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**NARROMINE SHIRE COUNCIL  
ORDINARY MEETING BUSINESS PAPER – 8 MAY 2019  
REPORTS OF COMMITTEES**

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**1. TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE**

The report to and minutes of the Tomingley Advancement Association Committee meeting held at the Tomingley Memorial Hall on Monday 15 April 2019, are attached (**See Attachment No. 1**).

**RECOMMENDATION**

That the report of the Tomingley Advancement Association Committee and the recommendations from the minutes of 15 April 2019 be adopted.

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**2. RURAL FIRE SERVICE LIAISON COMMITTEE**

The minutes of the Rural Fire Service Liaison Committee meeting held at Council's Chambers on Wednesday 17 April 2019, are attached (**See Attachment No. 2**).

**RECOMMENDATION**

That the report of the Rural Fire Service Liaison Committee and the recommendations from the minutes of 17 April 2019 be adopted.

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**3. NARROMINE FLOODPLAIN MANAGEMENT COMMITTEE**

The report to and minutes of the Narromine Floodplain Management Committee meeting held at the Council Chambers on Tuesday 16 April 2019, are attached (**See Attachment No. 3**).

**RECOMMENDATION**

That the report of the Narromine Floodplain Management Committee and the recommendations from the minutes of 16 April 2019 be adopted.

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**MINUTES OF THE TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING  
HELD ON MONDAY, 15 APRIL 2019 AT TOMINGLEY MEMORIAL HALL**

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**PRESENT:** Cr Lyn Jablonski (Chair), Jane Redden (General Manager), Phil Johnston (Director Community & Economic Development), Andre Pretorius (Director, Infrastructure and Engineering Services from 7.08pm), Elaine Buckley, Rodney Smith, Cheryl Smith, Christine Unger, Jim Dart, Doreen Dart, Peter Laffey, Sallie McGaw and Lesley-Ann Roberts (Minute Secretary).

**1. WELCOME**

The Chair welcomed those present and declared the meeting open at 7.05pm.

**2. APOLOGIES**

**RECOMMENDED** by consensus that the apologies of Linda Buntrock, Cr Craft, Phil Maugh, Gavin Dart be accepted.

**3. DECLARATION/CONFLICTS OF INTEREST**

Nil

**4. CONFIRMATION OF MINUTES**

**RECOMMENDED** by consensus that the Minutes from the last meeting held on 15 October 2018 be adopted as a true and accurate record of the meeting held.

**5. BUSINESS ARISING FROM THE MINUTES**

It was advised, that an update regarding water tanks will be provided in *Item 6, Report to Tomingley Advancement Association Committee*.

**6. REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE**

Director, Community and Economic Development spoke to his report and tabled the following items:

**1) Follow Up Items**

**b) Investigate the installation of bollards at Dicken Park**

It was noted, there are still vehicles parking in this area.

**ACTION: Residents to report to NSW Police and Council to keep up to date with this matter**

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**MINUTES OF THE TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING  
HELD ON MONDAY, 15 APRIL 2019 AT TOMINGLEY MEMORIAL HALL**

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**6. REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE Cont'd.**

**c) Supply of rainwater tanks to Tomingley Residents**

Director, Community and Economic Development gave an update as to the status of supplying rainwater tanks to Tomingley Residents.

It was advised that Council have had to ensure that the parameters surrounding plausible options were suitable. It should be noted however, that the tanks will be deemed non-potable.

It was noted there is \$60K available for this project.

The General Manager gave background regarding x3 line items specific to VPA funding which includes a community fund, environmental fund and road maintenance fund.

It was noted, thirty eight (38) residents pay a water access charge. To qualify for a tank, there will also need to be a residence on the property.

It was queried whether motels were entitled to received a water tank if there was a residence at this location?

It was advised that if there is a residency at this location, the landowner would qualify.

It was noted following the Easter break, the application and information pack will be prepared to ensure all residents are included and clarify tank colour, logistics surrounding tank drop off and the standards of tank.

Director Community and Economic Development apologised for the length of time it has taken however, due to the legalities surrounding drinking water quality, assurance has had to be sought to ensure all parameters have been considered.

It was noted that drinking water quality standards has changed in previous years to what may have previously been acceptable.

There are a number of local suppliers in the Shire and Council would prefer local preference to be catered to if possible.

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**MINUTES OF THE TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING  
HELD ON MONDAY, 15 APRIL 2019 AT TOMINGLEY MEMORIAL HALL**

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**6. REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE Cont'd.**

**h) Main Street Beautification**

As part of the beautification process, Council will install 3 tanks in through Drought Communities Programme funding at Dicken Park, Eric Woods Park and Tomingley Racecourse.

TGO road money \$141K roads component of VPA allocated to Tomingley Mine catchment for rural roadworks.

Director Infrastructure and Engineering Services is aware of the Burill Street drainage issue and it was advised when this next occurs to take a photo or video as Director Infrastructure and Engineering Services is following up with Council's Manager Infrastructure Delivery regarding drainage in streets and overgrown sections that require clean out when it rains.

**RECOMMENDED** by consensus that the information be noted.

**2) WHS**

The following items were tabled and are in need of attention:

- Mrs Buckley queried the overgrown block and the hazards it poses  
**ACTION: CRM to be logged for review**
- Tree has fallen over  
**ACTION: CRM to be logged for review**
- Hot water service location of switch to be confirmed
- Light at the back of Hall is on 24 hours and on all night rather than a timed spotlight.  
**ACTION: Director Infrastructure and Engineering Services to investigate following the meeting**
- Clean up to be undertaken at Hall prior to Federal Election.  
**ACTION: Director Community and Economic Development to arrange.**
- Waste bins not taken inside following December Hall Opening event.  
**ACTION: Director Community and Economic Development to ensure this happens for future bookings.**
- Lack of water pressure in gardens etc.  
**CRM to be logged for Water Crew to review**

Discussion was had regarding water levels in Tomingley and working with Tomingley Gold Operations regarding topping up dam levels.

Director Infrastructure and Engineering Services advised the Mine completed a topup approximately 1 year ago and Council have requested that the mine tops up levels once more. It is anticipated this happens within the week

**Peter Laffey left the meeting at 7.52pm**

**RECOMMENDED** by consensus that the information be noted.

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**MINUTES OF THE TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING  
HELD ON MONDAY, 15 APRIL 2019 AT TOMINGLEY MEMORIAL HALL**

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**6. REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE Cont'd.**

**3) Bookings**

New booking received for Federal Election in May 2019.

**RECOMMENDED** by consensus that the information be noted.

**4) Financial Report**

Discussion was had regarding plausible projects under this funding such as involvement in Dolly Parton Festival in 2020 or additional works to Tomingley Hall.

Drought Communities Programme has \$30K allocated towards repairs to Tomingley Hall Roof.

It was noted drought funding through RMS Heavy Vehicle Safety and Security Program (HVSSP) allowed for roadworks to be undertaken on Belowrie Road.

In addition, maintenance has been undertaken on O'Learys Lane.

**RECOMMENDED** by consensus that the information be noted.

**7. GENERAL BUSINESS**

Discussion ensued regarding parking of trucks in restricted residential areas and the policing of this?

It was advised that regulatory signage is not enforced by Council thus residents would need to notify the Orana Police when it occurs by noting vehicle details etc.

It was noted that photos be provided to Director, Community and Economic Development following the meeting to assist Police with undertaking investigation of trucks parking in restricted areas.

It was queried whether bollards would be a possibility in deterring trucks from parking in these areas?

It was noted, this is a possibility however, RMS would need to be contacted for their endorsement and Local Traffic Committee would need to be consulted.

It was suggested that temporary barriers are to placed in this area.

It was noted that rubbish on the hill outside of Tomingley needs to be inspected regularly to ensure dumpsites don't occur as has been the case.

It was noted there is an ant problem along the footpaths

**ACTION: CRM logged for footpath to be investigated and possibly sprayed**

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**MINUTES OF THE TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING  
HELD ON MONDAY, 15 APRIL 2019 AT TOMINGLEY MEMORIAL HALL**

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**7. NEXT MEETING**

Discussion was had regarding the frequency of meetings.

It was advised that Council are always open to queries and feedback and can be contacted on a weekly basis via telephone or face to face.

the next meeting of the Tomingley Advancement Association Committee will be held on Monday, 14 October 2019 at the Tomingley Memorial Hall, commencing at at 7.00pm.

There being no further business for discussion the meeting closed at 8.26 pm.

The Minutes (pages 1 – 5) were confirmed at the meeting held on the  
day of 2019, and are a true and accurate record of  
proceedings of the meeting held on 15 April 2019.

**CHAIR**

**REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING TO BE HELD AT THE TOMINGLEY MEMORIAL HALL ON  
MONDAY 15 APRIL 2019 AT 7PM**

**1. FOLLOW UP ITEMS**

ITEM	DESCRIPTION	ACTION/STATUS AS AT 10.04.2019
a) Letter to Alkane	A thank you letter to be written to Alkane for topping up water reserves during Summer.	ACTION: Director, Infrastructure and Engineering Services
b) Investigate the installation of bollards at Dicken Park	Investigate vehicles driving through this area. Suggestion for bollards of some type to stop vehicles using.	ACTION: Director, Infrastructure and Engineering Services to investigate
c) Supply of rainwater tanks to Tomingley Residents	Finalise method for delivering rain water tanks to residents of Tomingley.	ACTION: Director, Community and Economic Development
d) Gateway to Narramine Shire sign	Large promotional sign directing tourists from the South into the Narramine Shire	ACTION: Funding options being sought
e) Dicken Park concrete and bitumen seal	Concrete to be placed under existing shelter and GM to investigate whether sufficient funding to bitumen seal the remainder of the carpark and footpath	
f) Fire Hazard	Overgrown block adjoining Mrs Buckley at [REDACTED]. The slashing was not done close to the fence and with trucks parking alongside her fence she is concerned that a dropped cigarette could cause a fire adjacent to her home.	Slashed prior to Summer
g) Footpath in front of shelter at Dicken Park	Cement footpath in front of the shelter in Dicken Park is broken up and needs repairing.	ACTION: Programmed as part of the Main street beautification program.
h) Main Street Beautification	Initial discussions held with Tony Ellis and Sally McGaw. Grant confirmed. Final scope of works for Tomingley to be finalized.	ACTION: Completed; Cr Craft met with Tomingley Residents to discuss plans in late 2018 plans
i) Tomingley Hall works Stronger Country Communities Round 1	Sign to front Historical photos.	Completed ACTION: Ongoing; Council's Program Coordinator sourcing images.
j) Pipe under Road to direct more water to Creek	Mr Ellis advised in September 2016 the water was 18 inches deep everywhere at the entrance to the mine. On one side of the road the water was going into the creek but nothing from the other side. Council to investigate next time good rain is received.	ACTION: Director, Infrastructure and Engineering Service to further investigates
k) Shell Service Station DA	DA is approved and active. Developer can take up to 5 years to commence.	ACTION: No further action required at this time

**RECOMMENDATION**

That the information be noted.

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**REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING TO BE HELD AT  
THE TOMINGLEY MEMORIAL HALL ON MONDAY 15 APRIL 2019 AT 7PM**

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## **2. WORK HEALTH AND SAFETY ISSUES**

Electrical testing of all appliances was completed at Tomingley Memorial Hall and on Wednesday, 17 October 2018 by Council's Depot and Procurement Officer.

The following electrical items at the Hall were tagged out, danger tag attached and the plugs cut off.

- Old Freezer
- Old Bonaire Air Cooler
- Old Hoover vacuum cleaner
- Old stove and oven

Have any other Work Health and Safety Issues arisen for further consideration?

### **RECOMMENDATION**

That the information be noted.

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## **3. BOOKINGS**

Since the last meeting in October 2018, there have been 2 (two) functions at the Tomingley Memorial Hall, including the State Government Elections. There are zero (0) forward bookings for the next six (6) months up to October 2019.

### **RECOMMENDATION**

That the information be noted.

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## **4. FINANCIAL REPORT**

The Tomingley Advancement Association Committee Financial Report is reflected in **Attachment No. 2**.

### **RECOMMENDATION**

That the Financial Report as presented be adopted.

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## **5. DROUGHT COMMUNITIES FUNDING UPDATE**

In August 2018, the Australian Government announced an additional \$1 million in support for eligible councils as part of the Drought Communities Programme. The objective of the Drought Communities Programme is to deliver benefits in declared Council areas, by supporting investment in local infrastructure initiatives. Funding is targeted at infrastructure projects that provide employment for people whose work opportunities have been impacted by drought; stimulate local community spending; use local resources, businesses and suppliers; and/or provide a long-lasting benefit to communities and the agricultural industries on which they depend.

Council has allocated \$1 10 000 of the \$1 million funding to its Community and Economic Stimulus grants program, which was announced in December 2018. This program is for capital works programs put forward by community groups and organisations.



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**REPORT TO TOMINGLEY ADVANCEMENT ASSOCIATION COMMITTEE MEETING TO BE HELD AT  
THE TOMINGLEY MEMORIAL HALL ON MONDAY 15 APRIL 2019 AT 7PM**

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**5. DROUGHT COMMUNITIES FUNDING UPDATE Cont'd.**

Applicants were invited to apply for up to \$20 000 to undertake each project and applications closed on Friday 15 February 2019.

20 projects were submitted and 12 projects have had their funding confirmed including the Tomingley Picnic Races Club who have received \$15,000 for repairing existing furniture for the local community and tourists, who will use the facilities for camping and caravanning.

Of the \$1 million funding, Council have also allocated \$589,000 to its Community Infrastructure Enhancements Project. The objective of the Program is to deliver benefits in drought declared Council areas, by supporting investment in local infrastructure activities.

In Tomingley specifically, \$30, 000 has been attributed towards a new roof for Tomingley Memorial Hall, with works contracted out for an immediate start. A further \$12, 000 has been allocated towards the installation of water tanks at Dicken Park, Eric Woods Park and Tomingley Racecourse, with works being followed up soon.

**RECOMMENDATION**

That the information be noted.

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**6. NEXT MEETING**

The next Tomingley Advancement Association Committee meeting will be held on Monday, 14 October at 7pm at the Tomingley Memorial Hall.

**RECOMMENDATION**

That the information be noted.

Phil Johnston  
**Director, Community and Economic Development**

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**MINUTES OF THE RURAL FIRE SERVICE LIAISON COMMITTEE MEETING HELD AT THE  
NARROMINE SHIRE COUNCIL CHAMBERS ON WEDNESDAY 17 APRIL 2019**

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**PRESENT:**

Cr Colin Hamilton	Chair, Councillor, NSC
Superintendent Lyndon Wieland	NSW Rural Fire Service, Orana
Inspector Peter Fothergill	NSW Rural Fire Service, Orana
Neville Roberts	Group Captain, Euromedah Brigade
André Pretorius	Director Infrastructure and Engineering Services, NSC
Lesley-Ann Roberts	Minute Taker

**1. WELCOME**

The Chair welcomed those present and declared the meeting open at 10.02 am.

**2. APOLOGIES**

**RECOMMENDED** Neville Roberts/Peter Fothergill that the apology of Cr Robert McCutcheon be accepted.

**3. MINUTES OF THE PREVIOUS MEETING**

**RECOMMENDED** Peter Fothergill/ Supt. Wieland that the minutes of the previous meeting held on 30 January 2019 be accepted as a true and accurate record of the meeting.

**4. BUSINESS ARISING FROM THE MINUTES**

- Tankers have been slow to be delivered; still one (1) Category 6 tanker outstanding for financial year.
- Director Infrastructure and Engineering Services noted Hazard Reduction funding application has been submitted and thanked the RFS support team for their assistance during the application process.

**5. SCHEDULE THREE REPORT**

Supt. Wieland tabled the March 2019 Overview (**see Attachment No. 1**) and Quarterly Performance Report (**see Attachment No. 2**) and summarized the following contents:

**A) Hazard Reduction Funding Claim**

- Hazard Reduction funding claim is now a priority to be submitted to RFS as soon as possible in order to finalise claim.
- Peter Fothergill and Lyndon Wieland will hold an impromptu meeting with Council's Manager Accounting Services following the RFS meeting in order to discuss what documentation is required from Council to submit a claim.

**B) Station Build Claims**

- It was advised once station builds are completed, claims to be submitted as soon as possible.
- Wyanga Station Build is nearing completion and following this, Council will send Tax Invoice to Supt. Wieland to finalise this claim.

**ACTION: Director Infrastructure and Engineering Services**

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**MINUTES OF THE RURAL FIRE SERVICE LIAISON COMMITTEE MEETING HELD AT THE  
NARROMINE SHIRE COUNCIL CHAMBERS ON WEDNESDAY 17 APRIL 2019**

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**5. SCHEDULE THREE REPORT Cont'd.**

- It was advised, it is more feasible to go through RFS Orana for follow up with Station Build claims.
- The Chair queried the deadline for this claim? It was advised, prior to end of financial year.
- Group Captains to clarify tanker replacement program at their June Meeting.
- Supt Wieland advised that Council would receive an invitation to a forum and encouraged finance staff to attend; the date is to be advised.

**RECOMMENDED** Supt. Wieland/Neville Roberts that the March 2019 and Quarterly Performance Report as presented to the meeting be accepted.

**6. GENERAL BUSINESS**

Discussion ensued regarding burning for landowners in light of the bushfire danger period ending on 31 March 2019.

**7. NEXT MEETING**

The date for the next meeting is to be advised by NSW RFS Orana.

There being no further business the meeting closed at 10.26 am.

The minutes (pages 1-2) were confirmed on \_\_\_\_\_ 2019 and are a true and accurate record of proceedings of the meeting held on 17 April 2019.

**CHAIR.**



NSW RURAL FIRE SERVICE



## MEMORANDUM

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**To:** Orana Liaison  
**From:** Orana Manager  
**Subject:** December Report  
**Date:** 05/04/19

**File No.**    Type File No.

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### March 2019 Report Overview

- › Council HR work require information for Claim.
- › Council to ensure they have completed the Road Side HR application process.
- › Station Builds Bundemar, & Frost Toilets have been delivered need power and water connected. Curra Creek still waiting on sec 68 Gollan DA approved waiting on construction certificate.
- › Tanker Radio upgrade starting 6<sup>th</sup> May
- › Tanker replacement programme reply from Head Office.
- › BIRS reports 100% completed and validated
- › Fire season finished end of March
- › Orana staff update
- › Brigade AGMs about to commence.
- › Local Government RFS forums Council need to be represented.
- › Weemabah Station Build located on Weemabar Road land Identified.
- › Crew Leader Grass Land training
- › Problems with corrosion within Cat 6 Tanker from treated water.



Attachment No. 2

QUARTERLY PERFORMANCE REPORT											
Region West					2018/19						
Orana					March						
BP Reference	INITIATIVE/PROGRAM/ACTIVITY (What are we doing to achieve the Corporate Objective)	EXPECTED OUTCOME (What do we expect to achieve through this initiative)	QTR	x	y	KPI or Milestone Result	STATUS	OVERALL INITIATIVE STATUS (schedule and deliverables)	REASON BEHIND	WHAT HAPPENED (include any issues)	CORRECTIVE ACTION
A1.1.1	Enhance leadership and operational capability of NSW RFS members	Minimum of one multi-agency incident management exercise conducted at each District by 1 October annually	Complete by Q2	1	1	100%	Completed				
A1.1.2		Minimum of one joint training activity undertaken between RFS and FRNSW in accordance with relevant district MAA/MOU	Minimum 1 per District by Q4	8	8	100%	Completed				
A1.1.3		Each District to undertake an operational quick decision exercising (ITASC, FTASC, Emergency Logistics, Planning). Complete five (5) sessions a quarter	Minimum 5 per District per Quarter	13	15	87%	On Target				
A1.1.4		Undertake gap analysis of completion and approval of pre-planning requirements for hazard reduction activities - gap analysis to be completed by end of Q2	Complete by Q2	9	9	100%	On Target				
A1.2.1	Comply with data requirements for operational corporate systems	BIRS reports validated (90%)	90%	100%		#DIV/0!	On Target				
A1.2.2		All ICAM level 2 investigations with a draft completed within one month of being allocated	100%	100%		#DIV/0!	Completed				
A1.3.1	Increase understanding of current dispatch practices	Each District to provide a brief to Region on current dispatch processes	Complete by Q4	1	1	1	Completed				
A2.1.1	Enhance fire trail networks	Number of Districts that have held a FAFT workshop in accordance with the published schedule, including volunteer consultation	Complete by Q4	2	2	2	Completed				
A2.1.2		Number of Districts that have a BFMC endorsed FAFT plan in accordance with the published schedule	Complete by Q4	1	1	100%	On Target				
A2.2.1	Ensure completion of District Bush Fire Risk Management Plan annual works program	Percentage of the District BFRMP annual proposed works plan completed (IE Those proposed works in BRIMS against those completed)	80% by Q4	2	5	40%	On Target				
A2.5.1	Formalise inclusion of smoke management in HR planning	Engage FBANS for HRs that will impact communities (Number of times FBANS engaged year to date)	Number	3		#DIV/0!	On Target				
A3.1.1	Training adequately planned	Number of members with PBS qualification increased (target two (2) members per District signed off annually)	Minimum 2 per District by Q4	91		91	Completed				
A3.1.3		All training plans endorsed by the District Manager by Q3 annually	100% by Q3	1	1	100%	Completed				
A3.1.4		Increase number of volunteers with IMT qualifications	Number	26		#DIV/0!	Completed				
A3.2.1	Members are publicly recognised for their outstanding contribution to the NSW RFS	Number of eligible members presented with long service awards in current financial year (min 30 per District)	Minimum 30 per District by Q4	40		#DIV/0!	On Target				



QUARTERLY PERFORMANCE REPORT											
Region West											
Orana											
BP Reference	INITIATIVE/PROGRAM/ACTIVITY (What are we doing to achieve the Corporate Objective)	EXPECTED OUTCOME (What do we expect to achieve through this initiative)	QTR		March		Financial Year		2018/19		CORRECTIVE ACTION
			Q3 TARGET (Date, number or %)	x	y	KPI or Milestone Result	STATUS	OVERALL NARRATIVE (Summarise and describe)	REASON BEHIND	WHAT HAPPENED (Include any issues)	
A3.3.1	Effective consultation contributes to achievement of corporate objectives	Minimum of two Captains meetings held per year	Minimum 2 per District by Q4	5		#DIV/0!	On Target				
A3.3.2	0	Minimum of four SMT meetings held per year	Minimum 4 per District by Q4	3		#DIV/0!	On Target				
A3.4.1	Promote organisational diversity through inclusive and flexible membership ensuring volunteer culture remains core to our business now and in the future (response, capability, recruitment, retention, training, mentoring)	Number of brigades that have undertaken a brigade health check with the assistance of District staff in line with recruitment and retention kit (target two (2) checks per year undertaken per District)	Minimum 2 per District by Q4	2		#DIV/0!	Completed				
A4.1.1	Ensure fire fighting appliances are inspected in accordance with the requirements of the Rural Fires Act	All District annual fire fighting appliances roadworthy inspection recorded on SAP EAM	100%	145	145	100%	Completed				
A4.2.2	Comply with HSW legislation for Districts and Brigades for the continuous improvement of District safety initiatives	All non-compliant mezzanines permanently restricted (other than sign) where ongoing use of mezzanine is not desired	100%	4	4	100%	Completed				
A4.2.3	0	All Brigade WHS validated Site Management plans are reviewed annually and are current	Review complete by Q4	nyd		#VALUE!	On Target				
A4.3.1	Implement planned program for station/FCC builds	Three year planned Stations/FCC build program to be reviewed by end of Q1 annually	Complete by Q1	1	1	100%	Completed				
A4.3.2	0	Complete stations/FCC building works in line with approved project proposal and budget allocation (individual projects to be listed in DM work plans)	Complete by Q4	nyd		#VALUE!	On Target				
A4.4.1	Complete implementation of SAP EAM (fleet first priority)	Review SAP EAM data and highlight identified issues with Engineering to ensure fleet data is as up to date and accurate as possible	Complete by Q3	nyd		#VALUE!	On Target				
A5.1.1	Comply with professional development and work plan framework	All current staff (established ongoing roles) have a work plan developed and agreed with their Manager	100%	7	7	100%	Completed				
A5.2.1	Actively engage with Local Government	Minimum of two District Liaison Committee meetings held per committee per year	Minimum 2 per District by Q4	1	2	50%	On Target				
A5.2.2	0	Minimum of two meetings held between Council General Manager/Mayor and District Manager to ensure key stakeholder engagement	Minimum 2 per District by Q4	2	2	100%	Completed				



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**MINUTES OF THE NARROMINE FLOODPLAIN MANAGEMENT COMMITTEE MEETING HELD AT  
COUNCIL CHAMBERS ON TUESDAY 16 APRIL 2019**

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**PRESENT:** Narromine Shire Council: Cr Colin Hamilton, Mrs Jane Redden (General Manager), Andre Pretorius (Director Infrastructure and Engineering Services), Mr Guy Marchant (Executive Manager Health, Building and Environmental Services), Carmel O'Connor (Executive Manager Planning), John Kauter (Consultant); Office of Environment and Heritage: Mr Ivan Rivas Acosta; Community/Business Representatives: Mayor Cr Craig Davies, Mr George Mack, Mr Tony Barlow, Mr Bob Treseder, Mr Jack Cooper; and Mrs Lesley-Ann Roberts (Minute Taker).

## **1. WELCOME**

The Chair welcomed those present and declared the meeting open at 10.07 am.

## **2. APOLOGIES**

**RECOMMENDED** Cr Davies/Mike Bennett that the apologies of Debbie Love (Office of Environment and Heritage), Graham Millgate (Narromine Shire Council, Local Emergency Management Officer), Craig Ronan NSW State Emergency Service), Cr Rob McCutcheon, (Narromine Shire Council), Mr Robert Heywood be accepted.

## **3. MINUTES OF THE PREVIOUS MEETING**

**RECOMMENDED** George Mack/Tony Barlow that the minutes of the previous meeting held on 14 March 2018 be accepted as a true and accurate record of the meeting with the following amendment, that under item 4, recommendation on page 1, Webb Siding Road should be Webb Siding.

## **4. BUSINESS ARISING FROM THE MINUTES**

**George Mack queried where the progress had been following on from the previous minutes and why progress had not flowed on from the discussion had in those minutes?**

- It was noted Inland Rail are undertaking flood model studies and once completed will provide information to Council.
- It was noted, subsequent to the last Council meeting, community consultation for Option B was undertaken; a summary of outcomes from the consultation is presented in the 16 April 2019 Report to Floodplain Management Committee.
- Council have determined alternative options to Option B in order to alleviate residents' concerns.
- Option B was discussed and Council resolved to go to community consultation on Option B, thus Council rejected the Recommendation from Floodplain Management Committee.

## **5. REPORT TO FLOODPLAIN COMMITTEE**

Director Infrastructure and Engineering Services spoke to his report and noted the following points in particular:

### **a) Outcomes of the community consultation**

- Consultation conducted in 2018 was based on the following strategies:
  - A newsletter was issued to the community providing information and an update on the progress of the levee project;

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**MINUTES OF THE NARROMINE FLOODPLAIN MANAGEMENT COMMITTEE MEETING HELD AT  
COUNCIL CHAMBERS ON TUESDAY 16 APRIL 2019**

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**5. REPORT TO FLOODPLAIN COMMITTEE CONT.**

- Impacted property owners were invited to individual sessions with Council staff, the flood modelling consultant and the levee design consultant to provide more detailed information on the different levee options and the potential impacts on their property. This occurred over a 2-day period from 26 June 2018 to 27 June 2018;
- A general community information and Q&A session was held in the evening of 27 June 2018 at the Narromine USMC; and
- Submissions were invited from the public on the levee project with a closing date of 20 August 2018.
- Consultation undertaken in June 2018
- Council Workshop held in December 2018

**Jack Cooper** noted: people who attended the consultation were advised that they were not being encouraged to offer alternatives to the options presented but were consulted to be informed only.

**b) Feedback outlining concerns from Warren Road, Crossley Drive and River Drive – Report Pages 2-3.**

- Lyalls and Associates provided 5 different alignment options along Warren Road.
- Council resolved Option B April 2018 meeting however, this option does not protect houses on River Drive.
- A breakdown of submissions received for Option B was presented.

**c) Report No. Page 6.**

Discussion was had regarding the proposed Option Ha in particular, the following points were summarised:

- Drainage of water northerly direction
- Narromine Aerodrome is considered critical infrastructure
- Reinforced box culverts
- Promote the flow of water
- Breakout from Macquarie River Mitchell Highway drainage culverts

**George Mack:** Noted **Attachments 3.1 and 3.2** and the change in water levels once water is in town, showing water can make its way into town near the towns' service stations, given the flat nature of the terrain.

**Director, Infrastructure and Engineering Services:** noted the terrain of the Cowal and the potential of backflow and advised that Council would work towards mitigating these impacts through the detailed design.

It was noted **on Attachment No 3 (Figure 9)**, Backwater effect only from Town Cowal, but does not consider potential flow from the Backwater Cowal.

**Mayor Cr Davies:** If water does go out to the Aerodrome it could be greater than 1% AEP but currently it is believed the impact to the Aerodrome would be minor however, this is subject to detailed design.



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**MINUTES OF THE NARROMINE FLOODPLAIN MANAGEMENT COMMITTEE MEETING HELD AT  
COUNCIL CHAMBERS ON TUESDAY 16 APRIL 2019**

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**5. REPORT TO FLOODPLAIN COMMITTEE Cont'd.**

- d) Director Infrastructure and Engineering Services gave background to the typical sections of a levee including earth embankments and outlined a few varying options with regards to a levee bank.

**Bob Treseder:** noted a concern regarding Crossley Drive height options with a height of 3M for his dwelling. As a resident, how will this be kept tidy? Even at the present moment there is cause for concern.

**Director Infrastructure and Engineering Services** advised, the levee will be designed fit for purpose that is, suitable for site. These sections will be applicable to residents on Warren Road, Crossley Drive etc.

**Executive Manager Health Building and Environmental Services** provided a diagram of levee sections drawn on the whiteboard.

**Executive Manager of Planning left the meeting room at 11.01 am and returned at 11.04 am.**

It was noted, when Council arrive at the design phase, there may be varying options that are flatter that could be available to residents in certain areas.

**Bob Treseder noted:** The Macquarie River comes through from Rotary Park then starts to rise.

Option B levee heights were discussed along the alignment and respective chainages. Option Ha has a section of levee removed between the scheme channel and the Peppercorn Motel on Warren Road.

**Jack Cooper:** Levee along the edge of High Park could this avoid concerns? Given there is a water scheme out there.

**Jack Cooper left the meeting at 11.19 am**

**Director Infrastructure and Engineering Services** presented next steps with particular reference to option Ha that is to close out the current study and commence with concept design, followed by detailed design that would cover traffic safety concerns, the type of levee, site specific and benefit to residents who consult with affected residents.

**John Kauter:** noted the following concerns regarding Option Ha which could mean the isolation of:

- Golf Clubhouse
- Warren Road residents
- Peppercorn Motel
- Sky Park that is Bowden Fletcher Drive given the temporary installation of floodgates.

Director Infrastructure and Engineering Services advised that consultation would take into account the shift from Option B to the new Option Ha which would then highlight these and other concerns with regards to Option Ha.

The principle issue is that residents do not want to be on water side of the levee.

**The General Manager left the meeting room at 11.27 am and returned at 11.30 am.**

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**MINUTES OF THE NARROMINE FLOODPLAIN MANAGEMENT COMMITTEE MEETING HELD AT COUNCIL CHAMBERS ON TUESDAY 16 APRIL 2019**

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**George Mack:** queried whether Option Ha was the cart before the horse, given the Options did not take into account a further investigation into Webb Siding?

**Ivan Rivas Acosta:** noted these issues and outstanding queries would be considered in the Flood Risk Management Plan once it has finished being updated.

It was noted the progression of next steps will be as follows:

1. Confirm alignment option
2. Incorporate information from the study to be undertaken from Webb Siding

As a result of this, levee heights may increase or decrease as the design will be informed through the modelling as outlined above.

The Flood Risk Management Plan is now outdated (2009); Council will first need to go out to Quotation to have the plan updated; once updated, new information will be incorporated.

**John Kauter:** noted other Councils are also running behind schedule with regards to Floodplain Risk Management Plan

**Tony Barlow:** queried why the Committee were called to a meeting given Council overruled the Committee at the April 2018 meeting?

**The General Manager:** advised the meeting was to gauge the Committees thoughts and to provide feedback to Council

**Mayor Cr Davies noted:** to advance the process and convey that progress is being made through modelling and various studies at Webb Siding

**Bob Treseder left the meeting room at 11.38 am and returned at 11.42 am.**

Discussion ensued regarding inundation at Narromine Golf Club.

**Director Infrastructure and Engineering Services** gave background to the Local Emergency Management Plan which contains Consequence Management Guides whereby a specific combat agency or multiple is activated, with regards to the relative emergency at hand. In this instance, flooding.

**RECOMMENDED:** Cr Davies/Tony Barlow that Option Ha be the recommended alignment for the proposed levee to minimise impacts (such as potential flooding and aesthetic) for residents along Warren Road, subject to further engineering advice regarding Webb Siding.

There being no further business the meeting closed at 12.05 pm.

The minutes (pages 1- 4) were confirmed at a meeting held on 2019 and are a full and accurate record of the meeting held on 16 April 2019.

**CHAIR**

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**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
BE HELD AT NARROMINE SHIRE COUNCIL ON TUESDAY, 16 APRIL 2019**

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**1. REPORT ON PUBLIC CONSULTATION AND ALTERNATIVE ALIGNMENTS TO OPTION B  
ALONG WARREN ROAD**

**Introduction**

The purpose of this report is to provide the Committee with the outcomes of the community consultation as well as investigations into additional options on the levee alignment (variations to Option B) along Warren Road.

**Background**

Community consultation was conducted based on the Draft Concept Design Report and Drawings in June 2018.

Following a Levee Workshop with Councillors held on 17 December 2018, it was decided to investigate alternative Levee alignments along Warren Road. Areas along Warren Road were inspected (between 10 December and 18 December 2018) to determine if the levee alignment could be optimised, especially along Warren Road.

Lyall and Associates were therefore asked by Council to conduct further investigations and flood modelling and 5 variations to the alignment of Levee Option B was assessed to determine which option would have the least impact on properties along Warren Road and Sky Park.

This process was done in parallel with the completion of the final milestones Narromine Town Levee Concept Design for submission to the Office of Environment and Heritage. Council also recently received a grant to update its Floodplain Risk Management Plan where information from relevant flood studies will be used in this process.

**Discussion/Comments**

- **Community Consultation**

The following strategies was used during the community consultation process:

- A newsletter was issued to the community providing information and an update on the progress of the levee project;
- Impacted property owners were invited to individual sessions with Council staff, the flood modelling consultant and the levee design consultant to provide more detailed information on the different levee options and the potential impacts on their property. This occurred over a 2-day period from 26/06/2018 to 27/06/2018;
- A general community information and Q&A session was held in the evening of 27/06/2018 at the Narromine USMC; and
- Submissions were invited from the public on the levee project with a closing date of 20/08/2018.

In all, 52 submissions were received representing 46 different residents/interests. Over 80% of submissions were against the levee. The **Table** below provides a high-level summary of the submissions with a breakdown for the different residential areas impacted by the levee. A number of submissions suggested further investigation or alternative alignments be

**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
BE HELD AT NARROMINE SHIRE COUNCIL ON TUESDAY, 16 APRIL 2019**

investigated and these are listed in the **Table** below. Please note this table is not necessarily mutually exclusive with the 'in favour of levee' and 'against levee' rows

Area	Warren Road	Crossley Drive	River Drive/ High Park Road	Other	Total
<b>Number of Submissions</b>	15	8	6	17	46
<b>In favour of Levee</b>	0	1	0	3	4
<b>Against levee</b>	15	6	6	11	38
<b>Further investigation or different option analysed</b>	2	4	0	3	9

A short, generalised summary of the submissions for each residential area where properties are directly impacted is provided below:

- Warren Road:
  - Residents are satisfied with their current level of immunity from flooding;
  - Residents are very concerned about being outside the levee, the increased flood levels caused by the levee and the impact on property values; and,
  - Residents didn't understand why a levee was required along Warren Road and didn't think the protection of Sky Park and the Aerodrome warranted the impacts on the Warren Rd properties. If a levee was to be built it should just protect the town and not go along Warren Rd.
- Crossley Drive:
  - Residents were very concerned with the size of the levee and the impacts this would have on access to the river side of their properties and also on the aesthetic and lifestyle impacts such a large levee would have on their properties.
  - Residents had divided opinions on whether a levee was necessary or not.
- River Drive:
  - Residents didn't think that a levee was warranted for Narromine considering the impacts to properties on River Road, Warren Road and Crossley Drive.
  - If the levee was to be built they had concerns with the design along River Drive, particularly traffic safety issues where it crosses High Park Rd and that the design should be changed to address these concerns.

Further hydraulic modelling during the detailed design phase to determine what additional protection measures such as, scour and erosion protection, details for emergency spillways and safe operation of the levee in floods greater than the 1%EAP would be required.

Comprehensive consultation would be required with affected property owners to refine alignment and to obtain agreement with regards to Levee Type (i.e. L-shaped retaining wall, earth embankment, post and panel wall, etc.)

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**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
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- **Variations to Levee Option B alignment along Warren Road**

There were five (5) variations to the alignment of Option B investigated to ensure that most avenues had been explored to minimize impacts on properties along Warren Road and to reduce the chance of further delays.

These alignments were:

- **Option Fa** – which follows the alignment of the preferred Levee Option B, but crosses Warren Road south of the golf course club house where it then runs in a westerly direction for a distance of about 400 m along a natural “ridgeline”. The scheme would include removable flood gates where the levee crosses Warren Road. **(see Attachment 1)**.
- **Option Fb** – which is identical to Levee Option Fa with the exception that it crosses Warren Road to the north of the golf course club house. **(see Attachment 2)**.
- **Option Ha** – which is identical to Levee Option Fa, but includes a second section of levee which runs in a northerly direction from the irrigation canal embankment along the eastern side of Skypark, where it then turns west and wraps around the future subdivision within Skypark. This option includes the construction of a wide shallow grassed floodway channel along the western side of Warren Road extending north from Bowden Fletcher Drive to a location along the northern boundary of the aerodrome. The floodway channel would have a base width of about 20 m and longitudinal slope of 0.1 percent. This option also includes the installation of 5 3600 x 450 reinforced concrete box culverts (subject to detailed design) beneath both Bowden Fletcher Drive and the future Kingsford Smith Drive. Minor regrading would be required on the southern side of Bowden Fletcher Drive within golf course land to promote the flow of water through the box culverts. The scheme would include removable flood gates where the levee crosses both Bowden Fletcher Drive and the future Kingsford Smith Drive. **(see Attachment 3)**
- **Option Hb** – which is identical to Levee Option Ha, with the exception that the levee crosses Warren Road at the same location as Levee Option Fb and removes the gap in the levee in the vicinity of the golf course (i.e. it results in a continuous levee which extends from River Drive to a location downstream of Skypark). An emergency spillway(s) can be incorporated into the design of the levee so that there is some relief provided in peak flood levels during floods larger than the 1% AEP, especially in relation to the properties that are located along Warren Road south of the Eumungerie Road bridge crossing. On this basis, the emergency spillway(s) should permit flow to discharge to the Town Cowl in the vicinity of the golf course. The impacts are very similar to those for Levee Options Fa, Fb and Ha. **(see Attachment 4)**
- **Option Hc** – which is identical to Levee Option Hb, but includes a short section of levee which prevents flow from discharging in a northerly direction along Warren Road at the location where the irrigation canal crosses the road corridor. The scheme would include removable flood gates where the short section of levee crosses Warren Road. **(see Attachment 5)**

**Attachment 6** shows **Option B**, which is the original route adopted by the Floodplain Management Committee at their meeting held on 12 August, 2013.

**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
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**Attachment 7** shows the main extent of the 1% AEP Main Stream Flood and location of surveyed properties for pre-levee conditions.

With no levee, a total of 24 out of 28 properties will have above ground flooding and 7 out of 28 properties will have above floor flooding under present day conditions in Warren Road and in Sky Park.

The table below illustrates the number of properties impacted upon when different alignment options are compared for Warren Road and Sky Park.

Option	Option B	Option Fa	Option Fb	Option Ha	Option Hb	Option Hc
<b>Change 1% AEP Peak Flood levels in Property (m)</b>	Min: 0.06 Max: 0.36 Ave: 0.13	Min: -0.05 Max: 0.11 Ave: 0.04 2 Properties showed improvement with levee construction	Min: -0.08 Max: 0.10 Ave: 0.04 2 Properties showed improvement in with levee construction	Min: -0.08 Max: 0.10 Average: 0.04 2 Properties showed improvement with levee construction	Min: -0.02 Max: 0.11 Ave: 0.05 1 Property showed improvement in levee construction and 1 Property is not flooded	Min: 0.03 Max: 0.30 Ave: 0.10
<b>Change in Depth of Above-Ground Inundation in Property Located Along Warren Road and in Sky Park (m)</b>	Min: 0.06 Max: 0.36 Ave: 0.13  1 Property not flooded/ No Change	Min: -0.05 Max: 0.11 Ave: 0.04  2 Properties not flooded/ No Change  2 Properties showed improvement with levee construction	Min: -0.08 Max: 0.10 Ave: 0.04  2 Properties not flooded/ No Change  2 Properties showed improvement with levee construction	Min: -0.08 Max: 0.10 Average: 0.03  2 Properties not flooded/ No Change  2 Properties showed improvement with levee construction	Min: -0.02 Max: 0.11 Ave: 0.05  2 Properties not flooded/ No Change  1 Property showed improvement with levee construction  1 Property showed no change in Peak Flood Level Attributable to Levee Construction.	Min: 0.03 Max: 0.30 Ave: 0.10  2 Properties not flooded/ No Change
<b>Change in Depth of Above-Floor inundation in Property (m)</b>	Min: 0.0 Max: 0.60 Ave: 0.06  12 Properties above floor flooding	Min: -0.05 Max: 0.06 Ave: 0.02  15 Properties above floor flooding	Min: -0.08 Max: 0.07 Ave: 0.02  16 Properties above floor flooding	Min: -0.08 Max: 0.05 Ave: 0.02  16 Properties above floor flooding	Min: -0.02 Max: 0.08 Ave: 0.03  16 Properties above floor flooding	Min: 0.01 Max: 0.30 Ave: 0.11  14 Properties above floor flooding
<b>Notes:</b>	Positive indicates rise in level – (inundation) Negative indicates decrease in level					

Director, Infrastructure and Engineering Services Report to the Floodplain Management Committee Meeting of 16 April 2019

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**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
BE HELD AT NARROMINE SHIRE COUNCIL ON TUESDAY, 16 APRIL 2019**

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From the above table, it can be seen that options Fa, Fb, Ha and Hb show the number of properties and above floor inundation has reduced, while some having a reduced inundation and some with a slightly increased inundation.

It should be noted that further detailed investigations should be conducted during the concept and detailed design stages especially in terms of:

- a) Upgrades required to rail infrastructure at the Town Cowal.
- b) Upgrades required to the scheme irrigation channel, and relevant approvals required to improve this structure.
- c) Potential flooding impacts at the Peppercorn Motel and Golf Club.
- d) Potential for backflow/ return flow and associated impacts from the Town Cowal back into Narromine either by overland flow or via stormwater or sewage systems.
- e) Additional requirements for the protection of the Aerodrome, since it is a critical infrastructure.

It would appear that the Option with most minimal impact to residents along Warren Road is **Option Ha while Option B** provides most protection to critical infrastructure such as the aerodrome and minimizing potential backflow from the Town Cowal.

Some angst from residents who are located outside the alignment of the levee will still remain. This will be managed by consultation, with appropriate actions be implemented by the relevant responsible agencies in accordance with the Consequence Management Guide of Council's Local Emergency Management Plan, 2015.

Once the alignment has been finalised, residents along Warren Road need to be consulted.

After the consultation has taken place, the Narromine Town Levee Concept Design can be updated and be presented to Council, for the purposes on making a decision whether to proceed with construction of a levee along with the chosen alignment.

The Narromine Town Levee Concept Design should be used in the review and updating of the Floodplain Risk Management Plan.

With this decision finalised, and in the event that Council chooses to construct a levee, further grant funding will be sought for the completion of the final 2 stages of the Feasibility Study, being EIS and detailed design. This work will require a further tender process to be undertaken.

On completion of this work, further funding will be sought for the construction of the levee along the approved alignment.

There will also be additional work undertaken with land acquisitions and registrations of plans along the route of the levee.

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**REPORT TO FLOODPLAIN MANAGEMENT COMMITTEE MEETING TO  
BE HELD AT NARROMINE SHIRE COUNCIL ON TUESDAY, 16 APRIL 2019**

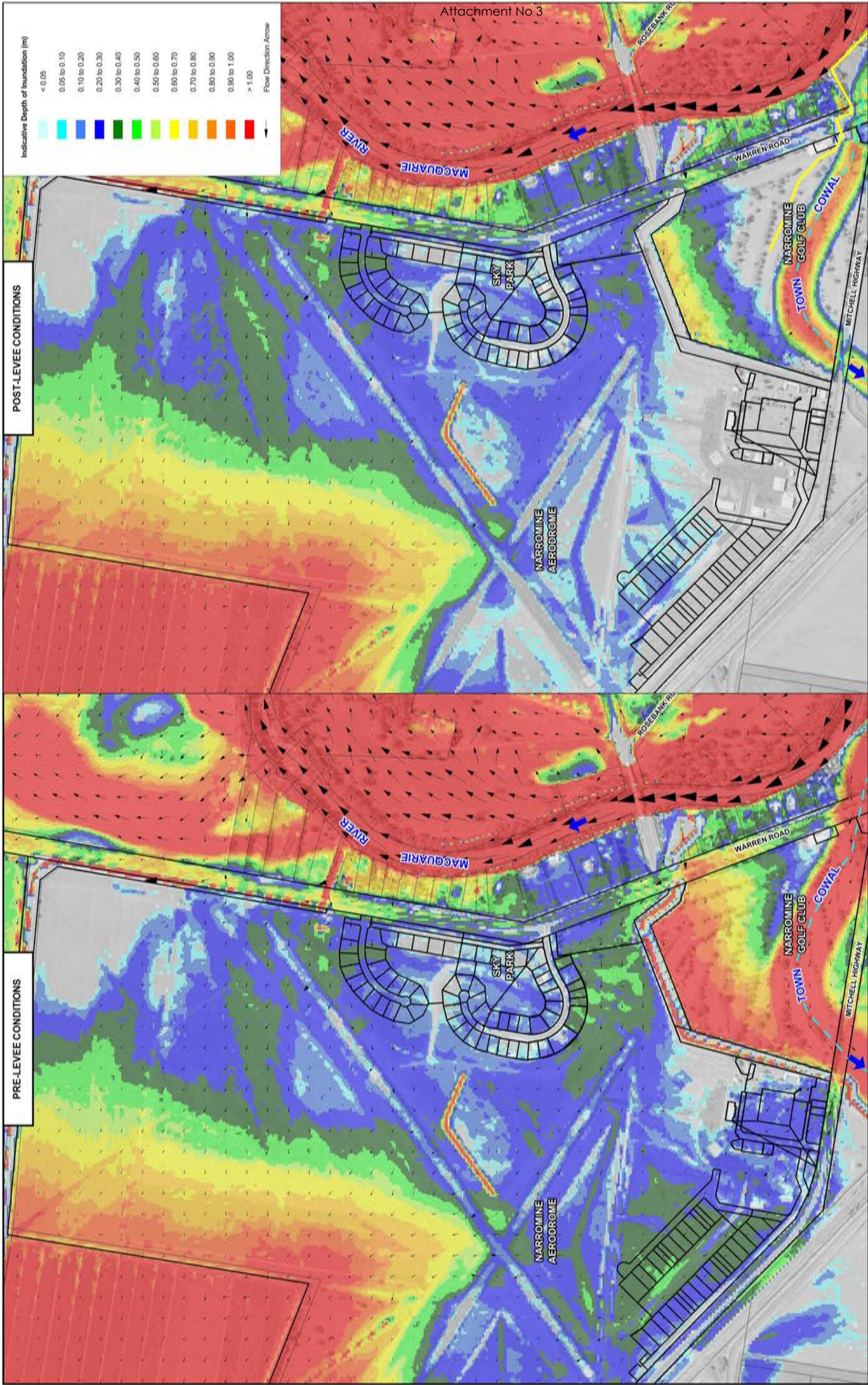
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**RECOMMENDATION**

1. That Option Ha be the recommended alignment for the proposed levee to minimise impacts (such as potential flooding and aesthetic) for residents along Warren Road.

André Pretorius  
**Director, Infrastructure and Engineering Services**





**LEGEND**  
 Levee Route

**NARROMINE RIVER BANK LEVEE  
 FEASIBILITY STUDY**

**NOTE:**

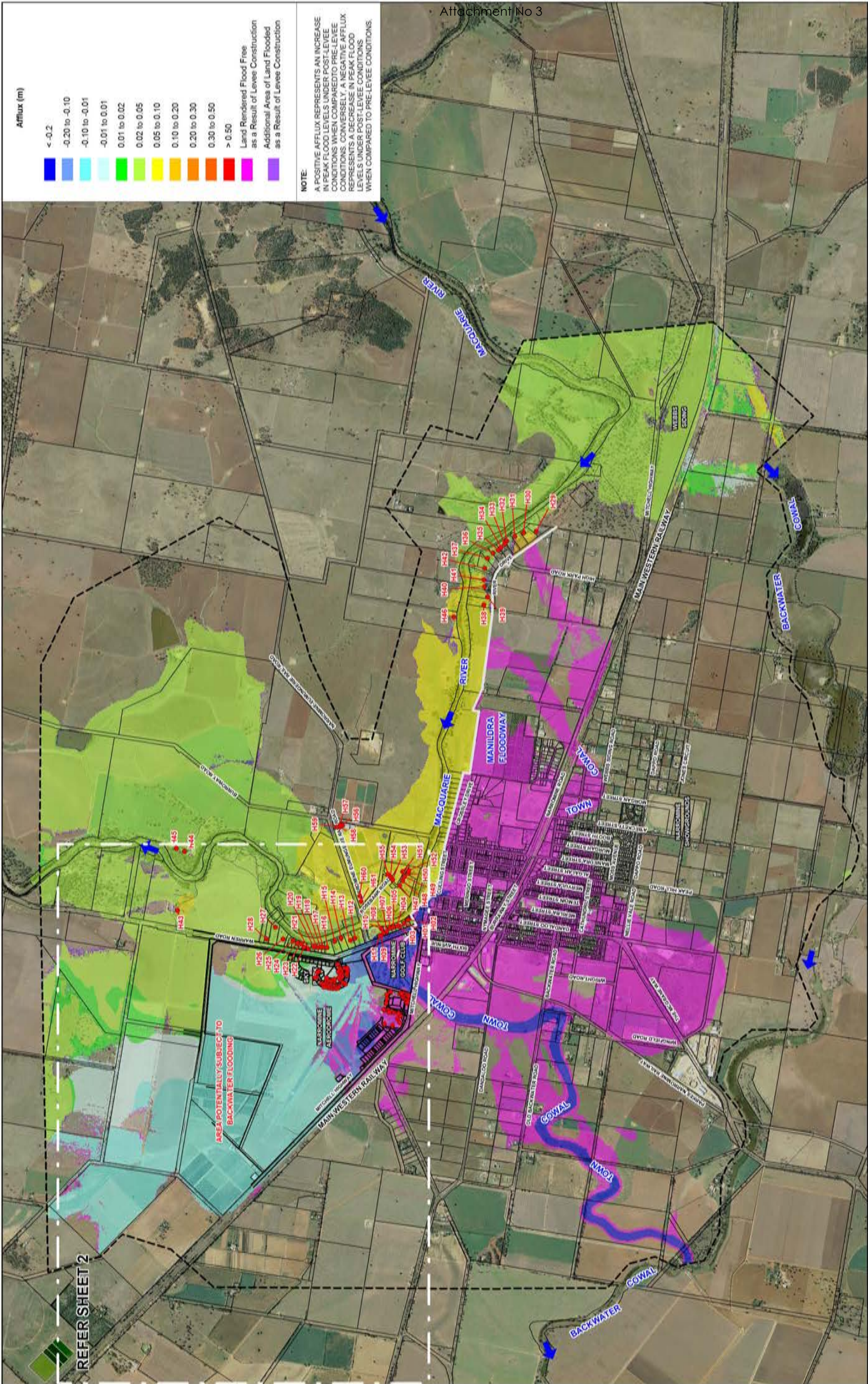
THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.



Figure 4

**MAIN STREAM FLOODING BEHAVIOUR  
 PRE-LEVEE AND POST-LEVEE OPTION Fa CONDITIONS - 1% AEP**





**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**  
 Figure 5  
 (Sheet 1 of 2)  
**IMPACT OF LEVEE OPTION Fa ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route

**NOTE:**  
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Scale: 1:40,000  
 400 0 400 800 1200 m  
  
**Lyall & Associates**

REFER SHEET 2

AREA POTENTIALLY SUBJECT TO BACKWATER FLOODING

MANILDRA FLOODWAY

MACQUARIE RIVER

BACKWATER

MACQUARIE RIVER

BACKWATER

MACQUARIE RIVER

BACKWATER

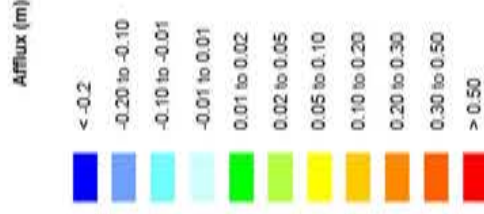
MACQUARIE RIVER

BACKWATER

MACQUARIE RIVER

BACKWATER





**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 5  
 (Sheet 2 of 2)  
**IMPACT OF LEVEE OPTION Fa ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

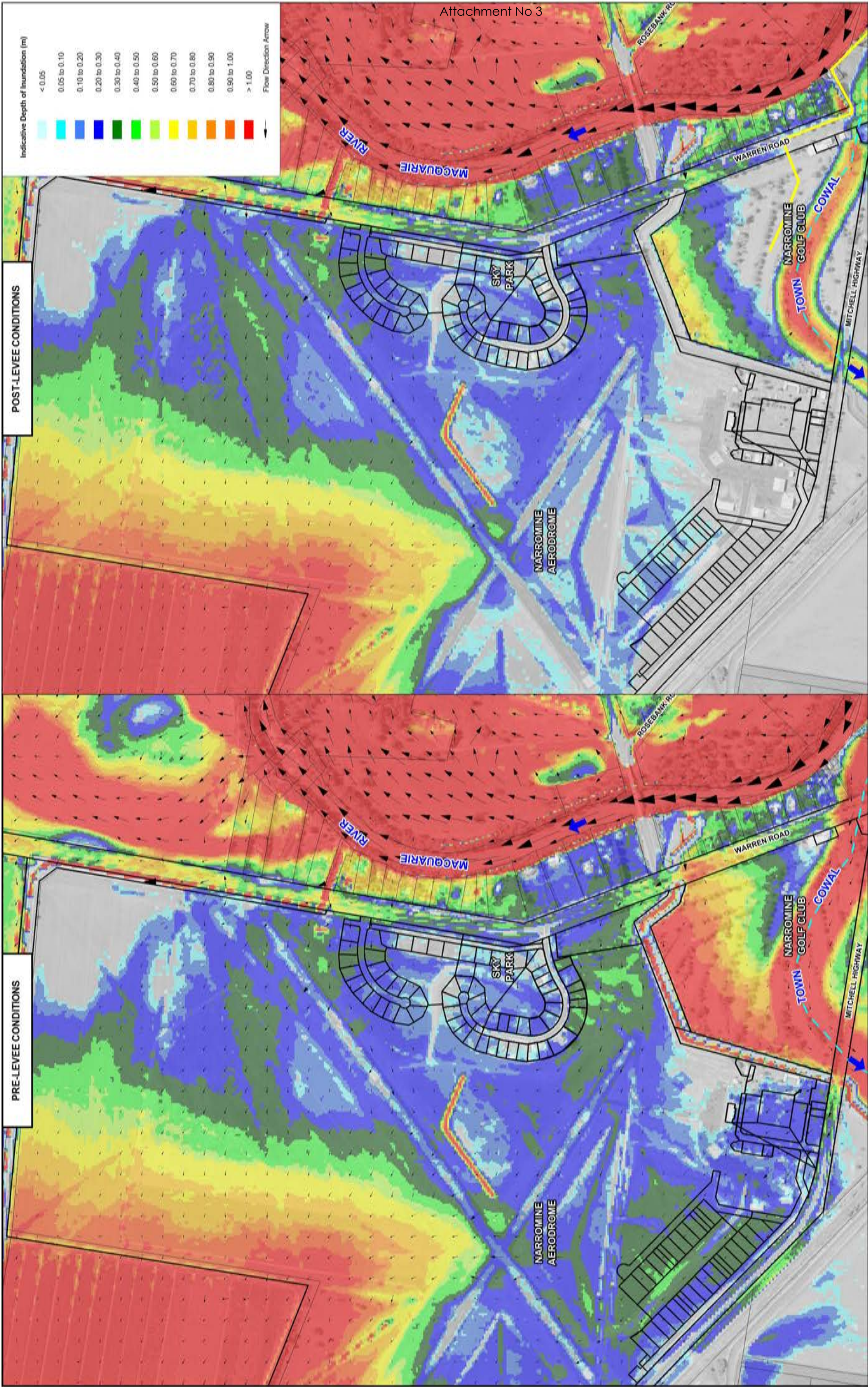
**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route

**NOTE:**  
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**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

**LEGEND**  
 Levee Route

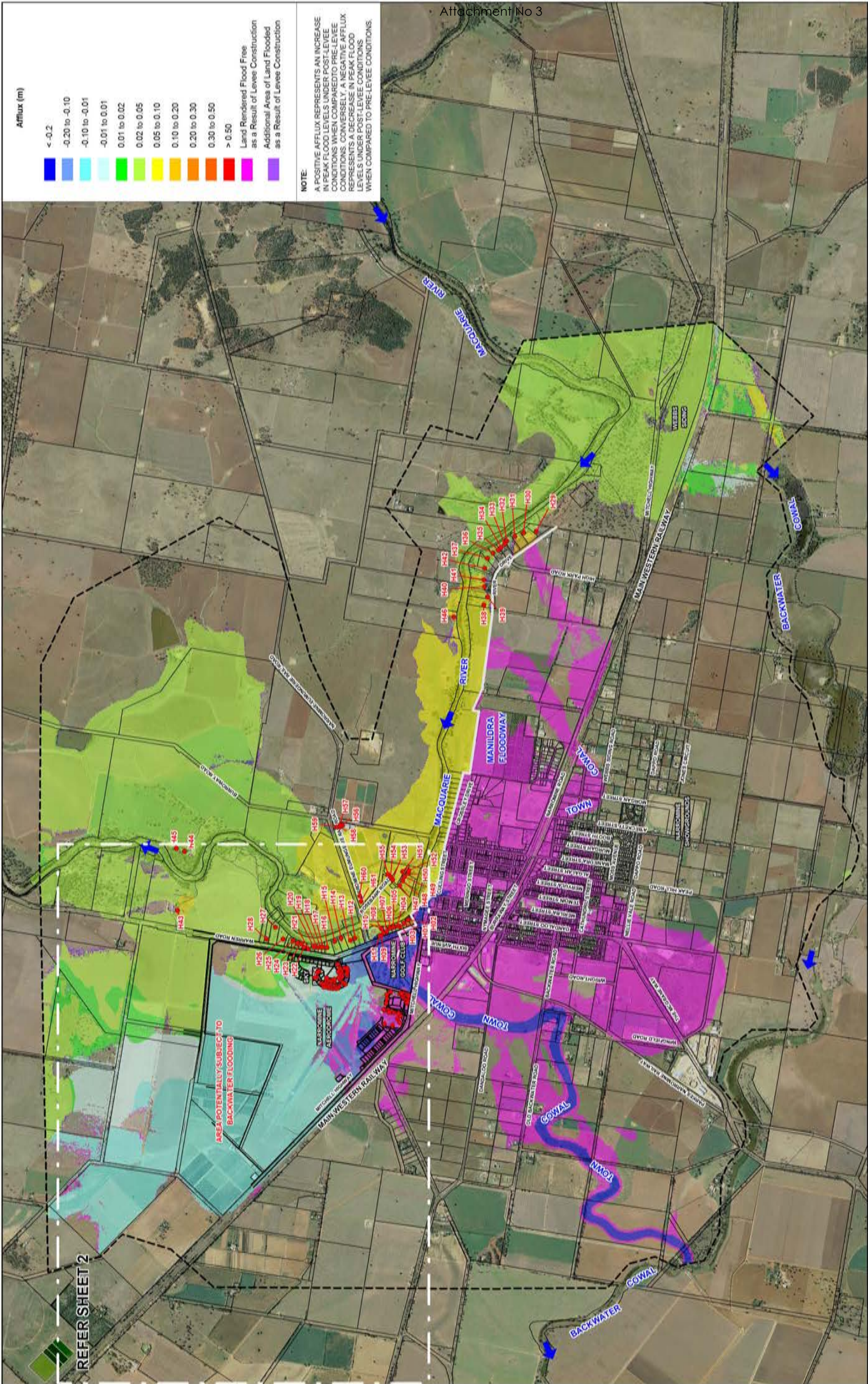
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**Figure 6**  
**MAIN STREAM FLOODING BEHAVIOUR**  
**PRE-LEVEE AND POST-LEVEE OPTION F<sub>b</sub> CONDITIONS - 1% AEP**





**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

REFER SHEET 2

AREA POTENTIALLY SUBJECT TO BACKWATER FLOODING



**NOTE:**  
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**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route

**NARRMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 7  
 (Sheet 1 of 2)  
**IMPACT OF LEVEE OPTION Fb ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**





**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

**NOTE:**  
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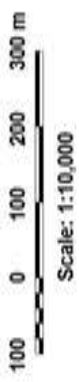
**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 7  
 (Sheet 2 of 2)  
**IMPACT OF LEVEE OPTION Fb ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

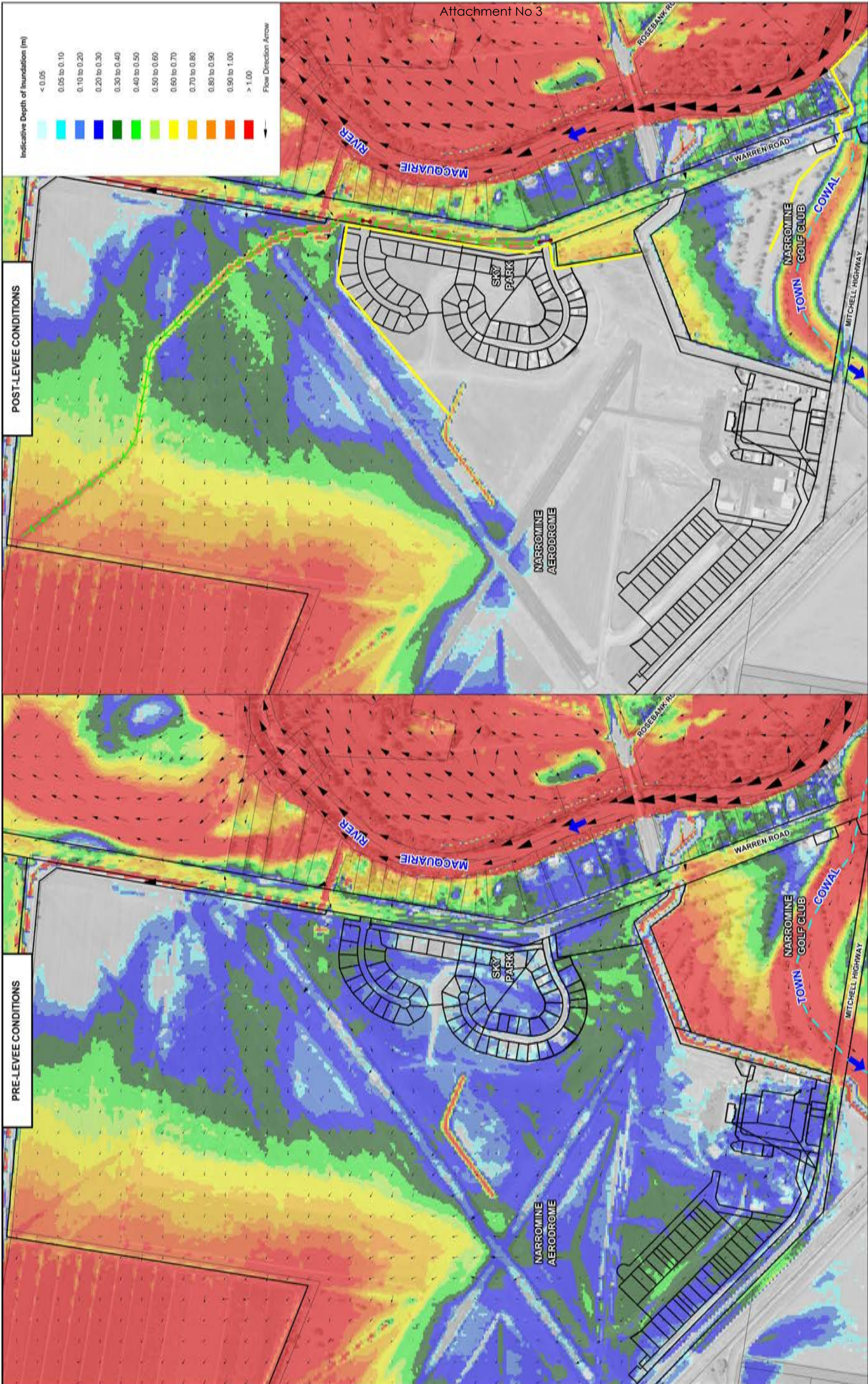
**LEGEND**

- Red dot: Surveyed Property and ID
- Black dashed line: Two-Dimensional Model Boundary
- Grey line: Levee Route

**NOTE:**  
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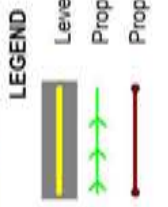
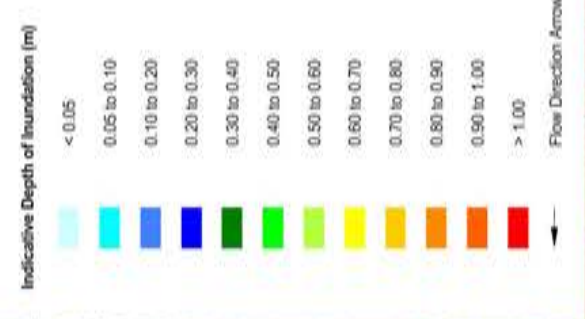






POST-LEVEE CONDITIONS

PRE-LEVEE CONDITIONS



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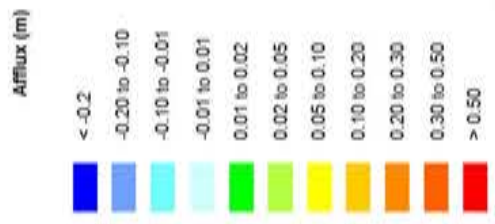
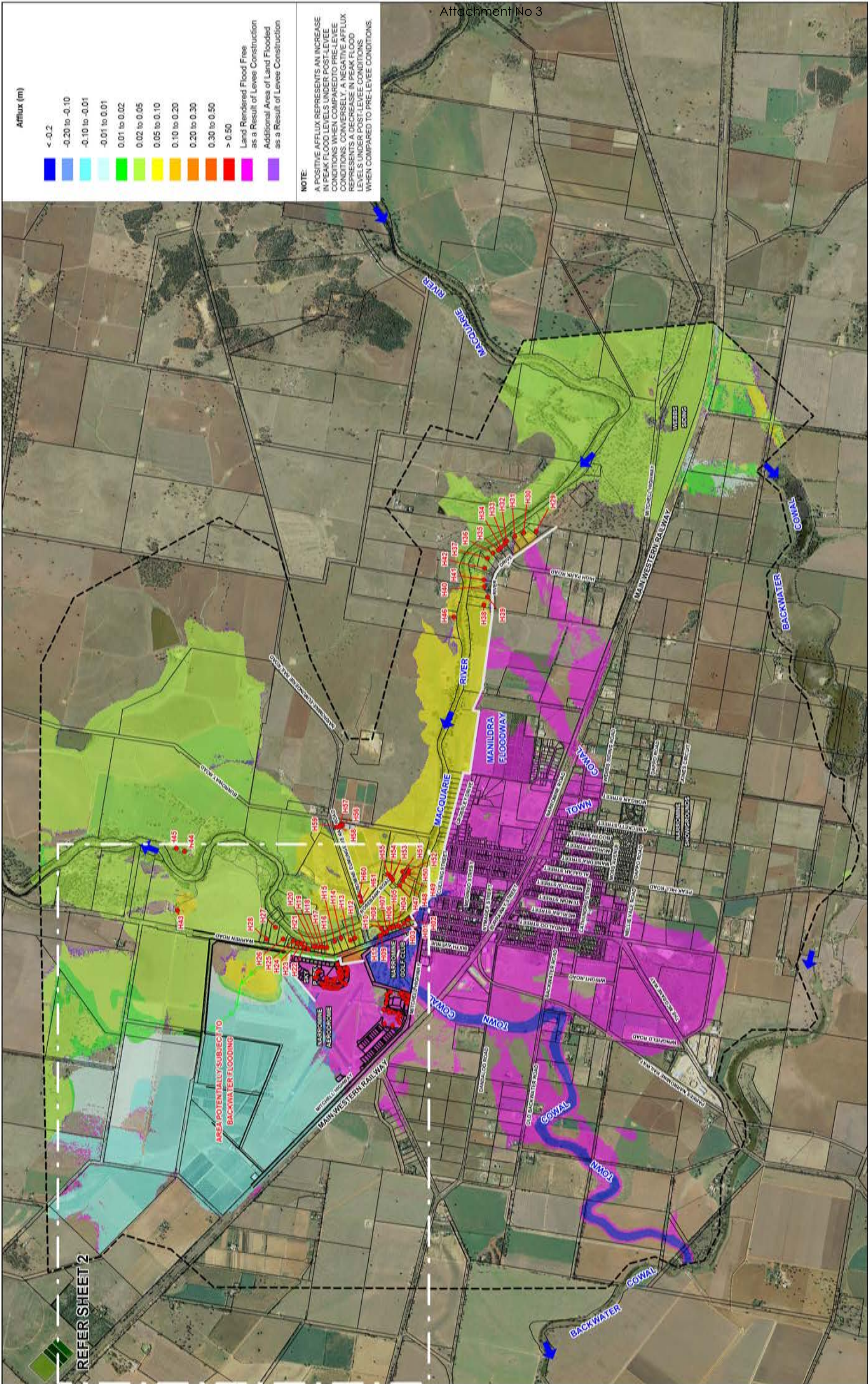


**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 8

**MAIN STREAM FLOODING BEHAVIOUR PRE-LEVEE AND POST-LEVEE OPTION Ha CONDITIONS - 1% AEP**





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**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

**Figure 9**  
 (Sheet 1 of 2)  
**IMPACT OF LEVEE OPTION Ha ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route
- Proposed Channel

**NOTE:**  
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Scale: 1:40,000

400 0 400 800 1200 m

**Lyall & Associates**

REFER SHEET 2

AREA POTENTIALLY SUBJECT TO BACKWATER FLOODING

MANILDRA FLOODWAY

MACQUARIE RIVER

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**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

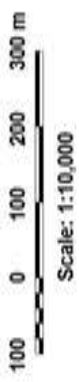
**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 9  
 (Sheet 2 of 2)  
 IMPACT OF LEVEE OPTION Ha ON MAIN STREAM FLOOD BEHAVIOUR  
 1% AEP

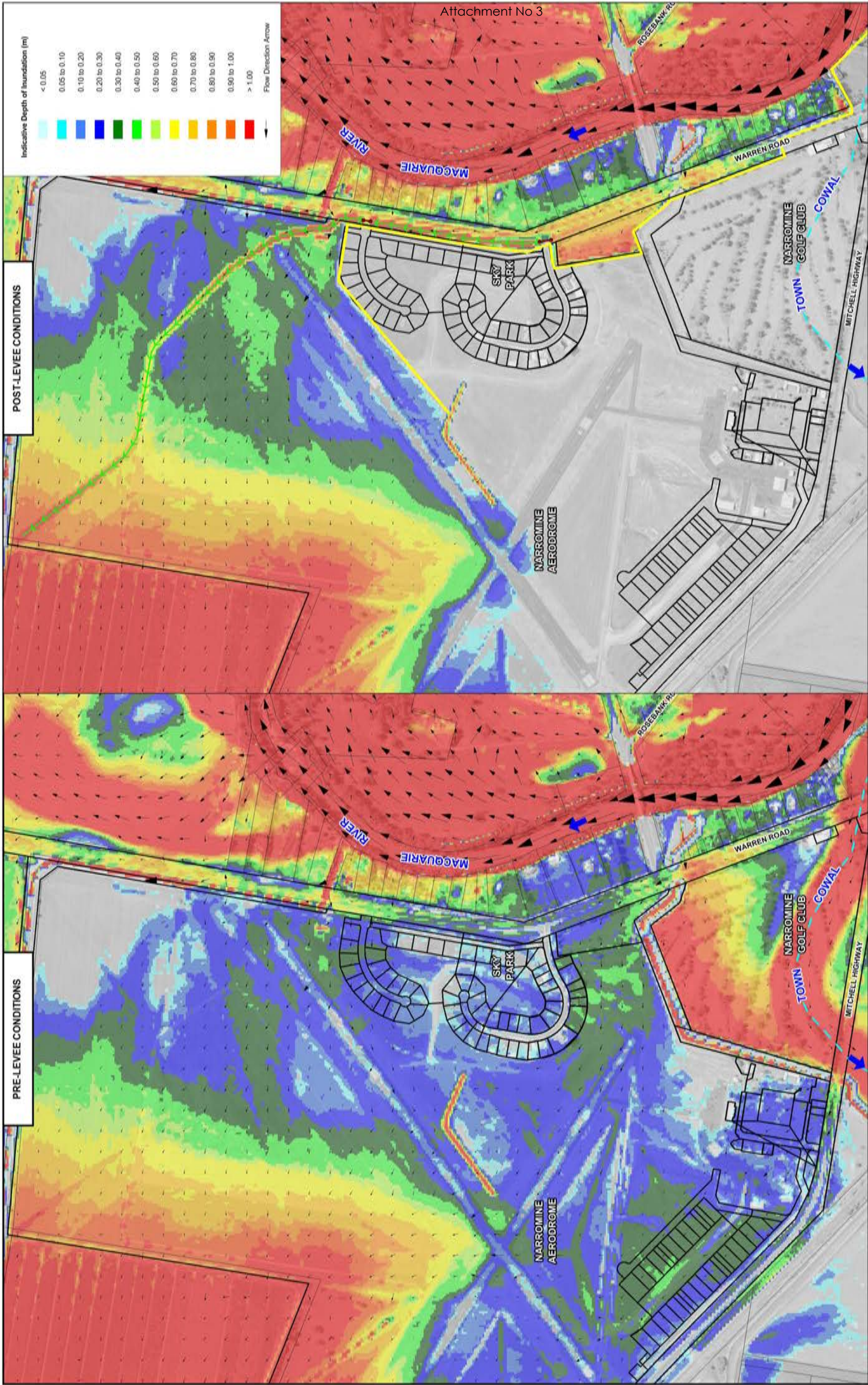
**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route
- Proposed Channel
- Proposed Drainage Network

**NOTE:**  
 THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.







**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 10

**MAIN STREAM FLOODING BEHAVIOUR PRE-LEVEE AND POST-LEVEE OPTION H<sub>b</sub> CONDITIONS - 1% AEP**

**LEGEND**

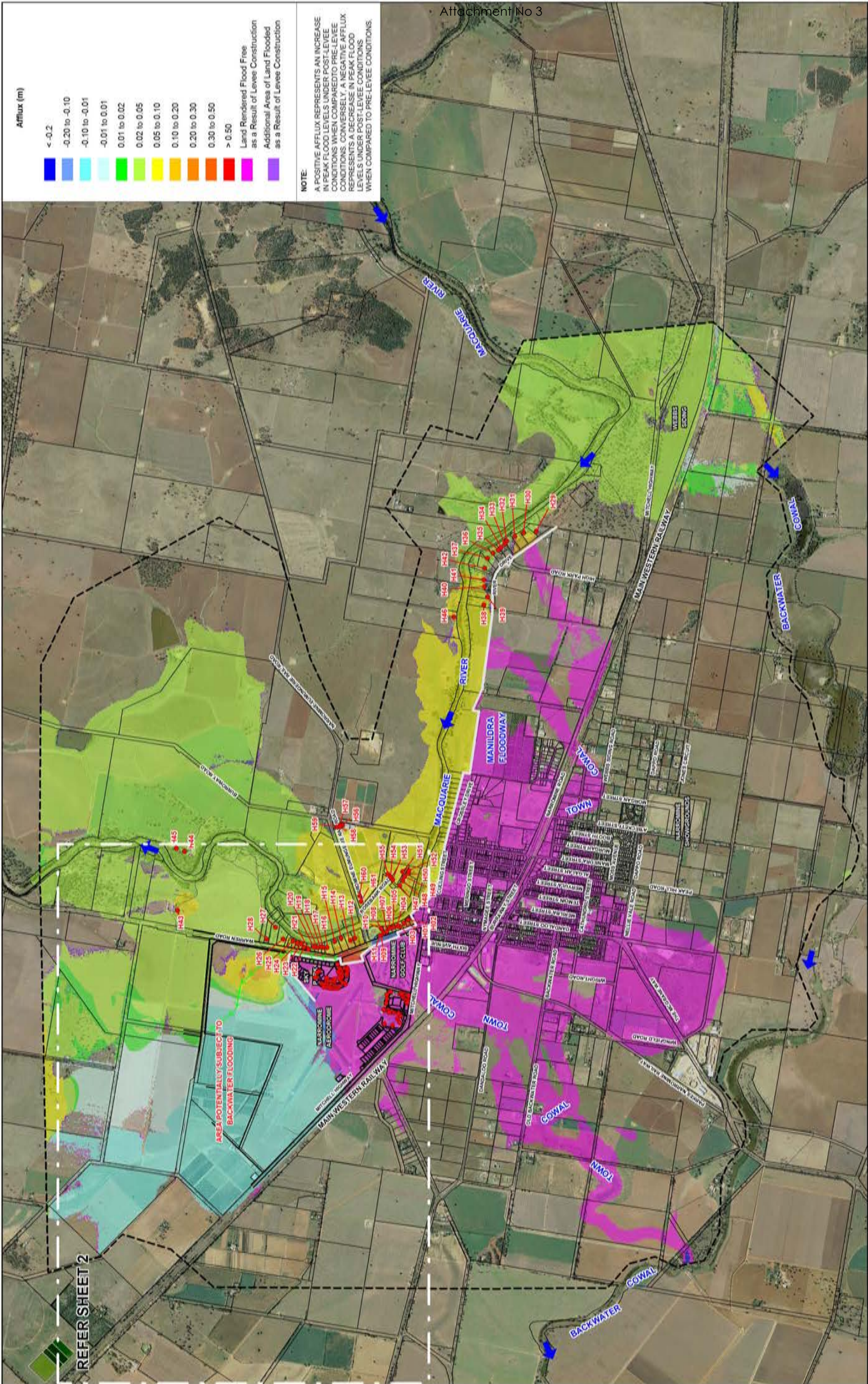
- Levee Route
- Proposed Channel
- Proposed Drainage Network

N 100 0 100 200 300 m  
Scale: 1:10,000

**NOTE:**  
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**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

Afflux (m)
< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

**Figure 11**  
 (Sheet 1 of 2)  
**IMPACT OF LEVEE OPTION Hb ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route
- Proposed Channel

**NOTE:**  
 THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.

Scale: 1:40,000

400 0 400 800 1200 m

**Lyall & Associates**

REFER SHEET 2

AREA POTENTIALLY SUBJECT TO BACKWATER FLOODING

NOTE:

THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.





**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

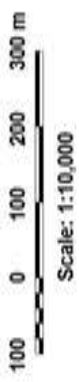
**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 11  
 (Sheet 2 of 2)  
**IMPACT OF LEVEE OPTION Hb ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

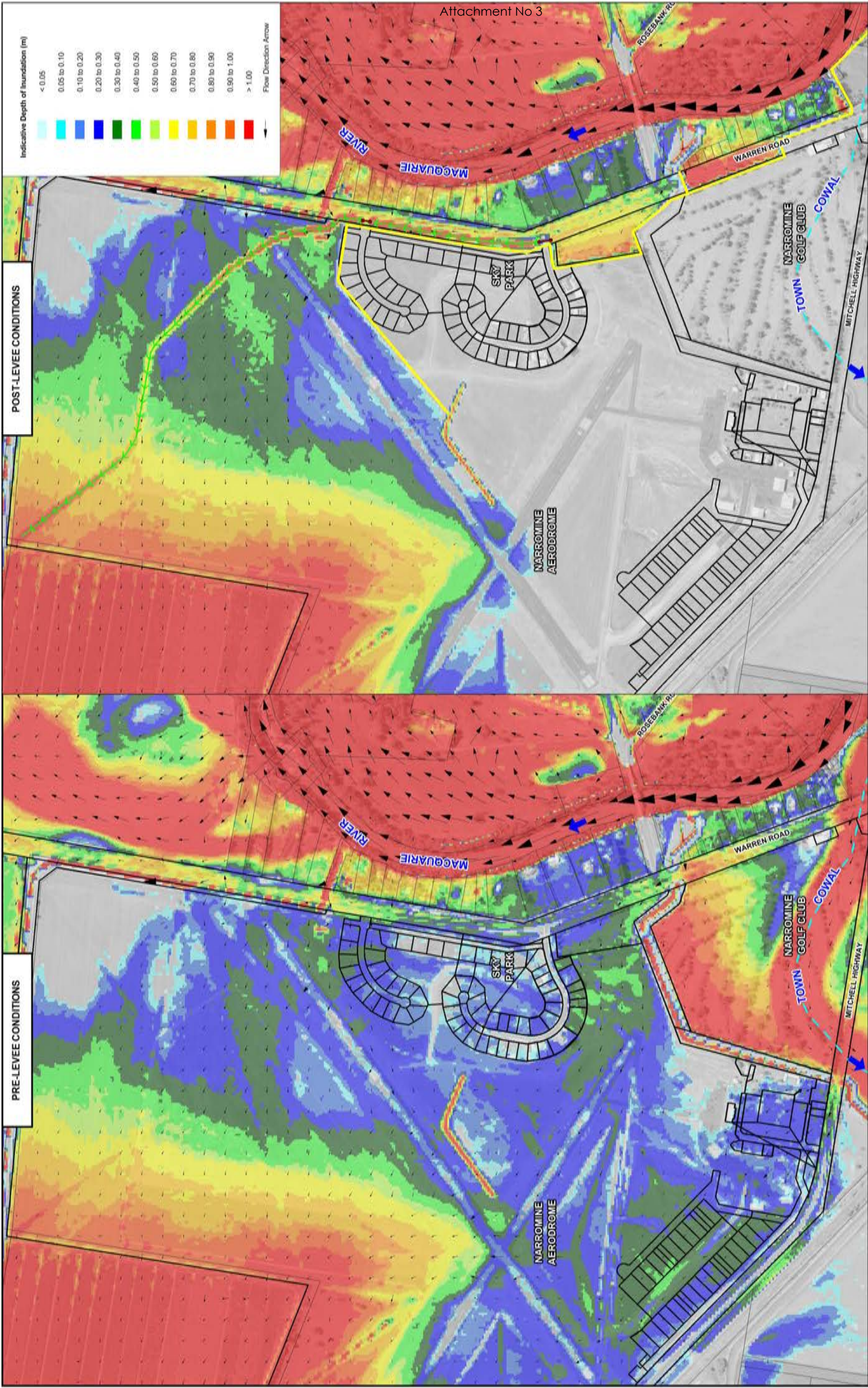
**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route
- Proposed Channel
- Proposed Drainage Network

**NOTE:**  
 THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.







POST-LEVEE CONDITIONS

PRE-LEVEE CONDITIONS

Indicative Depth of Inundation (m)

< 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.40
0.40 to 0.50
0.50 to 0.60
0.60 to 0.70
0.70 to 0.80
0.80 to 0.90
0.90 to 1.00
> 1.00

Flow Direction Arrow

N 100 0 100 200 300 m  
Scale: 1:10,000

- LEGEND**
- Levee Route
  - Proposed Channel
  - Proposed Drainage Network

**NOTE:**  
THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.

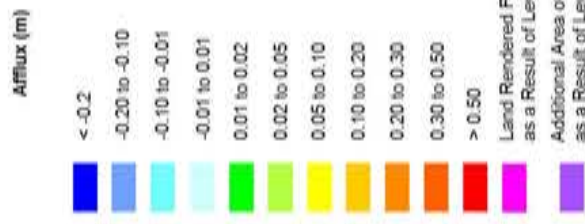
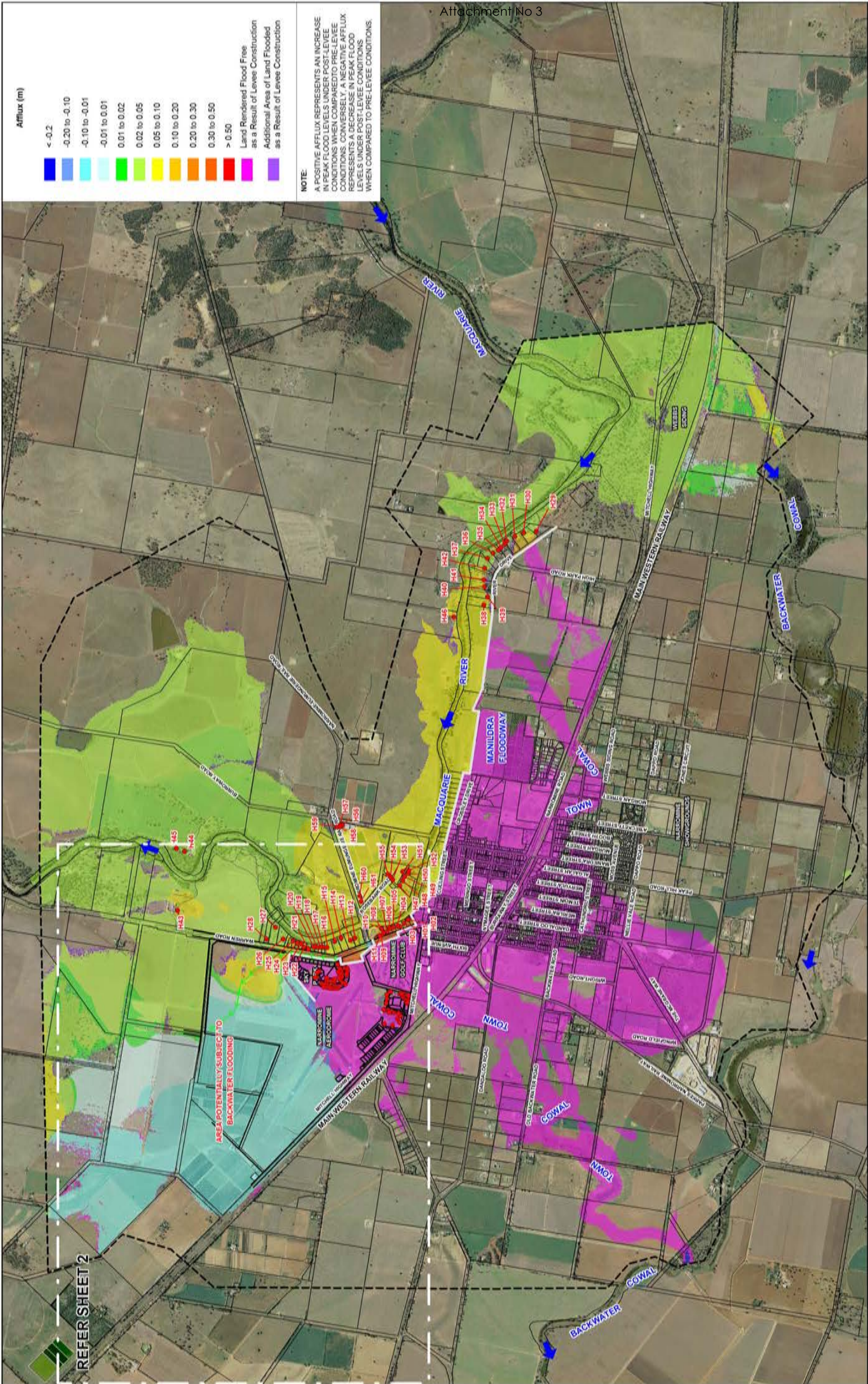


**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 12

**MAIN STREAM FLOODING BEHAVIOUR PRE-LEVEE AND POST-LEVEE OPTION Hc CONDITIONS - 1% AEP**





**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

REFER SHEET 2

AREA POTENTIALLY SUBJECT TO BACKWATER FLOODING



NOTE:

THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.

- LEGEND**
- Surveyed Property and ID
  - Two-Dimensional Model Boundary
  - Levee Route
  - Proposed Channel

**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 13  
 (Sheet 1 of 2)  
**IMPACT OF LEVEE OPTION Hc ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**





**NOTE:**  
 A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

**Afflux (m)**

< -0.2
-0.20 to -0.10
-0.10 to -0.01
-0.01 to 0.01
0.01 to 0.02
0.02 to 0.05
0.05 to 0.10
0.10 to 0.20
0.20 to 0.30
0.30 to 0.50
> 0.50

Land Rendered Flood Free as a Result of Levee Construction  
 Additional Area of Land Flooded as a Result of Levee Construction

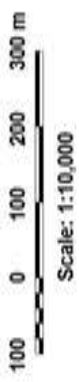
**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 13  
 (Sheet 2 of 2)  
**IMPACT OF LEVEE OPTION Hc ON MAIN STREAM FLOOD BEHAVIOUR**  
 1% AEP

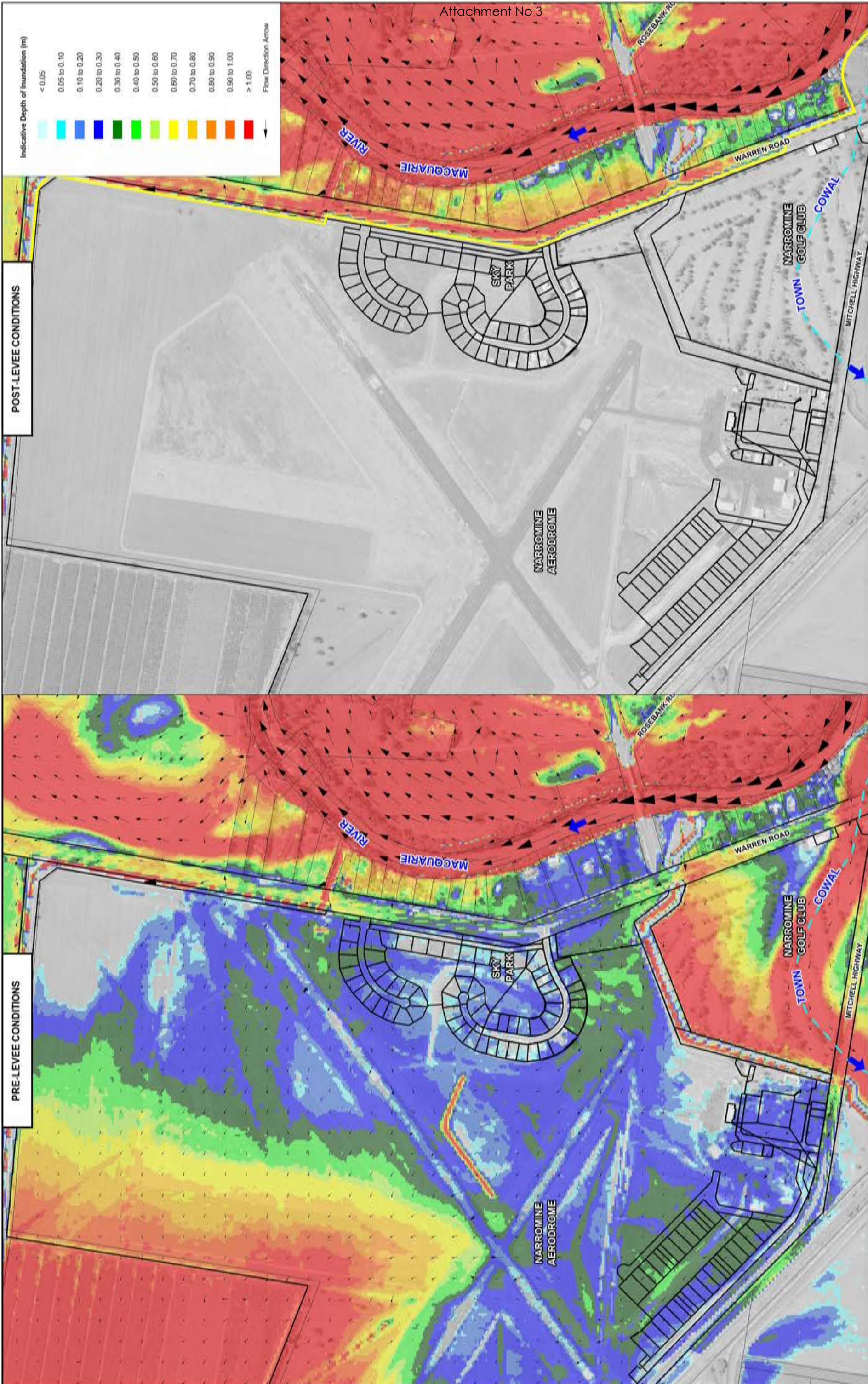
**LEGEND**

- Surveyed Property and ID
- Two-Dimensional Model Boundary
- Levee Route
- Proposed Channel
- Proposed Drainage Network

**NOTE:**  
 THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS. FOR EXAMPLE, THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.







**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 2

MAIN STREAM FLOODING BEHAVIOUR  
PRE-LEVEE AND POST-LEVEE OPTION B CONDITIONS - 1% AEP

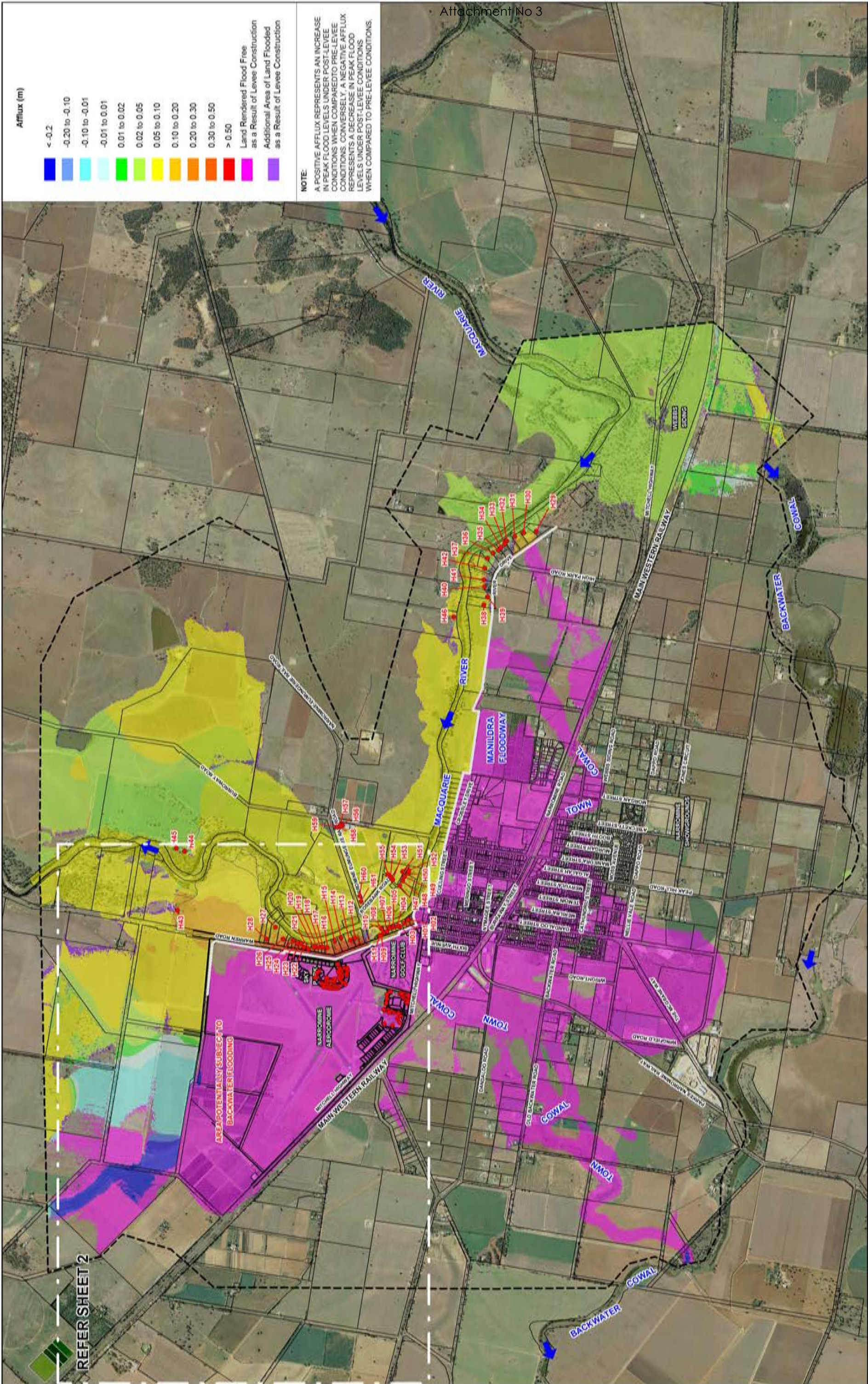
**NOTE:**  
THE TUFLOW MODEL RESULTS SHOWN ON THIS FIGURE ARE NOT TO BE USED FOR PURPOSES OTHER THAN THE ASSESSMENT OF LEVEE OPTIONS FOR EXAMPLE. THEY ARE NOT TO BE USED FOR SETTING MINIMUM FLOOR LEVEL REQUIREMENTS WITHIN NARROMINE OR DETERMINING THE EXACT EXTENT OF FLOOD AFFECTED LAND FOR PLANNING PURPOSES.



Scale: 1:10,000  
0 100 200 300 m

**LEGEND**  
Levee Route





**NOTE:**

A POSITIVE AFFLUX REPRESENTS AN INCREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS. CONVERSELY, A NEGATIVE AFFLUX REPRESENTS A DECREASE IN PEAK FLOOD LEVELS UNDER POST-LEVEE CONDITIONS WHEN COMPARED TO PRE-LEVEE CONDITIONS.

- Afflux (m)**
- <math>< -0.2</math>
  - 0.20 to -0.10
  - 0.10 to -0.01
  - 0.01 to 0.01
  - 0.01 to 0.02
  - 0.02 to 0.05
  - 0.05 to 0.10
  - 0.10 to 0.20
  - 0.20 to 0.30
  - 0.30 to 0.50
  - > 0.50
- Land Rendered Flood Free as a Result of Levee Construction
- Additional Area of Land Flooded as a Result of Levee Construction

**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**

Figure 3  
(Sheet 1 of 2)  
IMPACT OF LEVEE OPTION B ON MAIN STREAM FLOOD BEHAVIOUR  
1% AEP

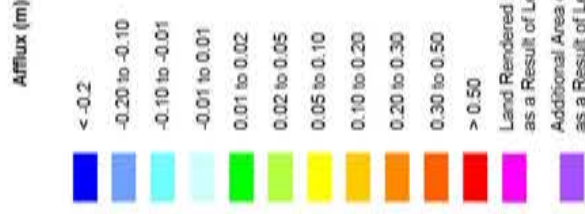
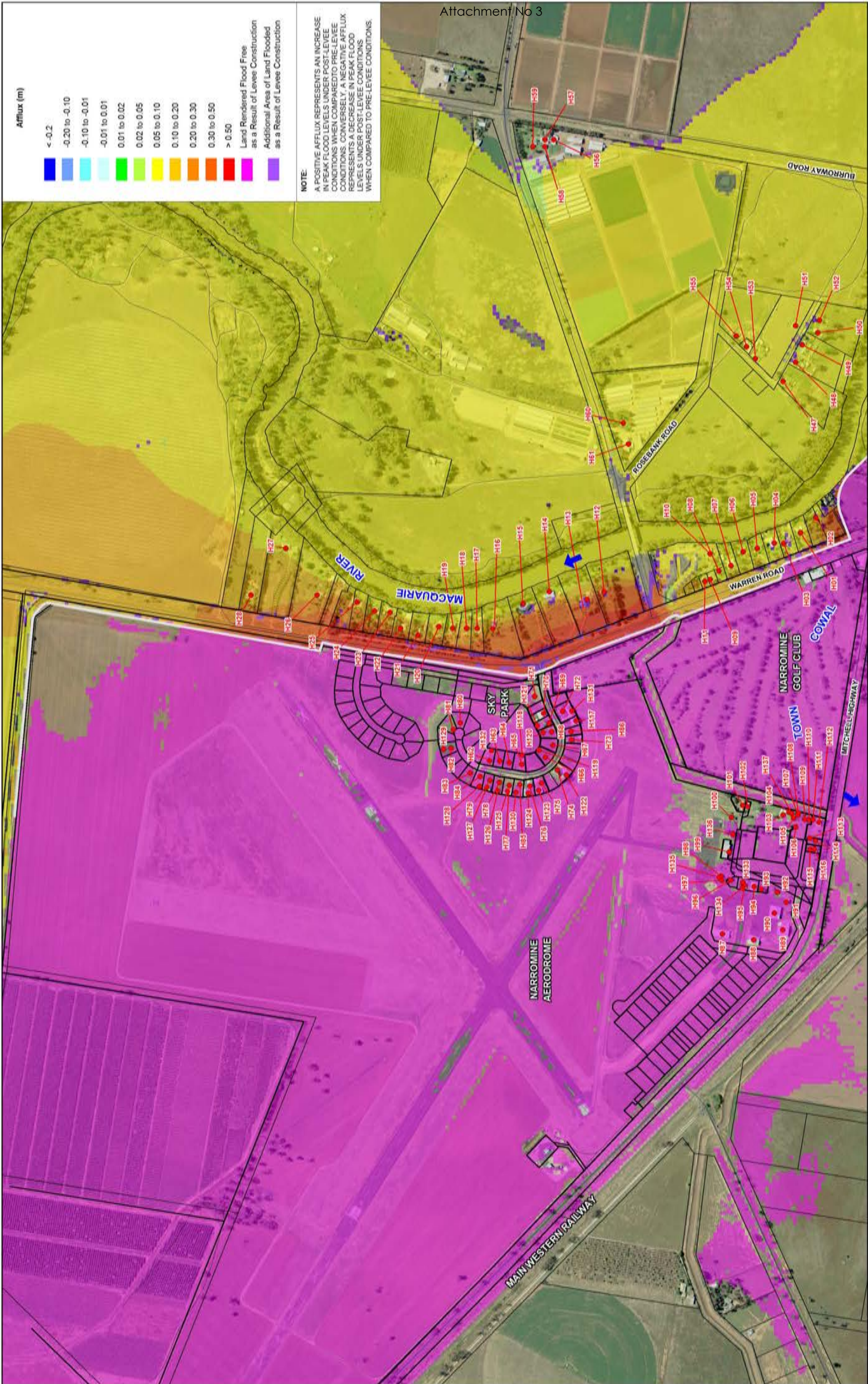
- LEGEND**
- H30 Surveyed Property and ID
  - Two-Dimensional Model Boundary
  - Levee Route

**NOTE:**  
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REFER SHEET 2





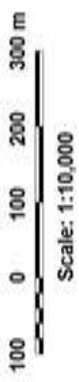
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**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**  
 Figure 3  
 (Sheet 2 of 2)  
**IMPACT OF LEVEE OPTION B ON MAIN STREAM FLOOD BEHAVIOUR 1% AEP**

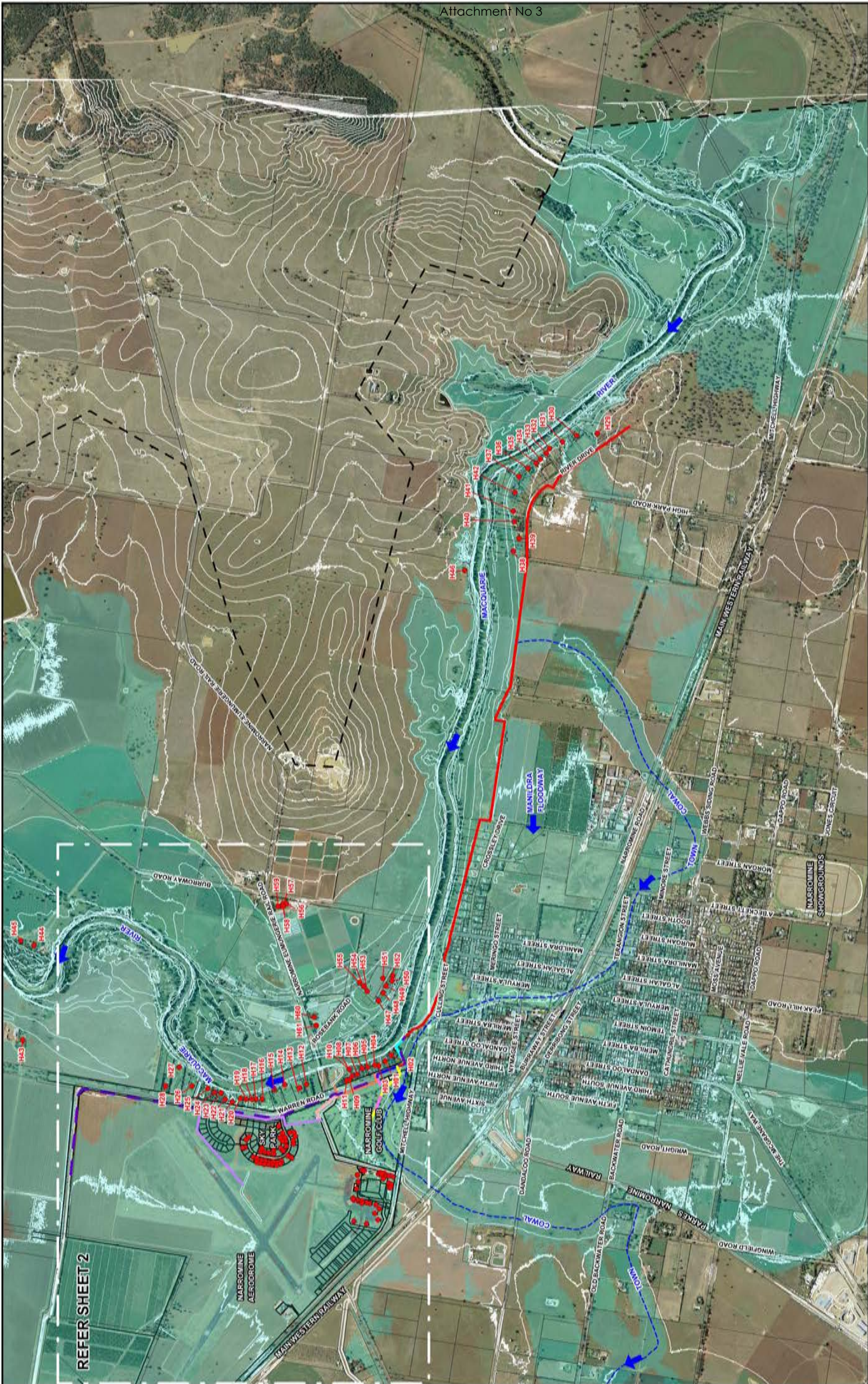
**LEGEND**

- H30 Surveyed Property and ID
- Two-Dimensional Model Boundary
- ▬ Levee Route

**NOTE:**  
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**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**  
 Figure 1  
 (Sheet 1 of 2)

**INDICATIVE EXTENT OF 1% AEP MAIN STREAM FLOOD (PRE-LEVEE CONDITIONS) AND LOCATION OF SURVEYED PROPERTIES**

**LEVEE ROUTES**

- Common to Levee Options B, Fa, Fb, Ha, Hb and Hc
- Common to Levee Options Fa, Fb, Ha, Hb and Hc
- Common to Levee Options B, Fb, Hb and Hc
- Common to Levee Options Ha, Hb and Hc
- Common to Levee Options Fa and Ha
- Common to Levee Options Hb and Hc

**LEVEE OPTIONS**

- Levee Option B
- Levee Option Fb
- Levee Option Hb
- Levee Option Hc

**LEGEND**

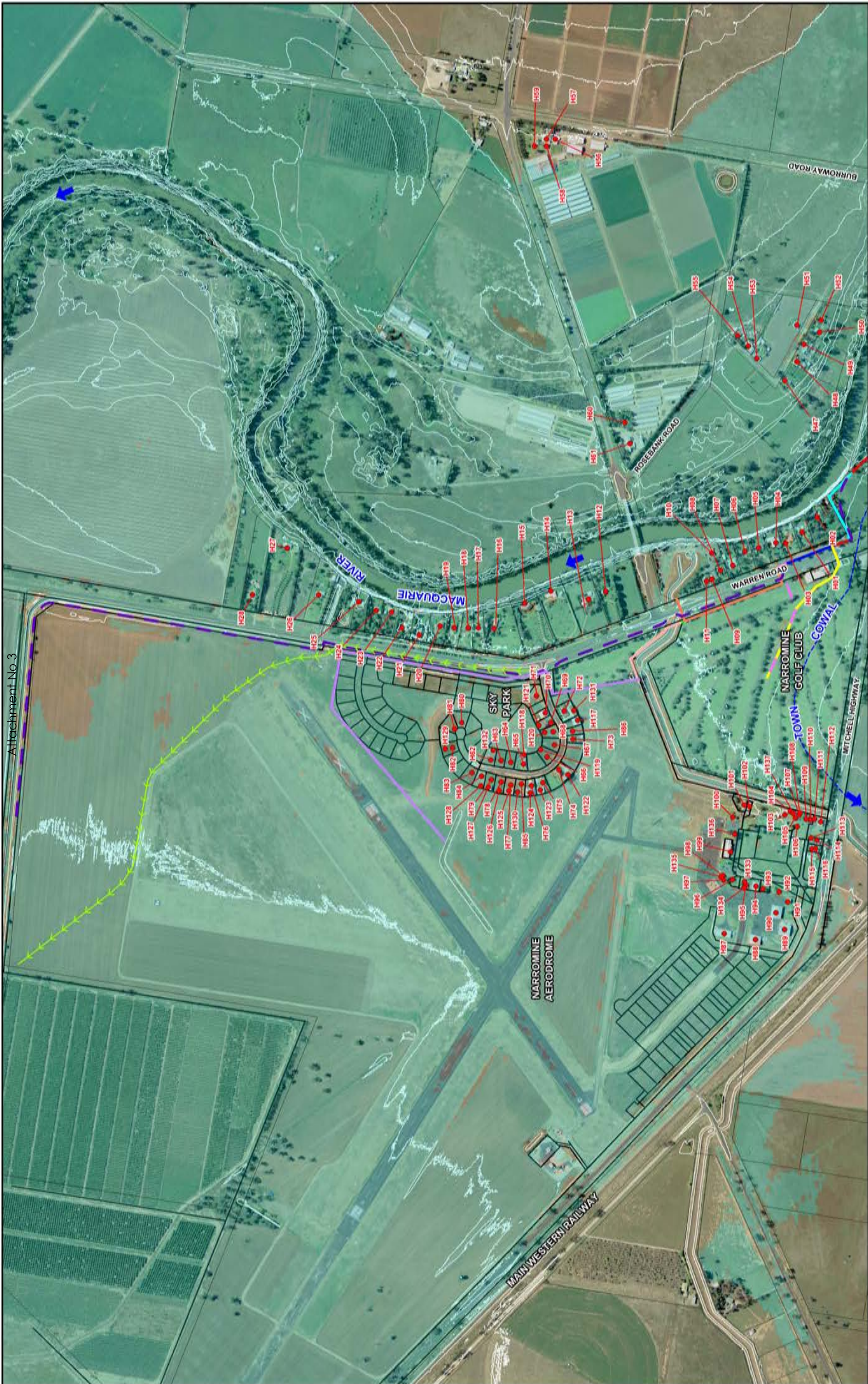
- H30: Surveyed Property and ID
- : Two-Dimensional Model Boundary
- : Indicative Extent of 1% AEP Main Stream Flood (Pre-Levee Conditions)

**Scale:** 1:25,000  
 0 250 500 750 m

**REFER SHEET 2**

**Lyall & Associates**





**NARROMINE RIVER BANK LEVEE FEASIBILITY STUDY**  
Figure 1  
(Sheet 2 of 2)

**INDICATIVE EXTENT OF 1% AEP MAIN STREAM FLOOD (PRE-LEVEE CONDITIONS) AND LOCATION OF SURVEYED PROPERTIES**

**LEGEND**

- H30 Surveyed Property and ID
- Indicative Extent of 1% AEP Main Stream Flood (Pre-Levee Conditions)
- Proposed Channel for Levee Options Ha, Hb and Hc

**LEVEE ROUTES**

- Common to Levee Options B, Fa, Fb, Ha, Hb and Hc
- Common to Levee Options Fa, Fb, Ha, Hb and Hc
- Common to Levee Options B, Fb, Hb and Hc
- Common to Levee Options Ha, Hb and Hc
- Common to Levee Options Hb and Hc
- Levee Option B
- Levee Option Fb
- Levee Option Hb
- Levee Option Hc

N  
 100 0 100 200 300 m  
 Scale: 1:10,000