Cherbourg Aboriginal Shire Council

Working Papers

For Council Meeting Held 15 & 16 March 2023

Reports

1. Minutes (Unconfirmed)
2. Chief Executive Officer
3. Corporate Services
4. Economic & Community Development
5. Operations Department
6. Community Support

1. Minutes (Unconfirmed)

MINUTES

Cherbourg Aboriginal Shire Council

Held 16 February 2023

MINUTES

COUNCIL MEETING

HELD 16 FEBRUARY JANUARY 2023

Attendance

Mayor Elvie Sandow
Deputy Mayor Tom Langton
Cr Fred Cobbo
Cr Leighton Costello
Cr Bronwyn Murray

Officers: *Chief Executive Officer- Zala*
Minute Taker - Eileen Jacobs
Council Advisor - Brett De Chastel

Meeting Commenced 9.30am

9.30am *Mayors Welcome*

Councillor Obligations

Prescribed Conflict of Interest

Nil

Declarable Conflict of Interest

Nil

Register of Interest

Nil

Confirmation of Minutes

Resolution

Council resolves that the minutes of the Cherbourg Aboriginal Shire Council Meeting held On 18 & 19 January 2023 be adopted.

Moved: ***Cr Bronwyn Murray***
Seconded: ***Cr Leighton Costello***

Motion No 2292 Carried
For Vote: Council Voted Unanimously

CEO REPORT

The CEO Report was tabled

Cherbourg Local Housing Plan 2022

The Cherbourg Local Housing Plan identifies local housing priorities. It is a strategic document to guide the Department of communities, Housing and Digital Economy and Council to deliver structural, service, and economic reforms to improve housing outcomes in community.

The Cherbourg Local housing Plan will be a living document that will be reviewed and monitored through new governance arrangements between DCHDE and Council to ensure community priorities and concerns are raised and key actions and deliverables are identified to resolve issues. This will lead to better outcomes that meet the community need.

Resolution

Cherbourg Aboriginal Shire Council resolves to:-

1. ***Endorse the Local housing Action Plan – Draft 2***
2. ***Endorse the Stakeholder and Community engagement document to proceed further on engagements with community.***

Moved: ***Cr Fred Cobbo***
Seconded: ***Deputy Mayor Tom Langton***

Motion No 2293 Carried
For Vote: Council Voted Unanimously

Qld Health ATSI Public Health Program Workshop

Qld Health is proposing to have Queensland Health ATSI Public Health Program Workshop in Cherbourg. This will be the first AMW/EWH workshop outside of North Queensland.

Resolution

That Cherbourg Aboriginal Shire Council resolves that ;-

A. ***It's a great opportunity to have the workshop in our community and Endorses the Workshop to be held in Cherbourg.***

B. ***Cherbourg TAFE will be the venue for the workshop given they will have 40 attendees***

Moved: ***Cr Bronwyn Murray***
Seconded: ***Cr Leighton Costello***

Motion No 2294 Carried
For Vote: Council Voted Unanimously

Damien Bond – Barrel Racing on Borangi Farm

Damien has previously requested land at Borangi Farm to provide an area for Barrel Racing.

Economic & Community Development Manager and Farm staff met to discuss the request for an area at Borangi for Barrel Racing. Farm Staff supports Damien's vision for Barrel Racing, Rodeo and working with kids in principle. However with Council operations at Borangi there is no appropriate area for Damien for Barrel Racing etc.

Farm Staff recommend that the Barrel Racing be located to the paddock next to the Football Ground. It is a reasonable size, has access to pasture and water and has access for spectator and trucks. There are also amenities at the football grounds for rodeos.

Resolution

Council resolves that it endorse the recommendation,

- ***That Damien Bond be offered the paddock next the Football Field for Barrel Racing and Rodeo training etc.***

Moved: ***Deputy Mayor Tom Langton***
Seconded: ***Cr Bronwyn Murray***

Motion No 2295 Carried
For Vote: Council Voted Unanimously

Company Directors Course for (CEO) Professional Development

CEO Zala is seeking Council approval to undertake the Company Director Course for CEO Professional Development.

Resolution

That Cherbourg Aboriginal Shire Council resolves that:-

A. CEO pays fees as per council education support policy and reimburse back on successful completion of the course.

B. Prefer study is face to face course in Brisbane, Dates will be in June/July 2023.

Moved: ***Cr Bronwyn Murray***
Seconded: ***Cr Leighton Costello***

Motion No 2296 Carried
For Vote: Council Voted Unanimously

Report Approval

Council resolves that the Chief Executive Officer Report be adopted.

Moved: ***Cr Leighton Costello***
Seconded: ***Deputy Mayor Tom Langton***

Motion No. 2297 Carried
For Vote: Council Voted Unanimously

CORPORATE SERVICES REPORT

The Corporate Services Report was Tabled

Work Hours Policy

Cherbourg Aboriginal Shire Council Work Hours Policy has been presented for Council endorsement.

Resolution

Cherbourg Aboriginal Shire Council resolves that it endorses the Cherbourg Aboriginal Shire Council Work Hours Policy.

Moved: ***Deputy Mayor Tom Langton***
Seconded: ***Cr Fred Cobbo***

Motion No 2298 Carried
For Vote: Council Voted Unanimously

Debts to be Written Off

Approval is sought for the submitted Debts to be written off where debtor is deceased, there is no contact details, or an agreement was made to pay half.

Resolution

Cherbourg Aboriginal Shire Council resolves to Write off the submitted debts as they cannot be reclaimed.

Moved: ***Cr Leighton Costello***
Seconded: ***Deputy Mayor Tom Langton***

Motion No 2299 Carried
For Vote: Council Voted Unanimously

Report Approval

Council resolves that the Corporate Services Report be adopted.

Moved: ***Deputy Mayor Tom Langton***
Seconded: ***Cr Leighton Costello***

Motion No. 2300 Carried
For Vote: Council Voted Unanimously

OPERATIONS DEPT REPORT

The Operations Dept Report was tabled.

Speed Bumps – Collins Road

Operations Manager has made application for a Speed Bumps to be installed in Collins Road and charges utility fees to business operating on the community.

Solution

Cherbourg Aboriginal Shire Council resolves that,

1. ***A Speed Bumps be installed in Collins Road***
2. ***Council charges utility fees to operating businesses***

Moved: ***Cr Bronwyn Murray***
Seconded: ***Cr Leighton Costello***

Motion No. 2301 Carried
For Vote: Council Voted Unanimously

Report Approval

Council resolves that the Operations Dept Report be adopted.

Moved: ***Cr Fred Cobbo***
Seconded: ***Cr Leighton Costello***

Motion No. 2302 Carried
For Vote: Council Voted Unanimously

COMMUNITY SERVICES REPORT

The Community Services Report was tabled.

Report Approval

Council resolves that the Community Services Report be adopted.

Moved: ***Cr Fred Cobbo***
Seconded: ***Cr Bronwyn Murray***

Motion No.2303 Carried
For Vote: Council Voted Unanimously

ECONOMIC & COMMUNITY DEVELOPMENT

The Economic & Community Development Report was tabled.

Report Approval

Council resolves that the Economic and Community Development Report be adopted.

Moved: ***Cr Leighton Costello***
Seconded: ***Deputy Mayor Tom Langton***

Motion No. 2304 Carried
For Vote: Council Voted Unanimously

CORRESPONDENCE

Terry Bell

Information – Qld Alliance of Agriculture and Food Innovation (QAAFI) research into healthy alternative to soft drinks - wishing to partner with Cherbourg Aboriginal Shire Council or Cherbourg State School in this research.

Council agreed to refer this proposal to the Cherbourg State School

Lord Mayor Brisbane

Advice – 14th Asia Pacific Cities Summit (APCS) & Mayors Forum 'Shaping Cities for our Future.

LGAQ

2023 Indigenous Leaders Forum (ILF) 8-9 June 2023.

Cherbourg TAFE – Proposed Student Carpark

Request for the installation of a Student Carpark at Nurunderi TAFE.

Resolution

The Council Aboriginal Shire Council is the Local Government Authority for the Cherbourg Aboriginal Shire Council area. As the Local Government Authority, Council as duly elected representatives of the community, through local decision making has the responsibility of deciding what is in the best interest of the community, advancing a thriving community.

It is considered that approving the installation of a Student Carpark at Nurunderi TAFE is considered to be of benefit to the Cherbourg community.

Moved: ***Cr Bronwyn Murray***
Seconded: ***Deputy Mayor Tom Langton***

Motion No. 2305 Carried
For Vote: Council Voted Unanimously

Qld Tourism Industry Council

2023 Qld Top Tourism Town and Top Tour Guide Competition will commence in February 2023.

Country University Centre Management Committee

Cr Danita Potter is seeking support to start the process to organise a Management Committee for a Country University Centre of which the Hub will be in Kingaroy with later expectations of the centre opening other satellite CUC's in the surrounding towns including Cherbourg. Council views this initiative as being a great potential resource to the South Burnett including Cherbourg.

Resolution

Cherbourg Aboriginal Shire Council resolves that it;-

1. ***Endorses the proposal to organise a Management Committee for a Country University Centre in Kingaroy.***

Moved: ***Deputy Mayor Tom Langton***
Seconded: ***Cr Leighton Costello***

Motion No. 2306 Carried
For Vote: Council Voted Unanimously

QLD GOVT

Allocations for Remote and Discrete Aboriginal and Torres Strait Islander Communities – Policy and Process.

PHN

PHN Invitation to Council for Friday 10 March 2023 to Reflect on 2022 and upcoming opportunities.

Anna Moffitt – Qld Health

Anna advises that due to the large number of Community skin diseases raised to Darling Downs Public health Unit, the Indigenous Health Team along with the Public Health unit consulted with the Cherbourg Health Council to discuss community led programs that can be implemented to address this issue.

It was recommended that the Cherbourg Health Council work to implement a Health Skin Program in their community, lead by Darling Downs Health Service.

Agreed

New Residences

Cherbourg Aboriginal Shire Council New Residences Designs were presented for Council perusal.

Resolution

It is considered that supporting the Cherbourg Aboriginal Shire Council New Residences Designs for delivering 3 new residences will improve accommodation opportunities for the Cherbourg community.

Council resolves to endorse the New Residence Designs of

- ***2-4 Alan Douglas Avenue***
- ***25 Broadway Street***
- ***3 Fisher Street***

Moved: ***Cr Leighton Costello***
Seconded: ***Deputy Mayor Tom Langton***

Motion No. 2307 Carried
For Vote: Council Voted Unanimously

Meeting Closed

Council resolves to Close the Council Meeting held on 16 February 2023 at 2.40pm

Moved: ***Cr Fred Cobbo***
Seconded: ***Cr Leighton Costello***

Motion No. 2308 Carried
For Vote: Council Voted Unanimously

Meeting Reopened

Council resolved to reopen Council Meeting 16 February 2023 at 2.41pm

Moved: ***Deputy Mayor Tom Langton***
Seconded: ***Cr Fred Cobbo***

Motion No. 2308.1 Carried
For Vote: Council Voted Unanimously

Cherbourg Multipurpose Civic Centre.

Recommendation

On 24 January 2023, the project steering committee reviewed all submissions received and moderated the assessment for each proposal against the selection criteria. The assessment by the project steering committee resulted in the following ranking.

1. *Palladium Infrastructure Pty Ltd – 38*
2. *M5 Advisors – 30*
3. *David Lennie – 15*

The project steering committee recommends the Palladium Infrastructure Pty Ltd Submission.

Resolutions

The Council is the Local Government Authority for the Cherbourg Aboriginal Shire and the Trustee of the Cherbourg Deed of Grant in Trust (DOGIT). As the Local Government Authority and Trustee for the DOGIT the Council has the responsibility of deciding what is in the best interest of the community. It is considered that supporting Palladium Proposal for delivering a business case for the Cherbourg Community Multi purpose and Civic Centre as it will improve opportunities for the Cherbourg community and visitors which is of benefit to all community members.

Council resolves :

1. ***"In Principal" appoints Palladium Infrastructure Pty Ltd to deliver a business case for the Cherbourg Multipurpose and Civic Centre***

2. ***Authorise the Chief Executive Officer to negotiate the terms and conditions of the contract in preparation for execution by Palladium Infrastructure Pty Ltd to deliver the business case for the Cherbourg Multipurpose and Civic Centre once additional funding from the State is confirmed.***

3. ***The Chief Executive Officer submit a variation request to DSDILGP for an additional $225,400 under LGGSP.***

Moved: ***Cr Fred Cobbo***
Seconded: ***Cr Leighton Costello***

Motion No. 2309 Carried
For Vote: Council Voted Unanimously

Meeting Closed

Council resolves to Close the Council Meeting held on 16 February 2023 at 2.43pm

Moved: ***Cr Fred Cobbo***
Seconded: ***Cr Leighton Costello***

Motion No. 2310 Carried
For Vote: Council Voted Unanimously

2. Chief Executive Officers Report

➢ 1. Internal Audit and Risk Committee Meeting:

The Audit and Risk committee held its regular meeting on 27 February 2023. A copy of the minutes of that meeting are attached for the information of Council.

Key issues addressed at the meeting were:-

- Noted that the internal review of our housing function will commence in March 2023
- Adopting the external audit plan for Council's annual audit which aims to have our financial statements signed off by 9 October 2023
- Adopting an internal audit plan for the coming years. Once the housing audit is complete, the following audits will look at (i) grant management - how we attract, manage and acquit our grants (ii) procurement – how we both comply with legislation and get value for money from our purchasing practices. Future internal audits include payroll and the recycling centre.
- A review of Council's monthly budget report. Feedback from the external audit committee members was very positive in terms of the layout and information provided to Council on a monthly basis.

Recommendation regarding Internal Audit and Risk Committee Meeting:

That the Council note the report from the Audit and Risk committee held on 27 February 2023.

2. Strategic Focus – Advancing Community Housing in Cherbourg

At the February Council meeting, we heard from our Council Advisor about the need to remain focused on our big picture strategic goals. There is no more important goal for us at the moment than securing additional housing for our community.

I thought it might be useful to dedicate some time at our March Council meeting to focus on this strategic issue. How can we ensure that we can deliver more housing for our community in the future? What are the opportunities for more housing for our community? What are the current impediments to us achieving that goal? How can we overcome these?

Our Council advisor will facilitate a workshop at our Council meeting looking at the issue of community housing to make sure we remain focused on achieving this important strategic goal. It is intended to undertake a SWOT analysis on housing at the meeting with input from the Mayor and Councillors. A SWOT analysis looks that our Strengths, Weaknesses, Opportunities and Threats to achieving our goal of more housing for our community.

By understanding our strengths, weaknesses, opportunities and threats, we can focus our attention on delivering on this strategic objective. Our Council Advisor will facilitate this session.

3. QRA – Flood Study – Tender Allocation:

We have now received price from Stantec to do all the four studies – More details included in tender document:

As pre-approved suppliers under Local Buy (LB312), Stantec are pleased to cover the following aspects

in this document;

1. Overland flow study and mitigation feasibility assessment

2. Total Flood Warning Review

3. Council depot flood mitigation feasibility assessment

4. Stormwater data survey

Stantec sees these projects as a great opportunity to deliver a multi-faceted review into stormwater and

flood risk and impact across the Cherbourg township.

We are pleased to provide the following detailed proposed methodology for your consideration.

Cherbourg Total Flood Warning Review CASC-1 $57,500.00

Cherbourg Council Depot Flood Mitigation

Feasibility AssessmentCASC-2 $80,500.00

Cherbourg Stormwater Data Survey CASC-3 $40,000.00

Cherbourg Overland Flow Study and

Mitigation Feasibility Assessment - $69,000

Recommendation regarding Internal Audit and Risk Committee Meeting:

That the Council allocate flood study work to Stantek, given they are listed n Local Buy (LB312) and also have come under our budget.

Chatur Zala

Chief Executive Officer

Workplace Health & Safety – February 2023

Activities

- Ongoing SMS management
- Updated records including vehicle checks, toolbox talks, training matrix and CAR
- Completed January monthly report for MRF and WHS
- Monthly emergency equipment checks completed
- Hazard inspections completed
- Respond to non-conformances identified during CoEx WHS audit
- Arranged and assisted Rick Fox visit (part of LGW review)
- March Toolbox Topic distributed – Hand Safety
- Delivered Feb Toolbox Topic to Mngt Team and Corp Serv
- Safety alerts distributed
- Prepared draft 2023 WHS plan

Recommendations/Resolution Required

- Asbestos register
- Equipment noise audit required

Incidents/ Alerts

- 2 Incident reports submitted
  - 11/02 employee strained ankle as a result of a trip – FA treatment
  - 23/02 customer at KCRP cut arm while unloading containers – FA treatment
- O Hazards Reported
- 2 Safety Alerts Communicated
  - 20/02 WorkSafe Qld – working in hot sheds
  - 23/02 WorkSafe Qld FATALITY – tractor rolled ejecting operator who was crushed by the tractor

Training

- Asbestos Awareness training completed (via Teams). 15 people attended incl some contractors
- Safety Awareness (Induction) training completed - 3 people attended

Next Month

- Refresher CPR due
- Additional First Response + Fire Warden training

Minutes - Audit and Risk Committee

Cherbourg Aboriginal Shire Council

Monday 27 February 2023

Cherbourg Council Chambers and Online via Teams

The meeting opened at 10am.

Attendees

Audit and Risk Committee Members

Scott Mead – Independent member and Chairperson

Mark Pitt – Independent member.

Mayor Elvie Sandow

Deputy Mayor Tom Langton

Council Observers

Zala Chatur – CEO

Sam Murray – Manager of Corporate Services

Sean Nicholson – Manager of Economic and Community Development

Dol Ranabaht – Accountant

Brett de Chastel – Council Advisor

Auditors

Erin Neville-Stanley – Partners KPMG and Ryan Lindwall KPMG (via Teams)

Michael Claydon and Jessica Rossouw – Queensland Audit Office (via Teams)

Ziggy Kapera – Pro Bono Internal Audit from Sunshine Coast Regional Council (via Teams)

Apologies - Nil

6 -

1. **Meeting Opening and Welcome.**
   The Chairperson welcomed everyone to the fourth meeting of the Council's Audit and Risk Committee.

2. **Minutes of the previous meeting**
   The minutes of the meeting held on 8 December 2022 were noted.

Moved: Deputy Mayor Tom Langton

Seconded: Scott Mead

That the minutes of the Audit and Risk Committee meeting held on 8 December 2022 be adopted as true and correct.

Carried unanimously.

3. **Matters arising from previous Minutes**

- Brett advised that the proposed internal audit of our housing function will commence within the next 2 weeks to be undertaken by Ziggy from the Sunshine Coast Council audit team. An online meeting to commence this process will be held in the next day or so.
- KPMG advised that they had visited the Council last week and presented the external audit plan which has now been signed off.
- No other issues were identified for further consideration.

4. **External Audit Plan including the QAO update**

Erin from KPMG presented the proposed external audit plan. She thanked the Council for her informative visit to the community last week. Erin outlined the 4 main focus areas of the audit being (i) valuations of property plant and equipment (ii) revenue recognition (mainly the treatment of grants) (iii) employee expenses and (iv) procurement processes and expenses. Erin also outlined the materiality levels and the audit timetable set out in the proposed plan which sees proposes off of the financial statements by the first week of October 2023. The Council and Audit and Risk Committee were satisfied with the proposed External Audit plan.

QAO also provided an update of reports they are undertaking which will be of interest to Council. This includes reports on (i) Health outcomes for indigenous communities – due for release in April (ii) improving asset management in local government – due for release in May and (iii) annual report to parliament on local government including benchmarking of financial ratios – due for release in May.

Moved: Mark Pitt

Seconded: Mayor Elvie Sandow

That the External Audit plan for the 2023 audit and the update from the Queensland Audit Office be noted.

Carried unanimously

5. **Internal Audit Plan for future years**

Brett presented his report on the proposed internal audit program for the next few years. It was noted that the review of Council's housing activity will start in March 2023. The other previously identified internal audit areas have been prioritised based on financial implications, risk profile and allocating reviews across the organisation. Based on this analysis, the next two internal audits proposed are for grants management and procurement processes.

The timing for other internal priorities (recycling centre and payroll) can be scheduled for review once the first 3 reviews have been completed. The final area for proposed internal audit is cyber security and Zala provided the committee with an update on work already been done to reduce our risk in that regard. Council is taking advantage of a free service being provided by the State government to audit the existing Cyber security risks and also to provide training for staff.

The audit and risk committee was happy with the proposed prioritisation and noted that the internal audit plan would be reviewed on an annual basis.

Moved: Mark Pitt

Seconded: Mayor Elvie Sandow

That the Audit and Risk Committee adopt the proposed Internal Audit Plan noting that the plan will be reviewed on an annual basis.

Carried unanimously

6. **Valuation process for 2022/23**

DoI provided an update for the committee on the asset valuation process proposed for 2022/23. It was noted that a comprehensive revaluation was undertaken for the 2021/22 financial year for all of the Council's different asset classes.

Based on that recent valuation, it is intended that a desktop indexation approach will be used this financial year. There was some discussion as to whether or not a revaluation of the housing asset class would be warranted given the significant increase in those valuations last year. After discussion, it was agreed that indexation would be applied this year and perhaps revisiting the housing asset class next year to determine whether a specific revaluation is required noting that evaluation had a significant impact on Council's insurance costs. A working paper for the Auditors on this matter is being prepared.

The Committee noted the proposed approach to asset valuations for the 2022/23 financial year.

7. **Update on Council's 2022/23 budget**

The committee reviewed Council's monthly budget report. DoI outlined the current issues being managed including (i) a review of the landfill provision which is done every 5 years (ii) the impact of high inflation and rising costs when Council doesn't have control over its own income and (iii) rising interest rates providing additional revenue from cash reserves.

Zala noted the inappropriateness of the current financial sustainability ratios for indigenous Councils and that the proposed new ratios should be an improvement. Cherbourg Council is focusing particularly on measuring its unconstrained cash reserves and is currently looking at reducing expenses to build up those reserves.

The external committee members provided positive feedback to Council on the format of its monthly budget report and Councillors also acknowledged the format and content of the report providing them with useful information each month. Consideration will be given to adding information about the monthly financial position of the recycling centre given its significant financial impact on Council.

8. **Update from CEO**

Zala provided the committee with an update on his current focus areas. In particular, he noted that historically the focus has been on how the Council can create jobs. The current focus is how to sustain these jobs from a financial perspective into the future without impacting on Council's long term financial position. With only approximately 20% of total revenue coming from our own source revenue, there is an emphasis on finding more operating grants, applying operating expenses to capital grants (where permitted under the grant conditions) and keeping expenses under control. This will assist in achieving longer term financial sustainability.

9. **General Business**

The next meeting is scheduled for 5 May but both external members will be unavailable at that time. An alternative date will be scheduled in early May for the next meeting of the audit and risk committee.

Meeting closed at 11.25 am.

Internal Audit Scope – Cherbourg Aboriginal Shire Council
Audit and Risk Committee

BACKGROUND INFORMATION

- Planned review as per approved 2022/23 Internal Audit Plan.
- Council manages Community Housing including allocating houses to its residents and also collecting rent from tenants.
- Revenue from tenant rental is budgeted at $1.8M in 2022/23.
- Outstanding rental unpaid by tenants as at October 2022 is $1.678M.

SYSTEM OBJECTIVES

To better manage how Council deals with its role as the community housing landlord with a particular emphasis on how it manages the allocation of housing and the rental aspects of that activity. Community housing provides rental housing primarily for Indigenous families and individuals living on Deed of Grant in Trust land. Housing is usually provided to applicants in accordance with their level of need and a "wait list" approach basis.

AUDIT OBJECTIVES

To ensure the efficient and effective management of Council's role as the community housing landlord with a particular focus on the processes and Council role in managing housing allocations and rental issues such as setting rental levels, collecting rental and managing rental arrears so that all revenue due is collected.

SCOPE OF AUDIT

The main focus of the review will be around how Council manages its housing role in terms of housing allocation and revenue collection and whether its policies, procedures and practices associated with those activities are effective and efficient.

Outside the scope of the review are the Council's role in building and maintaining community housing on behalf of the State Government (through QBuild).

INITIAL RISK ASSESSMENT

Inherent risks:

- Fraud/corruption – conflicts of interest in housing allocation and rental collection
- Missed revenue due to inadequate rental collection practices
- Inconsistent practices due to inadequate or inconsistent application of policies.

Current risks as per the Council's Strategic Risk register:

There are two risks identified associated with housing in the Council's strategic risk register, namely:-

(i) Risk 2 - Insufficient funds to provide services to the community – with over $1.8M currently owing to Council, Council will face a less certain financial future without this revenue being recovered.

(ii) Risk 18 – Failure to provide services appropriate to community needs. Housing is one of an indigenous Council's core activities and the failure to manage this well will result in poor outcomes for the community.

Key Controls:

- Monthly financial report to Council on housing rental arrears
- Monitoring and review of housing allocations in accordance with policies
- Regular management meetings between Housing team and Corporate Services Manager
- Housing Policy and Housing Debt Policy – Policies adopted by Council - Corporate Documents - Cherbourg

- Eligibility criteria and application approval processes including references
- Tenancy agreements
- Periodic rent reviews
- Reconciliations of income due to bankings and ledger
- Regular and prompt bankings and security of cash

PREVIOUS AUDITS AND FOLLOW UP ITEMS

- No previous review of Housing has been undertaken.
- Of interest, this is the first internal audit to be undertaken at Cherbourg Aboriginal Shire Council

BEST PRACTICE RESEARCH

While there have been no specific audits of Indigenous Housing managed by local Councils, the QAO has undertaken an audit of community housing provided by the State Government – see Delivering social housing services | Queensland Audit Office (qao.qld.gov.au)

ITEMS OF INTEREST RAISED BY MANAGERS

- There are a number of Council staff and Councillors who have arrears of rent.
- In a small community, there are inevitably difficult decisions to be made in relation to community housing that impact on family and friends and these conflicts of interest need to be recognised and addressed.
- The Council wants to ensure that it applies its policies in an equitable and consistent manner.
- There is support at the elected member level for this internal audit.

AUDIT TIMEFRAMES

Detail the major milestones of the audit by working out planned number of days and available;

- The start date is to be 1 March 2023
- Draft report to be completed by end on 31 May 2023
- Exit meeting to be organised around that time
- The CEO and Manager of Corporate Services will have an opportunity to provide comments to the report

Any significant issues to be communicated directly and all relevant staff will be kept informed at all times.

Internal Audit will attempt to complete the scope of the audit in accordance with the detailed deliverables. However, the scope and time frames are dependent upon the availability of staff and records demonstrating sound internal controls.

Also, the scope of the audit may change if material risks are identified.

MANAGERS TO SIGN HERE ACCEPTING THE TERMS OF REFERENCE

Name: Sam Murray Position: Manager of Corporate Services	Sign here: Date / /
Name: Ziggy Kapera	Sign here:

Position: Pro Bono Internal Auditor for Cherbourg Aboriginal Shire Council

Date / /

12.

Stantec Australia Pty Ltd
Level 11, 515 St Paul's Terrace
Fortitude Valley QLD 4006
AUSTRALIA
ABN 17 007 820 322

24 February 2023

Project/File: Cherbourg Stormwater and Flood Assessments

Zala Chatursinh
22 Barambah Ave,
Cherbourg, Qld
Australia 4605

Reference: Cherbourg Stormwater and Flood Assessments

Dear Zala Chatursinh

Thank you very much for the opportunity to provide a proposal for council's upcoming four-part project.

As pre-approved suppliers under Local Buy (LB312), Stantec are pleased to cover the following aspects in this document;

1. Overland flow study and mitigation feasibility assessment
2. Total Flood Warning Review
3. Council depot flood mitigation feasibility assessment
4. Stormwater data survey

Stantec sees these projects as a great opportunity to deliver a multi-faceted review into stormwater and flood risk and impact across the Cherbourg township.

We are pleased to provide the following detailed proposed methodology for your consideration.

Making the most of all your water resources

A river carves a landscape over hundreds of years; a flood can cause devastation in a matter of hours. Comprehending how water works on timescales ranging from centuries to days is critical to managing it effectively and safeguarding our communities.

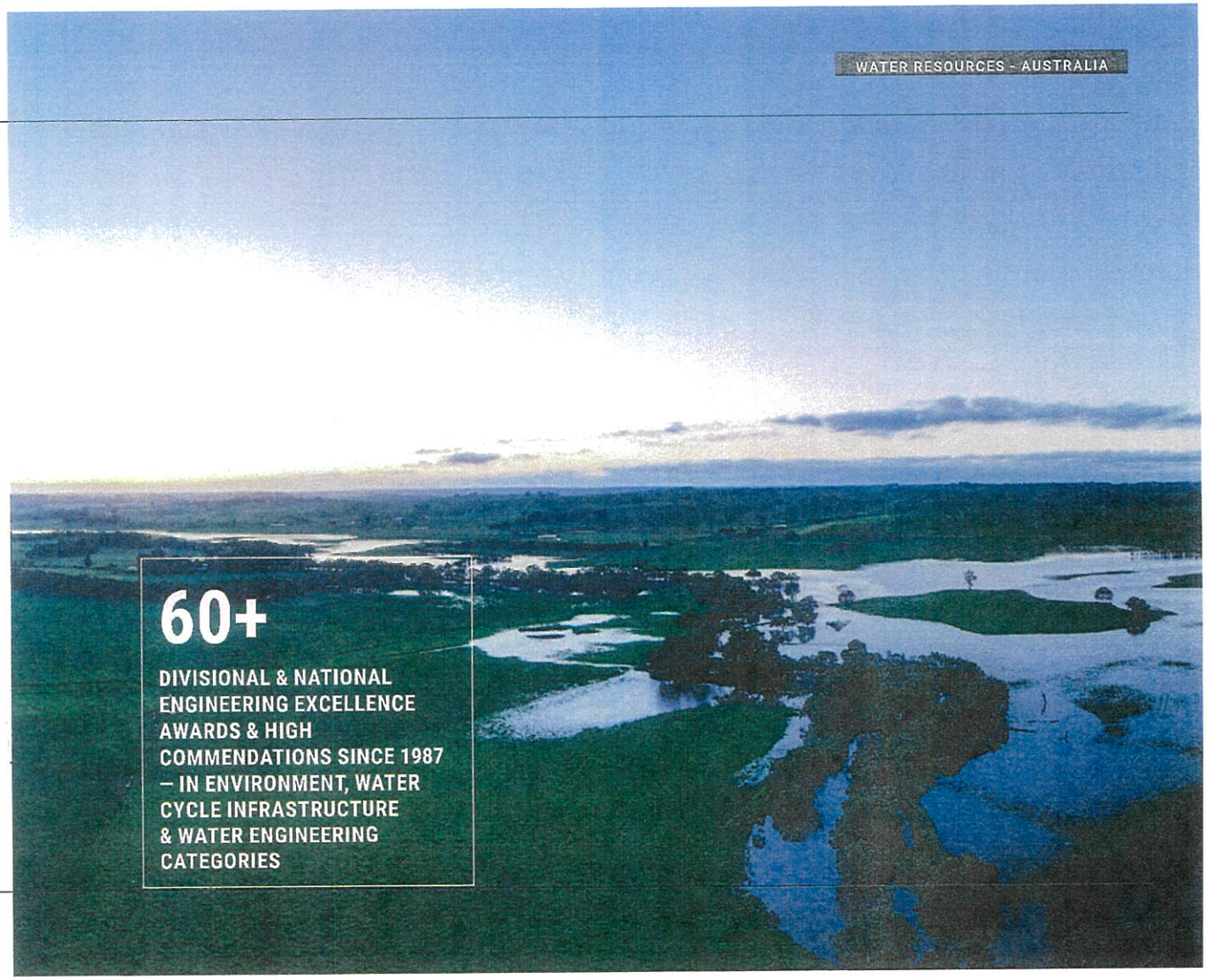
Recent drought and severe flood events across Australia serve as warnings for the emerging patterns of increased climatic variability. Balancing mitigation, development needs, and community demands is no simple task.

Our Water Resources team use industry leading modelling software, tools and techniques to assess flood risk associated with extreme rainfall. Through detailed and meaningful outputs, we help our clients and communities to understand flood risk.

We are specialists in a range of flood risk management measures from structural protection and disaster management measures, to empower communities to monitor and respond to flood.

Our team appplies an integrated approach to stormwater management, with an aim of transforming stormwater risk to a resource. We consider rainfall variability throughout planning and design to minimise the impact of urban and infrastructure development on the environment, the hydrological cycle, and local communities.

Our design team translates engineering analysis of water into practical, efficient, and robust designs.

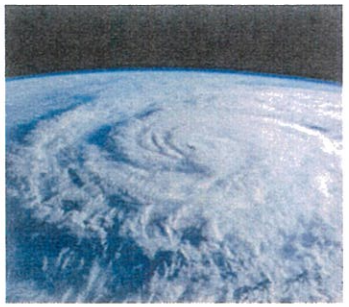


KEY SERVICE OFFERINGS

Flood Risk

We utilise modelling software to develop hydraulic and hydrological assessments to define flood risk and impact and explore measures to manage flood risk.

- Flood studies & modelling
- Flood risk definition
- Flood impact assessments
- Structural flood mitigation assessments
- Flood assessments for dams
- Master drainage studies
- Overland flow investigations & assessments
- Dam failure impact assessments
- Flood risk management studies & planning
- Coastal adaptation studies
- Peer review



Flood Resilience

Our team help to create resilience communities through flood planning and flood risk responses across the entire spectrum of flood emergency management actions and measures.

- Total flood warning reviews
- Community flood action planning
- Flood operational response reviews
- Emergency flood management planning (disaster management)
- Flood warning infrastructure reviews
- Flood classification review
- Operational hydrology reviews

Stormwater

We provide planning and design services with a goal to minimise the impacts of urban and infrastructure development on the environment, the hydrological cycle, and local communities.

- Stormwater management planning
- Stormwater quality & quantity modelling & Management
- Water sensitive urban design/low impact development
- Stormwater harvesting
- Stormwater detention &/or retention
- Integrated water management
- Mine water management
- Catchment action plans

Design

By applying an integrated approach of modelling and design, we translate engineering analysis of water into practical, efficient and robust designs for our clients.

- Drainage networks
- Water sensitive urban design/low impact development
- Detention
- Stormwater harvesting
- Flood mitigation measures
- Waterway management
- Blue green infrastructure

Water Security

We have comprehensive experience in the assessment and management of water supply systems. Our services span quantitative assessment of the level of reliability of water resources informed by catchment hydrology, through to providing planning advice on system mitigation and improvement.

- Quantitative water balance modelling
- Climate change assessments
- Water supply security assessments
- Water security & planning strategies
- Emergency water supply planning
- Drought management planning
- Mine water assessments
- Dams

Software utilised by our team:

- TUFLOW
- HEC RAS
- HEC HMS
- InfoWorks
- ICM
- XP-SWMM
- MIKE Hydro
- MIKE Flood
- MIKE 11
- RORB
- WBNM
- RAFTS.
- waterRIDE.
- MUSIC
- wFlow
- XP-SWMM
- OPSIM
- GoldSIM
- eWater Source
- 12D
- Civil3D

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Stantec

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of place and of belonging. That's why at Stantec, we always **design with community in mind.**

We care about the communities we serve—because they're our communities too. We're designers, planners, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe. Stantec trades on the Toronto Stock Exchange (TSX) and the New York Stock Exchange (NYSE) under the symbol STN.

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1 SCOPE OF WORKS

1.1 Overland Flow Study and Mitigation Feasibility Assessment

1.1.1 PROPOSED METHODOLOGY

Stantec intends to develop local TUFLOW rain on grid hydraulic models that account for all local catchments that impact on the study area. These inflows will be applied to detailed 1D/2D hydrodynamic hydraulic models in Tuflow. Flows from catchments external to the detailed study areas will be extracted and introduced as hydrographs to model boundaries.

Broadly, the proposed solution consists of implementing ARR 2019 techniques, using storm durations from 10 to 90* (to be confirmed) minutes with pre-burst and initial and continuing losses applied and run through the model for the 50%, 20%, 10%. 5%, 2%, 1% and 1%@2100 AEP events. Stantec has made allowance for modelling of these events in this proposal. Confirmation of the events to be modelled will be discussed at the inception meeting.
The critical design storm for each AEP will then be selected based on the max median result at the problem location/area. These selected storms will then become the critical design storms for subsequent model runs. They will be used to establish the existing case flood levels, develop mitigation measures and assess designs.

It is proposed to discuss the overall approach to hydrologic and hydraulic modelling and modelling assumptions in the inception meeting to ensure the approach is considered fit for purpose by all parties.

The following sections detail the overall approach proposed, however these are adaptable, within reason, if based on our initial review of the catchment area and discussion with Council, they are no longer considered suitable. All hydrologic and hydraulic modelling assumptions and justification will be detailed

1.1.2 DATA COLLECTION

1.1.2.1 Surface Data

Lidar will be obtained from Council. This will then be collated and interrogated to ensure that it is fit for purpose. Modifications will be made if required to accurately represent the known topography. Particular attention will be paid to crossings, roads, overland flow easements, residential locations, and storage areas. Issues identified will be raised with Council.

1.1.2.2 Pipe Networks

The existing underground pipe network and road crossings will be obtained from Council for the study area. This data will be updated with survey being undertaken as part of this project.

1.1.3 HYDROLOGIC MODELLING

Hydrologic routing of runoff is proposed to be represented as rain on grid within the proposed hydraulic model. To find the design storm the model will initially be run on a larger grid size. This will be reduced to a 1m grid once the design storm(s) have been identified.

In the interests of hydraulic simulation time, the initial hydraulic models may also be reduced in extent to just the focus area once the design storms have been selected.

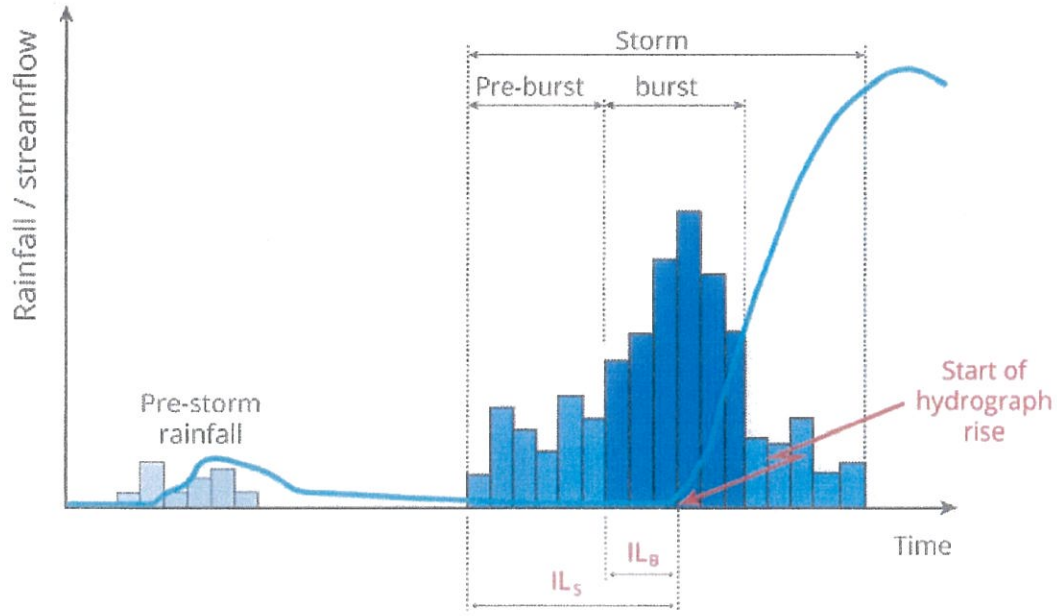
1.1.3.1 Catchment Delineation

The development of catchments extents will generally be undertaken automatically via the QGIS gis software package. However, a level of manual manipulation is expected to be required to ensure that the catchment definition accurately reflects the watershed to each outlet location. QGIS enables the user to accurately define actual catchment flowpaths particularly where infrastructure such as culvert crossings intersect streamlines. The advantage of such a degree of detail in the hydraulic model is that the full topographic data set is utilised in the development of catchments. It also enables future users to quickly extract data for additional points within the catchment.

1.1.3.2 Parameters

Consistent with ARR2019, an initial loss / continuing loss approach will be adopted. The design loss rates for urban areas differ from ARR1987 as losses are now calculated across the entire storm as opposed to the burst, as was the case for ARR1987. For short duration storms, the burst loss is less than the total storm loss reported by ARR2019. This is shown in Figure 1-1 below.

Figure 1-1 Burst Losses



For Urban catchments, it is recommended that median ILs of 60 to 80% of the recommended rural catchment ILs be adopted.

Design continuing loss rates are given in ARR2019 for three types of areas:

- Directly Connected Areas, which consist of:
  - impervious areas (e.g. roofs and paved areas) which are directly connected to the drainage system – referred to as Direct Connected Impervious Areas (DCIA).
- Indirectly Connected Areas, which consist of:
  - impervious areas which are not directly connected, runoff from which flows over pervious surfaces before reaching the drainage system (eg. a driveway that discharges onto a lawn) – referred to as Indirectly Connected Impervious Areas (ICIA).
  - Pervious areas that interact with Indirectly Connected Impervious Areas, such as nature strips, garden areas next to paved patios, etc.
- Pervious areas consisting of parklands and bushland that do not interact with impervious areas.

Loss rates for these areas are recommended by ARR as:

- DCIA - IL = 1-2 mm, CL = 0mm/h
- ICA – IL = 60% of adopted pervious loss, CL = 1-3 mm/h
- Pervious Losses – as per the rural loss rates.

Due to the generally small size of the catchments, areal reduction factors will not be applied to the study area.

ARR 2019 discusses that using GIS techniques to identify directly connected impervious areas (identifying road, roof and driveway areas) show that the EIA is typically between 70 and 80 percent of the measured impervious area. However, this may trend to 100 percent as the catchment imperviousness increases to 100 percent. Taken at a catchment scale, without considering consecutiveness, the Effective Impervious Area (EIA) is approximately 55 - 65% of the Total Impervious Area.

Therefore, the EIA will be determined in-line with those procedures outlined in ARR2019, Stantec's own values, aerial photography, current planning scheme layers and site inspections as necessary.

Mannings values will be calculated via interrogation of Aerial photography and Council planning layers.

1.1.3.3 Ensembles

Australian Rainfall and Runoff 2019 Ensemble procedures and rainfall data is proposed to be implemented in the development of the hydrologic and hydraulic models. In the first instance the full ensemble of storms will be modelled in the hydrological model, with refinement after these initial runs. These initial runs will include selected durations up to 90 minutes and all temporal patterns for the selected AEP events.

The ARR 2019 ensemble approach will be used to identify ensemble design storms for each study area. It is expected that different design storms may also be identified for different points within each study area.

The flow predictions of the hydraulic model will be utilised to determine the design storm critical duration(s) and appropriate temporal pattern(s) for each area of interest. It is anticipated that a number of different design events will be required to represent design behaviour across the catchments and at the location of areas of interest.

The location of interest points and modelling methodology will be discussed with Council prior to finalisation.

1.1.3.4 Pre-burst application

Pre-burst rainfall will be applied in line with ARR2019 recommendations. Careful consideration of the application of pre-burst is required with a consistent approach required across storm durations and probabilities. Review of the magnitude of pre-burst relative to the initial catchment losses is required to establish the approach. Furthermore, review of the pre-burst intensity relative to the burst intensity is required. There can be instances, that the pre-burst intensity is higher than the intensity of the burst which may influence peak flood levels. In such circumstances, the time frame of application of pre-burst may be required to be manually adjusted to avoid this.

1.1.3.5 Events

Generally, events that will be modelled are the 50% through to the 1% and 1%@2100 AEP. All AEP events will be developed within TUFLOW hydraulic software.

When completing a hydraulic assessment using ARR methodologies, there are a number of approaches that can be undertaken as shown in Figure 1-2. It is noted that both ARR 2019 and ARR 2016 methodologies remain the same in this regard.

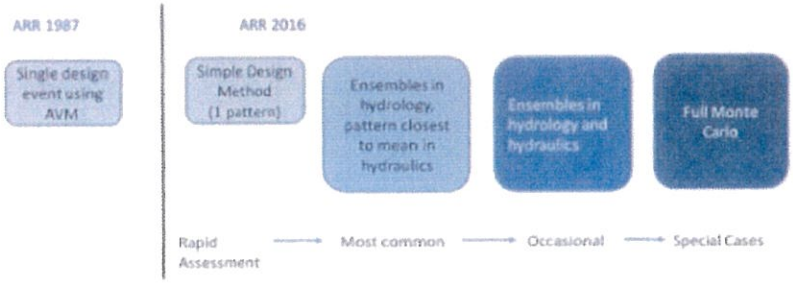


Figure 1-2 ARR Modelling Techniques

ARR 1987 utilised the approach of a single design event for each magnitude of AEP. As such, this method was very simple to apply when compared to ARR 2019 methodologies.

For the ARR 2019 methodologies, depending on the application and level of detail required, the practitioner can select different approaches to modelling ensembles. It is proposed that for these flood studies an ensemble approach will be utilised. This requires running a full suite of storms through modelling software and then running selected design ensemble storms.

The process for selecting temporal patterns and critical durations is semi-automatic within the TUFLOW hydraulic software. Durations will not be excluded from the hydraulic modelling unless it can be demonstrated that they will not cause critical flooding in the study area.

1.1.4 HYDRAULIC MODEL DEVELOPMENT

Hydraulic modelling of study areas is proposed to be undertaken in Tuflow software.

1.1.4.1 Hydraulic Model Resolution

We propose to build 1D/2D hydraulic models at the outset of the project with recorded rainfall as input. These initial models will include a stormwater network limited to major culverts and be run on a larger grid size. Using the TUFLOW capability on a larger grid will enable Stantec to quickly identify the design storms for each location using a coarser resolution than the detailed model.

We have undertaken this work on previous flood studies and have found that it has been invaluable to the management of the projects. The results of this model will enable us to assess the general flow behaviour of the catchment before attending meetings. This leads to the discussions being more efficient and targeted towards areas that the model has flagged as being critical such as break out areas. Furthermore, it also enables us to define PO line locations early in the project timeline which can also be discussed. This will also enable us to gain an understanding of approximate model run times.

A grid size of 1 metre will be implemented once the design storms have been selected.

1.1.4.2 Hydraulic Model Parameters

Inflows will be introduced to the hydraulic model along model boundaries, as SA areas and as rain on grid, with the final configuration being catchment dependant.

The 1D/2D component of the models will be based on the provided LiDAR, and will incorporate relevant survey information such as stormwater networks, channels, embankments, road crests and bridges if available. If data is not available, levels will be interpolated based on the surrounding information. The 1D portion of the model will contain the piped stormwater drainage network including road culverts and crossings.

Topographic detail to be used in the hydraulic model will be extracted from the Digital Terrain Model (composed of LiDAR and survey data as appropriate). Key hydraulic features, such as channels, roads and embankments will be specifically addressed in the topographic development to ensure they are appropriately defined. These will be input into the model using Tuflow z-shape layers if required.

All pipes in the hydraulic model will be modelled explicitly in the 1D layer. Only pipes larger than 200 mm will be included in the model. Overland flows will be represented in the 2D layer.

Where outflows across the study boundary will occur, a hydraulic boundary will be inserted into the model, defined by an estimated stage-discharge relationship or a downstream static water level.

Boundary conditions for upstream catchments will be extracted from the broader rain on grid TUFLOW model as a time varying hydrograph. Further to this, some of the models may need to be extended past their downstream limits to ensure boundary conditions do not affect flood behaviours in the project area.

Table 1-1 outlines modelling approaches that can be applied within Tuflow. For this study it is anticipated that a Direct Rainfall modelling approach via 2d SA RF and/or RF layers will be implemented.

It is proposed to model building footprints as inactive areas, with adjustments made to the surrounding area fraction impervious values to capture the loss of impervious area. Due to this approach, it should be

noted that water level values will be extracted from results adjacent to the building footprint and the associated floor level immunity calculated.

Table 1-1 Inflow Modelling Approaches Summary

Lumped Inflow	Distributed Inflow	Direct Rainfall
Typical Application(s)		
Assessment of trunk lines, rivers and other well defined flood paths	Assessment of complex overland networks where flow paths are generally understood	Assessment of complex flow paths where the overland flow paths may not be well defined or catchments are not easily identified
Approach Benefits and Constraints		
Computationally fast (less wet cells)	Computationally faster than direct rainfall	Computationally slow (all cells are wet)
Smaller (faster) hydraulic model can be developed	Smaller (faster) hydraulic model can be developed. Model generally larger than lumped inflow model.	Hydraulic model needs to be developed to catchment extents
Flow is applied directly to the main flow path	Flow is applied to each identified drainage feature	Flow is applied to all cells – may result in flow getting "caught"
Minimal post processing required	Some post processing required to ensure appropriate output	Requires post processing to remove surface noise due to surface variation in topography
All but major flow paths are missed / omitted	Most known flow paths assessed, misses areas where infrastructure may not be present	All flow paths mapped
Only assesses trunk infrastructure	Assesses all infrastructure	Assesses all infrastructure

Flows dependent on accurate hydrology model. Requires a well validated hydrology model.	Flows dependent on accurate hydrology model. Requires a well validated hydrology model.	Flows dependent on accurate hydraulic model. Requires significant user input and verification to ensure accuracy

1.1.4.3 Stormwater Infrastructure

Based on the requirements of the brief Stantec propose to incorporate all drainage infrastructure present within Councils database for the study area into the hydraulic model. This will be supplemented by survey data acquired under the proposed survey scope. It is assumed that separate GIS pit/pipe datasets for the study area will be provided. As such the methodology for dealing with the supplied data is provided below:

- The raw GIS dataset will be input into GIS software and all pits and pipes will have a preliminary assessment undertaken. This will consist of the following:
    - Review of the available information and identification of data gaps within both pit and pipe data;
    - Review of the direction of the pipe in the datasets to ensure the correct direction;
    - Review of the connectivity between pits and pipes. Tuflow has the ability to search and snap however this does not resolve issues where the GIS dataset has been drawn through connections;
    - Review of the network arrangement. GIS datasets can often contain either decommissioned pipes or proposed pipes. The intent is to identify areas where the network does not make sense relative to the surrounding network.
- Following the preliminary data review, the methodology for the infilling of information regarding pipe infrastructure will consist of the following:
    - All pipes will be updated to be drawn in the correct direction and all connections and intersections defined to ensure connectivity;
    - Pipe data will be compared with survey data and updated as required
    - Where pipe diameters are unknown, the upstream pipe diameter will be utilised (to provide conservatism). Where networks are missing diameters the assumptions will be discussed and confirmed with council;
    - Where invert levels are unknown, the ground level at each end of the pipe will be sampled. This will then be reduced by a nominal cover (for example 600 mm) plus the diameter of the pipe to develop a network.
    - The derived levels will be checked against known invert levels (if present). Where real data is present this will take precedent over estimated information.
    - The pipes will then be taken through a thorough GIS review process to ensure that the network derived is complete, flow downhill, upstream pipe inverts equal to or lower than the incoming downstream pipe invert level and that the pipe network is located underground in a conservative manner.
- Following the preliminary data review, the methodology for the infilling of information regarding pit inlet and outlet infrastructure will consist of the following:

- Outlets will be checked to be at ground level as appropriate; and
- Pits will be connected to identified low points.

Following the infilling of missing information, the stormwater infrastructure will be presented in database format showing the original information and the translated data, accompanied by the checks that were undertaken. Ultimately the accuracy of the system will be dependent on the underlying data and survey. It is noted that in all cases data supplied by Council and survey will take precedence over generated information unless it is noticeably erroneous.

Note that Stantec, for the purposes of this task have assumed all information will be provided digitally (GIS). No allowance for the review of hardcopy plans is provided. Stantec can supply a provisional fee to incorporate this dataset if it is deemed important to the outcomes of the project.

Upon completion of the verification the network will be developed into a suitable format for incorporation into the Tuflow model. It is proposed to use both '1d_nwk' layers for both pits and pipes. 'C' type pits are proposed to be used with a representative size and blockage factor applied to best represent catchment conditions.

1.1.4.4 Model Validation

If no suitable flood evidence data can be collected, flows will be validated via comparison with the Rational Method and/or RFFE (if suitable).

Following flow checks, the hydraulic model may then be adjusted via changes within the hydraulic model. These changes generally involve tweaking the mannings or loss values.

1.1.5 MITIGATION

It is understood that the objective of this project is to identify overland flooding issues and the flood risk within the residential area of Cherbourg, any areas identified will be discussed with Council prior to model progression.

Once an existing case model has been developed, validated and design events modelled, the following steps will broadly apply.

Step 1:

Properties will be assessed to see if model confirms habitable floor areas are flooded or roads do not meet QUDM design standards. If no, **Step 2**. If yes, **Step 3**.

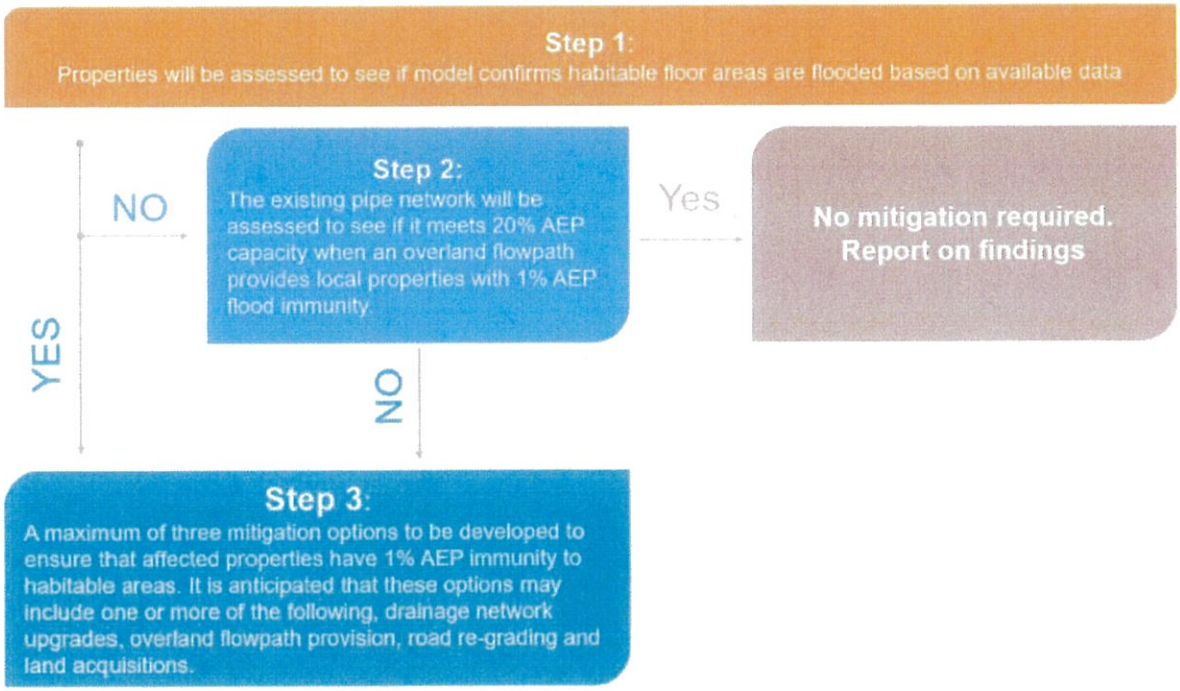
Step 2:

The existing pipe network will be assessed to see if it meets 0.5EY AEP capacity when an overland flowpath provides local properties with 1% AEP flood immunity. If no, **Step 3**. If yes, no mitigation required, report on findings.

Step 3:

A maximum of three mitigation options to be developed to ensure that affected properties have 1% AEP immunity to habitable areas. It is anticipated that these options may include one or more of the following, drainage network upgrades, overland flowpath provision, road re-grading and land acquisitions.

Figure 1-3 Mitigation Assessment Flow Chart



Mitigation investigation will be limited to three areas/locations. Following the initial modelling, areas for mitigation will be identified and discussed with Council, with the aim of prioritising 3 target locations for further investigation.

1.1.6 REPORTING

Report that covers off on the overland flood study methodology and outcomes, including flood risk, mitigation measures and feasibility of measures proposed. Report will include mapping of depth, water surface level and duration of inundation.

1.2 Total Flood Warning Review

The Cherbourg township is located just downstream of the confluence of the Barker and Barambah Creeks and is therefore positioned in a location that puts it at risk of flooding. This part of the project will focus on reviewing the aspects of the Total Flood Warning System that are currently in place. Stantec proposes to follow the methodology outlined below:

- Background information collection:
  - Provide a description of known and potential flood behaviour across the study area. This would likely include learnings from historic flood events and any other anecdotal information that might be available;
  - Summarise the community vulnerability to flooding including criteria like population demographics, physical/social/economic vulnerability and current level of flood awareness and resilience;
  - Identify key pieces of infrastructure at risk of being impacted during flood events, to inform things like evacuation planning;
  - Outline the existing flood warning monitoring network and associated warning services provided by state and federal agencies.
- Analyse the existing flood warning system and identify any shortcomings:
  - Engage with the QRA and the Bureau of Meteorology to identify potential locations for new flood warning infrastructure to be located. Significant input will be taken from the 2017 Bureau of Meteorology network reviews and any recent master planning discussions that have taken place;
  - Explore the potential for non-standard flood warning equipment and the role it might play going forward (e.g. flood cameras, automated flooded road signs and flood sirens);
  - Through engagement with Sunwater and the Bureau of Meteorology, provide discussion around the challenges associated with the current services provided by these organisations;
- Outline improvements and next steps:
  - Identify locations and technology types to augment the current flood warning infrastructure network;
  - Discuss potential improvements that can be explored with Sunwater (Bjelke-Petersen Dam Emergency Action Plan) and the Bureau of Meteorology (Service Level Specification document) by the Local Disaster Managment Group;
  - Propose triggers (including how the water level data from the Cherbourg automatic water level station) that council can use during flood events;
  - With reference to these triggers, what actions can be developed for the local community to respond more effectively;
  - Outline methods for the Local Disaster Management Group to communicate emergency warning messages (social media, emergency alert etc) and document the role that the Bureau of Meteorology and Sunwater play in this process.
- Community information session/s:
  - At the discretion of the Local Council, one Stantec staff member to attend and run a community information session focusing on any changes that have been agreed to by the Local Disaster Management Group as well as how to respond appropriately during the next flood event.
  - Explore the possibility for running a session with the local school with an outcome of assisting in building awareness and resilience in future flood events.

1.3 Council Depot Flood Mitigation Feasibility Assessment

It is understood that currently the Council depot area is known to experience direct flood risk from Barambah Creek.

It is proposed to implement the following scope of works to investigate flooding and identify mitigation measures and the feasibility of these measures:

- Identify issues with infrastructure in sheds
- Identify issues with containers within depot areas used to store Council records
- Utilise Sunwater TUFLOW regional model to define existing flood risk to Council depot
- Utilise rain on grid (overland flow model) to define overland flow risk
- Explore concepts of mitigation measures including feasibility for levee/ operation response measures

To cover the points above the following methodology will be implemented.

A detailed Tuflow model, is to be developed for the Council depot area. It is proposed that the model area is to include a portion of the upstream catchment and extended downstream a suitable distance to allow any potential flood impacts along the road and nearby areas to be investigated. (Model extents will be limited to survey/lidar extents.)

The flow hydrographs from the existing TUFLOW model are to be extracted from the full scale Sunwater model and applied at locations that best represent the main drainage line within the catchment at an appropriate location.

Appropriate model boundaries will be further refined based on review of the available LiDAR and data provided by Sunwater.

The tail water levels to be adopted for the various AEP events shall be discussed and agreed with Council prior to progressing modelling.

The hydraulic scope of works is summarised below;

1.3.1.1 Existing Case

Development of a fine scale TUFLOW model for the Council depot and surrounding area.

Run existing case to determine current flood levels, flows, velocities, duration of inundation and flood immunity. Events to be simulated include 50% AEP, 20% AEP, 10% AEP, 5% AEP, 2% AEP, 1% AEP, 0.2% AEP and 0.05% AEP events. (Will be limited to the actual events within the Sunwater TUFLOW model).

Compare fine scale model results against results from provided Sunwater model

Generate results for depth, velocity and duration for all design events.

Compare regional results with those obtained in the overland flow study to determine the primary flooding mechanism of the site.

1.3.1.2 Mitigation Assessment (3 iterations)

- Revise existing model to include concept mitigation (ie. Levee).
- Simulate model for the 50% AEP, 20% AEP, 10% AEP, 5% AEP, 2% AEP, 1% AEP, 0.2% AEP and 0.05% AEP events to determine developed flood levels, velocities and duration of inundation and any impacts of mitigation measures.
- Generate results for depth, velocity, duration and flood impact for all design events.

1.3.2 REPORTING

A hydraulic assessment report will be prepared to contribute to the overall design report and will address the following;

Methodology involved for the development of the fine scale hydraulic model.

Summary of existing results and developed results

- Summary of flood impacts for the mitigation measures proposed.

1.4 Stormwater data survey

We provide the following description of the intended survey data capture to support the quantitative assessment aspects of the project.

Proposed site extents for stormwater infrastructure capture.

Depo site requiring additional surface level information.

ITEM 1.1: Stormwater infrastructure capture:

- Site EH&S review and preparation of required SWMS and hazard identification
- Use existing Permanent Survey Marks within the Cherbourg proposed survey extents.
    - Horizontal coordinate datum for all surveys shall be the Geocentric Datum of Australia 1994 (GDA94) and implemented in the relevant zone of the Map Grid of Australia 1994 (MGA94). **Please note that should a transformation be required to suit new LiDAR capture, we can accommodate the change from GDA94, GDA2020.**
    - All surveys shall be based on the Australian Height Datum (AHD).
- We estimate roughly 120-140 stormwater assets that require survey suing RTK GPS observations.
    - These assets include stormwater gully pits in roads, immediate overflow locations into gullies or stormwater drains adjacent to the roads, stormwater manholes for inter allotment drainage between Bell Street and Bulgi Street, and Bulgi Street and Wondai Road.
    - Gully pits will be opened where we can safely do so, and the chamber size, pipe invert levels and sizes, and direction will be surveyed.
    - **We have not allowed for cleaning out blocked gully pits or pipes, and would recommend Council inspect and clean out any blocked chambers prior to the survey commencing.**
    - Where possible and the surveyor is confident of pipe directions between chambers, we will string pipes accordingly. In the event the surveyor is unsure, and additional shot will be taken to show pipe directions in and out of the chambers.
- GNSS site level of accuracy:
    - GPS Pickup: + 20 mm, -20 mm

Note: Traffic control has not been included in the fee provided above. If required, this will be advised to the client and charged at the provisional rate provided below.

- Survey of the Council Depo area as generally described above to include:
    - Spot heights and contours at 0.25m contour interval
    - Outlines of buildings and structures, including floor levels. Buildings to be surveyed showing perimeter walls only.
    - Banks, swales and changes in grade
    - Visible drainage/sewer structures including inverts if accessible.
        - Stormwater including pipe sizes, IL's, structures, locations, channels, grated drains, etc
        - Sewer including pipe sizes, IL's, material (if available), structures, locations, etc.

Requirements:

- Detail survey using SEQ Council feature (or other as required) coding format and 12D
- All data to be captured, reduced and supplied in SEQ Council coding format and 12D, AutoCad etc.
- All works to be undertaken and supplied in MGA Grid and AHD heights as described above.

Project delivery:

At the completion of the survey all captured and processed data is to be checked and verified by suitable means to ensure the completeness and accuracy of the prepared DTM.

Information to be delivered shall include MINIMUM requirement of:

- 12da file including all the processed data and the TIN
- 3d AutoCAD dwg file
- export the data to MID/MIF format

2 TEAM

Lisa Holden will project manage the projects across all 4 areas. Lisa brings over 17 year's of experience in Stormwater and flood risk definition, mitigation and resilience projects. Lisa will ensure the right team members are engaged in a timely manner and oversea project program and quality to ensure the intention of the project is fulfilled. Lisa will lead project reporting to Council.

Jess Carey will be the primary officer working on the Flood Waring review portion of the project. Jess brings nearly 15 years of experience as an operational flood forecaster at the Bureau of Meteorology. He brings a wealth of practical knowledge and expertise of the Total Flood Warning System concept, and Stantec believes this knowledge will be pivotal to the success of this project. His honest, outcomes focused demeanour allows him to quickly connect and build trust with both technical stakeholders and the general community.

Zac McCosker will be the technical lead for the stormwater and flood definition components of the project and oversee the development of both the overland flow study model and the council depot flood mitigation assessment model. With 10 years' experience in water resources, supported by 12 years in customer facing roles, Zac is experienced in all aspects of flood plain management.

Austin Peterson will act as lead flood modeller. Austin has experience in a variety of hydrological and hydraulic projects including flood impact assessments, flood mitigation, catchment-wide flood studies, master drainage plans, road upgrade studies and stormwater quality management plans across Queensland and New South Wales. Austin is competent with several software packages including TUFLOW, XP-RAFTS, URBS, WBNM, Storm Injector, HEC-RAS, Water RIDE, CatchmentSIM, HY-8, MUSIC, FLIKE, MapInfo and QGIS.

Rodger Louw will lead the survey aspects of the project. Rodger has over 23 years' experience gained in all aspects of Mining and Engineering Surveying including surface and underground mine surveying, topographical surveys, construction set-out and asconstructed surveys, monitoring surveys of structures and surfaces, volume and audit surveys and control network surveys for various types of projects and developments in Australia and South Africa

3 PROJECT PROGRAM

The following breakdown outlines each stage of the project and approximate timelines for the completion for each activity required to deliver that part of the project. It is expected that some components of the project can be run independently of each other.

Milestone	Target Date
Overland flow study and mitigation feasibility assessment	
Completion	Commissioning + 3 months
Total flood warning review	
Completion	Commissioning + 3 months
Council depot flood mitigation feasibility assessment	
Completion	Commissioning + 3 months
Stormwater data survey	
Completion	Commissioning + 1 months

4 FEES AND CONTRACT

We propose to be engaged under Local Buy Contract (LB312) and summarise below the proposed fixed fee structure for the proposed works. This proposal is valid for 1 month of the date of this document. Engagement thereafter may trigger review of the project program and budget.

Item	Fee (incl GST)
Cherbourg overland flow study and mitigation feasibility assessment	
	$59,440
Cherbourg total flood warning review	
	$51,290
Cherbourg council depot flood mitigation feasibility assessment	
	$71,320
Cherbourg stormwater data survey	
	$34,945
Total (incl GST)	$216,995

5 LIMITATIONS AND ASSUMPTIONS

The following limitations and assumptions apply to the proposed project scope.

Cherbourg overland flow study and mitigation feasibility assessment

- All flood modelling will be limited to the available data. Where data is limited that restricts the proposed scope of works, this will be discussed with Council.
- Any design or scope of works that has not been expressly stated in the above scope of works is excluded.
- Mitigation options will be limited to 6 (3 areas by 2 options) in total for the overland flow study and 3 options in total for the Council depot assessment
- No allowance has been made for the attendance of any site meetings by the flooding team.
- It is assumed that a data agreement will be entered into with Sunwater that allows Stantec to utilize the hydraulic model for the full scope intended to define regional flood behaviour. It is assumed that this data agreement with allow Stantec to rely on the accuracy of the flood model.

Cherbourg total flood warning review

- Stantec proposed to have 1 staff member attend and present at the Community Information Session
- Allowance for 1 single trip to Cherbourg for 1 staff member has been made
- No allowance has been made for venue planning, booking, catering, advertising or coordination of the planned community session. It is assumed that these activities will be arranged and paid for by Council

Cherbourg stormwater data survey

- Having full access to the above site during normal working hours (0730-1700) to be able to accurately carry out the field survey. No allowance has been made for negotiation of site access.
- Would be preferable Council provide an escort when accessing private property to capture internal allotment drainage.
- Council will manage and ensure advanced notification of residents and advise the survey team of any site access limitations prior to survey commencing.
- We have allowed for up to 140 stormwater assets to be captured. In the event this number increases significantly on site due to outdated imagery used for calculating the above proposal, or any other reasons we did not foresee, we will notify the Project Manager immediately. We will ensure that all stormwater infrastructure is captured first, being the priority item, before moving on to the Depo site.
- Quotation is based on works been carried out continuously without any stoppages, if stoppages are incurred through no fault of Stantec, additional charges will be incurred.
- No allowance for meetings and liaison with stakeholders in relation to the lodgment and obtaining approvals and signatures has been included in this proposal.

The survey will be done using both a DNRME accredited calibrated Robotic Total Station and GNSS RTK survey equipment, as required. Our preference is to use GPS observations using a base station placed over an existing Permanent Survey Mark.

Should any additional work be required to what has been mentioned above additional costs will apply.

The budget survey fees include the following:

- All labour and vehicle costs including travel and overtime costs;
- All survey equipment, laptop computers etc;
- All consumables – pegs, paints etc;
- Work to be carried out by a qualified surveyor.

Reference: Cherbourg Stormwater and Flood Assessments

We look forward to developing a collaborative relationship with Cherbourg Aboriginal Council to support better understanding of the stormwater and flood risks and improved resilience of the community.

Please don't hesitate to contact us if you wish to discuss this proposal.

Kind Regards,

STANTEC AUSTRALIA PTY LTD

Jess Carey
Practice Lead, Flood Resilience
Mobile: 0404 606 951
jess.carey@stantec.com

stantec.com

Attachment:Team CVs

The following Terms and Conditions are attached to and form part of a proposal for services to be performed by Consultant and together, when the Client authorizes Consultant to proceed with the services, constitute the Agreement. Consultant means the Stantec entity issuing the Proposal.

DESCRIPTION OF WORK: Consultant shall render the services described in the Proposal (hereinafter called the "Services") to the Client.

TERMS AND CONDITIONS: No terms, conditions, understandings, or agreements purporting to modify or vary these Terms and Conditions shall be binding unless hereafter made in writing and signed by the Client and Consultant. In the event of any conflict between the Proposal and these Terms and Conditions, these Terms and Conditions shall take precedence. This Agreement supercedes all previous agreements, arrangements or understandings between the parties whether written or oral in connection with or incidental to the Project.

COMPENSATION: Payment is due to Consultant upon receipt of invoice. Failure to make any payment when due is a material breach of this Agreement and will entitle Consultant, at its option, to suspend or terminate this Agreement and the provision of the Services. Interest will accrue on accounts overdue by 30 days at the lesser of 1.5 percent per month (18 percent per annum) or the maximum legal rate of interest. Unless otherwise noted, the fees in this agreement do not include any value added, sales, or other taxes that may be applied by Government on fees for services. Such taxes will be added to all invoices as required. The Client will make payment by Electronic Funds Transfer when requested by Consultant.

NOTICES: Each party shall designate a representative who is authorized to act on behalf of that party. All notices, consents, and approvals required to be given hereunder shall be in writing and shall be given to the representatives of each party.

TERMINATION: Either party may terminate the Agreement without cause upon thirty (30) days notice in writing. If either party breaches the Agreement and fails to remedy such breach within seven (7) days of notice to do so by the non-defaulting party, the non-defaulting party may immediately terminate the Agreement. Non-payment by the Client of Consultant's invoices within 30 days of Consultant rendering same is agreed to constitute a material breach and, upon written notice as prescribed above, the duties, obligations and responsibilities of Consultant are terminated. On termination by either party, the Client shall forthwith pay Consultant all fees and charges for the Services provided to the effective date of termination.

ENVIRONMENTAL: Except as specifically described in this Agreement, Consultant's field investigation, laboratory testing and engineering recommendations will not address or evaluate pollution of soil or pollution of groundwater. Consultant is entitled to rely upon information provided by the Client, its consultants, and third-party sources provided such third party is, in Consultant's opinion, a reasonable source for such information, relating to subterranean structures or utilities. The Client releases Consultant from any liability and agrees to defend, indemnify and hold Consultant harmless from any and all claims, damages, losses and/or expenses, direct and indirect, or consequential damages relating to subterranean structures or utilities which are not correctly identified in such information.

PROFESSIONAL RESPONSIBILITY: In performing the Services, Consultant will provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices normally provided in the performance of the Services at the time and the location in which the Services were performed.

INDEMNITY: The Client releases Consultant from any liability and agrees to defend, indemnify and hold Consultant harmless from any and all claims, damages, losses, and/or expenses, direct and indirect, or consequential damages, including but not limited to attorney's fees and charges and court and arbitration costs, arising out of, or claimed to arise out of, the performance of the Services, excepting liability arising from the sole negligence of Consultant.

LIMITATION OF LIABILITY: It is agreed that, to the fullest extent possible under the applicable law, the total amount of all claims the Client may have against Consultant under this Agreement, including but not limited to claims for negligence, negligent misrepresentation and/or breach of contract, shall be strictly limited to the lesser of professional fees paid to Consultant for the Services or $50,000.00. No claim may be brought against Consultant more than two (2) years after the cause of action arose. As the Client's sole and exclusive remedy under this Agreement any claim, demand or suit shall be directed and/or asserted only against Consultant and not against any of Consultant's employees, officers or directors.

Consultant's liability with respect to any claims arising out of this Agreement shall be absolutely limited to direct damages arising out of the Services and Consultant shall bear no liability whatsoever for any consequential loss, injury or damage incurred by the Client, including but not limited to claims for loss of use, loss of profits and/or loss of markets.

In no event shall Consultant's obligation to pay damages of any kind exceed its proportionate share of liability for causing such damages.

DOCUMENTS: All of the documents prepared by or on behalf of Consultant in connection with the Project are instruments of service for the execution of the Project. Consultant retains the property and copyright in these documents, whether the Project is executed or not. These documents may not be used for any other purpose without the prior written consent of Consultant. In the event Consultant's documents are subsequently reused or modified in any material respect without the prior consent of Consultant, the Client agrees to defend, hold harmless and indemnify Consultant from any claims advanced on account of said reuse or modification.

Any document produced by Consultant in relation to the Services is intended for the sole use of Client. The documents may not be relied upon by any other party without the express written consent of Consultant, which may be withheld at Consultant's discretion. Any such consent will provide no greater rights to the third party than those held by the Client under the contract and will only be authorized pursuant to the conditions of Consultant's standard form reliance letter.

Consultant cannot guarantee the authenticity, integrity or completeness of data files supplied in electronic format ("Electronic Files"). Client shall release, indemnify and hold Consultant, its officers, employees, Consultant's and agents harmless from any claims or damages arising from the use of Electronic Files. Electronic files will not contain stamps or seals, remain the property of Consultant, are not to be used for any purpose other than that for which they were transmitted, and are not to be retransmitted to a third party without Consultant's written consent.

FIELD SERVICES: Consultant shall not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with work on the Project, and shall not be responsible for any contractor's failure to carry out the work in accordance with the contract documents. Consultant shall not be responsible for the acts or omissions of any contractor, subcontractor, any of their agents or employees, or any other persons performing any of the work in connection with the Project. Consultant shall not be the prime contractor or similar under any occupational health and safety legislation.

GOVERNING LAW/COMPLIANCE WITH LAWS: The Agreement shall be governed, construed and enforced in accordance with the laws of the jurisdiction in which the majority of the Services are performed. Consultant shall observe and comply with all applicable laws, continue to provide equal employment opportunity to all qualified persons, and to recruit, hire, train, promote and compensate persons in all jobs without regard to race, color, religion, sex, age, disability or national origin or any other basis prohibited by applicable laws.

DISPUTE RESOLUTION: If requested in writing by either the Client or Consultant, the Client and Consultant shall attempt to resolve any dispute between them arising out of or in connection with this Agreement by entering into structured non-binding negotiations with the assistance of a mediator on a without prejudice basis. The mediator shall be appointed by agreement of the parties. The Parties agree that any actions under this Agreement will be brought in the appropriate court in the jurisdiction of the Governing Law, or elsewhere by mutual agreement. Nothing herein however prevents Consultant from any exercising statutory lien rights or remedies in accordance with legislation where the project site is located.

ASSIGNMENT: The Client shall not, without the prior written consent of Consultant, assign the benefit or in any way transfer the obligations under these Terms and Conditions or any part hereof.

SEVERABILITY: If any term, condition or covenant of the Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions of the Agreement shall be binding on the Client and Consultant.

FORCE MAJEURE: Any default in the performance of this Agreement caused by any of the following events and without fault or negligence on the part of the defaulting party shall not constitute a breach of contract, labor strikes, riots, war, acts of governmental authorities, unusually severe weather conditions or other natural catastrophe, disease, epidemic or pandemic, or any other cause beyond the reasonable control or contemplation of either party. Nothing herein relieves the Client of its obligation to pay Consultant for services rendered.

COVID-19: The parties acknowledge the ongoing COVID-19 pandemic and agree that the fee and schedule in the proposal is based on what is currently understood. Where conditions change, the parties may have further discussions to manage and mitigate the impact of this evolving situation on the Project.

CONTRA PROFERENTEM: The parties agree that in the event this Agreement is subject to interpretation or construction by a third party, such third party shall not construe this Agreement or any part of it against either party as the drafter of this Agreement.

BUSINESS PRACTICES: Each Party shall comply with all applicable laws, contractual requirements and mandatory or best practice guidance regarding improper or illegal payments, gifts, or gratuities, and will not pay, promise to pay or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a government official or private individual) or entity for the purpose or illegally or improperly inducing a decision or obtaining or retaining business in connection with this Agreement or the Services.

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LISA HOLDEN

Flood Engineer

Lisa is a senior water engineer with over 17 years' experience working in hydrology, hydraulics and flood risk management. Lisa draws upon her comprehensive experience in a broad range of areas within the flooding industry to provide technical guidance and expert contribution to water resources projects for state and local government organisations, property developers, resource industries and water authorities both in Australia and internationally.

Specific areas of technical expertise include hydrologic/hydraulic assessment, flood modelling for flood risk definition, stormwater assessment and mitigation, dam break assessment, levee assessments, water security assessments and strategies, region wide and site-specific flood warning review and flood emergency planning. Lisa has applied her technical expertise in various peer review roles and provided technical input to expert witnesses in her field. Lisa applies her detailed technical knowledge to lead engineering studies ensuring assessments are fit for purpose and outcomes are robust and meaningful.

Lisa enjoys working collaboratively with clients and takes pleasure from delivery of quality and meaningful outcomes for local councils governing bodies and above all the communities touched by flooding.

QUALIFICATIONS AND MEMBERSHIPS

- BEng (Env) (Hons)

PROJECT EXPERIENCE

Redland City Council Flood Risk, Redland City Council, 2020-2022

Preliminary design study including identification of options, organisation and management of all technical inputs to meet a tight 14-week study deadline. The project involved reviews with the Dam Regulator and other stakeholders including DEWS. The project is in support of a Business Case via Building Queensland. The dam is the largest catchment in Queensland with over 115,000 km^2. The existing structures consist of a 500m long 32m high concrete spillway and 5km of earthworks and rockfill dams.

Various Master Drainage Studies for Local Catchments across the Region, Fraser Coast Regional Council 2019-2022

Lisa led the team via collaboration with Fraser Coast Regional Council to undertake hydrologic and hydraulic modelling to define the flood risk for multiple local catchments across the Fraser Coast Region. Mitigation options were explored and conceptualised. Lisa project managed and project technical direction and review of modelling and project deliverables.

Riverine Flood Warning Review of Fraser Coast Region 2021-2022

Lisa led the team via collaboration with Fraser Coast Region and the range of stakeholders to undertake a review of the Total Flood Warning System for the riverine flood risk of the region. The objective of the project was to alignment with industry best practice and provide the awareness, resilience and recovery capabilities required for major riverine flood events.

Wagga Wagga Flood Warning System Improvements Review, Wagga Wagga City Council 2021-2022

Lisa project managed and led consultation activities involved to achieve improvement in flood forecasting and flood warnings to give the community of Wagga Wagga, and particularly upstream villages such as Oura a better understanding of flood behaviour in real time. Study recommendations were targeted to leverage off existing infrastructure to improve communities understanding of flooding.

Mount View Detention Basin, Public Works Advisory NSW, 2021

Lisa led hydrologic and hydraulic modelling to support update to dam routing assessments including dam break assessment.

Fraser Coast Water Security Strategy, Fraser Coast Regional Council, 2021

Lisa oversaw hydrodynamic modelling utilised to assess current/forecast Level of Service for existing water supply schemes and the development of a region wide water security strategy for the next 30 years.

Torres Shire Flood Hazard Risk Assessment, DATS Islander Partnerships, 2020

Lisa undertook flood mapping and reporting to support the Flood Hazard Risk Assessment of the Draft Torres Shire Planning Scheme

Legacy Way Tunnel (2011)

Hydrologic & hydraulic modelling of Eastern Tunnel Portal utilising WBNM and TUFLOW

Cornmeal Creek Flood Study, Sunshine Coast Regional Council

Cornmeal Creek Flood Study (RAFTS and TUFLOW), Maroochydore

Flood Assessment for Insurance Companies 2011

Undertook site investigations and interviewed insured to determine the cause of water damage following intense rainfall events of 2011. Undertaken for many properties.

Flood Assessment for Insurance Companies 2008

Undertook site investigations and interviewed insured to determine the cause of water damage following intense rainfall events of 2008. Undertaken for many properties.

OTHER RELEVANT PROJECTS

- Redland Bay Storm Tide Study
- Tabulam Water Supply Scoping
- Isaac Water Trigger Level Assessment
- Mount View Detention Basin (Cessnock, NSW) Dam Routing Update Hydrologic (RAFTS) and Hydraulic (MikeFlood) assessments.
- Waioeka and Otara River Capacity Review Hydraulic Modelling in Tuflow. Bay of Plenty, NZ
- Urangan South (Hervey Bay, QLD) - Road, Stormwater Drainage and Drainage Corridor Detailed Design - Hydraulic Analysis in Tuflow.
- Various Master Drainage studies using Tuflow within Fraser Coast Region
- Waitohu Stream Hydraulic Investigations in Tuflow, Greater Wellington NZ
- Kuku Stream Hydrologic and Hydraulic Investigations Culvert Upgrade, NZTA

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ZAC MCCOSKER

Senior Stormwater & Drainage Engineer

Zac McCosker has over 9 years' experience within the water resources industry of which 4.5 have been at Cardno now Stantec. This water resource experience is supplemented by over 10 years of experience within the environmental management industry. He has held senior positions within various private consultancies, service providers and has worked in local government.

In the Technical/Lead Flood Modelling role as a Flooding and Stormwater engineer Zac has been involved in a number of significant projects both at Stantec and other organisations. The role involves ensuring a timely delivery of projects, project management, risk anylysis, solution optimisation, and assisting graduate engineers on technical design aspects of flood modelling, ethical issues, water quality, flood risk management and water management issues.

With a focus on safe, sustainable and ethical solutions in all projects that he leads, Zac strives to provide solutions that benefit not just clients but the community and environment as a whole.

SPECIALISATIONS

- Hydrologic/hydraulic assessment
- Flood modelling for flood risk definition
- Stormwater assessment and mitigation
- Dam break assessment
- Levee assessments
- Drainage Masterplans
- Region wide and site-specific flood warning review and flood emergency planning

QUALIFICATIONS AND MEMBERSHIPS

- B E (Env) (Hons)

PROJECT EXPERIENCE

Technical Lead Flood Modelling, RCC Flood Mitigation Projects, Redland City Council, 2020 – 2022

Detailed flood modelling to assess existing flooding conditions and propose potential mitigation options in targeted areas across the Redlands region. The scope of the project was to verify flooding within habitable areas of each identified flood affected residence, identify the cause of flooding, provide mitigation options to rectify and reduce flooding risk and complete a multi-criterion analysis that ranked the best mitigation options based on a variety of criteria. These criteria included effectiveness of the mitigation option, overall cost, maintenance and disturbance during construction.

During the course of this project reference was made to a number of different guidelines and standards, including but not limited to QUDM, State Planning Policy, Queensland Flood Risk Management Framework and TMR road design manuals.

Lead Flood Modelling, Eel Creek and Tinana Creek Flood Assessment, Gympie Regional Council, 2019 – 2021

Detailed hydrology and hydraulics modelling for the Eel Creek and Tinana Creek catchments within the Gympie Regional Council local government area. The purpose of the assessment was to provide a better understanding of flood behaviour within the catchment as well as provide information for future management decisions, land use planning, disaster management planning and infrastructure planning.

The trafficability of all major road crossings was identified using Council, QUDM and TMR guidelines.

Lead Flood Modelling, Tandur Road Bridge Upgrade, Gympie Regional Council, 2019 – 2021

Detailed hydrology and hydraulics modelling for a 30 metre long bridge located on Six Mile Creek. Modelling was required to assist the design process and ensure that the proposed upgrade from a single lane to dual lane with guardrails did not cause any adverse impacts on surrounding infrastructure.

Internal Council guidelines were sourced and referenced for this project due to proximity of neighbouring properties and the potential impacts.

Lead Flood Modelling, Lihir Island, Newcrest Mining, 2020 – 2022

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The Lihir Island road project is a 27 km long road upgrade located on Lihir Island. The project scope included detailed modelling of two bridge crossings, wet crossings and approximately 50 cross drainage culverts. As part of this project high level risk assessments were performed to guide crossing designs. The updated PNG Flood Estimation Manual and the PNG Drainage Structures Manual wepre used as reference material for this project. Guidance was also sought from the PNG department of works on design suitability.

Flood Modeller, Maroochy City Centre, Suncentral, 2012 – 2020
This project included flood modelling, preliminary sewer and water services provision, preliminary earthworks strategy, geotechnical investigations, environmental and ecology services, canal water quality and circulation system design and general engineering master planning advice. Some of the specific environmentally focussed aspects of the project that have been provided include:

- Developing a Project wide Construction Environment Management Plan
- Undertaking Protected Plants Flora Surveys and Reporting
- Undertaking marine plant and fish habitat assessments; and
- Investigating fish passage and fish habitat improvement opportunities; and
- Obtaining approvals for waterway barrier works associated with the new canal, the automated waste collection system and a range of temporary works.
- Flood modelling and assessment
- Stormwater quality assessment and design

PM/Lead Flood Modelling, Mt Peter Stormwater Management Plan, DEPW, 2021 – 2022

Cardno was engaged by the Department of Energy and Public Works (DEPW) to prepare a Stormwater Management Plan for the proposed development site located at Mount Peter Road, Edmonton.

The study provided engineering advice to address issues relating to stormwater quantity and quality, as well as flooding of the subject site.

Works at this site were required to comply with all SPP and Council requirements for water quality, quantity, flood risk and impacts on surrounding properties.

Project Manager, Maroochydore Master Drainage Study, SCC, 2019 – 2020
The purpose of the study was to mitigate off-site actionable nuisance likely to occur as a result of future growth within the region as well as better understand flooding behaviour within the catchment. It is expected that this study will form the main flooding and drainage tool to represent the study area for the next 10 years while also informing the Local Government Infrastructure Plan (LGIP). A 1D/2D linked hydraulic model was constructed using the modelling program TUFLOW to simulate overland, channel flows and flooding within the study area. Mitigation areas were selected based on a road hazard and trafficability assessment using design standards from the Queensland Urban Drainage Manual (QUDM). Multiple mitigation scenarios were modelled including augmentation of the existing stormwater network and the implementation of on-site detention to selected areas.

Mitigation options were also assessed on an impact and risk basis to the surrounding properties via pre agreed Council requirements.

Project Manager, Nambour West Master Drainage Study, SCC, 2020 – 2021
The purpose of the study was to mitigate off-site actionable nuisance likely to occur as a result of future growth within the region as well as better understand flooding behaviour within the catchment. It is expected that this study will form the main flooding and drainage tool to represent the study area for the next 10 years while also informing the Local Government Infrastructure Plan (LGIP). A 1D/2D linked hydraulic model was constructed using the modelling program TUFLOW to simulate overland, channel flows and flooding within the study area. Mitigation areas were selected based on a road hazard and trafficability assessment using design standards from the Queensland Urban Drainage Manual (QUDM). Multiple mitigation scenarios were modelled including augmentation of the existing stormwater network and the implementation of on-site detention to selected areas.

Lead Flood Modelling, Seib Road Flood Impact Assessment, SCC, 2020 – 2021
Detailed hydraulics modelling to inform design and assess afflux of the proposed 30 metre long pedestrian bridge across a major flow path. Input was provided to the structural team to ensure the optimal solution was provided. Model was developed inline with Council requirements on maximum afflux. TMR modelling guidelines were implemented throughout the project.

Cardno now Stantec

Rodger Louw

Current Position
Survey Manager
Geospatial

Profession
Surveyor

Years' Experience
23

Joined Cardno
November 2007

Education
Dip. Mine Surveying
National Higher Dip.
Mineral Resource Mgt

Professional Registrations
Surveyors Board QLD

Surveying Associate
No. SA548

Affiliations
SSSI

Summary of Experience

Rodger has over 23 years' experience gained in all aspects of Mining and Engineering Surveying including surface and underground mine surveying, topographical surveys, construction set-out and as-constructed surveys, monitoring surveys of structures and surfaces, volume and audit surveys and control network surveys for various types of projects and developments in Australia and South Africa.

In November 2007 he relocated to Australia and joined Cardno now Stantec where he is currently employed as the Survey Manager in Brisbane where he leads a team of surveyors on projects throughout Queensland.

Significant Projects

Engineering and Topographical surveys (Brisbane):

- City of Gold Coast - Uplands and Greenacre Drive shared path upgrade project,
- Brisbane City Council - Beams Rd utilities survey for design
- Redland City Council - Victoria Esp. beach nourishment survey - laser scanning monitoring for volumetric calculations.
- Brisbane City Council - Brisbane City Hall floor monitoring project - laser scanning survey
- City of Gold Coast - Mermaid Beach Pacific Fair Drive Intersection Pram Ramp upgrade project - detail for design survey;
- City of Gold Coast - Reids Crossing and Birds Crossing culvert upgrade projects -detail for design survey;
- City of Gold Coast - Currumbin Creek Road landslip sites - detail for design surveys;
- City of Gold Coast - Howards Creek Place landslip site - detail for design survey;
- City of Gold Coast - Pimpama to Coombaba STP Recycled Water Main Augmentation upgrade project - detail for design survey, cadastral survey, underground utilities engineering.
- Scenic Rim Regional Council - NDRRA flood damaged sites, bridges, culverts, road sections survey package 1 - detail for design surveys including UAV use.
- City of Gold Coast - Rock Groynes detail survey for monitoring including conventional and hydrographic surveying.
- Sunshine Coast City Council - various bridge sites along Maroochy River detail for design surveys.
- Cross River Rail - underground utility investigation survey and reports;
- Inland Rail - Moree to Narrabri - underground utility investigation and detail for design surveys of both stations. Boundary verification survey at Narrabri Station.

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JESS CAREY

Practice Lead – Flood Resilience

Jess has fifteen years-experience in the flooding industry and has worked with stakeholders across Australia and across all levels of the government to build capability and improve resilience to flooding.

Jess is an excellent communicator and has over a decade of communication experience delivering briefings, interviews and presentations to all levels of government and to the media; including live press conferences. He has demonstrated the ability to build effective working relationships with external customers, most recently across all levels of the Disaster Management community in Queensland and has a strong passion to ensure the concepts and benefits of the Total Flood Warning System concept are realised to keep the community safe. He also possesses vast leadership experience in high stress, rapidly changing operational environments where maintaining a clear vision and calm, organised manner is extremely important.

Jess is looking to leverage his operational experience and knowledge of flood impact in Queensland and other areas to deliver flood resilience projects that improve the way a community responds to flood events to keep people and their livelihoods safe.

QUALIFICATIONS AND MEMBERSHIPS

- BEnv. Mgt. (Hons)

CAREER SUMMARY

Stantec
Practice Lead – Flood Resilience
Water Resource Australia (February 2023 – current)

Bureau of Meteorology
Decision Support Senior Hydrologist
Hazard Preparedness and Response (Oct 2020 – Jan 2023)

Key contact point for all flood related services for Queensland. Strategic oversight over flood related customer relationships for all levels of the Queensland Disaster Management framework. Provided essential input of intelligence into dozens of Local Disaster Management Groups during flood events. Maintained customer relationships with Queensland Reconstruction Authority and other agencies who participate in the Flood Warning Consultative Committee, the lower Brisbane Interagency Group and represented the Bureau at regular Floodplain Management Australia Queensland Chapter meetings.

Worked with the QRA's Get Ready team to build resilience and education at the local level. A summary of the activities completed include:

- Delivery of a flood related educational video.
- Attendance at various community focused events and exhibitions
- Review and input into various documents to be utilised by members of the public

Major flood events including:

- NSW and Victoria flooding (Sept/Oct 2022)
- Southern Queensland Northern NSW flooding (Feb/Mar 2022)
- Southern border flooding (March 2021, Oct 2021)

Bureau of Meteorology
Senior Hydrologist
Flood Forecasting and Warning Team (May-Oct 2013, Apr-Aug 2014, Oct 2016-Oct 2020)

Various experience in temporary opportunities before being formally promoted to the level of Senior Hydrologist in October 2016. Experience included:

Senior Hydrologist – Queensland Flood Forecasting and Warning Team (Oct 2016 – Oct 2020)
External engagement portfolio lead, which required strategic oversight and delivery of external communications to Local Councils, State Government departments and other flood focussed organisations. This included formal secretariat of the Queensland Flood Warning Consultative Committee and chair of the Lower Brisbane River Interagency Group. Bureau of Meteorology Customer Lead for the relationship with the Queensland Reconstruction Authority from June 2019. Acted as a Lead Flood Warning Duty Officer during flood operations.

Major flood events including:

- Southern Interior Flooding (March 2020)
- Monsoon Trough flood event – North Queensland (February 2019)
- Queensland North Tropical Coast flooding (February 2018)
- Daly River Flooding in the Northern Territory (Jan 2018)
- Tropical Cyclone Debbie flooding (March 2017)

Business Lead – WET2 Project (Mar 2017 – Oct 2017)
Lead the project team to develop and operationalise the Bureau's next generation warning entry tool alongside the nationalisation of the Flood Watch service. This project required the following items to be delivered:

- a new interface to be developed to support the new Flood Watch service including the introduction of graphical warning and watch products
- nationally agreed policy on when, where and how Flood Watch products would be issued across the country
- Development and completion of a national training and competency module to support the introduction of the new tool and policy arrangements

Project Manager – Flood Warning Training and Competency Project (Apr 2014 – Aug 2014)
Act as the Project Manager on the Flood Warning Training and Competency Project to ensure its ongoing development and improvement. This role included constant communication with the project board, being responsible for ensuring the flood warning team maintained their competency and ensured existing training modules were maintained to a high standard and where required replaced/improved.

Senior Hydrologist – Munro Review improvements project (May 2013 – Oct 2013)
In response to the Munro Review the Bureau of Meteorology required an increase the communication and understanding of the current arrangements for the provision of flood forecasting and warning services to the Australian community.

To do this a number of documents (National Arrangements, Service Level Specifications and Data Sharing Agreements) were constructed in partnership with key stakeholders which better defined the Bureau's flood warning services and the roles and responsibilities of key stakeholders in a nationally consistent manner. This

role required me to lead on the construction and delivery of these documents which now act as critical reference documents that support the services provided by the national flood forecasting and warning team.

Bureau of Meteorology
Queensland Media and Communication Manager
Corporate Communications Team (Feb 2015 – Mar 2016)

As part of this role Jess led and supported the timely planning and implementation of national and regional stakeholder engagement and communication strategies and plans. He proactively engaged stakeholder groups and facilitated the effective marketing and adoption of the Bureau's information products, services and programs. He was required to provide professional and timely communication, adoption and issues management guidance, advice and support to Regional and Head Office staff. He was tasked with coordinating, preparing and delivering responses to media, stakeholder and public enquiries regarding the Bureau's programs, products and services with input from technical specialists and other Bureau staff as required. In addition to this during periods of severe weather and other critical incidents, he supported the preparation, integration and distribution of technical information and other operational support activities to priority stakeholders including other Bureau staff, the media, local, state and federal government agencies, emergency services and industry sectors.

Major weather events included:

- Severe Tropical Cyclone Marcia (February 2015)
- Severe Tropical Cyclone Nathan (March 2015)
- Granite Belt snow event (July 2015)

Bureau of Meteorology
Hydrologist
Flood Forecasting and Warning Team (Oct 2012 – Oct 2016)

Undertook hydrological studies (including hydrological modelling) in support of the development, implementation and maintenance of existing, improved and new flood forecasting systems. Also participated and when required led flood operations in the Queensland Flood Warning Centre and actively participated in field maintenance trips with technical officers from the maintenance Hub.

Major events included:

- January 2013 – Ex-TC Oswald Flooding
- April 2014 – TC Ita Flooding

Engeny Water Management
Water Resource Engineer
Surface Water Engineering Team (May 2012 – Oct 2012)

Provided specialist flood emergency management detail into floodplain management studies. Undertook various hydrologic and water balance modelling projects. Also assisted in the production of the various mapping tasks.

Major projects included:

- Flinders River flood mitigation study – Richmond Shire Council
- Springsure Creek water management study – Bandanna Energy
- Mt Leyshon Mine wet season review – Newmont Mining

Bureau of Meteorology
Graduate Hydrologist
Flood Forecasting and Warning Team (Apr 2008 – May 2012)

Assisted in the development of the data analysis and forecasting tools and models utilised in flood warning operations. Participated in monitoring network development activities and maintenance trips and acted as a flood forecaster in the Queensland Flood Warning Centre during flood operations.

Major events included:

- February 2012 – South-West Queensland Floods
- February 2011 – TC Yasi flooding
- December 2010 to January 2011 – Queensland flooding
- March 2010 – South-West Queensland Floods
- February 2009 – Gulf River floods

Australian Army
Infantry reservist
25/49 RQR, Gallipoli Barracks, Enoggera (Oct 2004 – Jun 2007)

Stantec

AUSTIN PETERSON

Stormwater and Flood Engineer

Austin Peterson is a Flooding and Stormwater Engineer of Cardno who joined Cardno in September of 2018. Austin completed his Bachelor of Civil Engineering (Honours) with the University of the Sunshine Coast.

Austin has experience in a variety of hydrological and hydraulic projects including flood impact assessments, catchment-wide flood studies, master drainage plans, road upgrade studies and stormwater quality management plans across Queensland and New South Wales. Austin is competent with several software packages including TUFLOW, XP-RAFTS, URBS, WBNM, Storm Injector, HEC-RAS, Water RIDE, CatchmentSIM, HY-8, MUSIC, FLIKE, MapInfo and QGIS.

QUALIFICATIONS AND MEMBERSHIPS

- Bachelor of Civil Engineering (Hons)

PROJECT EXPERIENCE

Modeller, Maroochydore City Centre Flood Impact Assessment using RAFTS and Tuflow, Sun Central, 2019

Flood impact assessment for major redevelopment of golf course into Central Business District development on the Sunshine Coast.

Modeller, Palm Lake Resort Flood Impact Assessment, Palm Lake, Sunshine Coast Council, 2019

Undertaking flood impact assessment for major redevelopment of golf course into retirement facility at Pelican Waters, Sunshine Coast.

Modelling Lead, Cotton Tree and Picnic Point Master Drainage Plan, Sunshine Coast Council, 2019

Undertaking Master Drainage Study for two Urbanised catchments within the Sunshine Coast Council LGA.

Modelling Lead, Maroochydore West and Nambour West Master Drainage Plan, Sunshine Coast Council, 2020

Undertaking Master Drainage Study for two Urbanised catchments within the Sunshine Coast Council LGA.

Modelling Lead, ARR Ensemble Testing, Sunshine Coast Council, 2020

Independent testing of implications of adopting ARR methodology compared to Council's MIDIS methodology.

Modelling Lead, Fraser Coast Stormwater Catchment Analysis, Fraser Coast Regional Council, 2020

Drainage analysis and mitigation assessment for three catchments across the Fraser Coast Regional Council LGA.

Modelling Lead, Eel, Banks and Tinana Creek Flood Study, Gympie Regional Council, 2021

Major flood study for three large catchments across the Gympie Regional Council LGA.

Modelling Lead, Redland City Council Flood Risk, Redland City Council, 2020-2022

Undertaking several flood assessment's across targeted areas of the Redland City Council LGA.

Modelling Lead, Waitohu Stream Hydraulic Investigations in Tuflow, Greater Wellington Regional Council NZ, 2021-2022

Mitigation assessment for complex floodplain in Otaki, New Zealand aimed at reducing frequent flooding of rural properties.

Modelling Lead, Newell Highway Upgrade, TfNSW, 2022

Major flood Study for potential upgrade of 100km of highway between West Wyalong and Forbes.