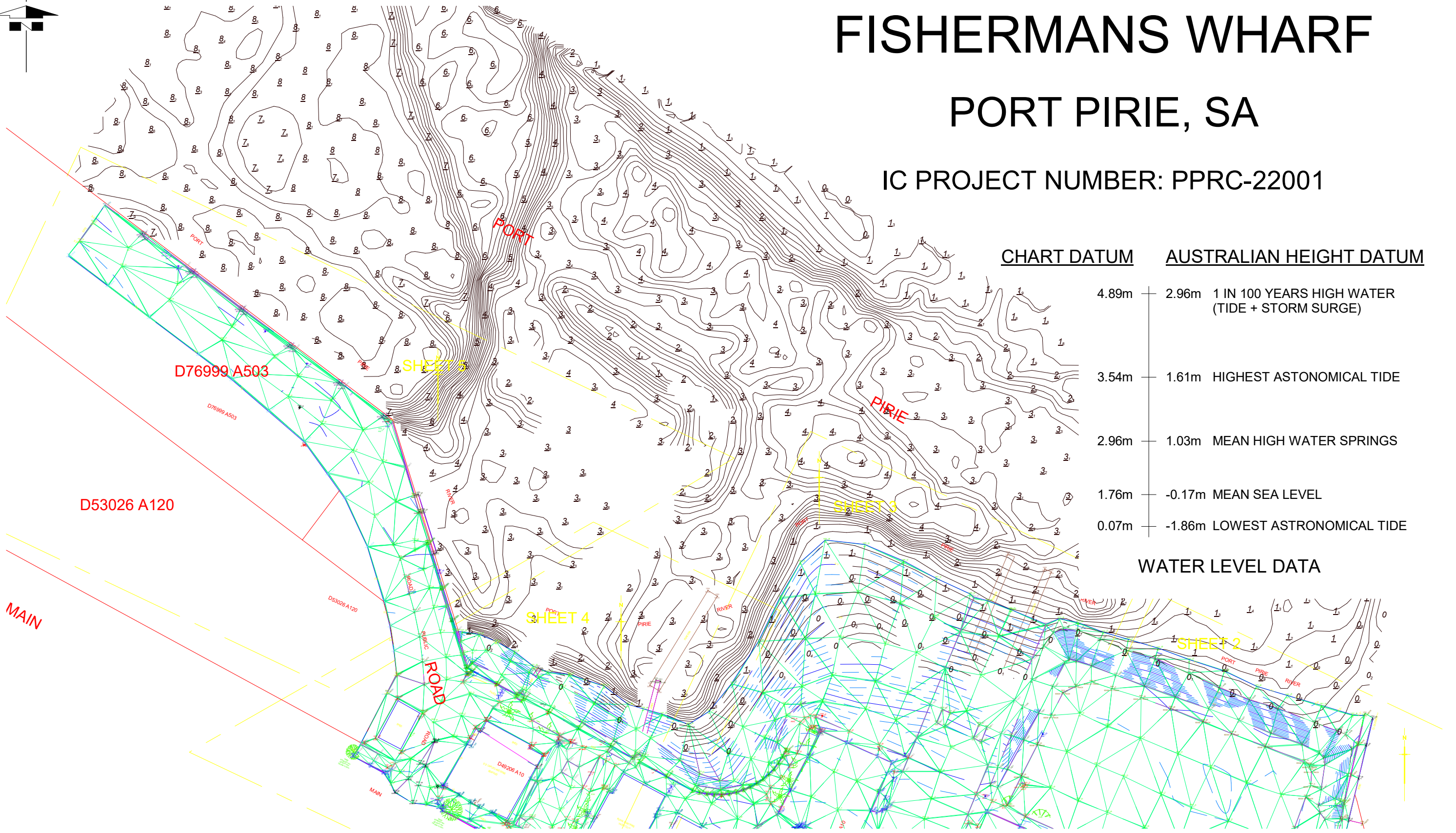


CHART DATUM

AUSTRALIAN HEIGHT DATUM

4.89m	2.96m	1 IN 100 YEARS HIGH WATER (TIDE + STORM SURGE)
3.54m	1.61m	HIGHEST ASTONOMICAL TIDE
2.96m	1.03m	MEAN HIGH WATER SPRINGS
1.76m	-0.17m	MEAN SEA LEVEL
0.07m	-1.86m	LOWEST ASTRONOMICAL TIDE

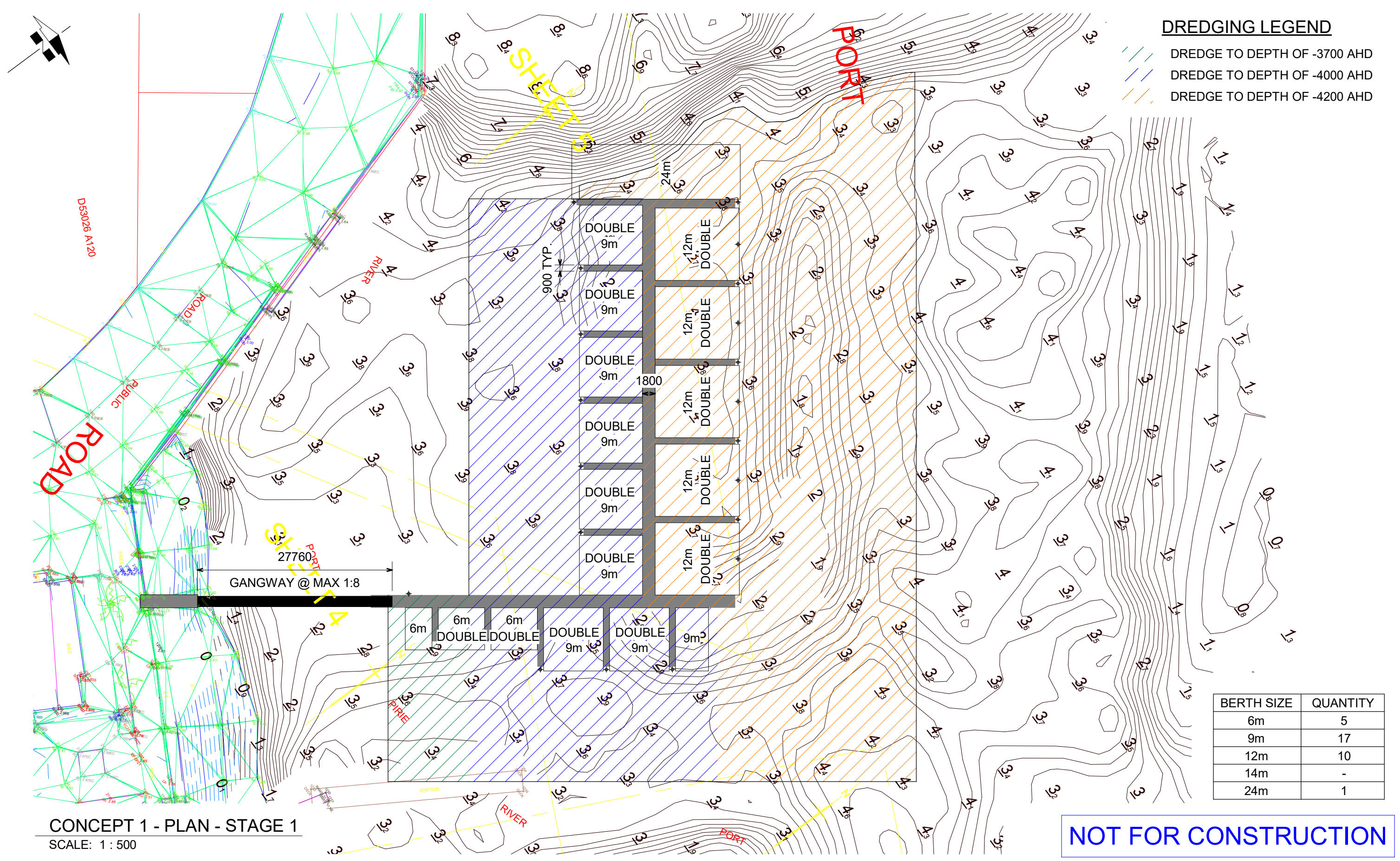
WATER LEVEL DATA

A	CONCEPT	06/02/2023	TP	TP	SS
No	DESCRIPTION	DATE	DRAWN	DESIGNED	APPROVED
REVISIONS					



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CLIENT PORT PIRIE REGIONAL COUNCIL				
TITLE COVER SHEET				
PROJECT No. PPRC-22001	SHEET No.	DRAWING NUMBER S001	REVISION A	SHEET A3



DREDGING LEGEND

- DREDGE TO DEPTH OF -3700 AHD
- DREDGE TO DEPTH OF -4000 AHD
- DREDGE TO DEPTH OF -4200 AHD

BERTH SIZE	QUANTITY
6m	5
9m	17
12m	10
14m	-
24m	1

CONCEPT 1 - PLAN - STAGE 1
SCALE: 1 : 500

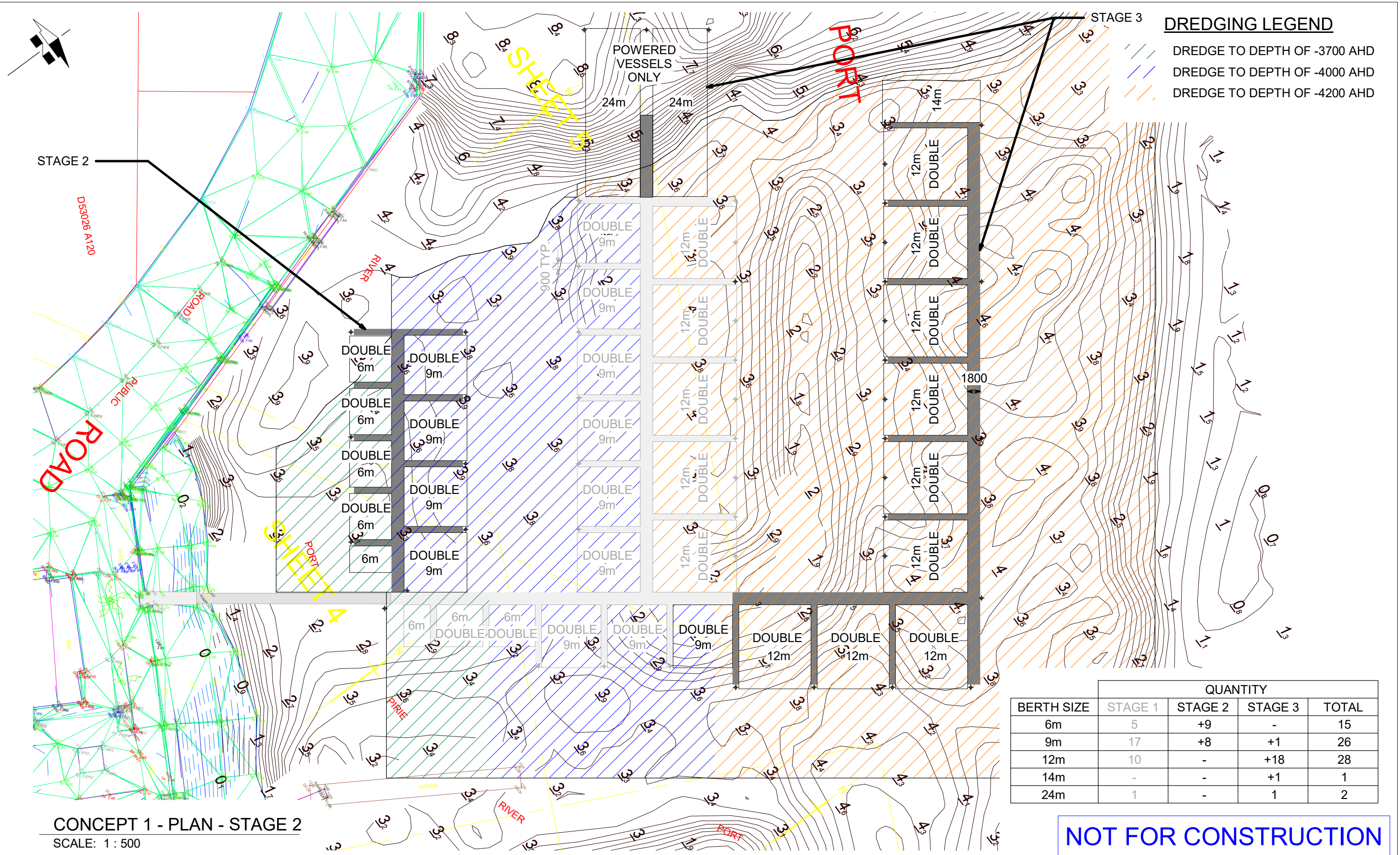
NOT FOR CONSTRUCTION

REVISIONS		DATE	DRAWN	DESIGNED	APPROVED
A	CONCEPT	06/02/2023	TP	TP	SS
No	DESCRIPTION				



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CLIENT	PORT PIRIE REGIONAL COUNCIL				
PROJECT	FISHERMANS WHARF				
LOCATION	PORT PIRIE, SA				
TITLE	CONCEPT 1 PLAN - STAGE 1				
PROJECT No.	SHEET No.	DRAWING NUMBER	REVISION	SHEET	
PPRC-22001		S211	A	A3	



CONCEPT 1 - PLAN - STAGE 2
SCALE: 1 : 500

BERTH SIZE	QUANTITY			
	STAGE 1	STAGE 2	STAGE 3	TOTAL
6m	5	+9	-	15
9m	17	+8	+1	26
12m	10	-	+18	28
14m	-	-	+1	1
24m	1	-	1	2

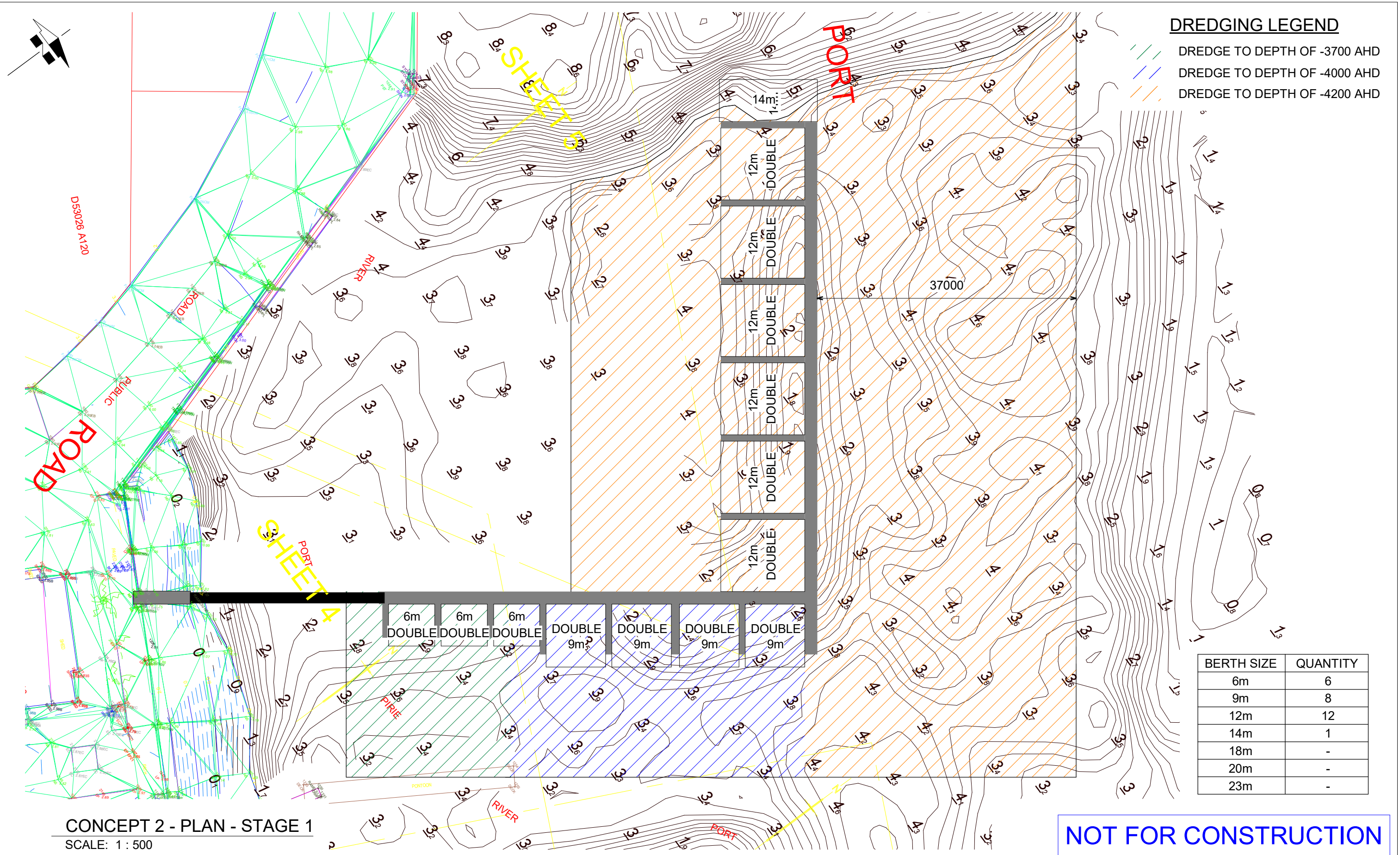
NOT FOR CONSTRUCTION

A	CONCEPT	06/02/2023	TP	TP	SS
No	DESCRIPTION	DATE	DRAWN	DESIGNED	APPROVED
REVISIONS					



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CLIENT	PORT PIRIE REGIONAL COUNCIL				
PROJECT	FISHERMANS WHARF				
LOCATION	PORT PIRIE, SA				
TITLE	CONCEPT 1 PLAN - STAGE 2&3				
PROJECT No.	SHEET No.	DRAWING NUMBER	REVISION	SHEET	
PPRC-22001		S212	A	A3	



DREDGING LEGEND

- DREDGE TO DEPTH OF -3700 AHD
- DREDGE TO DEPTH OF -4000 AHD
- DREDGE TO DEPTH OF -4200 AHD

BERTH SIZE	QUANTITY
6m	6
9m	8
12m	12
14m	1
18m	-
20m	-
23m	-

CONCEPT 2 - PLAN - STAGE 1
SCALE: 1 : 500

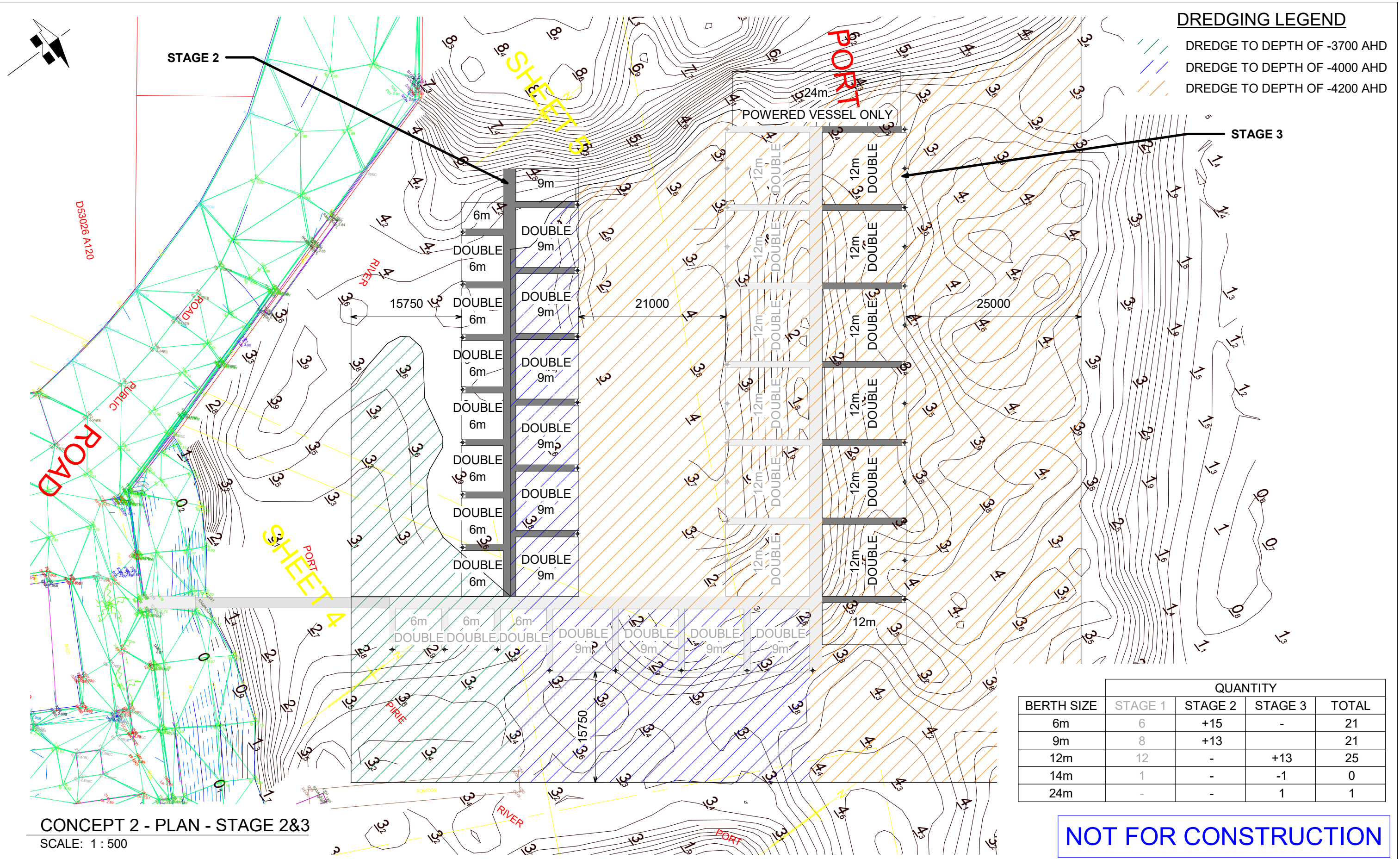
NOT FOR CONSTRUCTION

REVISIONS		DATE	DRAWN	DESIGNED	APPROVED
A	CONCEPT	06/02/2023	TP	TP	SS
No	DESCRIPTION	DATE	DRAWN	DESIGNED	APPROVED



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CLIENT	PORT PIRIE REGIONAL COUNCIL				
PROJECT	FISHERMANS WHARF				
LOCATION	PORT PIRIE, SA				
TITLE	CONCEPT 2 PLAN - STAGE 1				
PROJECT No.	SHEET No.	DRAWING NUMBER	REVISION	SHEET	
PPRC-22001		S221	A	A3	



DREDGING LEGEND

- ▬ DREDGE TO DEPTH OF -3700 AHD
- ▬ DREDGE TO DEPTH OF -4000 AHD
- ▬ DREDGE TO DEPTH OF -4200 AHD

BERTH SIZE	QUANTITY			
	STAGE 1	STAGE 2	STAGE 3	TOTAL
6m	6	+15	-	21
9m	8	+13	-	21
12m	12	-	+13	25
14m	1	-	-1	0
24m	-	-	1	1

NOT FOR CONSTRUCTION

CONCEPT 2 - PLAN - STAGE 2&3
SCALE: 1 : 500

REVISIONS		DATE	DRAWN	DESIGNED	APPROVED
A	CONCEPT	06/02/2023	TP	TP	SS
No	DESCRIPTION	DATE	DRAWN	DESIGNED	APPROVED



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CLIENT	PORT PIRIE REGIONAL COUNCIL				
PROJECT	FISHERMANS WHARF				
LOCATION	PORT PIRIE, SA				
TITLE	CONCEPT 2 PLAN - STAGE 2&3				
PROJECT No.	SHEET No.	DRAWING NUMBER	REVISION	SHEET	
PPRC-22001		S222	A	A3	

