



Additional information

Ordinary Meeting of Council

Wednesday, 24 June 2020, 6.00pm

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**C2006-11 MCCABE PLACE, NO. 2-4 (LOTS 9, 10 & 11), NORTH FREMANTLE -
10 TWO STOREY GROUPED DWELLINGS AND 1 THREE STOREY
GROUPED DWELLING WITH UNDERCROFT CAR PARKING (TG
DA0498/19)**

Additional information 1 – Site Photos



Additional information 2 – DAC Minutes

CITY OF FREMANTLE
DESIGN ADVISORY COMMITTEE MEETING HELD IN THE
GARDEN ROOM, FREMANTLE OVAL
DATE 14 October 2019 2-5pm

DAC MINUTES

COMMITTEE MEMBERS

Eamon Broderick
Sam Klopper
Geoffrey London
Jennie Officer

CITY OF FREMANTLE

Ben Talarczyk Acting Manager Development Approvals
Justin Lawrence Coordinator Statutory Planning

APPLICANTS

Jono Harris – Harris Jenkins Architects

APOLOGIES

Paul Garbett Director Planning and Projects
Julia Kingsbury Manager Development Approvals
Dominic Snellgrove DAC Member

1. ACTION ITEMS

2	No.2-4 McCabe Street, North Fremantle - The Coordinator Statutory Planning made a presentation to the Committee. - The Applicant made a presentation to the Committee.
	<u>CABE DESIGN PRINCIPLES</u> CHARACTER (A place with its own identity) - The concept and vision of this proposal is generally supported. - Overall the scale and massing of the development respond positively to the existing and desired context and character of this immediate locality of North Fremantle. CONTINUITY AND ENCLOSURE (A place where public and private spaces are clearly distinguished) - N/A QUALITY OF PUBLIC REALM (A place with well-designed, high quality public spaces) - N/A EASE OF MOVEMENT (A place that is easy to get to and move through) - Consideration should be given to introducing a new north south link to allow for better connectivity for internal pedestrian movements to

	McCabe Street rather than only McCabe Place, - Review of the lift and stairwell sizes for all dwellings should be considered to enable future universal access and ease of potential elderly occupants, and general ease of access within units up and down narrow stairwells LEGIBILITY, ADAPTABILITY, DIVERSITY (A place that is easy to navigate, a place that can change, a place with variety and choice, is easy to navigate) - Further consideration should be given to the design and generosity of the pedestrian entrance from corner of McCabe Street and Place, - Legibility of the entrances to the individual units in the southern complex should be increased and made easily identifiable. - There was strong encouragement to increase floor to ceiling heights which will help improve the internal amenity and volume of the units. OVERALL DESIGN QUALITY AND FUNCTIONALITY - There is general support for the overall design quality and functionality APPROPRIATENESS OF MATERIALS AND FINISHES - Again general support for the chosen materials and finishes WHAT ARE THE STRENGTHS - The configuration of the units on the site is good, - The forming of the buildings works well, and - The general level of amenity proposed is good HOW CAN THE PROPOSAL BE IMPROVED - Improve the legibility of the entrance at the corner of McCabe Street and McCabe Place from the elevated pedestrian concourse, - Introduction of a secondary pedestrian path/ link from the middle common property concourse directly to McCabe Street, - Increasing mature vegetation and Deep Planting Zones over the development site is strongly encouraged, - The southern building complex is not as well considered or designed as the northern units and lifting this building higher to allow for more presence and obtaining potential views from roof top locations, - The first floor internal common property concourse / access way needs improvements to ensure privacy for facing and adjacent units, to help ease pedestrian experiences and way finding to individual dwellings - Further investigation is required regarding a) potential shading devices / treatments for the upper floor windows to the northern elevation of all dwellings, b) the impact of prevailing winds on the roof terrace of the units needs to be considered c) Visual privacy and use of landscaping or alternative screening treatments in between roof terrace areas of all units, and d) Fire separation should be considered for the southern boundary. <u>RECOMMENDATION</u> The Design Advisory Committee, having reviewed the current revision of the pre-lodgement proposal for 2-4 McCabe Street, North Fremantle, invites the
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	applicant to present a package that includes plans that respond to its comments above and provides further details on the proposed architecture of the development to assist its progression towards a formal Planning Application submission.
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2. NEXT MEETING

11 November 2019

CITY OF FREMANTLE
DESIGN ADVISORY COMMITTEE MEETING HELD IN THE
GARDEN ROOM, FREMANTLE OVAL
DATE 13 January 2020 2.00-5.00pm

DAC MINUTES

COMMITTEE MEMBERS

Dominic Snellgrove (Chair)
Sam Klopper
Jennie Officer

CITY OF FREMANTLE

Julia Kingsbury Manager Development Approvals
Paul Garbett Director Planning and Projects
Tom Geddes Senior Planning Officer
Catherine Sullivan Planning Officer
Josh Loveridge Planning Officer

APPLICANTS

- Item 1 – Phillip Stejskal (Phillip Stejskal Architecture)
Item 2 – Jono Harris (Harris Jenkins Architect)
 - Zac Wood (Harris Jenkins Architect)
 - Sheldon Day (Yolk Property Group)
Item 3 – Ben McCarthy (Planning Horizons)
 - Rob Skipworth (Horizon Designs)
 - Kathy Prosser (Client)
 - Kevin Williams (Client)
Item 4 – Felipe Soto (Hillam)
 - Sean Van Der Poel (Hillam)
 - Murray Casselton (Element)
 - Catherine Atoms (Element)
 - Trent Durwood (Megara)

APOLOGIES

Eamon Broderick
Geoffrey London

1. ACTION ITEMS

1	408 South Terrace, South Fremantle – Proposed 4 Storey Mixed Use Development (NB) • The Manager made a presentation to the Committee. • The Applicant made a presentation to the Committee.
	<u>CABE DESIGN PRINCIPLES</u> CHARACTER (A place with its own identity)

	• The project is a well-considered, thoughtful and developed proposal incorporating the reuse of a heritage structure along with high quality residential units. • Facade texture, permeability and operability and response to environmental conditions including low level west solar are well considered. • The proposed massing appears to maximise the site to the detriment of improved solar access and ventilation. • Whilst access to north light has been improved it remains constrained by virtue of the density, massing and stacking. • Some residuals concern with how the new interfaces with and distinguishes itself from the old. The two currently merge rather than converse independently. • The absence of communal space is considered to be mitigated by the scale of the development and the location. CONTINUITY AND ENCLOSURE (A place where public and private spaces are clearly distinguished) • The proposal includes a distinct and legible residential entry, however further consideration should be given to separating the café/office amenities (toilets) from the residential lobby. • The corridors are well ventilated and lit. QUALITY OF PUBLIC REALM (A place with well-designed, high quality public spaces) • The ground floor including the outdoor terrace/al fresco area engages well with South Terrace and Douro Road. EASE OF MOVEMENT (A place that is easy to get to and move through) N/A LEGIBILITY, ADAPTABILITY, DIVERSITY (A place that is easy to navigate, a place that can change, a place with variety and choice, is easy to navigate) • The proposal includes a distinct, legible and improved residential entry. OVERALL DESIGN QUALITY AND FUNCTIONALITY • The project is well considered in its stacking and articulated volumes with the adaptive reuse of the heritage building and introduction of high quality apartments. • The project incorporates a well thought out landscape design. • There is general support for the overall design quality which has the ability to develop an under-utilised site in a 'gateway' location. APPROPRIATENESS OF MATERIALS AND FINISHES • The selection of materials, including timbers responds positively to the location and the environment.
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	• A review of the materials used to conserve the heritage building and the new additions may assist to greater distinguish between the new and the old. • The Panel is confident that the quality demonstrated in the proposal will be delivered. WHAT ARE THE STRENGTHS • The quality of the proposal and its potential to make a positive contribution to the southern gateway into Fremantle. • The stacking and articulation of the volumes (although concerns are raised in regard to the 4th storey in this context). • The response to the location and environment. HOW CAN THE PROPOSAL BE IMPROVED • The bulk and scale of the project has been compromised by the maximisation of space evidenced by the plot ratio excess and height discretion sought. Consideration should be given to deleting the top storey. • Access to northern light is still constrained by virtue of the density and massing. If massing is not reconfigured consideration should be given to roof lights or other measures to improve solar access. • The interface between the retained building and the new building should be reviewed to ensure the buildings converse independently. <u>RECOMMENDATION</u> The Design Advisory Committee, having reviewed the proposal for 408 South Terrace, South Fremantle, advises that it generally supports the proposal subject to the applicant having consideration for: 1. A reduction in the bulk and scale of the development having consideration for the plot ratio and building height requirements of the Planning framework. 2. Further improvement of the internal residential amenity including (but not limited to) the separation of the W/C amenities from the residential lobby, access to northern light and maximum outlook. 3. Further refinement of the connection between the retained building and the new building that distinguishes between the new and the old whilst maintaining the integrated design approach.
2	2-4 McCabe Street, North Fremantle – Proposed Grouped Dwelling Development (TG) • The Senior Planning Officer made a presentation to the Committee. • The Applicant made a presentation to the Committee.
	<u>CABE DESIGN PRINCIPLES</u> CHARACTER (A place with its own identity)

	• The development responds positively to the existing context and character of this immediate locality of North Fremantle. • The proposal represents a strong urban response and delivers high quality town houses which are a well valued housing typology. CONTINUITY AND ENCLOSURE (A place where public and private spaces are clearly distinguished) • Streetscape response to McCabe Street is active, engaged and includes individual entry gates to town houses. QUALITY OF PUBLIC REALM (A place with well-designed, high quality public spaces) • N/A EASE OF MOVEMENT (A place that is easy to get to and move through) • The introduction of a secondary north south link to enhances access and legibility through the development. • Improved legibility of individual pedestrian entrances via McCabe Street. • The clearance from the lift access doors in the garages appears to be constrained and may impact on internal access. LEGIBILITY, ADAPTABILITY, DIVERSITY (A place that is easy to navigate, a place that can change, a place with variety and choice, is easy to navigate) • N/A OVERALL DESIGN QUALITY AND FUNCTIONALITY • The proponent is to be commended for addressing the comments of the DAC from its pre-lodgement review. • The Panel is confident that the quality shown in the application can be delivered successfully. • The inclusion of north facing living and outdoor spaces for both blocks of town houses enhances the amenity for future occupants. APPROPRIATENESS OF MATERIALS AND FINISHES • The Panel is confident that the quality shown in the application can be delivered successfully. WHAT ARE THE STRENGTHS • The strong urban and streetscape response and ability to deliver high quality town houses. • Inclusion of a secondary access into the central space from McCabe Street enhances pedestrian access and legibility. • The inclusion of integrated landscaping and enhanced deep soil zones. • The internal amenity of the town houses.
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	HOW CAN THE PROPOSAL BE IMPROVED • Potential for the upper floor bathroom to become a semi-ensuite for Bed 2 of each town house. • Potential for an openable window to be included in the stairway of each town house to promote outlook and natural ventilation. • The inclusion of additional sun shading to north facing openings to reduce the impact on these openings. • The roof terraces should be expressed as separate and independent elements. This may become a requirement upon subdivision. • Details are required to demonstrate how the AC condenser units on the roof and in the rear courtyard will be screened from view from other town houses within the development and the street. <u>RECOMMENDATION</u> The Design Advisory Committee, having reviewed the proposal for 2-4 McCabe Street, North Fremantle, advises that it supports the proposal subject to: 1. Minor amendments to the layout and function of the town houses being considered to further enhance the amenity for future occupants. These amendments include consideration of a connection between Bed 2 and the bathroom, an openable window within the stairway and additional north facing sun shading. 2. Final details of how the air conditioning condenser units are to be screened for view of adjoining town houses and the street. 3. Final details of the materials and finishes, demonstrating the retention of the proposed high quality finishes being submitted prior to the issue of a Building Permit.
3	19 Essex Street, Fremantle – Proposed 4 Storey Tourist Accommodation Development • The MDA made a presentation to the Committee. • The Applicant made a presentation to the Committee.
	<u>CABE DESIGN PRINCIPLES</u> CHARACTER (A place with its own identity) • The revised proposal, including its materiality and use of brick positively responds to the character of the locality. • A more coherent brick appearance could be achieved by consolidating the planter ledge and planting in the balcony area and deletion of the ledge at the brick wall. • A contrasting material could assist in distinguishing the top floor terrace structure from the brick floors below. CONTINUITY AND ENCLOSURE (A place where public and private

	spaces are clearly distinguished) • The revised proposal including the location of the lobby and proposed lighting enhances surveillance in the laneway. • The proposed roof terrace is a positive addition which will enhance the amenity of the development, whilst minimising the potential impact on adjoining properties. QUALITY OF PUBLIC REALM (A place with well-designed, high quality public spaces) N/A EASE OF MOVEMENT (A place that is easy to get to and move through) • The revised proposal including the location of the lobby and proposed lighting improves the legibility of the development for guests and visitors. • The floor layout has significantly improved including the legibility of the entrance and lift lobby areas. LEGIBILITY, ADAPTABILITY, DIVERSITY (A place that is easy to navigate, a place that can change, a place with variety and choice, is easy to navigate) • Legibility to and from and throughout the development has greatly improved. • Signage that is carefully integrated into the development will further improve access to the development. OVERALL DESIGN QUALITY AND FUNCTIONALITY • The proponent is to be commended for collaborating with the DAC in the development of the design with significant associated improvements. • The overall design, layout and functionality has greatly improved. • Minor modifications to the external design and internal layout will further improve the development and amenity for future occupants. APPROPRIATENESS OF MATERIALS AND FINISHES • The revised materials and finishes are considered to be more appropriate for this location and type of development. • The vertical greenery adds interest and character to the development, however ongoing access and maintenance needs to be carefully considered. WHAT ARE THE STRENGTHS • Revised design improves the external appearance and the internal layout of the development. • Legibility of the development is greatly improved. • The roof top terrace provides an additional, well designed amenity for future occupants. • Dedicated and screened area for AC condensers provided at the
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	roof level. HOW CAN THE PROPOSAL BE IMPROVED - Consider consolidating the planter ledge and planting into or in front of the balcony area with the deletion the ledge at the brick wall to improve access for maintenance from the balcony and present a more coherent brick face. - Consider treating the top floor terrace structure in a different material to distinguish it from the brick floors below. - Reconfigure bathroom layouts to create opening off entry corridor to avoid the view from bed location. - Maximise opportunity to enhance access to northern light with additional openings where possible (notably Units 2, 3, 6 and 7). - Explore opportunities for access to natural light and ventilation to the bathrooms where possible (notably Units 2, 3, 6 and 7). <u>RECOMMENDATION</u> The Design Advisory Committee, having considered the proposal for 19 Essex Street, Fremantle, supports the proposal subject to: - The external appearance being revised to remove the concrete ledge so that the building has a more coherent brick appearance. - The planter ledge being consolidated with the balconies to improve access for future maintenance. - Additional openings being introduced (where possible) to maximise access to northern light and access to light and ventilation to bathroom areas. - The bathroom layout being reviewed to relocate the entry away from the bedroom. - Final details of the materials, finishes and landscaping being submitted prior to the issue of a Building Permit.
4	19 – 21 McCabe Road, North Fremantle – Concept Planning Proposal for Future Development - The MDA and Director Strategic Planning & Projects made a presentation to the Committee. - The Applicant made a presentation to the Committee. The Applicant is to be commended for their early engagement with the City and the DAC. Noting that the concept challenges the current planning perimeters for the site, the DAC provides the following design comments, having regard for the CABA Principles of Good Design and SPP7.0 Design of the Built Environment. Strengths - The site is considered to be a good location for density as it is located in close proximity to public transport. - The comprehensive site analysis (including view corridor study)

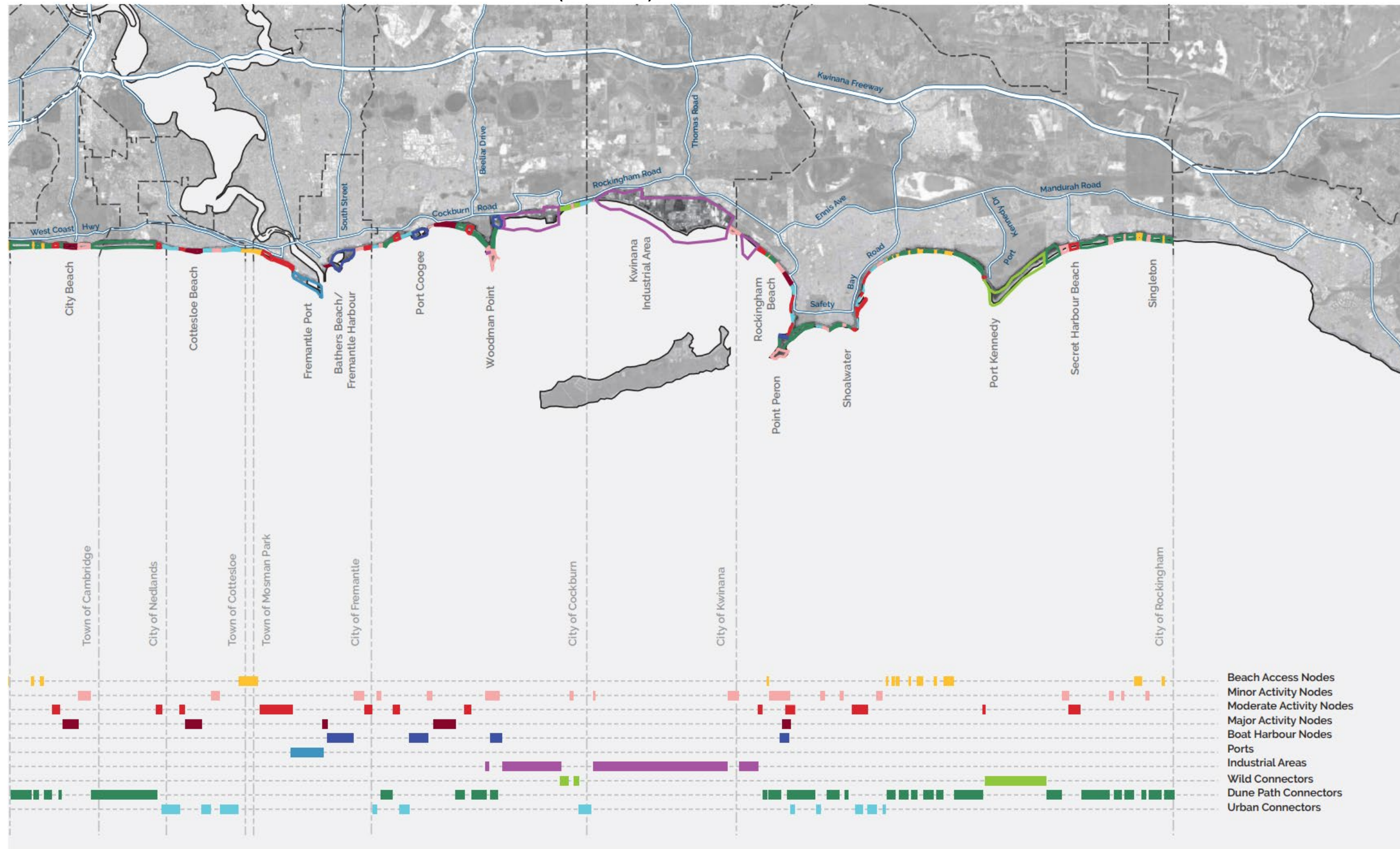
	provided in the presentation will be critical as this project moves forward. • The analysis of the range of options in relation to the location of building bulk and scale. • The terraced design approach presents an interesting reference to the natural contours and topography of the locality which may provide an appropriate response to character and context. • The initial presentation of a well thought out central landscaped area could provide for an essential resident amenity. • The aspiration to respond to and integrate with the existing reserve to the east. Challenges • The applicant is encouraged to development a more coherent narrative about place and form that responds to the local context and character. • The terraced design approach will not be evident from McCabe Street; therefore it is not clear how the McCabe Street elevation will respond to the scale of surrounding development. • Further analysis should be provided to demonstrate that the terraced design approach can effectively mitigate the scale of the development to the northern boundary and single residential context. The bulk and mass relationship with the north boundary will be compared to the outcome evident on the site to the east which is characterised by townhouses. • An analysis of the scale, bulk and height response in relation to the existing policy requirements and adjacent approved (and constructed / under construction) projects will assist to understand the deviation from the policy requirement and the impact on views/vistas from Mt Lyell park. • The preliminary planning indicated a potential prevalence of south facing living and outdoor spaces. • An analysis of the overshadowing impact on the residential development on the southern site of McCabe Street should be provided to understand how the development may affect the development as whole and also individual units. • The apartment planning and layout must exceed the minimum requirements including solar, light, ventilation, internal/external privacy etc. • Legibility through the site and development needs to be carefully considered including access to any rear building(s). • The on structure landscaping appears extensive. Further evidence is necessary to ensures its feasibility and its on-going maintenance. • The mass and potential amenity impact on the assumed building envelope of the site to the west needs further consideration. • Consideration needs to be given the to the interface of any above ground car parking levels with the street and adjoining sites. <u>RECOMMENDATION</u>
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	The Design Advisory Committee, having considered the concept proposal for 19 - 21 McCabe Street, North Fremantle, encourages the applicant to consider the comments above and further develop the concept proposal for future consideration.
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2. NEXT MEETING

10 February 2020

C2006-14 CONSIDERATION OF A MOTION CARRIED AT THE ANNUAL GENERAL MEETING OF ELECTORS REGARDING PARKING AT LEIGHTON & PORT BEACH
ADDITIONAL INFORMATION: 1 – PERTH COASTAL USE STUDY (EXTRACT)



ADDITIONAL INFORMATION: 2 – LEIGHTON OCEANSIDE PARKLANDS MASTERPLAN (EXTRACT)



Leighton Oceanside Parklands Master Plan

Figure 1

C2006-16 DELEGATED AUTHORITY REGISTER REVIEW
ADDITIONAL INFORMATION: DELEGATED AUTHORITY REGISTER 2019-20

Register of delegated authority

Local government to Chief Executive Officer, officers and
committees

2019 - 2020

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Explanation notes

General

Section 5.42 of the *Local Government Act 1995* (the Act) allows for a local government to delegate to the Chief Executive Officer the exercise of any of its powers or the discharge of any of its duties under the Act.

Section 5.44 of the Act provides for the Chief Executive Officer to delegate any of their powers to another employee, this must be done in writing. The Act allows for the Chief Executive Officer to place conditions on any delegations if they desire. The powers cannot, however, be further sub-delegated.

The purpose of this document is to detail which authorities have been delegated by Council to the Chief Executive Officer, and which the Chief Executive Officer has further delegated to officers.

Limits on delegations to the CEO

Section 5.43

The following are decisions that cannot be delegated to the Chief Executive Officer:

- any power or duty that requires a decision of an absolute majority or 75% majority of the local government;
- accepting a tender which exceeds an amount determined by the local government;
- appointing an auditor;
- acquiring or disposing of any property valued at an amount determined by the local government;
- any of the local government's powers under Sections 5.98, 5.99 and 5.100 of the Act;
- borrowing money on behalf of the local government;
- hearing or determining an objection of a kind referred to in Section 9.5;
- any power or duty that requires the approval of the Minister or Governor; or
- such other duties or powers that may be prescribed by the Act.

Purpose of delegating authority

The aim of delegated authority is to assist with improving the time taken to make decisions within the constraints allowed by the relevant legislation. The register details the related document(s) where the power to delegate is derived from. This delegated authority register will be reviewed in accordance with the Act on an annual basis.

Councils understanding

It is that by delegating its authority it is granting sufficient power to enable the City's responsibilities to be fulfilled in a timely, open and accountable manner.

It is the expectation of council that the Chief Executive Officer and other officers will use the delegated authority conferred on them in a manner that aligns with council's values and objectives and they will demonstrate appropriate judgment and accountability in regard to the circumstances and extent of the use of that power.

Legislation

The Act allows for a local government to delegate to the Chief Executive Officer the exercise of any of its powers or the discharge of any of its duties under the Act except those listed in section 5.43. All delegations made by the council must be by absolute majority decision {S5.42 (1)}.

Associated legislation

Legislation other than the *Local Government Act 1995*, its regulations and the local government's local laws created under the Act where delegations or authorisations may occur are as follows:

- *Building Act 2011* and associated regulations;
- *Bush Fires Act 1954* and associated regulations;
- *Cat Act 2011* and associated regulations;
- *Caravan Parks and Camping Grounds Act 1955* and associated regulations;
- City of Fremantle Local Laws;
- *Control of Vehicles (Off-Road Areas) Act 1978* and associated regulations;
- *Dog Act 1976* and associated regulations;
- Local Planning Scheme No. 4;
- *Environmental Protection Act 2005* and associated regulations;
- *Food Act 2008* and associated regulations;
- *Freedom of Information Act 1992* and regulations;
- *Public Health Act 2016* and associated regulations;
- *Land Administration Act 1997* and associated regulations;
- *Litter Act 1979* and associated regulations;
- *Local Government (Miscellaneous Provisions) Act 1960* and associated regulations;

- *Planning and Development Act 2005* and associated regulations;
- *Spear-guns Control Act 1955*;
- *Strata Titles Act 1985* and associated regulations;

Acting through another person

Section 5.45

Nothing in this Division (Division 4 – Local Government Employees) is to be read as preventing –

- (a) *a local government from performing any of its functions by acting through a person other than the CEO; or*
- (b) *a CEO from performing any of his or her functions by acting through another person.*

The key difference between a delegation and “acting through” is that a delegate exercises the delegated decision making function in his or her own right, as though he or she were the original decision maker. Alternatively, where a person is ‘acting through’ they are making a decision as previously instructed.

The difference between a delegated authority to exercise discretion on behalf of the City and acting through another person to undertake a function on behalf of the City where no discretion exists is reinforced by Section 56 of the *Interpretation Act 1984* which states:

56. “May” imports a discretion, “shall” is imperative

- (1) *Where in a written law the word “may” is used in conferring a power, such word shall be interpreted to imply that the power so conferred may be exercised or not, at discretion.*
- (2) *Where in a written law the word “shall” is used in conferring a function, such word shall be interpreted to mean that the function so conferred must be performed.*

The City’s Delegated Authority and Authorisations Management Procedure should be read in conjunction with this

Delegation by the chief executive officer

The Act allows for the CEO to delegate any of the powers to another employee {S5.44 (1)}. This must be done in writing {S5.44 (2)} The Act allows for the CEO to place Limitations on any delegations if desired {S 5.44 (4)}

Transfer of authority due to absence

Where an officer has been appointed to act in a delegated position in the absence of the usual officer, the authority shall transfer to the officer acting as appointed, for the duration of the authorisation.

Register of, and records relevant to delegations Section 5.46

A register of delegations is to be kept and reviewed at least once every financial year.

If an officer is exercising a power or duty that they have been delegated, the Act requires them to keep necessary records to the exercise of the power or discharge of the duty. The written record is to contain:

- how the person exercised the power or discharged the duty;
- when the person exercised the power or discharged the duty; and
- the persons or classes of persons, other than council or committee members or employees of the local government, directly affected by the exercise of the power or the discharge of the duty.

The onus is on the officer exercising delegated authority to ensure that a record is made.

A person to whom a power is delegated under the Act is considered to be a ‘designated employee’ under S 5.74(b) of the Act and is required to complete a primary and annual return each year. There is no power for a person other than the CEO to delegate a power {S 5.44 (1)}.

Authority to amend the Delegated Authority Register

The Manager Governance is authorised to effect non-substantive changes to the Delegated Authority Register to reflect:

- (a) *Changes to titles of positions; and,*
- (b) *the deletion of positions.*

How to read a delegation table	
Delegator:	Council
Date adopted:	The date in which Council adopts the delegated authority register.
Delegation:	A reference to: • The legislation allowing delegation. • The legislation under which the delegation is made.
Delegated to:	The position/s to which the power or duty is delegated.
Limitations on delegation:	Council imposed limitations on the extent of use of this delegation.
Power to sub delegate:	A reference to the legislation allowing sub delegation, if any. Some legislation does not include the power to sub delegate.
Description of sub delegation	
Delegator	Chief Executive Officer
Date approved:	The date in which the Chief Executive Officer approves the sub delegation.
Sub delegated to:	The position/s to which the power or duty is sub delegated.
Limitations on sub delegation:	Chief Executive Officer imposed limitations on the extent of use of this delegation.
Reporting requirements	
The information required to be recorded when this delegation has been used. (who, what, when, why and how much)	

PART 1

Delegations to Committees of Council

1.1 Delegated Committees of Council			
Delegator:	Council		
Date adopted:	26 June 2019 amended 24 July 2019		
Delegation:	Council delegates to the • Finance, Policy, Operations and Legislation Committee • Planning Committee • Strategic Planning and Transport Committee all of the functions and powers, delegable by a local government, to make decisions on behalf of council, except any power or duty that requires a decision of an absolute majority or a 75% majority of the local government, in accordance with: <table> <tr> <td> Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i> </td><td> Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82 </td></tr> </table> For the purpose of the effective decision making by the City of Fremantle.	Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i>	Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82
Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i>	Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82		
Delegated to:	• Finance, Policy, Operations and Legislation Committee • Planning Committee • Strategic Planning and Transport Committee		
Limitations:	The Finance, Policy, Operations and Legislation Committee, Planning Committee and Strategic Planning and Transport Committee are delegated all of the powers and functions of the local government in accordance with the following limitations: 1. A decision of committee can only be made by the votes of at least five members of the committee. 2. When approving leases of council property: a. the term must not exceed ten (10) years, b. the disposal must be in accordance with Sections 3.58 and 3.59 of the <i>Local Government Act 1995</i>. 3. When approving closure of council carparks, the closure must not exceed fourteen (14) days. 4. When accepting or declining to accept tenders, they must be within budget. 5. may not determine final approval for: <table> <tr> <td> • Council policies • Strategic community plan • Corporate business plan • Strategies as defined in the City's Council policy • City related international travel • Structure plans </td><td> • Local planning policies • Local planning schemes • Local development plans • Appointment or termination of a Chief Executive Officer • Scheme amendments </td></tr> </table>	• Council policies • Strategic community plan • Corporate business plan • Strategies as defined in the City's Council policy • City related international travel • Structure plans	• Local planning policies • Local planning schemes • Local development plans • Appointment or termination of a Chief Executive Officer • Scheme amendments
• Council policies • Strategic community plan • Corporate business plan • Strategies as defined in the City's Council policy • City related international travel • Structure plans	• Local planning policies • Local planning schemes • Local development plans • Appointment or termination of a Chief Executive Officer • Scheme amendments		
Power to sub delegate:	Nil		
Reporting requirements			
All Committee Minutes shall record and identify each decision made under this delegation in accordance with legislative requirements.			

PART 2

Delegations to the Chief Executive Officer

2.1 Administration of local laws		
Delegator:	Council	
Date adopted:	26 June 2019	
Delegation:	Council delegates to the Chief Executive Officer the authority to administer the City's local laws in accordance with: Legislation Local Government Act 1995 Section 5.42 and 5.43 For the purpose of effective management of the City of Fremantle.	
Delegated to:	Chief Executive Officer	
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.	
Power to sub delegate:	Legislation Local Government Act 1995	Section 5.44
Sub delegation Administration of local laws		
Delegator:	Chief Executive Officer	
Date approved:	3 July 2019	
Sub delegated to:	All Directors	
Limitation on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.	
Reporting requirements		
Use of this delegation:		
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.		

2.2 Investing and managing investments				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to: 1. Invest money held in the municipal or trust fund that is not, for the time being, required for any other purpose. 2. Establish and document internal control procedures to be followed by employees to ensure control over investments, enabling the identification of the nature and location of all investments and the transactions related to each investment. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i></td><td>Section 5.42, 5.43 and 6.14(1) Regulation 19</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42, 5.43 and 6.14(1) Regulation 19
Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42, 5.43 and 6.14(1) Regulation 19			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Investing and managing investments				
Delegator	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director City Business Manager Finance Finance Team Leader Revenue Team Leader			
Limitations on sub delegation:	1. Investments must be approved by two delegated officers, one of whom must be the Director City Business or the Manager Finance. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be presented in a report to each monthly Council meeting. 2. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.3 Defer payment, grant a concession, waive fees and write off debts										
Delegator:	Council									
Date adopted:	26 June 2019									
Delegation:	Council delegates to the Chief Executive Officer the authority to waive or grant concessions in relation to any amount of money or write off any amount of money that is owed to the local government, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.42, 5.43, and 6.2</td></tr></table> For the purpose of effective management of the City of Fremantle. Note: Section 6.12(2) of the <i>Local Government Act 1995</i> does not allow money owed to the City in respect of rates and services charges to be waived or for a concession in relation to such money to be granted.		Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, and 6.2						
Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, and 6.2									
Delegated to:	Chief Executive Officer									
Limitations on delegation:	Where all reasonable avenues of recovery have been exhausted the Chief Executive Officer may, up to the maximum amount indicated below: <table><tr><td>Defer Payment of a debt:</td><td>\$500,000.00</td></tr><tr><td>Waive or grant a concession (discount):</td><td>\$100,000.00</td></tr><tr><td>Write – Off a debt other than an infringement debt:</td><td>\$100,000.00</td></tr><tr><td>Write – Off an infringement debt:</td><td>\$10,000.00</td></tr></table> All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		Defer Payment of a debt:	\$500,000.00	Waive or grant a concession (discount):	\$100,000.00	Write – Off a debt other than an infringement debt:	\$100,000.00	Write – Off an infringement debt:	\$10,000.00
Defer Payment of a debt:	\$500,000.00									
Waive or grant a concession (discount):	\$100,000.00									
Write – Off a debt other than an infringement debt:	\$100,000.00									
Write – Off an infringement debt:	\$10,000.00									
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44								
Sub delegation										
Defer payment, grant a concession, waive fees and write off debts										
Delegator	Chief Executive Officer									
Date approved:	3 July 2019									
Sub delegated to:	Director City Business Director Community Development All Managers Finance Team Leader Revenue Team Leader Revenue Officer – Lead Rates									

Limitations on sub delegation:	Defer Payment of a debt:	
	Where in the opinion of the Director City Business or the Manager Finance, all other reasonable avenues of recovery have been exhausted the following officers may make arrangements to pay for the maximum amount indicated for any single debtor:	
	Director City Business	\$500,000.00
	Manager Finance	\$149,999.00
	Finance Team Leader	\$30,000.00
	Revenue Team Leader	\$30,000.00
	Revenue Officer – Lead Rates	\$5,000.00
	Waive or grant a concession (discount):	
	In accordance with City policy or procedure the following officers may grant a discount up to the maximum amount indicated on any single occasion to a maximum of four occasions per financial year:	
	Director City Business	\$20,000.00
All Directors	\$10,000.00	
Manager Finance	\$10,000.00	
Manager Economic Development (car parking fees only)	\$10,000.00	
All Managers	\$5,000.00	
Write – Off a debt:		
Where in the opinion of the relevant delegated officer, all other reasonable avenues of recovery have been exhausted the following officers may write – off debts up to the maximum amount indicated on any single occasion to a maximum of four occasions per financial year:		
Director City Business	\$20,000.00	
All other Directors	\$10,000.00	
Manager Finance	\$10,000.00	
All Managers	\$5,000.00	
Finance Team Leader	\$1,000.00	
Revenue Team Leader	\$1,000.00	
Revenue Officer – Lead Rates	\$500.00	
All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements		
Use of this delegation:		
1. When waiving or writing off debts valued at \$1000 or above per debtor this must be reported to the Audit and Risk Management Committee.		
2. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.		

2.4 Disposing of property						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer the authority to: 1. dispose of property to: a) the highest bidder at public auction or b) the person who at public tender called by the local government makes what is, in the opinion of the local government, the most acceptable tender, whether or not it is the highest tender 2. dispose of property by direct negotiation only in accordance with section 3.58(3) of the Act. (give public notice and consider submissions). 3. dispose of property excluded from s. 3.58 of the Act. In accordance with: <table><tr><td>Legislation</td><td>Section</td></tr><tr><td><i>Local Government Act 1995</i></td><td>5.42, 5.43 , 3.58(2) and (3)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation	Section	<i>Local Government Act 1995</i>	5.42, 5.43 , 3.58(2) and (3)
Legislation	Section					
<i>Local Government Act 1995</i>	5.42, 5.43 , 3.58(2) and (3)					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	The Chief Executive Officer may approve leases of council property where: 1. The key lease terms and performance criteria have been agreed by council; or a. the lease is not for a period greater than six months (short term lease only); or b. the lease agreement does not require a business plan; or c. the disposal of property is in accordance with s.3.58 of the Local Government Act 1995; and d. the lease is in accordance with relevant council policies. The Chief Executive Officer may, up to the maximum amount indicated below: <table><tr><td>Approve disposals of land:</td><td>\$50,000.00</td></tr><tr><td>Approve disposals of property other than land</td><td>\$20,000.00</td></tr></table> All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		Approve disposals of land:	\$50,000.00	Approve disposals of property other than land	\$20,000.00
Approve disposals of land:	\$50,000.00					
Approve disposals of property other than land	\$20,000.00					
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44				
Sub delegation Disposing of property						
Delegator	Chief Executive Officer					
Date approved:	3 July 2019					

Sub delegated to:	All Directors All Managers				
Limitations on sub delegation:	Disposal of property other than land: The following officers may dispose of property other than land to the maximum amount indicated below: <table> <tr> <td>All Directors</td><td>\$20,000.00</td></tr> <tr> <td>All Managers</td><td>\$10,000.00</td></tr> </table> Approve a lease: Where: - The key lease terms and performance criteria have been agreed by council; or - the lease is not for a period greater than six months (short term lease only); or - the lease agreement does not require a business plan; or - the disposal of property is in accordance with s.3.58 of the <i>Local Government Act 1995</i>; and - the lease is in accordance with relevant council policies. The following officers may approve the lease of a council property: - Director City Business - Director Community Development Note: If the tenant and prospective tenant meet the requirements of the Commercial Tenancy Act WA 1985, the council cannot withhold assignment of the lease or withhold tenant options to extend the term of the lease. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.	All Directors	\$20,000.00	All Managers	\$10,000.00
All Directors	\$20,000.00				
All Managers	\$10,000.00				
Reporting requirements					
Use of this delegation: - Must be reported to the Audit and Risk Management Committee. - Is to be recorded in the City's record keeping system, in accordance with legislative requirements.					

2.5 Payments from municipal or trust fund				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to make payments from the municipal or trust fund in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i></td><td>Section 5.42, 5.43 and 6.9(4) Trust Fund Regulation 12(1)(a)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42, 5.43 and 6.9(4) Trust Fund Regulation 12(1)(a)
Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42, 5.43 and 6.9(4) Trust Fund Regulation 12(1)(a)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Payments from municipal or trust fund				
Delegator	Chief Executive Officer			
Date approved:	3 July 2019			
Part 1 Sub delegated to:	Director City Business Manager Finance			
Part 1. Limitations on sub delegation:	1. Payments are to be made in accordance with: a. City of Fremantle policies and procedures. b. verification of a payment and authorisation of the same payment cannot be undertaken by the same person. 2. Authority includes but is not limited to: a. approving issue of purchase or credit cards. b. transferring money held in trust for 10 years to its municipal fund, and to approve to repay it to a person who establishes a right to the repayment, together with any interest earned on the investment. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions. Note: The CEO is the only person already authorised (directly by the <i>Local Government Act 1995</i> and Regulation 5(1)(e) of the <i>Local Government (Financial Management) Regulations 1996</i>) to authorise expenditure as included in the annual budget.			
Part 2. Sub delegated to:	Finance Team Leader Procurement Team Leader Revenue Team Leader			

Part 2. Limitations on sub delegation:	1. Payments are to be made in accordance with: a. City of Fremantle policies and procedures. b. any additional Limitations or limitations set by the Director City Business or Manager Finance. c. verification of a payment and authorisation of the same payment cannot be undertaken by the same person. 2. Authority does not include: a. approving issue of purchase or credit cards. b. transferring money held in trust for 10 years to its municipal fund, and to approve to repay it to a person who establishes a right to the repayment, together with any interest earned on the investment. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions. Note: The CEO is the only person already authorised (directly by the Local Government Act 1995 and Regulation 5(1)(e) of the Local Government (Financial Management) Regulations 1996) to authorise expenditure as included in the annual budget.
Reporting requirements	
Use of this delegation: 1. Is to be presented in a report to each monthly council meeting. 2. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

2.6 Determine grants and sponsorship allocations				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to determine allocation of the City’s grants, and sponsorships in accordance: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i></td><td>Section 5.42 and 5.43 Regulation 12(1)(a)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 12(1)(a)
Legislation <i>Local Government Act 1995</i> <i>Local Government (Financial Management) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 12(1)(a)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Determine grants and sponsorship allocations				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	All Directors Manager Arts and Culture Manager Communications and Events Manager Community Development Manager Economic Development and Marketing			
Limitations on sub delegation:	1. All Directors can approve grants, and sponsorships up to a maximum of \$25 000. 2. Manager Arts and Culture, Manager Communications and Events, Manager Economic Development and Marketing and Manager Community Development can approve grants, and sponsorships up to a maximum of \$20 000. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation: 1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.7 Agreements for payment of rates and service												
Delegator:	Council											
Date adopted:	26 June 2019											
Delegation:	Council delegates to the Chief Executive Officer the authority to make an agreement with a person for the payment of rates or services charges. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.42, 5.43 and 6.49</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43 and 6.49								
Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43 and 6.49											
Delegated to:	Chief Executive Officer											
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.											
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44										
Sub delegation Agreements for payment of rates and service												
Delegator	Chief Executive Officer											
Date approved:	3 July 2019											
Sub delegated to:	Director City Business Manager Finance Finance Team Leader Revenue Team Leader Revenue Officer - Lead Rates											
Limitations on sub delegation:	The following officers may agree payment arrangements for rates or service charges up to a maximum indicated for any single debtor: <table><tr><td>Director City Business</td><td>\$500,000.00</td></tr><tr><td>Manager Finance</td><td>\$149,999.00</td></tr><tr><td>Finance Team Leader</td><td>\$30,000.00</td></tr><tr><td>Revenue Team Leader</td><td>\$30,000.00</td></tr><tr><td>Revenue Officer - Lead Rates</td><td>\$10,000.00</td></tr></table> All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		Director City Business	\$500,000.00	Manager Finance	\$149,999.00	Finance Team Leader	\$30,000.00	Revenue Team Leader	\$30,000.00	Revenue Officer - Lead Rates	\$10,000.00
Director City Business	\$500,000.00											
Manager Finance	\$149,999.00											
Finance Team Leader	\$30,000.00											
Revenue Team Leader	\$30,000.00											
Revenue Officer - Lead Rates	\$10,000.00											
Reporting requirements												
Use of this delegation:												
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.												

2.8 Require lessee to pay rent in satisfaction of rates or services charge				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to: 1. Give notice to a lessee of land in respect of which there is an unpaid rate or service charge requiring the lessee to pay its rent to the local government. 2. Recover the amount of the rate or service charge as a debt from the lessee if rent is not paid in accordance with the notice. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.42, 5.43, 6.60(2) and (4)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, 6.60(2) and (4)
Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, 6.60(2) and (4)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation				
Require lessee to pay rent in satisfaction of rates or services charge				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director City Business Manager Finance Revenue Team Leader Revenue Officer - Lead Rates			
Limitations on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.9 Objection to rate record - objection and review				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to make decisions regarding objections to the rates record including extending the time for a person to make an objection and following consideration, make a decision whether to allow or disallow the objection, either wholly or in part. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.42, 5.43, 6.76(4) and (5)</td></tr></table> For the purpose of effective management of the City of Fremantle		Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, 6.76(4) and (5)
Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43, 6.76(4) and (5)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation				
Objection to rate record - objection and review				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub-delegated to:	Director City Business Manager Finance			
Limitations on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.10 Rate exemptions				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to determine applications for rate exemptions in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.42, 5.43 and 6.26</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43 and 6.26
Legislation <i>Local Government Act 1995</i>	Section 5.42, 5.43 and 6.26			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub-delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Rate exemptions				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director City Business Manager Finance Revenue Team Leader			
Limitations on sub delegation:	1. May only be used where there are no risk implications or political sensitivities evident. 2. The Revenue Team Leader may only determine rate exemption renewals where the renewal application does not vary materially from the previous approval and the annual value of the exemption is less than \$10,000. 3. The Director City Business and Manager Finance may only determine rate exemption applications and renewals with variations where the annual value of the exemption is less than \$25,000. 4. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation: 1. Is to be reported to the Audit and Risk Management Committee. 2. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.11 Expressions of interest and tenders				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to determine: 1. To call tenders. 2. To call tenders for the disposal of impounded goods. 3. To invite tenders though not required to do so. 4. The criteria for accepted tenders. 5. To vary tender information after public notice of invitation to tender and before the close of tenders. 6. Seek clarification from tenderers in relation to information contained in their tender submission. 7. To evaluate tenders and decide which is the most advantageous. 8. To accept or reject tenders. 9. To decline any tender. 10. Minor variations before entering into a contract. 11. To accept another tender where within 6-months of either accepting a tender a contract has not been entered into OR the successful tenderer agrees to terminate the contract. 12. When to seek expressions of interest and to invite expressions of interest to supply goods or services. 13. Consider expressions of interest which have not been rejected and determine those which are capable of satisfactorily providing the goods or services, for listing as acceptable tenderers. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i></td><td>Sections 3.57, 3.47, 5.42 and 5.43 Regulations 11, 13, 14(2a), (5), 18(2), (4), (4a), (5), (6), (7), 20, 21, and 23.</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i>	Sections 3.57, 3.47, 5.42 and 5.43 Regulations 11, 13, 14(2a), (5), 18(2), (4), (4a), (5), (6), (7), 20, 21, and 23.
Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i>	Sections 3.57, 3.47, 5.42 and 5.43 Regulations 11, 13, 14(2a), (5), 18(2), (4), (4a), (5), (6), (7), 20, 21, and 23.			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	1. May only call tenders where there is an adopted budget for the proposed procurement, with the exception being in the period immediately prior to the adoption of a new annual budget where the proposed procurement is required to fulfil a routine contract related to the day to day operations of the City, with an imminent expiry date and the value of the proposed contract has been included in the draft annual budget papers. 2. May accept a tender where the consideration under the resulting contract is \$500 000 or less and the item is identified in the adopted annual budget. 3. May only agree to variations before a contract is entered into in accordance with relevant City of Fremantle policies. 4. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Expressions of interest and tenders				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	All Directors			

Limitations on Sub delegation:	1. May only call tenders where there is an adopted budget for the proposed procurement, with the exception being in the period immediately prior to the adoption of a new annual budget where the proposed procurement is required to fulfil a routine contract related to the day to day operations of the City, with an imminent expiry date and the value of the proposed contract has been included in the draft annual budget papers. 2. May accept a tender where the consideration under the resulting contract is \$500 000 or less and the item is identified in the adopted annual budget. And the decision is consistent with the advice of the tender evaluation committee. 3. May only agree to variations before a contract is entered into in accordance with relevant City of Fremantle policies. 4. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Reporting requirements	
Use of this delegation: 1. Is to be reported to the Audit and Risk Management Committee. 2. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

2.12 Sole supplier of goods and services				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority: 1. To determine that, because of the unique nature of the goods or services required or for any other reason, it is unlikely that there is more than one potential supplier. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i></td><td>Section 5.42 and 5.43 Regulation 11(2)(f)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 11(2)(f)
Legislation <i>Local Government Act 1995</i> <i>Local Government (Functions and General) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 11(2)(f)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	The Chief Executive Officer being satisfied that: 1. The final amount spent does not exceed \$50 000. 2. adequate market research has been undertaken to verify that no alternative supplier of the goods or services is available; and 3. Sufficient investigation into the use of potential substitute goods or services has been undertaken. 4. Determinations to be reported to the Audit and Risk Management Committee at least annually. 5. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Sole supplier of goods and services				
Sub delegated to:	Nil.			
Reporting requirements				
Use of this delegation:				
1. Is to be reported to the Audit and Risk Management Committee. 2. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.13 Appointment of Acting Chief Executive Officer				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to appoint an Acting Chief Executive Officer in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.36, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 5.36, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 5.36, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	1. The employee being a director. 2. Appointments being no longer than six weeks. 3. Council members are to be advised of Acting Chief Executive Officer. 4. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Appointment of Acting Chief Executive Officer				
Sub delegate to:	Nil.			
Reporting Requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.14 Appoint authorised persons				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the Authority to appoint persons or classes of persons as authorised persons for the purpose of fulfilling prescribed functions within the <i>Local Government Act 1995</i>, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.24, 9.10, 5.42, 5.43 and Division 3, Subdivision 2</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.24, 9.10, 5.42, 5.43 and Division 3, Subdivision 2
Legislation <i>Local Government Act 1995</i>	Section 3.24, 9.10, 5.42, 5.43 and Division 3, Subdivision 2			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Appoint authorised persons				
Sub delegate to:	Nil.			
Reporting Requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.15 Additional powers when notice is given to the owner or occupier of land under Section 3.25				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to do anything necessary to achieve the purpose for which a notice has been given and to recover costs associated with achieving the purpose for which a notice has been given, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.26, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.26, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.26, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation				
Additional powers when notice is given to the owner or occupier of land under Section 3.25				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Director Strategic Planning and Projects Manager Field Services Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering			
Limitations on sub delegation:	1. An individual infringement notice cannot be withdrawn or extended by the same officer that has issued it. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.16 Particular things Local Governments can do on land that is not Local Government property				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to do any of the things prescribed in Schedule 3.2 of the <i>Local Government Act 1995</i> in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.27, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.27, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.27, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation				
Particular things local governments can do on land that is not local government property				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Director Strategic Planning and Projects Manager Field Services Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering			
Limitations on Sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.17 Crossing from public thoroughfare to private land or private thoroughfare						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer the authority to: 1. approve the construction of a crossing giving access from a thoroughfare to private land or a private thoroughfare serving the land. 2. give a person who is the owner or occupier of private land a notice in writing requiring the person to construct or repair a crossing from a public thoroughfare to the land or a private thoroughfare serving the land. in accordance with: <table><tr><td>Legislation Local Government (Uniform Provisions) Regulations 1996</td><td>Section Regulation 12(1) - Sch. 9.1 cl. 7(2) and Regulation 13(1)(2) - Sch. 9.1 cl. 7(3)</td></tr><tr><td><i>Local Government Act 1995</i></td><td>5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation Local Government (Uniform Provisions) Regulations 1996	Section Regulation 12(1) - Sch. 9.1 cl. 7(2) and Regulation 13(1)(2) - Sch. 9.1 cl. 7(3)	<i>Local Government Act 1995</i>	5.42 and 5.43
Legislation Local Government (Uniform Provisions) Regulations 1996	Section Regulation 12(1) - Sch. 9.1 cl. 7(2) and Regulation 13(1)(2) - Sch. 9.1 cl. 7(3)					
<i>Local Government Act 1995</i>	5.42 and 5.43					
Delegated to:	Chief Executive Officer					
Limitations delegation:	1. Approval must be in writing for the crossing under regulation 14(2) of the Local Government (Uniform Local Provisions) Regulations 1996. 2. Due process for the issuing of a notice under section 3.25 of the <i>Local Government Act 1995</i> must be followed. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44				
Sub delegation						
Crossing from public thoroughfare to private land or private thoroughfare						
Delegator:	Chief Executive Officer					
Date adopted:	3 July 2019					
Sub delegated to:	Director Infrastructure and Project Delivery Manager Infrastructure Engineering Engineering Team Leader Principal Engineer					
Limitations on sub delegation:	1. Approval must be in writing for the crossing under regulation 14(2) of the Local Government (Uniform Local Provisions) Regulations 1996. 2. Due process for the issuing of a notice under section 3.25 of the <i>Local Government Act 1995</i> must be followed. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Reporting requirements						
Use of this delegation:						
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

2.18 Powers of entry				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to: 1. enter on to land to perform any function of the local government under the Act. 2. give a notice of entry. 3. seek and execute an entry under warrant. 4. execute entry in an emergency. 5. give notice and effect entry by opening a fence. in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.32, 3.33, 3.34, 3.36, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.32, 3.33, 3.34, 3.36, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.32, 3.33, 3.34, 3.36, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Powers of entry				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Director Strategic Planning and Projects Manager Field Services Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering Manager Development Approvals Manager Strategic Planning Coordinator Statutory Planning Heritage Coordinator Senior Planning Officer – Delegated Authority Senior Planning Officer All Statutory Planning Officers Senior Strategic Planning Officer Strategic Planning Officer Heritage Project Officer Team Leader Compliance and Health Compliance Technical Officer Principal Building Surveyor Building Surveyor			
Limitations on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation: 1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.19 Disposing of confiscated or uncollected goods				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to sell or otherwise dispose of confiscated or uncollected goods and to recover expenses incurred for removing and impounding and in disposing of confiscated or uncollected goods, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.47, 3.48 3.58 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.47, 3.48 3.58 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.47, 3.48 3.58 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Disposing of confiscated or uncollected goods				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub-delegated to:	All Directors Manager Field Services Manager Asset Management Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering Manager Community Development Manager Customer Service and Visitor Information Manager Arts and Culture Manager Communications and Events			
Limitations on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.20 Disposal of sick or injured animals				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to destroy and dispose of an animal that is determined to be too sick or injured to treat, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.47A(1), 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.47A(1), 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.47A(1), 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Disposal of sick or injured animals				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Manager Field Services Manager Parks and Landscape Manager Facilities and Environmental Management Team Leader Community Safety			
Limitations on Sub delegation:	- To be disposed of in the following manner: - Through surrender to an appropriate rescue organisation, with preference given to a no-kill facility where possible. - euthanasia: - Circumstances where euthanasia may be considered acceptable include, but are not limited to the following: - Where animals are vicious, dangerous, unmanageable, fearful or likely to cause harm due to their behavior or temperament. - Where the animal is sick or injured as determined by a veterinarian surgeon. - Unclaimed impounded animals unable to be taken by rescue organisations. - Euthanasia will be undertaken by an approved veterinarian surgeon in line with the Australian Veterinary Association Code of Professional Conduct. The veterinary surgeon will determine the most appropriate method of euthanasia. - No animal shall be surrendered to any person or organisation if it is believed the animal may be used for the purposes of medical research. - All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.21 Close thoroughfares to vehicles				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to: - close a thoroughfare (wholly or partially) to vehicles or particular classes of vehicles. - give public notice, and provide to the Commissioner of Main Roads and consider submissions relevant to road closures for proposed closures of thoroughfares for a period exceeding 4 weeks. - where level or alignment of a thoroughfare is fixed or altered or where draining water from a thoroughfare to private land, notify affected owners and consider any submissions made. in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.50, 3.50(A), 3.51, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.50, 3.50(A), 3.51, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.50, 3.50(A), 3.51, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Close thoroughfares to vehicles				
Delegator:	Chief Executive Officer			
Date adopted:	3 July 2019			
Sub delegated to:	All Directors Manager Infrastructure Engineering Engineering Team Leader			
Limitations on Sub delegation:	- The following officers may approve general closures and closures in an emergency: Director City Business Director Infrastructure and Project delivery Manager Infrastructure Engineering Engineering Team Leader - Closure of a thoroughfare as part of a community event may only be granted where: - the closures are similar to others held previously; or - the closure only involves a single road closure within the CBD; or - the closure only involves one street to accommodate a local resident activity. - The following officers may only approve closures in an emergency: Director Community Development Director Strategic Planning and Projects Director People and Culture - Where applicable all road closures are to be undertaken in conjunction with a traffic management plan that complies with the Main Roads WA Traffic Management for Works on Roads Code of Practice. - All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.22 Reserves under control of local government				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to do anything for the purposes of controlling and managing land that is vested in or under the management of the City, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i></td><td>Section 3.54, 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i>	Section 3.54, 5.42 and 5.43
Legislation <i>Local Government Act 1995</i>	Section 3.54, 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Reserves under control of local government				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub-delegated to:	All Directors Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering			
Limitations on Sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting Requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

2.23 Dangerous excavations in or near public thoroughfares				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to deem an excavation to be dangerous and to fill in or fence the excavation, or request the owner or occupier to fill or securely fence the excavation, in accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government (Uniform Local Provisions) Regulations 1996</i></td><td>Section 5.42 and 5.43 Regulation 11 Sch.9.1 cl.6</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government (Uniform Local Provisions) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 11 Sch.9.1 cl.6
Legislation <i>Local Government Act 1995</i> <i>Local Government (Uniform Local Provisions) Regulations 1996</i>	Section 5.42 and 5.43 Regulation 11 Sch.9.1 cl.6			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	1. That due process for the issuing of a notice under section 3.25 of the <i>Local Government Act 1995</i> is followed. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Dangerous excavations in or near public thoroughfares				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Director Strategic Planning and Projects Manager Field Services Manager Parks and Landscape Manager Facilities and Environmental Management Manager Infrastructure Engineering Engineering Team Leader			
Limitations on Sub delegation:	1. That due process for the issuing of a notice under section 3.25 of the <i>Local Government Act 1995</i> is followed. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

2.24 Private works on, over or under public places				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer the authority to grant permission to a person to construct anything on, over or under a public thoroughfare or other public place that is local government property, in accordance with: <table><tr><td>Legislation <i>Local Government (Uniform Local Provisions) Regulations 1996</i> <i>Local Government Act 1995</i></td><td>Section Regulation 17 Sch.9.1 cl.8 5.42 and 5.43</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government (Uniform Local Provisions) Regulations 1996</i> <i>Local Government Act 1995</i>	Section Regulation 17 Sch.9.1 cl.8 5.42 and 5.43
Legislation <i>Local Government (Uniform Local Provisions) Regulations 1996</i> <i>Local Government Act 1995</i>	Section Regulation 17 Sch.9.1 cl.8 5.42 and 5.43			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	Subject to: 1. Schedule 3.1, Division 2, item 3 of the <i>Local Government Act 1995</i>. 2. That due process for the issuing of a notice under section 3.25 of the Act is followed. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44		
Sub delegation Private works on, over or under public places				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director City Business Director Infrastructure and Project Delivery Manager Infrastructure Engineering			
Limitations on Sub delegation:	Subject to: 1. Schedule 3.1, Division 2, item 3 of the <i>Local Government Act 1995</i>. 2. That due process for the issuing of a notice under section 3.25 of the Act is followed. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

PART 3

Delegations from other legislation

Bush Fires Act 1954

3.1 Bush Fires Act 1954 Powers, duties and functions of a local government			
Delegator:	Council		
Date adopted:	26 June 2019		
Delegation:	Council delegates to the Chief Executive Officer all powers, duties and functions of the local government under the <i>Bush Fires Act 1954</i>, in accordance with: <table border="0"> <tr> <td>Legislation <i>Bush Fires Act 1954</i></td><td>Section 48</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Bush Fires Act 1954</i>	Section 48
Legislation <i>Bush Fires Act 1954</i>	Section 48		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	Authority excludes powers and duties that: 1. Are prescribed in the Act with a requirement for a resolution of the local government. 2. Are prescribed by the Act for performance by designated officers. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Power to sub delegate:	Nil.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

Food Act 2008

3.2 Food Act 2008 Appoint authorised and designated officers							
Delegator:	Council						
Date adopted:	26 June 2019						
Delegation:	Council delegates to the Chief Executive Officer authority to appoint a person: - To be an authorised officer for the purposes of the <i>Food Act 2008</i>. - To be a designated officer for the purposes of the <i>Food Act 2008</i>. in accordance with: <table border="0"> <tr> <td>Legislation</td><td>Section</td></tr> <tr> <td><i>Food Act 2008</i></td><td>122(1) and 126(13)</td></tr> <tr> <td><i>Food Act 2008</i></td><td>118(2)(b), 118 (3) [s119] and [s120] and 118(4)</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation	Section	<i>Food Act 2008</i>	122(1) and 126(13)	<i>Food Act 2008</i>	118(2)(b), 118 (3) [s119] and [s120] and 118(4)
Legislation	Section						
<i>Food Act 2008</i>	122(1) and 126(13)						
<i>Food Act 2008</i>	118(2)(b), 118 (3) [s119] and [s120] and 118(4)						
Delegated to:	Chief Executive Officer						
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.						
Power to sub delegate:	Nil.						
Reporting requirements							
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.							

3.3 Food Act 2008 Prohibition orders					
Delegator:	Council				
Date adopted:	26 June 2019				
Delegation:	Council delegates to the Chief Executive Officer, Director City Business, Manager Field Services and Senior Environmental Health Officer authority to determine: 1. Serve a prohibition order on the proprietor of a food business in accordance with s65 of the <i>Food Act 2008</i> [s65]. 2. Give a certificate of clearance, where inspection demonstrates compliance with a prohibition order and any improvement notices. 3. Give written notice to proprietor of a food business on whom a prohibition order has been served of the decision not to give a certificate of clearance after an inspection. In accordance with: <table border="0"> <tr> <td>Legislation <i>Food Act 2008</i></td><td>Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)</td></tr> <tr> <td><i>Food Act 2008</i></td><td>65(1), 66, and 67(4)</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)	<i>Food Act 2008</i>	65(1), 66, and 67(4)
Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)				
<i>Food Act 2008</i>	65(1), 66, and 67(4)				
Delegated to:	Chief Executive Officer Director City Business Manager Field Services Senior Environmental Health Officer				
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.				
Power to sub delegate:	Nil.				
Reporting requirements					
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.					

3.4 Food Act 2008 Prosecutions					
Delegator:	Council				
Date adopted:	26 June 2019				
Delegation:	Council delegates to the Chief Executive Officer, Director City Business, Manager Field Services, and Senior Environmental Health Officer authority to institute proceedings for an offence under the <i>Food Act 2008</i> in accordance with: <table> <tr> <td>Legislation <i>Food Act 2008</i></td><td>Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)</td></tr> <tr> <td><i>Food Act 2008</i></td><td>125</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)	<i>Food Act 2008</i>	125
Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)				
<i>Food Act 2008</i>	125				
Delegated to:	Chief Executive Officer Director City Business Manager Field Services Senior Environmental Health Officer				
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.				
Power to sub delegate:	Nil.				
Reporting requirements					
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.					

3.5 Food Act 2008 Registration of food businesses					
Delegator:	Council				
Date adopted:	26 June 2019				
Delegation:	Council delegates to the Chief Executive Officer, Director City Business, Manager Field Services, Senior Environmental Health Officer and all Environmental Health Officers authority to: 1. Determine applications for registration of a food business in respect of any premises for the purposes of Part 9 of the <i>Food Act 2008</i> and issue a certificate of registration. 2. After considering an application, grant (with or without Limitations) or refuse the application. 3. Vary the Limitations or cancel the registration of a food business in respect of any premises under Part 9 of the Food Act 2008. In accordance with: <table border="0"> <tr> <td>Legislation <i>Food Act 2008</i></td><td>Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)</td></tr> <tr> <td><i>Food Act 2008</i></td><td>110(1) and (5) and 112</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)	<i>Food Act 2008</i>	110(1) and (5) and 112
Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)				
<i>Food Act 2008</i>	110(1) and (5) and 112				
Delegated to:	Chief Executive Officer Director City Business Manager Field Services Senior Environmental Health Officer All Environmental Health Officers				
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.				
Power to sub delegate:	Nil.				
Reporting requirements					
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.					

3.6 Food Act 2008 Determine compensation					
Delegator:	Council				
Date adopted:	26 June 2019				
Delegation:	Council delegates to the Chief Executive Officer authority to determine to refuse or pay on an application for compensation from a person on whom a prohibition notice has been served, who has suffered loss as a result of the making of the order; and considers that there were insufficient grounds for making the order, in accordance with: <table border="0"> <tr> <td>Legislation <i>Food Act 2008</i></td><td>Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)</td></tr> <tr> <td><i>Food Act 2008</i></td><td>70(2) and (3)</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)	<i>Food Act 2008</i>	70(2) and (3)
Legislation <i>Food Act 2008</i>	Section 118(2)(b), 118 (3) [s119] and [s120] and 118(4)				
<i>Food Act 2008</i>	70(2) and (3)				
Delegated to:	Chief Executive Officer				
Limitations on delegation:	1. The level of compensation to be paid in respect of any single claim is not to exceed \$5 000. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.				
Power to sub delegate:	Nil.				
Reporting requirements					
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.					

Building Act 2011

3.7 Building Act 2011 Approve or refuse building permit						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer authority to: 1. Grant a building permit. 2. Refuse a building permit. 3. Determine approved alternative building solution to meet performance requirement in the Building Code relating to fire detection and early warning. 4. Determine approval / refusal of battery powered smoke alarm and determine application form. in accordance with: <table><tr><td>Legislation <i>Building Act 2011</i></td><td>Section 127</td></tr><tr><td><i>Building Act 2011</i> <i>Building Regulations 2012</i></td><td>20, 27(1) and (3) Regulation 55 and 61</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i>	Section 127	<i>Building Act 2011</i> <i>Building Regulations 2012</i>	20, 27(1) and (3) Regulation 55 and 61
Legislation <i>Building Act 2011</i>	Section 127					
<i>Building Act 2011</i> <i>Building Regulations 2012</i>	20, 27(1) and (3) Regulation 55 and 61					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)				
Sub delegation Approve or refuse building permit						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					
Sub delegated to:	Manager Development Approvals Principal Building Surveyor					
Limitations on Sub delegation:	1. Subject to the qualification requirements of <i>Building Services (Registration) Act 2011</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Reporting requirements						
Use of this delegation:						
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

3.8 Building Act 2011 Approve or refuse demolition permit						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer authority to: 1. Grant a demolition permit. 2. Refuse a demolition permit. 3. Impose, vary or revoke Limitations on a demolition permit. in accordance with: <table><tr><td>Legislation <i>Building Act 2011</i></td><td>Section 127</td></tr><tr><td><i>Building Act 2011</i></td><td>21, 27(1) and (3)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i>	Section 127	<i>Building Act 2011</i>	21, 27(1) and (3)
Legislation <i>Building Act 2011</i>	Section 127					
<i>Building Act 2011</i>	21, 27(1) and (3)					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)				
Sub delegation Approve or refuse demolition permit						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					
Sub delegated to:	Manager Development Approvals Principal Building Surveyor					
Limitations on Sub delegation:	1. Subject to the qualification requirements of <i>Building Services (Registration) Act 2011</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Reporting requirements						
Use of this delegation:						
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

3.9 Building Act 2011 Grant occupancy permit or building approval certificate						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer authority to: 1. require an applicant to provide any document or information required in order to determine an application. 2. grant or modify an occupancy permit or building approval certificate. 3. impose, add, vary or revoke Limitations on an occupancy permit or building approval certificate. 4. the period in which an occupancy permit or modification, or building approval certificate has effect. in accordance with: <table><tr><td>Legislation <i>Building Act 2011</i></td><td>Section 127</td></tr><tr><td><i>Building Act 2011</i></td><td>58, 62(1) and (3)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i>	Section 127	<i>Building Act 2011</i>	58, 62(1) and (3)
Legislation <i>Building Act 2011</i>	Section 127					
<i>Building Act 2011</i>	58, 62(1) and (3)					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)				
Sub delegation Grant occupancy permit or building approval certificate						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					
Sub delegated to:	Manager Development Approvals Principal Building Surveyor					
Limitations on Sub delegation:	1. Subject to the qualification requirements of <i>Building Services (Registration) Act 2011</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Reporting requirements						
Use of this delegation:						
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

3.10 <i>Building Act 2011</i> Designate authorised persons				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer authority to appoint ‘authorised officers’, in accordance with: <table><tr><td>Legislation <i>Building Act 2011</i> <i>Building Regulations 2012</i> <i>Local Government Act 1995</i> <i>Criminal Procedures Act 2004</i></td><td>Section 127 Regulation 70(2) 9.10 and 9.16 6(b)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i> <i>Building Regulations 2012</i> <i>Local Government Act 1995</i> <i>Criminal Procedures Act 2004</i>	Section 127 Regulation 70(2) 9.10 and 9.16 6(b)
Legislation <i>Building Act 2011</i> <i>Building Regulations 2012</i> <i>Local Government Act 1995</i> <i>Criminal Procedures Act 2004</i>	Section 127 Regulation 70(2) 9.10 and 9.16 6(b)			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)		
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.				

3.11 Building Act 2011 Issue and revocation of building orders						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer authority to: - Make building orders in relation to: - Building work. - Demolition work. - An existing building or incidental structure. - Give notice of a proposed building order and consider submissions received in response and determine actions [s.111(1)(c)] - Revoke a building order [s.117]. - If there is non-compliance with a building order, cause an authorised person to: - Take any action specified in the order. - Commence or complete any work specified in the order. - If any specified action was required by the order to cease, to take such steps as are reasonable to cause the action to cease [s.118 (2)]. - Take court action to recover as a debt, reasonable costs and expenses incurred in doing anything in regard to non-compliance with a building order [s.118(3)]. - Initiate a prosecution pursuant to section 133(1) for noncompliance with a building order made pursuant to section 110 of the Building Act 2011. In accordance with: <table><tr><td>Legislation <i>Building Act 2011</i></td><td>Section 127</td></tr><tr><td><i>Building Act 2011</i></td><td>110(1), 111(1), 117(1) and (2), 118(2) and (3) and 133(1)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i>	Section 127	<i>Building Act 2011</i>	110(1), 111(1), 117(1) and (2), 118(2) and (3) and 133(1)
Legislation <i>Building Act 2011</i>	Section 127					
<i>Building Act 2011</i>	110(1), 111(1), 117(1) and (2), 118(2) and (3) and 133(1)					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)				
Sub delegation Issue and revocation of building orders						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					

Sub delegated to:	Manager Field Services Principal Building Surveyor Team Leader Compliance and Health
Limitations on Sub delegation:	1. Subject to the qualification requirements of <i>Building Services (Registration) Act 2011</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Reporting requirements	
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

3.12 Building Act 2011 Inspection and copies of building records						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer authority to determine an application from an interest person to inspect and copy a building record, in accordance with: <table><tr><td>Legislation <i>Building Act 2011</i></td><td>Section 127</td></tr><tr><td><i>Building Act 2011</i></td><td>131(2)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Building Act 2011</i>	Section 127	<i>Building Act 2011</i>	131(2)
Legislation <i>Building Act 2011</i>	Section 127					
<i>Building Act 2011</i>	131(2)					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation <i>Building Act 2011</i>	Section 127(6A)				
Sub delegation Inspection and copies of building records						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					
Sub delegated to:	Manager Development Approvals Principal Building Surveyor Team Leader Compliance and Health					
Limitations on sub delegation:	1. Subject to the qualification requirements of <i>Building Services (Registration) Act 2011</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Reporting requirements						
Use of this delegation:						
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

Litter Act 1979

3.13 Litter Act 1979 Withdrawal of infringement notices			
Delegator:	Council		
Date adopted:	26 June 2019		
Delegation:	Council delegates to: • Chief Executive Officer • Director City Business • Manager Field Services • Team Leader Community Safety • Team Leader Parking the authority to determine if an infringement is to be withdrawn; and to sign withdrawal notices sent under subsection 4 of the <i>Litter Act 1979</i>. In accordance with: <table border="0"> <tr> <td>Legislation <i>Litter Act 1979</i></td><td>Section 30(4a)</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Litter Act 1979</i>	Section 30(4a)
Legislation <i>Litter Act 1979</i>	Section 30(4a)		
Delegated to:	Chief Executive Officer Director City Business Manager Field Services Team Leader Community Safety Team Leader Parking		
Limitations on delegation:	1. An individual infringement notice cannot be withdrawn or extended by the same officer that has issued it. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Power to sub delegate:	Nil.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

Dog Act 1976

3.14 Dog Act 1976 Functions				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer authority to undertake all the powers and duties of the local government under the <i>Dog Act 1976</i>, in accordance with: <table><tr><td>Legislation <i>Dog Act 1976</i></td><td>Section 10AA</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Dog Act 1976</i>	Section 10AA
Legislation <i>Dog Act 1976</i>	Section 10AA			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Dog Act 1976</i>	Section 10AA(3)		
Sub delegation Functions				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Manager Field Services Team Leader Community Safety			
Limitations on Sub delegation:	The Manager Field Services and Team Leader Community Safety are authorised to undertake the following functions: a. Direct a registration officer to refuse or effect or renew a registration of a dog or cancel a registration (s16). b. Determine that a dog cannot be registered where no application has been made (S17A). c. Determine, for the purposes of assessing whether a dog can be registered or remain registered, that a dog is not, or will not be appropriately confined (s 16, S17A). d. Determine for the purposes of assessing whether a dog can be registered or remain registered, that a dog is destructive, unduly mischievous, or to be suffering from an infectious or contagious disease (s 16, 17A). e. Establish and maintain dog management facilities (Section 11(1)); f. Keep a register of dogs (Section 14(1)). g. Discount or waive a dog registration fee (Section 15(4A)) h. Grant exemption regarding the number of dogs that may be kept (s26(3)). i. Approve kennel establishments (Section 27). j. Appoint persons to seize dogs (Section 29(1)). k. Declare a dog to be a dangerous dog (Section 33E). All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

Cat Act 2011

3.15 Cat Act 2011 Functions				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer authority to undertake all of the powers and duties of the local government under the <i>Cat Act 2011</i>, in accordance with: <table><tr><td>Legislation <i>Cat Act 2011</i></td><td>Section 44</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Cat Act 2011</i>	Section 44
Legislation <i>Cat Act 2011</i>	Section 44			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Cat Act 2011</i>	Section 45		
Sub delegation Functions				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Manager Field Services Team Leader Community Safety			
Limitations on Sub delegation:	Limited to the following sections of the <i>Cat Act 2011</i>: a. Registration (s1) b. Cancellation of registration (s10) c. Notice to be given of certain decisions made under this Subdivision (s13) d. Approval to breed cats (s37) e. Cancellation of approval to breed cats (s38) f. Notice to be given of certain decisions made under this Subdivision (s40) g. Authorised person may cause a cat to be destroyed (s49) All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

Caravan Parks and Camping Grounds Act 1995

3.16 Caravan Parks and Camping Grounds Act 1995 Authority to act as authorised persons			
Appointer:	Council		
Date adopted:	26 June 2019		
Appointed function:	Council appoints the: • Chief Executive Officer • Director City Business • Manager Field Services • Team Leader Compliance and Health • Senior Environmental Health Officer • All Environmental Health Officers • Team Leader Community Safety • All Community Safety Officers • All Security Officers to act as an authorised person for the purposes of this Act as considered necessary. In accordance with: <table border="0"> <tr> <td> Legislation <i>Caravan Parks and Camping Grounds Act 1995</i> The powers of a "authorised person" under the <i>Caravan Parks and Camping Grounds Act 1995</i> and the Caravan and Camping Grounds Regulations 1997 </td><td> Section 17(1) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Caravan Parks and Camping Grounds Act 1995</i> The powers of a "authorised person" under the <i>Caravan Parks and Camping Grounds Act 1995</i> and the Caravan and Camping Grounds Regulations 1997	Section 17(1)
Legislation <i>Caravan Parks and Camping Grounds Act 1995</i> The powers of a "authorised person" under the <i>Caravan Parks and Camping Grounds Act 1995</i> and the Caravan and Camping Grounds Regulations 1997	Section 17(1)		
Appointment:	Chief Executive Officer Director City Business Manager Field Services Team Leader Compliance and Health Senior Environmental Health Officer All Environmental Health Officers Team Leader Community Safety All Community Safety Officers All Security Officers		
Limitations on appointment:	The following officers can perform all of the functions of an authorised person under the <i>Caravan Parks and Camping Grounds Act 1995</i> but for the purposes of infringement notices the following limits apply: In accordance with section 23(11) the following persons are authorised to extend and withdraw infringement notices under 23(5) and (7) of the <i>Caravan Parks and Camping Grounds Act 1995</i>, but must not issue infringement notices: • Chief Executive Officer • Director City Business • Manager Field Services • Team Leader Community Safety In accordance with section 23(11) the following persons are authorised to issue infringement notices under section 23(2) of the <i>Caravan Parks and Camping Grounds Act 1995</i> but must not extend or withdraw infringement notices: • Senior Environmental Health Officer • All Environmental Health Officers • Team Leader Compliance and Health		

	• All Community Safety Officers • All Security Officers All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Power to sub delegate:	Nil – <i>The Caravan Parks and Camping Grounds Act 1995 does not contain a head of power to delegate the appointment of authorised persons to the Chief Executive Officer.</i>
Reporting requirements	
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

Graffiti Vandalism Act 2016

3.17 Graffiti Vandalism Act 2016 Local government functions				
Delegator:	Council			
Date adopted:	26 June 2019			
Delegation:	Council delegates to the Chief Executive Officer authority to undertake all of the powers and duties of the local government under the <i>Graffiti Vandalism Act 2016</i>, including the appointment of authorised persons, in accordance with: <table><tr><td>Legislation <i>Graffiti Vandalism Act 2016</i> <i>Graffiti Vandalism Act 2016</i> <i>Local Government Act 1995</i></td><td>Section 15 and 16 Part 3 Part 9</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Graffiti Vandalism Act 2016</i> <i>Graffiti Vandalism Act 2016</i> <i>Local Government Act 1995</i>	Section 15 and 16 Part 3 Part 9
Legislation <i>Graffiti Vandalism Act 2016</i> <i>Graffiti Vandalism Act 2016</i> <i>Local Government Act 1995</i>	Section 15 and 16 Part 3 Part 9			
Delegated to:	Chief Executive Officer			
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Power to sub delegate:	Legislation <i>Graffiti Vandalism Act 2016</i>	Section 17		
Sub delegation Functions				
Delegator:	Chief Executive Officer			
Date approved:	3 July 2019			
Sub delegated to:	Director Infrastructure and Project Delivery Manager Facilities and Environmental Management Graffiti Field Officer			
Limitations on Sub delegation:	1. Graffiti removal is to be undertaken in accordance with City of Fremantle policies. 2. Unauthorised street art is to be assessed before removal by the Director Community Development. 3. The Director Infrastructure and Project Delivery can only hear or determine an objection in accordance with Section 22 of the <i>Graffiti Vandalism Act 2016</i>. 4. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.			
Reporting requirements				
Use of this delegation:				
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.				

Public Health Act 2016

3.18 Public Health Act 2016 Appoint authorised officers							
Delegator:	Council						
Date adopted:	26 June 2019						
Delegation:	Council delegates to the Chief Executive Officer authority to: 1. Appoint a qualified person to be an environmental health officer. 2. Designate environmental health officers (either as a person or class of persons) to be authorised officers for the purposes of the <i>Public Health Act 2016</i> or another specified Act. 3. Designate a qualified person (either as a person or as a class of persons) who is not an environmental health officer to be an authorised officer for the purposes of the Public Health Act 2016 or another specified Act. In accordance with: <table border="0"> <tr> <td>Legislation</td><td>Section</td></tr> <tr> <td><i>Public Health Act 2016</i></td><td>17, 24(1),(3) and (4)</td></tr> <tr> <td><i>Public Health Act 2016</i></td><td>21</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation	Section	<i>Public Health Act 2016</i>	17, 24(1),(3) and (4)	<i>Public Health Act 2016</i>	21
Legislation	Section						
<i>Public Health Act 2016</i>	17, 24(1),(3) and (4)						
<i>Public Health Act 2016</i>	21						
Delegated to:	Chief Executive Officer						
Limitations on delegation:	1. The designation of authorised officers is to be in accordance with section 25 of the <i>Public Health Act 2016</i>. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.						
Power to sub delegate:	Nil.						
Reporting requirements							
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.							

Fines, Penalties and Infringement Notices Enforcement Act 1994

3.19 Fines, Penalties and Infringement Notices Enforcement Act 1994 Appointment of prosecution officers			
Delegator:	Council		
Date adopted:	26 June 2019		
Delegation:	Council delegates to the Chief Executive Officer authority to provide written notice to the Registrar designating those officers that are prosecution officers for the purposes of sections 16 and 22 of the <i>Fines, Penalties and Infringement Notices Enforcement Act 1994</i>, in accordance with: <table border="0"> <tr> <td style="vertical-align: top;"> Legislation <i>Fines, Penalties and Infringement Notices Enforcement Act 1994.</i> </td><td style="vertical-align: top;"> Section 13 and 13(2) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Fines, Penalties and Infringement Notices Enforcement Act 1994.</i>	Section 13 and 13(2)
Legislation <i>Fines, Penalties and Infringement Notices Enforcement Act 1994.</i>	Section 13 and 13(2)		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Power to sub delegate:	Nil.		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

Planning and Development Act 2005

3.20 Planning and Development Act 2005 Illegal development								
Delegator:	Council							
Date adopted:	26 June 2019							
Delegation:	Council delegates to the Chief Executive Officer authority to: 1. Give a written direction to the owner or any other person undertaking an unauthorised development to stop, and not recommence, the development or that part of the development that is undertaken in contravention of the planning scheme, interim development order or planning control area requirements. 2. Give a written direction to the owner or any other person who undertook an unauthorised development: a. to remove, pull down, take up, or alter the development b. to restore the land as nearly as practicable to its condition immediately before the development started, to the satisfaction of the responsible authority. 3. Give a written direction to the person whose duty it is to execute work to execute that work where it appears that delay in the execution of the work to be executed under a planning scheme or interim development order would prejudice the effective operation of the planning scheme or interim development order. In accordance with: <table><tr><td>Legislation</td><td>Section</td></tr><tr><td>Local Government Act 1995</td><td>5.42</td></tr><tr><td>Planning and Development Act 2005</td><td>214(2), (3) and (5)</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation	Section	Local Government Act 1995	5.42	Planning and Development Act 2005	214(2), (3) and (5)
Legislation	Section							
Local Government Act 1995	5.42							
Planning and Development Act 2005	214(2), (3) and (5)							
Delegated to:	Chief Executive Officer							
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.							
Power to sub delegate:	Legislation Local Government Act 1995	Section 5.44						
Illegal development sub delegation								
Delegator:	Chief Executive Officer							
Date approved:	3 July 2019							
Sub delegated to:	Director City Business Director Strategic Planning and Projects Manager Development Approvals Manager Field Services							
Limitations on sub delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.							
Reporting requirements								
Use of this delegation:								
1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.								

City of Fremantle Local Planning Scheme No. 4

3.21 City of Fremantle Local Planning Scheme No. 4 Enforcement and appeals						
Delegator:	Council					
Date adopted:	26 June 2019					
Delegation:	Council delegates to the Chief Executive Officer the authority to take action under part 13 of the <i>Planning and Development Act 2005</i> for any failure to comply with the provisions of Local Planning Scheme No 4 or the Planning and Development (Local Planning Schemes) Regulations 2015 (Deemed Provisions). As well as the power to determine a position in respect to any mediation resulting from an application for review made under Part 14 of the <i>Planning and Development Act 2005</i> in response to a decision made under delegated authority; and The determination of the City's position with respect to any appeal to the State Administrative Tribunal on a decision made under delegated authority. In accordance with: <table><tr><td>Legislation <i>Planning and Development Act 2005</i></td><td>Section 13 and 14</td></tr><tr><td><i>Planning and Development (Local Planning Schemes) Regulations 2015</i></td><td>82</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Planning and Development Act 2005</i>	Section 13 and 14	<i>Planning and Development (Local Planning Schemes) Regulations 2015</i>	82
Legislation <i>Planning and Development Act 2005</i>	Section 13 and 14					
<i>Planning and Development (Local Planning Schemes) Regulations 2015</i>	82					
Delegated to:	Chief Executive Officer					
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Power to sub delegate:	Legislation Planning and development (Local Planning Schemes) Regulations 2015	Section 83				
Sub delegation Enforcement and appeals						
Delegator:	Chief Executive Officer					
Date approved:	3 July 2019					
Part 1. Sub delegated to:	Director Strategic Planning and Projects Director City Business Manager Development Approvals Manager Strategic Planning Manager Field Services					
Part 1. Limitations on Sub delegation:	1. The power to withdraw written direction is limited to the Director Strategic Planning and Projects and the Director City Business. 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.					
Part 2. Sub delegated to:	Manager Field Services					
Part 2. Limitations on Sub delegation:	The Manager Field Services may only: 1. Take legal action in regard to breaches of the Local Planning Scheme No 4 or the Planning and Development (Local Planning Schemes) Regulations 2015 (Deemed Provisions). 2. Issue written direction in accordance with Section 214 of the <i>Planning</i>					

	<i>and Development Act 2005 (illegal development).</i> 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Reporting requirements	
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

3.22 City of Fremantle Local Planning Scheme No. 4 Development Control										
Delegator:	Council									
Date adopted:	26 June 2019									
Delegation:	Council delegates to the Chief Executive Officer the authority to determine: 1. applications for planning approval (including the exercise of discretion under Local Planning Scheme No. 4 and the Residential Design Codes); 2. all matters which arise out of the imposition of conditions on planning approvals; and 3. all matters delegated to the City of Fremantle under the <i>Planning and Development Act 2005</i>, or functions that the City is authorised to exercise under that Act. In accordance with: <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Local Government Act 1995</i></td><td>Section 5.42 and 5.43 6.49</td></tr></table> For the purpose of effective management of the City of Fremantle.		Legislation <i>Local Government Act 1995</i> <i>Local Government Act 1995</i>	Section 5.42 and 5.43 6.49						
Legislation <i>Local Government Act 1995</i> <i>Local Government Act 1995</i>	Section 5.42 and 5.43 6.49									
Delegated to:	Chief Executive Officer									
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.									
Power to sub delegate:	Legislation <i>Local Government Act 1995</i>	Section 5.44								
Sub delegation Development control										
Delegator	Chief Executive Officer									
Date approved:	3 July 2019									
Sub delegated to:	Director Strategic Planning and Projects Manager Development Approvals Manager Strategic Planning Coordinator Statutory Planning Senior Planning Officer – Delegated Authority									
Limitations on sub delegation:	<table><tr><td colspan="2">All powers and duties</td></tr><tr><td colspan="2">Director Strategic Planning and Projects</td></tr><tr><td colspan="2">Manager Development Approvals</td></tr><tr><td colspan="2">Manager Strategic Planning</td></tr></table> The officers listed above have all of the powers and duties of the Council under the Local Planning Scheme No. 4 with the exception of: a. The adoption of a local planning policy, structure plan or detailed area plan b. The establishment of a committee under local planning scheme no. 4. c. Determining a planning application considered a significant application by: • Director Strategic Planning and Projects • Manager Development Approvals • Manager Strategic Planning d. Determining a planning application, or variation to planning approval where: • relevant objection/s have been received on planning grounds which cannot be addressed by conditions of approval and is not a minor variation as determined by the officers listed below, and clearly does not meet the		All powers and duties		Director Strategic Planning and Projects		Manager Development Approvals		Manager Strategic Planning	
All powers and duties										
Director Strategic Planning and Projects										
Manager Development Approvals										
Manager Strategic Planning										

relevant performance criteria of the R Codes or intent of the relevant planning policy or scheme provision:

- Chief Executive Officer
 - Director Strategic Planning and Projects
 - Manager Development Approvals
 - Manager Strategic Planning
 - the application involves demolition of a building (excluding an outbuilding, incidental structure or minor addition) on the City of Fremantle Heritage List or within a Heritage Area.
- e. Determining a variation of planning approval where the original decision has been determined by the Council or Committee unless one of the officers listed below deems the variation to be minor and the requirements of this delegation are met:
- Chief Executive Officer
 - Director Strategic Planning and Projects
 - Manager Development Approvals
 - Manager Strategic Planning
- f. Determining an application for extension of time, where the original decision was determined by the Council or Committee and it is not the first extension of time for the planning application.
- g. Determining an application for planning approval in relation to a non- conforming use.
- h. Revocation of a local planning policy.

Limited authority

Coordinator Statutory Planning

Senior Planning Officer – Delegated Authority

The officers listed above have some powers and duties of the Council under the Local Planning Scheme No. 4 with the exception of:

- a. The adoption of a local planning policy, structure plan or detailed area plan.
- b. The establishment of a committee under local planning scheme no. 4.
- c. Determining a planning application considered a significant application by part 1 sub-delegated officers.
- d. Determining a planning application or variation to planning approval where:
 - relevant objection/s have been received on planning grounds which cannot be addressed by conditions of approval and is not a minor variation as determined by the officers listed below, and clearly does not meet the relevant performance criteria of the R Codes or intent of the relevant planning policy or scheme provision
 - Chief Executive Officer
 - Director Strategic Planning and Projects
 - Manager Development Approvals
 - Manager Strategic Planning
 - the application involves demolition of a building (excluding an outbuilding, incidental structure or minor addition) on the City of Fremantle Heritage List or within a Heritage Area.
- e. Determining a variation of planning approval where the original decision has been determined by the Council or Committee unless one of the officers listed below deems the variation to be minor and the requirements of this delegation are met.
 - Chief Executive Officer
 - Director Strategic Planning and Projects
 - Manager Development Approvals
 - Manager Strategic Planning

	f. Determining an application for extension of time, where the original decision was determined by the Council or Committee and it is <i>not</i> the first extension of time for the planning application. g. Determining an application for planning approval in relation to a non-conforming use. h. Revocation of a local planning policy. Prohibitions Coordinator Statutory Planning Senior Planning Officer – Delegated Authority The officers listed above are subject to the following additional prohibitions: 1. may not determine applications for development exceeding \$2,000,0000 in value 2. may not determine a net increase of more than two dwellings (unless on a survey strata lot) 3. may not determine a net increase of over 5000m2 of building floor area 4. may not refuse applications 5. may not determine applications in a manner not generally consistent with relevant planning policies 6. may not determine an application for planning approval where any submissions have been received, irrespective of issues raised, unless all submissions received are in support of the development without condition
Reporting requirements	
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

Control of Vehicles (Off-road Areas) Act 1978

3.23 Control of Vehicles (Off-road Areas) Act 1978 Authority to act as an authorised officer			
Appointer:	Council		
Date adopted:	26 June 2019		
Appointed function:	Council appoints the Manager Field Services, Team Leader Community Safety and all Community Safety Officers authority to act as an authorised officer for the purposes of this Act as considered necessary, in accordance with: <table border="0"> <tr> <td style="vertical-align: top;"> Legislation <i>Control of Vehicles (Off-road Areas) Act 1978</i> </td><td style="vertical-align: top;"> Section 38(1)(c) and 38 (3) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Control of Vehicles (Off-road Areas) Act 1978</i>	Section 38(1)(c) and 38 (3)
Legislation <i>Control of Vehicles (Off-road Areas) Act 1978</i>	Section 38(1)(c) and 38 (3)		
Appointment:	Manager Field Services Team Leader Community Safety All Community Safety Officers		
Limitations on appointment:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Power to sub-delegate:	Nil		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements			

Health (Asbestos) Regulations 1992

3.24 <i>Health (Asbestos) Regulations 1992</i> Appointment of authorised officers and approved officers			
Delegator:	Council		
Date adopted:	26 June 2019		
Delegation:	Council delegates to the Chief Executive Officer the appointment in writing of persons or classes of persons to be authorised officers or approved officers for the purposes of the <i>Criminal Procedure Act 2004</i> Part 2 in relation to infringement notices under the <i>Health (Asbestos) Regulations 1992</i>, in accordance with: <table border="0"> <tr> <td style="vertical-align: top;"> Legislation <i>Health (Asbestos) Regulations 1992</i> </td><td style="vertical-align: top;"> Section Regulation 15D(5) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Health (Asbestos) Regulations 1992</i>	Section Regulation 15D(5)
Legislation <i>Health (Asbestos) Regulations 1992</i>	Section Regulation 15D(5)		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
power to Sub delegate:	Nil.		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

PART 4

Delegations to local government from external agencies

The delegations outlined in part 4 of this register are externally established and may be subject to change. Please check the Government Gazette for most current version and use this register for reference only.

Environmental Protection Act 1986

4.1 Noise Control – Serve Environmental Protection Notices [S65(1)]

Noise Control – Serve Environmental Protection Notices [S65(1)]

Published in Government Gazette No.47, 19 March 2004

ENVIRONMENTAL PROTECTION ACT 1986

Section 20

Delegation No. 52

Pursuant to section 20 of the *Environmental Protection Act 1986*, the Chief Executive Officer hereby delegates as follows -

Powers and duties delegated -

All the powers and duties of the Chief Executive Officer, where any noise is being or is likely to be emitted from any premises not being premises licensed under the Act, to serve an environmental protection notice under section 65(1) in respect of those premises, and where an environmental protection notice is so served in such a case, all the powers and duties of the Chief Executive Officer under Part V of the Act in respect of that environmental protection notice.

Persons to whom delegation made -

This delegation is made to any person for the time being holding or acting in the office of Chief Executive Officer under the *Local Government Act 1995*.

Pursuant to section 59(1)(e) of the *Interpretations Act 1984*, Delegation No. 32, dated 4 February 2000 is hereby revoked.

Dated this 9th day of January 2004.

Approved –

FERDINAND TROMP, A/Chief Executive Officer.

Dr JUDY EDWARDS MLA, Minister for the Environment.

4.2 Noise Control – Keeping of Log Books, Noise Control Notices, Calibration and Approval of Non-Complying Events [Reg.16]

Noise Control – Keeping of Log Books, Noise Control Notices, Calibration and Approval of Non-Complying Events [Reg.16]

Published in Government Gazette No.232, 20 December 2013

EV402*

ENVIRONMENTAL PROTECTION ACT 1986

DELEGATION NO. 112

I, Jason Banks, in my capacity as Acting Chief Executive Officer of the Department of Environment Regulation responsible for the administration of the *Environmental Protection Act 1986* ("the Act"), and pursuant to section 20 of the Act, hereby delegate to any person for the time being holding or acting in the office of a Chief Executive Officer under the *Local Government Act 1995*, my powers and duties under the *Environmental Protection (Noise) Regulations 1997*, other than this power of delegation, in relation to—

- (1) waste collection and other works—noise management plans relating to specified works under regulation 14A or 14B
- (2) bellringing or amplified calls to worship—the keeping of a log of bellringing or amplified calls to worship requested under regulation 15(3)(c)(vi);
- (3) community activities—noise control notices in respect of community noise under regulation 16;
- (4) motor sport venues—noise management plans in relation to motor sport venues under Part 2 Division 3;
- (5) shooting venues—noise management plans in relation to shooting venues under Part 2 Division 4;
- (6) calibration results—requesting, under regulation 23(b), details of calibration results undertaken and obtained under Schedule 4;
- (7) sporting, cultural and entertainment events—approval of events or venues for sporting, cultural and entertainment purposes under Part 2 Division 7, subject to the following limitation—
 - (a) Subregulation 18(13)(b) is not delegated.

Under section 59(1)(e) of the *Interpretation Act 1984*, Delegation No. 68, gazetted 22 June 2007 is hereby revoked.

Dated the 12th day of December 2013. JASON BANKS, Acting Chief Executive Officer.

Approved by—
JOHN DAY, Acting Minister for Environment; Heritage.

4.3 Noise Control – Noise Management Plans – Construction Sites [Reg.13]

Noise Control – Noise Management Plans – Construction Sites [Reg.13]

Published in Government Gazette No.71 – 16 May 2014

EV405*

ENVIRONMENTAL PROTECTION ACT 1986

DELEGATION NO. 119

I, Jason Banks, in my capacity as the Acting Chief Executive Officer of the Department responsible for the administration of the *Environmental Protection Act 1986* ("the Act"), and pursuant to section 20 of the Act, hereby delegate to the holder for the time being of the offices of —

- (8) Chief Executive Officer under the *Local Government Act 1995*; and
- (9) to any employee of the local government under the *Local Government Act 1995* who is appointed as an Authorised Person under section 87 of the Act,

all my powers and duties in relation to noise management plans under regulation 13 of the *Environmental Protection (Noise) Regulations 1997*, other than this power of delegation.

Under section 59(1)(e) of the *Interpretation Act 1984*, Delegation No. 111, gazetted 20 December 2013, is hereby revoked.

Dated the 1st day of May 2014.

JASON BANKS, Acting Chief Executive Officer.

Approved by—

Hon ALBERT JACOBS JP MLA, Minister for Environment: Heritage

Planning and Development Act 2005

4.4 Referral arrangements - Western Australian Planning Commission

Western Australian Planning Commission – Referral Arrangements

Government Gazette No. 65 – 9 May 2014 (pages 1410 - 1412)

PL403*

PLANNING AND DEVELOPMENT ACT 2005

RESOLUTION

RES 2014/01 RESOLUTION UNDER CLAUSE 32 OF THE MRS

Resolution made under clause 32 of the Metropolitan Region Scheme regarding development control powers of the Western Australian Planning Commission

On 25 March 2014, pursuant to clause 32 of the Metropolitan Region Scheme (MRS), the Western Australian Planning Commission (WAPC) resolved—

A TO REVOKE its resolution made under clause 32 of the MRS as detailed in the notice entitled “RES 2011/01 Resolution under Clause 32 of the MRS” published in the *Government Gazette* of 1 November 2011 (pages 4612-4614);

B TO REQUIRE all local governments within the MRS area to refer applications for development of the classes and in the locations specified in clauses 1 to 4 of the Schedule 1 to the WAPC for determination;

C TO REQUIRE the local governments specified in clauses 5 to 10 of Schedule 1 to refer applications for development of the classes and in the locations specified in clauses 5 to 10 of Schedule 1 to the WAPC for determination;

D TO CONFIRM that words used in the schedule to this resolution have the meanings given to them in the *Planning and Development Act 2005* (Act) and the MRS. In the case of any inconsistency, the Act prevails;

E TO DECLARE that the resolution takes effect when notice of the resolution is published in the *Government Gazette*.

TIM HILLYARD, Secretary, Western Australian Planning Commission.

SCHEDULE 1

REFERRAL ARRANGEMENTS FOR LOCAL GOVERNMENTS IN THE AREA COVERED BY THE MRS

1. Development of state or regional significance

All applications made under clause 28 of the MRS for approval to commence and carry out development that the WAPC, by notice in writing in each case, advises the local government are of State or regional importance or in the public interest.

2. Development in the rural zone

The following classes of applications made under clause 28 of the MRS for approval to commence and carry out development on land in the rural zone in the MRS—

- extractive industry—all applications
- any other use which in the opinion of the local government or the WAPC may not be consistent with the rural zone.

3. Poultry farms

Applications made under clause 28 of the MRS for approval to commence and carry out development of new poultry farms or any extension or addition in excess of 100 square meters to the improvements of an existing poultry farm in the Rural, Urban or Urban Deferred zones in the MRS.

4. Development in activity centres

Applications made under clause 28 of the MRS for approval to commence and carry out development relating to a building or extension/s to an existing building for shop-retail purposes —

1. Where the local government or the WAPC considers that the development proposed may be of state or regional significance.
2. Where the development proposed is major development which the local government considers is appropriately located in an activity centre of a higher level of the activity centre hierarchy that the activity centre in which it is proposed to be located.
3. Where the development proposed is major development which the WAPC (after consulting the relevant local government) considers is appropriately located in an activity centre of a higher level of the activity centre hierarchy that the activity centre in which it is proposed to be located.
4. For Strategic metropolitan centre or Secondary centre developments where the development proposed is major development.
5. For District centre developments, where the development is major development and where approval of the proposal would result in the shop/retail floorspace exceeding 20 000m² of shop/retail floorspace (net lettable area).
6. Where the development proposed is wholly or partly located in zoned land in specialised centres.

except where the application complies with an activity centre structure plan or equivalent plan or strategy for the activity centre endorsed by the WAPC.

For the purpose of this resolution—

“*activity centre*” means the categories of activity centres set out in Table 2 and Table 3 of State Planning Policy 4.2, namely—

- capital city
- strategic metropolitan centres
- secondary centres
- district centres
- neighbourhood centres.

“*activity centre structure plan*” means a structure plan prepared as required under 6.4 of State Planning Policy 4.2;

“*major development*” means development as defined in appendix 1 of State Planning Policy 4.2, namely—

- Development of any building where the building is used or proposed to be used for *shop-retail* purposes and where the shop-retail net lettable area of the proposed building is more than 10000m²; or
- Development of any extension/s to an existing building where the extension/s is used or proposed to be used for *shop-retail* purposes and where the shop-retail net lettable area of the extension/s is more than 5000m².

“*net lettable area*” is defined in Appendix 1 of State Planning Policy 4.2;

“*shop-retail*” means the land use activities included in “Planning land use category 5: Shop/retail” as defined by the WAPC’s Perth Land Use and Employment Survey (as amended from time-to-time);

“*specialised centres*” means the centres identified in clause 5.1.1 of State Planning Policy 4.2, which focus on regionally significant economic or institutional activities that generate many work and visitor trips, which therefore require a high level of transport accessibility;

“*State Planning Policy 4.2*” means State Planning Policy No.4.2—Activity Centres for Perth and Peel, published in the *Government Gazette* on 31 August 2010.

REFERRAL ARRANGEMENTS FOR SPECIFIC LOCAL GOVERNMENTS

7. Stirling and Glendalough Station Precincts

The City of Stirling, in the areas defined in WAPC plan No. 4.1495/1, is to refer for determination by the WAPC the following classes of applications under clause 28 of the MRS for approval to commence and carry out development on land—

- (i) All applications that include non-residential uses and/or development; and

- (ii) All application for 5 or more residential dwellings.

8. Kwinana Industrial Area

The city of Kwinana is to refer for determination by the WAPC all applications made under clause 28 of the MRS for all classes of development for the area shown on WAPC plan No. 4.1489/1, except where development is estimated by the applicant to be less than \$250,000 in respect of which the council may decide at its discretion to submit or not to the WAPC.

9. North Coogee Industrial Area

The City of Cockburn is to refer for determination by the WAPC all application made under clause 28 of the MRS for all classes of development for the area shown on WAPC plan No. 4.1472/1.

10. Parliament House Precinct 6

The City of Perth is to refer for determination by the WAPC all applications for approval to commence and carry out development within—

- (i) The area depicted as the Inner Precinct on WAPC plan 3.2096; and
- (ii) The area depicted as the Outer Precinct on WAPC plan 3.2096, where the development proposed will exceed the specified height limits, previously determined by the WAPC.

11. Lots 6, 8 and 9 Scarborough Beach Road, Osborne Park

The City of Stirling is to refer for determination by the WAPC those applications made under Clause 28 of the MRS for the area shown on WAPC plan 4.1544.

12. Leach Highway and Stock Road—Leach Highway to South Street

The Cities of Fremantle and Melville are to refer for determination by the WAPC those applications made MRS for the area shown on WAPC plan 1.7068.

4.5 Development applications - Western Australian Planning Commission

Western Australian Planning Commission – Development Applications

Government Gazette No. 104 – 30 May 2017 (pages 2738 - 2743)

PL403

PLANNING AND DEVELOPMENT ACT 2005

Instrument of delegation
DEL 2017/02 Powers of Local Governments and Department of Transport
Metropolitan Region Scheme

Delegation of certain powers and functions of the Western Australian Planning Commission relating to the Metropolitan Region Scheme

Preamble

Under section 16 of the *Planning and Development Act 2005* (the Act) the Western Australian Planning Commission (the WAPC) may, by resolution published in the *Government Gazette*, delegate any function to an officer of a public authority or to a local government, a committee established under the *Local Government Act 1995* or an employee of a local government.

In accordance with section 16(4) of the Act, a reference in this instrument to a function or a power of the WAPC includes and extends to, without limitation or restriction, any of the powers, privileges, authorities, discretions, duties and responsibilities vested in or conferred upon the WAPC by the Act or any other written law as the case requires.

Resolution under section 16 of the Act (delegation)

On 24 May 2017, pursuant to section 16 of the Act, the WAPC resolved—

- A. To delegate to local governments, and to members and officers of those local governments, its functions in respect of the determination, in accordance with Part IV of the Metropolitan Region Scheme, of applications for approval to commence and carry out development specified in clauses 1 and 2 of Section A, within their respective districts, subject to the Limitations set out in clauses 1 to 4 of Section B;
- B. To delegate to the Managing Director, Policy, Planning and Investment—Transport, of the Department of Transport, and the person or persons from time to time holding or acting in that office, its functions in respect of the determination, in accordance with Part IV of the Metropolitan Region Scheme (MRS), of applications for approval to commence and carry out development specified in clause 3, Section A, subject to the Limitations set out in clause 5 of Section B.
- C. To revoke its delegation of powers and functions to local governments as detailed in the notice entitled “DEL 2011/02 Powers of local governments (MRS)” published in the *Government Gazette* on 10 June 2014, to give effect to this delegation,

KERRINE BLENKINSOP, Secretary,

Western Australian Planning Commission.

PLANNING AND DEVELOPMENT ACT 2005

INSTRUMENT OF DELEGATION

SECTION A—Types of Development

1. Development on zoned land

Applications for development on land zoned under the MRS except—

- (a) where the land is subject to a resolution under Clause 32 of the MRS; or
- (b) where the land is subject to the declaration of a planning control area under Section 112 of the *Planning and Development Act 2005*; or
- (c) where that land is partly within the development control area described in section 10 of the *Swan and Canning Rivers Management Act 2006* or is outside the development control area but abuts waters within the development control area; or
- (d) where the local government is of the opinion that the application should be determined by the WAPC on the grounds that the proposal is of State or regional importance or is in the public interest, or
- (e) in respect of public works undertaken by public authorities.

2. Development on regional road reservations

Applications for developments on or abutting land that is reserved in the MRS for the purpose of a regional road, but excluding any application relating to large format digital signage.

3. Large Format Digital Signage applications

Applications from any public authority for development in relation to large format digital signage, on land reserved under the MRS for the purpose of a Primary Regional Road.

SECTION B—Limitations

1. Referral requirements for development on land within or abutting a regional road reservation

The following applications for development on land that abuts or is fully or partly reserved as regional road reservation (classified as Category 1, 2 and 3) shall be referred to Main Roads WA (MRWA) or the Department of Planning (DoP), as applicable, for transport planning related comments and recommendations before being determined by the local government subject to the process explained in clause 4, Section B.

Type of regional road reservation in the MRS	Classification on plans SP 693 (PRR) and SP 694 (ORR)	Referral Agency
Primary Regional Road (PRR)	Category 1, 2 and 3	Main Roads WA
Other Regional Road (ORR)	Category 1, 2 and 3	Department of Planning

The regional road network (PRR and ORR) changes periodically with amendments to the MRS. This clause relates to all regional road reservations in the MRS as amended from time to time. Regional roads subject to this notice and the relevant agency that is responsible for their planning are shown on accompanying editions of plans SP 693 (PRR, MRWA) and SP 694 (ORR, WAPC).

The road categories shown on plans SP 693 (PRR) and SP 694 (ORR) classify the regional roads based on—

- (a) the permissible vehicular access arrangements to the subject land via the regional road frontage
 - **Category 1 road** means that frontage access is not allowed (control of access);
 - **Category 2 road** means that frontage access may be allowed subject to approval; and

- (b) the legibility and statutory powers of current road land requirements defined for the purpose of regional road reservation in the MRS
- **Category 3 road** means that the subject regional road reservation is not accurately defined or is subject to review by the agency that is responsible for planning of the regional road.

“Category 1 road” applies where regional roads—

- (a) are constructed or planned to a fully controlled and grade separated freeway standard; or
- (b) are constructed or planned to an access controlled arterial standard, (i.e. functioning as Primary Distributor or Integrator Arterial (District Distributor) road with widely spaced signalised intersections or roundabouts, and a few, if any, direct access points to individual sites or local streets.

“Category 2 road” applies where regional roads—

- (a) are constructed or planned to a partially access controlled arterial standard, (i.e. a primary or district distributor road with direct connections to local streets and driveways to larger sites, but with some restriction of direct frontage access to individual properties); or
- (b) have direct frontage access to abutting properties due to the historic development of the road and properties.

“Category 3 road” applies where regional road reservation is not accurately defined or is under review.

For enquiries and assistance regarding—

- (a) PRR Category 1, 2 and 3—call Main Roads WA on 138 138.
- (b) ORR Category 1, 2 and 3—call Department of Planning on (08) 6551 9000.

Tables 1, 2 and 3 below outline the category of the regional road reservation and the criteria for referring development applications to agencies for comment in accordance with this instrument of delegation.

**Table 1—Referral process of development applications with respect to
Category 1 (PRR or ORR reservations in the MRS)**

Respective referral agency (as per Section B)	
Referral is required in these instances	Referral is not required in these instances
1. Where a development application has one or more of the following characteristics— (a) Development, including earthworks and drainage, which encroaches or impacts upon the road reservation; or (b) Development with potential for a significant increase in traffic using any access, either directly or indirectly, onto the road reservation; or (c) Development, which involves direct vehicle access to and/or from the regional road reservation.	1. Where the local government first decides to refuse the application under the MRS; or 2. Under circumstances where the application is for an ancillary and incidental addition or modification to an existing authorised development, which does not encroach upon the road reservation and has no intention to alter existing access arrangements.

**Table 2—Referral process of development applications with respect to
Category 2 (PRR or ORR reservations in the MRS)**

Respective referral agency (as per Section B)	
Referral is required in these instances	Referral is not required in these instances

1. Where a development application has one or more of the following characteristics— (a) Development, including earthworks and drainage, which encroaches or impacts upon the road reservation; or (b) Development with potential for a significant increase in traffic on the regional road using any access, either directly or indirectly, onto the road reservation; or	1. Where the local government first decides to refuse the application under the MRS; or 2. Under circumstances where the application is for an ancillary and incidental addition or modification to an existing authorised development, which does not encroach upon the road reservation and has no intention to alter existing access arrangements.
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Respective referral agency (as per Section B)

Referral is required in these instances	Referral is not required in these instances
(c) Development, which involves the retention of more than one existing access; or additional, relocated or new access between the subject land and the road reservation; or (d) Development, which proposes retention of an existing access between the subject land and the road reservation, where alternative access is or could be made available from side or rear streets or from rights of way at rear; or (e) Development on a lot affected by the regional road reservation where— • all or part of the proposed development is within the regional road reservation; and • has a construction value greater than \$20 000; or (f) Development on a lot affected by the regional road reservation where— • none of the proposed development is within the regional road reservation; and • has a construction value greater than \$150 000	

Referral is required in these instances	Referral is not required in these instances
2. Where a development application has one or more of the following characteristics— (a) Development, including earthworks and drainage, which encroaches or impacts upon the road reservation; or (b) Development with potential for a significant increase in traffic using any access, either directly or indirectly, onto the road reservation; or (c) Development, which involves direct vehicle access to and/or from the regional road reservation.	3. Where the local government first decides to refuse the application under the MRS; or 4. Under circumstances where the application is for an ancillary and incidental addition or modification to an existing authorised development, which does not encroach upon the road reservation and has no intention to alter existing access arrangements.

**Table 2—Referral process of development applications with respect to
Category 2 (PRR or ORR reservations in the MRS)**

Respective referral agency (as per Section B)	
Referral is required in these instances	Referral is not required in these instances
2. Where a development application has one or more of the following characteristics— (a) Development, including earthworks and drainage, which encroaches or impacts upon the road reservation; or (b) Development with potential for a significant increase in traffic on the regional road using any access, either directly or indirectly, onto the road reservation; or	3. Where the local government first decides to refuse the application under the MRS; or 4. Under circumstances where the application is for an ancillary and incidental addition or modification to an existing authorised development, which does not encroach upon the road reservation and has no intention to alter existing access arrangements.

Respective referral agency (as per Section B)	
Referral is required in these instances	Referral is not required in these instances
(c) Development, which involves the retention of more than one existing access; or additional, relocated or new access between the subject land and the road reservation; or (d) Development, which proposes retention of an existing access between the subject land and the road reservation, where alternative access is or could be made available from side or rear streets or from rights of way at rear; or (e) Development on a lot affected by the regional road reservation where— • all or part of the proposed development is within the regional road reservation; and • has a construction value greater than \$20 000; or (f) Development on a lot affected by the regional road reservation where— • none of the proposed development is within the regional road reservation; and • has a construction value greater than \$150 000	

Table 3—Referral process of development applications with respect to Category 3 (PRR or ORR reservations in the MRS)

Respective referral agency (as per Section B)	
Referral is required in these instances	Referral is not required in these instances
1. All development applications, other than those where local government first decides to refuse it.	1. Where the local government first decides to refuse the application under the MRS

Notes—

- (1) Copies of plans SP 693 (PRR) and SP 694 (ORR) are available from the WAPC's website: "Resolutions and instruments of delegation—WAPC Powers of local governments (MRS)". (<http://www.planning.wa.gov.au/1212.asp>)
- (2) In determining applications under this delegation, local governments shall have due regard to relevant WAPC and MRWA policy and guidelines, including but not limited to the Commission's D C Policy—5.1 *Regional Roads (Vehicular Access)*, the Transport Impact Assessment Guidelines, and MRWA *Driveways Policy*, which set out the principles and requirements to be applied when considering proposals for vehicle access to or from developments abutting certain categories of regional roads.
(<http://www.planning.wa.gov.au/publications/812.asp>; and <https://www.mainroads.wa.gov.au/BuildingRoads/StandardsTechnical/RoadandTrafficEngineering/GuidetoRoadDesign/Pages/Driveways.aspx>)
- (3) Local governments shall ensure that sufficient transport information accompanies the development application to assist the referral agency in assessing the transport implications of the proposal. This information should be provided in accordance with the WAPC's *Transport Impact Assessment Guidelines*.
<http://www.planning.wa.gov.au/publications/1197.asp>
- (4) With regard to proposals for new noise-sensitive developments, the local government shall have due regard to the provisions of Commission's *State Planning Policy—5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*.
(<http://www.planning.wa.gov.au/publications/1182.asp>)
- (5) With regard to development application for the display of advertisements on land reserved under the MRS local government should have regard to the Commission's DC Policy 5.4 *Advertising on Reserved Land*. (<http://www.planning.wa.gov.au/publications/825.asp>)

2. Referral requirements for development on land abutting the Swan River Trust Development Control Area

Applications for development on land that is outside the development control area but abutting land that is in the development control area, or which in the opinion of the local government are likely to affect waters in the development control area, shall be referred to the Swan River Trust for comment and recommendation before being determined by the local government.

3. Referral requirements for development on land abutting other reservations

Applications for development on land abutting land reserved in the MRS for purposes other than regional roads or Parks and Recreation (where the reservation corresponds with the Swan River Trust development control area and is covered by Clause 2, Section B of this notice) shall be referred to the public authority responsible for that reserved land for comment and recommendation before being determined by the local government.

In the case of land reserved for the purpose of Parks and Recreation, which is not vested or owned by another public authority, the applications shall be referred to the Department of Planning before being determined by the local government.

4. For the purpose of this Instrument of Delegation (excluding applications under clause 3, Section A)—

- (a) Where an application is referred by the local government to a public authority for comment and recommendation, the public authority shall provide comment and a recommendation, if any, within 30 days of receipt of the application. If no comment or recommendation is received within that 30 day period the local government may determine the application on the available information.
- (b) Where the recommendation provided by the public authority specified in the delegation notice is not acceptable to the local government the application, together with the recommendations provided by all public authorities consulted and the reasons why the recommendation is not acceptable to the local government, shall be referred immediately to the WAPC for determination.
- (c) The powers delegated to a member or officer of a local government may only be exercised by a member or officer who has been delegated power from the local government to consider and determine applications for approval to commence and carry out development within the local government district under the local government's local planning scheme.

5. Referral Requirements for applications from a public authority for large format digital signage development on land within a Primary Regional Road reservation

Where applications for large format digital signage development relate to land that is reserved as Primary Regional Roads (PRR) reservation in the MRS, the following shall apply—

- (a) DoT shall refer the application to the relevant local government and Main Roads WA for comment and recommendation;
- (b) the local government and Main Roads WA shall provide their comments and recommendations, if any, to the delegate within 30 days of receipt of the application;
- (c) Once the 30 day period has elapsed, the delegate may determine the application, even in the absence of comments and recommendations; and
- (d) the delegate is not bound to follow any recommendation received.

Interpretation

In this Instrument of Delegation, unless the context otherwise requires—

- A reference to a ‘position’ or ‘classification’ contemplates and includes a reference to its successor in title.
- “access” means both entry and exit from either a road or abutting development by a vehicle.
- “Commission” or “WAPC” means the “Western Australian Planning Commission”.
- “development” has the same meaning given to it in and for the purposes of the *Planning and Development Act 2005* or “*development means the development or use of any land, including—*
 - (a) *any demolition, erection, construction, alteration of or addition to any building or structure on the land;*
 - (b) *the carrying out on the land of any excavation or other works;*
 - (c) *in the case of a place to which a Conservation Order made under section 59 of the Heritage of Western Australia Act 1990 applies, any act or thing that—*
 - (i) *is likely to change the character of that place or the external appearance of any building; or*
 - (ii) *would constitute an irreversible alteration of the fabric of any building”.*
- “DoT” means the Department of Transport
- “Large format digital signage” means an electronic billboard whether freestanding or attached to another structure with a display area of greater than 13m² “local government” means a local government within the area covered by the MRS.
- “local road” means a public road other than a private road or a road subject of reservation under Part II of the MRS.
- “not acceptable” means that the local government wishes to determine the application, as a delegate of the WAPC, in a manner that is inconsistent with the recommendation received from the public agency to which the local government was required to consult under this Notice of Delegation.
- Main Roads WA means Main Roads Western Australia
- “Public authority” means any of the following—
 - (a) a Minister of the Crown in right of the State;
 - (b) a department of the Public Service, State trading concern, State instrumentality or State public utility;
 - (c) any other person or body, whether corporate or not, who or which, under the authority of a written law, administers or carries on for the benefit of the State, a social service or public utility;
- “regional road” means any road designated under the region Scheme as follows—
 - (a) land coloured red in the Scheme Map—Primary Regional Roads; and
 - (b) land coloured dark blue in the Scheme Map—Other Regional Roads.
- “reserved land” means land reserved under Part II of the MRS.
- “road reservation” means land reserved for the purposes of a regional road in the MRS.
- “significant increase in traffic” means generating more than 100 vehicle trips in the peak hour and would therefore require a transport assessment to accompany the development application. Refer to the Commission’s *Transport Impact Assessment Guideline*.

Strata Titles Act 1985

4.6 Section 25 of Strata Titles Act 1985 - Western Australian Planning Commission

Western Australian Planning Commission – Section 25 of Strata Titles Act 1985

Government Gazette No.98 – 9 June 2009 (Pages 1936-1937)

PI409*

PLANNING AND DEVELOPMENT ACT 2005

INSTRUMENT OF DELEGATION DEL 2009/03 POWERS OF LOCAL GOVERNMENTS

Delegation to local governments of certain powers and functions of the Western Australian Planning Commission relating to the issuing of certificates of approval under section 25 of the Strata Titles Act 1985

Preamble

Under section 16 of the *Planning and Development Act 2005* (the Act) the Western Australian Planning Commission (the WAPC) may, by resolution published in the Government Gazette, delegate any function under the Act or any other written law to a local government, a committee established under the Local Government Act 1995 or an employee of a local government.

In accordance with section 16(4) of the Act, a reference in this instrument to a function or a power of the WAPC includes and extends to, without limitation or restriction, any of the powers, privileges, authorities, discretions, duties and responsibilities vested in or imposed on the WAPC by the Act or any other written law as the case requires.

Resolution under section 16 of the Act (delegation)

On 26 May 2009, pursuant to section 16 of the Act, the WAPC RESOLVED –

- A TO DELEGATE to local governments, and to members and officers of those local governments, its powers and functions under section 25 of the Strata Titles Act 1985 as set out in clause 1 of Schedule, within their respective districts, subject to the Limitations set out in clause 2 of Schedule 1.

TONY EVANS,
Western Australian Planning Commission.

SCHEDULE 1

1. Applications made under section 25 of the Strata Titles Act 1985

Power to determine applications for the issuing of a certificate of approval under section 25 of the Strata Titles Act 1985 for a plan of subdivision, re-subdivision or consolidation, except those applications that -

- (ii) propose the creation of a vacant lot;
- (iii) propose vacant air stratas in multi-tiered strata scheme developments;
- (iv) in the opinion of the WAPC as notified to the relevant local government in writing, or in the opinion of the relevant local government as notified to the WAPC in writing, relate to-
 - (i) a type of development; and/or
 - (ii) land within an area, which is of state or regional significance, or in respect of which the WAPC has determined is otherwise in the public interest for the WAPC to determine the application.

2. Reporting requirements

A local government that exercises the power referred to in clause 1 is to provide WAPC with data on all applications determined under this instrument of delegation at the conclusion of each financial year in the format prescribed by the WAPC.

Heritage of Western Australia Act 1990

4.7 Heritage of Western Australia Act 1990 – Resolution pursuant of Section 22(1)

Heritage of Western Australia Act 1990 Resolution pursuant of Section 22(1)

Government Gazette No.16 – 8 February 2019 (Page 252)

HR401*

HERITAGE OF WESTERN AUSTRALIA ACT 1990 Resolution pursuant of Section 22(1) Delegation of Functions

Take notice that on 14 September 2018, the Heritage Council of Western Australia resolved as follows—

“The Heritage Council of Western Australia (‘the Heritage Council’) resolves pursuant to Section 22(1) of the *Heritage of Western Australia Act 1990* (‘the Act’) to delegate and hereby does delegate to the Strategic Planning Manager of the City of Fremantle (‘the Strategic Planning Manager’) all of the powers, functions and duties of the Heritage Council arising under Section 11 of the Act with respect to proposals concerning land within the registered curtilage of *West End, Fremantle* (HCWA Place No. 25225) (the Place), other than the following classes of proposals—

- Proposals involving ‘large, complex, or contentious projects’ as defined in the ‘Delegation Framework’ published on the State Heritage website, stateheritage.wa.gov.au; and
- Proposals made in respect of places owned, occupied or under a Management Order held by the City of Fremantle; and
- Proposals to be determined by a decision making authority other than the City of Fremantle, including the Western Australian Planning Commission, Development Assessment Panels or the State Administrative Tribunal; and
- Proposals made in respect of other State Registered places that fall within the registered curtilage of *West End, Fremantle*, and land immediately adjacent to such places.

The Strategic Planning Manager shall consult from time to time with the Assistant Director General, Heritage Services of the Department of Planning, Lands and Heritage and the Chairperson of the Heritage Council regarding the nature of matters that are subject to this delegation.

An applicant whose proposal is subject to this delegation may upon written request to the Strategic Planning Manager have the proposal referred to the Heritage Council.

As provided by s. 59(1)(a) of the *Interpretation Act 1984*, the Heritage Council may call in any proposal that is subject to this delegation and exercise any of the delegated powers, functions or duties in respect of that proposal.

When carrying out any power, function or duty under this delegation, the Strategic Planning Manager is to comply with the ‘Delegation Framework’ published on the State Heritage website, stateheritage.wa.gov.au.

The Strategic Planning Manager is to maintain records of proposals handled under this delegation and make those records available for inspection by the Heritage Council or its nominee.

With respect to proposals handled under this delegation, the Strategic Planning Manager is to forward to the Department of Planning, Lands and Heritage a copy of each completed Routine Development Referral Assessment, Section 11 Advice Letter provided to the City of Fremantle, Determination Advice Letter sent to the applicant, a Monthly Report of Development Referrals Dealt With Under Delegation and any other report or document required pursuant to the ‘Delegation Framework’ published on the State Heritage website, stateheritage.wa.gov.au.”

Dated the 8th day of February 2019.

GRAEME GAMMIE, Assistant Director General,
Department of Planning, Lands and Heritage.

PART 5

Delegations from the Chief Executive Officer

5.1 Local Government Act 1995 - Conferences, seminars and training courses			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to all Directors and all Managers authority to approve attendance by employees at training courses, conferences and seminars within Australia, in accordance with: <table border="0"> <tr> <td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.41(g) and 5.44</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section 5.41(g) and 5.44
Legislation <i>Local Government Act 1995</i>	Section 5.41(g) and 5.44		
Delegated to:	All Directors All Managers		
Limitations on delegation:	1. Directors can approve attendance at training courses, seminars and conferences where they are within the budget. 2. Managers can only approve attendance within Western Australia that are within budget and are: a. one day seminars/conferences b. training courses (one or more days) 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.2 Local Government Act 1995 - Use of the City Logo and Coat of Arms			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to all Directors, the Manager Economic Development and Marketing and the Manager Communications and Events authority to approve the use of the crest and logo, in accordance with: <table border="0"> <tr> <td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.41(g) and 5.44</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section 5.41(g) and 5.44
Legislation <i>Local Government Act 1995</i>	Section 5.41(g) and 5.44		
Delegated to:	All Directors Manager Economic Development and Marketing Manager Communications and Events		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.3 Local Government Act 1995 - Infringement notice - grant an extension of time or withdraw infringement			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to • All Directors • Manager Field Services • Team Leader Community Safety • Team Leader Parking authority to grant an extension of time to pay a modified penalty and withdraw an infringement notice: In accordance with: <table> <tr> <td>Legislation <i>Local Government Act 1995</i></td><td>Section 9.19, 9.20 and 5.44</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section 9.19, 9.20 and 5.44
Legislation <i>Local Government Act 1995</i>	Section 9.19, 9.20 and 5.44		
Delegated to:	All Directors Manager Field Services Team Leader Community Safety Team Leader Parking		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.4 Local Government Act 1995 – Release of electoral roll information			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to • Director • Manager Governance • Revenue Team Leader • Revenue Officer – Lead Rates authority to approve the release of information under section 5.94(m) and 5.94(s) of the <i>Local Government Act 1995</i>: 1. any rates record 2. any register of owners and occupiers under section 4.32(6) and electoral rolls. In accordance with: <table border="0"> <tr> <td> Legislation <i>Local Government Act 1995</i> <i>Local Government (Administration) Regulations 1996</i> </td><td> Section 5.44 and 5.96 Regulation 29B </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i> <i>Local Government (Administration) Regulations 1996</i>	Section 5.44 and 5.96 Regulation 29B
Legislation <i>Local Government Act 1995</i> <i>Local Government (Administration) Regulations 1996</i>	Section 5.44 and 5.96 Regulation 29B		
Delegated to:	All Directors Manager Governance Revenue Team Leader Revenue Officer – Lead Rates		
Limitations on delegation:	1. The request for the information must be made in the approved manner and form. 2. The relevant officer must be satisfied, by statutory declaration or otherwise, that the information will not be used for commercial purposes. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.5 Local Government Act 1995 – Destruction of electoral materials			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to the Director City Business, the Manager Governance and the Revenue Team Leader authority to destroy electoral materials In accordance with: <table border="1"> <tr> <td> Legislation <i>Local Government Act 1995</i> <i>Local Government (Elections) Regulations 1997</i> </td><td> Section 5.44 and 4.84 Regulation 82(4) s. 4.84(a) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i> <i>Local Government (Elections) Regulations 1997</i>	Section 5.44 and 4.84 Regulation 82(4) s. 4.84(a)
Legislation <i>Local Government Act 1995</i> <i>Local Government (Elections) Regulations 1997</i>	Section 5.44 and 4.84 Regulation 82(4) s. 4.84(a)		
Delegated to:	Director City Business Manager Governance Revenue Team Leader		
Limitations on delegation:	1. The destruction is to be carried out by or under the supervision of the relevant Director or Manager Governance in the presence of at least 2 employees. 2. The parcels are to be conveyed securely to a secure paper destruction company or placed in a locked bin provided by such a company, by or under the supervision of the relevant Director or Manager Governance in the presence of at least 2 employees. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.6 Local Government Act 1995 – Owners and Occupiers Roll - enrolments			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to: • Director City Business • Manager Finance • Manager Governance • Revenue Team Leader • Revenue Officer – Lead Rates authority to: 1. accept owners and occupiers enrolments under section 4.32(4). 2. make any inquiries in order to make a decision under section 4.32(5). 3. decide that eligibility to enrol under section 4.30 has ended under section 4.35. In accordance with: <table border="0"> <tr> <td>Legislation <i>Local Government Act 1995</i></td><td>Section 4.30, 4.32, 4.35 and 5.44</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section 4.30, 4.32, 4.35 and 5.44
Legislation <i>Local Government Act 1995</i>	Section 4.30, 4.32, 4.35 and 5.44		
Delegated to:	Director City Business Manager Finance Manager Governance Revenue Team Leader Revenue Officer – Lead Rates		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.7 Local Government Act 1995 – Local government employees			
Delegator:	Chief Executive Officer		
Date approved:	3 July 2019		
Delegation:	The Chief Executive Officer delegates to Director People and Culture authority to: 1. Employ a person in any position other than the position of Chief Executive Officer. 2. Make arrangements relating to the persons employment. In accordance with: <table border="0"> <tr> <td>Legislation <i>Local Government Act 1995</i></td><td>Section 5.36(3) and 5.44</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section 5.36(3) and 5.44
Legislation <i>Local Government Act 1995</i>	Section 5.36(3) and 5.44		
Delegated to:	Director People and Culture		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

5.8 Elected member policy approvals	
Chief Executive Officer makes the following direction:	
Date approved:	3 July 2019
Direction:	The Chief Executive Officer directs the Manager Governance to determine approvals in accordance with the following policies: 1. Elected member professional development 2. Elected member allowances and reimbursements For the purpose of effective management of the City of Fremantle.
Direction made to:	Manager Governance
Limitations on direction:	1. Any approvals that fall outside the provisions of the policies must be determined by the Chief Executive Officer 2. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Reporting requirements	
Use of this delegation: 1. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

5.9 Freedom of Information Act 1992 – Direction to make decisions			
Chief Executive Officer ‘principal officer of an agency’ makes the following direction:			
Date approved:	3 July 2019		
Direction:	The Chief Executive Officer directs the Director City Business, the Manager Information Technology and the Information Management Team Leader to: 1. Make decisions 2. Review decisions In accordance with: <table border="0"> <tr> <td> Legislation <i>Freedom of Information Act 1992</i> </td><td> Section 39, 100 and 100(B) </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Freedom of Information Act 1992</i>	Section 39, 100 and 100(B)
Legislation <i>Freedom of Information Act 1992</i>	Section 39, 100 and 100(B)		
Direction made to:	Director City Business Manager Information Technology Information Management Team Leader		
Limitations on direction:	1. The Director City Business and the Manager Information Technology may review decisions in accordance with Division 5 of the <i>Freedom of Information Act 1992</i>, but may not make a decision. 2. The Information Management Team Leader may make a decision, generally, but may not review a decision. 3. All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Reporting requirements			
Use of this delegation: 1. Is to be recorded in the City’s record keeping system, in accordance with legislative requirements.			

PART 6

Delegations from Other Council Meetings

6.1 Ordinary Council Meeting - 22 August 2018 – Item SPT1808-2 Fremantle Oval - Indicative Development Plan

Fremantle Oval - Indicative Development Plan	
Delegator:	Council
Date adopted:	26 June 2019
Authorised function:	Authorises the Chief Executive Officer to negotiate a partnership approach with LandCorp, expressed through a Memorandum of Understanding (MoU) document, to further investigate the feasibility of developing the precinct in a manner that addresses the vision, goals, objectives and principles, with additional reference to: a. ensuring that any future development will be subjected to planning objectives and controls derived from extending the application of the Local Planning Scheme into the oval precinct, as opposed to a new Redevelopment Scheme being imposed; b. the importance of creating a great public realm within the redevelopment area that is connected, legible, safe and draws its pattern, form and character from the cultural significance of the site and its surrounds. c. the MoU to reference the existing Steering and Reference Groups established by the Council, and the ongoing consultative roles these bodies will serve during the next stage; Legislation <i>Local Government Act 1995:</i> Section 5.42 For the purpose of effective management of the City of Fremantle.
Delegated to:	Chief Executive Officer
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.
Power to sub delegate:	Nil
Reporting requirements	
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.	

6.2 Special Council Meeting – 31 October 2018 – Item SCM1810-1

Consideration of Preferred Status for Tender FCC911/18 Construction of Fremantle Civic Building and Library

Consideration of Preferred Status for Tender FCC911/18 Construction of Fremantle Civic Building and Library			
Delegator:	Council		
Date adopted:	26 June 2019		
Authorised function:	The Chief Executive Office is authorised to agree to any variation to the works under the construction contract entered into under paragraphs 3 or 4 of the Council Decision, provided that the single or cumulative upward adjustment to the contract sum does not exceed 5% of the contract sum. <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">Legislation <i>Local Government Act 1995:</i></td><td style="width: 40%;">Section 5.42</td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995:</i>	Section 5.42
Legislation <i>Local Government Act 1995:</i>	Section 5.42		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	All actions are to be undertaken in compliance with relevant legislative, procedural and policy provisions.		
Power to sub delegate:	Nil		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

6.3 Ordinary Meeting of Council – 24 July 2019 - Item SPT1907-2

Modifications to the Heritage List and Municipal Heritage Inventory

Modifications to the Heritage List and Municipal Heritage Inventory			
Delegator:	Council		
Date adopted:	24 July 2019		
Authorised function:	The Chief Executive Officer is authorised to modify the Heritage List and Municipal Heritage Inventory to maintain their currency by: - amending listing information to more accurately describe the listed property, and - reclassifying to Historic Record Only and removing from the Heritage List any properties which have been subdivided from the originally listed parent lot which do not retain heritage significance in their own right or maintain a significant contribution to the heritage significance of the original property. In accordance with: <table border="0"> <tr> <td style="vertical-align: top;"> Legislation <i>Local Government Act 1995</i> <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> </td><td style="vertical-align: top;"> Section 5.42 Division 2 of Schedule 2 </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i> <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>	Section 5.42 Division 2 of Schedule 2
Legislation <i>Local Government Act 1995</i> <i>Planning and Development (Local Planning Schemes) Regulations 2015</i>	Section 5.42 Division 2 of Schedule 2		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	any amendments must have the support of the effected landowner where consultation is required under legislation		
Power to sub delegate:	Yes		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

6.4 Ordinary Meeting of Council – 27 May 2020 - Item C2005-22 - Fremantle Leisure Centre Roof Replacement

Fremantle Leisure Centre Roof Replacement			
Delegator:	Council		
Date adopted:	25 May 2020		
Authorised function:	The Chief Executive Officer is authorised to accept a tender up to a value of \$950 000 for the works to replace the Leisure Centre Pool Roof. <table border="1"> <tr> <td> Legislation <i>Local Government Act 1995</i> </td><td> Section Section 5.42 </td></tr> </table> For the purpose of effective management of the City of Fremantle.	Legislation <i>Local Government Act 1995</i>	Section Section 5.42
Legislation <i>Local Government Act 1995</i>	Section Section 5.42		
Delegated to:	Chief Executive Officer		
Limitations on delegation:	subject to suitable tender submissions and Council budget approval		
Power to sub delegate:	Yes		
Reporting requirements			
Use of this delegation: Is to be recorded in the City's record keeping system, in accordance with legislative requirements.			

6.5 Ordinary Meeting of Council – 10 June 2020 - Item C2006-7 - Local Heritage Survey and Heritage List - Annual Update 2020 and Possible Approach to Greater Recognition of Post-WW2 Heritage

Local Heritage Survey and Heritage List - Annual Update 2020 and Possible Approach to Greater Recognition of Post-WW2 Heritage				
Delegator:	Council			
Date adopted:	10 June 2020			
Authorised function:	1. Invite comment from affected landowners on the following proposed modifications to the Local Heritage Survey (LHS) and Heritage List:			
	Place	Local Heritage Survey	Heritage List	Reason
	11 Chalmers Street, Fremantle	Add as Category Level 3	Add	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values.
	22 Shepherd Street, Fremantle	Add as Category Level 3	Add	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values. Of particular significance as a rare example of Post-War units constructed as social housing by the McNess Housing Trust.
	36 Samson Street, White Gum Valley	Add as Category Level 3	Add	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values.
	16 Howard Street, Fremantle	Add as Category Level 3	Add	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values.
	196 South Street, Fremantle	Add as Category Level 3	Add	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values.
	3, 4, 5, 6, 8, 10, 12, 14, 17, 19, 20, 21, 22, 23 & 24 Butterworth Place	Change Category from Level 3 to Historic Record Only	Remove	This property is part of a former market garden that was subdivided and redeveloped c. 2010s. No evidence of the earlier significant use remains.

1, 2, 3, 4, 5, 6, 7 & 8 Keady Way	Change Category from Level 3 to Historic Record Only	Remove	This property is part of a former market garden that was subdivided and redeveloped c. 2010s. No evidence of the earlier significant use remains.
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 & 19 Vickridge Close	Change Category from Level 3 to Historic Record Only	Remove	This property is part of a former market garden that was subdivided and redeveloped c. 2010s. No evidence of the earlier significant use remains.
38 Samson Street, White Gum Valley	Change Category from Level 3 to Historic Record Only	Remove	The timber cottage described in the heritage listing was burnt down in 2012 and a new house constructed in 2018.
10 Douglas Street, Fremantle	Change Category from Level 3 to Historic Record Only	Remove	The house described in the heritage listing was demolished c. 2010 and a new house constructed
162 High Street, Fremantle	Change Category from Level 3 to Historic Record Only	Remove	The place is below the threshold for inclusion on the Heritage List.
Jaylu Flats, 34 Queen Street, Fremantle	Change Category from Level 2 to Historic Record Only	-	The place is below the threshold for inclusion on in Category 2 or 3 of the LHS.
193 South Terrace, South Fremantle	Change Category from Level 3 to Level 2	Retain on list	The place is of considerable cultural heritage significance in its own right within the context of Fremantle.
258 South Street, South Fremantle	Change Category from Archaeological to Level 3	Retain on list	The shop and house have some significance for their contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values. There is
33 Attwell Street, Fremantle	Add to LHS as category Level 3	Add	35 Attwell Street was subdivided and the new empty block was numbered 35 and retained the heritage listing while the house became 33 Attwell. The listing needs to change to reflect this.
35 Attwell Street, Fremantle	Change Category from Level 3 to Historic Record Only	Remove	35 Attwell Street was subdivided and the new empty block was numbered 35 and retained the heritage listing while the house became 33 Attwell.
2 Nelson Street, South Fremantle		Change name of property on Heritage List.	2 Nelson Street has been incorrectly named a commercial building when it is a house.

	2A Nelson Street, South Fremantle	Change Category from Level 3 to Historic Record Only	Remove	2 Nelson Street was subdivided and a new house built on 2A.		
	House and Limestone Features,96 Marine Terrace, Fremantle	Retain	Retain	The place has some significance for its contribution to the heritage of Fremantle by its individual and collective aesthetic, historic and social values.		
	Various other properties listed in Attachment 1	Change Category to Historic Record Only	Remove	These places originally formed part of heritage listed parent lots but have since been subdivided from them. They retain no features of heritage significance themselves.		
	In the event of landowners making no objection to modifications recommended to the Local Heritage Survey and Heritage List, that these changes be finalised, documented and communicated to the Heritage Council of Western Australia and the City's records updated accordingly. Where objection is received, the recommendation will be referred back to Council. <table><tr><td>Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i></td><td>Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82</td></tr></table> For the purpose of effective management of the City of Fremantle.				Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i>	Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82
Legislation <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>City of Fremantle Local Planning Scheme No. 4</i>	Section 5.16 and 5.17 <i>Local Government Act 1995</i> section 5.42 <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> section 82					
Delegated to:	Planning Committee					
Limitations on delegation:	subject to suitable tender submissions and Council budget approval					
Power to sub delegate:	Yes					
Reporting requirements						
Use of this delegation: 2. Is to be recorded in the City's record keeping system, in accordance with legislative requirements.						

Table of amendments/review

Delegation reference	Reason for change	Decision reference
2.3	A request to add the following position to the "Defer Payment of a debt" limitations section: Revenue Team Leader - \$30,000.00	Approval – ECM DSID # 4178519
1.1	Remove the amount listed in part 4 of the limitations section (\$250, 000). A value does not need to be set in part 4 as accepting or declining tenders must be within budget which has already been approved through the budget adoption process by Council.	Approval - FPOL1907-9
6.3	Added a delegation from Council to the CEO - Modifications to the Heritage List and Municipal Heritage Inventory	Approval Council - SPT1907-2
2.7	Deleted the reporting requirement to ARMC. Ratepayers payment arrangements are entered into regularly, reporting on this isn't necessary.	CEO Approval – DSID # 4255339
2.11	Was being reported to Council and will now be changed to report to the ARMC quarterly. Amend part 2 of the limitations on sub delegation section: 2. May accept a tender where the consideration under the resulting contract is \$149 999 \$500 000 or less and the item is identified in the adopted annual budget. And the decision is consistent with the advice of the tender evaluation committee	CEO Approval – DSID # 4255339
2.3	A minor amendment to add 'All other Directors' to the limitations on sub delegation section Write – Off a debt, with the limit of \$10,000. This should have been included in the review but was an oversight at the time.	CEO Approval – DSID # 4303879
5.1	No wording added or deleted in the limitations on delegations section just restructured for ease of understanding.	Governance Manager Approval 21/02/2020
6.4	Added a delegation to the CEO – Accepting a tender for the Fremantle Leisure Centre Roof Replacement	Approval Council – C2005-22
6.5	6.4 Ordinary Meeting of Council – 10 June 2020 - Item C2006-7 - Local Heritage Survey and Heritage List - Annual Update 2020 and Possible Approach to Greater Recognition of Post-WW2 Heritage	Approval Council – C2006-10

**C2006-17 FUNDING FOR ARTHUR HEAD AND ROUND HOUSE REMEDIATION
WORKS**

**ADDITIONAL INFORMATION: ARTHUR HEAD CLIFF STABILISATION REPORT
2019**



FINAL REPORT
for the Arthur Head Cliff Stabilisation

Prepared by

Hocking Heritage Studio

04th April 2019

Cover image: Arthur Head, Source and date unknown

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HHS Job No. 201855

Rev No	Author	Reviewer	Date
A	Timo Bleeker (Hocking Heritage Studio)	Keith Fragomeli (City of Fremantle)	16 November 2018
B	Timo Bleeker (Hocking Heritage Studio)	Keith Fragomeli (City of Fremantle)	04 April 2019

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1.0 EXECUTIVE SUMMARY

This report has been prepared for the City of Fremantle with solutions for the structural stabilisation of the cliffs and walls at Arthur Head Reserve in Fremantle. Following visual investigations our assessment is there is no generic solution for the entire cliff face to stop or mitigate erosion and rockfall. Some faces have a similar condition while others need to be treated in a specific way to cater for their condition and location.

The recommended interventions for the cliffs are:

- Revegetation (only on ground level, not on cliff faces or cliff edges)
- Limestone masonry repair
- Installation of new limestone masonry (not retaining)
- Prevention of access to the cliff face
- Rockfall fencing installation

Where a more visible strategy is required for mitigating erosion and rockfall risk the following is recommended:

- Concealed cliff support solution (concrete arch)
- Canopy shelter

Some current day remediation strategies have not been considered further due to their intrusive nature to the representation of the cliff or their inadequacy as appropriate solutions, for the reasons identified herein in Section 3.2. These strategies are:

- Reshaping / profiling the cliffs
- Rock bolting / pinning
- Reinforced geogrid
- Rockfall nets / mesh
- Chemical grout injection
- Chemical sealers
- Visible shotcrete application to cliff face
- Improvement to site drainage
- Concrete retaining wall structures

Consideration should be given to the recommendations for Areas 7 and 8. There is an opportunity to not only mitigate erosion and rockfall risk but to also design and install a unique structure that interprets the heritage significance of the place and fits into the art precinct of Bather's Beach.

2.0 INTRODUCTION

2.1 Scope of Works Summary

Hocking Heritage Studio has been engaged by the City of Fremantle ('The Principal', 'The City', 'The Client') to assess the structural integrity and stability of the natural cliff faces and man-made walls at Arthur Head Reserve in Fremantle, as well as design and documentation for recommended works.

The main objective is to eliminate or reduce as much as possible the erosion of the cliff faces and walls at Arthur Head in a manner that is sympathetic of their heritage significance whilst improving access and safety for visitors to the site. In addition, a recommendation to the remediation of the walls and

roof surfaces of the Secret Tunnel linking the Gunner's Cottage to the Whaler's Tunnel is desired.

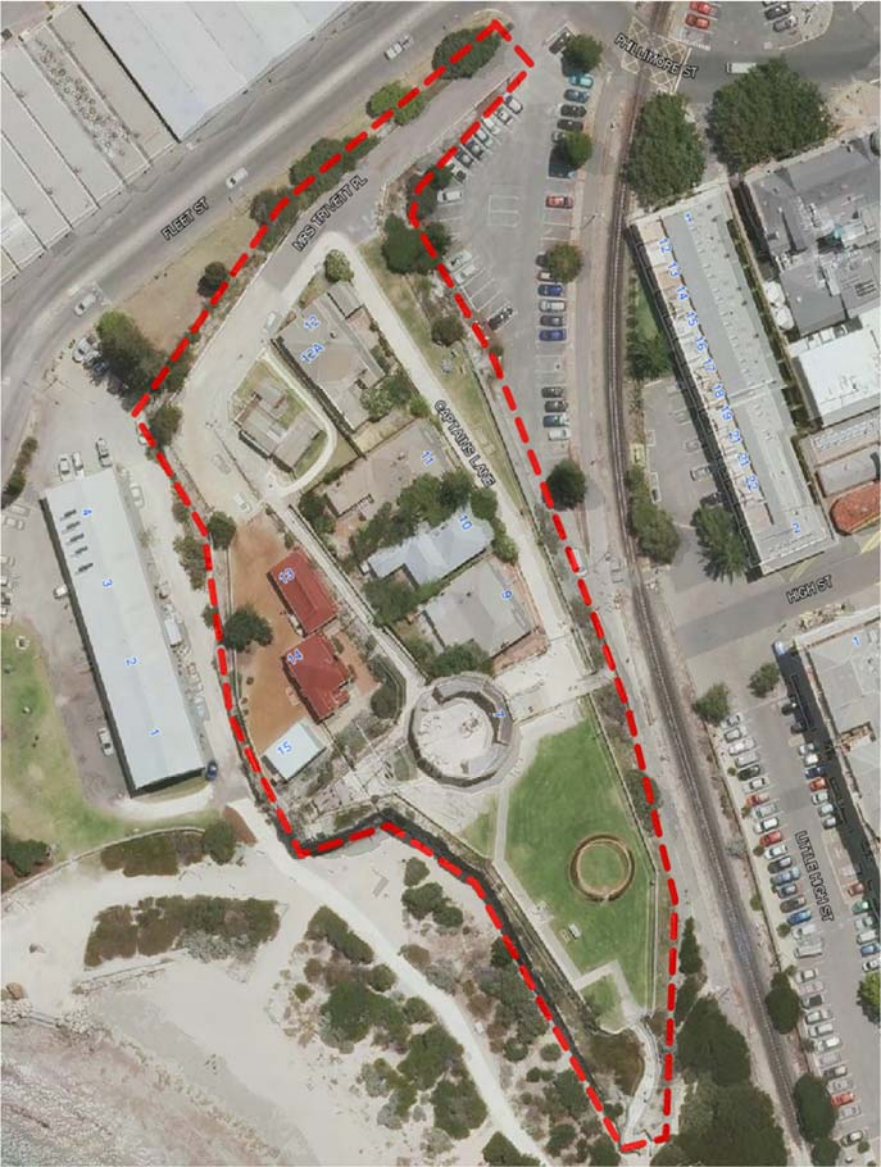
This report clearly identifies its findings and provides specific recommendations by the Consultancy team. Items which require further input from the Client are detailed herein in order to assist with the delivery of a successful project which surpasses expected outcomes.

2.2 The Site

The site is located at Lot 2015 Phillimore Street, Fremantle. It is wholly contained within Reserve 21563, the Arthur Head Reserve.

The extent of works is contained within the area outlined by the dashed red line in the aerial photo below.

There have been conservation and structural stabilisation works to the cliffs and Round House in 2001 and 2004. Additional surveys and remediation works have been undertaken in 2005, 2009 and 2018. A Conservation Management Plan (CMP) for the area was prepared in 2011.



Extent of the area of study at Arthur Head Reserve, Fremantle

2.3 Background

Arthur Head Reserve is a limestone outcrop located on the most western portion of the Fremantle townsite and is a prominent feature elevated above the surrounding landscape. Prior to the Swan River Colony settlement all of the headland west of the railway line was of roughly a similar height to the current reserve and formed a rocky cliff face along the coast line. The headland is named 'Manjaree' by the Whadjuk Noongar language group.

From the earliest days of settlement, limestone was quarried from the headland for public and private works. The first public building in the colony the public jail (now the Round House) built in 1830/1, was constructed from limestone quarried on the site. The Fremantle Whalers Company, one of the first industries in the colony established their trade on what is now Bathers Beach. The company quarried the limestone cliffs to create a rubble jetty, or the Whalers Jetty out from Bathers Beach and also dug the tunnel under the Round House in 1837. Later, substantial amounts of limestone were quarried to construct major public works, the nearby Inner Harbour (1892-1897) and South Mole (1894). The headland subsequently became a busy shipyard managed by the Fremantle Harbour Trust requiring a relatively flat site and accessibility to the water. The last major works removing a portion of the raised limestone headland was in the 1960s when the sheds now known as J Shed were relocated to this site.

The original cliff face on the eastern side is partially supported by a limestone block wall, probably built during the 1960s when the railway line was extended. The cliff faces of the Arthur Head Reserve to the north, south and west are surfaces left by the action of quarrying, not a result of natural forces.

Since quarrying has ceased, the exposure to the aggressive coastal environment and vegetation roots forcing through the base rock, has resulted in considerable erosion and weakening of the quarried cliff faces. Consequently there are now many loose areas in the natural faces which pose a significant risk of injury to persons at the site.

In November 1982, Reserve 21563 was vested in the City of Fremantle "in trust for the purpose of preservation and protection of the Round House and other buildings". The Round House and Arthur Head Reserve were one of the first places included on the State Register of Heritage Places in 1993.

The site continues to be maintained by the City of Fremantle and the Round House is a tourist destination operated by volunteer guides. The nearby Kidogo Art House, J Shed Artist Studio and other commercial attractions have contributed to the popularity of this precinct.

2.4 Heritage Listings

State Register Place 0896 Round House and Arthur Head Reserve	Permanent	19 Nov 1993
Municipal Inventory	Adopted	18 Sep 2000
Heritage List	Included	8 Mar 2007
Register of the National Estate	Permanent	21 Mar 1978
National Trust (WA)	Classified	2 Nov 1967
Department of Aboriginal Affairs Registered Site	-----	-----
Department of Aboriginal Affairs Heritage Places 3421; 3774	Recorded	20 Sept 1999 4 Dec 1999

A meeting with the Department of Planning, Lands and Heritage (DPLH), Heritage Services was arranged, where the scope of project works was explained and findings and remediation recommendations of each area were presented. There was no objection from DPLH in principle however formal commentary from the Development Committee is still pending at the time of this report. Documentation has been lodged for the committee meeting end of November 2018.

2.5 Statement of Significance

The following statement is taken from the Register Entry for Place 0896 Round House and Arthur Head Reserve prepared in 1992. It is noted that there is no reference to the cliffs in this statement.

The Round House is of exceptional cultural significance for the following:

It is the first permanent public building, and the oldest extant (European) building, in Western Australia;

It has a close association with, and is a demonstration of, the colonial system of law and order; and

It is one of only two extant buildings by H.W. Reveley, the first colonial engineer in the Swan River Colony (Western Australia).

The Conservation Management Plan (CMP) prepared by Philip Griffith Architects in 2011 outlines the following Policies for the place:

*“Items of **exceptional significance** include landscape features consisting of: The geological features of Arthur Head and the plateau on which the Round House stands; the cliff faces and revetments on all faces; ... “*

“[Policy 1] The fabric of spaces or elements of exceptional significance must be preserved or restored in such way as to demonstrate their significance.”

*“Archaeological areas of **considerable significance** include: The plateau around the Round House including ... the Signal Station*

and Observation Post, and Signal Mast 1905; the western cliff face and caves; ... “

“[Policy 2] The significant fabric of spaces or elements of considerable significance should be preserved, restored or reconstructed as appropriate.”

*Areas of **little significance** include landscape features consisting of: the landscape area between the south eastern revetment wall and railway tracks, ... the steps leading from the southern Round House lawn to the lower paths; ... and, pathway materials generally. “*

“[Policy 4] The fabric of spaces or elements of little significance contributes to the significance of the place, but not to the same extent as authentic fabric does. Where fabric of little significance has deteriorated consideration might be given to reinstatement, adaptation, removal or replacement in a manner that allows continuity of interpretive meaning and to suit contemporary requirements. Fabric of little significance should not be summarily dismissed as not being important.”

2.6 Project Description

The brief for the project is as follows:

- Assess the existing limestone cliffs and man-made wall/infill conditions
- Assess the Secret Tunnel condition;
- Categorise the risk for each finding;
- Propose and describe remediation options.
- Undertake an aesthetic weighting
- Undertake a cost benefit analysis

The option proposals have to consider the relationship with the site, the context, materiality, high visual aesthetic and heritage significance. Safety-in-Design, current statutory regulations and the City’s ‘One Planet Program’ are acknowledged as part of the design process. ‘Green’ and ‘Grey’ stabilisation technics are amongst the research for relevant modern day methodologies.

The proposed options have to provide a comprehensive overview of the necessary remediation works to enable the Principal to schedule and budget for the necessary undertakings.

2.7 Project Team

The team of specialist consultants and engineers involved in the project are listed below:

- Heritage Architect – Hocking Heritage Studio
- Geotechnical Engineer – CMW Geosciences
- Structural Engineer – Atelier JV
- Model & Surveying Engineer – Monaghan Mapping & Surveying
- Quantity Surveying - RBB

The contribution of all of the above is acknowledged in the collation of this report.

2.8 Project Status

The project has reached the end of Schematic Design.

The following tasks have been undertaken and completed:

- 1 Visual site survey of the site
- 2 Desktop review of the following provided reports:
 - Roundhouse Conservation Plans dated July 2002
 - Arthur Head Limestone Cliffs Report dated June 2005
 - Arthur Head Geotechnical Survey dated December 2009
 - Conservation Management Plan dated 2011
 - Visual Inspection Report dated February 2018
- 3 Review of the policies in the *Arthur Head Reserve Conservation Plan from 1999* to ensure that the cultural heritage significance of the place is maintained and enhanced
- 4 Feature and contour survey of the area
- 5 Geotechnical investigations by CMW Geosciences
- 6 Research current day remediation technics
- 7 Remediation option workshop with the consultant team evaluating mitigation technics and options
- 8 High level cost benefit analysis
- 9 Risk analysis



3.0 GEOTECHNICAL CLIFF AND RETAINING WALL INSPECTION

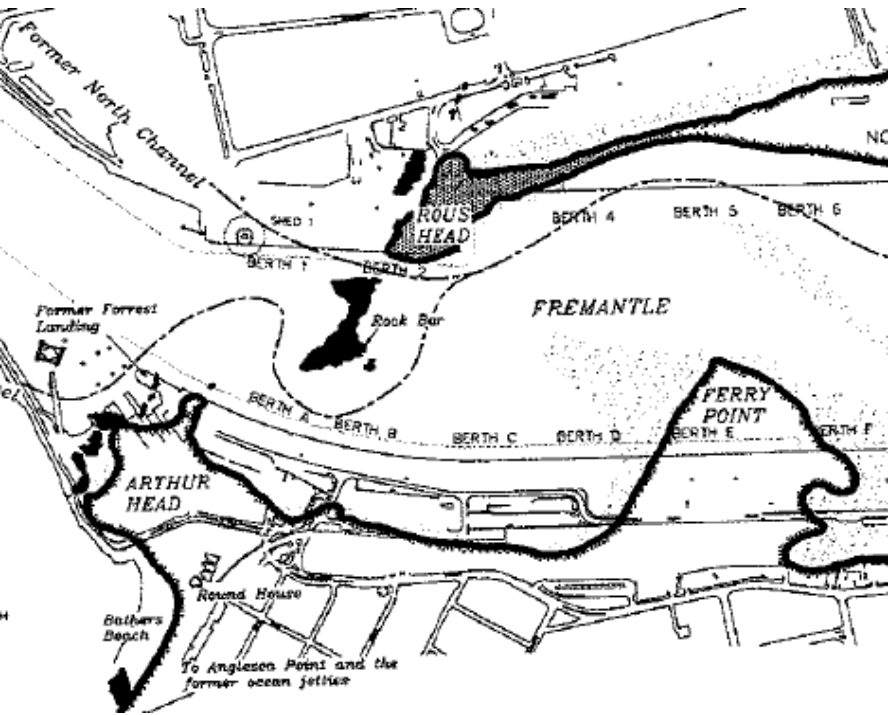
3.1 Arthur Head Geological Setting and Natural and Anthropogenic Processes

The references listed in Section 3.0 were used in the preparation of this section of the report. Refer Figure 1 for layout of features and the eleven Areas described in the text.

3.1.1 Background

The limestone from which Arthur Head Reserve is formed is part of the Tamala Limestone Formation. It is primarily a calcarenite formed from calcium carbonate rich wind-blown dune sands that have become lithified. The subsequent leaching and weathering that has and continues to take place have resulted in rock and soil that is highly variable in strength, density and form. It is variable to the extent that some materials are very high strength rocks and others are very loose sand yet both exist in very close association. This variability can occur across centimetres. Anthropogenic influences have also shaped the current Arthur Head and contributed to the features and in some cases the geotechnical hazards that are present.

The outcrop of limestone forming the Arthur Head Reserve and on which the Roundhouse now stands was once a prominent headland which together with a separate smaller limestone headland (Rous Head) once formed low cliffs either side of the entrance to the Swan River. Arthur Head forming the southern rocky headland and Rous head the northern rocky headland.



Coastline of Fremantle prior to the construction of Fremantle Harbour (after Tutton 2003)

Both headlands were significantly reduced in size through quarrying to facilitate the construction of a number of the early town buildings and in the case of Arthur Head to also provide stone to armour the South Mole. As a result, the outcrop of limestone on which the present day Arthur Head Reserve stands is a remnant of a larger headland and most sides of the present day reserve are quarried faces.

The cliff faces along the western (J Shed and Bather's Beach) side of the reserve in particular, are remnant quarried faces and are sub-vertical.



The Whalers Tunnel, some 73 m long and 3.6 m wide and high, was built connecting Bather's Beach with the western end of Fremantle High Street. Originally stairs connecting the Roundhouse with the High Street descended each side of the tunnel portal. These stairs were realigned in the past to accommodate the construction of a railway line running parallel to Cliff Street. At that time it would appear that, at that time, the quarried faces on the eastern side were also modified and trimmed to make room for the railway and the retaining walls now present along this part of the reserve were presumably built to protect and support the steepened rock face along this side of the reserve. A small (1.2 m wide 1.8 m high) inclined tunnel, called the *Secret Tunnel*, was built in 1938 to connect houses in the northern Arthur Head area with the Whalers Tunnel.

3.1.2 The Limestone in Arthur Head

The Tamala Limestone in Fremantle is generally less than 120,000 years old and extends to depth of about 30 m below sea-level under most of Fremantle, except where it has been removed by a deep palaeo-channel.

The exposed limestone at Fremantle is an aeolianite (a dune deposit) but it has been modified through post-depositional processes and now presents as three distinct lithologies. Indeed, three distinct geotechnical units (units defined by their engineering characteristics and mechanical behaviour) are evident. These distinct units are *caprock*, *zone of roots* and *cross-bedded aeolianite*. The presence or absence of one or more units has a major influence on the rate of erosion, potential for undercutting, and the overall stability of cliffs and risk to people and property.

Caprock

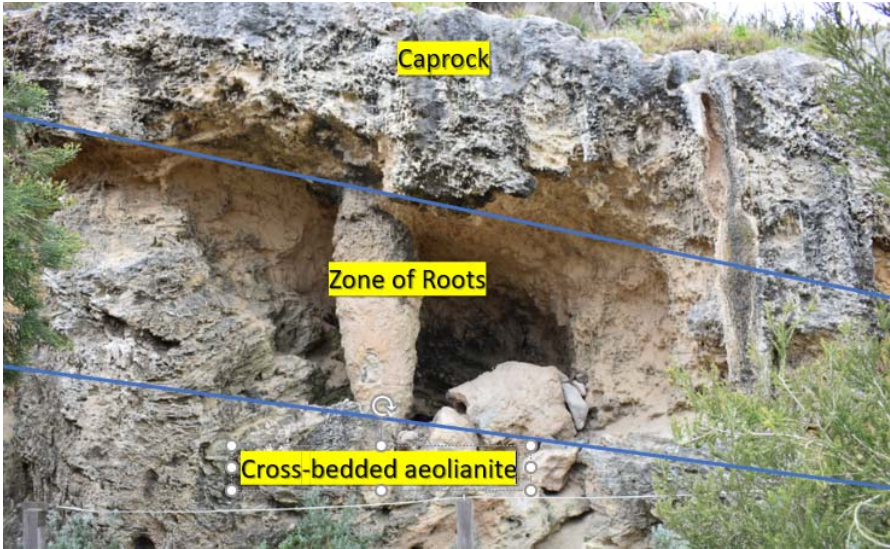
The uppermost lithological unit is a caprock, typically about 1.5 m thick. The caprock can be seen in the cliff faces. Progressing clockwise around the reserve commencing at Area 1 caprock can be seen below the barrier wall at the top of the cliff, in Area 3 above the top of the retaining wall. It is largely absent in area 4, presents as a caprock pavement at the top of the Area 5 cliffs (southern end) It can clearly be seen dipping from north to south in Areas 6 and 7 and is present at the top of the cliff faces in Areas 8 and 9. The same caprock layer also forms a number of the pavements within the reserve itself, in particular on the south and west side of the round house in the path from the public toilets south to the Roundhouse and around the cannon and time-ball platform.

Caprock is very much stronger and less permeable than some of the other Tamala Limestone lithologies and typically has a rock strength of High to Very High. It does however contain holes typically about 0.2 m, but occasionally up to about 0.5 m, in diameter formed by tree roots. The caprock was formed by calcium carbonate enrichment the result of rainfall (carbonic acid) percolating into the aeolianite, dissolving calcium carbonate (calcite) depleting the limestone of its cementing agent. Then, through the warming and drying action of the sun, the calcite is drawn upwards by capillary action where the calcite precipitates to form an enriched zone, namely the caprock.

Zone of Roots

In forming a caprock the limestone immediately beneath it is depleted of calcite and as a result is highly prone to weathering and erosion. Where this material is exposed in cliff faces, wind and rain have resulted in large undercuts, cavities and has created an overall vuggy texture to the limestone. Much of this erosion has taken place since quarrying ceased and as such the larger cavities have occurred in the last 100-150 years. The situation at Arthur Head is therefore dynamic and conditions will continue to change in even a short time frame.

The calcite depleted zone is further complicated by thin tubular cementation that has resulted through the action of tree roots. Occasionally a large root, likely the tap root of a Jarrah or Tuart tree, forms a calcite lined tube and when exposed this becomes a calcrete lithified column as can be seen in the cave in Area 6. These columns are sometimes hollow where the original root has rotted or the calcretised solution tube can become infilled with sand or *terra rosa* soil washed down from above. Smaller tubes generally less than 200 mm diameter can completely fill with high strength calcrete. The presence of these cemented roots or annuli around larger roots is usually in concert with the removal of the calcite cementing agent from the surrounding rock mass often leaching it completely and leaving only a soil. The lithified roots are referred to as *Rhizocreations* and the zone beneath the caprock through which roots penetrate below the original ground surface is referred to as the 'zone of roots'.



The zone of roots is typically between about 4 and 6 m thick at Arthur Head and dips with the caprock towards the south.

The strength of material in the zone of roots varies from very high strength rock to loose sands and voids (where leached sands have been eroded out). The volume of the rock strength lithified rocks is however relatively small as a percentage of the total zone and as such the rock mass is weak and subject to erosion when exposed. These characteristics make the 'zone of roots' a geotechnically problematic strata with respect to cliff stability, rockfall risk and the control of erosion.

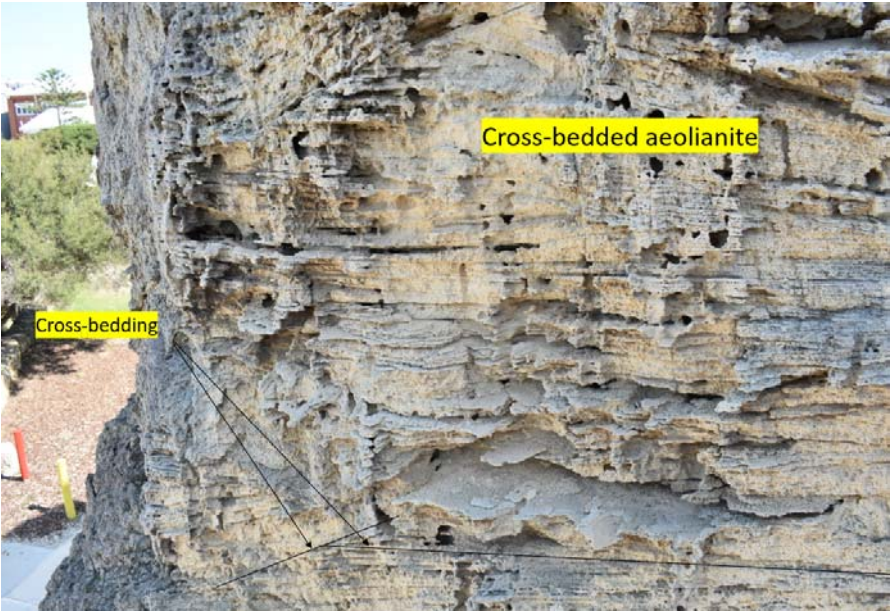


Cross Bedded Aeolianite

The lower part of the cliffs around the western tunnel portal and Areas 9 and 10 are aeolianites that have been unaffected by caprock formation or the variable lithification associated with the 'zone of roots' and calcite depletion. The aeolianite displays distinct cross-bedding. The cross-bedding, reflects the original dune system and although more competent than the overlying "zone of roots" still display variable leaching. Typically

beds of sand are cemented with calcite to form low to medium strength limestone separated from adjacent beds by weaker leached beds which are occasionally completely uncemented. Thus thin "slates" of rock can occur.

Cross bedded aeolianite is less prolific in the southern part of the reserve as the caprock and zone of roots dip towards the south and are present at lower elevations. Nonetheless, the zone of cross-bedded aeolianite are present at the level of the base of the cliffs around the southern part of the reserve.



Weathering, leaching and erosion

The weathering process of limestone is referred to as *leaching* and involves the dissolution and removal of calcium carbonate (Calcite). The result is a loss of material strength and density, the creation of pitted surfaces, vughs, voids and solution features (tubes/pipes etc). A colour change can also occur. Lighter straw-white colours are associated with leached materials whilst unleached limestone not exposed to the atmosphere is whitish and where exposed it commonly becomes grey through a process called *case hardening*. Entirely leached limestone becomes a sand and if the sand erodes away a void is left behind. The heavily leached limestone or sand is highly vulnerable to erosion.

The following erosion mechanisms are observed at the Arthur Head Reserve:

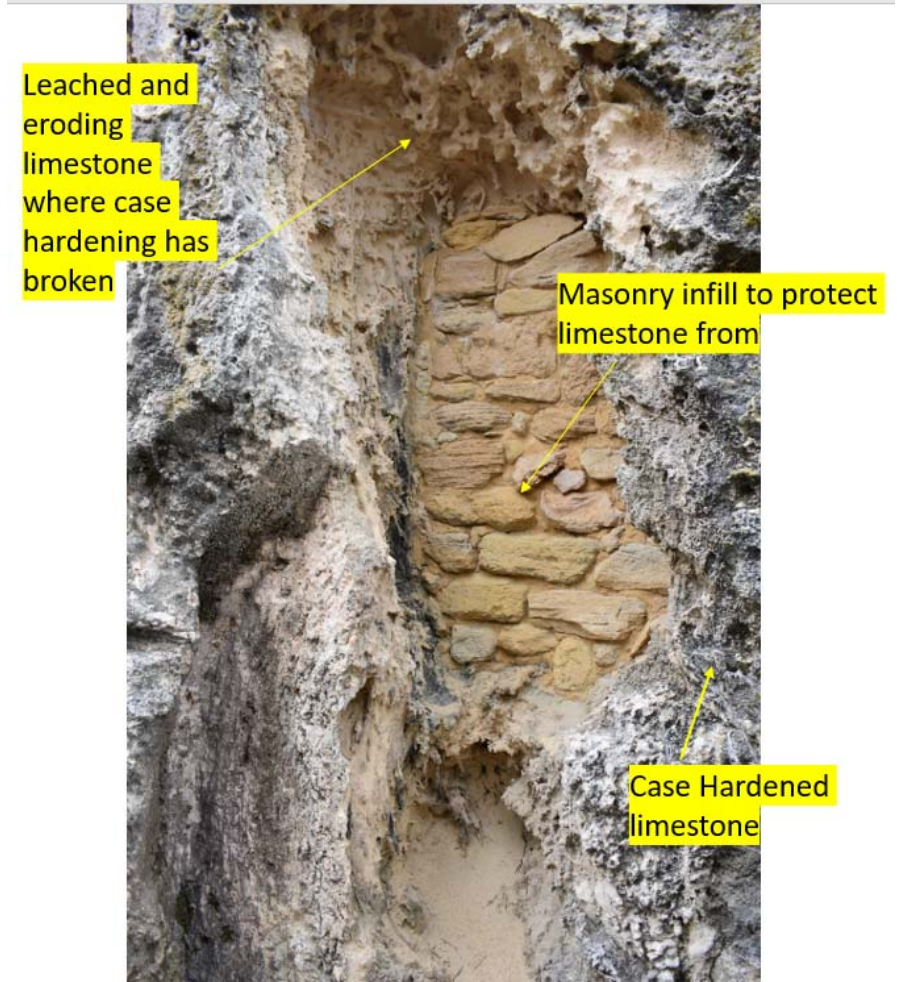
- 1) Wind and rain blowing or washing away sand and friable limestone. This can isolate more competent materials that then falls or topples under gravity.
- 2) Erosion by wind and wind driven rain and salt spray occurring in the zone of roots to form undercut tabular slabs.
- 3) Water can also percolate down tubes within the caprock pavement.
- 4) Water flowing over the edge of the cliffs.
- 5) Root wedging by trees and shrubs

Another leaching mechanism which is relatively common is referred to by Gordon (2012) as soil slotting. It is the minor undercutting of the cliffs and main made limestone walls in the splash zone where rainwater strikes the ground and splashes against the adjacent limestone.



Case Hardening

Many of the rock faces and masonry walls around Arthur Head display case hardening. It is important to understand the significance of case hardening and the need to protect it from damage as far a practical.



Case hardening is the induration or strengthening of limestone surfaces that have been relatively recently exposed. It takes the forms the form of a grey

coloured crust or rock armour that is formed by the sun’s heat pulling out capillary water saturated by bicarbonate to the surface where the water evaporates. The hardened surface typically takes about 5 years to form (Gordon 2012). It is however important to note that this indurated crust is only a few millimetres in thickness and it forms by depleting the limestone of its cementing agent in the zone immediately behind the crust. Thus, when the crust is disturbed or removed by erosion or engineering works, the material behind is exposed and will be particularly vulnerable to erosion until such time that a new crust develops. In some instance the rates of erosion exceed that of the case hardening process and the crust never re-establishes. There are examples of this around the cliffs and walls around Arthur Head, and also areas where overhangs have developed or facing work using limestone blocks and mortar have been used to protect the exposed and eroding faces.

3.2 Available Remediation Methods

As part of the study a desk study was undertaken of available remediation techniques namely “green” and “grey” techniques.

Green Techniques:

Green techniques commonly refer to techniques that are concealed or involve stabilisation using natural products or vegetation.

Green techniques might include the following:

- Use of vegetation
- Seeded erosion protection mattresses
- Use of earthen structures reinforced with HDPE geogrids or geotextiles (with a vegetation cover) to buttress or reinforce slopes
- Improvement to site drainage
- Use of Calcite In-situ Precipitation Systems (CIPS)
- Use of limestone masonry with lime mortar joints
- Use of chemical stone (limestone) sealers

Vegetation to stabilise limestone cliffs subject to erosion is not a suitable technique. This includes the use of HDPE geogrids with vegetation cover. It is in fact detrimental for the following reasons:

- 1) It detracts from the original limestone cliff face
- 2) May involve earthen support (as in the case of mechanically stabilised earth) to buttress the unstable faces therefore removing the original amenity
- 3) Shrubs and trees have a root system that will penetrate the limestone and tend to cause root wedging levering out blocks or rock
- 4) Vegetation introduces acids that have a tendency to dissolve calcareous material resulting in leaching
- 5) Fertilisers and reticulated water (uric and carbonic acids) can cause further and accelerated dissolution of weakly cemented limestone

As a result, no planting of vegetation on or on top of cliff faces is recommended as a stabilisation measure. In fact, as a general recommendation all shrubs and trees growing out of cliff faces or growing on top of the cliffs within 2 m of the cliff crest should be carefully removed.

There is one exception where vegetation is beneficial. Trees and shrubs at the base of the cliffs but no closer than 3 m have the tendency to protect

the cliffs from the worst of wind driven rain and salt spray. Therefore, the buffer of shrubs between the western side of Arthur Head and Bather’s beach should be preserved.

Ensuring storm run-off does not directly discharge over and onto cliff faces (Improvement to site drainage) is an erosion and rockfall mitigation strategy. Generally, the site drainage was noted to be good and no location of concentrated discharge over the crest of cliffs was noted and as such this option has not been pursued.

There are several locations where limestone masonry, in keeping with the existing *in situ* limestone, provides benefit for the following reasons:

- 1) prevent erosion of a heavily leached area
- 2) to support a face as a retaining wall
- 3) to underpin an overhang

Repair of existing masonry and installation of new masonry walls is a primary form of recommended remediation.

Widespread use of stone sealers is not considered beneficial as these products are designed to limit water penetration. In the case of *in situ* Tamala Limestone the free passage of water into and out of the face is the mechanism that allows case hardening to occur.

Calcite In-situ Precipitation Systems (CIPS)

There is a system for re-cementing limestones that have weathered to sand or improving the cementation of limestones. This system is called a *Calcite In-situ Precipitation System (CIPS)*. It had been commercialized but unfortunately no contractors currently hold a license. We have contacted the patent holders and licenses can still be sold to interested parties

CIPS is a permeation grouting system that delivers ‘liquid’ calcite into a permeable and porous material such as sand or limestone.

When injected into homogeneous ground through grouting spears it can form spheres (if injected from a point source) or cylinders (if injected at multiple elevations). Overlapping cylinders can be used to form grouted wall. Although CIPS will have similar material appearance to in situ limestone the spherical or cylindrical form of the grouted columns would have a distinctly man-made appearance when facing material drops away. The photo below shows an example of cementation from a point source in sand



Furthermore, the limestone at Arthur Head is not homogenous as it contains voids and cavities at different scales (mm, cm etc.), root tubes etc. Unlike conventional cementitious grouting which is designed to infill voids, CIPS is injected as a non-viscous liquid and works by creating cementitious bonds at existing material contacts and not by infilling voids. For these reasons it is not considered an appropriate retaining system for the Arthur Head limestone cliffs. CIPS may however be suitable as a mechanism for slowing down the rate of erosion when applied to the friable and fretting cliff face.

Where the case hardening on limestone faces has been damaged through man-made or natural causes, CIPS could be used to rebuild the cementitious contacts on the leached surface creating a cementitious veneer (a few millimeters thick) that would slow down or prevent erosion until future damage occurs. Application of CIPS in this context would not physically prevent cobbles and pinnacles of rock falling from the faces. It could however reduce the likelihood of such occurrences, by slowing down the amount of day to day erosion and fretting of sandy material, which otherwise would ultimately undermine pinnacles and blocks of limestone. CIPS used in this context would be applied as a surface coating and it is understood this application of CIPS was used as part of the 2001 restoration works of the Whalers Tunnel.

It is not known how successful such an application would be when applied to the exposed vertical faces of Arthur Head and several applications (possibly 5-10) are likely to be required to make a tangible improvement to the outermost few millimeters of the leached and eroded cliff faces. It is also uncertain whether the application of CIPS will noticeably change the appearance of the treated limestone and how it will weather relative to untreated adjacent sections. For these reasons it is recommended that a trial be carried out on a small section of a non-visually prominent and weathered cliff face so that both the physical and aesthetic aspect of the CIPS application can be assessed. To enable a trial, and if successful subsequent use of this product, a contractor would need to purchase a CIPS license.

Grey Techniques

These is a plethora of available grey techniques, including but not limited to the following:

- Rockbolts
- Rock fall netting (rockbolted in place)
- Mesh and shotcrete (anchored in place with rock bolts)
- Grouting
- Concrete retaining walls

Rockbolts can have a use but given the friable nature of the aeolianite and zone of roots, there is a risk of any post tension in the bolt crushing the rock and rock might even crack during the process of installation. Rock bolts therefore have limited use in isolation but would need to be used to secure masonry veneers, mesh and shotcrete or anchored (non-gravity) retaining walls.

Rockfall netting without the use of shotcrete removes some of the rockfall risk. The limestone, especially the cross-bedded aeolianite and the zone of roots however tends to break down into particles that would pass through the aperture of the mesh. Whilst the main rockfall hazard is mitigated the mesh does not prevent erosion and so deterioration of rock faces may still occur with time. Mesh is also considered too visually obtrusive.

Mesh and shotcrete held in place with rock bolts provide a sound and practical cliff stabilisation measure and, in most cases, could achieve the required level of stabilisation and rockfall risk reduction. It has not been recommended however due to damage it would do to the fabric of the amenity and the loss in heritage value that would result.

Grouting using cementitious grouts to penetrate the limestone is not considered a practical option. Whilst grouted blocks and retaining walls can be successfully constructed the exposed grouted limestone will not be attractive. Furthermore, putting aesthetics aside, it is not considered a feasible engineering option due to the significant variation in void size and permeability within the limestone which would result in significant grout volumes and loss of control of where grout flows and uncontrolled issues of grout from faces would almost certainly occur.

Concrete retaining walls could be used to achieve required stabilisation but would clearly result in loss of heritage value and are not considered further.

Allowing the natural faces to Case Harden

In many instances the natural process of case hardening has been affected by outside disturbance such a vegetation wearing against the cliff faces, past trimming of unstable faces, water erosion etc. CIPs can be used to encourage case hardening, if a commercial operator can be found. Even without CIPs faces should be left to find equilibrium and with time (if undisturbed) the exposed surfaces should develop a case-hardened face Gordon (2003) cites a period of about 5 years for a case-hardened face to develop on material that is not actively eroding.

3.3 Site Observations, Qualitative Evaluation of Risk and Mitigation Options

3.3.1 Methodology - Risk Assessment Basis

A framework for assessing the existing risk to people visiting Arthur Head and the risk following remedial improvement (residual risk) is used throughout the study. The residual risk is equivalent to a safety in design risk assessment.

The Australian Geomechanics Society, under funding provided by the National Disaster Funding Program (NDMP), produced Landslide Risk Management Guidelines and have developed Landslide Risk Management Practice Notes. The guidelines and practice notes known collectively as AGS2007 have been used extensively here to evaluate the quantitatively risk to life described in this report. The quantitative risk assessment is presented in Appendix 3.

Assessment of risk is highly subjective. It involves estimation of the likelihood and severity of the event which are both highly subjective. It also involves an assessment of likely exposure and numbers of people traversing areas and for how long. Estimates of risk must therefore be considered as indicative and approximate.

The recommended remedial/risk mitigation option for each area is highlighted in Appendix 3.

The quantitative risk designation adopted in Appendix 3 was used in a simplified form (i.e. very high, high, medium and low) as a basis for a cost benefit analyses (CBA). The CBA is presented in Appendix 4 and shows the

cost benefit as a function of the reduction in the risk level to people any improvement or deterioration in aesthetic value of the amenity and anticipated magnitude of costs resulting from the proposed remedial option.

The CBA is subjective and approximate both in equally weighting of change in risk level and change in aesthetic value but also in the relative estimation of cost.

3.3.2 Site Observations

The site inspection was undertaken on 8 October 2018 by Matthew Tutton a Senior Principal Engineering Geologist and Jit Lim a Project Geotechnical Engineer of CMW Geosciences Pty Ltd (CMW).

An 18 m cherry picker was used to facilitate inspection in some of the higher and unstable cliff areas and to observe cavity and niches within the cliff face that were not apparent from ground level and well as to get a close-up view of cracks etc.

Protection of the public and close by vegetation (pine trees etc.) during the assessment was considered and undertaken. No damage caused by the works was envisaged.

The cliff and retaining walls around the Arthur Head reserve form part of the inspection in addition to the Secret Tunnel. The Whalers Tunnel, Roundhouse and walls to buildings within the reserve complex were not part of the brief and were not inspected. Masonry walls forming a barrier around the reserve were also not part of the brief although comment is made in this report because these walls sit close to the cliff edge and at some locations could be affected by cliff instability. Similarly, loose blocks and mortar present a rockfall hazard at locations where the wall is located directly against the edge of cliff faces.

It was noted that certain sections of the cliffs display common characteristics and for this reason the observations at each of these areas are grouped and are discussed collectively. Photographs relating to each area are presented in APPENDIX 2 together with some general photographs of the reserve. All the photos in APPENDIX 2 are numbered for reference in the text. Additional photographs illustrating specific features are included in the text.

Reference is made to eleven areas of noted rockfall or landslide risk. For the remaining parts of the perimeter of Arthur Head there are low (0-4 m high) shallow sloped (<45°) limestone batter faces where the level of rockfall risk was observed to be low or negligible and therefore further comment is not made. Similarly, there is an undercut in a low 2 m high limestone bank behind a cottage in the northern part of the reserve (see photo below).

The level of risk is considered low due to the nature of the caprock and in the low frequency of people likely being present in this area.



Each of the eleven areas is described consecutively in a clockwise direction commencing in the northern part of the reserve as shown on the map on the next page.

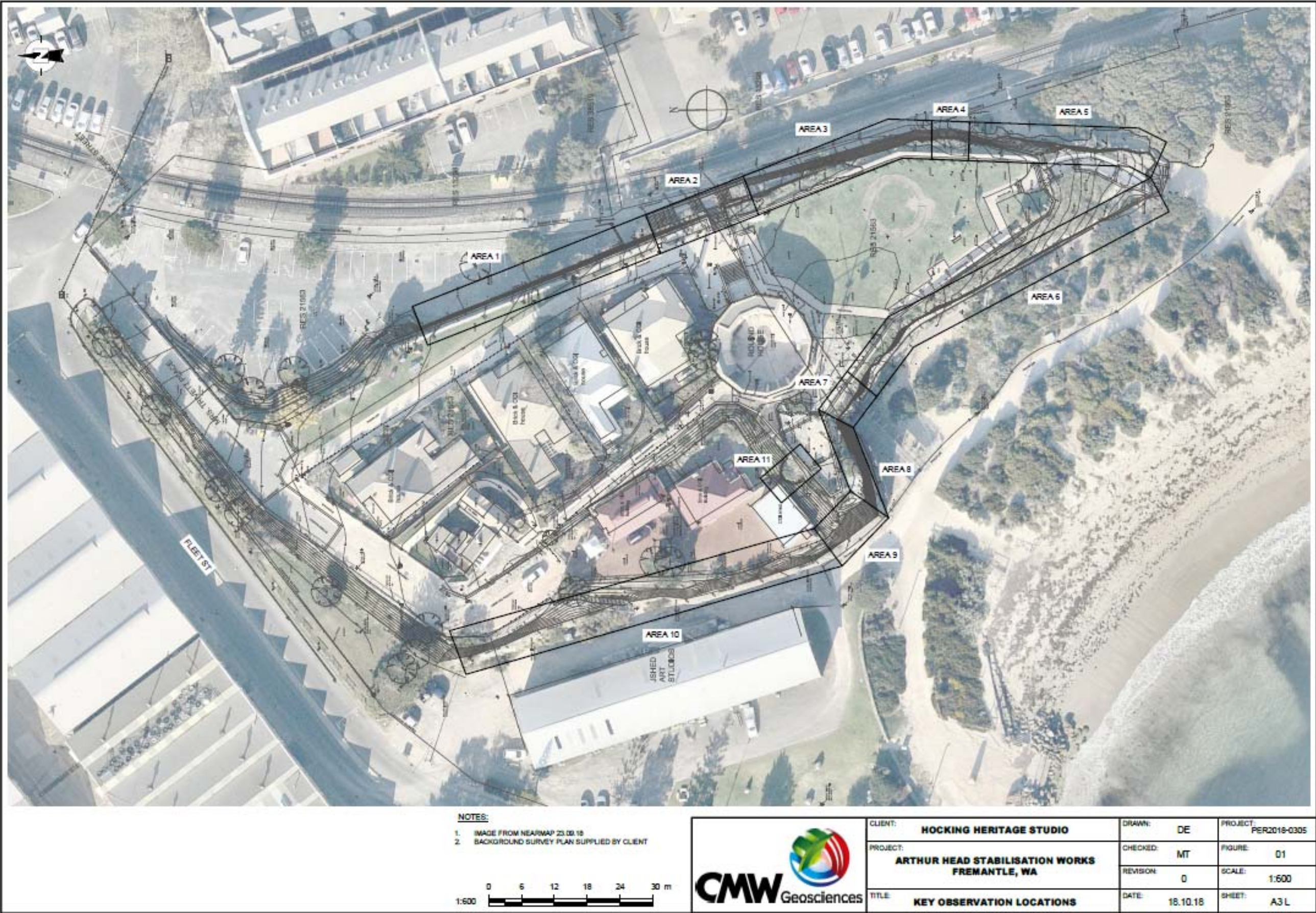
Appropriate mitigation options are listed for each area in a comprehensive table.

Some key notes:

- The **ratings** in the table are to be understood as general weighting only.
- The **Safety Improvement Factor** is a result of ‘Current Risk’ plus/minus ‘Residual Risk’.
- The **Aesthetic Weighting** is based on visual impact of the mitigation strategy including considerations of historic, social, rarity and representative significance of the place.
- The **Benefit** is a result of ‘Safety Improvement Factor’ plus/minus ‘Aesthetic Weighting’.
- The **Cost/Benefit** rating is based on ‘Benefit’ rating divided by ‘Cost’ rating.

Observation	...
Risk Category	Very High – High – Medium - Low

Mitigation Options	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost Estimate AUD
1, ...	4 Highest 1 Lowest	Comments	4 Highest 1 Lowest	3 Highest -3 Lowest	3 Highest -3 Lowest	Comments	3 Highest -3 Lowest	8 Highest 1 Lowest	2 Highest -2 Lowest	Amount ex GST



3.3.3 Qualitative and Quantitative Risk Assessment

The Australia Geomechanics Society 2007 publication (AGS2007) sets out a procedure for assessment of landslide or rockfall risk which has become an industry standard. For each of the following areas risk was considered in terms of the risk to an individual's life. Account is taken of:

- the type of rockfall or landslide hazards,
- the assessed annual probability of occurrence,
- the spatial probability of the event impact an area that people frequent
- the spatial/temporal probability of a person being in the impact zone at the time of impact
- and, should an impact occur the severity of impact (vulnerability of the individual).

All these factors are used to assess the risk of a person being killed by a rockfall. The results of the quantitative risk assessment are provided in Appendix 3, for:

- the prevailing condition
- the recommended remediation/risk mitigation option
- alternative remediation/risk mitigation options

Risk values suggested as being tolerable in AGS2007 are provided in Appendix 3. A qualitative risk term is also provided in the table and this term is used in the description below and used in the cost benefit analysis provided in Appendix 4.

The following definitions apply:

- Very high or high risk (considered an intolerable level of risk according to AGS2007 and risk level must be reduced
- Medium (considered a tolerable level of risk in limited circumstances (AGS2007)) Risk mitigation required
- Low (considered a tolerable level of risk (AGS 2007)).

Therefore, all recommendations made below are made (sometimes in concert) to bring the level of risk to low.

3.3.4 Area 1 – Limestone Quarried Face with Masonry infilling

Observations

Observation	Small trees are growing out of the cliff face, rock fall hazard
Risk Category	Medium - Low

Area 1 comprises a near vertical cliff face 4 to 5 metres in height. The cliff is not natural but has been created by quarrying stone. The face is a mixture of natural limestone and masonry infill and dentistry work. The relative proportions of *in situ* limestone to masonry exposed on the face are about 50/50 with the masonry comprising irregular shaped and poorly coursed/bonded blocks. Caprock in present towards the top of the face and the cliff/wall is capped by a masonry boundary wall set hard against the edge of the cutting. It would appear that the masonry infill panels have been added in an *ad hoc* manner likely over multiple repair campaigns (refer Photos 5 and 6).

Multiple hazards are observed primarily associated with the deterioration of the masonry where blocks are weathering, mortar is dropping out and there is loose material at risk of dropping out onto the carpark below as illustrated in the photograph below.



Risks

The wall on top of the Area 1 cliff face is in a poor state of repair on its outer face and there is a risk to people and cars if pieces of mortar or rubble from this wall were to fall. Furthermore, several small trees are growing out of the cliff face, mainly towards the top of the cliff. The tree roots are wedging out blocks and a cobble sized fragment of limestone was noted wedge behind the trunk of a small tree. It is possible that this block will fall if the tree sways in high winds.

The following photograph illustrates the outer face of the barrier wall on top of the cliff which is in a poor state of repair.



Overall the rockfall hazard along Area 1 is considered to be low to medium for both body work damage to cars and with respect to injury or fatality to people.

Mitigation Measures

Removal of trees and vegetation growing out of the cliff face, replacement of badly weathered blocks and careful pointing and re-bonding of the masonry both within the cutting face and in the wall at the crest should substantially lower the risk. It is recommended that some weepholes be installed as protection against build-up of water pressure behind the wall during heavy rainfall. It is noted that there is an above ground water hydrant at the crest of this cliff. Should this hydrant be left to discharge onto the ground the risk of local instability would be very significantly increased. It is recommended that the management of this hydrant is reviewed to prevent inadvertent discharge.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Remove trees, point and rebond masonry	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	1.00	\$115,000

3.3.5 Area 2 – Main Stairs – Masonry and Brickwork covered in Render

Observations

Observation	Render cracking caused by tree root wedging or thermal expansion
Risk Category	Low

Two staircases originally ascended parallel to the tunnel and oalong either side of the eastern tunnel portal. The staircases however were realigned in 1897 to make room from the new railway line. Two rendered panels can still be seen either side of the portal (refer Photo 7, Appendix A) which presumably show where the original stairs were cut away from the structure and a single new staircase running parallel to the cliff face was built (refer Photo 9). The large crack seen in Photos 8 and 10 may be a function of the slow rotation of the additional structure (the new stairs) away from the original structure.

Much of the cracking on the right hand side of Photo 9 is the result of root wedging. The offending tree has been removed but the large root remains as can be seen in the photo below.



Risks and Mitigation measures

Kinematically there appears to be little risk of collapse and any repairs to the render would be more for aesthetic reasons than to restore stability.

Removing the cement render has the potential to reveal unstable limestone material underneath which will need to be assessed and conserved. Depending on the level of deterioration the walls along the staircase will need to be finished with limewash or lime water to seal the limestone along the trafficable area. Any areas to be re-rendered should be done using a lime based mortar after carbonation.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Remove trees, repair render	1	---	1	0	1	appearance will improve	1	1	1.00	\$50,000



State Library of Western Australia

View of staircase c.1928

Area 3 – High masonry retaining wall along railway reserve

Observations

Observation	Material falling from the crest where root wedging is occurring
Risk Category	Medium

A large masonry wall runs north to south along the eastern boundary of the reserve. The wall is about 4.5 m high at its northern end and increases to a height of about 8 m that the southern end. It has a battered face at approximately 75°. At the northern (tunnel) end of the wall there is a bench at the top of the wall with a small cliff of limestone. This bench is nominally 2.5 m wide at the northern end and would be sufficient to catch any rock falling from the small cliff at its crest.

We could not inspect the cliff behind a tree at the crest (refer Photo7) but would expect the bench to be insufficient in width to catch any material falling from the micro cliff at this location. Furthermore, the tree is causing some wedging of the masonry at the top of the wall as shown in the photo below.



Overall the masonry in Area 3 is in relatively good condition and is reasonably well pointed. The wall is not cracked and does not appear to be bulging or showing distress. A few mortar courses are eroded and weathered, particularly at the northern end of the wall.

Risks and Mitigation measures

The wall appears to be in reasonably good condition although there is a medium risk to users of the footpath - cycle path associated with material falling from the crest where root wedging is occurring. This risk can be mitigated by the removal of the trees, securing and rebonding/pointing loose masonry and by the inspection of the micro-cliff behind the tree at the crest of the wall, if necessary following the inspection, securing (likely by blockwork) or removing by hand scaling any lose material in the micro-cliff.

It would be prudent to install weepholes in this masonry wall to allow drainage of water following repairs and repointing works.

Note there is a high risk to the public at the southern end of the wall where the transition into unsupported ground occurs. However, this area is discussed under Area 4.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
Remove trees, point and rebond masonry	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	1.00	\$70,000

3.3.6 Area 4 – Weak leached cliff close to rail reserve

Observations

Observation	unsupported section, risk of unbound material falling, weak rock/soil mass dilates away from face, general fretting and ravelling of the face
Risk Category	High

The unsupported section above the southern end of the Area 3 retaining wall and further south presents a risk to the public using the north to south footpath/cycleway running along the eastern side of the reserve. The extent of this area of risk coincides with the extent of Area 4 (see Figure 1) and is also depicted in Photo 12.

The upper part of the face along Area 4 comprises a highly leached limestone with the properties of a sand. The faces stand near vertical because of weak cementation. This cementation however also provides a mechanism for tension cracks to develop as the weak rock/soil mass dilates away from the face. It is possible that large blocks (volumes > 1 m³) of this weakly cemented sand could collapse from the face with little warning, particularly during or following periods of heavy rainfall if water was to enter the narrow tension cracks within the rock/soil mass.

Slightly further south, in Area 5, cracks are appearing in similar highly leached material. The example from Area 5 illustrated below serves as an analogue for Area 4.



In addition to a large fall of earth, general fretting and ravelling of the face is observed as evident from the accumulation of sand and gravel at the base of the cliff. A falling cobble from this face would present a risk of injury to any person in its trajectory when a fall occurs. The following photo illustrates the weak friable nature of this face and the proximity of the footpath/cycleway.



Risks and Mitigation measures

There is a high risk of loose and unbound material or weakly cemented material falling from the cliff. The risk has been partially mitigated by the closure of the path along the base of this cliff that connects the railway reserve footpath with the southern stairs to Arthur Head. However, at the junction of the closed and open paths, the path closure has not fully mitigated the risk. A likelihood remains of material falling from the upper part of the face that could spill out onto the north south cycleway/footpath which has not been closed (see Photo above). As the consequences of this hazard occurring could be a serious injury or even a fatality we consider the risk to be high. Remedial measures that support this face, at least across the distance where a collapse could reach the main path, are therefore required.

The most **effective support measures** would:

- 1) Extending the existing masonry wall by about 6m and designing the extended wall as a retaining structure, designed to visually match the existing.
- 2) Installing a 900mm high wire fence adjacent to the extended masonry wall to 1.) prevent material falling from the cliff to roll onto the footpath and 2.) prevent the public to enter the area immediately beside the cliff at Area 5.

The following possible options are **not recommended** because they are considered less effective and would only partially mitigate the risks, or would impact negatively on the significance of the place as per the CMP.

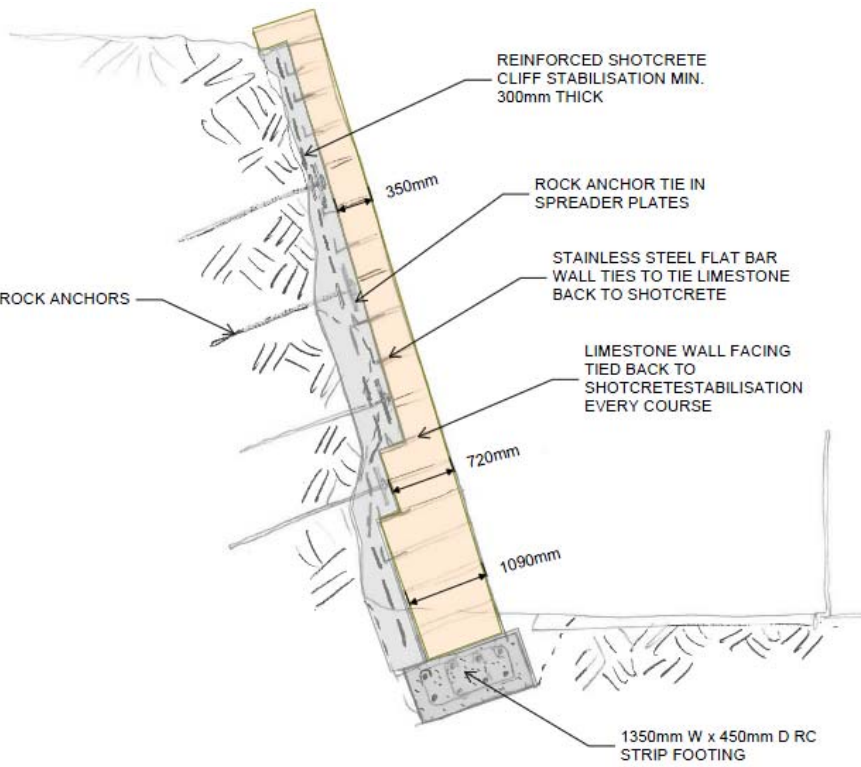
- 1) Re-calcify the face using a Calcite In situ Precipitation System (CIPS). This system is limited by how effectively the solutions associated with CIPS can be introduced into the face.
- 3) Mesh the face, secured with soil nails and use CIPS applied to surface to mitigate against material eroding through the aperture in the mesh.
- 4) Build another type of retaining structure e.g. a soil nail wall involving soil nails, mesh and shotcrete.

Until a permanent retaining option is carried out it will be necessary to mitigate the existing risk to the public traversing the north south footpath/cycleway. One of the following measures is recommended:

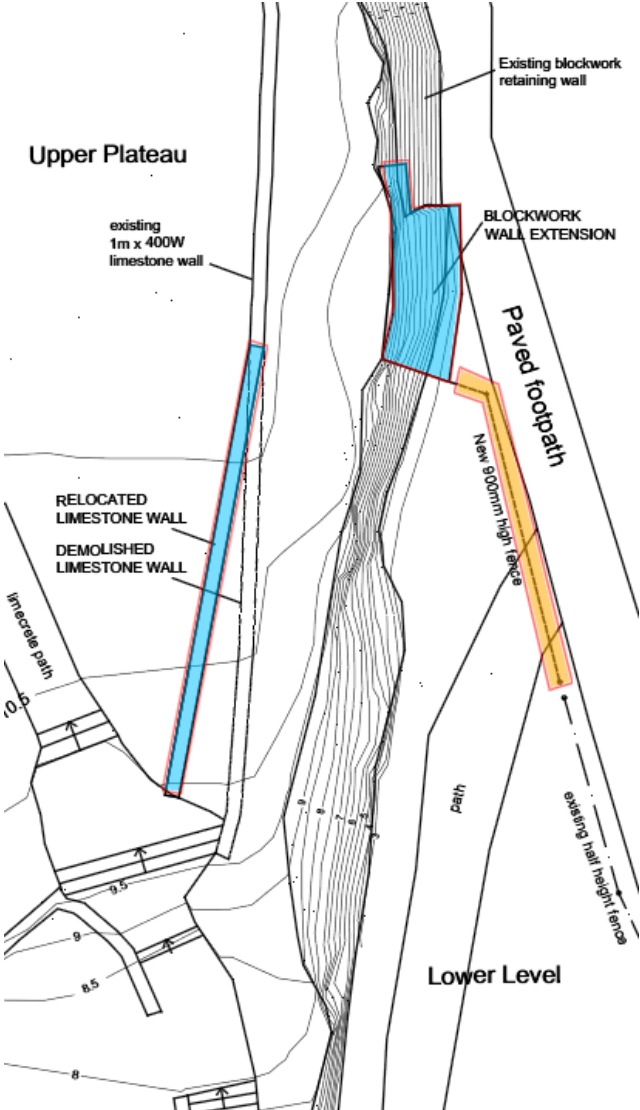
- a) Full closure of the rail reserve cycle/footpath where it passes the hazard
- b) Erection of a temporary support tunnel across the path design to retain earth falls hitting the side of the structure or rock striking the sides or top of the structure.
- c) Part closure of the path by narrowing the path and building a temporary barrier /fence capable of catching falling rock/earth.



Area 4: Sketch illustrating the recommended cliff façade extend to be covered by the masonry wall (blue) and by a 900mm high fence (yellow).



Area 4: Mitigation sketch – Section of masonry extension.



Area 4 and 5: Proposed wall extension, new fence location and upper plateau balustrade relocation.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
Extend existing adjacent masonry wall	3	will stop deterioration and support face	1	2	2	appearance improves significantly	4	8	0.50	\$90,000
Canopy over		protect public				could be designed to look attractive although rock face will				

3.3.7 Area 5 – Weak cliff of leached limestone and cross bedded aeolianite

Observations

Observation	Shallow undercuts, limestone balustrade close to cliff edge
Risk Category	High - Medium

The conditions in Area 5 are similar to those in Area 4 with a covering of loose sand at the top a low, 5 to 6-metre-high, cliff underlain by highly leached limestone with soil like properties in turn further underlain by leached and friable cross-bedded aeolianite (refer Photos 15, 16, 17 and 19.

Towards the southern end of Area 5 the capping of soil gives way to a caprock surface down which a path descends at the southern end of the elevated part of the reserve. A masonry wall is built on top of the cliff and at its southern end this wall is within about 1 metre of the cliff edge. This wall appears to be founded on sand and the southern end of the wall is at risk of being undercut should a cliff edge collapse occur.

Beneath the caprock at the southern end are several shallow undercuts which do not appear to present a risk of collapsing from under the path above due to the competency of the caprock. The situation should however continue to be monitored for changing conditions. There is a cave that appears to have been used as a storeroom in the past. It has been boarded up (refer Photo 18). By viewing through the bars to the barrier (Photo 18) it appears to be quite extensive and no doubt extends under the footpath that descends from the southern part of the reserve.

Risk and Mitigation Measures

There is a risk of collapse to sections of the cliff. This would present a high risk to path users if the footpath (currently closed) that skirts around the base of this cliff was to be reopened. It is recommended that this path remains permanently closed unless a retaining structure is built to support the faces, or at least the path is realigned so it is located beyond the path of falling debris.

At cliff crest level it is possible that some of the weakly cemented leached material falling from the cliff could cut back to and destroy a short section of the masonry barrier wall. To mitigate this risk one of the following could be undertaken.

- 1) Allow the cliff to find equilibrium (get case hardening after time being exposed to weathering) and relocate an about 8m long section of the upper plateau balustrade wall to avoid the retreating cliff edge. Prevent the public to get close to the cliff face by installing a 900mm high fence.
- 2) Build a cliff retention structure with mesh/shotcrete and soil nails.

It is possible the currently boarded up cave (Photo18) presents a risk of crowning upwards to the surface and undermining the path. Surface cover might only be about 2 m.

The stability of the cave could be investigated by removing the barrier to grant access and by a detailed level survey, so the plan area of the cave and the cave soffit elevations can be compared with ground levels. At the same time the roof of the cave can be visually inspected, and the quality of cover materials could also be evaluated by shallow boreholes drilled from above. Depending on the heritage value of the cave, an easy and reliable remedial measure is to build a shutter across the cave entrance and backfill the cave with flowable concrete thus negating the need for investigation and removing any residual risk.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Prevent public getting close to cliff face and relocate part of upper plateau balustrade wall	3	Current risk based path being currently operational	1	2	1	no change in appearance	3	2	1.50	\$75,000
Open path at cliff face and cover cliff in mesh/shotcrete and soil nails	3	path around base operational	1	2	-3	appearance with look temporary and have poor aesthetics	-1	7	-0.14	\$175,000

3.3.8 Area 6 – Vertical face of caprock over zone of roots and cross-bedded aeolianite with undercuts

Observations

Observation	caves and undercuts beneath the caprock, rock fall, cracked columns in cave
Risk Category	High - Medium

Area 6 is a near vertical cliff of limestone about 9 metres high at its northern most end tapering to about 3 m high at its southern end. The cliff displays all three of the geotechnical units. The caprock at the higher most level is competent and intact and can be seen in plan as a pavement and also in section at the top of the cliffs. It is underlain by the “zone of roots” which has been eroded at many locations creating caves and undercuts beneath the caprock. The cross-bedded aeolianite form a stratum that is more competent than the zone of roots and is present towards the base of the cliff (refer Photos 21 to 27).

There is a cave towards the southern end of the cliff face. The cave displays a fine example of a large calcretised column formed by a taproot of a eucalypt tree. The column supports a large slab of caprock approximately 1.5 m thick. An adjacent fallen column shows the typical hollow structure of these large Rhizocretions (refer Photo 27). The standing column is also hollow as can be seen in Photo 26 and is cracked across its full width towards its base (refer Photos 26 and 27).

Generally, the caprock appears to be sufficiently competent to bridge the undercuts and cavities that have developed in the underlying zone of roots. However, from time to time a collapse of the edge of the caprock occurs as noted in the photograph below where a former rock bolt has been exposed.



A diagonal crack can be seen in the northern part of the Area 6 face. This appears to be a natural joint (refer Photo below) and although mentioned in earlier surveys does not appear to be developing.



The path along the base of this cliff was closed to the public at the time of the inspection and as such fallen rocks likely do not get cleared away very frequently. Several rocks were noted on or adjacent to the path during our inspection and are testament that the weathering and erosion of the limestone, especially the zone of roots units creating a mechanism to dislodge blocks. Examples of fallen rocks can be seen in Photos 22, 23 and 24.

Risk and Mitigation Measures

Risks to users of the lower path along the base of the cliff due to the hazard from rockfall are considered Medium to High if the path was to be re-opened.

The risk of a larger collapse bringing down a slab of caprock is considered relatively low and the risk of a slab of caprock collapsing and impacting the public area behind the barrier walls on top of the cliff are considered low to very low.

It is recommended that the path remain closed to manage the risk to people at the base of the cliff. It is also recommended that the calcretised column which might be partially supporting the cave (refer Photos 26 and 27) be reinforced at its base by constructing a jacket of concrete around the column to just above the level of the crack. The concrete jacket could be faced with limestone to conceal the concrete and blend in with the surroundings.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Permanently close path beside cliff face and reinforce base of column in cave	3	Current risk based path being currently operational	1	2	1	existing appearance is maintained	3	2	1.50	\$50,000
Mesh and shotcrete face and open path to public	3	Current risk based path being currently operational	1	2	-3	affect appearance of face and destroy the cave	-1	8	-0.13	\$155,000

3.3.9 Area 7 – Vertical Face over western tunnel portal

Observations

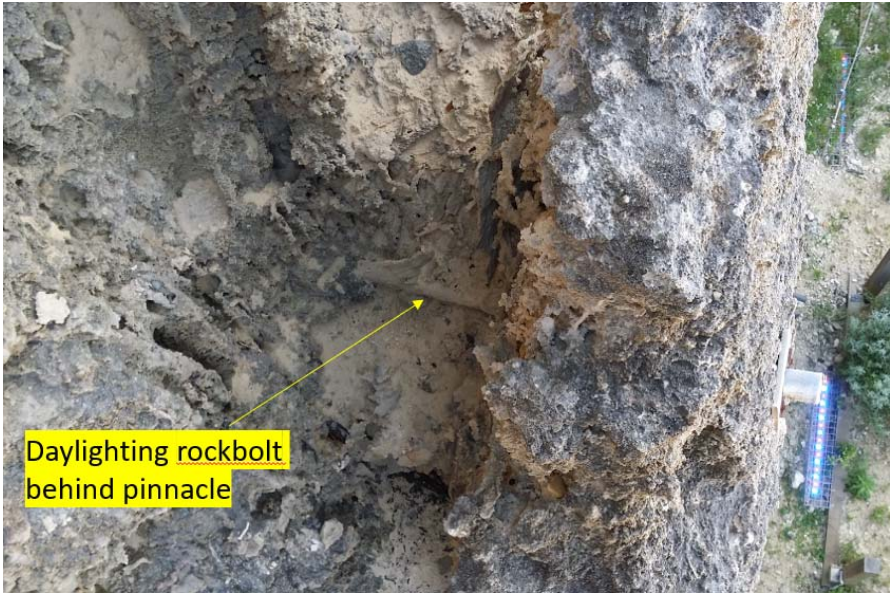
Observation	Dysfunctional rock bolts, cracking, no structural support to the tunnel portal
Risk Category	High

Area 7 is a near vertical cliff of limestone about 10 metres high at the northern end of Area 6 and directly over the western portal of the Whalers Tunnel. The face was inspected using a cherry picker (refer Photos 29 to 39).

The face displays a limestone caprock, an undercut and fretted section within the ‘zone of roots’ about 5 m thick. The undercuts are up to about 1 m deep and the face beneath the undercut caprock is not smooth but comprises a series of niches and columns. This irregularity in the face is hard to appreciate from ground level.

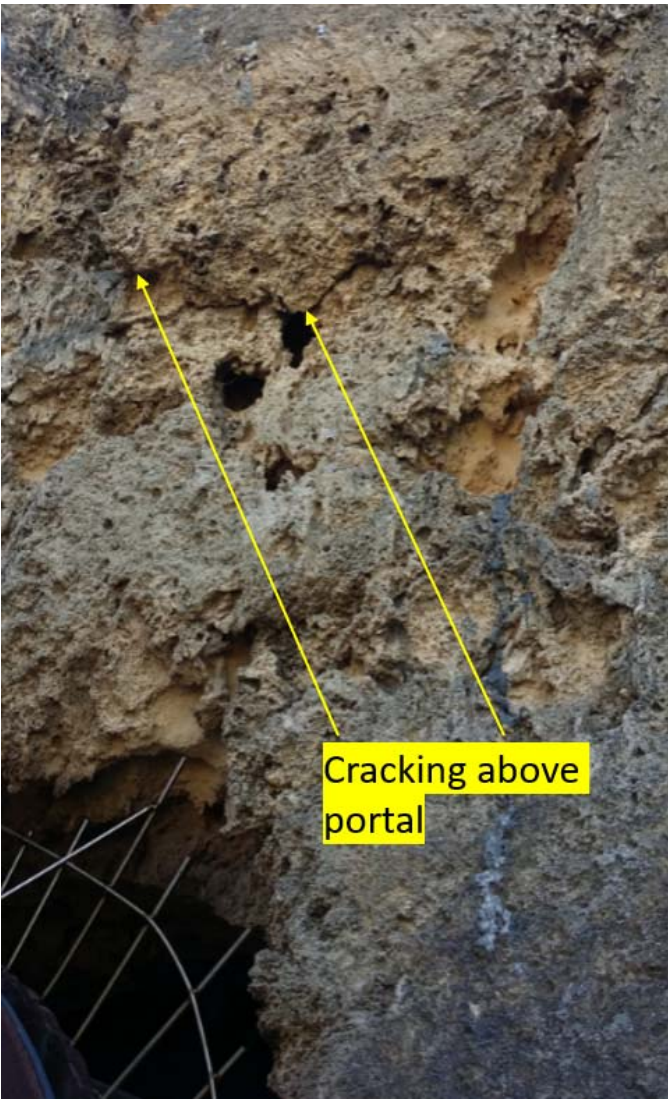
Immediately above the tunnel portal and the faces each side of the portal comprises limestone belonging to the cross-bedded aeolianite unit.

It should be noted that there is evidence of several defunct cable bolts. Two functioning rock bolts can also be seen in the face. These rock bolts appear to have been installed to secure pinnacles of limestone. The presence of the bolts appears however to have resulted in the cracking of the friable pinnacles and the southern most of the two rock bolts can be seen daylighting behind the pinnacle before penetrating the main face (see Photo below).



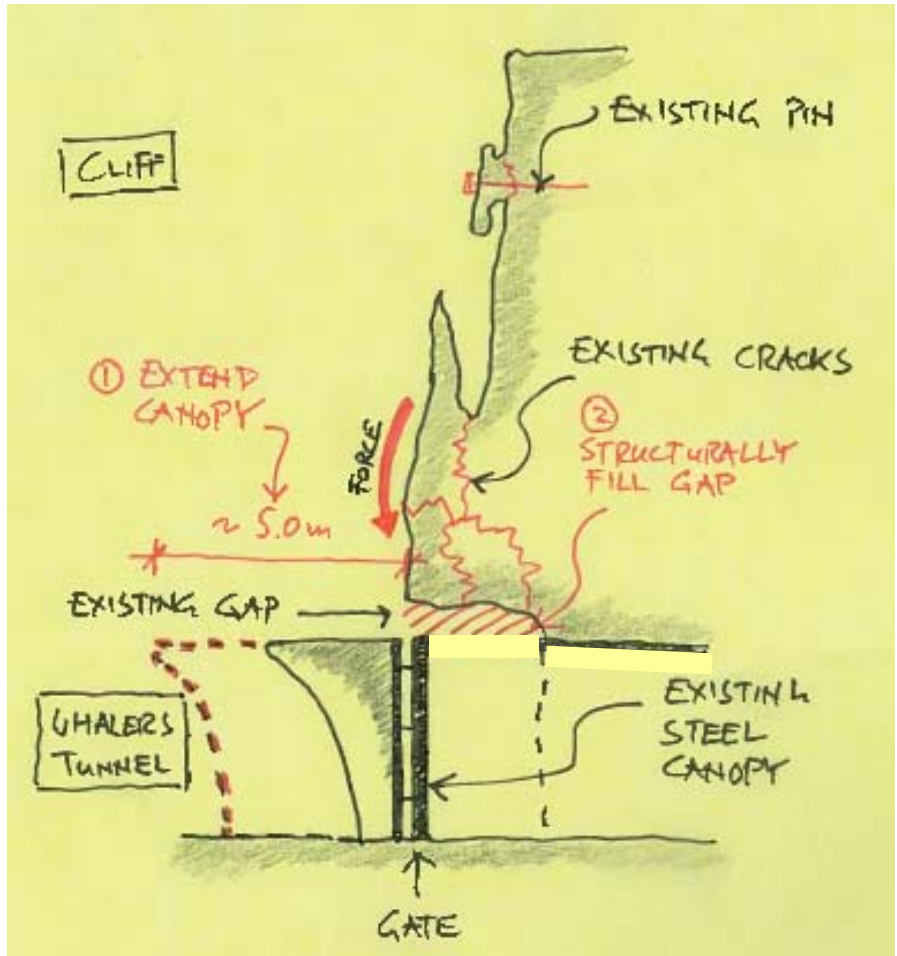
These bolts (without mesh and/or shotcrete) are providing little support to the face with respect to preventing cobble sized falls of rock.

Immediately above the western portal cracking can be seen as noted in the Photo below. Other cracks are present in the area above the portal and the limestone does not form a smooth arch as can be seen in Photo 38.



It was also noted that there is no structural support to the tunnel portal. The cable bolts reinforcing the crown of the tunnel installed in 2001 stop a few metres short of the portal and the steel arched canopy (refer Photos 38 and 39) would only be able protect the public from small cobble sized rocks falling from the face above the portal.

It is visually apparent that this canopy is not able to support the portal as it is not in contact with the crown of the tunnel nor does it extend into the tunnel a sufficient distance to provide the necessary support.



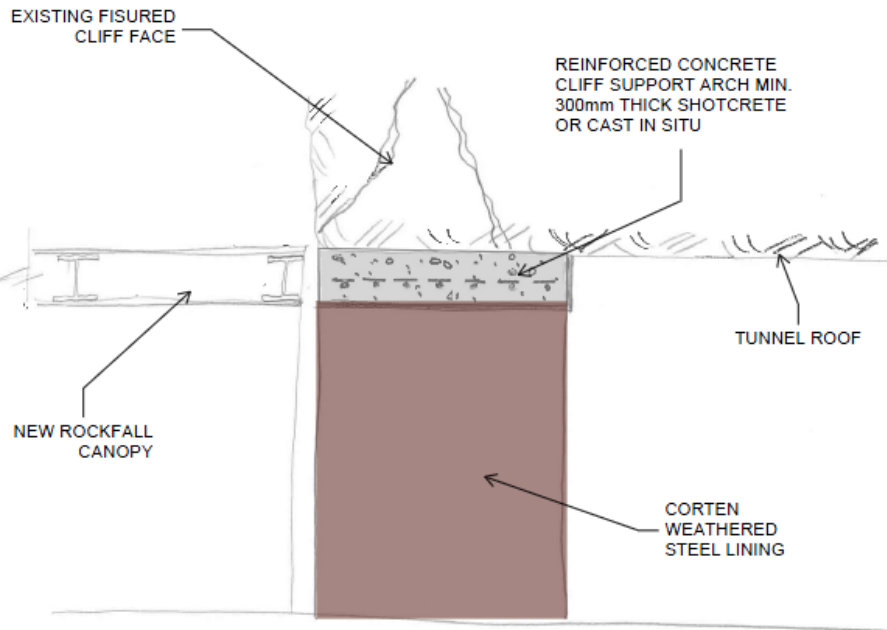
Area 7: Sketch illustrating 1.) The recommended canopy extension and 2.) the recommended structural fill between the steel canopy and rock tunnel roof.

Risk and Mitigation Measures

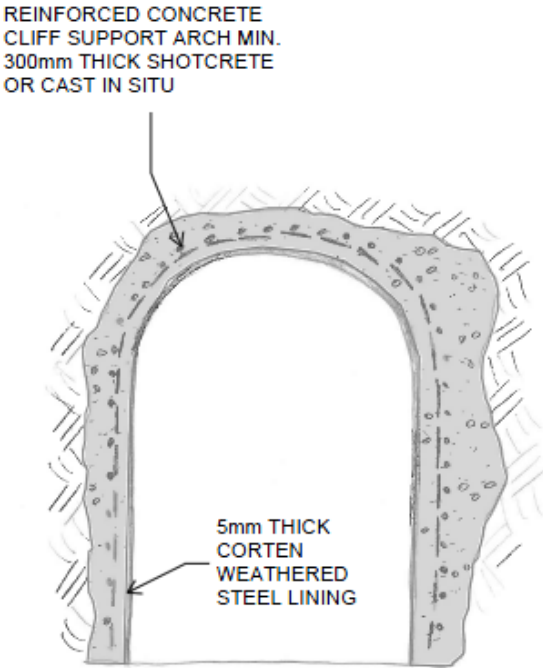
The rock bolts above the portal secure individual pinnacles. These pinnacles show some level of distress and the risk of them falling from the face has not been entirely negated by the installation of the rock bolt. If a fall of an individual pinnacle was to occur it is likely that the existing steel rockfall canopy and temporary scaffold would reduce the risk to injury to people to low with respect to rockfalls of less than about 0.5 m³. There is however a possibility of the falling pinnacles or other pieces of rock triggering a larger collapse that brings down the tunnel roof around the portal for about 1 m into the tunnel and extending upwards possibly even as far as the caprock pavement. If this was to occur rocks would end up on the floor of the tunnel and the steel rockfall canopy would likely collapse as the rock into which it is anchors collapses. Should this event occur, fatalities could result if people were in the vicinity of the portal at the time of collapse.

To significantly reduce the risk of the portal collapse occurring, a structural arch would need to be designed and installed beneath the portal and extending into the tunnel by about 1 m. The space between the structural arch and the tunnel roof and sides would need to be packed with concrete

to provide support with minimum movement. Aesthetically we propose to clad the concrete arch with corten steel to all three faces to match the existing design language of the place. Such a structural arch would reduce the risk of a catastrophic portal failure to very low.



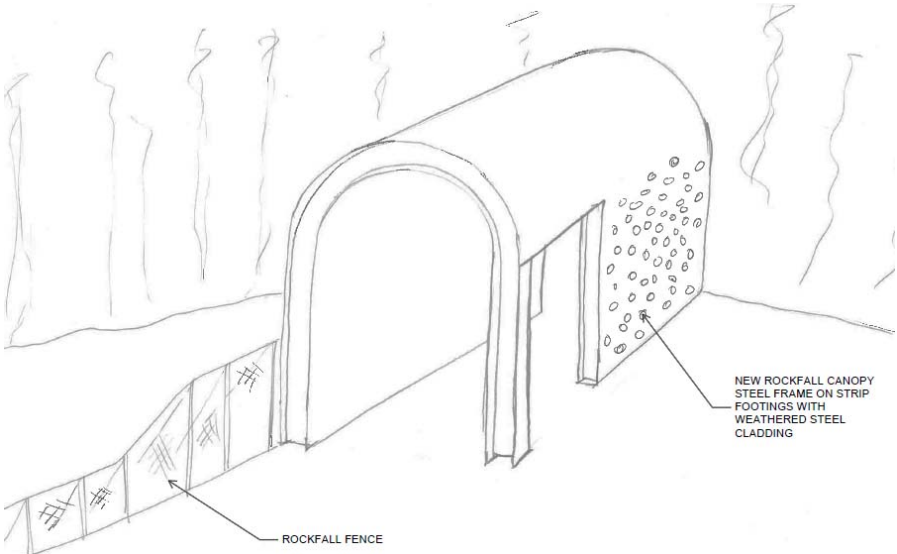
Area 7: Mitigation sketch – Long section of proposed arch supporting the cracking rock portal.



Area 7: Mitigation sketch – Cross section of proposed arch supporting the cracking rock portal.

However, the rockfall risk resulting from the face above the portal would need to be addressed. This could be done with extensive rockfall netting across the cliff face used in conjunction with a rockfall canopy similar to the current canopy. This solution would be detrimental to the representation of the cliff face. The preferred mitigation strategy for this highly public location is therefore a combination of four elements:

1. A larger rockfall canopy designed and constructed extending about 6 m out from the tunnel portal. The exact size of the rockfall canopy is a function of the rockfall risk in Area 7, but also addresses the risk from the adjacent Area 8 and the works undertaken there to mitigate that risk.
2. Application of the CIPS system to pockets of friable material across the cliff to address erosion.
3. A rockfall fence extending out from the canopy structure, which will be explained in further detail in 0 Area 8.
4. Soil and ground covering plants (coastal succulents) to an area between the rockfall fence and the cliff face to mitigate the bounce of falling rocks.



Rockfall Canopy – Option 1

Because of the exceptional significance of the Whaler's tunnel entry based on its historic value we do not recommend a masonry mitigation strategy to this area such as that proposed for Area 4. The rockfall canopy would be the solution addressing the risk of falling material.

Rockfall analyses indicate that a canopy extending 6 m from the tunnel portal is required assuming, this also connects with a 0.9 m high 10 kJ rockfall fence to intercept any rebounding rocks falling from Area 8.

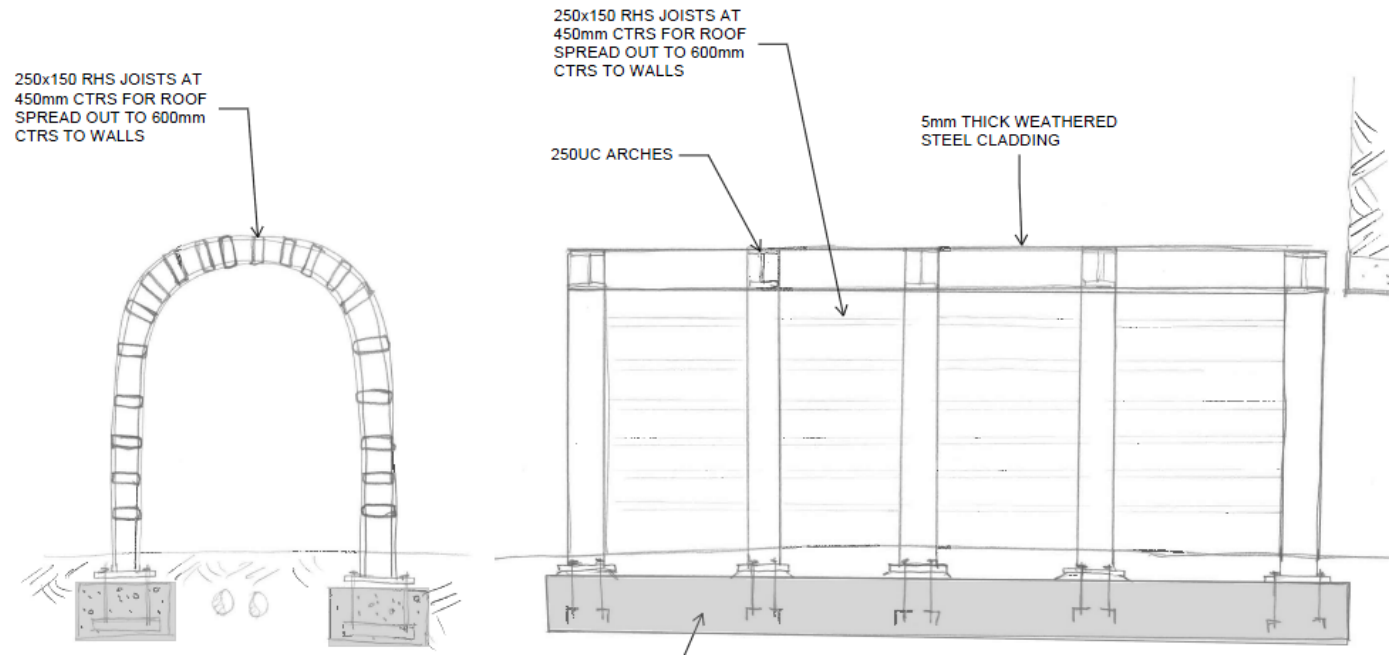
Following the existing shape of the tunnel, we propose a canopy extension of around 6m long, 4 m high and 4 m wide made from steel suitable for the coastal location and clad with corten steel. The canopy roof must be solid but the aides can be open or clad with perforated steel panel.

Because of its location within Fremantle's "art precinct" (J-Shed, Kidogo Arthouse etc.), there is potential for the canopy steel cladding to be an interpretive artwork of the heritage significance of the place. Opportunities for interpretation can be creatively designed to inform visitors to the site such as using an interpretive perforation showing the Whaling or shipbuilding history.

If feasible the existing canopy and steel gate could be retained and reinstalled. This is subject to further intrusive investigation.

The design of steel members is driven by the potential impact forces of fallen material. To avoid a "bulky" construction, the installation of springs under the canopy columns is recommended allowing a more slender steel member design.

Area 7: Rockfall canopy – Visualisation of proposed rockfall canopy and rockfall fence at Whalers tunnel entry (Bather's Beach side) – Option 1

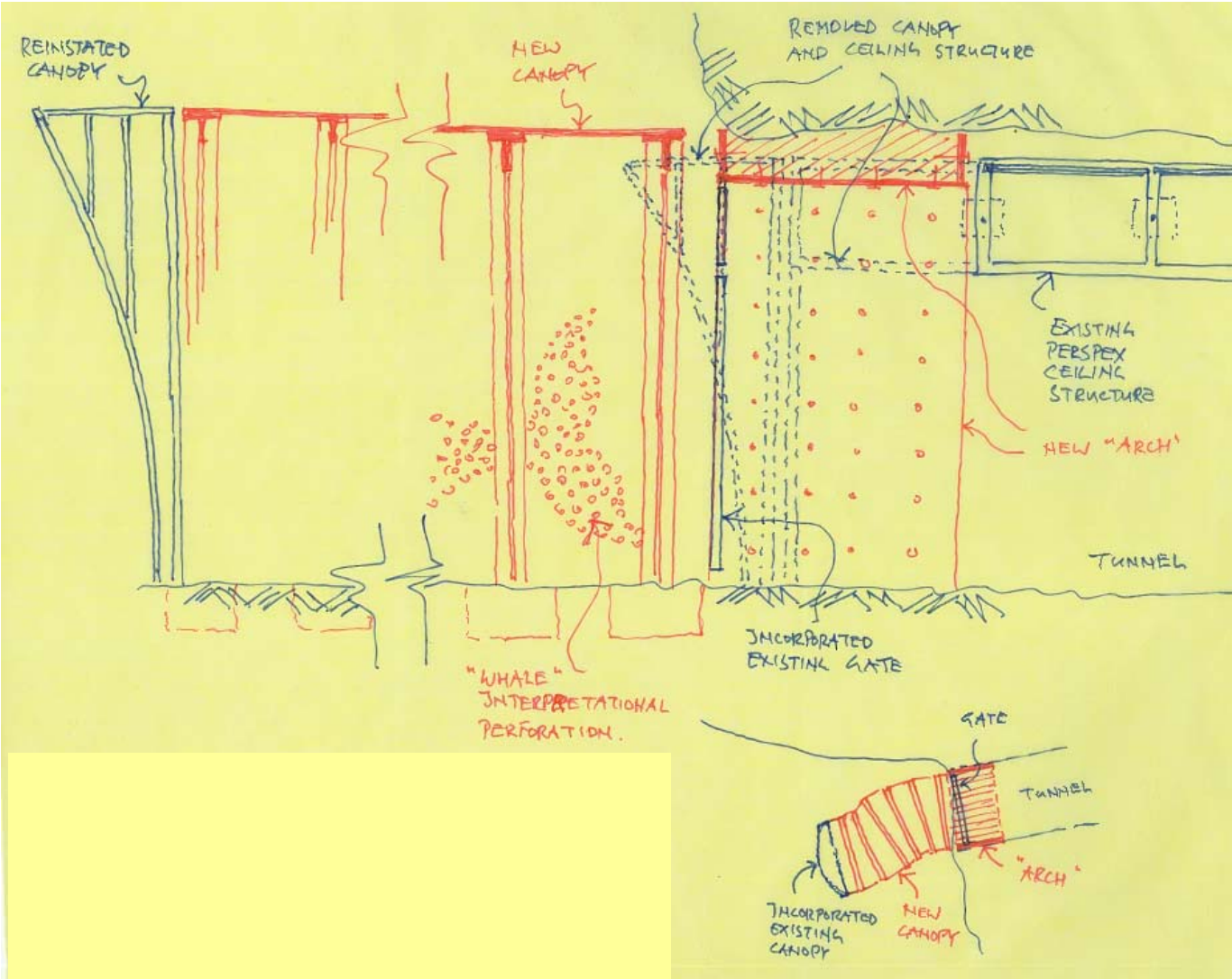


Area 7: Rockfall canopy – Sections of proposed rockfall canopy at Whalers tunnel entry (Bather's Beach side) – Option 1



Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Build support for portal in form of arch	3		1	2	1	support would barely be visual from outside the tunnel visual	3	5	0.60	\$285,000
Extend rockfall canopy by 6m (Option 1) and do not treat face	3		1	2	-1	extension of existing could be designed to complement surrounding	1	5	0.20	\$145,000
Install rockfall netting to cliff face	3		1	2	-3	Netting would significantly affect appearance	-1	4	-0.25	\$115,000

Area 7: Exploded image of spring proposed for canopy column base.



Area 7: Rockfall canopy - Section sketch and site plan – Option 1

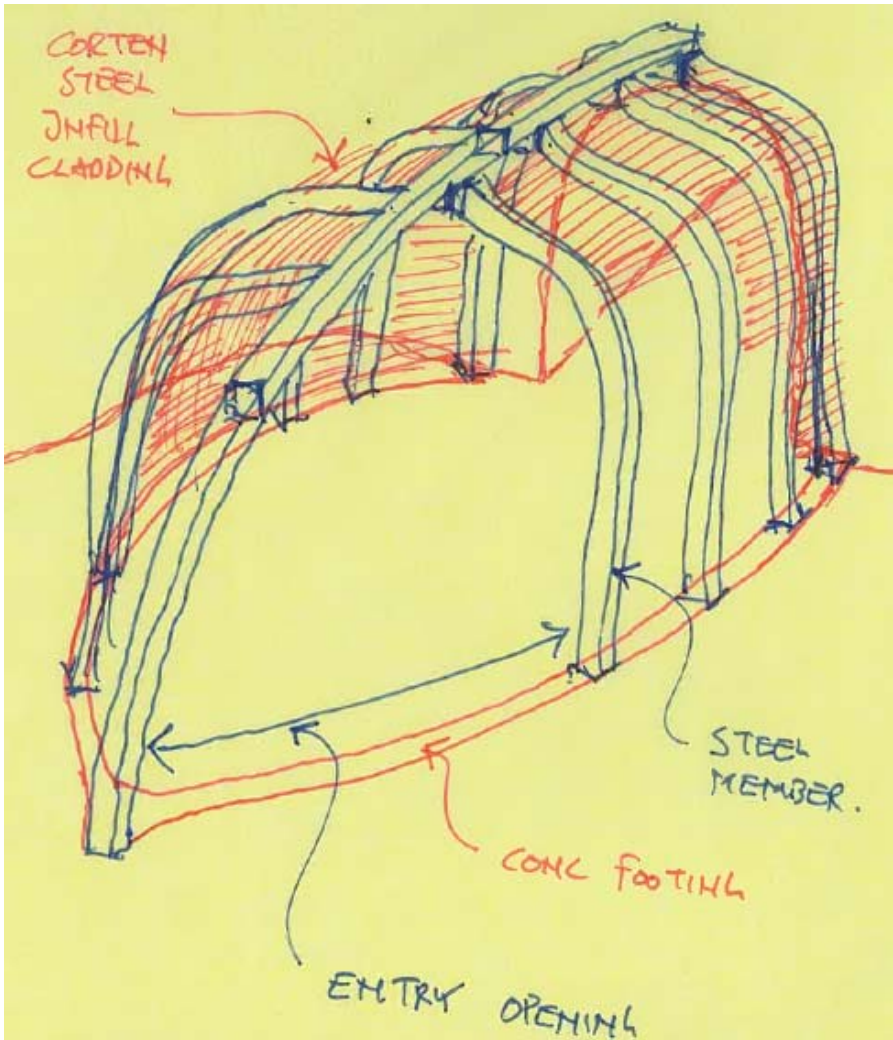
Rockfall Canopy – Option 2

With reference to the history of Bather’s Beach as a Whaling and shipbuilding location during early settlements, we propose an interpretive design to the canopy shelter. Beside proper ships they were certainly using small rowing boats which usually got stored on the beach in a flipside position.

This is what Option 2 picks up upon. The design interprets the hull of a flip sided boat. Steel members get installed as the keel and frame, a concrete strip footing follows the curved form of the boat. Suitable steel panel infills provide the necessary shelter function.



Area 7: Rockfall canopy – Simplified visualisation – Option 2



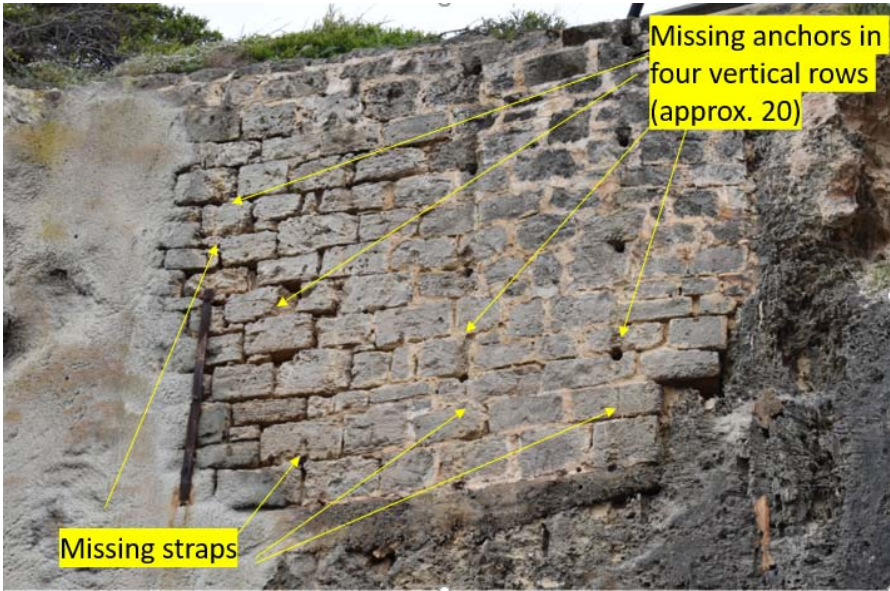
Area 7: Rockfall canopy – Visualisation – Option 2

3.3.10 Area 8 – High face beneath time ball and signal cannon platform

Observations

Observation	Extensive cliff erosion, friable surfaces, corroded masonry ties, rock fall hazards
Risk Category	High

Area 8 comprising a near-vertical cliff about 12 m high is located immediately south of the signal cannon and time ball platforms and close to the western portal of the Whalers Tunnel. Photos 39 to 47 illustrate the cliff face conditions at Area 8. The geotechnical units comprise a caprock between about 0.5 and 1.5 m thick at the top, underlain by a fretted and highly eroded “zone of roots” which is further underlain by the cross bedded aeolianite. At some time in the past a panel of limestone masonry approximately 5 m wide by 4 m high was constructed, presumably to slow down erosion within the ‘zone of roots’. This was presumably considered important for safety as this part of the wall is located directly above the tunnel portal. It is apparent that in the past this masonry wall was tied back into the cliff by at least 20 rock bolts, and steel straps approximately 50 mm wide were arranged vertically in four rows. The anchors have all but completely corroded away and only a rusty piece of strapping remains (see photo below). The wall sits upon a concrete footing that can also be seen in the photo below.



The masonry itself is in very poor condition as can be seen in the photo below.



Next to this masonry wall is an area where shotcrete has been applied in the in an apparent attempt to prevent the erosion and fretting of the upper part of the cliff within the ‘zone of roots.’ The shotcrete does not appear to have adhered well to the sandy friable surface of the limestone and cracks can be seen (see photo below). Pieces of shotcrete now present a rockfall hazard.



Further west the ‘zone of roots’ section of the face is particularly friable and it is from this section that a large pinnacle of material (approx. 100 kg)

dropped and was noted and photographed in the Gordon Geological Consultants site inspection report of 2009. The following photo shows the area from which that pinnacle fell.



The strength of the face is highly variable with highly leached zones adjacent to more competent materials (refer the following two photos).





Risk and Mitigation Measures

There are significant risks relating to the cliff at Area 8 in its current condition. Without the tie-back system and in its current state of repair there is possibility to likelihood of the masonry wall collapsing. If the situation is not improved the likelihood of collapse will increase further. The scaffold canopy at the base of this part of the cliff partially mitigates the risk. Depending on the size of the fall there is a risk that some falling debris could smash through the plywood cover to the scaffold or enter the canopy structure from the side. The risk of a fall is considered high but the risk of falling material breaking into the canopy and causing an injury is considered low to medium.

Similarly, if the masonry wall was to collapse *en masse* there is a low to medium risk of the caprock pavement immediately behind the wall collapsing and affecting public safety in the vicinity of the time-ball platform. Thus, whilst path closures or canopies can protect the public at the base of the cliff, some form of retention works are required to stabilise the wall to mitigate risk at the top of the cliff.

The retention options are:

- 1) Masonry repairs, mortar repairs, new pointing and installation of rockbolts /soil nails and steel straps both vertically and horizontally like the original anchoring and strapping applied to this wall.
- 2) Masonry repairs, mortar repairs, new pointing and installation of a high strength rockfall mesh/netting secured and anchored in place with rock bolts/soil nails
- 5) Installation of a high strength rockfall mesh/netting secured and anchored in place with rock bolts/soil nails across the face of the masonry wall and a layer of shotcrete. **Not recommended for aesthetic and Heritage purposes.**

Option1 would result in a similar level of improvement in stability to the other options and would not significantly change the appearance of the existing wall/cliff face.

West of the wall in the area where a pinnacle has previous fallen, the risk of a rockfall or minor cliff collapse affecting public safety at the signal cannon platform is considered low as the setback of the platform from the cliff edge is greater at this location than at the location of the masonry wall.

There are however fewer options to reduce risk at this location.

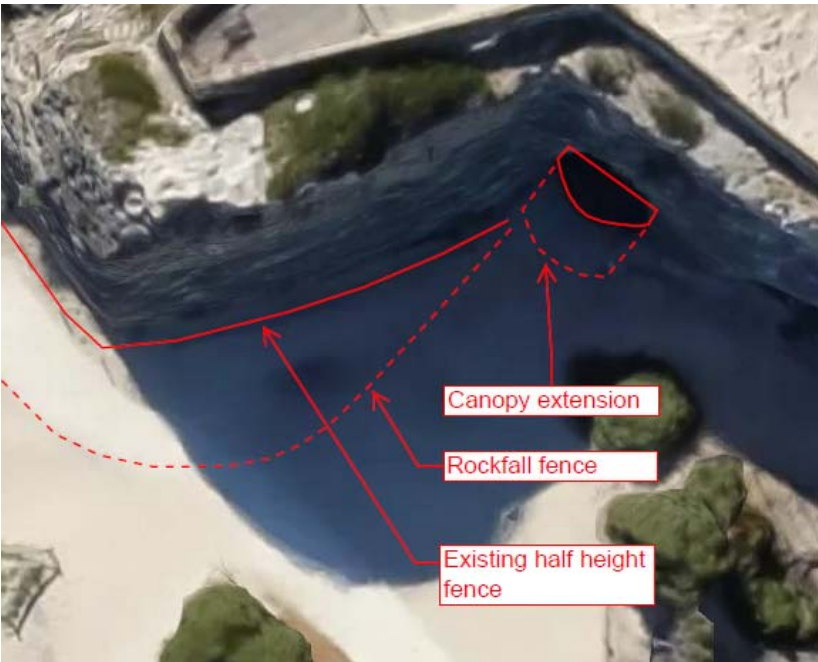
- Trimming of the face is discounted as it will remove case hardened material and expose the slope to erosion.
- A pinned rockfall net/mesh would likely not be effective due to some extremely friable material towards the top of cliff that would fret and wash through the netting apertures and a loss of tension in the net could be expected as material drops out.
- A rock bolted/ soil nailed mesh with an application of shotcrete would improve overall stability and significantly mitigate rockfall risk. Due to the highly irregular surface of the cliff face a shotcrete thickness more than 0.5 m in places could be expected in order to provide cover to the reinforcing mesh. **Not recommended for aesthetic and Heritage purposes.**
- A more aesthetically pleasing option might be to leave the cliff untreated and instead invest in keeping the public out of the impact zone of falling material. This could be achieved by a combination of:
 - Rockfall shelter / canopy (close to the tunnel portal,
 - A rockfall energy absorbing fence barrier where the distance is such that impact from the hazard is from a sideways trajectory (i.e. bouncing rock)
 - Re-routing footpath to keep them out of the rockfall impact, bounce and roll zone.

A surface application of CIPS could be applied to the cliff face to try to slow down the rate of erosion, but this method is unlikely to have sufficient penetration to substantial reduce the risk of rockfall or to improve overall stability.

The current risk if the public were to enter the currently cordoned off zone is very high. These risks could be reduced to low by either the shotcrete option or measures to keep the public protected through distance, fencing and canopies.

Rockfall Fence

A 600mm to 900mm high rockfall fence is proposed to be installed below this location able to withstand a 10kJ force of rebounding rocks falling from the cliff, cabling and posts bolt anchored in concrete as per example image on the next page.



Area 8: Sketch illustrating 1.) the recommended canopy extension and 2.) the recommended rockfall fence location re-routing the public away from the cliff face.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
Repair masonry wall, install new ties, install rockfall fences and re-route paths	4	assuming temporary path closures and scaffold canopy were removed	1	3	1	existing appearance is maintained	4	5	0.80	\$50,000
Cover face in mesh rock bolted in place	4	assuming temporary path closures and scaffold canopy are removed	2	2	-2	appearance will deteriorate due to mesh	0	5	0.00	\$115,000

3.3.11 Area 9 – Steeply inclined cliff

Observations

Observation	Rock fall, overhangs
Risk Category	Medium

Area 9 is the westernmost edge of the promontory forming the signal cannon platform. It is a face up to 11 m high and is inclined at approximately 65-70°. Overall the face appears more stable than the adjacent southern facing cut face (Area 8). The face is covered with case hardened calcrete. The host units appear primarily to be the cross-bedded aeolianite with a cover of caprock at the summit. The geotechnically problematic zone of roots appears largely absent at this location. There is a small area of infilled blockwork dentistry (refer Photo 48) which appears to have been undertaken to repair an area where case hardening has been lost. Some remnants of a long abandoned and partially dismantled staircase remain on the face (refer Photos 48 and 50).

Risk and Mitigation Measures

The clean nature of this face and the extensive case hardening decreases the likelihood of small pieces falling from the face, although a hazard is present. There is also the risk of collateral damage to this face should material fall from the southerly facing rock face in Area 8. For this reason, it is recommended that the footpath be locally realigned, so the edge is at least 6 m from the cliff face and a catch fence be constructed to contain any falling material that might bounce, roll or slide beyond the exclusion zone and onto the path.

An alternative to relocating the path would be to pin a rockfall netting to the face with soil nails/rock bolts. As the case hardening is largely intact on this face the anchored rockfall netting would be effective in containing and/or preventing falling material, however if the case hardening becomes damaged, the application of shotcrete would become necessary to prevent smaller material from ravelling/washing out through the net apertures.

It is recommended that the hazards associated with the overhanging step illustrated in Photo 50 be removed by removing the step and other man-made debris from the area.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
Re-route path away from face	2		1	1	1	existing appearance is maintained	2	2	1.00	\$15,000
Rock bolt and mesh face	2		1	1	-2	appearance will deteriorate due to mesh	-1	4	-0.25	\$50,000

Area 10 – Inclined cliff face behind J shed

Observations

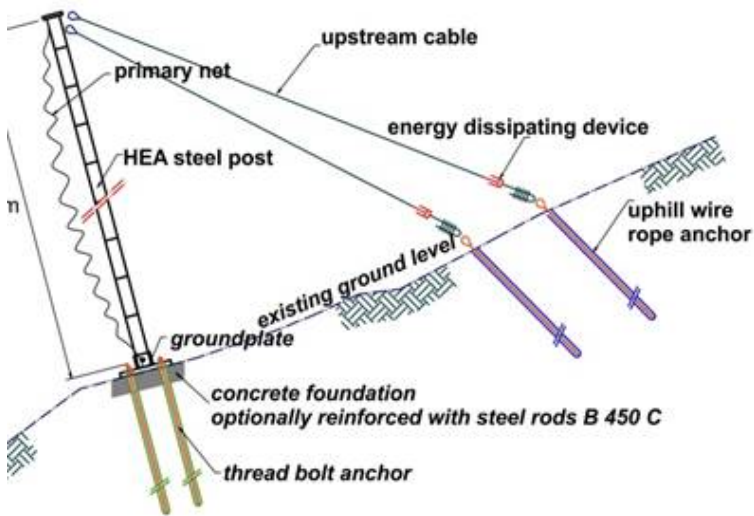
Observation	Vegetation overhang, little rock fall risk
Risk Category	Low

Area 10 comprising a 45 to 60° case hardened limestone batter some 4 to 6 m in height. The principal unit exposed is the cross-bedded aeolianite (refer Photo 56) and extensive case hardening has resulted in a well cemented and apparently stable face. There are some *Rhizocretions* in the form of calcified taproots at the northern end of the cutting (refer Photos 51 and 52).

Risk and Mitigation Measures

Overall the risk of material falling from this face and striking pedestrians, parked cars etc. is considered low. No mitigations measures are considered necessary other than to keep vegetation trimmed so that trees do not grow and start to wedge blocks of rock by root wedging.

Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
Trimming of vegetation to avoid wedging	1		1	0	1	appearance will benefit	1	1	1.00	\$50,000



Area 8: Sketch illustrating the recommended rockfall fence system.



Area 8: Example image of the recommended rockfall fence

3.3.13 Area 11- Man made retaining wall between CGI shed and Time ball Platform

Observations

Observation	Retaining wall in unstable condition
Risk Category	High

A small buttress like promontory of limestone projects northwards from the northern side of the time-ball and cannon signal platforms. In the past it has clearly been modified by the addition of an irregular masonry wall. This feature can be seen in Photos 57 to 60.

According to the CMP, this 'outcrop' was most likely the base of a former 2nd signal mast from about 1905 – 1929 (pg72 item 21 in CMP). It lists the signal mast area as archeologically “considerable significant”.

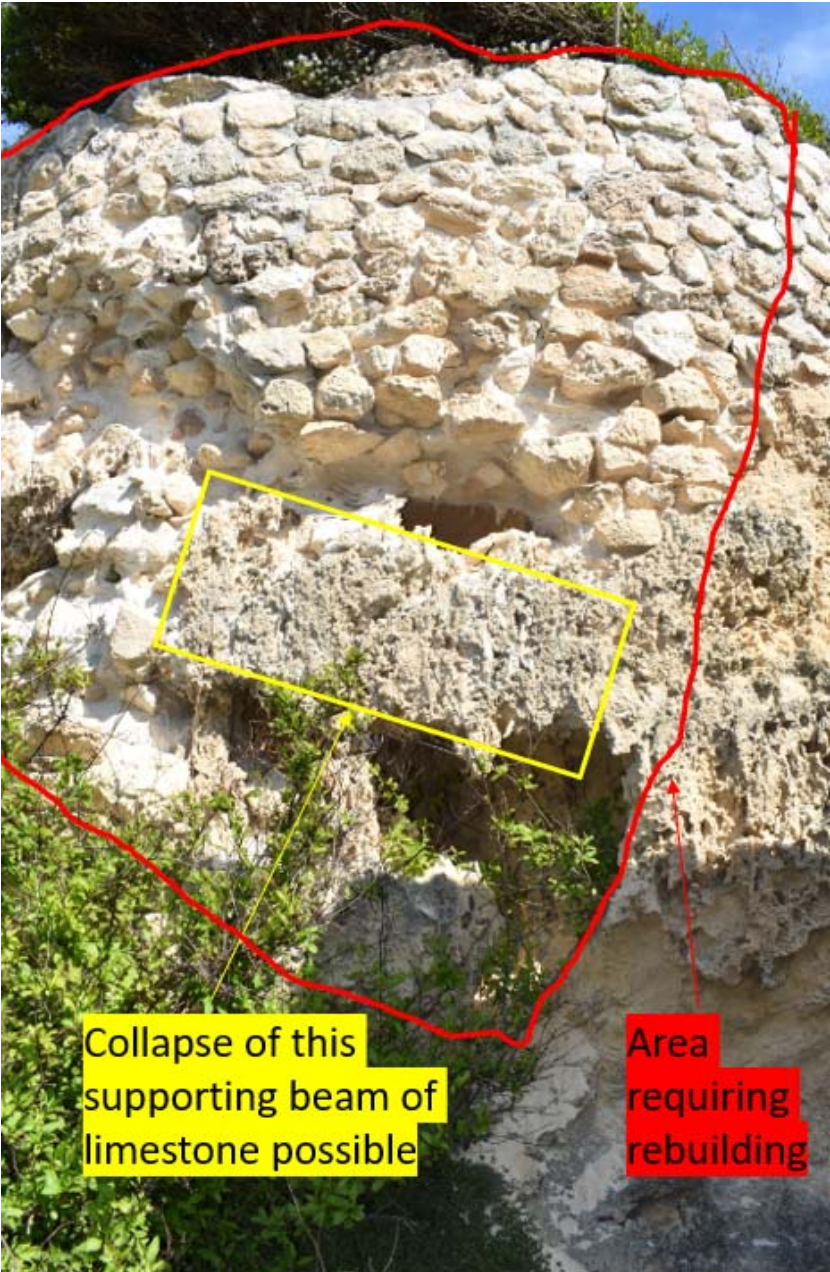
It is however now outside of the masonry barrier wall that surrounds the cannon and time-ball platforms so cannot be accessed by the public. It is currently in an unstable condition with the foundation rock on which the masonry wall is built being vughy and containing large voids.

Risk and Mitigation Measures

A brittle failure of a beam of vughy *in situ* limestone on which the wall stands would result in a collapse of the wall mobilising a large volume of earth, rock and stonework possibly 20+ m³. See Photo below.

There is a strong likelihood of a collapse occurring within the next 10 years. The consequences of the collapse would likely be damage to the green steel CGI shed (refer Photos 58, 59 and 60. The risk with respect to damage to the building is considered high, whilst the risk to people is considered low, solely because of the unlikelihood of anyone being in the line of fire (namely being behind the shed or outside of the barrier wall at the crest) at the time of collapse. The Heritage significance of this buttress needs to be looked at in further detail.

To significantly reduce the risk of collapse, and therefore damage to the building, it is recommended that the area illustrated in the above photo is carefully dismantled, loose rock removed and voids at foundation level infilled with mass concrete or limestone masonry infill before rebuilding the wall to match the existing.



Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Demolish and rebuild unstable retaining wall	3		1	2	1	existing appearance is maintained	3	5	0.60	\$75,000

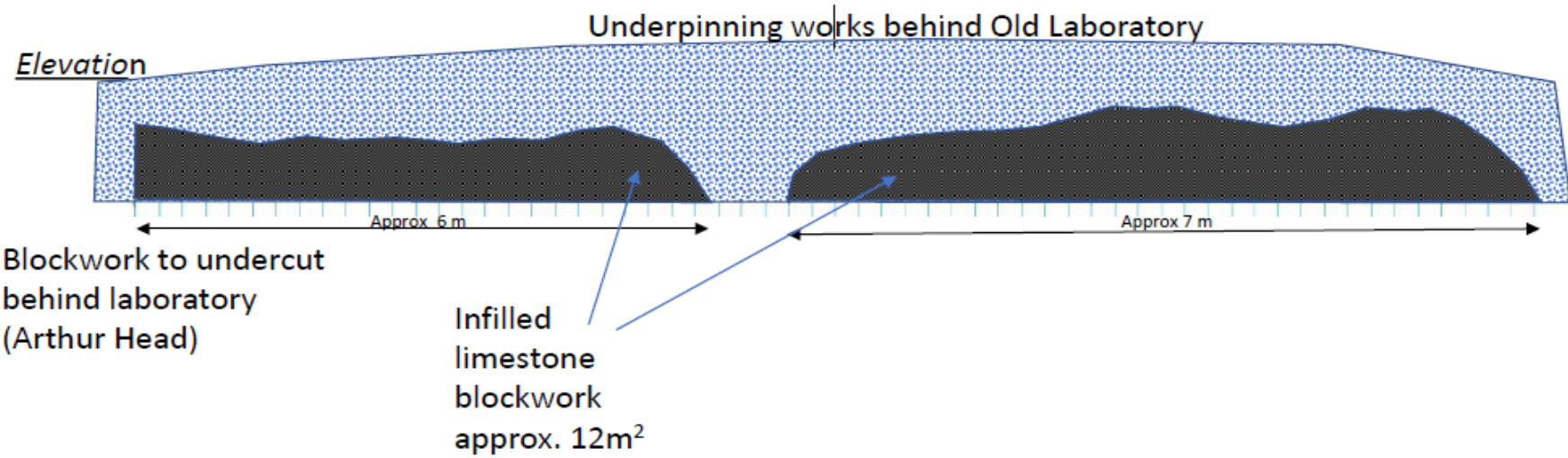
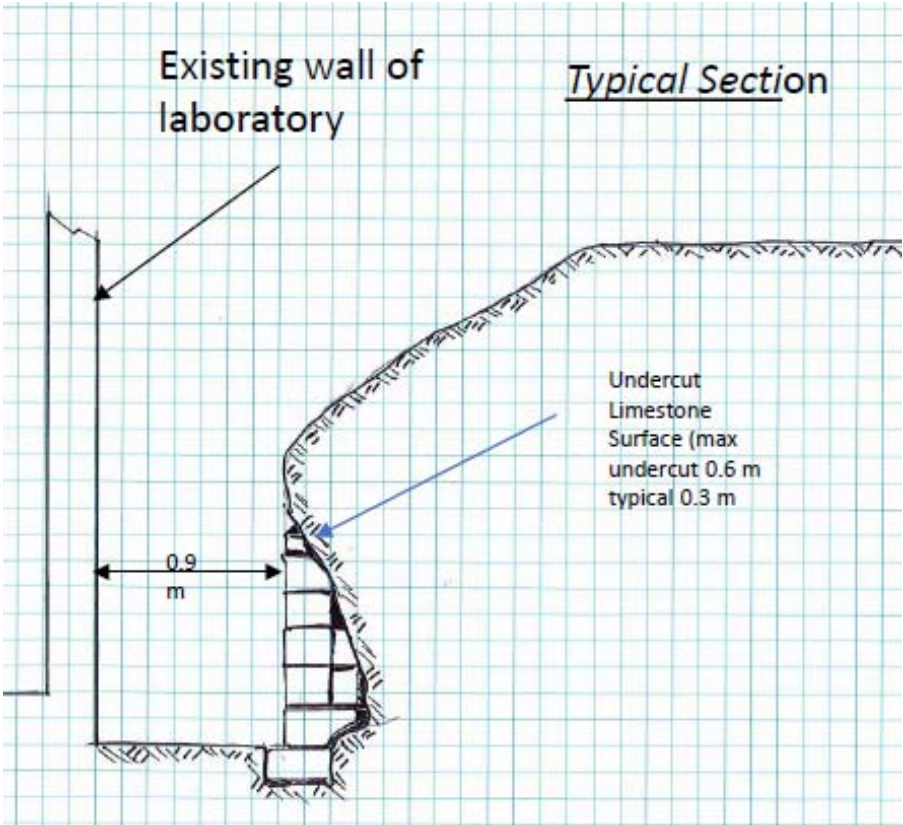
3.3.14 Area 12 – Underpinning works behind Old Laboratory

Observation	Overhanging caprock
Risk Category	Very Low

A small undercut approx. 12m² in size exists behind the Old Laboratory, overhung by stable caprock.

Risk and Mitigation Measures

Carefully clean loose sand from undercut. Carefully excavate base to sound limestone and level to lay first limestone block on bed of lime mortar up to 80 mm thick. Limestone blocks shall be natural limestone and have minimum density of 1200 kg/m³ and minimum compressive strength of 2.2 MPa (wet) and 2.5 MPa (dry). All mortar shall be lime mortar in accordance with specification. Cut 500 x 350x 150 mm natural limestone blocks to suit recess/undercut requiring underpinning. Pack gaps behind blockwork with lime mortar so no gaps are left. Wall shall be formed 900 mm off face of existing laboratory wall. Finish top of wall with fillet of mortar to shed water. Blocks to be stretcher bond, 150 mm between courses with mortar beds 20 mm thick.



Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/cost	Cost estimate AUD
Underpinning works	1		1	0	-1		1	2	0.50	\$19,930

3.3.15 Secret Tunnel

Observations

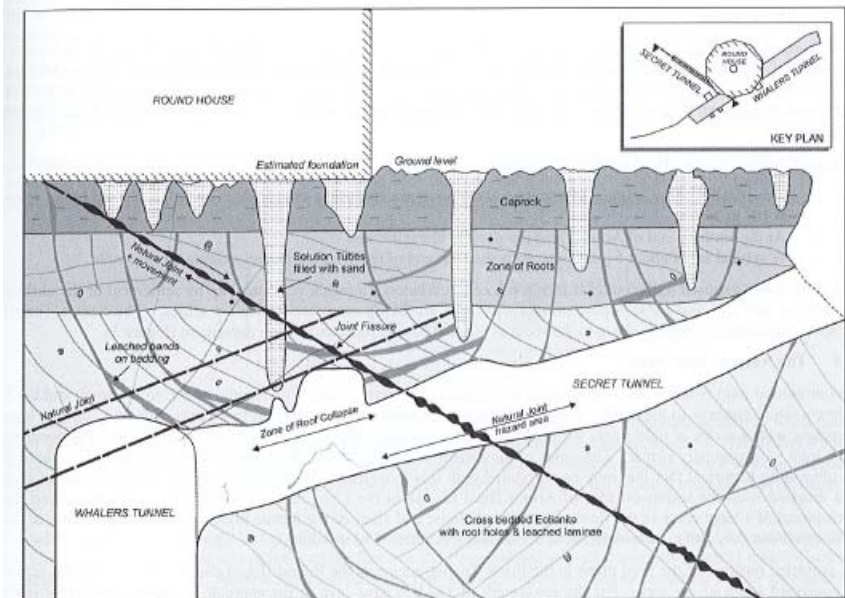
Observation	Friable ceiling material, rock fall
Risk Category	Very High (if opened to public)

It is likely that the Secret Tunnel had not be entered for some time prior to our inspection as indicated by the accumulation of debris across the locked gate at the northern end which had to be cleared to allow access.

The tunnel measures nominally 1.2 m width and 1.8 m high. It is unsupported/ unlined and has been formed in limestone with an arched roof, vertical walls and a flat floor.

The tunnel descends on an incline to intercept the Whalers tunnel about 1.5 m above invert of that tunnel.

The long section presented below is after Gordon (2003). It shows the geometry and geology of the Secret Tunnel. This interpretation largely agrees with our observations, although we infer that the ‘zone of roots’ extends into the tunnel crown in some areas.



Some key observations from our inspection are listed below:

- 1) A large amount of very loose sand has accumulated in the floor of the tunnel. It is apparent that this sand has largely not been washed into the cave but instead has fallen from the walls and ceiling of the tunnel to form a fine-grained and very loose layer of sand. This can clearly be seen in Photo 61. Accumulation on some but not all of the fallen rocks in Photo 63 support this observation. The large rock in the photo without a drape of sand is presumably a recent fall.

- 2) A rockfall was observed about 2 metres from the Whalers Tunnel portal. This is not the zone of roof collapse described in Gordon 2003 and illustrated in the sketch above. Instead it appears to have been triggered by the installation of one of the radial cable anchors installed during the 2001 remedial works to the main Whalers Tunnel. The photo above illustrates the ribbed duct around the cable anchor that has been exposed in the roof of the Secret Tunnel.

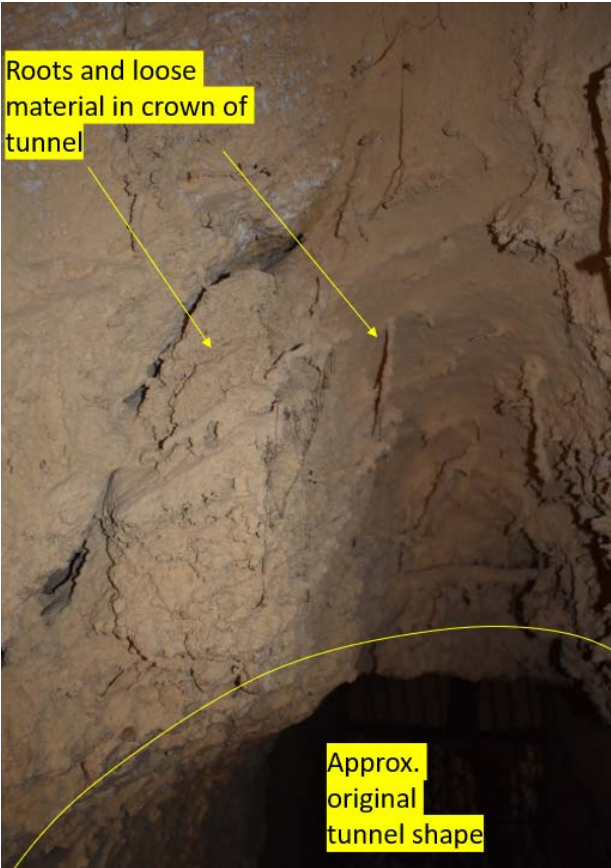


- 3) Much of the Secret Tunnel is within the cross-bedded aeolianite but the ‘zone of roots’ is exposed in the tunnel roof and is friable in nature. Loss of material has occurred in the crown of the tunnel exposing a number of calcretised root filaments (see Photo below). The roof is thus very friable and a small impact when traversing the tunnel was noted to bring down small pieces of rock and sand.

Risks and Risk Mitigation Measures

The tunnel presents an extreme risk for any public access. Even for occasional inspections, the risk of a rockfall injuring personnel is high and entry should only be made by a geotechnical professional who is able to access the risk of each section before entry. For this reason, it is recommended that the tunnel is permanently closed, and entry permitted only under a properly planned and managed inspection regime.

The only safe way of allowing public entry to the tunnel would be to provide a fully lined/supported system likely involving a fibre-reinforced shotcrete.



Due to the friable and loose nature of the tunnel the ceiling and walls material is likely to fret and fall during the application of the shotcrete.

Alternatively, the CIPS system might assist in binding the friable material stabilising the surface. The public safety however wouldn’t be significantly improved. Once the surface gets mechanically impacted, the protecting CIPS layer would brake easily and erosion or rockfall might occur.

Whilst there is a significant risk of small quantities of material falling from the tunnel crown, the risk of a rockfall enlarging and emerging at ground level above, as a crown hole, is considered to be low. The tunnel width is only 1.2 m and a cover of between 5 and 6 m of limestone exists above the tunnel except near the northern portal. There is a caprock pavement over the tunnel and this pavement can be visually inspected at ground level. The caprock pavement is of high to very high rock strength and would likely be

Recommended Mitigation Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Cost	Benefit/ cost	Cost estimate AUD
CIPS application	4	Stabilizes erosion	3	1	1	Limited improvement to safety	1	1	1.00	\$85,925
Install full lining system	4		1	3	-3	no longer the original tunnel	0	8	0.00	\$145,000

able bridge any void that developed beneath it due to a collapsing tunnel soffit. The risk of crown hole development to the surface is therefore considered low.

The only conceivable risk of a void daylighting to the surface would be if sand in a solution tube was to wash down into the tunnel. Whilst possible, this hazard is considered relatively minor as it is constrained by the diameter of the solution tube. Most solution tubes are under 25 cm in diameter and the resultant hole at ground level could be easily plugged if it was to occur.

3.4 Retaining Walls

Stability calculation has not been conducted for the existing retaining walls around the Arthur Head reserve. This is because it is not readily apparent as to which walls if any are in fact retaining and supporting a load or pressure imposed on them from the earth behind. Instead it would appear that many of the walls function as erosion protection coverings to prevent the fretting, and removal of leached limestone. By controlling this erosion, the undercutting and progressive deterioration of the cliff face is arrested or at least slowed down and the risk of undercutting of parts of the cliff significantly reduced.

Without undertaking extensive and invasive investigation techniques to drill and probe the thickness of the retaining walls and to also evaluate where the material behind walls is capable of self-support or requires retention, it is not possible to back-analyse the walls to establish the factor of safety against the various mechanism of instability (sliding, foundation failure, overturning, etc.). Instead an observational approach to their stability has been undertaken. This approach involves observing the wall for signs of movement such as bulging that might suggest meta-stability. Similarly, it is recognised that the future stability of the walls depends on ensuring that their condition does not deteriorate and that new disturbing agents are not introduced. Such new disturbing agents could be; water discharging into the ground behind the wall from a tap or hydrant left on, broken reticulation piping, new soak-wells placed close to the back of the wall, modified surface drainage. It is also essential that the overall structural integrity of the wall is maintained, e.g. masonry blocks that have lost mass and strength through weathering and leaching are cut out and replaced, leached and fretted mortar is raked out and replaced and the walls are kept well pointed and in an overall good state of repair. Similarly, where sections of wall such as the panel of masonry in Area 8, beneath the Cannon platform, were previously tied back to the cliff face with steel anchors and supported with straps between the anchors this tie back system requires replacement as it has deteriorated and is clearly no longer functioning. As such this section of wall could collapse without warning most likely during adverse load conditions such as heavy rain and high winds.

3.5 Recommendations and Alternative Options

A quantitative risk analysis of the prevailing risk assuming restored public access and alternative remedial or risk mitigation strategies is recommended. It should be noted that where the option is to close an area to the public the risk still has to be considered based on one of the following:

- Trespassers sleeping in the cave on average 30 days a year
- City of Fremantle Workers entering closed off areas for maintenance purposes and picking up litter etc.
- Occasional inspections (as in the case of the Secret Tunnel).

However, it should be noted that assessment of risk is highly subjective. It involves estimation of the likelihood and severity of the event which is very subjective and assessment of likely exposure and numbers traversing areas. Estimates of risk must therefore be considered as approximate calculations.

The recommended remedial/risk mitigation option is highlighted in Appendix .

A **Schedule of Recommendations** is attached in Appendix .

3.6 Cost Benefit Analysis

A cost benefit analysis (CBA) is provided in Appendix . This CBA was used to inform the recommended option. Both improvement in safety/risk and aesthetics were weighted equally and a scaled value of benefit divided by cost to give a value of benefit/unit cost against which options can be compared. Note this CBA is subjective both in the equal weighting of improvement in risk level and loss of aesthetic value but also in the relative estimation of cost.

4.0 CONCLUSION

The condition of the cliffs at Arthur Head Reserve in Fremantle ranges from good to poor. Some areas are in reasonable condition and only need minor repairs, re-pointing of man-made masonry or vegetation removal and maintenance.

Other areas, especially Areas 4, 7, 8 and 11 are currently poor and a considerable risk to the public due to their degradation and potential collapse close to frequently used pathways or buildings. We emphasise that timely remedial action is needed to address the hazards and minimise the erosion of the cliffs on this historic site with natural and manmade features.

The secret tunnel is currently structurally unsafe and should remain blocked off. It should be noted that the methods of repair for the tunnel are outside the scope of this report.

The preliminary drawings were reviewed by DPLH Heritage Services after their Development Committee meeting at the end of November 2018 with their comments incorporated in the Contract Documentation. This included the completion of an Interpretation Strategy for the place.

Tender documents and specifications have been prepared following the advice of the consultants and acknowledgement of the City of Fremantle.

5.0 REFERENCES AND BIBLIOGRAPHY

Earth Bond Solutions Pty Ltd, Perth, CIPS ("Calcite In situ Precipitation System) undated: A down to earth Australia Invention Data Sheet and Case Studies

Gordon F. R. 2003, Coastal Limestone, Journal of the Australian Geomechanics Society, Vol 38, No 4 Dec 2003

Gordon Geological Consultants 2005, Review of Arthur Head Limestone Cliffs for City of Fremantle, June 2005

Gordon Geological Consultants 2009, Review of Arthur Head Limestone Cliffs for City of Fremantle, Dec 2009

Gordon F. R. Geology of Quaternary Coastal Limestones of Western Australia, PhD Thesis, Curtin University, Sept 2012

Lawrence, Naomi, Arthur Head Reserve Fremantle Conservation Plan for the Fremantle City Council and Heritage Council of WA, 1999

Philip Griffiths Architects, Arthur Head Reserve Conservation Management Plan, June 2011

STATS Pty Ltd 2018, Arthur Head Cliff Face Area Fremantle, for City of Fremantle, Feb 2018

Tutton M. A. 2000 Young Geotechnical Engineers Conference Field Trip Notes to Arthur Head, The Round House, Bathers beach and Whalers Tunnel (unpublished) Feb 2000

Tutton M. A. 2003, Engineering Geology of Fremantle Harbour. Journal of the Australian Geomechanics Society, Vol 38, No 4 Dec 2003

Granor Pot Type Structural Bearings, Granor Rubber & Engineering, Bayswater, Victoria, Australia 3153

6.0 **APPENDIX 1**

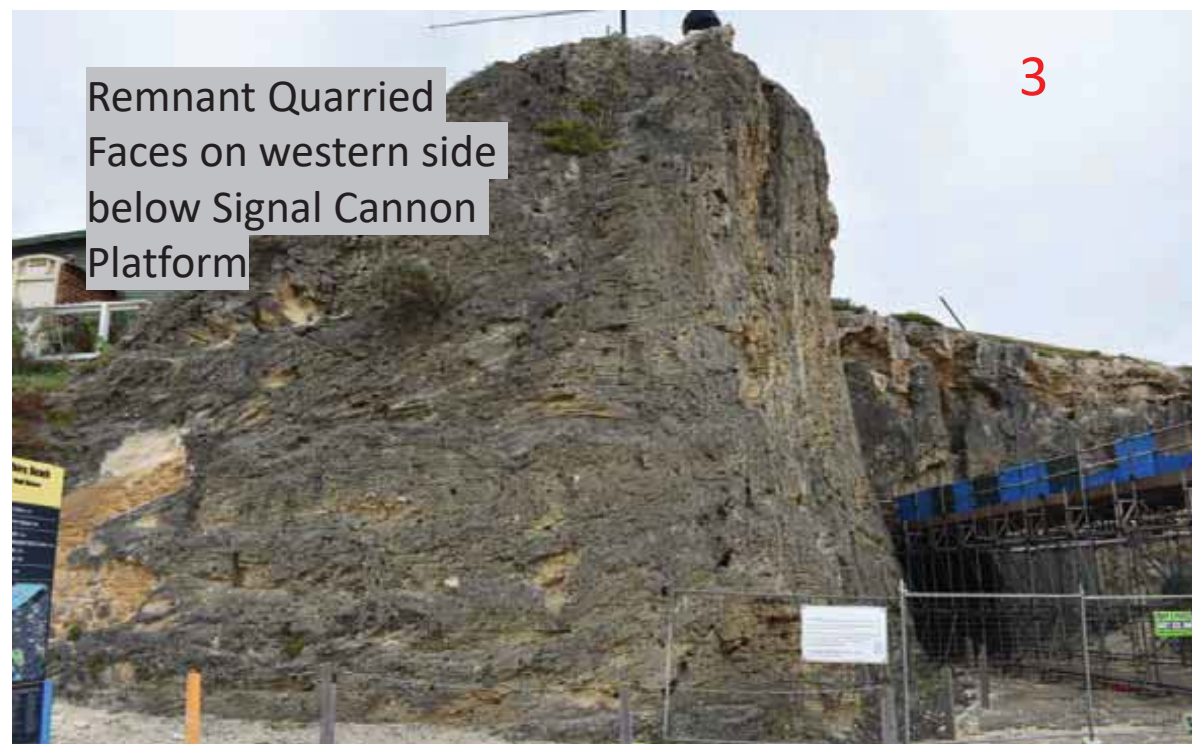
6.1 **Contour and Feature Plan**

Prepared by Monaghan Mapping & Surveying

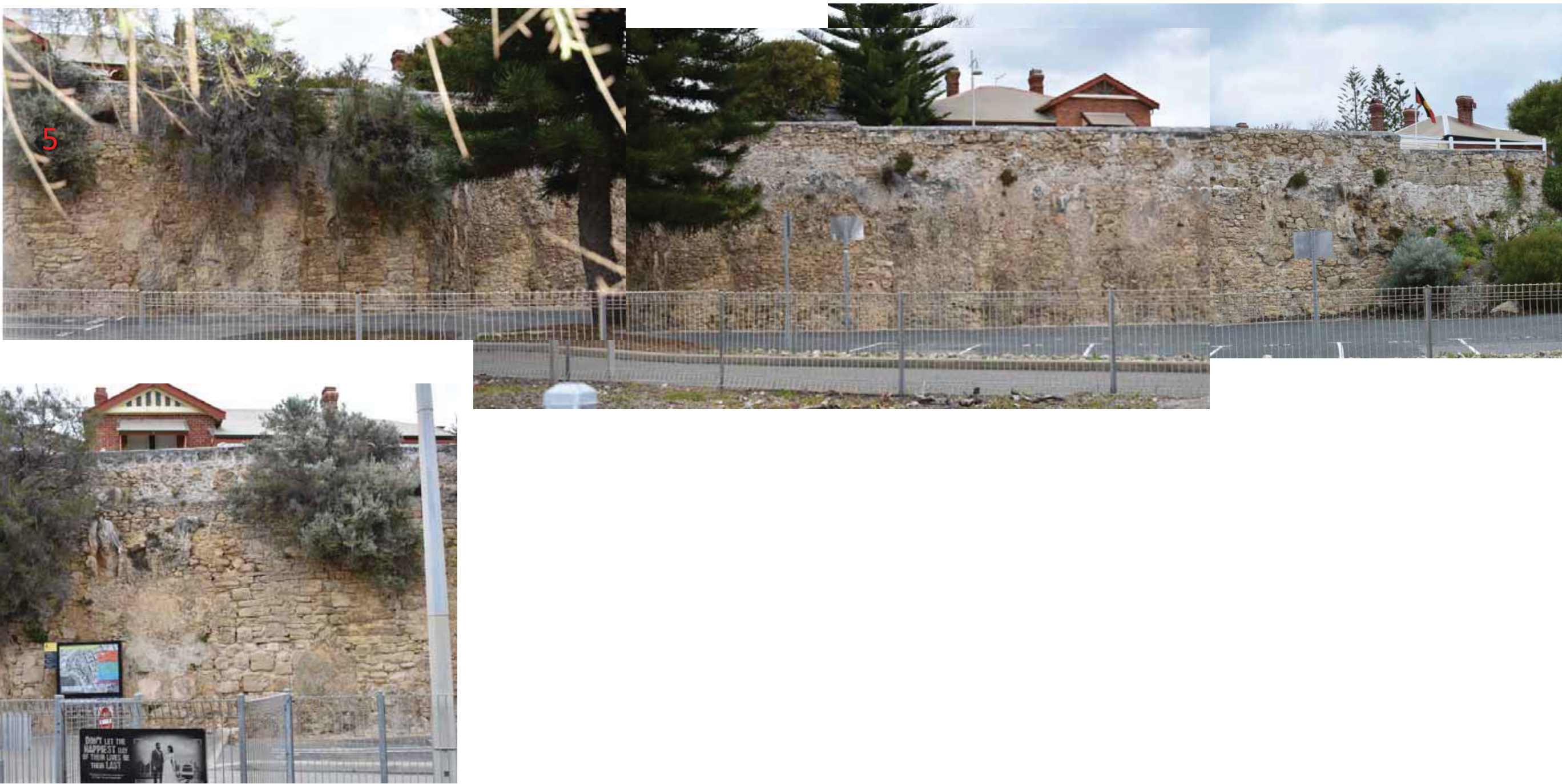
7.0 **APPENDIX 2**

7.1 **Photos**

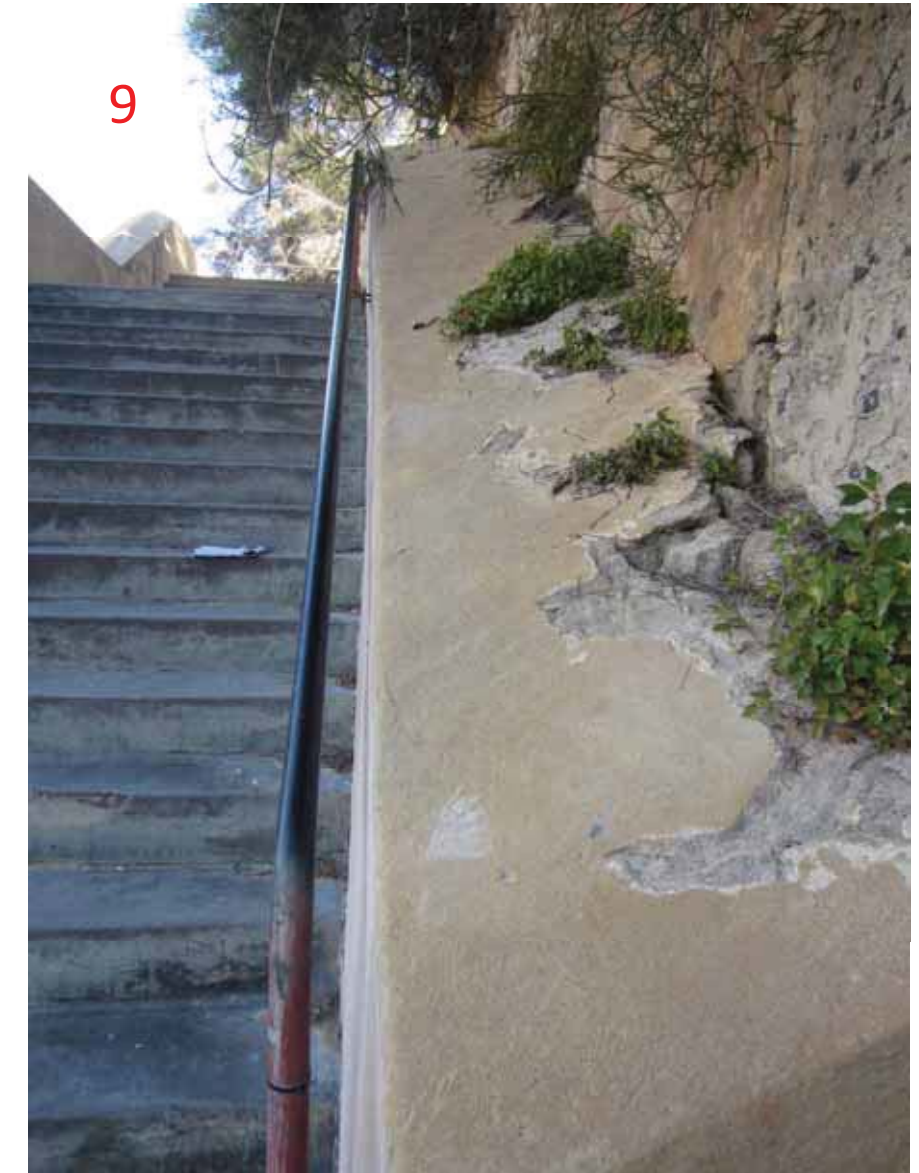
General Photos



Area 1 – Limestone Quarried Face with Masonry infilling



Area 2 – Main Stairs – Masonry and Brickwork covered in Render



Area 3 –High masonry retaining wall along railway reserve

11



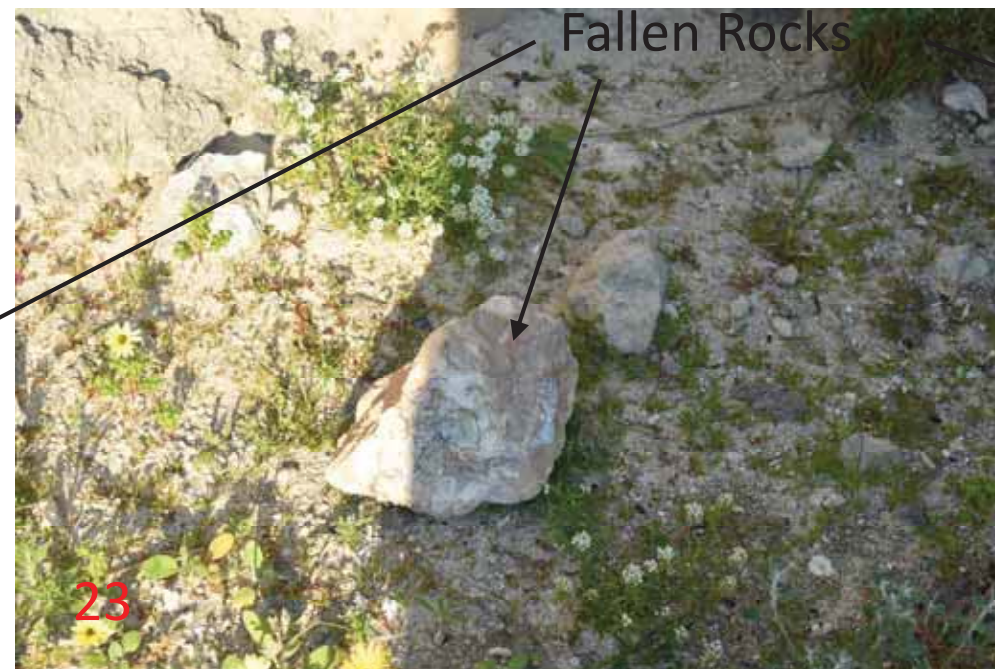
Area 4 – Weak leached cliff close to rail reserve



Area 5 – Weak cliff of leached limestone and cross bedded aeolianite



Area 6 – Vertical face of caprock over zone of roots and cross-bedded aeolianite with undercuts



Area 6 – Vertical face of caprock over 'zone of roots' and cross-bedded aeolianite with undercuts



Area 7 – Vertical Face over western tunnel portal



Area 7 – Vertical Face over western tunnel portal



Area 8 – High face beneath time ball and signal cannon platform



Area 8 – High face beneath time ball and signal cannon platform



Area 9 – High steeply inclined cliff



Area 10 – Inclined cliff face behind J shed



Area 11- Man made retaining wall between CGI shed and Time-ball Platform



8.0 **APPENDIX 3**

8.1 **Minutes of Meeting with Department of
Planning, Lands and Heritage (DPLH),
Heritage Services**

Prepared by Hocking Heritage Studio

MEETING MINUTES

Project:	Arthur Head Cliff Stabilisation		
Project No:	2018-55		
Subject:	Meeting with DPLH, Heritage Services		
Venue:	491 Wellington Street, Perth	Date:	31 October 2018, 2pm
Distribution:	All attendees and apologies below	File Note	001
From:	Timo Bleeker (HHS)	Pages	1

Attendees

<i>Name</i>	<i>Organisation</i>	<i>Email Address</i>	<i>Discipline</i>
Janine Symons (JS)	DPLH	janine.symons@dplh.wa.gov.au	Heritage Services
Dinah Mujati (DM)	Hocking Heritage Studio (HHS)	dinah@hockingheritagestudio.com.au	Architect
Timo Bleeker (TB)	Hocking Heritage Studio (HHS)	timo@hockingheritagestudio.com.au	Architect

Apologies

<i>Name</i>	<i>Organisation</i>	<i>Email Address</i>	<i>Discipline</i>
Keith Fragomeli	City of Fremantle	KEITHF@fremantle.wa.gov.au	Client

Ref Number	Discussion	Action by	Date
1.0	Scope of project works was mentioned. Findings and remediation recommendations of Area 1-11 and Secret Tunnel were presented, concentrating on the most intrusive areas as follows:	Note	
1.1	Area 4: Extension of existing masonry wall to cover friable material of cliff face close to public footpath.	Note	
1.2	Area 5: Redirection of balustrade wall to upper level plateau close to steps at southern end.	Note	
1.3	Area 6: Base strengthening of the limestone column in the cave	Note	
1.3	Area 7/8: Arch construction to support Whalers tunnel entry portal; canopy extension up to 6m; rockfall fencing; keeping public away from the cliff face	Note	
1.4	Area 11: Demolition and reinstalment of natural stone man-made wall to circular promontory	Note	
2.0	No objection from JS in principle, however, commentary from the Development Committee is required on the discussed items.	Note	
2.1	Post meeting note: Lodgement of documentation to DPLH required by 9 th Nov for inclusion in Committee meeting on 27 th Nov	HHS	9.11.
	Meeting closed at 2.30pm		

9.0 **APPENDIX 4**

9.1 **Advisory letter by the Development
Committee of Department of Planning,
Lands and Heritage (DPLH), Heritage
Services**

Prepared by DPLH



HERITAGE
COUNCIL

Working with Western Australians to recognise, conserve, adapt and celebrate our State's unique cultural heritage

5 December 2018

YOUR REF
OUR REF P0896/44854
ENQUIRIES Janine Symons (08) 6552 4167

Mr Timo Bleeker
Hocking Heritage Studio

By email: timo@hockingheritagestudio.com.au

Dear Sir

**ROUND HOUSE AND ARTHUR HEAD RESERVE
Cliff Stabilisation**

Thank you for your email of 9 November 2018 regarding the following proposed development at:

Place Number P0896
Place Name *Round House and Arthur Head Reserve*
Street Address Lot 2051 Phillimore Street, Fremantle
Development Description Cliff Stabilisation

We received the following report, prepared by Hocking Heritage Studio, dated 9 November 2018:

Heritage Impact Statement for Arthur Head Reserve Cliff Stabilisation, Rev. A

The Development Committee resolved to advise Hocking Heritage Studio that the matter has been considered in the context of the identified cultural significance of the place, and the following advice is given:

Findings

1. Arthur Head is a remnant original coastal limestone feature, greatly diminished by post-settlement quarrying for harbour works.
2. The place has considerable significance as a focal point in the design and layout of the City of Fremantle, as a dominant landmark, and visual termination of High Street.
3. Arthur Head is not mentioned in Heritage Council documentation which discusses built structures.
4. The proposal is for a program of stabilisation works to the Head, following on from urgent stabilisation works supported by the Development Committee (April 2018 meeting).

stateheritage.wa.gov.au
info@stateheritage.wa.gov.au

5. Subsequent to those works, a further geotechnical investigation was commissioned and carried out on 8 October 2018. This referral encompasses the recommendations of that report.

Advice

The proposed development, in accordance with the plans submitted, is supported, subject to the following conditions:

1. Testing of mortars to be carried out prior to works being undertaken. New mortars to match existing.
2. Replacement stone to match existing, and reconstructed masonry infill to match existing.
3. Detail of the following to be provided to the satisfaction of the Director Heritage Operation, Heritage Services:
 - a. Detail of proposed arch and canopy to Tunnel, noting that new interventions should complement the existing canopy and the rugged nature of the Head.
 - b. Detail of proposed rock fall fences, noting that new interventions should complement the existing canopy and the rugged nature of the Head.
 - c. Interpretation strategy to explain the history and extent of development at Arthur Head.
 - d. Detail of proposed relocation of cliff top balustrade, Area 5, noting that existing fabric should be used where possible.

If archaeological material or features are encountered during the works to Arthur Head, works shall cease and Heritage Services, Department of Planning, Lands and Heritage shall be notified immediately in order that consultation with an appropriately qualified historic and/or indigenous archaeologist can be undertaken to assess the finds and provide advice on an appropriate course of action.

Should you have any queries regarding this advice please contact Janine Symons at janine.symons@dplh.wa.gov.au or on 6552 4167.

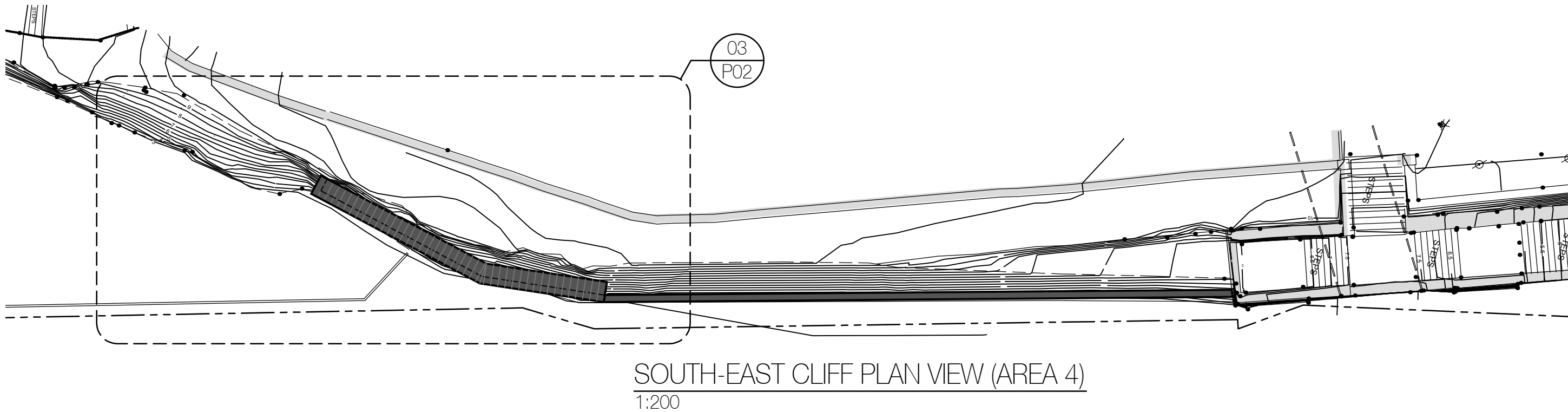
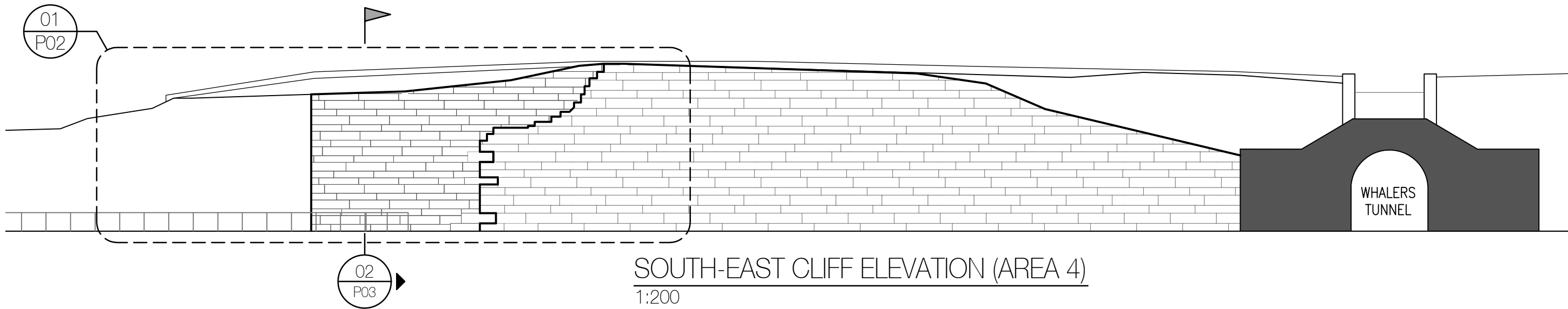
Yours faithfully

Anne Arnold
**CHAIR
DEVELOPMENT COMMITTEE**

10.0 **APPENDIX 5**

10.1 **Structural engineer sketches**

Prepared by Atelier JV



REV	DATE	DESCRIPTION	REVISED
0	15/11/18	ISSUED FOR INFORMATION	FH
REVISIONS			



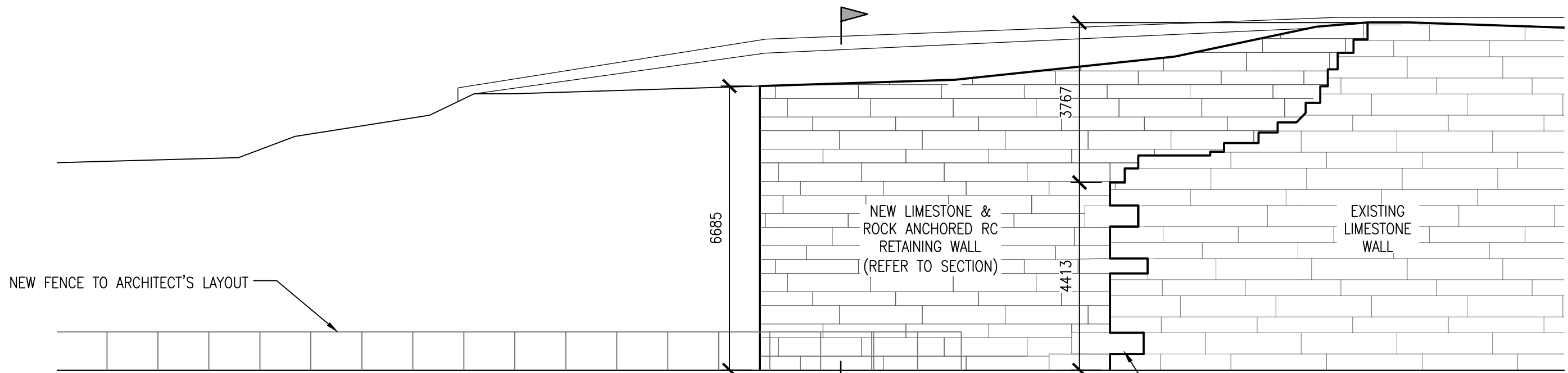
ATELIER JV

T: +61 (0)8 9228 9120 E: info@atelierjv.com.au
A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003

PROJECT
ARTHUR HEAD
CLIFF
STABILISATION
FREMANTLE

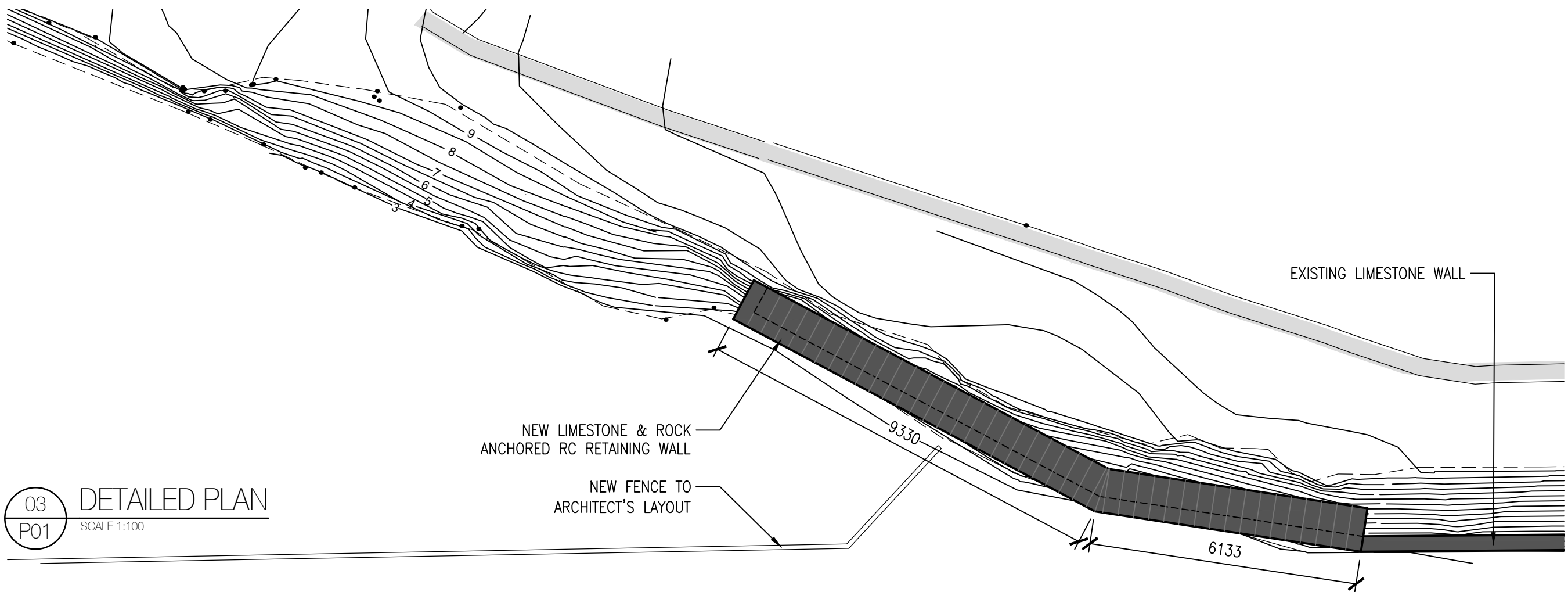
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DRAWN	DESIGNED	CHECKED	APPROVED
FH	SAJ	SAJ	SAJ
DATUM	GRID	SCALE	AT A3 SIZE
AHD	AMG	AS SHOWN	

TITLE		
STRUCTURAL CLIFF STABILISATION WORKS AREA 4 ELEVATIONS		
PROJECT No.	DRAWING No.	REV.
P18107	P01	0



01
P01 DETAILED ELEVATION
SCALE 1:100

02
P03



03
P01 DETAILED PLAN
SCALE 1:100

REV	DATE	DESCRIPTION	REV
0	15/11/18	ISSUED FOR INFORMATION	FH
			RVD



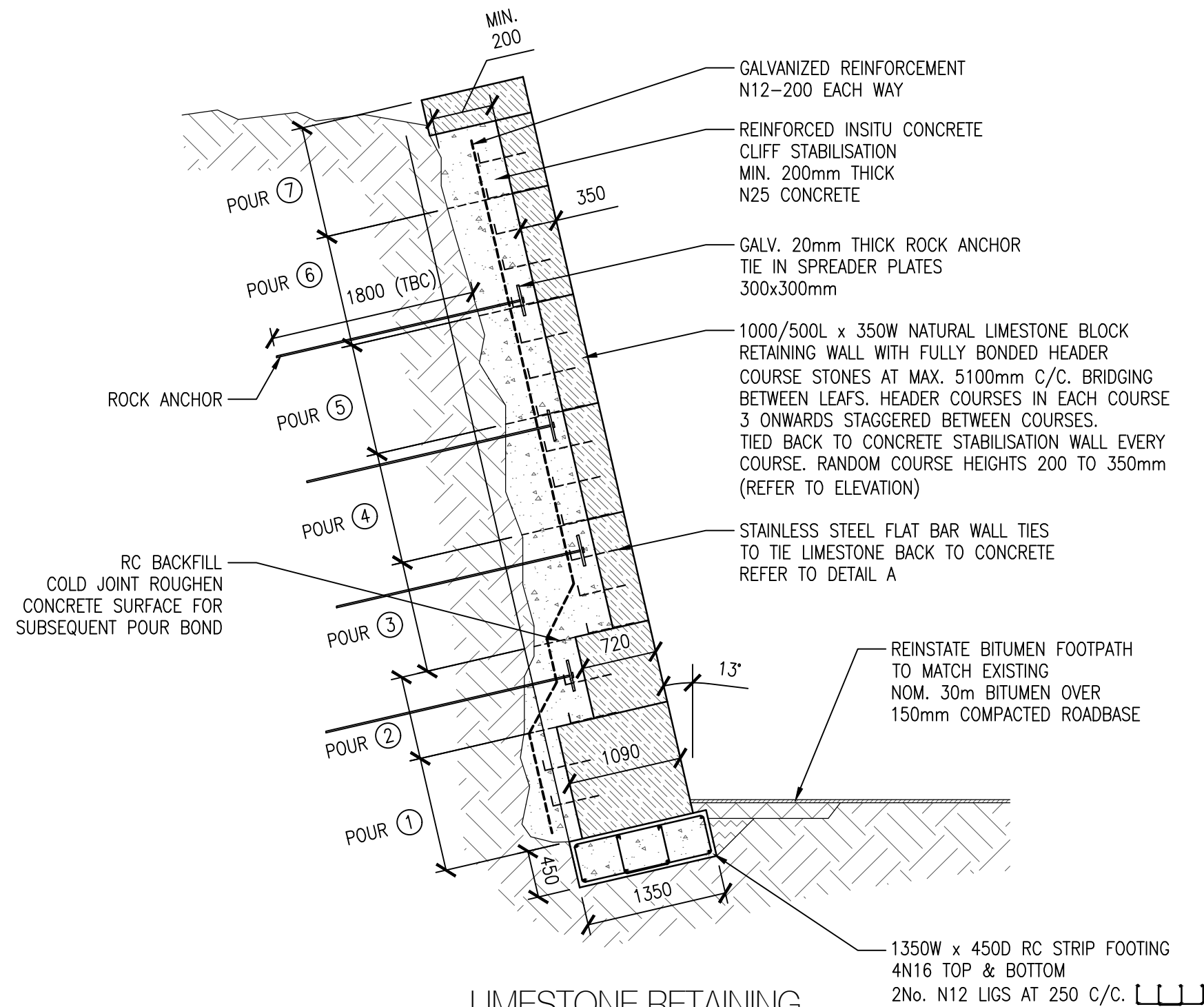
ATELIER JV

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A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003

PROJECT
ARTHUR HEAD
CLIFF
STABILISATION
FREMANTLE

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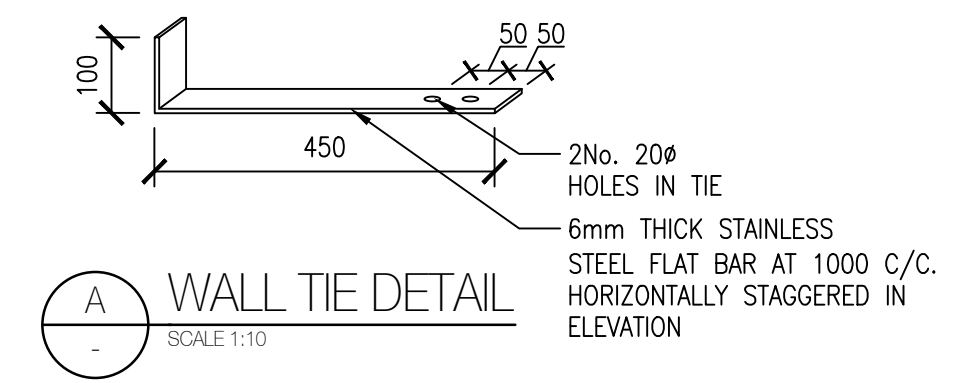
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PROJECT No. P18107	DRAWING No. P02	REV. 0



**LIMESTONE RETAINING
WALL SECTION**

02
P02

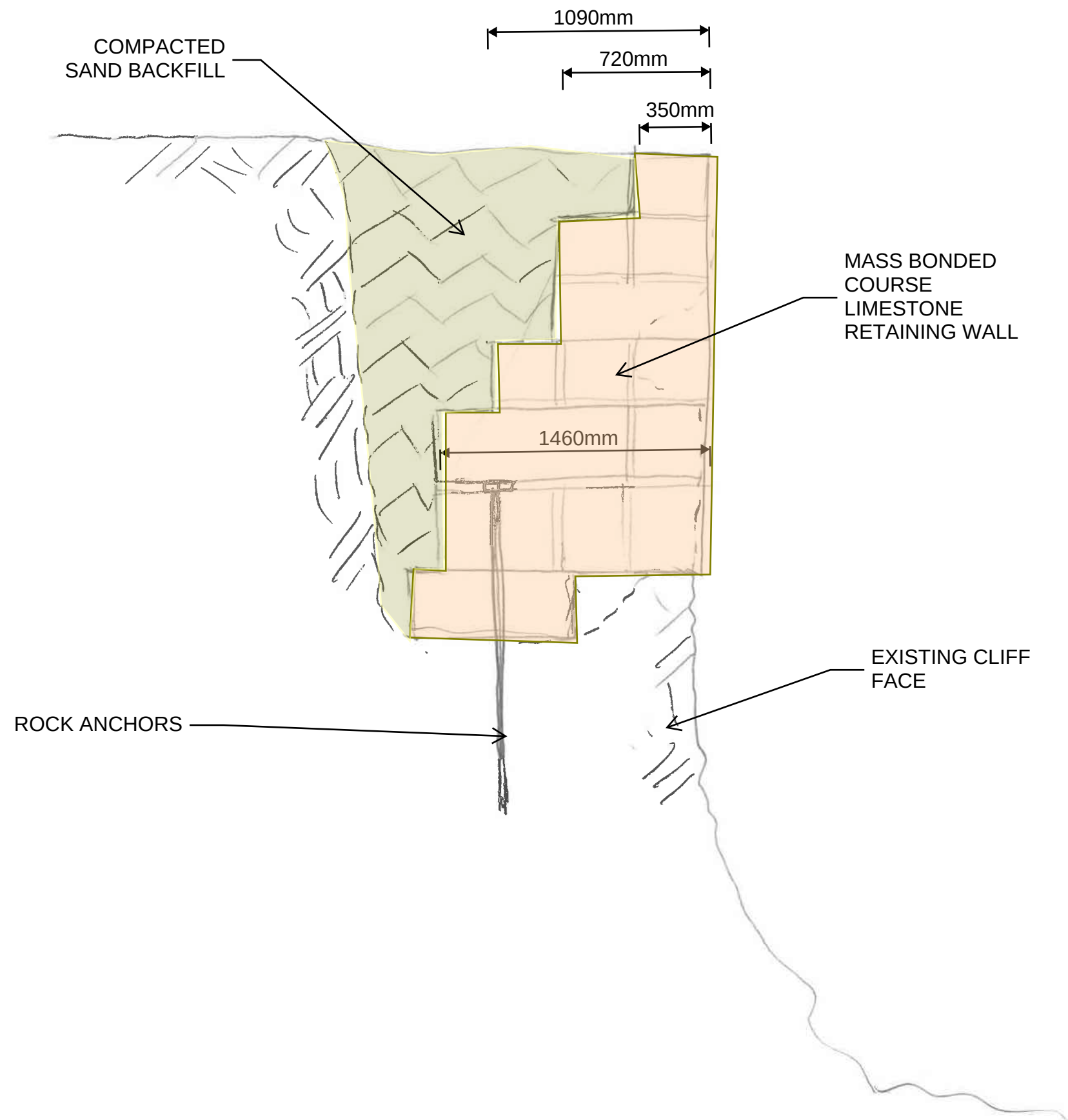
SCALE 1:50



NOTES:

1. DETAILS SHOWN ON THIS DRAWING ARE APPLICABLE FOR Hx350x1000 NATURAL LIMESTONE BLOCKS WITH 20mm MORTAR JOINTS.
2. NATURAL LIMESTONE BLOCKS SHALL HAVE A MINIMUM DENSITY OF 1200kg/m³ AND A MINIMUM COMPRESSIVE STRENGTH OF 2.2MPa (WET), 2.5MPa (DRY).
3. ALL TOP SOIL, VEGETATION DELETERIOUS MATERIALS TO BE REMOVED FROM FOUNDATION.
4. FOUNDATIONS SHALL BE CLEAN GRANULAR SAND COMPACTED TO A MINIMUM 95% MAXIMUM DRY DENSITY, TESTED TO A DEPTH OF 900mm OR NATURAL LIMESTONE SUBSTRATE.
5. GROUND IN FRONT OF WALL SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY PRIOR TO BACKFILLING BEHIND WALL WITH CLEAN AND FREE DRAINING SAND.
6. MORTAR MIX TO BE NL3: 1 PART LIME PUTTY - 2 PARTS SAND.
7. POINTING MORTAR IS TO EXTEND A MINIMUM 100mm BELOW FGL ALONG THE FRONT OF THE WALL AND DOWN THE REAR OF THE TOP BLOCK TO 100 BELOW FINISHED LOT LEVEL.
8. COMPLETED BLOCK WORK OF WALL TO BE OF THICKNESS NO LESS THAN MINIMUM PROFILE SHOWN.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CERTIFICATION OF THE LIMESTONE RETAINING WALLS BEING AS-CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND OBTAINING THE COMPACTION SPECIFIED ABOVE. COMPACTION TESTING AND QT RECORDS OF CONSTRUCTION MUST BE MAINTAINED THROUGH-OUT THE BUILD AND KEPT ON RECORD.
10. DO NOT BACKFILL CONCRETE INFILL WALL UNTIL AT LEAST 5 DAYS AFTER COMPLETION. PROP 350 WALL AS REQUIRED FOR UPPER POURS.

				PROJECT ARTHUR HEAD CLIFF STABILISATION FREMANTLE				STATUS INFORMATION DESIGNED SAJ CHECKED SAJ APPROVED SAJ				TITLE STRUCTURAL CLIFF STABILISATION WORKS AREA 4 - DETAILS			
0	15/11/18	ISSUED FOR INFORMATION	FH	DATE 15/11/18				PROJECT NO. P18107				DRAWING NO. P03			
REV	DATE	DESCRIPTION	RVD	DATE AHD				SCALE AS SHOWN				REV 0			
REVISIONS				T: +61 (0)8 9228 9120 E: info@atelierjv.com.au A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003				AT A3 SIZE							



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EXISTING FISURED
CLIFF FACE

REINFORCED CONCRETE
CLIFF SUPPORT ARCH MIN.
300mm THICK SHOTCRETE
OR CAST IN SITU

NEW ROCKFALL
CANOPY

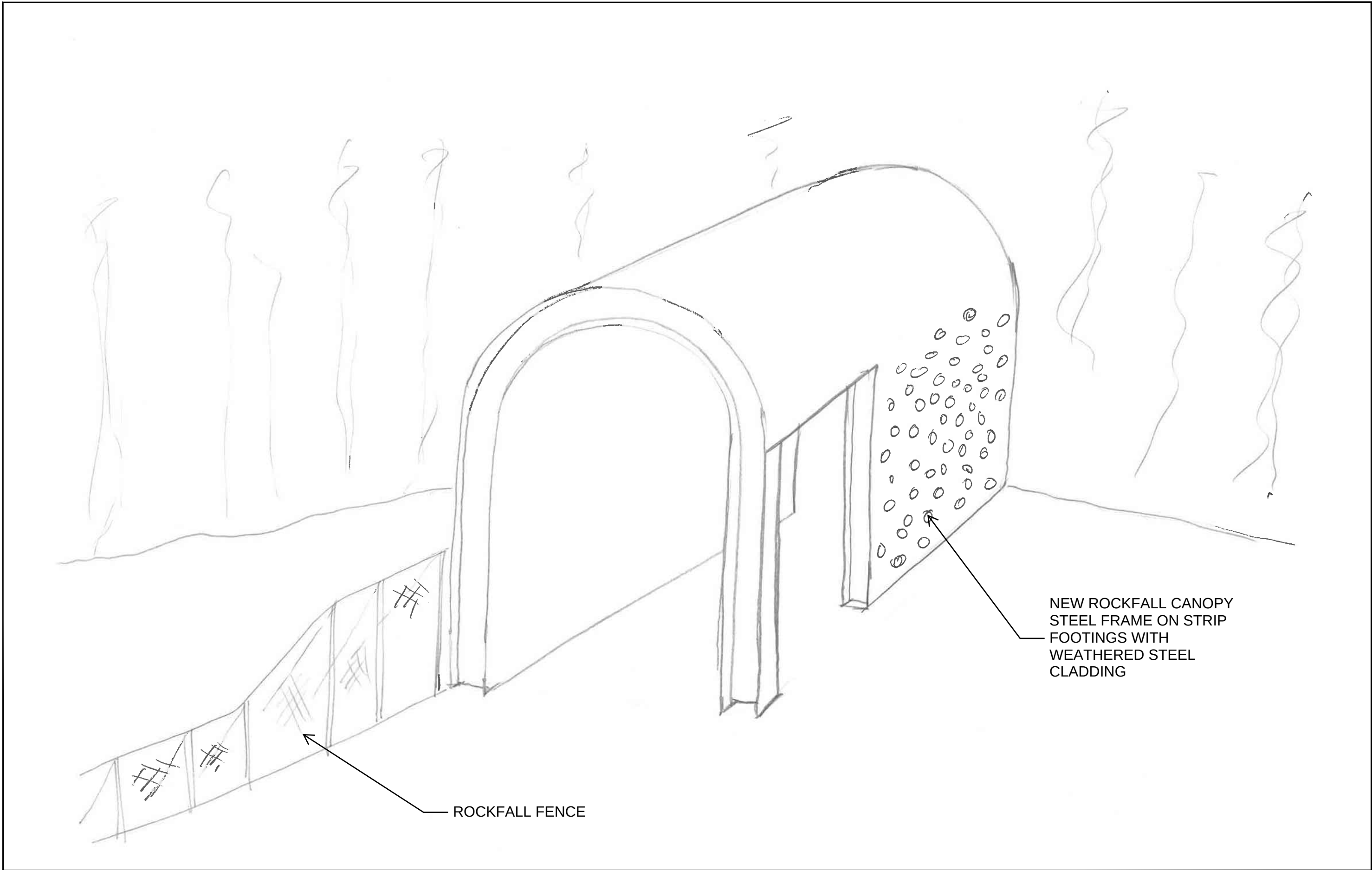
TUNNEL ROOF

CORTEN
WEATHERED
STEEL LINING

REINFORCED CONCRETE
CLIFF SUPPORT ARCH MIN.
300mm THICK SHOTCRETE
OR CAST IN SITU

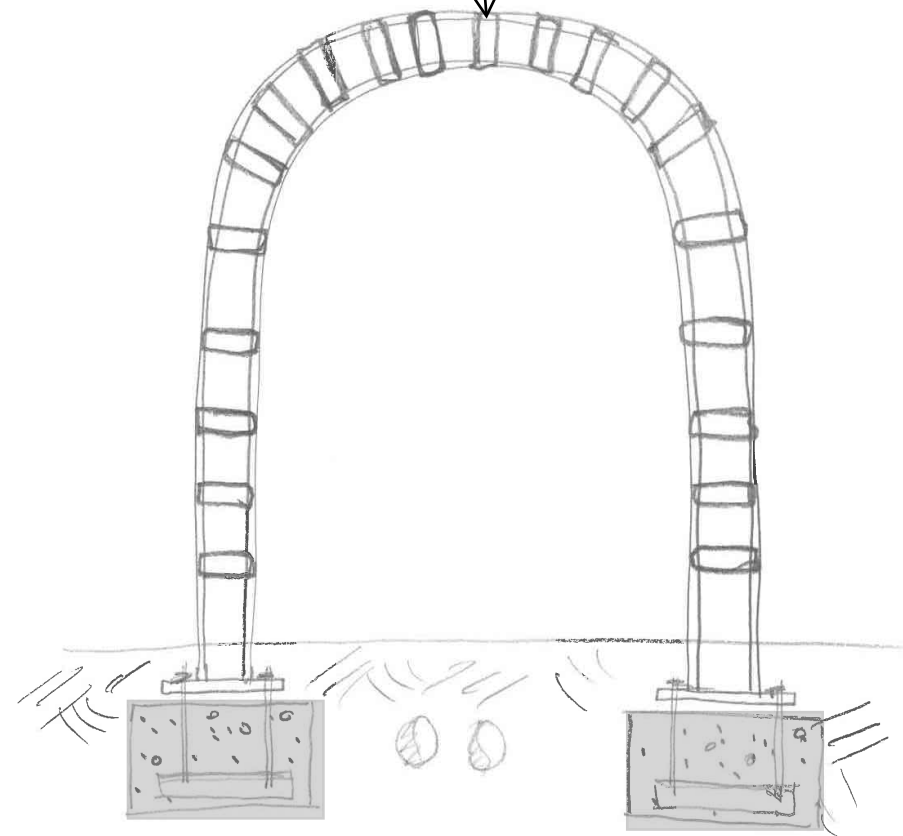
5mm THICK
CORTEN
WEATHERED
STEEL LINING

				CLIENT		PROJECT		STATUS				TITLE		
												ARTHUR HEAD CLIFF STABILISATION		
				T: +61 (0)8 9228 9120 A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003		E: info@atelierjv.com.au		INFORMATION				STRUCUTRAL SKETCH AREA 7 - TUNNEL PORTAL		
								DRAWN	DESIGNED	CHECKED	APPROVED			
								SAJ	SAJ	SAJ	SAJ			
								DATUM	GRID	SCALE	AT	PROJECT No.	DRAWING No.	REV.
								AHD	AMG	NTS	A3	P18107	SK04	-
				REVISIONS										



			CLIENT		PROJECT		STATUS				TITLE				
											ARTHUR HEAD CLIFF STABILISATION				
			T: +61 (0)8 9228 9120		E: info@atelierjv.com.au		INFORMATION				STRUCUTRAL SKETCH				
			A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003		FREMANTLE		DRAWN SAJ DESIGNED SAJ CHECKED SAJ APPROVED SAJ				AREA 7 - ROCKFALL CANOPY				
							DATUM AHD GRID AMG SCALE NTS AT A3				PROJECT No. P18107		DRAWING No. SK05	REV. -	

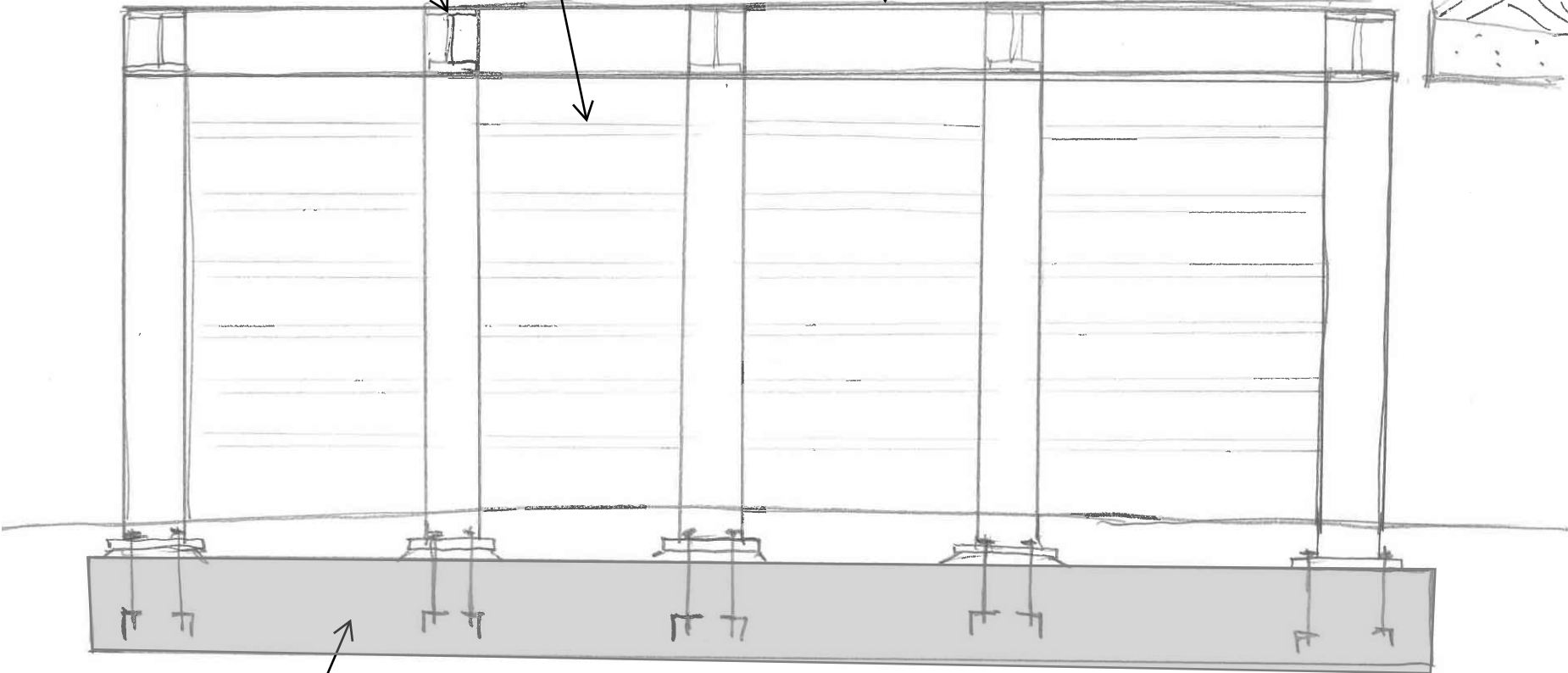
250x150 RHS JOISTS AT
450mm CTRS FOR ROOF
SPREAD OUT TO 600mm
CTRS TO WALLS



250x150 RHS JOISTS AT
450mm CTRS FOR ROOF
SPREAD OUT TO 600mm
CTRS TO WALLS

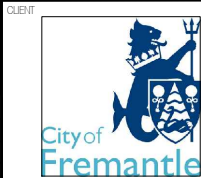
250UC ARCHES

5mm THICK WEATHERED
STEEL CLADDING



600 x 400 RC
STIP FOOTING

REV	DATE	DESCRIPTION	REVISED
-	08/11/18	ISSUED FOR INFORMATION	SAJ
REVISIONS			





T: +61 (0)8 9228 9120
A: 123 ABERDEEN STREET, NORTHBRIDGE, PERTH, WA 6003

E: info@atelierjv.com.au

PROJECT

ARTHUR HEAD
CLIFF
STABILISATION

FREMANTLE

INFORMATION			
DRAWN	DESIGNED	CHECKED	APPROVED
SAJ	SAJ	SAJ	SAJ
DATUM	GRID	SCALE	AT
AHD	AMG	NTS	A3

STRUCUTRAL SKETCH AREA 7 - ROCKFALL CANOPY		
PROJECT No.	DRAWING No.	REV.
P18107	SK06	-

11.0 **APPENDIX 6**

11.1 **Quantitative Risk of Existing Hazards and
Proposed and Alternative Remediation
Works (using AGS2007 Guidelines)**

Prepared by CMW

Appendix 5 Quantative Risk of Existing Hazards and Proposed and Alternative Remdiation Works (using AGS2007 Guidelines)

In most case a person is likely to be struck when standing with a rock falling from above. The approximate plan area of the person has been assumed to be 0.5 x 0.5 m. The abbreviation ppl for people is used in the following table.

Area	Observation	Option	Hazard	P _(H)	Assumption	P _(S,H)	Assumption	P _(T,S)	Assumption	V _(D,T)	Assumption	R _(LoI)	Qualitative
1	Small trees are growing out of the cliff face, rock fall hazard	Prevailing Risk	Rock or blockwork infill falls and hits a person at carpark or footpath	1	1 x 15kg rockfall per year	0.003333333	target area (person) 0.5m x 0.5m; hazardous zone area 50m x 1.5m	0.138888889	average 200 ppl/day; average 1 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	6.94E-05	medium
		1a Remove trees, point and repair	Rock or blockwork infill falls and hits a person at carpark or footpath	0.1	1 x 15kg rockfall per 5 years	0.003333333	target area (person) 0.5m x 0.5m; hazardous zone area 50m x 1.5m	0.138888889	average 200 ppl/day; average 1 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	6.94E-06	low
3	Material falling from the crest where root wedging is occurring	Prevailing Risk	Rock or blockwork infill falls and hits a person at footpath	0.2	1 x 15kg rockfall per 5 years	0.004761905	target area (person) 0.5m x 0.5m; hazardous zone area 35m x 1.5m	0.347222222	average 1000 ppl/day; average 0.5 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	4.96E-05	medium
		2a Remove trees, point and repair	Rock or blockwork infill falls and hits a person at footpath	0.02	1 x 15kg rockfall per 50 years	0.004761905	target area (person) 0.5m x 0.5m; hazardous zone area 35m x 1.5m	0.347222222	average 1000 ppl/day; average0.5 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	4.96E-06	low
4	Unsupported section, risk of unbound material falling, weak rock/soil mass dilates away from face, general fretting and ravelling of the face	Prevailing Risk	Rock/soil mass collapses and hits a person at footpath	0.5	1 x 250kg rockfall per 2 years	0.023809524	target area (person) 0.5m x 0.5m; hazardous zone area 7m x 1.5m	0.069444444	average 1000 ppl/day; average 0.15 min/ppl	0.9	impact likely fatal	7.44E-04	high
		4a Masonry wall and fence to prevent access to Area 4/5 cliff base	Rock/soil mass collapses and hits a person at footpath	0.02	1 x 15kg rockfall per 50 years	0.023809524	target area (person) 0.5m x 0.5m; hazardous zone area 7m x 1.5m	0.069444444	average 1000 ppl/day; average 0.15 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	4.96E-06	low
		4b Shotcrete and nail wall and fence to prevent access to Area 4/5 cliff base	Rock/soil mass collapses and hits a person at footpath	0.02	1 x 15kg rockfall per 50 years	0.023809524	target area (person) 0.5m x 0.5m; hazardous zone area 7m x 1.5m	0.069444444	average 1000 ppl/day; average 0.15 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	4.96E-06	low
		4c Canopy over cycleway and fence to prevent access to Area 4/5 cliff base	Rock/soil mass collapses and hits a person at footpath	0.5	1 x 250kg rockfall per 2 years	0.023809524	target area (person) 0.5m x 0.5m; hazardous zone area 7m x 1.5m	0.069444444	average 1000 ppl/day; average 0.15 min/ppl	0.01	canopy design to withstand rock fall	8.27E-06	low
5	Shallow undercuts, limestone balustrade close to cliff edge	Prevailing Risk	Overhang limestone falls and hits a person on footpath (assume path is re-opened without remediation)	0.2	1 x 250kg rockfall per 5 years	0.004761905	target area (person) 0.5m x 0.5m; hazardous zone area 35m x 1.5m	0.173611111	average 500 ppl/day; average 0.5 m/ppl	0.7	high likelihood of impact causing fatality	1.16E-04	high
		5a Permanently close path at base and rebuild part of balustrade wall at top	Overhang limestone falls and hits a trespasser on closed footpath	0.2	2 x 250kg rockfall per 5 years	0.004761905	target area (person) 0.5m x 0.5m; hazardous zone area 35m x 1.5m	0.013888889	average 1 ppl/day; average 5 min/ppl (for maintenance)	0.7	high likelihood of impact causing fatality	9.26E-06	low
		5b Open path and cover rock face in mesh/shotcrete and soil nails	Overhang limestone falls and hits a person at footpath	0.02	1 x 15 kg rockfall per 50 years	0.004761905	target area (person) 0.5m x 0.5m; hazardous zone area 35m x 1.5m	0.173611111	average 500 ppl/day; average 0.5 m/ppl	0.15	impact to head fatal Probability of head impact approx 15%	2.48E-06	low
6	Caves and undercuts beneath the caprock, rock fall, cracked columns in cave	Prevailing Risk	Overhang limestone falls and hits a person on footpath (assume path is re-opened without remediation)	4	4 x 15kg rockfall per year	0.002564103	target area (person) 0.5m x 0.5m; hazardous zone area65m x 1.5m	0.347222222	average 500 ppl/day; average 1 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	5.34E-04	high
		6a Permanently close path and reinforce base of column in cave	Cave collapses and hits a trespasser	0.01	1 x 2000kg rockfall per100 years	1	collapse would affect whole zone	0.01369863	assume person sleeps in cave for 240 hrs/year (say 15 nights/year)	0.99	rock fall impact fatal	1.36E-04	medium
		6b Mesh and shotcrete face and open path to public	Rockfall hits a person on footpath	0.02	1 x 15kg rockfall per 50 years	0.002564103	target area (person) 0.5m x 0.5m; hazardous zone area 65m x 1.5m	0.173611111	average 500 ppl/day; average0.5min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	1.34E-06	low
7	Dysfunctional rock bolts, cracking, no structural support to the tunnel portal	Prevailing Risk	Portal collpases on people walking through tunnel	0.05	1 x 2000kg rockfall per 20 years	1	collapse would affect whole zone	0.034722222	average 1000 ppl/day; average 0.05 min/ppl to traverse hazard zone	0.99	rock fall impact fatal	1.72E-03	high
		7a Build support for portal in form of arch	Portal collpases on people walking through tunnel	0.002	1 x 2000kg rockfall per 500 years	1	collapse would affect whole zone	0.034722222	average 1000 ppl/day; average 0.05 min/ppl to traverse hazard zone	0.01	portal would be designed to prevent collpase	6.94E-07	low
		7b Do nothing to support arch and close tunnel	Portal collpases on people walking through tunnel	0.05	1 x 2000kg rockfall per 20 years	1	collapse would affect whole zone	6.94444E-05	average 2 ppl/day; average 0.05 min/ppl to access tunnel for cleaning only	0.99	rock fall impact fatal	3.44E-06	low
		7c Build rockfall shelter and do not treat face	Pinnacle falls and hits a person walking through tunnel	0.2	1 x 500kg rockfall per 5 years	0.020833333	target area (person) 0.5m x 0.5m; hazardous zone area 4m x 3m	0.034722222	average 1000 ppl/day; average 0.05 min/ppl	0.01	canopy design to withstand rock fall	1.45E-06	low
		7d Treat face with shotcrete and mesh and do not build rockfall canopy	Pinnacle falls and hits a person walking through tunnel	0.02	1 x 15kg rockfall per 50 years	0.020833333	target area (person) 0.5m x 0.5m; hazardous zone area 4m x 3m	0.034722222	average 1000 ppl/day; average 0.05 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	2.17E-06	low

8	Extensive cliff erosion, friable surfaces, corroded masonry ties, rock fall hazards	Prevailing Risk	Mason panel or rocks drop out and hit people	1	1x100 kg rockfall per1 year	0.00462963	target area (person) 0.5m x 0.5m; hazardous zone area 18 m x 3 m	0.173611111	average 1000 ppl/day; average 0.25 min/ppl (assumes access is restored without remedial works)	0.99	rock fall impact fatal	7.96E-04	very high
		8a	Repair masonry wall and install new ties, build canopy, rockfall fences and re-route paths	0.05	1 x 15kg rockfall per 20 years	0.00462963	target area (person) 0.5m x 0.5m; hazardous zone area 18 m x 3 m	0.013888889	average 1 ppl/day; average 20 min/ppl (only CoF maintance staff would enter hazardous zone	0.15	impact to head fatal Probability of head impact approx 15%	4.82E-07	low
		8b	Cover face in shotcrete and mesh negating need for path re-routing and fences	0.02	1 x 15kg rockfall per 50 year	0.00462963	target area (person) 0.5m x 0.5m; hazardous zone area 18 m x 3 m	0.173611111	average 1000 ppl/day; average 0.25 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	2.41E-06	low
		8c	Cover face in mesh and rock bolted in place	10	10 x 1kg rockfall per 1 year	0.00462963	target area (person) 0.5m x 0.5m; hazardous zone area 18 m x 3 m	0.173611111	average 1000 ppl/day; average 0.25 min/ppl	0.05	small rock will fall through mesh and could still cause injury	4.02E-04	medium
9	Rock fall, overhangs	Prevailing Risk	Rock falls and hits a person at footpath	0.5	1 x 15kg rockfall per 2 years	0.006944444	target area (person) 0.5m x 0.5m; hazardous zone area 12m x 3m	0.138888889	average 1000 ppl/day; average 0.2 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	7.23E-05	medium
		9a	Re-route path away from face	0.5	1 x 15kg rockfall per 2 year	0.006944444	target area (person) 0.5m x 0.5m; hazardous zone area 12m x 3m	0.003472222	average 1 ppl/day; average 5 min/ppl for maintance purposes only	0.15	impact to head fatal Probability of head impact approx 15%	1.81E-06	low
		9b	Rock bolt and mesh face	1	1 x 1kg rockfall per 1 year	0.013888889	target area (person) 0.5m x 0.5m; hazardous zone area 12m x 1.5m	0.138888889	average 1000 ppl/day; average 0.2 min/ppl	0.05	small rock will fall through mesh and could still cause injury	9.65E-05	medium
		9c	Rock bolt, mesh and shotcrete face	0.02	1 x 15kg rockfall per 50 year	0.013888889	target area (person) 0.5m x 0.5m; hazardous zone area 12m x 1.5m	0.138888889	average 1000 ppl/day; average 0.2 min/ppl	0.15	impact to head fatal Probability of head impact approx 15%	5.79E-06	low
11	Retaining wall in unstable condition	Prevailing Risk	Wall collapses and hits a person	0.05	1 x 2000kg rockfall say in 20 years	1	collpase would affect whole zone	0.006944444	average 1 ppl/day; average 10 min/ppl (say 1 worker at rear of shed)	0.9	impact likely fatal	3.13E-04	high
		11a	Demolish and rebuild unstable retaining wall	0.05	1 x 15kg rockfall per 20 years	0.027777778	target area (person) 0.5m x 0.5m; hazardous zone area 6m x 1.5m	0.006944444	average 1 ppl/day; average 10 min/ppl (say 1 worker at rear of shed)	0.15	impact to head fatal Probability of head impact approx 15%	1.45E-06	low
ST	Friable ceiling material, rock fall	Prevailing Risk	Rock falls and hits a person in the tunnel (assumed opened to special user groups)	50	50 x 5kg rockfals per year	0.069444444	target area (person) 0.5m x 0.5m; hazardous zone area 30m x 1.2m but increased due to people likely to trigger rockfalls	0.028538813	average 500 ppl for 30 minutes/ year	0.05	fatal head injury likelihod reduced due to likely use of cavers helmets (say 5%)	4.95E-03	very high
		Sta	Do nothing and keep closed	2	2 x 5kg rockfall per 1 years	0.006944444	target area (person) 0.5m x 0.5m; hazardous zone area 30m x 1.2m	0.000114155	average 1 hr/yr	0.05	fatal head injury likelihod reduced due to likely use of cavers helmets (say 5%)	7.93E-08	low
		STb	Install full lining system	0.01	1 x 10kg rockfall per 100 years	0.006944444	target area (person) 0.5m x 0.5m; hazardous zone area 30m x 1.2m	0.007534247	average 200 ppl for 20 minutes/ year	0.7	high likelihood of impact causing fatality	3.66E-07	low

LEGEND

P _(H)	is the annual propbability of the landslide or rockfall
P _(S:H)	is the probability of spatial impact of landslide or rockfall with an area where people may be present
P _(T:S)	is the temporal spatial probability of the impact zone being occupied by a person
V _(D:T)	is the vulnerability of the individual (probability of loss of life of the individual in the event of being impacted by rockfall or landslide)
R _(LoL) =P(H)*P(S:H)*P(T:S)*V(D:T)	Is the risk (annual propobability of loss of life (death) of an indivdual)

Rows coloured **grey** indicate the existing risks
Rows coloured **green** indicate residual risks following execution of recommneded risk mitigation works

AGS Suggested Tollerable loss of life individual risk

Existing slopes/developments 10⁻⁴/annum
landslides 10⁻⁵/annum

Qualatative Risk defined as follows:

Low	Quantative Risk(loss of life) <10 ⁻⁵ /annum
Medium	Quantative Risk (loss of life) >10 ⁻⁵ /annum and <10 ⁻⁴ /annum
High	Quantative Risk (loss of life) >10 ⁻⁴ /annum and <5 x 10 ⁻⁴ /annum
Very High	Quantative Risk (loss of life) >5 x 10 ⁻⁴ /annum

12.0 **APPENDIX 7**

12.1 **Cost Benefit Analysis of the possible remedial options**

Prepared by CMW

Arthur Head Remedial Work Cost Benefit Analysis

Location	Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Benefit - Safety Improvement Factor	Benefit - Aesthetic	Assumption	Combined Benefit	Relative Unit Cost	Benefit/unit cost
Area 1	Remove trees, point and repair	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	2.5
Area 2	Remove trees, re-render	1	---	1	0	1	appearance will improve	1	1	1.0
Area 3	Remove trees, point and repair	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	2.5
Area 4	Masonry wall	3	will stop deterioration and support face	1	2	2	appearance improves significantly	4	8	0.9
Area 4	Shotcrete and nail wall	3	will stop deterioration and support face	1	2	-3	appearance will look temporary and have poor aesthetics	-1	6	0.3
Area 4	Canopy over cycleway	3	designed to protect public if cliff collapse occurs	1	2	-2	could be designed to look attractive although rock face will deteriorate	0	4	0.8
Area 5	Permanently closed path and rebuild part of barrier wall	3	Current risk assume path (currently closed) is operational	1	2	1	no change in appearance	3	2	3.0
Area 5	Open path and cover in mesh/shotcrete and soil nails	3	Current risk assume path (currently closed) is operational	1	2	-3	appearance will look temporary and have poor aesthetics	-1	7	0.3
Area 6	Permanently close path and reinforce base of column in cave	3	Current risk assume path (currently closed) is operational	1	2	1	existing appearance is maintained	3	2	3.0
Area 6	Mesh and shotcrete face and open path to public	3	Current risk assume path (currently closed) is operational	1	2	-3	shotcrete would negatively affect the appearance of face and the cave	-1	8	0.3
Area 7	Build support for portal in form of arch	3		1	2	1	arch would barely be visible from outside the tunnel	3	5	1.2
Area 7	Build rockfall canopy and do not treat face	3		1	2	-1	extension of existing could be designed to compliment surrounding	1	5	0.8
Area 7	Treat face with shotcrete and mesh only	3		1	2	-3	would substantially affect appearance of the cliff face	-1	6	0.3
Area 8	Repair masonry wall and install new rockbolts and straps, rockfall fences and re-route paths	4	assuming temporary path closures and scaffold canopy currently in place were removed	1	3	1	existing appearance is maintained	4	5	1.4
Area 8	Cover face in shotcrete and mesh negating need for path re-routing and fences	4	assuming temporary path closures and scaffold canopy currently in place were removed	1	3	-4	entire west face of Arthur Head would be a mass of shotcrete	-1	8	0.3
Area 8	Cover face in mesh rock bolted in place	4	assuming temporary path closures and scaffold canopy currently in place were removed	2	2	-2	appearance will deteriorate due to mesh	0	5	0.6
Area 9	Re-route path away from face	2		1	1	1	existing appearance is maintained	2	2	2.5
Area 9	Rock bolt and mesh face	2		1	1	-2	appearance will deteriorate due to mesh	-1	4	0.5
Area 9	Rock bolt, mesh and shotcrete face	2		1	1	-4	entire west face of Arthur Head would be covered in shotcrete	-3	6	0.0
Area 10	Trimming of vegetation to avoid wedging	1		1	0	1	appearance will benefit	1	1	1.0
Area 11	Demolish and rebuild unstable retaining wall	3		1	2	1	existing appearance is maintained	3	5	1.2
Secret Tunnel	Do nothing and keep closed (annual inspections)	4		4	0	1		1	1	4.0
Secret Tunnel	Install full lining system	4		1	3	-3	no longer the original tunnel	0	8	0.4

Only credible options included Do nothing as an option is only included where this is

Comments								
Risk			Aesthetic weighting		Benefit	Relative Unit Cost		Benefit/Unit Cost
Very High	4		Face completely cover in shotcrete (large area)	-4	Changes in level of risk and aesthetics are weighted equally	Broad approximate relative ranking to rank one option against another.		<0.6
High	3		Face completely cover in shotcrete (medium area)	-3		Cost of annual inspection only	1	0.6 to 0.8
Medium	2		Significant collapse that cannot be readily repaired without loss of aesthetics or faces covered in mesh	-2		Low relative costs	2 and 3	0.9-1.5
Low and Very Low =1	1		Rockfall Fences and rockfall shelters	-1		Medium relative costs	4 and 5	>1.5
			No change	1		High relative costs	6 to 8	

13.0 **APPENDIX 8**

13.1 **Schedule of Recommendations**

Prepared by Hocking Heritage Studio

2018-55 Arthur Head Cliff Stabilisation - Schedule of Recommendation

Revision 1 - 3rd April 2019

Note: Updated weighting figures

Priorisati on	Location	Option	Current Risk	Assumptions	Residual Risk (say in 10 years)	Safety Improvement Factor	Aesthetic Weighting	Assumption	Benefit	Relative Unit Cost	Benefit/ Unit cost
1	Area 7	Build support for portal in form of arch	3		1	2	1	arch would barely be visible from outside the tunnel	3	5	1.2
2	Area 7	Build rockfall canopy	3		1	2	-1	extension of existing could be designed to compliment surrounding	1	5	0.8
3	Area 4	Masonry wall extension	3	will stop deterioration and support face	1	2	2	appearance improves significantly	4	8	0.9
4	Area 8	Repair masonry wall and install new rockbolts and straps, install rockfall fence	4	assuming temporary path closures and scaffold canopy currently in place were removed	1	3	1	existing appearance is maintained	4	5	1.4
5	Area 11	Demolish and rebuild unstable retaining wall	3		1	2	1	existing appearance is maintained	3	5	3.0
6	Area 5	Permanently close path beside cliff face and rebuild part of barrier wall	3	Current risk assume path (currently closed) is operational	1	2	1	no change in appearance	3	2	3.0
7	All applicable areas	Undertake CIPS trial, install system to applicable areas	2		3	1	2	existing appearance is maintained	3	3	1.0
8	Area 6	Permanently close path beside cliff faceand reinforce base of column in cave	3	Current risk assume path (currently closed) is operational	1	2	1	existing appearance is maintained	3	2	2.5
9	Area 1	Remove trees, point and repair	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	2.5
10	Area 3	Remove trees, point and repair	2	hazards will be substantially removed	1	1	1	appearance will improve	2	2	2.5
11	Area 9	Re-route path away from face	2		1	1	1	existing appearance is maintained	2	2	1.0
12	Area 2	Remove trees, re-render	1		1	0	1	appearance will improve	1	1	1.0
13	Area 10	Trimming of vegetation to avoid wedging	1		1	0	1	appearance will benefit	1	1	1.0
14	Area 12	Underpinning works	1		1	0	-1	Safety will benefit	1	2	0.5
15	Secret Tunnel	CIPS Application	4	Stabilizes erosion	3	1	1	Limited improvement to safety	1	1	1.0

14.0 **APPENDIX 9**

14.1 **Cost Estimate**

Prepared by RBB

Item No	Description	PTE Estimate (Excl GST)	SD Estimate (Excl GST)
PR	Preliminaries	Incl	Incl
1	Area 1 - Refurbishment	\$ 90,620.00	\$ 90,620.00
2	Area 2 - Main stairs - Masonry and Brickwork covered in Render	\$ 38,410.00	\$ 38,410.00
3	Area 3 - High masonry retaining wall along railway reserve	\$ 50,600.00	\$ 56,350.00
4	Area 4 - Weak leached cliff close to rail reserve	\$ 198,639.50	\$ 68,540.00
5	Area 5 - Weak cliff of leached limestone and cross bedded aeolianite	\$ 15,053.50	\$ 58,006.00
6	Area 6 - Vertical face of caprock over zone of roots and cross-bedded aeolianite with undercuts	\$ 121,900.00	\$ 121,900.00
7	Area 7 - Vertical Face over western tunnel portal	\$ 603,698.40	\$ 341,112.50
8	Area 8 - High face beneath time ball and signal cannon platform	\$ 88,952.50	\$ 40,595.00
9	Area 9 - Steeply inclined cliff	\$ 20,700.00	\$ 11,500.00
10	Area 10 - Inclined cliff face behind J shed	\$ 40,135.00	\$ 40,135.00
11	Area 11 - Man made retaining wall between CG1 shed and Time ball Platform	\$ 78,154.00	\$ 60,835.00
12	Secret Tunnel	\$ 68,740.00	\$ 116,580.00
13	Underpinning to Old Laboratory	\$ 19,930.00	\$ -
	Total Estimate (Excl GST)	\$ 1,435,532.90	\$ 1,044,583.50
Con	Contingency (25%)	\$ 358,883.23	\$ 261,145.88
	Total Estimate incl contingency (Excl GST)	\$ 1,794,416.13	\$ 1,305,729.38

GST not included \$176,404.11

Item No	Description	Unit	Work Required Qty	Total Qty	Rate	Subtotal	Contingency - 25%	Total (Excl GST)
	<u>Area 1 - Limestone Quarried Face with Masonry infilling</u>							
1.1	Preliminaries and margin	Item				\$ 11,820.00	\$ 2,955.00	\$ 14,775.00
1.2	Allow for barricades and protection for pedestrians and vehicles	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
1.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		240	65	\$ 15,600.00	\$ 3,900.00	\$ 19,500.00
1.4	Remove existing trees, bushes, roots, like and apply necessary treatments to prevent re-growth as required	m2		240	25	\$ 6,000.00	\$ 1,500.00	\$ 7,500.00
1.5	Repair and make good existing barrier wall top which are in poor state	m		50	390	\$ 19,500.00	\$ 4,875.00	\$ 24,375.00
1.6	Repair and make good existing vertical cracks along the limestone and masonry walls - allowed for 4 vertical cracks	m		20	650	\$ 13,000.00	\$ 3,250.00	\$ 16,250.00
1.7	Point and re-bond masonry to match existing	m2		240	55	\$ 13,200.00	\$ 3,300.00	\$ 16,500.00
1.8	Allow for providing few weep holes as protection for water pressure during heavy rain falls - allowed 5no	No		5	400	\$ 2,000.00	\$ 500.00	\$ 2,500.00
1.9	Sundry works	Item				\$ 5,000.00	\$ 1,250.00	\$ 6,250.00
	Sub Total					\$ 90,620.00	\$ 22,655.00	\$ 113,275.00
							\$ -	\$ -
	<u>Area 2 - Main stairs - Masonry and Brickwork covered in Render</u>						\$ -	\$ -
2.1	Preliminaries and margin	Item				\$ 5,010.00	\$ 1,252.50	\$ 6,262.50
2.2	Allow for barricades and protection for pedestrians and vehicles	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
2.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		100	65	\$ 6,500.00	\$ 1,625.00	\$ 8,125.00
2.4	Remove existing trees, bushes, roots, like and apply necessary treatments to prevent re-growth as required	m2		70	70	\$ 4,900.00	\$ 1,225.00	\$ 6,125.00
2.5	Repair and make good existing stair guard wall top and sides including new render patching - up works, as required (approx. area)	m2		90	65	\$ 5,850.00	\$ 1,462.50	\$ 7,312.50
2.6	Repair and make good existing stair façade including new render patching - up works, as required (approx. area)	m2		80	65	\$ 5,200.00	\$ 1,300.00	\$ 6,500.00
2.7	Point and re-bond masonry to match existing	m2		30	65	\$ 1,950.00	\$ 487.50	\$ 2,437.50
2.8	Repair and make good existing vertical cracks along stair guard wall including new render patching-up works, etc as required (approx. 3m)	Item				\$ 2,000.00	\$ 500.00	\$ 2,500.00
2.9	Sundry works	Item				\$ 2,500.00	\$ 625.00	\$ 3,125.00
	Sub Total					\$ 38,410.00	\$ 9,602.50	\$ 48,012.50
							\$ -	\$ -
	<u>Area 3 - High masonry retaining wall along railway reserve</u>						\$ -	\$ -
3.1	Preliminaries and margin					\$ 6,600.00	\$ 1,650.00	\$ 8,250.00
3.2	Allow for barricades and protection for pedestrians and vehicles	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
3.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		240	65	\$ 15,600.00	\$ 3,900.00	\$ 19,500.00
3.4	Remove existing trees, bushes, roots, like and apply necessary treatments to prevent re-growth as required	m2		240	10	\$ 2,400.00	\$ 600.00	\$ 3,000.00
3.5	Repair and make good existing loosen wall top blocks	m2		40	200	\$ 8,000.00	\$ 2,000.00	\$ 10,000.00
3.6	Re-point and rebond existing loose masonry after removal of trees and roots	m2		140	50	\$ 7,000.00	\$ 1,750.00	\$ 8,750.00
3.7	Allow for providing few weep holes as protection for water drainage during re-pointing works - allowed 10no	No		5	400	\$ 2,000.00	\$ 500.00	\$ 2,500.00
3.8	Sundry works	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
	Sub Total					\$ 50,600.00	\$ 12,650.00	\$ 63,250.00
							\$ -	\$ -
	<u>Area 4 - Weak leached cliff close to rail reserve</u>						\$ -	\$ -
4.1	Preliminaries and margin	Item				\$ 25,909.50	\$ 6,477.38	\$ 32,386.88

4.2	Allow for barricades and protection for pedestrians and vehicles	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
4.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		100	80	\$ 8,000.00	\$ 2,000.00	\$ 10,000.00
4.4	Reinforced concrete strip footing with fibre r/f bars, formwork etc	m3		4	1250	\$ 5,000.00	\$ 1,250.00	\$ 6,250.00
4.5	Reinforced concrete cliff stabilizing fill (N25 grade) including staging pours (7 pours)	m3		30	450	\$ 13,500.00	\$ 3,375.00	\$ 16,875.00
4.6	'1000/500L x 350 wide natural limestone block retaining wall including bridging, ties to concrete stabilizing wall at every course	m2		90	450	\$ 40,500.00	\$ 10,125.00	\$ 50,625.00
4.7	'1000/500L x 350 wide natural limestone block retaining capping course - approx. 1m wide	m2		16	500	\$ 8,000.00	\$ 2,000.00	\$ 10,000.00
4.8	'900 High heavy duty chain link fence	m		25	150	\$ 3,750.00	\$ 937.50	\$ 4,687.50
4.9	Allow for remove vegetation / cut back from the face before building the retaining wall	m2		100	25	\$ 2,500.00	\$ 625.00	\$ 3,125.00
4.10	Excavation limestone for concrete footing	m3		5	150	\$ 750.00	\$ 187.50	\$ 937.50
4.11	Reinstate existing bitumen foot path to match existing including 150 compacted road base	m2		16	250	\$ 4,000.00	\$ 1,000.00	\$ 5,000.00
4.12	32 PVC weep holes and geotextile wrap to footing - 500 high	no		18	85	\$ 1,530.00	\$ 382.50	\$ 1,912.50
4.13	4000 Long x 100 dia. drilling to rock anchors including N20 galvanised bar and plate (approx. 12kg), 40 Mpa grout (0.03m3), all complete	no		21	3000	\$ 63,000.00	\$ 15,750.00	\$ 78,750.00
4.14	Form joint between existing and new retaining walls including cutting 3no existing blocks	m		12	250	\$ 3,000.00	\$ 750.00	\$ 3,750.00
4.15	'12 Dia. fibre reinforced plastic (GFRP) bars at 200 centres each way with stabilizing concrete fill	m2		90	80	\$ 7,200.00	\$ 1,800.00	\$ 9,000.00
4.16	Sundry works	Item				\$ 7,500.00	\$ 1,875.00	\$ 9,375.00
	Sub Total					\$ 198,639.50	\$ 49,659.88	\$ 248,299.38
							\$ -	\$ -
	Area 5 - Weal cliff of leached limestone and cross bedded aeolianite						\$ -	\$ -
6.1	Preliminaries and margin	Item				\$ 1,963.50	\$ 490.88	\$ 2,454.38
5.1	New fencing - Lower level	m		12	160	\$ 1,920.00	\$ 480.00	\$ 2,400.00
5.2	New fencing - Upper Level	m		27	160	\$ 4,320.00	\$ 1,080.00	\$ 5,400.00
5.3	New single gate to fence	no		1	1250	\$ 1,250.00	\$ 312.50	\$ 1,562.50
5.4	Remove existing turf and replace with ground covering vegetation and mulch	m2		24	150	\$ 3,600.00	\$ 900.00	\$ 4,500.00
5.5	Sundry works	Item				\$ 2,000.00	\$ 500.00	\$ 2,500.00
	Sub Total					\$ 15,053.50	\$ 3,763.38	\$ 18,816.88
							\$ -	\$ -
	Area 6 - Vertical face of caprock over zone of roots and cross-bedded aeolianite with undercuts						\$ -	\$ -
6.1	Preliminaries and margin	Item				\$ 15,900.00	\$ 3,975.00	\$ 19,875.00
6.2	Allow for barricades and protection for general public	Item				\$ 5,000.00	\$ 1,250.00	\$ 6,250.00
6.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		400	65	\$ 26,000.00	\$ 6,500.00	\$ 32,500.00
6.4	Reinforce concrete base to existing column (500 dia.) base in cave and cover concrete base with limestone boulders	No		1	5000	\$ 5,000.00	\$ 1,250.00	\$ 6,250.00
6.5	Mesh and shotcrete face of vertical cliff face (allowance 50% only)	m2		200	325	\$ 65,000.00	\$ 16,250.00	\$ 81,250.00
6.6	Sundry works	Item				\$ 5,000.00	\$ 1,250.00	\$ 6,250.00
	Sub Total					\$ 121,900.00	\$ 30,475.00	\$ 152,375.00
							\$ -	\$ -
	Area 7 - Vertical Face over western tunnel portal						\$ -	\$ -
7.1	Preliminaries and margin	Item				\$ 44,718.40	\$ 11,179.60	\$ 55,898.00
7.2	Allow for barricades and protection for general public	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
7.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		90	65	\$ 5,850.00	\$ 1,462.50	\$ 7,312.50
7.4	Build support for existing portal in form of arch including corten (inside tunnel)	m2		64	2344	\$ 150,000.00	\$ 37,500.00	\$ 187,500.00
	Demolition to Existing Canopy							
7.5	Cut, seal and remove existing electrical services to tunnel entry	Item				\$ 1,500.00	\$ 375.00	\$ 1,875.00

7.6	Remove existing steel canopy section to entrance including steel 150 x 50 RHS post. footings etc to receive new concrete casing (plan area measured)	m2		10	120	\$ 1,200.00	\$ 300.00	\$ 1,500.00
7.7	Remove existing perspex ceiling and cladding including framing to entrance soffit to receive new concrete casing	m2		6	80	\$ 480.00	\$ 120.00	\$ 600.00
	<u>Concrete Portal - Tunnel Entrance</u>							
7.8	N50 Concrete to Tunnel base including reo/fm wk/excavation etc	m3		4	650	\$ 2,600.00	\$ 650.00	\$ 3,250.00
7.9	N50 Concrete to tunnel walls and soffit including reo/fm wk/excavation etc	m3		7	1250	\$ 8,750.00	\$ 2,187.50	\$ 10,937.50
7.10	Sundry works - Water stops, construction joints, etc	Item				\$ 1,100.00	\$ 275.00	\$ 1,375.00
	<u>New Design - Cuved double lined hydraulic buffer steel canopy</u>							
7.11	RCC footing	m3		8	750	\$ 6,000.00	\$ 1,500.00	\$ 7,500.00
7.12	Sundry base plates, bolts, etc	Item				\$ -	\$ -	\$ -
	<u>Framing</u>							
7.13	150 UC	t		1.34	8000	\$ 10,720.00	\$ 2,680.00	\$ 13,400.00
7.14	150 UC - curved	t		1.08	14000	\$ 15,120.00	\$ 3,780.00	\$ 18,900.00
7.15	300 PFC	t		2.33	8000	\$ 18,640.00	\$ 4,660.00	\$ 23,300.00
7.16	300 PFC - curved	t		2.41	14000	\$ 33,740.00	\$ 8,435.00	\$ 42,175.00
7.17	250 x 150 RHS	t		4.98	8000	\$ 39,840.00	\$ 9,960.00	\$ 49,800.00
7.18	400 x 200 RHS- Mid beam	t		0.47	7500	\$ 3,525.00	\$ 881.25	\$ 4,406.25
7.19	Steel truss(s) to link modules	Item				\$ 65,000.00	\$ 16,250.00	\$ 81,250.00
7.20	'1200 High industrial hydraulic buffer post including base plates, fixing bolts, fixing to structural framework, etc (0.70t each)	no		12	5750	\$ 69,000.00	\$ 17,250.00	\$ 86,250.00
	<u>Sheets</u>							
7.21	3 thick corten sheets to steel frame	t		1.71	11000	\$ 18,810.00	\$ 4,702.50	\$ 23,512.50
7.22	3 thick corten sheets to steel frame - curved	t		2.92	14500	\$ 42,340.00	\$ 10,585.00	\$ 52,925.00
7.23	'10 thick 300 wide (approx.) corten steel plate welded between curved canopy sections	Note				Excluded		Excluded
7.23a	Extra over corten for 5mm thick			Item		\$ 15,000.00	\$ 3,750.00	\$ 18,750.00
	<u>Sundries</u>							
7.24	Allow welding and cap plates	t		2.7	10000	\$ 27,000.00	\$ 6,750.00	\$ 33,750.00
7.25	Allow connection to tunnel entry (approx. girth 11m)	Item				\$ 1,265.00	\$ 316.25	\$ 1,581.25
7.26	Modify / refix existing steel gate as required	Item				\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
7.26A	PROVISIONAL SUM - Sealer System to Corten					\$ 10,000.00	\$ 2,500.00	\$ 12,500.00
7.27	Sundries	Item				\$ 2,500.00	\$ 625.00	\$ 3,125.00
	Sub Total					\$ 603,698.40	\$ 150,924.60	\$ 754,623.00
	<u>Area 8 - High face beneath time ball and signal cannon platform</u>							
	<u>Arrea 7 .8 & 9 - Fencing & Paving</u>							
	Preliminaries and margin	Item				\$ 6,757.50	\$ 1,689.38	\$ 8,446.88
	Remove existing kerb	m		30	80	\$ 2,400.00	\$ 600.00	\$ 3,000.00
	New fence	m		50	150	\$ 7,500.00	\$ 1,875.00	\$ 9,375.00
	New timber sleeper kerb	m		50	200	\$ 10,000.00	\$ 2,500.00	\$ 12,500.00
	Limecrete paving	m2		150	95	\$ 14,250.00	\$ 3,562.50	\$ 17,812.50
	Compacted crushed limestone paving	m2		20	65	\$ 1,300.00	\$ 325.00	\$ 1,625.00
	Vegetation to rock fall area	m2		120	80	\$ 9,600.00	\$ 2,400.00	\$ 12,000.00
	Sub Total					\$ 51,807.50	\$ 12,951.88	\$ 64,759.38
	<u>Option 1</u>							
8.1	Preliminaries and margin	Item				\$ 4,845.00	\$ 1,211.25	\$ 6,056.25
8.2	Allow for barricades and protection for general public					\$ 4,500.00	\$ 1,125.00	\$ 5,625.00
8.3	Allow for erection of scaffolding for inspection and carry out proposed works	m2		220	65	\$ 14,300.00	\$ 3,575.00	\$ 17,875.00
8.4	Repair, re-point recently constructed limestone masonry wall section	m2		20	120	\$ 2,400.00	\$ 600.00	\$ 3,000.00
8.5	Replace missing or corroded anchor points on recently constructed limestone wall section	No		20	200	\$ 4,000.00	\$ 1,000.00	\$ 5,000.00
8.7	Re-route existing path	m2		36	100	\$ 3,600.00	\$ 900.00	\$ 4,500.00
8.9	Sundry works	Item				\$ 3,500.00	\$ 875.00	\$ 4,375.00
	Sub Total					\$ 37,145.00	\$ 9,286.25	\$ 46,431.25
							\$ -	\$ -
	<u>Area 9 - Steeply inclined cliff</u>						\$ -	\$ -
	<u>Option 1</u>						\$ -	\$ -

9.1	Preliminaries and margin	Item				\$ 2,700.00	\$ 675.00	\$ 3,375.00
9.2	Re-route existing path	m2		80	200	\$ 16,000.00	\$ 4,000.00	\$ 20,000.00
9.3	Sundry works	Item				\$ 2,000.00	\$ 500.00	\$ 2,500.00
	Sub Total					\$ 20,700.00	\$ 5,175.00	\$ 25,875.00
							\$ -	\$ -
	Area 10 - Inclined cliff face behind J shed						\$ -	\$ -
10.1	Preliminaries and margin	Item				\$ 5,235.00	\$ 1,308.75	\$ 6,543.75
10.2	Allow for erection of scaffolding for inspection and carry out proposed works	m2		360	65	\$ 23,400.00	\$ 5,850.00	\$ 29,250.00
10.3	Remove existing trees, bushes, roots, like and apply necessary treatments to prevent re-growth as required	m2		360	15	\$ 5,400.00	\$ 1,350.00	\$ 6,750.00
10.4	Repair and make good to existing cliff face, where trees and roots are removed as required - assume 20%	m2		72	50	\$ 3,600.00	\$ 900.00	\$ 4,500.00
	Sundry works					\$ 2,500.00	\$ 625.00	\$ 3,125.00
	Sub Total					\$ 40,135.00	\$ 10,033.75	\$ 50,168.75
	Area 11 - Man made retaining wall between CG1 shed and Time ball Platform							
11.1	Preliminaries and margin	Item				\$ 10,194.00	\$ 2,548.50	\$ 12,742.50
11.2	Allow for erection of scaffolding for inspection and carry out proposed works	m2		60	65	\$ 3,900.00	\$ 975.00	\$ 4,875.00
11.3	Careful removal of existing limestone cladding/retaining wall to reuse as required (approx. area)	m2		30	300	\$ 9,000.00	\$ 2,250.00	\$ 11,250.00
11.4	Excavate, drill, cut and remove existing limestone bed to receive new concrete footings	m2		14	750	\$ 10,500.00	\$ 2,625.00	\$ 13,125.00
11.5	Concrete mass filling to make up levels to receive new footing bed (approx. quantity)	m3		6	1000	\$ 6,000.00	\$ 1,500.00	\$ 7,500.00
11.6	Reinforced concrete strip footing with fibre r/f bars, form work, etc	m3		4	850	\$ 3,400.00	\$ 850.00	\$ 4,250.00
11.7	190 Reinforced core filled block work including 350 long fiber reinforced plastic wall ties etc	m2		16	350	\$ 5,600.00	\$ 1,400.00	\$ 7,000.00
11.8	300 Wide (approx.) Random rubble limestone facing wall to match existing sizes and pattern	m3		24	500	\$ 12,000.00	\$ 3,000.00	\$ 15,000.00
11.9	Lime stabilized sand back fill	m3		14	200	\$ 2,800.00	\$ 700.00	\$ 3,500.00
11.10	300 thick top soil fill	m3		4	80	\$ 320.00	\$ 80.00	\$ 400.00
11.11	600 long x 32 dia. drainage pipe to retaining wall base	no		12	250	\$ 3,000.00	\$ 750.00	\$ 3,750.00
11.12	Low profile salt resistant landscape planting	m2		12	120	\$ 1,440.00	\$ 360.00	\$ 1,800.00
11.13	Sundry works					\$ 10,000.00	\$ 2,500.00	\$ 12,500.00
	Sub Total					\$ 78,154.00	\$ 19,538.50	\$ 97,692.50
							\$ -	\$ -
	Underpinning to Old Laboratory						\$ -	\$ -
12.1	Preliminaries and margin	Item				\$ 1,680.00	\$ 420.00	\$ 2,100.00
12.2	Underpinning works	m2		14	800	\$ 11,200.00	\$ 2,800.00	\$ 14,000.00
12.3	Footing	m2		13	350	\$ 4,550.00	\$ 1,137.50	\$ 5,687.50
12.4	Sundry works					\$ 2,500.00	\$ 625.00	\$ 3,125.00
	Sub Total					\$ 19,930.00	\$ 4,982.50	\$ 24,912.50
	Secret Tunnel - If Required						\$ -	\$ -
13.1	Preliminaries and margin	Item				\$ 8,640.00	\$ 2,160.00	\$ 10,800.00
13.2	Careful removal of existing loose sand around tunnel and make good to receive new lining	m2		96	200	\$ 19,200.00	\$ 4,800.00	\$ 24,000.00
13.3	New lining system to existing secret tunnel CIPS System	m		96	400	\$ 38,400.00	\$ 9,600.00	\$ 48,000.00
13.4	Sundry works					\$ 2,500.00	\$ 625.00	\$ 3,125.00
	Sub Total					\$ 68,740.00	\$ 17,185.00	\$ 85,925.00
						\$ 1,450,586.40	\$ 362,646.60	\$ 1,813,233.00

15.0 **APPENDIX 10**

15.1 **Safety in Design Report**

Prepared by Hocking Heritage Studio

ARTHUR HEAD RESERVE
CLIFF STABILISATION

SAFETY IN DESIGN REVIEW REPORT
Report to City of Fremantle

Date : 18 December 2018
Project No: 2018-55

HOCKING HERITAGE STUDIO

This report is provided to comply with applicable legislative requirements. All buildings and/or structures present potential hazards during construction, during operation, in their maintenance and in demolition. This report assumes that all parties act reasonably, understand the normal risks in and around buildings and take all reasonable care and precautions in what they do.

This report is prepared by us in our capacity as architects involved in the project. We are not experts in risk assessment nor hazard management and this report should not be relied upon as though it had been prepared by such experts.

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1. INTRODUCTION

- Relevant WA legislation and Codes of Practice designed to assist compliance with the relevant legislation (together referred to as the Legislative Regime), set out requirements for safe construction and safe working.
- Relevantly to this Report, the Legislative Regime requires that if work to be carried out on a construction site ‘was, is being or is to be done for the client as part of the client’s trade or business’ then a person involved in the design of that work (or a part of it) has obligations to identify and eliminate or reduce hazards arising from the design and provide a written report to the client on that issue.
- This report considers hazards arising from design (and construction methodologies) and considers control measures in that context. We assume that widely known construction hazards (such as working at heights, working below cranes, working near openings and changes of levels, working with materials containing solvents or other toxins and so on) will be identified, controlled and managed by those in control of the workplace at the time. This is not the architect. This applies equally to the contractor or builder constructing the project and to the future occupants of the building and their maintenance teams. As such, we do not draw particular attention to those hazards in this report.
- This Report is only applicable to the extent that it applies to works within Western Australia.

2. SCOPE

Hocking Heritage Studio was commissioned by the **City of Fremantle** as lead consultant and Architect for the Arthur Head Reserve Cliff Stabilisation Survey.

The subject of this review is:

- Arthur Head Reserve natural limestone cliffs and their man-made retaining walls and infills
- ‘Secret Tunnel’ leading from the Gunner’s cottage to the Whalers tunnel

The scope of services is as follows:

- Assessment of the structural integrity and stability of the natural cliff faces and man-made walls
- Eliminating or reducing erosion of the cliff faces and walls
- Assessment of the Secret Tunnel condition;
- Categorising the risk for each finding;
- Proposing and describing remediation options.

3. REFERENCED DOCUMENTS

The following documents have been referenced as part of this review:

- Building Code of Australia (part of National Construction Code).
- Code of Practice – Safe Design of Buildings and Structures issued by WorkSafe WA
- National Standard For Construction Work, Guidance for Designers issued by WorkSafe WA
- Initial Report from 26th October 2018 by Hocking Heritage Studio
- Final Report from 19th November 2018 by Hocking Heritage Studio
- P01 Area 4 Elevations
- P02 South East Elevations
- P03 Area 4 Details
- P04 Area 11 North West Wall
- P05 Area 11 North West Wall
- P06 Area 8 Whalers Tunnel

4. DESIGN ASSUMPTIONS/PARTICULAR ASPECTS OF DESIGN

The following assumptions have been made as part of this review.

- This report considers hazards arising from design (and construction methodologies) and considers control measures in that context. Standard hazards (working at heights, working below cranes, working near openings, edges and changes of levels, working with materials containing solvents or other toxins, UV protection and so on) will be controlled and managed by those in control of the workplace at the time. This is not the architect. This applies equally to the contractor or builder constructing the project and to the future occupants of the building/structure and their maintenance teams
- A competent and appropriately licensed and qualified contractor will be engaged to carry out the Works.
- This risk assessment is based on current good industry practice and knowledge.
- This report is limited to consideration of any hazards from a design perspective being those that can, where reasonably practicable, be identified and then removed or mitigated through the design process for which the author of this report is responsible
- The Works will be constructed in accordance with all applicable legislative requirements.
- This report is a summary of the process followed and some of the risk identification. It is assumed, and required, that the entirety of this report (including all appendices) will be read together with the completed Hazard Identification Register
- A risk assessment from a Geotechnical perspective has been undertaken separate to this report.

5. REVIEW METHODOLOGY

Hazard Identification

A Hazard Identification Checklist and Register was utilised to record the findings of the review. A copy of the completed Register is attached to this report.

For each area/location of risk exposure the review described:

- Area of Risk, specific hazard identified
- Estimation of Probability that harm may occur (Risk Assessment Matrix)
- Estimation of Consequence of harm that may occur (Risk Assessment Matrix)
- Estimation of Risk Level (Probability x Consequence = Risk) (Risk Assessment Matrix)
- Control options considered
- Controls implemented

Summary of Risk Assessment Matrix Used

A “5x5” risk matrix was utilized to estimate the level of risk associated with a specific hazard (risk is the probability of harm multiplied by the consequence of harm).

A. Identify potential hazards associated with the activity through the use of the Hazard Identification Checklist					
B. Perform a risk assessment for the hazards identified by:					
(i) Determining the consequences (refer Table 1);					
(ii) Determining the probability of the event occurring (refer Table 2);					
(iii) Applying the values obtained from Tables 1 & 2 to the Qualitative Risk Matrix (Table 3) to obtain the resultant Risk Score and Level.					
TABLE 1 – CONSEQUENCE TABLE			TABLE 2 – PROBABILITY TABLE		
Given that the event occurs, what is the likely outcome?			How likely is it, that the event will occur?		
LEVEL	DESCRIPTOR	CONSEQUENCE	LEVEL	DESCRIPTOR	DESCRIPTION
1	Insignificant	No injury	1	Rare	The event may occur only in exceptional circumstances
2	Minor	First Aid treatment	2	Unlikely	The event may occur at some stage
3	Moderate	Medical treatment required	3	Moderate	The event should occur at some stage
4	Serious	Extensive injuries	4	Likely	Event will probably occur in most circumstances
5	Disaster	Death	5	Almost Certain	Event expected to occur in most circumstances
TABLE 3 – QUALITATIVE RISK ASSESSMENT MATRIX					
CONSEQUENCE					
PROBABILITY	1 Insignificant	2 Minor	3 Moderate	4 Serious	5 Disaster
1 Rare	1	3	6	10	15
2 Unlikely	2	5	9	14	19
3 Moderate	4	8	13	18	22
4 Likely	7	12	17	21	24
5 Almost Certain	11	16	20	23	25
					RISK LEVEL
					High (18 - 25)
					Significant (10-17)
					Moderate (6 - 9)
					Low Risk (1 - 5)

6. REVIEW RESULTS

Uncontrolled Risks

The risk assessment forming part of this safety in design review identified that the hazard(s) summarised below are uncontrolled risks (ie no controls have been implemented), and/or remain as High Risks or Significant Risks, even after steps have been taken to reduce them.

All other risks were rated as being MODERATE or LOW and can be reviewed in the Register attached to this report.

RISK ITEM 1	
Area of Risk	All areas
Description of Hazard	Dropping of loose material from cliff face during Works
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Moderate = 13
Control Options	Temporary netting installed
RISK ITEM 2	
Area of Risk	Area 4,5,7,8
Description of Hazard	Part collapse of cliff face areas during Works
Risk level (i.e. Probability x Consequence = Risk level)	Rare / Disaster = 15
Control Options	Monitoring of cliff face by an experiences Geotechnical professional
RISK ITEM 3	
Area of Risk	All areas
Description of Hazard	Physical injury due to cutting and removal of plant material (bushes, trees etc.) at heights
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Minor = 8
Control Options	Temporary netting installed, Safe work practices
RISK ITEM 4	
Area of Risk	All areas
Description of Hazard	Site access and site location adjacent to frequented public pathways
Risk level (i.e. Probability x Consequence = Risk level)	Likely / Serious = 21
Control Options	Clear visible signage to the public, appropriate fencing and/or netting,

	Active site access management
RISK ITEM 5	
Area of Risk	Area 4,
Description of Hazard	Manual handling of large size limestone blockwork, physical injury from lifting large or heavy objects
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, emergency action procedure induction
	Minimise prefabricated size and weight of elements
RISK ITEM 6	
Area of Risk	Area 7
Description of Hazard	Manual handling of prefabricated elements on site, physical injury from lifting large or heavy objects
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, emergency action procedure induction
	Minimise prefabricated size and weight of elements
RISK ITEM 7	
Area of Risk	All areas
Description of Hazard	Restricted transport options for material to and from site
Risk level (i.e. Probability x Consequence = Risk level)	Likely / Minor = 12
Control Options	Active site access management planning
RISK ITEM 8	
Area of Risk	All aeras
Description of Hazard	Working off power grid, fuel of generator could ignite
Risk level (i.e. Probability x Consequence = Risk level)	Unlikely / Serious = 14
Control Options	Sealed fuel container
RISK ITEM 9	
Area of Risk	Area 7
Description of Hazard	Physical harm due to cutting and removal of steel elements

	on site
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, emergency action procedure induction
RISK ITEM 10	
Area of Risk	All areas
Description of Hazard	Loading/Unloading of vehicle, risk of injury to personnel during loading/unloading of vehicle due to difficulty of operation & limited situational awareness
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Moderate = 13
Control Options	Safe work practices Contractor/Subcontractor's extant OHS policy
	Enforce strict controls limiting personnel in vicinity of loading/unloading operations. Eg, "no-go" zones.
	Use personnel in "spotter" role/s to warn equipment operators of hazards to personnel
RISK ITEM 11	
Area of Risk	All areas
Description of Hazard	Physical injury from using rock breaking or drilling machinery
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, emergency action procedure induction
RISK ITEM 12	
Area of Risk	Area 11
Description of Hazard	Physical injury from removal of limestone blockwork
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, emergency action procedure induction
RISK ITEM 13	
Area of Risk	Secret Tunnel

Description of Hazard	Physical injury from partly collapsing tunnel roof
Risk level (i.e. Probability x Consequence = Risk level)	Almost certain / Serious = 23
Control Options	Safe work practices, First aid kit, emergency action procedure induction
	Access only with an experienced Geotechnical professional
	Active work stage planning before commencing works on site. Use personnel in "spotter" role/s to supervise
RISK ITEM 14	
Area of Risk	All areas
Description of Hazard	Working in proximity of cliff edges
Risk level (i.e. Probability x Consequence = Risk level)	Likely / Serious = 21
Control Options	Safe work practices, First aid kit, emergency action procedure induction
RISK ITEM 15	
Area of Risk	All areas
Description of Hazard	Chemicals used in workplace
Risk level (i.e. Probability x Consequence = Risk level)	Moderate / Serious = 18
Control Options	Safe work practices, First aid kit, dedicated cleaning station. emergency action procedure induction
RISK ITEM 16	
Area of Risk	
Description of Hazard	
Risk level (i.e. Probability x Consequence = Risk level)	
Control Options	

7. CONCLUSION

This Safety in Design review has sought, so far as reasonably practicable, to involve the participation of relevant project participants, including clients, to mitigate or eliminate hazards through design where possible and draw attention to those which remain as High Risks, Significant Risks or risks for which no controls have been applied

For any ensuing design it is strongly recommended that this Safety in Design review be reviewed and revised as required to reflect any changes to the defined or assumed design.

The review is current as at the date of issue of this report. Any change to design after this date may have an impact on safety. If such changes are made, they should be referred back to the architect. Any changes made to a design without the architect's knowledge removes the architect's ability to consider the risk issues further. The Safety in Design review is based on design scope which is within the architect's control.
