AGENDA AND BUSINESS PAPER

Floodplain Risk Management Advisory Committee

To be held on TUESDAY 18 JUNE 2019 AT 8.30AM

Cnr Baylis and Morrow Streets, Wagga Wagga NSW 2650
PO Box 20, Wagga Wagga

Phone: 1300 292 442
Fax: 02 6926 9199
Website: www.wagga.nsw.gov.au
ORDER OF BUSINESS:

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APOLOGIES

CONFIRMATION OF MINUTES

CM-1 MEETING MINUTES - 7 MAY 2019

Recommendation

That the Minutes of the proceedings of the Floodplain Risk Management Advisory Committee held on 7 May 2019 be confirmed as a true and accurate record.

Attachments

1. Meeting Minutes - 7 May 2019

DECLARATIONS OF INTEREST
REPORTS FROM STAFF

RP-1 PROJECT UPDATES

Author: Peter Ross
Director: Caroline Angel

Analysis: This report is to provide an update on the following projects:
- Wagga Wagga Major Overland Flow Flood (MOFF) Risk Management Study and Plan
- Main City and North Wagga Levee Construction – Stage 1
- Wagga Wagga Revised Floodplain Risk Management Study and Plan
- Wagga Wagga Villages Floodplain Risk Management Study and Plan

Recommendation

That the Committee receive and note the report.

Report

Project 1753 – Wagga Wagga Major Overland Flow Flood (MOFF) Risk Management Study and Plan

An application was made on 21 February 2019 for a variation to the existing approved grant funding for this project to undertake Australian Rainfall and Runoff 2016 (ARR2016) work on the existing flood model. The variation was for a three-month extension in time and an increase in Government funding to undertake the work. Formal advice had previously been received confirming that the three-month extension was granted, however the request for additional funding was not approved. Following a request from Council to review the funding decision, formal advice has now been received confirming approval for the original funding increase request. The total project cost is now $228,940.00 (Refer attachment MOFF’s Program Ver 5.1).

Following the last Committee meeting, planning workshops were held regarding the definition of the Flood Planning Area in overland flow affected areas and preliminary results of mitigation options assessed in and around Lake Albert and Glenfield Drain.

Outcomes from the Workshop are as follows:

1. Major Overland Flow Flood Planning Area:
   a. to be defined as the extent of the 1% AEP event excluding areas affected by depths of less than 150 mm;
   b. WMAwater to confirm this extent would not exclude any areas categorised as Floodway or high hazard (H5-H6), and amend if necessary to ensure these are incorporated;
   c. WMAwater to prepare Flood Planning Area Maps for each MOFFRMS domain;
   d. Discussion about the riverine flood risk inside the levee in flood events that overtop the levee (or in the event of unexpected levee failure) – Critical
Facilities/Utilities in particular should consider this ‘residual flood risk’. Commercial properties in east wagga are likely also to be subject to both riverine and overland flow flood risk. Council will be provided with the necessary information to understand the full range of flood risk at such locations.

2. **Major Overland Flow Flood Planning Level**
   a. Brief discussion about using a freeboard of 0.3 m for overland affected areas (rather than 0.5m freeboard typically used in mainstream affected areas and applied from the Riverine FRMS);
   b. WMAwater to undertake a Freeboard Assessment to determine the suitable freeboard;

3. **Future Development Areas**
   a. Council has provided GIS files to WMAwater – these will be mapped in relation to various design flood outputs to identify any constraints or flood issues.

**Preliminary Mitigation Options**

WMAwater are currently looking at flood modification options in the Lake Albert and City areas:

1. **Lake Albert**
   a. Options are being considered to investigate the impacts of diverting a greater proportion of flow from Stringybark Creek and Crooked Creek into Lake Albert.
   b. First pass assessments have shown promising results, however some refinement is needed to ensure upstream properties are not adversely impacted – WMAwater is currently working on this.

2. **Glenfield Drain**
   a. Options are being investigated to reduce flows in the Glenfield Drain (and by extension, reduce overland flow around the Dobney Ave/ Bunnings intersection) via a range of methods.
   b. Preliminary results are promising but further refinement is needed.
   c. In addition to assessing reductions in peak flood levels, options that substantially reduce duration of inundation are also being considered and investigated.

The Consultants will be in attendance at the 18 June 2019 FRMAC meeting to discuss progress to date and proposed mitigation options throughout the study area.

**Project 1793 – Main City and North Wagga Levee**

The upgrade of the remaining 6km of levee between Gobbagombalin Bridge and Hammond Avenue is the second part of this lengthy and complex project. The aim is to provide a 1 in 100-year flood protection to the city for the first time.

Stage 2 works involve the extension and reinforcement of existing concrete retaining walls and installation of capped sheet piles.

The sheetpiles between Cadell Place and Johnston Street have been installed and adjusted for height. The capping of these piles will commence once the concrete path in the area has been completed.

The concrete wall extension along Cadell Place has been completed.

The carpark at Crampton Street has been reopened and the cribwall, stairs, footpath and DDA ramp completed recently.
The Narrung St bank is completed and only waiting for seeding to take place and the area along the dog track is on track for completion shortly.

The Wiradjuri Walking Track will be completely closed for several months in this section from 7 January 2019.

The sheetpiles south of the Sturt Highway and along to Kooringal road have been driven and levelled, the capping of these piles should commence shortly.

The earthworks between the Sturt Highway and the Riverina Water County Council pedestrian bridge has commenced in preparation for sheetpiling in this area.

Residents and business operators affected by the works, or anyone interested in the Stage 2 levee project attended a community information session held on 30 May 2019.

Council staff are working with the contractors to minimise disruptions as much as possible and thank residents and businesses for their cooperation throughout these works.

The Stage 2 upgrade is scheduled to take approximately 14 months, weather dependant.

**Project 2000 – Wagga Wagga Revised Floodplain Risk Management Study and Plan**

**Updates to FRMS&P Mitigation Measures**

**Options PR1 & L4B**

**PR1:** Undertake a feasibility study to investigate a Voluntary House Raising & Voluntary House Purchase Scheme in Wagga Wagga Study Area, in conjunction with, North Wagga Levee Upgrade to 5% AEP level of protection WITH an equivalent upgrade to Hampden Avenue (as embankment) and conveyance improvements through Wilks Park.

**L4B:** Undertake a feasibility study to investigate North Wagga Levee Upgrade to 5% AEP level of protection WITH an equivalent upgrade to Hampden Avenue (as embankment) and conveyance improvements through Wilks Park, in conjunction with, Voluntary House Raising & Voluntary House Purchase Scheme in Wagga Wagga Study Area.

Council has received grant funding from OEH to undertake the feasibility study of these two options. Development of the concept has been completed (please refer attachment). The brief is still to be finalised.

**RE1: Improve Flood Warning System**

As stated at the previous meeting, Council has made a grant application to investigate options to improve our riverine flood warning system. We are awaiting response in relation to the application, which will most likely be towards the end of the year.
Project 18640 – Wagga Wagga Villages Floodplain Risk Management Study and Plan

Stage 1 report has been submitted by GRCHydro and distributed to OEH, relevant Council staff and FRMAC members for comment. For information, program work plan for this project is attached as “VOFF’s Program”.

A preliminary list of mitigation measures to be modelled has been compiled for Uranquinty, Ladysmith and Tarcutta. The list has been based on results of the questionnaire, the findings of the flood study and the Consultant’s understanding of each town’s flood behaviour. The list for each town is detailed below. The study budget includes modelling of a maximum of 12 different mitigation options. The 12 italicised options are recommendations for modelling but are open to suggestion. Other options (such as planning controls or maintenance items) will be included in the report but do not necessarily require modelling. It should be noted that the list is a starting point, not a finalised list.

Uranquinty

1. Raise levee to give protection against 1% AEP creek flooding, including freeboard
2. Raise Connorton St and Deane St levees to give overland flow protection, including channel improvements
3. Improve bypass channel conveyance and widen and/or deepen in sections
4. Increase creek capacity at highway/railway crossing
5. Increase stormwater capacity through the urban area (e.g. pit/pipe upgrade)
6. Increase culvert capacity at Uranquinty Cross Road
7. Upgrade levee cross drainage (multiple locations)

Tarcutta

8. Raise existing town levee to offer 1% AEP protection
9. Construct new levee adjacent to oval and achieve 1% AEP level of protection
10. Assess other levee alignments and levels of protection (depending how many options were developed by RMS)
11. Significantly reduce extent of Hambledon levee
12. Improve overland flow path through the town with kerb/guttering, bunds or piped drainage.
13. Increase capacity under old highway

Ladysmith

14. Clean up sides of Monavale Road where there is currently fill
15. Upgraded stormwater drainage in the town to reduce occurrence and extent of overland flooding.
16. Upgraded kerb and guttering to reduce occurrence and extent of overland flooding.

The study is also in the process of the flood damages assessment and the flood risk assessment of emergency management and current zonings.

The Consultants will be in attendance at the 18 June 2019 FRMAC meeting to make a presentation.
Subsequent consultation will occur between the consultant and FRMAC representatives during modelling and development of mitigation options, before the draft study and plan is put on public exhibition for wider consultation.

**Project 19555 – Flood Mitigation Option Feasibility Study for North Wagga & Floodplain Residents**

Council staff have completed the scoping document for this project and are working on the development of the brief. Given the nature of the options to be investigated as part of the study, there is a level of complexity that needs to be fully considered and understood to ensure practical outcomes from the study.

The scoping document for this project is attached to this report.

**2019-2020 Floodplain Management Program**

As stated at the previous meeting, a grant application has been submitted for Humula and Mangoplah Flood Studies & Floodplain Risk Management Studies and Plans (FRMS&P).

We are awaiting response in relation to the application, which will most likely be towards the end of the year.

**Financial Implications**

The total project budgets, expenditure and commitments to date are as follows:

<table>
<thead>
<tr>
<th>Project name</th>
<th>Total Project Budget</th>
<th>Expended + Committed as at 30 May 2019</th>
<th>Budget Remaining</th>
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<tbody>
<tr>
<td>Wagga Wagga Major Overland Flow Flood (MOFF) Risk Management Study and Plan FM-0099 - (17826)</td>
<td>$228,940</td>
<td>$214,473</td>
<td>$14,468</td>
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<tr>
<td>Main City Levee Construction – Stage 1 (17843) *</td>
<td>$3,278,231</td>
<td>$3,537,593</td>
<td>($259,362)</td>
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<tr>
<td>Wagga Wagga Villages Floodplain Risk Management Study and Plan FM-115 - (18640)</td>
<td>$198,000</td>
<td>$141,872</td>
<td>$56,128</td>
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<tr>
<td>North Wagga Flood Mitigation Study 2018-19-FM-0071 – (19555)</td>
<td>$234,000</td>
<td>$0.00</td>
<td>$234,000</td>
</tr>
</tbody>
</table>

*Main City Levee Construction – Stage 1 is showing expenditure at $3.538M, as the project includes expenditure incurred on the Kooringal Road Cycleway, which Council expects to receive approximately $156K in grant funding from the RMS, which will require 50:50 Council Reserves funding.

**Policy and Legislation**

The outcomes from the various studies will be very important in the terms of future amendments to the Council Local Environmental Plan and its Development Control Plan.
Link to Strategic Plan

Community Leadership and Collaboration
Objective: We are active community members
Outcome: We recognise we all have a role to play

Risk Management Issues for Council
There is a risk that the cost to carry out these projects could be more than was originally estimated. Therefore, Council would need additional funds to complete the works. However, some contingency was built into all of the estimates to reduce this risk

Internal / External Consultation
The Office of Environment and Heritage have been heavily consulted throughout the process of planning and executing these projects.

NSW Emergency Management is the responsible funding body and receives quarterly status update reports.

NSW State Emergency Services and Bureau of Meteorology are consulted when required.

Each of these projects is managed using a project steering group made up of members from different areas of Council as per Councils project management methodology.

Council officers in various directorates are members of the project steering committees for each project.

Attachments

1. MOFF's Program Ver 5.1
2. North Wagga Options Assessment - Rev 1 PMO Scope (002)
3. VOFF's Program
<table>
<thead>
<tr>
<th>Milestone number</th>
<th>Milestone</th>
<th>Activities</th>
<th>Outcomes</th>
<th>Projected milestone completion date (est/mem/yy)</th>
<th>Total estimated milestone cost (all contributions)</th>
<th>Estimated milestone payment amount ( Devon contribution: verify)</th>
<th>Estimated milestone payment amount (extraneous)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Collection, Model Review &amp; Update</td>
<td>* Data collection and review</td>
<td>* Initial meeting held, Model update report, Meeting Concluded</td>
<td>15/02/2019</td>
<td>$46,340.00</td>
<td>$11,228.67</td>
<td>$35,111.33</td>
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<tr>
<td>2</td>
<td>Flood Damages Assessment</td>
<td>* Flooding assessment and risk management report</td>
<td>* Meeting Concluded</td>
<td>15/02/2019</td>
<td>$39,340.00</td>
<td>$2,200.00</td>
<td>$37,140.00</td>
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<tr>
<td>5</td>
<td>Draft MOF FRM &amp; Public Exhibition</td>
<td>* Prepare draft MOF FRM Study &amp; Plan report</td>
<td>* Draft MOF FRM Study and Plan report, * Meeting Concluded</td>
<td>22/11/2018</td>
<td>$20,360.00</td>
<td>$1,022.00</td>
<td>$19,338.00</td>
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<tr>
<td>6</td>
<td>Final MOF FRM &amp; Handover</td>
<td>* Public exhibition of draft MOF FRM &amp; plan report</td>
<td>* Meeting Concluded</td>
<td>15/02/2020</td>
<td>$12,110.00</td>
<td>$16,073.35</td>
<td>$3,963.35</td>
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<tr>
<td>7</td>
<td>AVAR 2018 Update</td>
<td>* Assess alternative and prepare final report</td>
<td>* Final MOF FRM Study and Plan submitted to AVAR 2018 guidelines and O&amp;M Manual guidance fully incorporated into MOF Modeling.</td>
<td>31/02/2018</td>
<td>$17,270.00</td>
<td>$2,160.00</td>
<td>$15,110.00</td>
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<tr>
<td>8</td>
<td>Final Report</td>
<td>* Grant application</td>
<td>15/04/2020</td>
<td>N/A</td>
<td>$22,940.00</td>
<td>$112,260.47</td>
<td>$112,260.47</td>
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</tbody>
</table>

Please submit as Excel document - do not PDF - via the Grants Unit via email at grants.support@mooff.qld.gov.au. The Table is automatically generated from the data entered. Please ensure you include additional comments below where necessary.
1b. Project Scope

**Project Scope** – only to be completed once the Concept is ‘Approved’

**Project Background and Problem / Opportunity that this Project will address**

The completion of a feasibility study for Option L4B for a North Wagga Levee with a 5% AEP level of protection WITH an equivalent upgrade to Hampden Avenue and conveyance improvements through Wilks Park between North Wagga and the CBD is recommended.

The feasibility study would involve identifying the environmental constraints of excavating Wilks Park to offset flood impacts, assessing the condition of the existing levee, detailed floor survey and site by site assessment of negatively affected properties to determine individual flood impacts and subsequently, eligibility for and suitable types of compensatory works. Further to this, the study would also be required to consider ongoing community education issues and engagement programs. Consideration must also be given to internal drainage infrastructure.

The feasibility study will be undertaken in conjunction with Option PR1, which will assess the feasibility of a Voluntary House Raising and Voluntary Purchase Scheme in eligible areas of the Wagga Wagga Study Area.

There is a large number of dwellings in the Wagga Wagga Study Area subject to high hazard flood conditions. A combined Voluntary House Raising and Voluntary Purchase scheme would, over time, either raise dwellings above the FPL or remove eligible dwellings from the area to remove residents from high hazard areas, thereby reducing instances of over-floor flooding and hence damages.

The Scheme could be an alternative to Option L4B, which involves a feasibility study to assess upgrading the North Wagga Levee to the 5% AEP Level with associated access upgrade, and the two feasibility studies should be undertaken in conjunction to determine if both options are feasible, and if so, which is more viable for reducing flood risk exposure in Wagga Wagga.

A further component of the study as recommended by WWCC Councilors is the combination of options L4B and PR1 to ascertain the feasibility of a combined solution to combat flooding issues in and around North Wagga.

**PR1:** Undertake a feasibility study to investigate a Voluntary House Raising & Voluntary House Purchase Scheme in Wagga Wagga Study Area

**L4B:** Undertake a feasibility study to investigate North Wagga Levee Upgrade to 5% AEP level of protection WITH an equivalent upgrade to Hampden Avenue (as embankment) and conveyance improvements through Wilks Park

**WWCC Option:**

Undertake feasibility studies of flood mitigation strategies including Option L4b and PR1 combined

**What outcome(s) is the project going to deliver?**

The recommended option presented in the feasibility study is aimed to establish a program for implementation of the best feasible and viable flood mitigation option to reduce the flood risk in North Wagga and the whole of Wagga Wagga's floodplain residents.
What is in Scope for the project?

Flood Mitigation Option Feasibility Study for North Wagga – Draft Scope of Works

Levee upgrade option assessment:
- Collect and review all relevant data and information and collect any additional relevant data emanating from the review.
- Develop Community Consultation Plan.
- Preliminary Design for a 5%AEP levee upgrade with Hampden Avenue raising.
- Detailed survey of each property inside and outside the levee.
- Hydraulic and third party impact assessment associated with the levee and Hampden Avenue upgrade.
- Costing, Flood Damages Assessment review and Cost/Benefit Analysis for levee upgrade option.

VHR/VP option assessment:
- Develop criteria for assessing the viability of “at risk” dwellings for VP and/or VHR.
- Identify properties eligible for VP and VHR both inside and outside the levee.
- Community Consultation to gauge Community preferences for levee versus VHR/VP scheme.
- Estimates of “market valuations” for VP eligible properties and costs to raise VHR eligible properties.
- Review and update flood damage assessments for these “at risk” dwellings.
- Identify and assess the viability of “at risk” dwellings suitable for VP or VHR based on the assessment criteria including:
  - Practicality and eligibility
  - Preliminary cost estimates and benefit cost estimates for VP and/or VHR for dwelling(s)
  - Equity
  - Priorities for VP and/or VHR
- Cost/Benefit Analysis for VHR/VP option.
- Compare the two options (levee upgrade vs VP/VHR) from a social, economic, ecological and cultural perspective.
- Consider, develop and assess a revised option/s that encompass a combination of these options? Extensive Community Consultation needed in this phase.
- Develop a draft Feasibility study with a recommendation for an option going forward.
- Prepare PEPO for the preferred option.
- Undertake further consultation with the North Wagga and Floodplain communities and the individual “at risk” dwelling owners during Public Exhibition of the draft feasibility study.
- Finalise Feasibility Study and Council adoption.

5% AEP Wilks Park Conveyance

<table>
<thead>
<tr>
<th>Social</th>
<th>Construction &amp; Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appetite for levee upgrade (residents inside and outside levee to be interviewed);</td>
<td>Environmental impacts of Wilks Park Excavation;</td>
</tr>
<tr>
<td>Preference for VHR &amp; VP Scheme instead;</td>
<td>Procurement of local materials/contractors;</td>
</tr>
<tr>
<td>Expectations of residents;</td>
<td>Space constraints for increased footprint and easement allowances;</td>
</tr>
<tr>
<td>Visual impact concerns.</td>
<td>Eligibility of houses to be raised;</td>
</tr>
<tr>
<td>Financial</td>
<td>Other</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Capital and ongoing costs of constructing and maintaining levee;</td>
<td>• Residual Flood Risk: Significant community education required to</td>
</tr>
<tr>
<td>• Cost of environmental assessment for the Wilks Park Excavation;</td>
<td>promote awareness of:</td>
</tr>
<tr>
<td>• Cost of compensatory works;</td>
<td>o Levee will be overtopped in events greater than a 5% AEP</td>
</tr>
<tr>
<td>• Cost of Hampden Avenue upgrade;</td>
<td>o Levees can fail in a number of ways, at any time</td>
</tr>
<tr>
<td>• Cap on VHR and VHP;</td>
<td>o Dangers of sheltering in place instead of evacuating (isolation,</td>
</tr>
<tr>
<td>• VHR/VP funding scheme ratio;</td>
<td>long duration of inundation</td>
</tr>
<tr>
<td>• Time &amp; resources for planning and assessment;</td>
<td>• Third party impacts</td>
</tr>
<tr>
<td>• Benefits/Damage reduction.</td>
<td></td>
</tr>
<tr>
<td>• Interim access routes and detours so residents can access their</td>
<td></td>
</tr>
<tr>
<td>properties during road upgrade;</td>
<td></td>
</tr>
<tr>
<td>• Internal drainage pumps/gates.</td>
<td></td>
</tr>
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</table>
VHR and VP

<table>
<thead>
<tr>
<th>Social</th>
<th>Construction and Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Appetite for scheme, likelihood of participation:</td>
<td>• Procurement of local materials/contractors</td>
</tr>
<tr>
<td>• Preference for levee option L4B instead</td>
<td>• Types of dwellings eligible for raising</td>
</tr>
<tr>
<td>• Expectations of residents</td>
<td>• Method of raising – piers or second story</td>
</tr>
<tr>
<td>• Number of properties eligible</td>
<td>• Interim accommodation or assistance to residents during house raising</td>
</tr>
<tr>
<td>• Prioritization of eligible properties</td>
<td></td>
</tr>
<tr>
<td>• Visual impact concerns</td>
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</table>

<table>
<thead>
<tr>
<th>Financial</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Costs to raise a house;</td>
<td>• Flood immunity of key access routes and if road upgrades should be considered;</td>
</tr>
<tr>
<td>• Retrospective subsidy available for those who have already raised</td>
<td>• Community education regarding responsibility to evacuate;</td>
</tr>
<tr>
<td>their houses above the FPL;</td>
<td></td>
</tr>
<tr>
<td>• Co-contribution from OEH, Council, residents;</td>
<td>• Rules for appropriate use of ground floor (if not pier construction);</td>
</tr>
<tr>
<td>• Time &amp; resources for planning and assessment;</td>
<td>• Overall timeframe of scheme and future participation;</td>
</tr>
<tr>
<td>• Benefits/ Property Damage reduction.</td>
<td>• Consideration of participation by subsequent property owners;</td>
</tr>
<tr>
<td></td>
<td>• Residual flood risk and dangers of sheltering in place instead of evacuating (isolation, long duration of inundation)</td>
</tr>
</tbody>
</table>

What is out of Scope for the project?
Any floodplain analysis, recommendations or actions outside of the North Wagga Village area and its connection by road to the CBD.

What constrains the way the project will be delivered?
The recommendation from the FRMAC is as follows and limits the project to this work:

To undertake a feasibility study for a North Wagga Levee with a 5% AEP level of protection WITH an equivalent upgrade to Hampden Avenue and conveyance improvements through Wilks Park, in conjunction with, Voluntary House Raising and Voluntary House Purchase Scheme in the Study Area which will assess the feasibility of a Voluntary House Raising and Voluntary Purchase Scheme in eligible areas of the Wagga Wagga Study Area.
What assumptions have been made about the project (on currently available information)?

<Explaining text here about assumptions made as to how the project will progress and deliver outcomes>

Describe how (if applicable) previous Lessons Learned from similar projects have been reviewed and applied for this project:

<Where a similar project (or part of the project) has been undertaken by Council before, make sure that this has been reviewed to capture and apply any relevant 'lessons learned'>

Are there any related projects or other dependencies?

Main City Levee construction and the associated Flood studies as listed below:

In 1977, a desktop flood study was performed by Sinclair Knight based upon the 1974 flood event.
In May 1988, Waga Wagga Flood Study Report was prepared by NSW Department of Water Resources.
In 2004, WMAwater produced and Council adopted a Flood Study based upon a 1D Tuflow model, calibrated to the 1974 flood event.
In 2010, WMAwater converted the 2004 model to a 2D TUFLOW flood model for Council.
In 2012, WMAwater produced a coarse 2D TUFLOW model for the entire floodplain within the Local Government Area.
In 2013/14, Council, through WMAwater, revised its 2010 flood model to accommodate the revised rating tables for the Murrumbidgee River and validated and calibrated the model using survey and mapping data obtained following the 2010 and 2012 flood events, as well as a comparison to the 1974 flood event.
In 2018, Council, through WMAwater, adopted its Wagga Wagga Revised Floodplain Risk Management Study and Plan.

What is the total estimated project cost or Delivery Program budget allocation?

$234,000.00 excl GST (2:1 grant from OEH, $156K and $78K)

What is the total estimated effort hours for Council staff on this project?

Wagga Wagga City Council is well resourced and has prepared a dedicated project manager to undertake this project. Council's project management methodologies and processes will assist in carrying out the proposed project efficiently. Council also has a long history of carrying out and completing projects under the Floodplain Management Program and the Natural Disaster Resilience Grants Scheme.

Is this project clearly allowed for in the Delivery Program?

Yes: If the Project is clearly allowed for – List the appropriate project category below. Complete a Business Case when this Project Brief is approved by Business Owner.
<Cost Centre and Code>, <Budget $>, <Financial year 200_ / 200_>

No: Complete a Business Case when this Project Brief is approved by Business Owner.

What is the expected timeframe to complete project?
<high level estimate here as to when the project is likely to start and finish>

What level of Consultation will be required during the Project?

Staff active project participation
Community Survey required

**GO/NO GO decision to proceed to Planning Phase**

Authorisation to proceed with Planning - Is the fundamental project concept and scope sound?

<table>
<thead>
<tr>
<th>Business Owner Name and Position</th>
<th>Decision</th>
<th>Signature</th>
<th>Decision date</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;First Name, Surname&gt;</td>
<td>Approved – may proceed to Planning Phase, Pending - hold, Denied – no further project action</td>
<td>(May also be noted as approved via email)</td>
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</tbody>
</table>

<First Name, Surname>
Version Control

<table>
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<tr>
<th>Version number</th>
<th>Purpose / Changes</th>
<th>Author</th>
<th>Date</th>
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<tr>
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<td>Add Risk Identification table</td>
<td>K Holbrook</td>
<td>December 2017</td>
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<tr>
<td>2</td>
<td>Reformatted</td>
<td>K Holbrook</td>
<td>February 2018</td>
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<td>3</td>
<td>Added ‘Organizational Involvement’</td>
<td>K Holbrook</td>
<td>March 2018</td>
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### Work Plan

<table>
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<tr>
<th>Milestone number</th>
<th>Milestone</th>
<th>Activities</th>
<th>Outputs</th>
<th>Projected milestone completion date (mm/dd/yyyy)</th>
<th>Estimated milestone cost (inclusive of GST)</th>
<th>Estimated milestone cost (inclusive of GST)</th>
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<tbody>
<tr>
<td>1</td>
<td>Data Collection, Review, Update Flood Studies and Community Consultation</td>
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<td>Inaugural FIRM Committee Meeting held, Progress Report Stage 1. 2nd FIRM Committee Meeting held.</td>
<td>20/03/2019</td>
<td>$40,263.33</td>
<td>$26,722.32</td>
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<td>2</td>
<td>Hazard Hydrological, Risk Assessment, FPA Mapping and Floodplain Management Options</td>
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<td>3rd FIRM Committee Meeting held, Progress Report Stage 2, 4th FIRM Committee Meeting held.</td>
<td>10/06/2019</td>
<td>$71,453.33</td>
<td>$47,622.32</td>
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<td>3</td>
<td>Draft Floodplain Risk Management Studies and Draft Plans &amp; Public Exhibition</td>
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<td>Draft FIRM Study and Plan Reports, 5th FIRM Committee Meeting held, Draft FIRM&amp;S Reports placed on Public Exhibition.</td>
<td>8/07/2019</td>
<td>$20,166.87</td>
<td>$17,444.45</td>
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<tr>
<td>4</td>
<td>Final Floodplain Risk Management Studies and Plans &amp; Handover</td>
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<td>Draft final FIRM Studies and Plans publicly exhibited, Final FIRM Committee Meeting held, Final FIRM Studies and Plans completed and adopted by Council. All handover material supplied to Council, OEH and the SSS.</td>
<td>30/09/2019</td>
<td>$9,041.87</td>
<td>$6,527.76</td>
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<td>5</td>
<td>Final Report</td>
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<td>Grant acquitted</td>
<td>30/11/2019</td>
<td>N/A</td>
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</table>

Please submit as an Excel document - do not PDF - to the Grants Unit via email at coastalestuary.floodgrants@environment.nsw.gov.au

For OEH office use only

I have reviewed this work plan and recommend this work plan for approval.

Name: [signature] Date: [signature] / [signature] / 2019
QUESTIONS WITH NOTICE
MINUTES of the FLOODPLAIN RISK MANAGEMENT ADVISORY COMMITTEE held on Tuesday 7 May 2019.

PRESENT

Cr Vanessa Keenan  Wagga Wagga City Council
Cr Rod Kendall  Wagga Wagga City Council
Jenny Rolfe  Community Member (Dialed In)
Ros Prangnell  Community Member
Brian Mahony  Community Member

IN ATTENDANCE

Greg Gilmour  Co-opted Committee Member (Uranquinty)
Craig Ronan  State Emergency Service (SES)
Barry Griffiths  State Emergency Service (SES)
Steve Manwaring  Office of Environment and Heritage
Caroline Angel  Commercial Operations Sector Director
Kate Roberts  Projects Communication Officer
Sam Robins  Town Planner
Sylvester Otieno  Manager Operations
Adriaan Stander  Manager Technical and Strategy
Peter Ross  Manager Environment & City Compliance
Mark Gardiner  Administration Coordinator (Minute Taker)
Maree Ingram  WMAwater
Cath Goonan  WMAwater

The meeting of the Floodplain Risk Management Advisory Committee commenced at 8.35am.

ACKNOWLEDGEMENT OF COUNTRY

I would like to Acknowledge the Traditional Custodians of this Land, on which this meeting takes place and to pay my respects to Elders past and present.

APOLOGIES

Cr Tim Koschel  Wagga Wagga City Council
Patricia Murray  Community Member
Keith Seghers  Subdivision Coordinator
Janice Summerhayes  Director Community
CONFIRMATION OF MINUTES

CM-1 MEETING MINUTES - 5 FEBRUARY 2019

Recommendation:
On the Motion of R Prangnell and B Mahony

That the Minutes of the proceedings of the Floodplain Risk Management Advisory Committee held on 5 February 2019 be confirmed as a true and accurate record.

CARRIED

DECLARATIONS OF INTEREST

Nil Declarations received

REPORTS FROM STAFF

RP-1 PROJECT UPDATES

Recommendation:
On the Motion of R Prangnell and B Mahony

That the Committee
a receive and note the report.

b request that community contact details and GRCHydro contact details be exchanged in relation to the VOFFS

c request that a revised Wagga Wagga Villages Floodplain Risk Management Study and Plan schedule be distributed to the Floodplain Risk Management Advisory Committee as soon as possible

d recommend Council adopt the revised Wagga Wagga Floodplain Risk Management Study and Plan which has been updated with Australian Rainfall and Runoff (AR & R) 2016 requirements so that Council's Planning staff can continue on with the updated information.

CARRIED

Discussion on the Projects:

Project 1793 – Main City Levee Upgrade
Cr Keenan – have there been any complaints from the owners of the properties near the dog track works?
MINUTES of the FLOODPLAIN RISK MANAGEMENT ADVISORY COMMITTEE held on Tuesday 7 May 2019.

AM – No

Cr Kendall – What is the expected completion date?

AM – June 2020

CR – is the community information session set down for 30 May 2019 going ahead.

AM – Yes

Cr Keenan – the recent media event went really well and was well received by all outlets. Media was not aware of the complexity of the project.

RP – Are the business houses at the end of Fitzmaurice Street happy now that the Crompton Street carpark has been reopened?

AM – There has been no feedback since the car park was reopened a week earlier than planned.

Project 2000 - Wagga Revised Floodplain Risk Management Study and Plan

PR – In relation to the North Wagga levee, staff in conjunction with OEH, are still in the process of developing the brief due to the intricacies of the combination of the two options. The brief will be prepared in house at Council with a draft to be reported to the next FRMAC meeting in June.

Cr Keenan – With the two North Wagga co-opted community members, will their roles be primarily that of a liaison nature between the committee and the community? Will they be involved in the preparation of the brief as that would be a good opportunity for them to provide input?

P Ross – that is not the intent of their role as due to the intricate nature of the brief it is best to get it to point where consultation can then take place with the community.

CA – Intention is to prepare the brief with the assistance of OEH and then bring a draft back to the Committee, due to the complexities around the recommendations. There will need to be a good understanding of the recommendations of the adopted plan to enable explanations to be given to committee members.

SM - OEH have provided some sample briefs to Council staff. OEH are happy to review the draft once it has been finalised.

CA – it is important that the draft comes back to the committee for review.

CR Kendall – Need to remember, as part of the flood studies, the preliminary investigations into flood water evacuation structures in respect to the time that flood waters stayed inside the North Wagga levee during the last event. This aspect was not looked at with the Main City levee.

CA – There was extensive conversations around this throughout the whole of the study with the recommendation being that a pump be installed to move the water faster.
MINUTES of the FLOODPLAIN RISK MANAGEMENT ADVISORY COMMITTEE held on Tuesday 7 May 2019.

CR Kendall – would suggest a more notable structure than a pump, something that lets the water out at the same time as the river is going down. If this item is not in the feasibility study it will not be captures in the budget at a later date.

SM – OEH would be happy to include this in the brief

Flood Warning Systems
PR – Council has submitted an application to review and assess current systems and make recommendations on additional needs.

SM – The original recommendation from the adopted Wagga Revised Floodplain Risk Management Study and Plan was for a flood level gauge (dipstick) at Oura. It is now proposed to look at deficiencies for the whole system rather than just Oura.

2019-2020 Floodplain Management Program
PR – An application has been made in relation to flood studies for Mangoplah and Humula similar to those undertaken for the Villages flood studies for Uranquinty, Ladymith and Tarcutta.

SM – OEH Grants area is currently assessing all applications and it is likely that approval for any projects will not be given until the end of this year.

Project 18640 – Wagga Wagga Villages Floodplain Risk Management Study and Plan
PR – A number of responses were received in respect to the Villages questionnaire especially from Tarcutta where a large of number comments related to the effect of the RMS bypass road and bridge.

GRCHydro have requested information on the location of all levees in their study area as well as the contact details of community representatives for the villages.

Co-opted members from Uranquinty have been appointed. No interest from Ladymith and Tarcutta following advertisements in Council News and on Council’s webpage. Staff have since taken more steps to make both the Ladymith and Tarcutta communities aware of the call for co-opted community members. It is anticipated that nominated representatives from both towns should be in place by the next FRMAC meeting.

Cr Keenan – there is a community consultation session being undertaken by Council at Ladymith shortly, would be a good opportunity to include the request for coopted members on the agenda for discussion with community.

BM – It is reported that Council’s consultant has met with Council on the 17/04/19. Will the consultant be meeting with the Uranquinty community as the 17/04/19 was a wasted opportunity for consultation as there was no local input?

P Ross – The consultant may not have wanted to initially engage with the community as they may have wanted to inspect first hand to clarify aspects then come back and
talk to the community at a later date. Consultation will definitely be undertaken with the community.

BM – In the project report it stated that the Stage 1 report has been distributed FRMAC members, is this going to happen?

PR – Apologies if this has not been done, will make sure that it does happen. Revised Stage 1 and 2 reports will be sent out to the committee.

Cr Kendall – All project reports would be well served to have a timeline chart, with indicative target dates that have been confirmed with the consultants included, as this would be good for when the committee are talking with the community.

Cr Keenan – what are the next steps for the VOFFS?

PR – GRC Hydro are reviewing the data that they have requested.

CA – Shaula Siregar worked with Councillor’s Master Scheduler to develop a schedule as part of our monthly reporting requirements. The most current report will be provided to each FRMAC meeting going forward.

SM – The consultant has been updating the modelling to reflect the 2016 AR & R which has caused a slight delay. The next progress report will summarise all work to date as well as community consultation plans. A revised schedule maybe required depending on the impact of the 2016 AR & R review as the Grant finishes at the end of September 2019.

BM – Is there something concrete that the community/coopted members can do to connect with the consultant?

PR – 1. We will get the contact details of all community coopted members to the consultant and vice versa. .

2. We will look at a timeline update if required and communicate to the Committee.

Councillor Keenan left the meeting at 9.05am, Councillor Kendall took over as Chairperson.

Project 19555 – Flood Mitigation Option Feasibility Study for North Wagga and Floodplain Residents

No discussion

Project 1753 – Wagga Wagga Major Overland Flow Flood (MOFF) Risk Management Study and Plan

PR – An application has been made for an extension in time and an increase in funding for this project
MINUTES of the FLOODPLAIN RISK MANAGEMENT ADVISORY COMMITTEE held on Tuesday 7 May 2019.

SM – Quite confident that the original increased amount of funding that was requested will be reinstated due to clarification relating to the sensitivity study aspect.

Cr Kendall – Updates have occurred in November 2018 and January 2019 – have we made a decision to put a line under it? If we keep making updates we may never get the work finished.

SM – There are not going to be any more changes.

Presentation made to Committee by WMAwater – Cath Goonan – copy of presentation to be distributed the committee with the meeting minutes.

C G - All models have been updated with the 2016 AR & R.

Cr Kendall provided an explanation in respect to flood modelling losses to the community committee members in attendance.

Cr Kendall - 2012 was a large event that came after significant wetting of the catchment, do the latest loses take into account the lead up to events? Does the modelling now include this impact?

C Goonan – Advised that they have undertaken extensive mapping of soil types across NSW and considered other factors such as Antecedent conditions and continuing losses.

SM – Antecedent Moisture Control - in calibration of design floods, need to make assumptions. Wrong for Wagga, assumed there was no lead up moisture in the soil. BOM have data hub – factors way too high for inland NSW – not a lot of inland monitoring stations compared to that along the coast. C&H flagged these issues - applying guidelines that considered increased losses.

Cr Kendall – with modern computing can you do modelling on certain storm durations?

SM – There is new technology – “Rainfall and Grid” analysis which does this better but doesn’t work for urban catchments however worked well at Ungarie.

BM – Does this apply in outlying areas – 80mm event – pretty minimal effect. 80mm over two weeks soaking rain – sheets of water everywhere.

SM – Difficulty with modelling – need to work out a standard

BM – Uranquinty flooding event - not related to the Wagga Wagga event – very localised

SM – Are we at a point where we can assess mitigation options?

CG – Yes we can, have been through them before, still have our ideas from previous meetings
MINUTES of the FLOODPLAIN RISK MANAGEMENT ADVISORY COMMITTEE held on Tuesday 7 May 2019.

There is a flood planning area for Council to use re flood risk when looking at potential development areas. This is way for Council to use information that WMAwater has.

AS – This will be helpful from a strategic planning process – informative – stay away from high risk areas

SM – A crucial part of the project is to look at new development areas to determine if they are appropriate – use the WMAwater tool.

AS – the timing is perfect

CG – Looked at Riverine floodplain areas as well

Cr Kendall – land use maybe open space in a high risk area – not knocking out whole area – how do you do your land use planning?

Cr Kendall – Council has previously adopted the outcomes of the MOFFS. Now that levels have been revised does Council need to readopt the study? Should a formal report go to Council?

AS – we will discuss this afternoon.

Cr Kendall – Would be handy if it is adopted

CG – If reported would it need to go on public exhibition?

SM – Lake Albert – surcharging the Lake re mitigation – temporary structure downstream. Stringybark/Crooked Creek – enhance flows into Lake Albert - Is this something Council wants to look at?

PR – Issues of creeks – redirecting water from Tatton Drain – Council would have to get a permit and a licence.

Cr Kendall – This would not a permanent diversion only a flood mitigation measure

PR – Would need to be careful so that roads are not flooded – level would need to be considered – issue would have to be discussed with NRAR

SM – Have recently seen a planning proposal for west of the Lake.

SM – Any community suggestions?

CG – Glenfield drain upgrade

Cr Kendall – Lake Albert feeding channels would make diversion more beneficial – could be secondary benefits – Lake Albert more usable

PR – there are contrary views to this

Cr Kendall – more consistent – diversion less likely to be breached – more likely more water to go into Lake Albert – secondary benefits
SM – The focus is to reduce the effect in residential areas

CG – This would be an operational issue.

SM – Limitations on infrastructure around the Lake – work out how high you could go – bike path inundation is likely

Cr Kendall – were there any other options?

C Goonan – Comments from community related to more so to stormwater movements – had to guide them – the issues were bigger than this

Cr Kendall – Plumpton Rd drainage – Can we achieve extra capacity within the inflows at the top of the Lake.

P R – One creek – 1 in two years storm frequency, the other 1 in 5yrs frequency – then both flows bypass the lake

Cr Kendall – increase to 1 in 20 would make a difference

CG – Lake Albert was looked at as a system when looking at community responses

SM – Committee to look at updated report, provide comments and options back through the committee

Cr Kendall – can the report and presentation be distributed to the committee.

SM – Other option – Wollundry Lagoon – use it as a detention basin?

Cr Kendall – this is currently in the operational plan – drop level when storm due – pumps have been installed for this – can the capacity of the pumps be provided to WMWater?

CG – Is there a minimum level required for Council’s air conditioning system?

AM – Have in house information, will provide

Cr Kendall – Storage increase at Flowerdale?

AM – there are proposed concepts at Flowerdale to separate Vestey Street drainage

CG – Will chat with AM re affected roads and culverts – maybe more depth markers and flashing lights are required

AM – Part of the MC levee upgrade will look at all flood pumps – upgrade to larger pumps – 30 flood gates – should have pumps – more consistent – 8inch pumps – 1/2/3 in each pit – same pump

Cr Kendall – Need to look at invert levels, pumps could have secondary benefits

SM – Only look at a reduction in damages
BM – upgrading pumps, will this be for all areas?

Cr Kendall – same will be done for villages.

SM – looking at upgrading levees

GG – will this also include drains under railway bridges?

SM – will be looking at is as part of the villages study

CG – any opportunities for piggy backing onto a major Council project?

SM – Special Activation Precinct has not been modelled completely – the impacts may be included into SAP – expand Overland Flow area to include Bomen down the track to ensure that it is appropriately developed. MOFFS may need to be expanded to include Bomen – 5/10 years down the track

CG – report 1 and 2 to be presented to Council?

PR – Need to determine how to accept the report results pending adoption of final report

GRCHydro will be attending the next meeting on 4 June 2019.

QUESTIONS WITH NOTICE

No Questions With Notice were received.

The Floodplain Risk Management Advisory Committee rose at 10.10am.