

11.2 Nungamoora Design Options - Confidential

Report Reference	GC240423F11.2
Originating Officer	Coordinator Coastal Walkway – Alex Cortes
Corporate Manager	Manager City Activation – Charmaine Hughes
General Manager	General Manager City Development – Tony Lines

CONFIDENTIAL MOTION

That pursuant to Section 90(2) and (3)(b and d) of the *Local Government Act 1999*, the Council orders that all persons present, with the exception of the following persons: Chief Executive Officer, General Manager City Development, General Manager City Services, General Manager Corporate Services, Manager Office of the CEO, Manager City Activation, Manager City Property, Project Manager Infrastructure, Unit Manager Governance and Council Support and Governance Officer, be excluded from the meeting as the Council receives and considers information relating to The Coastal Walkway – Nungamoora Design Options, upon the basis that the Council is satisfied that the requirement for the meeting to be conducted in a place open to the public has been outweighed by the need to keep consideration of the matter confidential given the information relates to private information including private land valuation financial figures, consideration or discussion of the information in public would, on the balance, be considered personal under privacy law.

REPORT HISTORY

Report Reference	Report Title
GC231128F7.2	Coastal Walkway Nungamoora Design
GC231024R12.5	Coastal Walkway Nungamoora Design
GC221213F10.1	Coastal Walkway Gullies Report for Construction
GC220524F11.3	Coastal Walkway Gullies Report for Construction
SFRAC220426F8.1	Coastal Walkway – Prudential Report
GC220308F18.4	Coastal Walkway Update
GC220222F11.3	Coastal Walkway Update
GC211214F18.3	Coastal Walkway Update
GC211026R10.5	Coastal Walkway Concept Design Update
GC210622F03	Coastal Walkway Update – Field River
GC201124R10	Coastal Walkway Concept Design & Outcomes of Community Engagement
GC191126R07	Coastal Walkway Project

REPORT OBJECTIVE

To provide Council with an update on the structural options for the Nungamoora segment of the Coastal Walkway, and select a preferred solution for design and construction.

EXECUTIVE SUMMARY

The Coastal Walkway Project for Grey Gully and Kurnabinna Gully includes the Nungamoora section of boardwalk. This section of the walkway is a major component connecting the new Grey and Kurnabinna Gullies. Works to the walkway are required to facilitate the opening of this segment of the Coastal Walkway. A right of entry agreement was negotiated with the landowners of [REDACTED] until 30 June 2024 to facilitate these works.

A geotechnical assessment undertaken by CMW Geoscience identified and noted the potential for future slope instability through this area including the land at [REDACTED]. There is a likelihood that slope instability could compromise the walkway structure in the longer term, therefore careful consideration is required into the most appropriate long term design solution.

At the General Council Meeting 28 November 2023, Members resolved to further investigate longer-term design structure options instead of refurbishing the existing Nungamoora boardwalk. These options included investigating the potential purchase of a portion of private land at [REDACTED] to create an at-grade path.

Noting that potential solutions would take some time to resolve, and in order to ensure that the project opening of the Coastal walkway (likely to be June 2024) was not impacted, Council endorsed minor repairs for Nungamoora (guided by recommendations from the structural engineers) up to a maximum of [REDACTED]. These works will not disturb the existing footings and will allow the Nungamoora section to be safe and open to the public at the same time as Grey and Kurnabinna Gullies in June 2024.

Extensive design option investigations have been undertaken. Council could resolve to **refurbish the existing Nungamoora structure** at a cost of [REDACTED] as per the General Council report in November 2023 – noting that the [REDACTED] is already included within the existing construction contract for Cells 5 and 6 and represents no additional cost to Council. This option would provide a reduced design life for the structure (10–15 years). Standard monitoring and maintenance costs are included within the Coastal Walkway Asset Management Plan. This option would provide the easiest and most cost-effective short-term option for remediation.

Options have been investigated for **several types of bridge structures** to sit within the Nungamoora gully. Due to site conditions and feasibility study undertaken by an independent specialist, the best option would be for a truss bridge structure at about 25m in length at an estimated cost of [REDACTED]. This option would provide a long-term solution which would require minimal maintenance for around 50 years.

The potential **purchase of land** [REDACTED] has been explored to allow the **coastal walkway path to be built at grade**. As part of the potential purchase process, two opportunities exist:

- to retain the land to provide additional open space within the Hallett Cove suburb; or
- to subdivide and sell the balance of the land deemed not necessary.

A land valuation for [REDACTED] indicated a market value of [REDACTED] (refer **Attachment 1**). The landowners' expectations are [REDACTED], or [REDACTED] for the western portion of the land only (refer **Attachment 2**). The landowners' proposed offer is time limited and expires mid to late May 2024. Additionally, due to the geotechnical complications with the land, there could be extensive risks to Council to remediate the land in the order of [REDACTED] as well as the cost of the at-grade path estimated at [REDACTED].

The landowners state that should Council resolve not to purchase the land, the landowners will proceed with their plans to develop the land with immediate effect (May 2024) and withdraw access to their property to facilitate the building of a bridge using cranes on their land. However the right of entry agreement offers the landowners no ability to terminate prior to 30 June 2024.

Refurbishing the existing boardwalk structure (Option 1) would provide the most cost-effective short-term solution, with a design life of say 10-15 years and an already budgeted cost of [REDACTED]. Building a truss bridge (Option 7A) would be the best long-term option with a design life of at least 50 years but an additional budget requirement of [REDACTED] (comprising [REDACTED] from State Government Coastal Walking Trail Bridges grant funding quarantined in Reserves and [REDACTED] in additional borrowings in 2025-2026). A long-term bridge would avoid any community engagement and construction challenges in 15 years when a refurbished boardwalk finally needs replacing and the surrounding vacant land is fully developed, likely with premium coastal residences.

RECOMMENDATION

That Council:

- 1. Endorses the upgrade of the Nungamoora boardwalk by:**
 - a. Refurbishing the existing Nungamoora structure at an already budgeted cost of [REDACTED] noting a design life of 10-15 years.**
 - OR**
 - b. Replacing the existing Nungamoora structure with a 25m truss bridge at an additional estimated cost of [REDACTED], noting a design life of 50+ years and that a bridge would avoid any community engagement and construction challenges in 15 years when a refurbished boardwalk needs replacing, and funded from [REDACTED] from State Government Coastal Walking Trail Bridges grant funding quarantined in Reserves (as per GC240312R11.9) and [REDACTED] in additional borrowings in 2025-2026.**
- 2. In accordance with Section 91(7) and (9) of the Local Government Act 1999, orders that the finances and the personal and private land valuation information within the report, attachments and Minutes relating to the item 'Nungamoora Design Options: GC240423F11.2', having been considered in confidence under Section 90(2) and (3)(b and d) of the Act, except when required to effect or comply with Council's resolution(s) regarding this matter, be kept confidential and not available for public inspection upon the basis that the information relates to private information including private land valuation financial figure, is considered personal under privacy law. The disclosure of this information would, on balance, be contrary to the public interest because the information is considered personal under privacy law.**
- 3. Notes that this order shall operate until it is revoked, or a further order is made and will be reviewed every 12 months.**

DISCUSSION

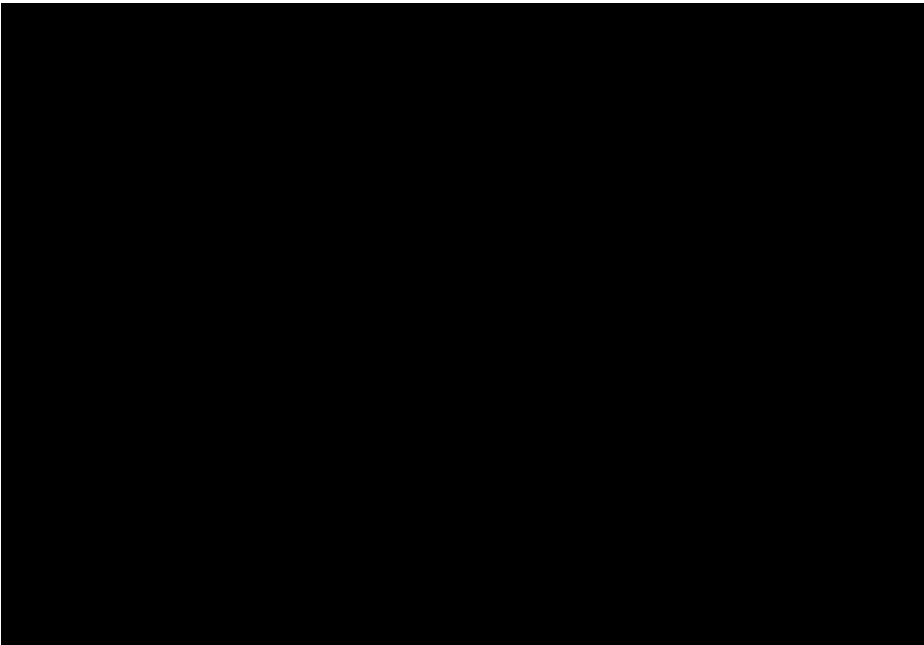
The City of Marion Coastal Walkway from Marino to Hallett Cove is a highly valued and important community asset that attracts visitors and contributes to the livability of the city.

The Nungamoora segment of boardwalk is a major component of the Coastal Walkway which connects the new Grey and Kurnabinna Gullies. The works to the walkway are required to facilitate the opening of this segment of the Coastal Walkway. To facilitate the works to Nungamoora and the works to Grey Gully, a right of entry agreement was negotiated with the landowners of [REDACTED] until 30 June 2024.

From the early concept of the project, concerns existed around the stability of the land around [REDACTED] Hallett Cove. Staff commissioned a geotechnical assessment by geotechnical specialist CMW, which confirmed the area as being highly unstable. The previous gully has been

historically filled with unclassified material and the location of the existing boardwalk on a steep and unstable slope has been affected by unclassified fill material which could compromise the existing walkway structure in the longer term.

The existing Nungamoora boardwalk section is approximately 60 metres long with some sections hard up against the property boundary.



Through the detailed design process for Coastal Walkway Cells 5 and 6, it was recommended by the lead designers that the existing boardwalk structure could be retained and repaired which would provide a design life of at least 10-15 years. The proposed design was aesthetically aligned to the boardwalks being delivered through the construction works to Cells 5 and 6, noting that due to the requirement to retain the existing footings, the boardwalk would be 1.2m wide not 1.8m wide.

At the General Council Meeting 28 November 2023, Members reviewed the recommendation to proceed with refurbishing the existing Nungamoora boardwalk and resolved to investigate longer-term design structure options. These options included investigating the potential purchase of a portion of private land at [REDACTED] [REDACTED] through either mutual negotiation or compulsory land acquisition, to facilitate the creation of an at grade path.

Council noted the length of time required to thoroughly investigate and deliver these options, and endorsed minor repairs for Nungamoora (guided by recommendations from the structural engineers) up to a maximum of [REDACTED] to ensure that the opening of the Coastal walkway in June 2024 was not impacted. These works will not disturb the existing footings. This will allow the Nungamoora section to be safely opened to the public at the same time as the opening of Grey and Kurnabinna Gullies, enabling the entire segment to be traversed.

OPTIONS

Staff have investigated a number of design structure solutions as alternatives to refurbishing the existing Nungamoora boardwalk. Aspect Studios, in partnership with Fleetwood (pedestrian bridge specialist), was engaged to develop a high-level feasibility study of construction options that could be achievable through this environmentally sensitive and difficult terrain. The design structure solutions include a Truss Bridge, Multi Span Girder Bridge, Swing Bridge, Single Span Girder Bridge and Steps.

The Feasibility Report, conceptual drawings including costings is included in **Attachment 3**.

Staff have also investigated the potential purchase of private land through mutual negotiations or via compulsory land acquisition with landowner/s [REDACTED] adjacent to Nungamoora.

A summary of the options is provided below together with pros and cons.

Option No.	Option Description	Pros	Cons	Recommended for further consideration
1	Retain existing alignment and refurbish boardwalk structural members	<ul style="list-style-type: none"> - Cost effective - Quick construction 	<ul style="list-style-type: none"> - Design life estimated at 15 years - Unlikely to be compliant to AS5100 or similar standards. - Ongoing concerns with scouring - Visual condition will be ok, but will not be same quality or width as other new boardwalks within the area or Field River 	✓
2	Purchase front of adjacent property, build at-grade pathway	<ul style="list-style-type: none"> - Good technical solution - Can achieve accessibility improvement to maintain 1.8m walkway width 	<ul style="list-style-type: none"> - Owners have rejected approach, but would sell some of the property for [REDACTED] - Does not resolve stability concerns with the upslope or downslope land 	×
3	Compulsorily acquire front of land, build at grade pathway	<ul style="list-style-type: none"> - Good technical solution - Can achieve accessibility improvement to maintain 1.8m walkway width 	<ul style="list-style-type: none"> - Ministerial recommendation to negotiate with owner in first instance prior to proceeding with compulsory acquisition - As per Option 2 	×
4	Buy whole property, construct Pathway and Reserve	<ul style="list-style-type: none"> - Provides additional amenity to the area - Good technical solution - Can achieve accessibility improvement to maintain 1.8m walkway width 	<ul style="list-style-type: none"> - Council will own risk of global stability for the whole site [REDACTED] in remediation works). - Additional open space / playground is not required - Very expensive to purchase entire site - Difficult to access and park at the site - Remediation of the land likely to be required 	×

5	Buy all land, build at grade path and sell remainder once completed	- As per Option 4	- As per Option 4, except some cost recovery.	×
6	Re-route the Coastal walkway around [REDACTED]	- Good technical solution	- Obtaining relevant land difficult to achieve. - Poor outcome for a coastal walking trail to deviate away from the coast. - Requires negotiation with multiple landowners	×
7A	Build New Bridge Structure (Truss Bridge)	- Solid, stable bridge design - Fully compliant solution to Bridge loading Code (AS5100) - Long term, durable solution for the next 50 years - Can be replaced at the end of its serviceable life - Bridge structure will be low profile and have low visual impact to block views	- Cranage and construction is difficult, however not impossible – likely to require temporary works for bridge installation. - Foundations are complex, however less risky than swing bridge option	✓
7B	Build New Bridge Structure (Swing Bridge)	- Long term, durable solution for the next 50 years - Can be replaced at the end of its serviceable life - Bridge structure will be low profile and have low visual impact to block views	- Cheaper bridge, however footing costs and risks with foundations are significantly higher than Truss bridge option. - High technical risk associated with footings due to significant horizontal forces - Not fully compliant to AS5100 – bounce and swing responsiveness - Larger footprint required due to back-span of cable stays - Slightly higher visual impact than truss bridge option	×
7C	Build New Bridge Structure (Multispan Bridge)	- Solid, stable bridge design - Long term, durable solution for the next 50 years - Can be replaced at	- Requires a central pier/footing mid-span within the gully which may not be technically feasible to achieve without	×

		the end of its serviceable life - Bridge structure will be low profile and have low visual impact to block views Fully compliant solution to bridge loading code	significant slope stabilisation works - Extreme technical risk	
8	Build New Boardwalk Steps	- Potentially cheaper than bridge options - Easier to maintain and construct – lightweight materials	- Same issues as per Option 1 Refurbish existing – scouring and stability risk is not addressed - Asset will remain at risk of failure - Amenity / access criteria not addressed – (worse outcome than current) - May increase risk of use for access to beaches – increasing safety risks - Higher number of touch points to the ground – environmental risk	x

The following section further explores a number of the above options.

Option 1 – Retain existing alignment and refurbish boardwalk structural members

This was one of the original options put forward by CMW on the slope and stability assessment report. This option looks to repair and replace existing boardwalk members without disturbing the existing footings or the existing alignment.

The work would include replacing the existing boardwalk members but keeping the width and height of boardwalk the same as existing. The existing width is approximately 1.2 metres and will be narrower than the remainder of the other sections now at 1.8 metres. All deck boards, existing posts to existing bearers and balustrades would be replaced.

Noting the limitations with respect to the slope stability and foundation performance discussed in detail in the previous report (GC231024R12.5), this option would result in a shorter residual design life for the timber structure of 10-15 years. Monitoring inspections and maintenance expenditure throughout the life cycle would be programmed through the Coastal Walkway Asset Management Plan.

The application was granted Development Plan Consent (DPC) on 6 June 2022 and would lapse if the full Development Approval isn't issued or extended by 6 June 2024. Whilst DPC has been

issued, the application is still awaiting Building Consent, and therefore full Development Approval has not yet been issued. There are also two land division applications in the system to divide the land (to reflect the approved land use) – these have not yet been approved.

If the property at [REDACTED] was approved and developed, any future longer-term design solutions at the end of the asset life such as a bridge or at-grade path could be problematic due to access and engagement challenges.

From a financial perspective, the construction costs for the Nungamoora Street boardwalk were included within the final price for the Cells 5 and 6 construction projects as presented at the General Council meeting on 13 December 2022 (GC2201213F10.1).

Option 3 – Compulsory Acquisition a portion or all of [REDACTED] [REDACTED] (objective to build at grade path)

The cost of installing an at-grade path would be approximately [REDACTED]. Costs include fencing on both sides of the walkway and demolition of the existing boardwalk structure.

Council staff engaged CBRE to undertake a valuation which specified a market value of [REDACTED]. Staff have regularly communicated with the property owners to understand their appetite to sell a portion of or all the land (around 8-10m of the site's frontage) to accommodate the path being built at grade. The landowners immediately refused to sell this portion of the land due to the direct impact on their land division and dwelling plans as all 5 allotments and 4 of the site dwellings would be impacted.

On 25 March 2024, the landowners wrote to staff presenting a proposal for the acquisition of part or all their seafront land to facilitate the construction of an at-grade path. The owners have stated they obtained their own valuations with appraisals between [REDACTED]. It should be noted that Development Plan Consent has been issued for a development which seeks to construct 5 dwellings, 4 of which front the coast.

The landowners have confirmed that they will not consider the sale of a small portion of land to facilitate the path, rather a larger portion of sea front land, or the entire block.

In early January 2024, staff wrote to the State Government (Minister for Infrastructure and Transport, Minister for Local Government) seeking a meeting to discuss requirements under a potential compulsory acquisition to purchase [REDACTED] to align our Coastal Walkway upgrade to the State Government's Metropolitan Coast Park Plan.

In response to Council's request, The Office of Local Government responded with the following declaration.

I understand that the Council is redeveloping the Coastal Walkway and has met challenging topography and engineering issues around [REDACTED] and is: therefore, investigating construction options for the walkway, including options that would require access to private land at this location. I also understand that the Council may have held, or is considering, initial discussions with landowners regarding the Council's possible acquisition of land to enable the construction of the Coastal Walkway.

Outside of any such discussions, I understand that the Council seeking advice on options moving forward if negotiations with landowners were not successful, and whether there would be ministerial support for compulsory acquisition of the land in this circumstance.

As you are aware, the Land Acquisition Act 1969 (the LA Act) sets out South Australia's compulsory land acquisition process and the compensation that owners and tenants are entitled to. The LA Act applies to and in relation to every acquisition of land authorised by a 'special Act' authorising the compulsory acquisition of land.

Under section 191 of the Local Government Act 1999 (the LG Act) provides that a council may, with the Minister for Local Government's written approval, acquire land compulsorily, and the LA Act applies to the acquisition of land under section 191 of the LG Act.

Noting that under section 190 of the LG Act, a council may acquire land by agreement, I encourage the Council to seek to obtain any necessary land by agreement, in the first instance. If, following this process, the Council does not reach agreement with the landowners, the Council may request the Minister's approval to acquire necessary land compulsorily pursuant to section 191 of the LG Act, at that time. Under section 4 of the LG Act, 'land' means 'a legal estate or interest in, or right in respect of, land', therefore this could include fee simple, rights of way or easements.

The Minister is not able to provide support or approval to compulsory acquire land prior to receiving such an application from a council.

I advise that if a council requests the Minister's approval for compulsory acquisition of land that it should include the following information, for the Minister's consideration—

- *Clearly identify the land proposed to be compulsorily acquired.*
- *Describe how the purpose of the acquisition of the land reasonably appears to further the objects of the LG Act.*
- *Demonstrate that the subject land is reasonably required to achieve the objects of the LG Act in the particular case.*
- *Demonstrate that the purpose for which the land is to be acquired is consistent with the functions of councils under the LG Act.*
- *Describe which estate or interest in that parcel of land must be taken by the Council to achieve those objects and purposes (i.e. an estate in fee simple or some lesser interest like a right of way).*

The Council may wish to seek legal advice on this matter.'

In summary, compulsory purchases are seldom undertaken by local government due to both the cost implications and political sensitivities involved. Legal advice has been sought and has advised that Ministerial approval would be a requirement of any compulsory purchase process and that whilst a positive outcome may be possible due to the state-wide significance of the Coastal Walkway and no case law exists that impacts to prohibit or otherwise prevent the compulsory acquisition, appetite for such an action would need to be tested with Government.

It is therefore not recommended that this option be explored further at this stage due to the political sensitivities.

Option 4 – Acquisition of [REDACTED] by negotiations with owners (objective to convert the land into open space and an at-grade path)

Geotechnical assessment undertaken by CMW is a major factor in considering purchase and any re-sale of the land. Council has been advised that an engineering solution such as a retaining wall may be required to remediate and secure the land for future development, which could cost [REDACTED]

The Open Space Framework guides and prioritises open space projects and upgrades across the City of Marion area. A mid-life review was recently presented to Council and is out for public consultation. The Plan does not identify an overall lack of open space in Hallett Cove, although no playground exists within this small pocket that is slightly land locked between the gullies, Cove Road and the rail line. The closest open space is not suitable for a playground or any other recreation activity. The user catchment would be surrounding residents and potential trail users.

As the user catchment is so small, if a playground was to be considered by Council, staff recommend that a local level playground would be appropriate. In addition to the [REDACTED] land purchase and engineering remediation, a playground would cost around [REDACTED] plus general site remediation due to the poor quality of the land, irrigation and landscaping, which could cost a further

Should Council resolve to install a larger neighbourhood playground, this would add another [REDACTED]. These figures would not include connecting water to the area.

Council could alternatively consider the delivery of an active area for local recreation which would allow for seating, a drinking fountain, natural shade and an irrigated, grassed area. In addition to the cost of purchase, etc., the active area would cost [REDACTED]. Again, these figures would not include for connecting water to the area.

This approach would be extremely expensive due to the high costs of purchasing the land [REDACTED] plus the likely site engineering remediation [REDACTED], design and delivery of an Open Space solution [REDACTED].

Option 5 – Acquisition of [REDACTED] by negotiations with owners (objective to subdivide for an at-grade path and sell the remainder of the land)

Staff commissioned CBRE to undertake a land valuation report of the land. CBRE have provided a report which has concluded that the market value for the property is estimated at [REDACTED] for the entire block of land.

Over the last few months, staff have engaged in regular discussions with the landowners. On 25 March 2024, the landowners provided Council with a proposal for two options for consideration for the sale of the land. It should be noted the at the owners have stated prices are non-negotiable and are time limited.

Option A - Acquisition of whole of [REDACTED]

The landowners have proposed a price of [REDACTED] to purchase the entirety of [REDACTED]. The owners have stated that:

- This price is non-negotiable.
- Should Council resolve not to purchase the land, the landowners will proceed with their plans to develop the land with immediate effect (May 2024).
- Have stated that this reflects the true market value of the land upon being subdivided into 4 blocks (**Attachment 2**), and that they have received valuations for each block of up to [REDACTED] each.

Option B - Acquisition of Smaller Seafront Parcel with Subdivision:

Alternatively, the landowners have offered a smaller land parcel across the ocean frontage of [REDACTED] as illustrated in **Attachment 2** for [REDACTED] (noting that CBRE's market valuation for the whole site is [REDACTED]).

The owners would then propose to subdivide the residual land into two blocks, in addition to the rear block, for potential development or resale to the public for residential homes. The owners believe that the value of the land in the area marked 'Reserve 7' (**Attachment 2**) is not proportional to the value of the remaining land as most of the value of the land is in that waterfront allotment and that once the houses are pushed back into the rear lots, the value of the land drops dramatically.

Purchasing the smaller seafront parcel for [REDACTED] would not represent best value for council as the entire block has been valued at [REDACTED].

Additionally, significant remediation works of [REDACTED] would be required due to the instability of the land.

The owners have advised they are pushing forward with the site works and land development. They also state that should their offer not be accepted; they anticipate commencing development of the site "mid to late May 2024" and advise that the current site will no longer be available or offered to [REDACTED].

Council to facilitate the building of a bridge using cranes on their land. However the current Right of Entry Agreement offers the landowners no ability to terminate prior to 30 June 2024.

This option is not recommended due to the excessive cost of purchasing the land noting the above valuation advice received and the unknown risks around the potential for extensive site remediation.

Option 6 – Re-route the Coastal walkway around [REDACTED]

Following extensive discussions with the landowner of [REDACTED] the landowners have refused to sell such a segment of their land to facilitate the creation of a path around their potential development.

Even if it were possible to purchase the land, this option would provide a poor design solution as the path would leave the coast and run between homes and across a driveway. With the significant level differences, this option is not considered practical.

Option 7 – Build a New Bridge Structure

Staff engaged Aspect Studios, the lead designer for Cells 5 and 6, together with Fleetwood Urban, and Innovis (Engineers) and RLB (cost manager) to advise on the options analysis and high-level pricing for the construction of a bridge in this location given the challenging ground conditions and limited access.

The consultants have provided feasibility considerations, preliminary concept designs and cost estimate for a new pedestrian bridge located at the end of Nungamoora Street, proposed as a replacement for the existing boardwalk structure. The consultants have considered high-level investigations of various bridge options including a Truss bridge, Multi-Span Girder Bridge, and a Swing Bridge.

Bridge Option	Total Cost
Truss Bridge	[REDACTED]
Multi Span Girder Bridge	[REDACTED]
Swing Bridge	[REDACTED]

These high-level estimates include the cost of the bridge/boardwalk option, common siteworks, Geotech assessment, professional fees for design/tender and construction phase, escalation for a post 2024 build and additional City of Marion contingency.

Truss Bridge

The consultants have recommended that a 25m long proprietary truss bridge using AS5100 and 5kPa as a required standard is the most appropriate option. Truss bridges are suitable for spans of between 18 and 45 metres and can be largely pre-assembled off site (including balustrade and deck) and transported ready for installation.

A significant crane (+/-300 tons) would be required for the installation of the fully assembled truss bridge. The positioning of the crane would be temporarily placed at the intersection of Nungamoora and Murnada Street minimising construction risk causing less disturbance to the natural ground as identified within the slope stability report.

Utilising a smaller crane (+/-230 tons) could be possible (subject to landowners consent) which seems unlikely given their current position and appetite to develop the site quickly. While possible, this option would require further investigation and advice from a geotechnical engineer.

This option is estimated to cost [REDACTED]. Whilst this is the most expensive bridge option, it provides the best design solution given the complexity of the site and unstable land.

Multi-Span Girder Bridge

The Multi-Span Girder option was discounted as this design would require a mid-support. Based on design drawings, this mid-support will be situated within the area identified as unconsolidated fill which is not recommended.

Swing Bridge

A swing bridge design is typically lighter, less invasive and more economical than larger fixed structures. These bridges are typically hand-assembled, piece by piece, making them a good option for restricted areas where the site is quite steep and surrounded by difficult to access terrain.

However, the application of the recommended AS5100 (Bridge Design – Scope & General Principles) is prohibitive for a swing bridge. The main issue with AS5100 besides the excessive loading, is frequency compliance. With a swing bridge, the structure would need to be much heavier to hold it down, and excessive wind stays would be required to keep it rigid and within standard requirements. The extra weight would make the typical hand installation process prohibitive.

Whilst this option is the cheapest bridge solution, due to the concerns around the Australian Standards and extra required weight making the hand install process prohibitive, this option is not recommended by the designers.

Option 8 – Build New Boardwalk Steps

In lieu of a bridge, consideration has been given as to whether a set of new steps could be designed to fit into the gully. This option is estimated to cost [REDACTED].

Whilst this step option is the cheapest, a truss bridge provides a more cost-effective long-term solution. This is backed up by significantly improved accessibility, minimised environmental impact, reduced future maintenance liabilities as well as reduced construction risk.

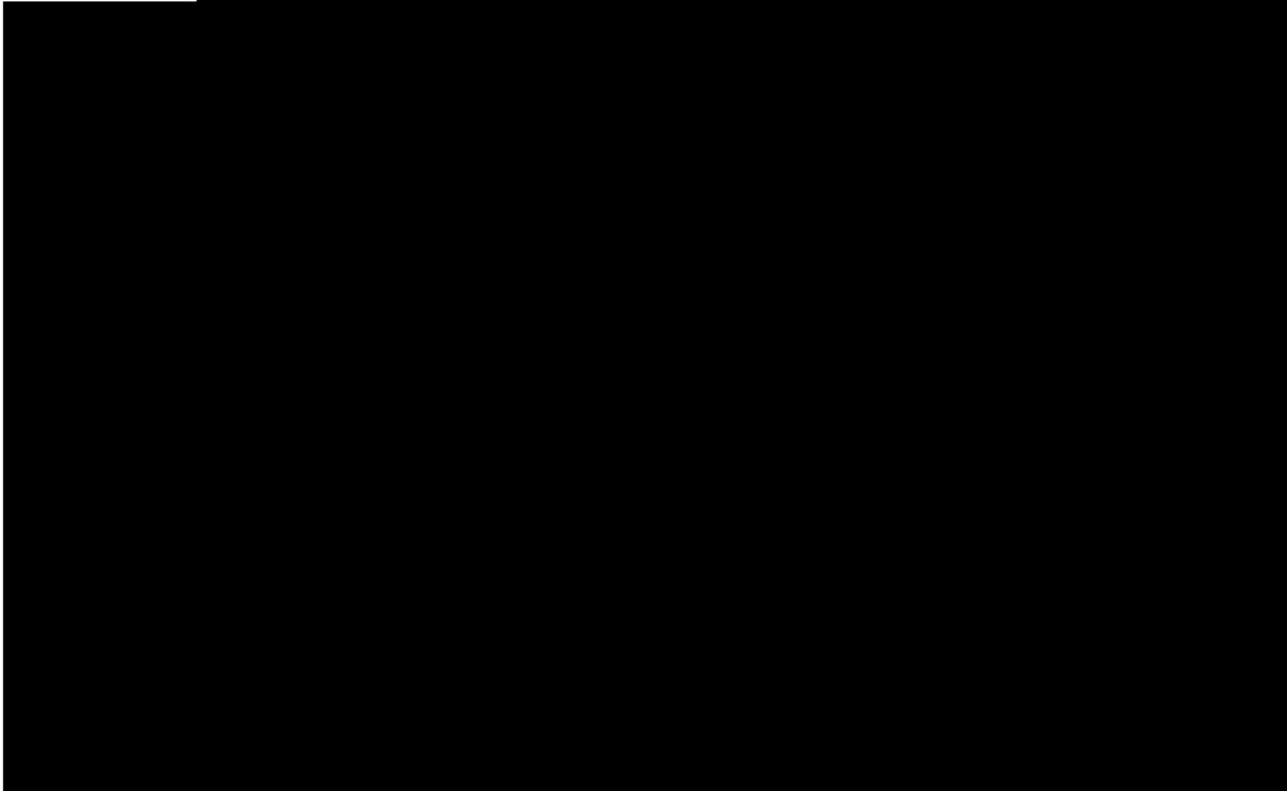
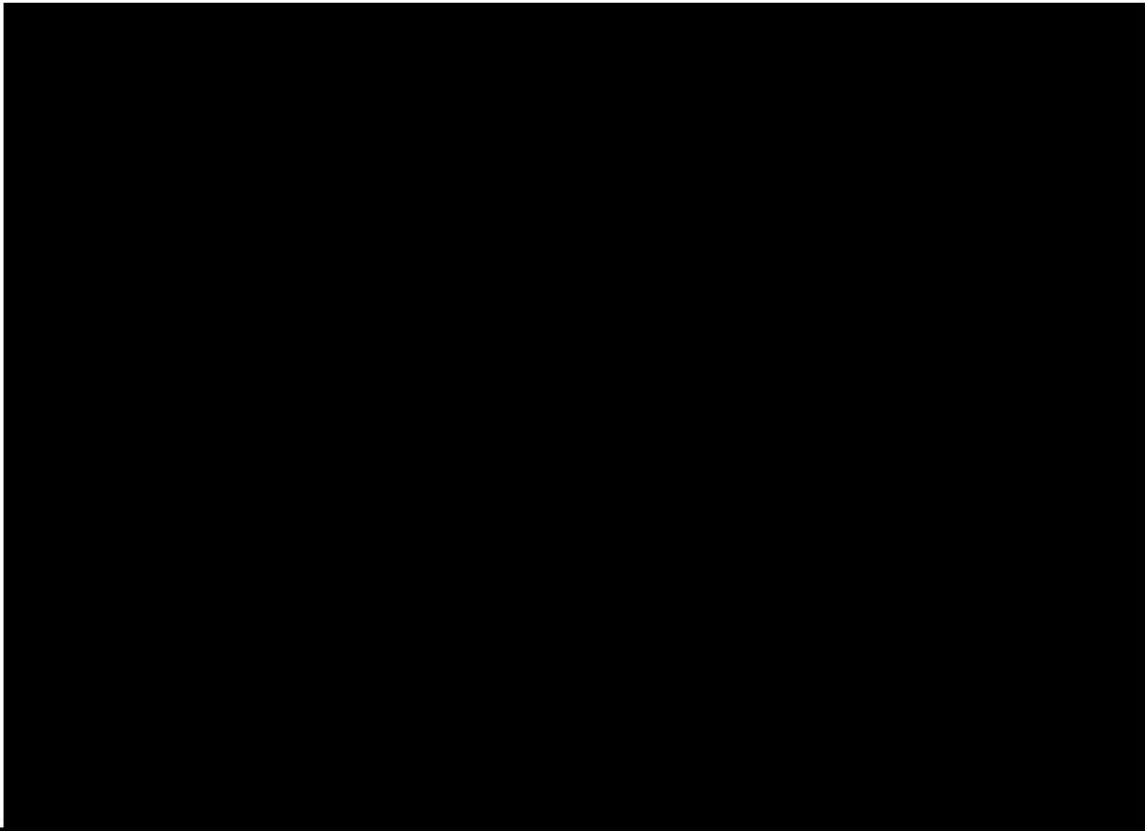
CONCEPT DESIGN FOR TRUSS BRIDGE

A preliminary concept footing design has been prepared without geotechnical design investigations and advice. The footing design assumes that founding material /conditions are like that of Kurnabinna bridge. No coordination of the abutment design has been undertaken with the bridge contractor. The installation of the recommended truss bridge is based on crane pad option C (Nungamoora Street). Any establishment for a piling rig (or other) associated with foundation works for crane pad will require a separate establishment as required. A contingency of 10% has been included for such items.

From a construction methodology perspective, whilst three potential locations for the crane site have been included, due to the landowners' written confirmation that approval would not be provided for access to their land during a bridge construction, the crane would need to be situated on Nungamoora Street for the truss bridge installation. Therefore, a larger crane (300T) would be required to operate from this distance.

Use of this location would require the closure of Murnada Street (No Through Road) for the duration of the installation (several days). Residents would need to be notified and access their vehicles from Nungamoora Street east. The overhead powerline would need to be deactivated and removed for installation and then reinstated.

Figure 2: Options for Crane Access (plan view)



The expected life cycle and design life of the truss bridge is 50 years.

The advantage of installing the truss bridge with the crane pad located on Nungamoora Street is that construction will be possible should the landowners of [REDACTED] proceed with their plans to develop their land. Also, if future replacement or significant works are required at the end of the truss bridge life, a future Council should be able to access the asset using the current crane technology.

FINANCIAL IMPLICATIONS

Should Council select Option 1 to refurbish the existing boardwalk at a cost of [REDACTED] no further funding will be required, as the costs are contained within the existing construction contract and the works will be commenced immediately.

Should Council endorse the estimated additional funding of [REDACTED] required for Option 7A Truss Bridge, the cost of servicing the additional annual loan repayments over a 10-year loan term is estimated at [REDACTED] (interest [REDACTED] and principal of [REDACTED] to meet overall repayments of [REDACTED] including interest of [REDACTED].

The forecast increase in rates required in 2025-2026 to service the additional funding for this bridge project should no other source of funds be identified equates to an increase in rates of approximately 0.33% .

A bridge project will not impact on funding for the draft 2024-2025 ABP set to be adopted in June 2024. Further modelling and consideration of Council's LTFP beyond 2024-2025 will be required. However, the indicative likely impact is manageable with Council's key financial sustainability indicators of Net Financial Liabilities Ratio, Debt Servicing Ratio and Operating Surplus ratio likely to remain within target bandwidths over the 10 years. The Net Financial Liabilities Ratio may come close to Council's targeted upper target of 50% for one year but fall back within its targeted bandwidth for the remainder of the LTFP.

ATTACHMENTS

1. Attachment 1 - Valuation Report [REDACTED] [11.2.1 - 44 pages]
2. Attachment 2 - Correspondence from Landowners [REDACTED] 11.2.2 - 9 pages]
3. Attachment 3 - Coastal Walkway - Nungamoora Concepts with Costings [11.2.3 - 58 pages]