

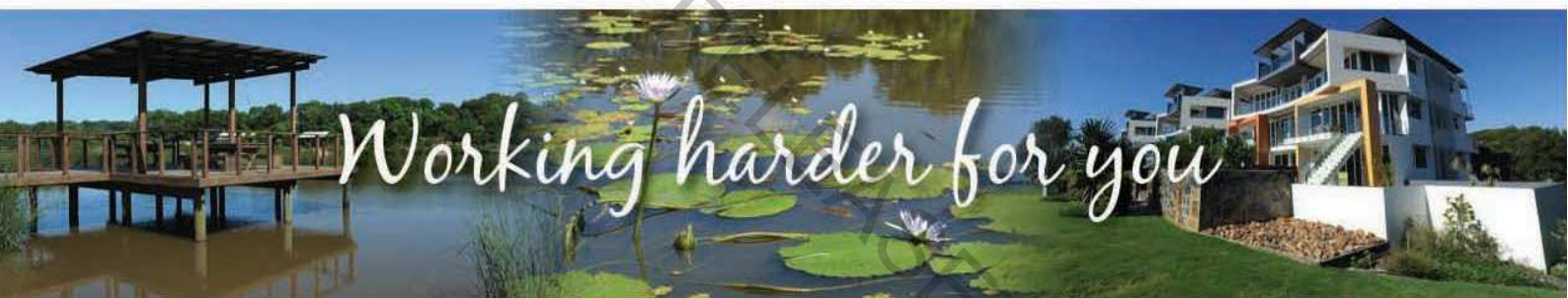
ADMINISTRATIVE



COVEY

ASSOCIATES PTY LTD

Consulting Engineers



CONSULTANCY STRUCTURAL ENGINEERING REVIEW

FOR

SUTTONS BEACH PAVILION 1

AT

MARINE PARADE, SUTTONS BEACH, REDCLIFFE 4020

FOR

MORETON BAY REGIONAL COUNCIL (RFQ No. WP195412)

PROJECT No: 202718

REPORT No: 62015RPT

DECEMBER 2020

DOCUMENT ISSUE APPROVAL

Project No: 202718

Title: Consultancy Structural Engineering Review

Client: Moreton Bay Regional Council

Date: December 2020

Issue No: A

Distribution: Moreton Bay Regional Council – One (1) copy
Covey Associates – One (1) copy

© Copyright **Covey Associates Pty Ltd** (2020).

This document is the property of **Covey Associates Pty Ltd**. This document and the information contained in it are solely for the use of the authorised recipient and this document may not be used, copied or reproduced in whole or part for any purpose other than that for which it was supplied by Covey Associates Pty Ltd**. **Covey Associates Pty Ltd** makes no representation, undertakes no duty and accepts no responsibility to any third party who may use or rely upon this document or the information contained in it.

** As per Clause 21 of the Consultant Contract LBUS262-0317/VP195412, Covey Associates Pty Ltd grants to Moreton Bay Regional Council an irrevocable, royalty-free licence to use such Intellectual Property Rights, adapt, reproduce, amend, publish and sublicense such copyright for any purpose for which this document is provided.

COPYRIGHT NOTICE: Parts of this document contain material originally prepared by:

This material is the intellectual property and copyright of Covey Associates Pty Ltd.

Personal Information

Contents

1.0 INTRODUCTION	1
1.1 Site Details	1
2.0 TECHNICAL REVIEW	2
2.1 Defects Affecting Structural Integrity	2
2.1.1 Original Concrete Structure - Suspended slab	2
2.1.2 Rear/Wet/Western Wall	3
2.1.3 Concrete Beam in PWD Toilet	4
2.1.4 Other Pavilion 1 Defects Tabulated	5
2.1.5 Structural Components Damaged by Water Ingress	6
2.2 Refurbishment and Heritage Issues and Concerns	8
2.2.1 Rear Wall Replacement Clash with Heritage Stairs	8
2.2.2 Repair or Replacement of Concrete Beam in PWD	8
2.2.3 Other Heritage Issues Tabulated	9
2.3 Structural and Heritage Recommendations	10
3.0 SERVICES	11
3.1 HYDRAULIC AND WET FIRE SERVICES	11
3.1.1 LOWER STOREY HYDRAULIC SERVICES	11
3.1.1.1 Sanitary Drains	11
3.1.1.2 Water Supply	11
3.1.1.3 Fire Services (Wet Fire)	11
3.1.1.4 Trade-Waste Services	12
3.1.1.5 Rainwater Collection Drains	12
3.1.1.6 Roof Water Collection Gutters	12
3.1.2 UPPER LEVEL	12
3.1.2.1 Sanitary Plumbing	12
3.1.2.2 Water Supply	12
3.1.2.3 Fire Services (Wet)	12
3.1.2.4 Trade Waste Services	12
3.1.2.5 Rainwater Collection	13
3.1.2.6 Roof Water Collection	13
3.1.3 SITE STORMWATER COLLECTION	13
3.1.3.1 Lower Level	13
3.1.3.2 Upper level	13
3.2 INSPECTION	13
3.3 Electrical Services	21
3.4 MECHANICAL SERVICES	25

3.5 Services summary and recommendations	31
3.5.1 Hydraulic services summary and recommendations	31
3.5.2 Wet fire summary and recommendations	32
3.5.3 Electrical summary and recommendations	32
3.5.4 Mechanical summary and recommendations	32

Table 1 Additional Defects Identified	5
Table 2 Components Damaged by Water Ingress	7
Table 3 Other Heritage Issues	9
Table 4 Inspection Findings	13
Table 5 Electrical Services	21
Table 6 Mechanical Services	25
Table 7 MBRC Planning Scheme Overlays.....	35
Figure 1 - Site Location	2
Figure 2 – MBRC Planning Scheme Zoning.....	34
Figure 3 Heritage and Landscape Character Overlay	35
Figure 4 – State Heritage Overlay	36
Figure 5 – Erosion Prone Area Overlay.....	36
Figure 6 – Coastal Management District Overlay	37
Figure 7 – Medium Storm Tide Inundation Area.....	37
Figure 8 - High Storm Tide Inundation Area	37
Figure 9 – State Controlled Road Overlay.....	37
Figure 10 – Extract from Section 5.7 Building Work	38
Figure 11 – Extract from Section 5.5.9 Recreation and Open Space Zone	40
Figure 12 - Extract from Table 5.7.1 Building Work	40
Figure 13 – Levels of Significance	42

TECHNICAL REVIEW

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

LIST OF APPENDICES

APPENDIX A

List of Referenced Documents Provided by MBRC

ADMINISTRATIVELY RELEASED BY MBRC 2-2-22

EXECUTIVE SUMMARY

This report relies upon the data from numerous previous inspections, investigations, structural condition audits, defect reports, into the structural and non-structural components of the aging Pavilion 1 building. Various documents from the past 10 years were reviewed. The major issue has been prolonged water ingress. This has resulted in many reported failures including the roof, external cladding system, wall cladding, glazing, balcony flooring, awnings and parapets, retaining walls. More invasive investigations revealed that the water ingress has led to significant structural issues in some cases. A number of structural and non-structural issues and inadequacies were reported.

Major Structural, Functional and Safety Issues Include:

- Upper-level timber wall framing – structurally inadequate (wet and dry rot in timber framing members)
- Rear/Western retaining wall – functionally inadequate (leaks)
- Handrails and balustrade – structurally inadequate (corrosion to rail and connections)
- Concrete beam in PWD – Structurally inadequate – spalling concrete, corroded reinforcement - currently propped
- Steel floor beam connection - unfit for purpose - to be replaced

Other Water Ingress Issues Affecting Secondary Structural Elements and Non-Structural Elements Include:

- Roof sheeting – requires replacing
- Roof framing potentially affected by water ingress and lack of support from rotting wall framing.
- Upper-level wall cladding – to be replaced
- Upper-level glazing – to be replaced
- Façade, awnings, parapets to be removed and replaced
- Lower-level wall framing and cladding – must be removed and replaced
- Suspended slab likely to be affected by leaking balcony tiles and flooring.
- Upper-level roof framing support and tiedown compromised by inadequate wall framing.

A brief high-level review of the mechanical, hydraulic and electrical services was also conducted as part of this report. This revealed a number of issues requiring replacements and further investigation as well as some safety concerns.

Pavilion 1 Services Unknowns:

- Inground drains integrity, materials and life span – need CCTV of pipework
- Services fire safety audit be conducted
- Full services audit recommended also for electrical and mechanical
- Pressure testing of water supply recommended

Pavilion 1 Services Replacements:

- Replace water supply pipe work back to authority meter if refurbishment option is undertaken
- Replace box gutters and provide overflows
- Replace all eaves gutters
- Replace external light fittings
- Mechanical plant supports breaking down and corroding – full check and replace as required.
- Exhaust fan and duct strengthening repair including electricals.

TECHNICAL REVIEW

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

Pavilion 1 Services Safety issues:

- Fire hose reels not compliant
- Fire hydrant cover to building not to current Australian standards.
- Airconditioning systems likely don't meet current Australian standards and further investigation is required.
- Mechanical ventilation may be required in amenities – further investigation is recommended.
- Airconditioning systems adequacy for acceptable quantities required by current Australian standards – checks required.
- Corroded fan filters require servicing or replacement.
- Wet air quality capacity and audit to be conducted.

A brief high-level review of the potential planning requirements was also conducted as part of this report. Based on the three options indicated in the tender documentation. Which of course is to be confirmed with a council planner, heritage officer and extensive community consultation.

- **Option 1** – Accepted Development if a cultural heritage conservation management plan is approved by Council and complies with the relevant codes
- **Option 2** – Code Assessable Building Works Application if no increase or change in use
– Code Assessable Material Change of Use if increase or change in use
- **Option 3** – as per Option 2.

The Scope of cost estimates has been increased to include Pavilion 2 and a life cycle costing analysis based off previous reports supplied by council. This document is to be supplied at a later date.

1.0 INTRODUCTION

Covey Associates Pty Ltd (CA) was commissioned by Moreton Bay Regional Council (MBRC) on August 2020 to undertake a Technical Review of existing reports undertaken in relation to issues identified at Pavilion 1, Suttons Beach, Redcliffe. The review will help MBRC to identify the best investment option. This report is to assist in determining whether the Pavilion can be repaired or if it needs to be demolished and rebuilt.

The scope included the following:

- Technical Review of reports that have been obtained to date and a conclusive recommendation regarding both structure and heritage considerations.
- High level analysis of Services (electrical, mechanical, fire services and hydraulics)
- High level analysis of Development Assessment/Planning requirements
- Provide a basic 3D image of what the imagined site may look like for presentation purposes.

This report undertakes a Technical Review as per the Scope identified in MBRC's tender documentation. The review has been based upon documents provided and outlined in the tender document and additional documents provided during the assessment period. A list of the reviewed documents is provided in Appendix A. In preparing this report Covey Associates have relied upon data, plans, photos, analysis, comments and recommendations, reports, correspondence and other information provided by the client. Covey Associates has not verified the accuracy or completeness of this data. The statements, opinions, facts, information, conclusions and/or recommendations in this report are based in whole or in part on the data. No new structural investigations have been carried out, all items listed here are taken from the attached references – locations and further details, recommendations etc of these are all itemised in the previous reports and will not be duplicated. Covey Associates will not be liable for any conclusions drawn from this data or other information not provided or misinterpreted.

1.1 Site Details

Pavilion 1, Suttons Beach is located at 50 Marine Parade Redcliffe, refer Figure 1. Real property description is Lot 1 RP30381 and the site has an area of 27,822m². Pavilion 2 is located to the north of Pavilion 1. Both Pavilions are located east of Marine Parade along Suttons Beach beachfront. Pavilion 1 is currently used as a restaurant and events space. Pavilion 1 is listed on the MBRC local heritage register and was constructed in 1937. Various refurbishments and additions have been made to the pavilion since its initial construction in 1937. It is understood that substantial modifications have occurred since its construction.



Figure 1 - Site Location
(courtesy nearmap 11-11-2020).

2.0 TECHNICAL REVIEW

Pavilion 1 is reaching 90 years old and has had numerous extensions completed during this time, the most recent of which being is over 13 years ago. Extensions and additions details and dates can be found in reference 1 in Appendix A. This building appears to have had an extensive history of severe water ingress issues for over 10 years. Numerous reports and investigations have been carried out by various engineers and technical consultants/contractors, some of these documents are referenced in Appendix A. A number of the defects reported, affect the structural integrity of Pavilion 1 (See items in Section 2.1 below). A number of issues arise when considering replacing or repairing these items (See Section 2.2 below).

2.1 Defects Affecting Structural Integrity

There are a number of areas in which the structural integrity of the building appears to be an issue, the most serious of which are described in subsections below, while others are listed in Table 1. Refer to the previous reports listed in Appendix A for all locations, further details, assessments and recommendations of these areas.

2.1.1 Original Concrete Structure - Suspended slab

The upper level suspended slab forms part of the original structure which has been described as *being at or approaching end of life which will result in accelerated degradation*. (Page 4 of Ref 1 in Appendix A).

This “end of life” statement was clarified in Ref 5 of Appendix A as *the design serviceable lifespan of the structure. At a structures end of serviceable life you should expect the onset of more significant, ongoing and sustained repair works requirements (this is not a line in the sand and it may not be immediate, just as it may already be occurring), for concrete this would be the onset and required remediation of reinforcement corrosion leading to concrete spalling.* There is already evidence of concrete spalling at 3 existing wall locations (see section 2.1.2 and 2.1.3 below).

A further visual only investigation was carried out in 2020 and *did not observe widespread spalling in the suspended slab but did note old repairs and patching to the slab soffit.* They considered the slab to be in fair condition and not at imminent risk of structural failure. However, it did recommend *audit testing such as half-cell potential, carbonation depth, Schmidt hammer testing and compressive strength tests from cored samples, to gauge the future life expectancy of the slab before committing to any significant redevelopment of the building.*

Reference was also made to the concrete beam being part of this suspended slab which is spalling and corroded (See section 2.1.3 below.)

Given the age of the structure, it is likely that the original concrete has undergone some degree of carbonation and is low strength. Furthermore, the condition of reinforcement is unknown and of concern due to the ongoing water ingress issues mentioned in the referenced reports in Appendix A.

A detailed condition assessment to determine the anticipated residual life of the original concrete structure should be undertaken. Ideally all concrete components of the original structure should be included in these tests to provide a comprehensive assessment of the condition of the structural concrete components. These components include the slab on ground, suspended slab and beams, concrete walls and columns. The previous reports referenced in Appendix A detail concerns mainly regarding the suspended slab and rear retaining wall. Investigating these two main concrete components as a priority initially would minimise cost. The investigation could be staged:

Stage 1: to include preliminary testing with the intent of determining the current condition of and if there is any merit in retaining the suspended floor and rear retaining wall. This would include but is not limited to dust sampling or small cores, breakout concrete to check cover to and condition of reinforcement, carbonation depth tests, Schmidt hammer etc.

Stage 2: a more detailed assessment only to be undertaken if stage 1 determines there is merit in retaining these elements. This would include but is not limited to core sampling for accurate strength assessment, Ground Penetrating Radar (GPR) assessment to detail reinforcement over a wide area, full measure up, structural analysis etc.

2.1.2 Rear/Wet/Western Wall

The rear/wet/western wall is a reinforced concrete retaining wall that was part of the original 1930's construction. It has 3 main functions: firstly, to retain the embankment, secondly to prevent water ingress to ground level tenancies (kitchen etc) and thirdly to support the upper-level suspended slab and structure above. The previous reports referenced in Appendix A note that the waterproofing of this wall has failed allowing water ingress along its full extent, affecting;

1. the internal flooring and kitchen fit-out,
2. rotting the internal wall framing and its cladding,
3. the structural integrity of the wall itself – which is somewhat unknown due to limited access.

Both surface water runoff and ground water levels contribute to this issue. Remedial options to repair this wall were investigated in 2016, however due to the building configuration, mitigation measures were limited and could not be 100% guaranteed to fully mitigate water ingress unless a secondary wall is constructed behind in conjunction with a dewatering system. See Reference 1 in Appendix A page 15 *FS1499BB MBRC CI 4.3 Appendix E 2016*. Note part of the Pavilion 1 upper floor (toilets, kitchen and plant room) overhang the middle section of this wall which would imply that either these areas must be demolished to install a continuous secondary wall or a dewatering system be installed for this segment. Hence this system may not have a continuous wall and would still require adequate drainage/dewatering which may not be considered absolute. Also, this secondary wall would clash with the existing entrance stairs from Marine Parade that have an 'exceptional' heritage grading and should be retained – See Section 2.2.1 Rear wall replacement clash with heritage stairs.

As much of this wall was not able to be accessed due to kitchen fit out, the extent of visual assessment has been limited in previous reports and remains somewhat unknown. However, a clear indication of structural issues including spalling concrete and corrosion of reinforcement can be seen at two locations;

1. one being the view of the rear wall in the ceiling space at Defect D2 Ref 1 and
2. the other being in the similarly constructed link structure wall at Defect D11 Ref 1.

Further structural damage to the rear retaining wall can be expected when considering the damage to internal wall framing and cladding at Defect D5 ref 1. The extent and implication of this structural damage in terms of the walls' other functions in supporting the upper floor slab and retaining is also unknown. In order to better quantify this strength checks on this wall should be carried out similar to the slab above.

Similarly, the link structure (which was not part of this tender but will be mentioned here) requires replacement or remedial works to mitigate water ingress. (Ref 1 in Appendix A).

In addition to the above, during the brief site visit it was noticed that the upper level Western wall at the plant room had slight cracks in the render zigzagging/stepping horizontally and vertically along the block which could indicate some settlement of this slab and/or foundation.

2.1.3 Concrete Beam in PWD Toilet

This overhead beam is considered to have "structurally failed" – See email in Reference 1 in Appendix A page 35 of FS1499FL-SER01 Rev1 Email from Personal Information (FSACE) dated 23 January 2020 Appendix C. The corrosion on the exposed steel reinforcement bars is anticipated to have extended along the steel bars some distance into the concrete beam and would need further investigation to clarify extent of remedial works. This would likely require the removal of existing concrete to expose clean uncorroded bars, removal of corrosion on all bars, measuring cross sectional area loss of bars, determine loads on beam, performing structural analysis on beam with reduced steel, design additional steel as required, replace or install additional steel reinforcing or replace concrete and install carbon fibre strips to increase beam flexural capacity or demolish and replace with new. Prior to going down this path it would be best to carry out similar concrete tests as per section 2.1.1 above in order to determine the current condition of the concrete and if it is even worth repairing.

Other non-structural issues associated with the repair or replacement of this beam are discussed in section 2.2.2.

2.1.4 Other Pavilion 1 Defects Tabulated

Table 1 below list other defects obtained from the review of the consultant reports listed in Appendix A and identified during site visits.

Table 1 Additional Pavilion 1 Defects Identified

Location	Defect	Issue/Implication	Reference
Slab on ground	Numerous Cracks less than 1mm wide	May have been present since construction or may have occurred from movement. Potential future source for ground water ingress.	Ref 1. In Appendix A Section 8 of appendix F.
Original stairs from Marine Pde	Cracks in steps and rendered side walls. Rusted rails and connections	Repairable.	Ref 1 in appendix A Photos 2.49 and 2.47 Appendix G.
Suspended Slab	Aged – reaching end of life.	Requires testing such as half-cell potential, carbonation depth, Schmidt hammer, core samples etc to gauge future life expectancy.	Ref 1 in Appendix A Ref 6 in Appendix A
Balcony	Balcony floor	Replace entire waterproofing system including tiles, surrounding walls, and glazing. Replace of the above and install overflows.	Page 18 in Appendix F of reference 1.
Steel floor beam	Connection supplementary floor beam to wall appeared unfit for purpose. Corrosion to unprotected steelwork.	Remove finishes, faming and services to enable access to connection for design and installation of upgraded connection.	Ref 2 Appendix A see Defect D3 Location G8
Upper-level walls	Water damage to full extent of upper-level wall framing. Severe rot causing Structural damage to bottom plate and lower portion of load bearing studs.	Removal of all external cladding. Replace all timber studs, plates, tiedown etc. Check and upgrade tiedown to current standards. Install new external wall membrane and cladding. Replace/repair internal wall cladding as required.	Ref 2 Appendix A see Defect D10 Location F4 to F9
Parapets	Cracking in render, gaps in joints and flashings allowing water ingress.	Water ingress to parapet structural framing, floor framing and	Ref 1 in Appendix A See page 16 of Appendix F.
Balustrade walls and rails	Severe corrosion to handrail and bolted connection	Balustrade exposed to salt spray and weather. Handrails are a safety requirement. Handrails and connections to be replaced.	Ref 2 in Appendix A. See D11
All upper-level walls and glazing	Dry rot, wet rot of timber framing and cladding. Glazing leaks. Timber studs and bottom plate structurally inadequate from rot.	All Upper-level wall framing (including top & btm plates, wall studs and tiedown), wall cladding and glazing to be replaced.	Ref 1 Appendix A & Section 4.2 Ref 5 Appendix A

Location	Defect	Issue/Implication	Reference
Façade elements	Degraded, cracked, delaminating, spalling Water penetration, deteriorated foam.	Remove façade and foam awnings, check structural members. Repair/replace structural members as required.	Ref 1 Appendix A (Section 3.6) Ref 2 Appendix A (defect D19)
Awnings	Degraded, delaminating, spalling render, cracks allowing water ingress	Continued water ingress will rot structural members and rust steel connections. Remove and replace all awnings.	Ref 2 Appendix A See G9 and D19
Roof Framing	Visible deformation of roof sheeting-possible failed structural members. Roof framing condition to be checked. Structural adequacy for future loads to be checked.	Possible replacement of Hardwood roof members that have rot or failed. Possible upgrade of Timber framing to support new plant, platform or solar.	Ref 2 Appendix A Figure 12
Roof	Corroded sheeting, leaks	Roof to be replaced – New Sheeting, guttering, fixings, mechanical plant platform etc.	Page 36 & page 4 Appendix D of Ref 1 in Appendix A
Link Structure	Corrosion of original concrete reinforcement, Undermining original concrete.	Demolish access path. Repair/replace corroded concrete wall. Waterproof etc.	Ref 2 in Appendix A D11 to D14. Ref 1 in Appendix A Page 30.
Access & Egress	Disabled access issues	Requires Assessment by building designer or certifier. Likely requires redesign.	Ref 1 Appendix A
PWD	Non-compliance with current PWD codes	Requires redesign and refurbishment – existing walls/areas restricts options.	Ref 1 Appendix A – page 31 Section 4.4

Note that the *upper-level wall framing to the full perimeter is deemed to be degraded, in several areas the bottom plate has completely collapsed rendering roof framing support compromised.* (page 29 of Ref 1 in Appendix A.) Furthermore, rotten framing affects tie down and concern was indicated in Ref 5 of Appendix A that *the event which would lead to an upper-level failure is likely to be a significant wind event.* Hence the upper-wall framing is a major structural issue and must be replaced as indicated in table 2 below.

2.1.5 Structural Components Damaged by Water Ingress

It is very apparent from the previous reports undertaken by various engineers and contractors (see reference list in Appendix A) that water ingress has been a major issue and has resulted in a number of structural issues of concern and potential concern. That is unseen structural components concealed by cladding, linings etc could be affected by water ingress.

Note that the likelihood of damage to structural members from continued water ingress is high. Extensive damage has “already been confirmed” in previous reports and investigations.

Table 2 below summarizes the damaged components that are allowing water ingress and **must be replaced**. The corresponding/supporting structural components affected by this water ingress are also identified with regards to recommendations, probability of damage, replacement and requirement for further investigation.

Table 2 Components Damaged by Water Ingress

Components leaking	Structural components affected by Leak	Recommendations already made	Likelihood of damage	Further investigation required
Roof sheeting	Roof framing and connections	Replace roof sheeting and possibly framing. Check structural roof framing once exposed.	HIGH	YES during repairs
Level 1 Wall Cladding	Wall framing, top and bottom plates, tiedown	Remove all cladding and replace wall framing.	Already Confirmed	NO
Level 1 glazing	Wall framing, bottom plate, connections	Remove all glazing and cladding and replace.	Already Confirmed	NO
Level 1 parapet cladding	Structural framing and connections	Extent of damage unknown. Requires further investigation.	HIGH	YES during repairs
Level 1 balcony tiles/flooring	Suspended slab, floor framing, lower wall framing	Previous investigations reveal some issues and recommend removing tiles and waterproofing deck. Further investigation of slab.	HIGH	YES during/before repairs. Invasive investigations to determine current condition and estimate remaining service life
Level 1 awning cladding	Awning support framing and connections, potentially ground floor wall framing	Replace awning cladding. Check structural framing, connections and ground floor wall framing supporting the awning.	HIGH	YES during demolition and repairs
Water proofing failed on Ground level Western retaining wall	Original concrete and Besser block wall, reinforcement. Internal fit-out and wall framing/cladding	Remove/replace/install secondary wall behind with dewatering system. But this is limited by building layout and not 100% Guaranteed.	Original wall has ongoing water ingress will damage structural wall	YES Check integrity of existing wall with invasive investigations
Link Structure waterproofing failed on Block wall and original wall	original concrete wall, Besser block wall, reinforcement	Repairs and construction of a 2 nd retaining wall behind.	ongoing water ingress will damage structural wall	YES Check integrity of existing wall with invasive investigations

A number of building elements, fit-out and services must be removed to access other areas for repair or investigation. These elements could effectively be concealing other issues not yet seen; hence the actual extent of rectification works is unknown which is considered a risk.

2.2 Refurbishment and Heritage Issues and Concerns

Note that the Heritage Assessment by Converge included in Appendix I of Ref 1 in Appendix A, highlights the impact that various modifications over the years have detracted from the heritage value of the original design intent. The heritage significance is limited to a more cultural and community perspective for “*recreational purposes*” ... “*demonstrating the evolution of the history of Redcliffe as a seaside resort and reflecting the changes in the region more broadly*”. Pavilion 1 as a whole, is classed as having “Low” heritage significance. Whereas the stairs from Marine Parade are graded “Exceptional”.

Further heritage and other considerations to the major issues in Sections 2.1.1 and 2.1.2 of this report are detailed in the proceeding subsections and others listed in Table 3.

2.2.1 Rear Wall Replacement Clash with Heritage Stairs

The Rear/Wet/Western Retaining wall itself has a heritage rating of ‘Moderate’ but is mostly unseen due to ground level and kitchen fit-out.

Water ingress along the rear/wet/western wall is a major issue as already discussed in section 2.12 above.

The abovementioned best option of installing a secondary wall behind to “*remove the possibility of water ingress or water damage to the existing building*” would clash with the original stairs from Marine Parade requiring removal of part of them. Note that these stairs were the only ‘Exceptional’ graded element of heritage significance identified in *Former Suttons beach bathing Pavilion Heritage Assessment Report No. 19045 Issue 1 dated 13/11/2018 by Converge Heritage + Community*. Section 5.1, page 24 of this report states: “*The stairs from Marine Parade retain much of their original integrity and should be preserved.*”

Also, it is assumed that in order to install the secondary drainage wall mentioned above, along the full Western side of Pavilion 1 that the Upper Level toilets, plant room and part of the food prep area would require removal and reinstatement. This means removal of the ‘High’ heritage graded upper level Western wall around the plant room etc. This wall is somewhat visually impaired by services, ventilation grate and doors anyway. See Table 3 below.

2.2.2 Repair or Replacement of Concrete Beam in PWD

In repairing the concrete beam in PWD the concrete would need to be scabbled back to determine the extent of corroded reinforcement, which is likely to be significant. If intact, the existing reinforcement would need to be analysed for structural adequacy. Hence a rebuild of this beam is likely.

This beam was identified as being part of the original structure, however the proposed repair installation of carbon fibre bandage would detract from any heritage value visually.

Fire rating and head height consideration would also be issues to check. (Ref 1 Appendix A See page 35 Appendix C).

Also, the PWD toilet itself which is currently no in use is non-compliant with AS1428.12009 (Ref 1 Appendix A - see section 4.4 page 31).

2.2.3 Other Heritage Issues Tabulated

Table 3 Other Heritage Issues

Location	Heritage Classification	Comments	Implications
Pavilion 1	Low	Difficult or unable to be interpreted, not an important function, subject to high alteration.	May be altered or removed if there is sufficient justification to do so.
Ground Floor			
Southern Stairs	Moderate	Have cracks and some spalling and rusted rail connections requiring repairs/replacements.	Require removal to access western wall – secondary wall installation. No comments on treatment in Heritage report in Appendix I.
Western Wall	Moderate	Unseen – covered by ground and internal cladding. Water ingress through wall.	Major issue - Water ingress – repair or replacement required. Although repair options reported are inadequate. A secondary wall installs option (option 3) noted as best option in 2016.
Rounded Kiosk Corners	Low		Heritage report interpreted as item can be removed
Modern extensions	Intrusive		Heritage report interpreted as item can be removed
Upper Level			
Verandahs	Intrusive		
2 verandah Columns	Moderate	These columns are on the corners of the central dining area and are boxed in by glazing and wall panels.	Columns are connected to original suspended concrete slab that is near the end of its' design life and needs to be assessed. Columns would need to be removed with slab if slab is to be demolished and replaced.
Part South wall	High	Appears rendered and has electrical box, electrical conduit, lights, fittings, horizontal drainage pipes and downpipes.	Wall above/behind original leaking retaining wall that must be removed/replaced or Plant room must be removed to provide access for "best option 3 install secondary retaining to create drainage void behind existing ground level western wall.
Western wall / Plant room wall	High	Practically inaccessible, rendered, has downpipes and stormwater pipes crossing it. Has door and large ventilation grate in each side.	Wall above original leaking retaining wall that must be removed/replaced or Plant room must be removed to provide access for "best option 3 install secondary retaining to create drainage void behind existing ground level western wall.

Location	Heritage Classification	Comments	Implications
Part Northern wall	High	Is largely unseen – adjacent lower roof and drainage void with solid high barrier/fence. Has large modern windows in it.	As above and reports deem all upper wall framing to be degraded and in several locations: structurally unsound due to water ingress and rot, requiring all wall framing and cladding to be replaced.

Note: the information in the above table reference the FSA report (Ref 1 in Appendix A) and site observations

2.3 Structural and Heritage Recommendations

As can be seen from the above, repairing this building is very problematic, a lot is required to be removed and replaced and it is highly likely that additional issues will be uncovered during this process. Furthermore, the previous reports included in Appendix A partly detail how expensive it is even without even considering the concrete repair costs, unknown costs and monitoring costs.

The various heritage gradings listed in Table 3 Above “*entail different management requirements. For example – an element of exceptional significance should be retained and conserved in-situ with as little intervention as possible, whereas an element of low significance may be altered or removed if there is sufficient justification to do so.*”

It is on this basis that primary consideration be given to preserving the original stairs from Marine parade over and above the actual Pavilion 1 building.

Other major factors influencing any recommendations are:

- Age of structure and expectation of more significant, ongoing and sustained repair works as it approaches end of serviceable lifespan, which appears to have already begun when considering the extent of required repairs including: new roof sheeting, new roof framing, new mechanical plant and platform, replacement of all upper level wall framing, cladding and glazing, further investigation of suspended concrete slab, Concrete beam repair/replacement, replacement of balcony flooring and waterproofing, new balustrades, new awnings, kitchen replacement, ground floor non-loadbearing wall and cladding replacement,
- Rear/Western wall failure to prevent water ingress and the inadequacy/rejection of repair options
- Collateral damage to exceptional heritage stairs for best option of installing secondary Western wall.
- Additional issues including access and egress, PWD compliance
- General heritage grading of Pavilion 1 is ‘low’
- Interpretation and analysis of results from suspended slab tests
- Likelihood of additional structural issues being exposed during removal and repair works is high. Hence there is an unavoidable risk of unknown issues and costs associated with keeping and refurbishing the building.

It is difficult to be conclusive in terms of a definitive “demolish and rebuild or refurbish” assessment, however, in consideration of the abovementioned structural issues, the complications associated with adequately preventing water ingress, the number of other components requiring replacement/repair and the age of the structure, the risk of unknown issues surfacing during repair works, etc, it is more likely that the better way forwards is to demolish the existing Pavilion 1 and build a new Pavilion. Pending the suspended slab test results and estimation residual life, cost and achievability of waterproofing the rest of the building and the real cost of refurbishment (some of which is unknown until removal of awnings, roof sheeting and wall claddings occurs to further inspect and replace structural framing). A number of building elements, fit-out and services must be removed to access other areas for repair. Further fuelling the case for a complete “demolish and rebuild”. Of course, further investigations and community consultation as indicated in the previous reports should be undertaken.

3.0 SERVICES

3.1 HYDRAULIC AND WET FIRE SERVICES

Covey Associates Pty Ltd attended the site on 8th October 2020 and met with the MBRC representative **Personal Information**. The purpose of the site inspection was to review the existing hydraulic services, electrical services and mechanical heating, ventilation and air conditioning services and services associated with Pavilion 1 area of the Suttons Beach complex. The complex is divided into two buildings Pavilion 1 and Pavilion 2. The area known as Pavilion 1 comprises of two storeys. The lower story is tenanted by Pavilion Bar and Kitchen, Fish and Chippery and the upper floor is tenanted by the Bathers Bar.

3.1.1 LOWER STOREY HYDRAULIC SERVICES

3.1.1.1 Sanitary Drains

The Pavilion 1 building is provided with a connection point to the Unitywater sewer network on the southern side of the building. (Manhole 2699714) The drainage picks up the discharge from the grease arrestor trap located on the southern side of the eat out area of the Pavilion Bar and Kitchen, the lower-level toilet amenity, sanitary services to the kitchen, back of house facilities, sanitary plumbing drainage stacks from the upper level, Female Staff, Male Staff, Council Store Room and public amenities.

3.1.1.2 Water Supply

The Pavilion 1 Building is provided with a metered service connection to the Unitywater water main networks on Sutton Beach Esplanade. The water supply is reticulated to the toilets, bar, kitchens, back of house supplies and risers to the upper-level water supply services. The water supply is reticulated in the ceiling space of the lower level and drops to the fittings in the wall spaces.

3.1.1.3 Fire Services (Wet Fire)

The Pavilion 1 Building is provided with one fire hose reel for firefighting purposes. The fire hose reel supply is reticulated from the water supply to the building. The fire hose reel is located within a purpose-built recess in the eat out area of the Pavilion Bar and Kitchen. The hose reel is located within (4) four meters of the entry into the outdoor eatery area.

The Pavilion 1 Building is provided with fire hydrants in-ground fire hydrants located in the front of the building to the east. These hydrants act as feed hydrants for the attending fire brigade.

3.1.1.4 Trade-Waste Services

The Pavilion 1 Building is provided with a gravity discharge trade-waste line to the grease arrestor located on the southern side of the building. The arrestor is in-ground and provided with gas tight lids. The grease arrestor has a backflow prevention device and hose tap in close proximity for the purposes of washdown during maintenance/ emptying of the trap.

3.1.1.5 Rainwater Collection Drains

The Pavilion 1 Lower-level roof areas are provided with roof water collection pipes connected to the reticulated in-ground roof water and surface water collection pipes. The eat out ground pavements drain to grates and pits connected to the collection pipes.

3.1.1.6 Roof Water Collection Gutters

The Pavilion 1 roof areas drain to eaves gutter systems and box gutter systems. The roof collection areas are a mixture of colourbond roof sheeting and vinyl sails

3.1.2 UPPER LEVEL

3.1.2.1 Sanitary Plumbing

The Pavilion 1 upper-level sanitary plumbing drains at gravity to the lower level in-ground drainage via 100mm stacks located in the back of house services void. These stacks collect waste from the upper-level toilet amenity and the sanitary services in the kitchen and bar area.

3.1.2.2 Water Supply

The Pavilion 1 upper-level water supply reticulates in the lower-level ceiling space and back of house services void and rises in the walls to the upper level to service the fittings.

3.1.2.3 Fire Services (Wet)

The Pavilion 1 Building is provided with one fire hose reel on the ground floor for firefighting purposes. The fire hose reel supply is reticulated from the water supply to the building. The fire hose reel is located within a purpose-built recess in the eat out area of the Pavilion Bar and Kitchen. The hose reel is located within (4) four meters of the entry into the outdoor eatery area.

The Pavilion 1 Building is provided with one fire hose reel on the upper floor for firefighting purposes. The fire hose reel supply is reticulated from the water supply to the building. The fire hose reel is located within the upper floor Kitchen. The hose reel is not located within (4) four meters of the entry into the outdoor eatery area.

The Pavilion 1 Building is provided with in-ground fire hydrants located in the front of the building to the east and on the Unitywater reticulated water mains.

3.1.2.4 Trade Waste Services

The Pavilion 1 upper-level trade-waste drains at gravity to the lower level in-ground trade-waste drainage via 100mm stacks located in the back of house services void. These stacks collect waste from the upper-level kitchen and bar area.

3.1.2.5 Rainwater Collection

The Pavilion 1 upper-level roof areas are provided with roof water collection pipes connected to the reticulated in-ground roof water and surface water collection pipes. The ground level outdoor dining areas pavements drain to balcony grates connected to the collection pipes.

3.1.2.6 Roof Water Collection

The Pavilion 1 roof areas drain to eaves gutter systems and box gutter systems. The roof collection areas are skillion type roof profile and fall to collection gutters to the west of the building.

3.1.3 SITE STORMWATER COLLECTION

3.1.3.1 Lower Level

The stormwater collection pipes on the lower-level discharge to the east into collection pipes and out to ocean outfall.


3.1.3.2 Upper level

The stormwater collection pipes on the upper level pick up several roof water down pipes and discharge via a 150mm stormwater pipe to a collection pit to the south of the building and out onto the kerb side of Sutton Beach esplanade. This then discharges to the east into kerb filed inlets and to ocean outfall.

3.2 INSPECTION

Table 4 provides a record of the findings of the inspection conducted 8th October 2020 with MBRC representative **Personal Information**




Table 4 Inspection Findings

Location	Photo	Description	Comment/ Condition
Lower Level			
Site Sewer Connection	 <p>Figure 1 – Site Sewer Connection</p>	The Pavilion 1 is serviced from the Unitywater sewer main to the south of the building. The approximate location of the property sanitary drains has been indicated in the report provided by FSA Consulting Engineers Dwg No. 17-545-102 refer Appendix A of this report. This is a 150 mm VC sewer main.	The integrity of the site sanitary drainage pipes is not known. We recommend a CCTV investigation be conducted to ensure if further development of the site is proposed that the existing drains would be adequate.

Technical Review

Client: Moreton Bay Regional Council




Location: Pavilion 1 Suttons Beach

Site Storm Water	 <p>Figure 2 – Site Roof water collection pipe</p>	<p>The Pavilion 1 building is serviced by stormwater collection pipes that discharge the collected roof water to ocean outfall. The roof water that falls to the rear of the building on the Marine Parade frontage is collected via a 150mm suspended UPVC stormwater pipe which discharges to a grated surcharge pit and to the kerb frontage on the south western side of the building. Roof and pavement run-off from the front of the building discharges direct to ocean out fall.</p>	<p>The integrity of the site stormwater collection pipes is not known. We recommend a CCTV investigation be conducted to ensure if further development of the site is proposed that the existing drains would be adequate.</p>
Site Water Supply	 <p>Figure 3 – Site water meter location</p>	<p>The Pavilion 1 building is serviced by metered water service on the Marine Parade frontage adjacent to the entry to Suttons Beach. It is then reticulated via in-ground pipe and suspended in the back of house services area</p>	<p>The water meter seems to be in good order.</p>
Site Wet Fire Supply	 <p>Figure 4 – Site Fire Hydrant Location</p>	<p>The hydrants provide a required flow for fire fight purposes. The design is to be in accordance with AS 2419.1-2005 and National Construction Code. At the time of inspection, it was not known the condition or the current fire fight flows and pressures achievable from the main</p>	<p>The current fire fight scenario is not in accordance with the relevant codes. We recommend an assessment should be conducted on the hydrant cover to the building.</p>

Technical Review

Client: Moreton Bay Regional Council


Location: Pavilion 1 Suttons Beach

<p>Toilet Male</p>		<p>The lower-level male toilet was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work run at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2-:2018 – Sanitary and Plumbing and Drainage</p>	<p>The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services</p>
<p>Toilet Female</p>	 <p>Figure 5 - Female toilet Ground Floor</p>	<p>The lower-level female toilet was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work ran at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2-:2018 – Sanitary and Plumbing and Drainage</p>	<p>The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services</p>
<p>Unisex PWD Toilet</p>	 <p>Figure 6 – Unisex PWD</p>	<p>The lower-level disabled toilet was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work ran at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2-:2018 – Sanitary and Plumbing and Drainage</p>	<p>The taps and fittings were decommissioned at the time. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services</p>

Technical Review

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

Pavilion Bar and Kitchen	 <p>Figure 7 – Fire Hose Reel Ground Floor</p>	<p>This area of the Pavilion one lower level was provided with a fire hose reel the fire house reel was not installed in accordance with the National Construction code Part E1 – Fire Equipment</p>	<p>The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services. We recommend a backflow audit be conducted on the fixtures within the kitchen connected to the cold-water supply. An assessment of fire hose reel location and cover should be conducted.</p>
Fish and Chippery	Not photo taken	<p>The cold prep has a number of display fridges. The water supply to the areas was provided by pipe work ran at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2-:2018 – Sanitary and Plumbing and Drainage.</p>	<p>The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services. We recommend a backflow audit be conducted on the fixtures within the kitchen connected to the cold-water supply.</p>
Male Staff Toilets	No Photo provided	<p>The lower-level male staff toilet was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work ran at high level in the ceiling over and dropped to service.</p>	<p>The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services</p>

Technical Review

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

Female Staff	No Photo provided	The lower-level female staff toilet was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work run at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2:-2018 – Sanitary and Plumbing and Drainage	
Council Staff	Area not assessed		
Back of House	No Photo provided	The back of house was provided with the lower-level hot water service which reticulated hot and tempered water to the facilities. This hot water indicated that the units had been installed in 03 September 2009 (i.e. (11) eleven years old. The associated thermo lagging had been removed from on the hot water flow and return services pipe. The water supply to Pavilion One entered through the back wall of the back of house and reticulated to cold fittings and the hot water plants on both levels. The water supply to the areas was provided by pipe work ran at high level in the services void of the back of house and dropped and rose to services. The drainage seems to be in good order and in accordance with AS3500.2:-2018 – Sanitary and Plumbing and Drainage	The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services. The hot water units located in the services duct have an install date of 03 rd September 2009. This puts the supply unit at around 11 years of age. We recommend if the building is to be refurbished that the hot water generation plant be replaced. The associated thermal insulation to some of the hot water service pipes had been removed and will require replacement. We recommend a backflow audit be conducted on the fixtures within the Back of House. connected to the cold-water supply. The waste to the cleaners were in working order and satisfactory. The waste tundish collection point for the cold room will require repairing.

Technical Review

Client: Moreton Bay Regional Council




Location: Pavilion 1 Suttons Beach




Upper Level			
Catering Kitchen/ Food Preparation	No Photo provided	The upper-level staff room was provided with a toilet suite and basin. The water supply to the areas was provided by pipe work run at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2:2018 – Sanitary and Plumbing and Drainage	The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services. We recommend a backflow audit be conducted on the fixtures within the kitchen connected to the cold-water supply.
Female Public	No Photo provided	The upper-level female public toilet was provided with a toilet suites and basins. The water supply to the areas was provided by pipe work run at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2:2018 – Sanitary and Plumbing and Drainage	The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services. We recommend a backflow audit be conducted on the fixtures within the kitchen connected to the cold-water supply.
Male Public	No Photo provided	The upper-level public toilet was provided with a toilet suites, urinals and basins. The water supply to the areas was provided by pipe work run at high level in the ceiling over and dropped to services. The drainage seems to be in good order and in accordance with AS3500.2:2018 – Sanitary and Plumbing and Drainage	The taps and fittings were in working order. If the building was to be refurbished, we would recommend replacement of the sanitary fittings. Hot water used would need to be tempered in accordance with AS 3500.4:2018 – Heated Water Services
Upper-Level Balcony one and two	No Photo provided	The upper-level balcony is provided with a paved impermeable surface and has a full height solid balustrade. The area is open to the sky and is provided with 100mm balcony outlets. The surface is graded to the outlets. This area has no	The outlets provided seem to be sufficient to cater for the experienced rain events that may fall on the area. It would be a recommendation to provide the area with some type of overflow system to


Technical Review

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

		provision of overflow relief in the event the drain outlets are blocked. The outlets drain to roof water collection pipes to the lower level.	cater for any possible blockages
Upper-Level Dinning roof allowing access to balcony one and two	 <p>Figure 8 – Damage to Roof Sheeting</p>	This area of roof is of material of Colourbond roof sheeting pitched toward a collection box gutter towards the Sutton esplanade rear of the building. There is no provision in the design for an overflow in the gutter	Due to the age of the installation, it is recommended the gutter be replaced and provided with an overflow to the southern end of the gutter.
Upper-Level roof sheeting over the dinning amenities and food preparation area	 <p>Figure 9 – Faulty installation with penetrations through pan of roof sheet</p>  <p>Figure 9.1 – Delapidated water proofing around services penetrations</p>	This area of roof is of material of Colourbond roof sheeting pitched toward a collection eaves gutter towards the Sutton esplanade rear of the building. The gutter is serviced by a series of PVC downpipes located down the external walls of Pavilion One. Some of these collection down pipes. Both the gutter and roof are showing signs of weathering. The roof sheet pans have been damaged in certain areas approx. 50% plus by roof traffic. The supporting structure under the roof sheets shows sign of deflection and sagging and hence the roof sheets now hold water within the pans of the sheets. The roof sheets in areas are not a continuous piece from the top to the bottom of the roof. Numerous roof screws have worked loose overtime	We recommend in the interim of total roof replacement that all loose screws be replaced or fastened tight; the short sheets be replaced with roof sheets the full length of the pitch of the roof. We recommend roof structural supports be placed on the bottom side of the penetrations. We recommend as a suitable



<p>Upper-Level Roof services flashings and supports</p>	 <p>Figure 10 – Loose fasteners on the roof</p>  <p>Figure 10.1 – Damage to Roof Sheeting</p>  <p>Figure 10.2 – Incorrect roof penetration flashing causing roof water pools</p>	<p>The roof has various items installed upon and penetrating the roof sheeting. There are several ventilations whirly birds installed. There are a number of sky lights installed through the roof and there are a number of mechanical plant equipment pieces installed upon the roof sheets. The plumbing services penetrate the roof sheets. These all have roof flashings associated with the installation.</p>	<p>We recommend the flashings to the whirly ventilators and sky lights be installed to general practice standards. (i.e. the over flashings should be flashed with all laps overlapping from the roof to the penetration/ flashing. The support fastenings for the mechanical units should not be passed through the pans of the roof sheeting. The corrosive part of the support strapping be replaced.</p>
---	--	---	--

	 <p>Figure 11- Incorrect roof sheeting installation</p>		
--	--	--	--

3.3 Electrical Services

Table 5 provides comments on the electrical services items identified during the site inspection.




Table 5 Electrical Services

Observation Number / Location	Photo	Description	Comment
EI.1	 <p>Figure 12- Exposed services</p>	Exposed/unprotected single insulated cable at bottom of external conduit j-box.	Safety issue – conduit to be installed to protect cable in accordance with AS.NZS 3000.
EI.2	 <p>Figure 13 – Loose cables</p>	Cables loose and not secured.	Safety issue – cable to be tidied up and secured in accordance with AS.NZS 3000.

Technical Review

Client: Moreton Bay Regional Council




Location: Pavilion 1 Suttons Beach

Observation Number / Location	Photo	Description	Comment
EI.3	 <p>Figure 14- Loose cables</p>	Cables loose and not secured.	Safety issue – cable to be tidied up and secured in accordance with AS.NZS 3000.
EI.4	 <p>Figure 15 – Insufficient ties</p>	Cables - insufficient ties on cable tray.	Safety issue – cable to be tidied up and secured in accordance with AS.NZS 3000.
EI.5	 <p>Figure 16 – Damaged fitting</p>	Troffer light fitting damaged and not sitting secure in ceiling.	Potential safety issue – replace fitting with new.

Technical Review

Client: Moreton Bay Regional Council


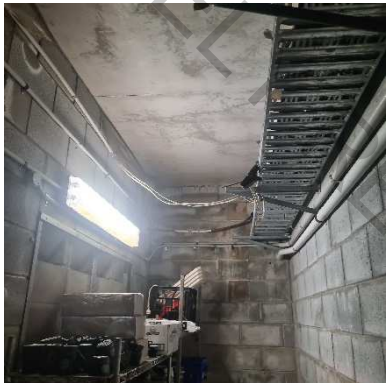

Location: Pavilion 1 Suttons Beach

Observation Number / Location	Photo	Description	Comment
E1.6	 <p>Figure 17 – Damaged cabinet</p>	Slight corrosion starting on the lift control cabinet.	Scrape and clean up to prevent further corrosion. Wipe down regularly to keep chemicals off.
E1.7	 <p>Figure 18- non-compliant sign</p>	Exit sign body cover missing – live parts potentially exposed.	Fitting should be replaced.
E1.8	 <p>Figure 19 – Defective lights</p>	Kitchen troffer lights cracked and broken. Should be clean room sealed for dust and vermin prevention.	Replace diffusers and/or fittings.

Technical Review

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach



Observation Number / Location	Photo	Description	Comment
E1.9	 <p>Figure 20- Defective install</p>	Unsecured cable off cable tray. Unsafe installation.	Secure cable in accordance with AS/NZS 3000.
E1.10	 <p>Figure 21- Defective install</p>	Unsecured cable off cable tray. Unsafe installation.	Secure cable in accordance with AS/NZS 3000.
E1.11	 <p>Figure 12 – non-compliant sign</p>	Old style Exit sign plus should be illuminated.	Re-lamp and update to running man symbol to bring up to AS2293 and NCC.

Observation Number / Location	Photo	Description	Comment
E1.12	 <p>Figure 13 - non-compliant signs</p>	Old style Exit sign plus should be illuminated.	Re-lamp and update to running man symbol to bring up to AS2293 and NCC.

3.4 MECHANICAL SERVICES

Table 6 identifies the mechanical services items identified on site.



Table 6 Mechanical Services

Observation Number / Location	Photo	Description	Comment
MI.1	 <p>Figure 14 – Water damage</p>	Supply air vent in reception wing lobby showing signs of moisture damage due to condensation.	A difficult problem to resolve in an area where an entry door allows warm humid air to enter a conditioned space with cold metal diffusers. Entry air locks and or the fitting of good quality air curtains are the most successful remedies.
MI.2		Cassette at reception entry	It is unlikely that this unit can handle outside air requirement for this space. This needs to be checked in accordance with current Australian Standards.

Technical Review

Client: Moreton Bay Regional Council




Location: Pavilion 1 Suttons Beach

Observation Number / Location	Photo	Description	Comment
	Figure 15 – non- compliant installation		
MI.3	 <p>Figure 16 – Pavilion Two function area</p>	Typical reception area supply air diffuser layout. Areas are served by split system ducted units with filtered outside air supply from roof mounted fan and filter bank.	The outdoor air quantities need to be checked for these areas to ensure compliance with current codes.
MI.5	 <p>Figure 17 – Upper level bar reception area</p>	Typically, the dining and bar areas are served by split system cassettes. It is unlikely that these provide sufficient outside air to these areas.	Outside air supply quantities should be checked for compliance with code.
MI.6		Toilets to the upstairs function room above the restaurant are naturally ventilated via skylight vents.	While this may be code compliant it is less than desirable for a space of this quality as generally smells are not adequately removed. It is recommended that mechanical exhaust be considered.

Technical Review

Client: Moreton Bay Regional Council



Location: Pavilion 1 Suttons Beach

Observation Number / Location	Photo	Description	Comment
	 <p>Figure 18 – upper-level toilets</p>		
MI.7	 <p>Figure 7</p>	Toilets in the rear south-west corner had been partially demolished to attend to termite infestation. Services were no longer operable.	Re-instatement required at some point with a rebalance of exhaust system.
MI.8	 <p>Figure 8.1</p>	Kitchen hood exhausts to both cooking equipment (fig. 8.1) and dishwashers (fig 8.2) was comprehensive throughout the various kitchens. Air quantities were not able to be checked but all looked to be professionally done.	Air quantities could be checked for code compliance.

Technical Review

Client: Moreton Bay Regional Council




Location: Pavilion 1 Suttons Beach




Observation Number / Location	Photo	Description	Comment
	 <p>Figure 8.2</p>		
MI.9	 <p>Figure 9.1</p>	<p>Kitchen exhaust fan adjacent the rear walkway was blown over during winds with damage to duct and electrical conduit. The duct had been stabilized with a number of angle brackets (fig 9.1) and timber cross braces (fig 9.2)</p>	<p>The patch up job should be refined to make safe (sharp points and edges on the angle pieces) and the electrical conduit fixed with stainless steel conduit clips. The timber should be replaced with cross bracing that is weather and corrosion resistant.</p>


Technical Review

Client: Moreton Bay Regional Council

Location: Pavilion 1 Suttons Beach

Observation Number / Location	Photo	Description	Comment
	 <p>Figure 9.2</p>		
MI.10	 <p>Figure 10</p>	Outside air fan filters at roof level.	Filters do not appear to have been serviced. These will require replacement and regular servicing.
MI.11	 <p>Figure 11</p>	Outside air fan and ductwork on roof of pavilion 1.	Fan junction box, flange bolts and ductwork require attention to rust.

Observation Number / Location	Photo	Description	Comment
MI.12	 <p>Figure 12</p>	Electrical entering roof mounted condensing unit with flexible conduit broken away from condenser body.	Generally, all electrical work to mechanical equipment on the roof should be inspected and repaired as required.
MI.13	 <p>Figure 13.1</p>  <p>Figure 13.2</p>	Corrosion of various metal parts, in this case condensing unit footing stands, is widespread due to the corrosive salt air environment. Note also the roof penetrations here, there are a large number of these across the roof. Fans, pipe work and electrical all penetrate the roof and are silicone for weatherproofing.	Rusting footing stands should be reviewed and replaced as required before they collapse. Fixings through the roof should always be through the top of the roof material ridges. Roof penetrations should be checked for water tightness (storm) and repaired as required.

Observation Number / Location	Photo	Description	Comment
MI.14	 <p>Figure 14</p>	Roof mounted condensing units; these we believe serve the restaurants et al. cassette units.	Units generally are still in quite good shape considering the seaside air they are subjected to. All units should be checked and cleaned regularly to remove salt. If possible, it would be advised to apply a reputable corrosion protective coating and repeating as per the manufacturer's recommendations.

3.5 Services summary and recommendations

We have assessed the associated services and below is a brief summary of the condition and the recommendations.

3.5.1 Hydraulic services summary and recommendations

The waste and trade drains seem to be in working order however, the internal condition of the installed was unable to be assessed. The materials associated with the inground drains was not known. Further investigation with the aid of CCTV of the pipe work would give a clearer indication of the integrity of these services and the materials they are constructed of. Due to the age of the installation, we recommend this investigation be conducted if renewal of the development was an option council would adopt. We recommend a services fire safety audit be conducted to ensure integrity between the floors in the event of a fire.

The water supply seems to be in good working order however, the internal condition of the installed was unable to be assessed. Due to the age of the installation, we recommend pressure testing be conducted if renewal of the development was an option council would adopt. The current water services supply line seems to be adequate for the demand. We recommend if the site was to be upgraded that the water supply pipe work be renewed back to the authority meter as part of these works.

The existing box gutter over the upper-level dining zone has no overflow mechanisms in place and due to the age of the installation may be leaking. It is our recommendation the gutter is replaced, and overflows be provided.

The existing eaves gutters are of an age that requires replacement/maintenance. We recommend the replacement of the eaves gutter.

The existing roof sheeting is of an age and condition that requires replacement. We recommend the replacement of the roof sheeting and all flashings associated with penetrations

Note the size and demands of the gas service were not assessed at the time of visit.

3.5.2 Wet fire summary and recommendations

The location of the two fire hose reels located on the upper and lower level are not in compliance with the codes associated. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a full wet fire services audit be conducted.

The existing fire hydrant cover to the building is not in accordance with code. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a full wet fire services audit be conducted.

3.5.3 Electrical summary and recommendations

The electrical services in the Pavilion were generally found to be in good condition.

In particular, with the exception of those specific items identified, the general wiring and switchboards were in very good condition. We believe an upgrade/modernisation has occurred in the last 5 years or so. The switchboards are in very good condition with modern switchgear all in accordance with code.

The site main switchboard is in very good condition and is supplied via 150 sq.mm XLPE/PVC consumers mains from the street transformer. This supply capacity is 250A - 300A which is adequate for the building usage.

The MSB main isolator is a 630A type.

The emergency and exit lighting coverage throughout the Pavilion is thorough and to code with the exception of some older type exit signs which were identified. We suspect this has been upgraded in recent times also. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a full services audit be conducted.

Internal lighting is generally in reasonable condition. Exterior lighting is showing some signs of corrosion typical for the beachside environment but is still generally serviceable but looking 'tired'. In the event of general upgrade works proceeding, we would recommend replacement of the external light fittings with new (of similar type/look).

3.5.4 Mechanical summary and recommendations

Mechanical services were generally in good condition for the seaside area in which they are located.

Roof mounted air conditioning units showed some sign of age but were generally still serviceable. Their mountings and roof penetrations were however showing signs of break down and corrosion. Mountings should be checked on an individual basis for degree of rust and be replaced as required. Likewise, pipe penetrations et all generally require re-caulking and in some cases replacing as they appear to be breaking down with roof leaks the likely result. Electrical entries on some condensing units have broken away and should be repaired, all roof mounted units and fans should be checked for this issue.

Systems serving the restaurants, bars and function area of building one are all split system cassettes and while it would appear that outside air may be supplied to these it is unlikely that it is in the quantities required by AS1668.2. Further investigation and quantification is required to assess this issue. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a services audit be conducted.

The roof mounted outside air fan and filters (see photos) have some duct rust issues (at this stage we believe repairable) and the filters do not appear to have been serviced in some time. The filters we believe will require replacing and a regular service contract put in place. .. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a full servicing of the system be conducted.

Function room toilets at this point rely on natural ventilation via vented skylights. We believe that while this may be code compliant, it is undesirable for an area such as this, and suitable mechanical ventilation should be investigated and installed. .. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a services audit be conducted.

The lower level PWD toilet in the north-west corner has been made unusable due to termite infestation and treatment of same. Refitting of this facility is, we assume underway.

Kitchen exhaust hoods all appear to be well designed and air quantities would be thought to be the same but should be checked. The exhaust fan and duct that collapsed in recent strong winds, adjacent the rear walkway, should be repaired in a more permanent manner, including electricals on the external of the duct. Note, if the building is to remain these items would need to be addressed for the safety of staff and patrons of the building. We recommend a full wet air quality capacity and capacity audit be conducted.

ADMINISTRATIVELY RELEASED BY MBRC 2-2-22

APPENDIX A

REFERENCE LIST

List of Documents reviewed

1. FSA Consulting Engineers – Structural Engineering Report
Document: FS1499FL-SER01
Original issue dated: 28th February 2020
Revision: 4
Dated: 30th June 2020
2. BE Collective – Structural Condition Audit Peer Review
Project No. 7366
Revision: A
Dated: 01/05/2020
Revision by: RK
Checked by: JT
3. Moreton Bay Regional Council – Asbestos Management Plan
Building Number: BLD-000767
Dated: 10th February 2015
4. Converge Heritage and Community – Former Sutton's Beach Bathing Pavilion
Conservation Management Plan
Project number: 20073
Document title: Conversation Management Plan
Revision: 3
Dated: 15 April 2020
5. Email from Personal Information – End of life reference queries
Dated: 30/07/2020
Subject: FS1499FL – MBRC – Suttons Beach Pav 1 - clarifications
6. Suttons Beach Pavilion 1 Structural Safety letter
Dated: 06/08/2020
Ref: 24DJSZNHUEPC-1850682920-7