Adelaide Plains Council	**20.1 Confidential Item**
25 July 2022	

20.1 Gawler River Floodplain Management Authority – Charter Review 2

RECOMMENDATION

"that:

1. **Pursuant to section 90(2) of the *Local Government Act 1999*, the Council orders that all members of the public, except Chief Executive Officer, General Manager – Governance and Executive Office, General Manager – Finance and Business, General Manager – Infrastructure and Environment, General Manager – Development and Community, Manager Governance and Administration, Administration and Executive Support Officer/Minute Taker and Information Technology Support Officer be excluded from attendance at the meeting of the Council for Agenda Item 20.1 – *Gawler River Floodplain Management Authority – Charter Review 2;***

2. **That Council is satisfied that pursuant to section 90(3)(b) of the Local *Government Act 1999,* Item Officer be excluded from attendance at the meeting of the Council for Agenda Item 20.1 – *Gawler River Floodplain Management Authority – Charter Review 2* concerns commercial information the disclosure of which could reasonably be expected to confer a commercial advantage on a person with whom the council is conducting business, or to prejudice the commercial position of Council, being information relating to the Gawler River Floodplain Management Authority and would, on balance, be contrary to the public interest; and**

3. **Council is satisfied that the principle that Council meetings should be conducted in a place open to the public has been outweighed by the need to keep the information, matter and discussion confidential."**

Adelaide Plains Council	**20.1**	**Gawler River Floodplain Management Authority – Charter Review 2**
	Department:	**Governance and Executive Office**
	Report Author:	**Chief Executive Officer**
Date: **25 July 2022**	**Document Ref:**	**D22/30023**

OVERVIEW

Purpose

The purpose of this report is to, once again, provide the Elected Body with a copy of the *Gawler River Flood Mitigation Cost Contribution Sharing Model - Northern Floodway Application*, prepared by Water Technology on behalf of the Gawler River Floodplain Management Authority (GRFMA) and obtain a position from Council in respect of same.

Background

Adelaide Plains Council (APC) has long held the view that the GRFMA ought to review its Charter, particularly clauses and schedules pertaining to the allocation of costs for new infrastructure projects. The cost sharing percentages were derived when the subsidiary was established and, for a number of reasons, the percentages are both outdated and unreasonable when weighing up 'who contributes what' for new infrastructure projects.

The below table illustrates the current percentages that each constituent council must bear for new infrastructure projects:-

Constituent Council	Capital Works Percentage Share %	Maintenance of Assets Percentage Share %	Operational Costs Percentage Share %
Adelaide Hills Council	1.73	1.73	16.66
Adelaide Plains Council	28.91	28.91	16.66
The Barossa Council	8.67	8.67	16.66
Town of Gawler	17.34	17.34	16.66
Light Regional Council	8.67	8.67	16.66
City of Playford	34.68	34.68	16.66
Total	100%	100%	100%

APC's current cost contribution percentage sits at 28.91 per cent, meaning that for any new flood mitigation infrastructure project undertaken, our share of the GRFMA component will be almost one third.

The GRFMA embarked upon its Charter Review 2 exercise, primarily, to review for relevance the current cost sharing model. Water Technology were subsequently engaged to undertaken this body of work on behalf of the GRFMA and in correspondence dated 18 August 2021, furnished the GRFMA with its opinion (see **Attachment 1**).

Put simply, the proposed cost sharing model is based on a number of principles for allocating costs, including:-

- future costs avoided
- water inflow
- waterway length
- ability to pay

Weightings have then been applied for the key funding principles of:-

- 50% future costs avoided
- 30% water inflow
- 15% waterway length
- 5% ability to pay

Inputting an example project such as the proposed Northern Floodway, and based on the aforementioned principles and weightings, the below revised percentages would prevail:-

Cost-sharing for Northern Floodway mitigation option	
Local Government Authority	**% of total**
Adelaide Hills Council	3.0
Adelaide Plains Council	6.5
The Barossa Council	26.1
City of Playford	49.8
Light Regional Council	11.8
Town of Gawler	2.9

Discussion

The revised figures as outlined in the above table serve to reinforce Council's concerns with the current Charter; concerns which APC has held and shared with constituent councils all along. Using the Northern Floodway as an example project for inputting purposes, APC's contribution would decrease from 28.91 per cent to 6.5 per cent while other council contributions would either increase or decrease depending on the weightings applied.

With this in mind, it is now for Council to determine its position in respect of the direction of proposed cost sharing model. The Board has formally written to all constituent councils seeking a position on the matter.

It is therefore now for Council to determine its position on the proposed cost sharing model, however, in consideration of same, the elected body ought to be mindful that any support, in-principle or otherwise, may have broader repercussions for constituent councils, namely:-

- inputting other projects into the model such as the Bruce Eastick Dam enlargement would certainly influence the weightings for APC and thus Council's level of contribution
- committing to a cost sharing model effectively signals to the state and federal government that the subsidiary is prepared to fund new infrastructure (whatever that portion may be)
- Council has resolved a position that the GRFMA focus ought to return to the management and maintenance of the Bruce Eastick Dam only and any commitment to a cost sharing model of this nature could be viewed as being at odds with Council's earlier-adopted position

Summary

Having advocated at length for the GRFMA to undertake a review of its cost sharing model, it would be prudent for Council to show its support, in part, for the work undertaken. That said, Council ought to be mindful that any support should also come with a number of conditions that speak to a broader discussion around the Board and its ongoing role in flood management.

RECOMMENDATION

"that Council, having considered Item 20.1 – *Gawler River Floodplain Management Authority – Charter Review 2,* dated 25 July 2022, receives and notes the report and in doing so notes the thrust and direction of the Gawler River Flood Mitigation Cost Contribution Sharing Model - Northern Floodway Application, and, while generally supportive of the principles and weightings applied, reserves its position until further outcomes are known in respect of:-

- **Stormwater Management Plan findings and recommendations**
- **Gawler River Flood Management Business Case findings and recommendations**
- **State and Federal Government funding support for new infrastructure."**

Attachments

1. Water Technology – Memorandum – Gawler River Flood Mitigation Cost Sharing Model – Northern Floodway Application – 18 August 2021

MEMORANDUM

To David Hitchcock – GRFMA

From Michael Di Matteo – Water Technology

Date 18 August 2021

Subject Gawler River Flood Mitigation Cost Sharing Model – Northern Floodway Application

Our ref 21030180 M001 Gawler River Mitigation Cost Sharing - Northern Floodway v3

1 OVERVIEW

1.1 Background and purpose of this study

Water Technology has been engaged by the Gawler River Floodplain Management Authority (GRFMA) to apply the Gawler River Flood Mitigation Cost Sharing Model developed by Water Technology (2021) earlier this year to a case study. The model is based on a number of principles for allocating costs, including:

- Future Costs Avoided
- Water inflow
- Waterway length
- Ability to pay

For the purposes of this study, the Northern Floodway mitigation option (AWE (2017), Tonkin (2018)) was used to demonstrate the cost sharing split for future mitigation works amongst the six (6) Local Government Areas. These include Adelaide Plains Council, Adelaide Hills Council, The Barossa Council, City of Playford, Light Regional Council, and Town of Gawler.

1.2 Scope

The Gawler River Flood Mitigation Cost Sharing Model was used to estimate the Cost Share for the local government areas for the Northern Floodway project. The following scenarios for Gawler River flood modelling are considered in this study:

Baseline scenario: Without Northern Floodway (without Riverlea Development)

Mitigation scenario: With Northern Floodway (without Riverlea Development)

This study adopted the following approach to model inputs:

- Future Costs Avoided
  - Flood modelling for both scenarios in order to inform a flood damages assessment.
  - Flood damages savings (baseline damages minus mitigation options damages) were evaluated.
- Water inflow
  - Hydrological modelling with catchment areas excluding Forestry SA land.

- Waterway length
  - Length calculations excluded 5th order or higher waterways within Forestry SA land.
- Ability to pay
  - Default values, not revised as part of this study.

1.3 Limitations

The results for cost sharing are based on a number of assumptions and are provided for demonstration purposes only. The results and flood damages inputs should not be relied upon for decision-making or applied in other studies. Further work is required to refine the data used as inputs into the model.

Importantly, the model has been run on the Northern Floodway proposal on the basis it is the only proposal that has the required flood mapping data to enable reasonable consideration of damages that might occur. Inclusion of the Northern Floodway in this model is not an indication that the GRFMA is currently proceeding with the Northern Floodway proposal.

2 FLOOD MODELLING

2.1 Scenarios

A total of six model runs were performed for this study. These runs are described in Table 2-1.

The Baseline scenario was modelled using a modified MIKE Flood hydraulic model. This model and hydrological inputs were previously used for modelling the Northern Floodway mitigation option (AWE 2016).

The Northern Floodway extent was based on the floodway and levee extents as shown in Tonkin (2018) (purple lines and the yellow dashed lines in Figure 2-1) with additional levee upgrade extending eastwards to between Pederick Road and Winnifred Road (Figure 2-2). The additional levee upgrades were included to mitigate a breakout east of Pederick Road known to occur from previous modelling. The additional levee upgrades were not included in the costing estimates in this study.

Table 2-1 Summary of model runs

Scenario	With Riverlea Development?	With Northern Floodway?	Flood events for damage assessment[1.] (% Annual Exceedance Probability)	Model development required?	Total number of model runs
Baseline	N	N	5, 2, 1	Y	3
Mitigation	N	Y	5, 2, 1	Y	3

1. The 10% AEP event and 0.5% event were not modelled as part of this assessment.

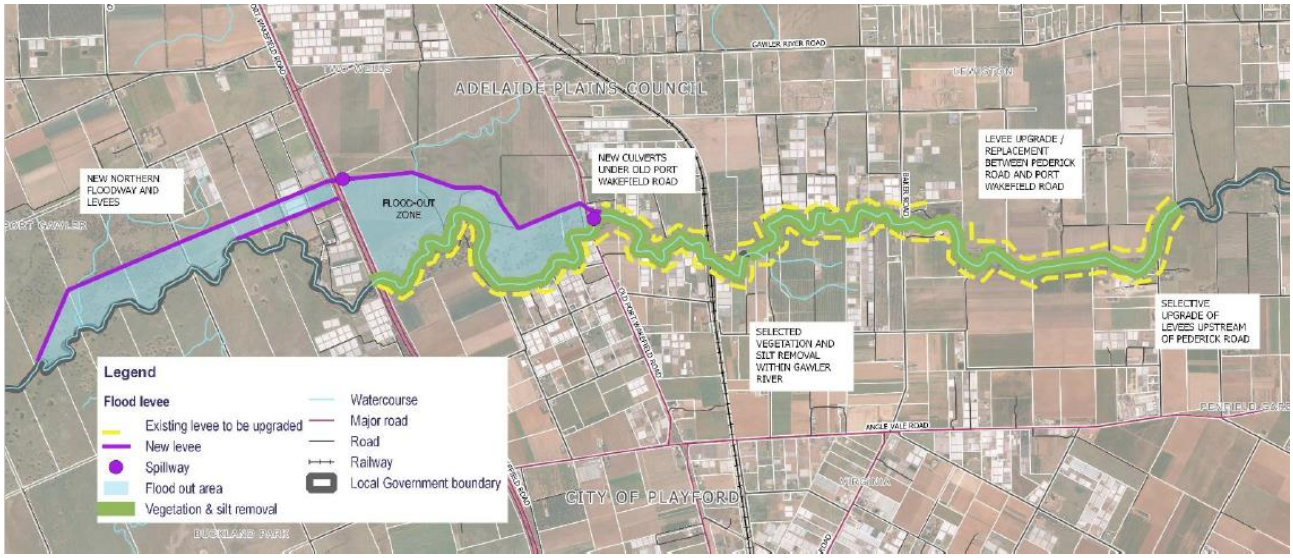

Figure 2-1 Northern Floodway mitigation works (extension of Existing levee to be upgraded to Pederick Road not shown).

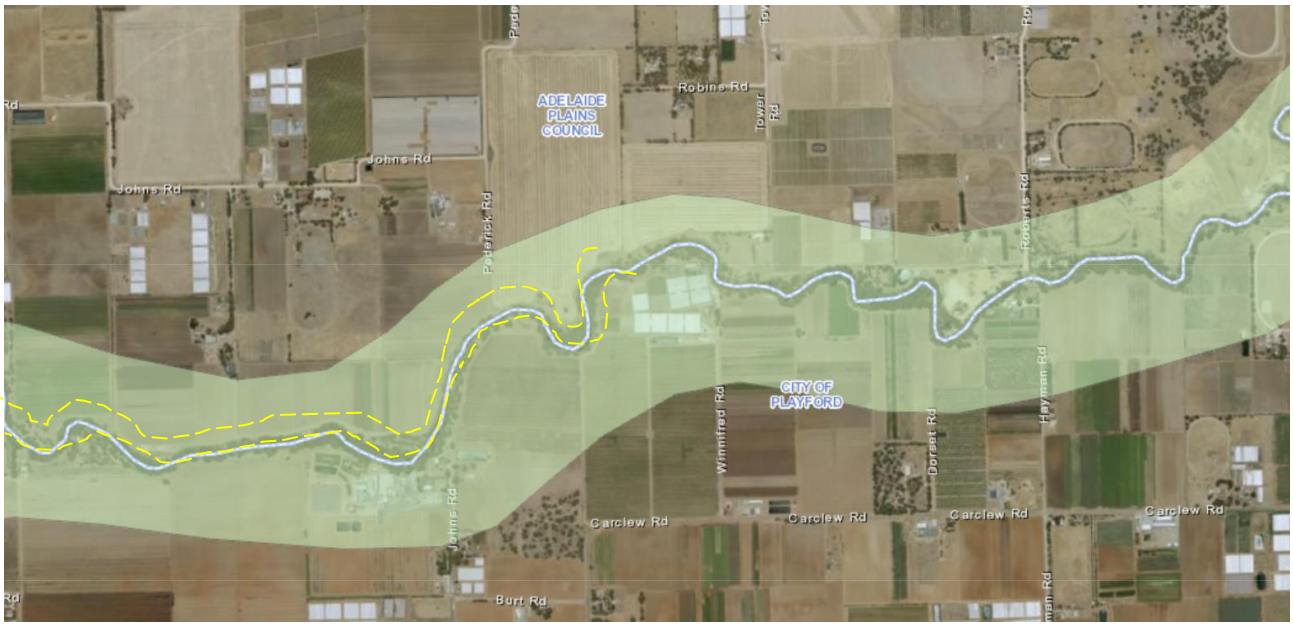

Figure 2-2 Indicative extent of levee upgrade in current study Northern Floodway scenario

2.2 Results

The flood modelling afflux results are provided in Attachment A. The flood mapping extent was compared with previous mapping carried out for the Northern Floodway by AWE (2016). The flood extent was similar to previous studies, except that the breakout east of Pederick Road was managed in the mitigation scenario.

3 GAWLER RIVER FLOOD MITIGATION COST SHARING MODEL

3.1 Overview

The following sections outline background on the Gawler River Flood Mitigation Cost Sharing Model and how it was applied in this study. The model inputs and related assessments are described.

3.2 Background on cost sharing model

Water Technology (2021) prepared a spreadsheet tool to assess the cost sharing split for future mitigation works amongst the six (6) Local Government Areas (Adelaide Plains Council, Adelaide Hills Council, The Barossa Council, City of Playford, Light Regional Council, Town of Gawler). The model apportions cost-sharing based on four (4) key principles:

- Future Costs Avoided - Monetary value of damage avoided (by the proposed mitigation works) as identified within each council area.
- Water inflow - Measurable proportion of volume of water (i.e. m^3/s) from each council area based on the whole of catchment (not just upstream of the Gawler River junction as per original model), excluding the area west of Port Wakefield Road.
- Waterway length - Gawler River, North Para, South Para. With consideration of order of streams e.g. Gawler River is a 7^{th} Order Stream with North and South Para Rivers being 5ht or 6^{th} Order Streams. Other minor tributaries (lower than 5^{th} Order Streams) are not to be included.
- Ability to pay - Identify via SA Local Government Grants Commission - Financial Assistance Grant equalisation considerations and allocations in order to determine each Council's ability to pay.

The Future Costs Avoided for the Northern Floodway was a key consideration for this study. In addition, the Water inflow and Waterway length were revised to exclude Forestry SA lands to demonstrate the impact of removing non-local government controlled land from the model inputs. Ability to pay values were kept as the default values in this study.

3.3 Flood Damages assessment

A high-level flood damages assessment approach was developed for the purposes of this study. The methodology, assumptions and limitations of the flood damages assessment is provided in Attachment B and inputs into the model are shown in Attachment C.

It should be noted that a review of the flood damages estimate developed in this study were approximately 30% higher than estimated damages in AWE (2016). This is due to the high level assumptions adopted for the flood damages as part of this study. A sensitivity analysis of the estimated damages for the costing tool was carried out to evaluate the impact of this variance on cost-sharing between councils. This demonstrated that the model is not overly sensitive to the estimated damages approach adopted in this study.

3.4 Future Costs Avoided

The estimated damages for the Northern Floodway scenario were subtracted from the Baseline scenario to determine the future costs avoided shown in Table 3-1. The total costs avoided for the 5%, 20% and 1% AEP events are estimated to be $72 million using the high-level flood damages assessment methodology adopted for this study. The majority of future costs avoided by the Northern Floodway scheme are in the City of Playford area (90%), and the remaining in the Adelaide Plains Council (10%).

Table 3-1 Future costs avoided summary

	Adelaide Hills	Adelaide Plains	The Barossa Council	City of Playford	Light Regional Council	Town of Gawler	TOTAL:
Total cost of damages:	**Damage in $**	**Damage in $**	**Damage in $**	**Damage in $**	**Damage in $**	**Damage in $**	**Damage in $**
10% AEP	-	-	-	-	-	-	$0
5% AEP	$0	$1,756,390	$0	$31,627,227	$0	$0	$33,383,616
2%AEP	$0	$3,559,536	$0	$16,519,882	-$756	$25,835	$20,104,497
1% AEP	$0	$1,660,454	$0	$16,893,240	$5,318	$29,605	$18,588,617
0.5% AEP	-	-	-	-	-	-	$0
TOTAL	**$0**	**$6,976,380**	**$0**	**$65,040,348**	**$4,563**	**$55,440**	**$72,076,731**
Percentage of Total	**0**	**10**	**0**	**90**	**0**	**0**	**100**

1. The 10% AEP event and 0.5% event were not modelled as part of this assessment. The percentage of total allocation of cost of damages savings to each Council may vary when considering damages from these additional events.
2. High-level flood damages assumptions were adopted for this study, for the purposes of demonstrating the cost-sharing tool, and should not be relied upon for other purposes. Further detailed flood damages assessments will be carried out as part of the Gawler River Stormwater Management Plan.

3.5 Northern Floodway Cost Estimate

Project costs input into the model do not affect the apportionment rate for cost-sharing by councils output by the model. Furthermore, external funding is likely to be sought from sources external to local government for the project.

As the total funding contribution by councils is not yet known, apportionment of cost-sharing in the results sections of this memorandum do not refer to costs of the project. Rather the proportion of cost-sharing as a percentage of the total contribution by councils is provided, which is the key output from the model intended for decision-making support.

3.6 Forestry SA land exclusion

The Water inflow and Waterway length inputs were altered in this application of the model to exclude contributions from Forestry SA land. The land area data was based on digitisation of the *ForestrySA Land* dataset available on NatureMaps (Government of South Australia (2021)).

Forestry SA land was selected as an example of non-Council managed land from a readily available dataset to demonstrate an indicative process for excluding known state government land from model inputs. Further refinement of the relevant land areas to include or exclude from model inputs will require further discussion and detailed analysis.

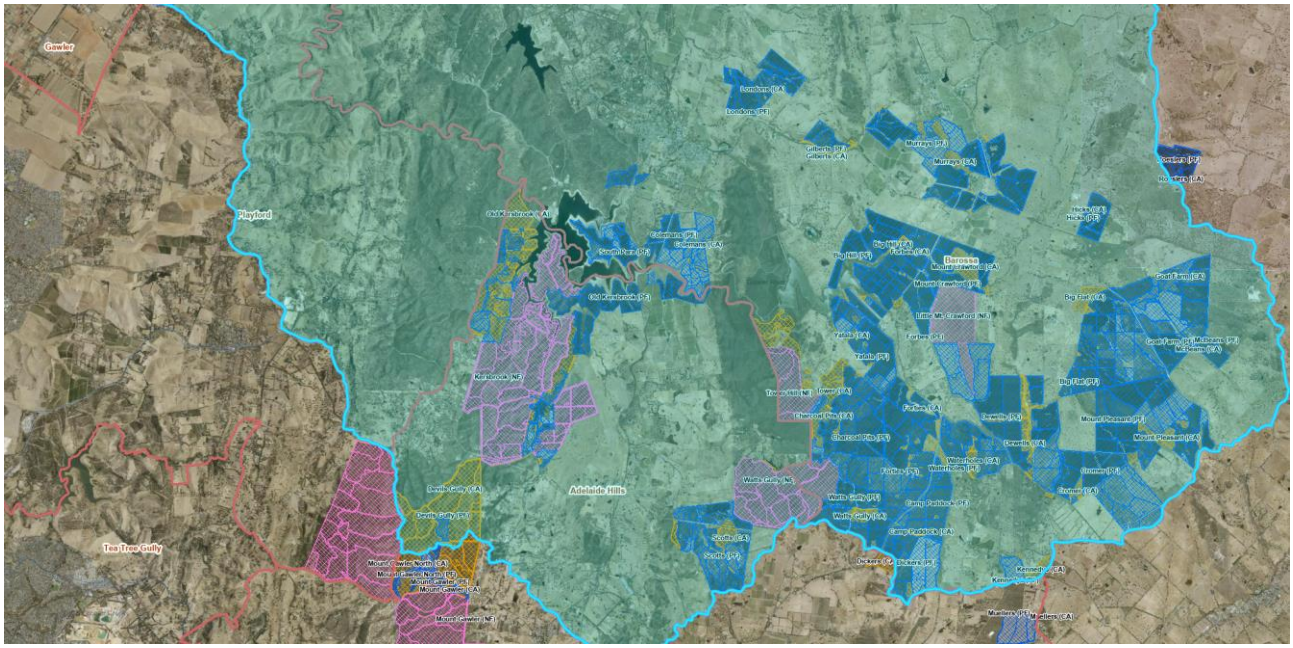

Figure 3-1 Map of Gawler River Catchment showing *ForestrySA Land* (hatched, various colours), and LGA boundaries (red line). (Source: Government of South Australia (2021), accessed 18 August 2021).

3.7 Water inflow

Catchment areas managed by Forestry SA were excluded from the hydrological model to remove the contribution to peak flows from these areas. The existing XP-RAFTS hydrological model was rerun and after identifying and removing Forestry SA managed land area from the catchment.

The locations North Para River 1km DS Turretfield, South Para Reservoir and Yaldara were affected by this change. The model was rerun for these three sites and peak Water Inflows in the model were revised based on the new peak flows.

The revised model inputs are shown in Attachment C.

3.8 Waterway length

Waterway lengths of 5th order and above streams within Forestry SA areas were subtracted from the total waterway lengths.

The revised model inputs are shown in Attachment C.

3.9 Ability to pay

The Ability to Pay apportionment input was assumed to be equal for all Councils. These are the default values used in Water Technology (2021). Further refinement of these values is not likely to influence the final cost-sharing due to the relatively low weighting for this Key Funding Principle.

For the purpose of future discussions, detail assumed for ability to pay is provided in Attachment D.

3.10 Weightings

The weightings of the Key Funding Principles adopted for this study are shown in Table 3-2. These are the default values used in Water Technology (2021).

Table 3-2 Weightings for Key funding Principles

Future Costs Avoided	Water Inflow	Waterway Length	Ability to Pay
50%	30%	15%	5%

4 RESULTS

The results for the cost-sharing between councils based on the Northern Floodway mitigation option, and preliminary model inputs that may be subject to future changes, are shown in Table 4-1. The weighted proportion of distribution for each funding principle is shown in

Table 4-2.

City of Playford is apportioned nearly 50% of the costs of the project, and is the highest contributor. This is driven by the highest weighting on Future Costs Avoided and that the Northern Floodway project mitigates primarily flood damages in the mid- and lower reaches of the Gawler River. City of Playford has high value horticultural land uses within the flood extent protected by the project, and therefore high future costs avoided.

The next highest contributor would be The Barossa Council, with 26.1% cost-sharing. The council area has limited Future Costs Avoided by the project, however the share is driven by the relatively high contribution to water inflows from the headwater catchments within the council area. This result excludes peak flow contributions from Forestry SA land areas.

The lowest contributors to this project would be Town of Gawler and Adelaide Hills Council with 2.9% and 3.0% contribution, respectively. Both councils have minimal or no Future Costs Avoided due to the project and relatively small water inflow contribution. The contribution is driven primarily by the waterway length within the councils that provide a drainage service for the council areas. This result excludes waterway lengths within Forestry SA land areas.

Table 4-1 Cost-sharing for Northern Floodway mitigation option

Local Government Authority	% of Total
Adelaide Hills Council	3.0
Adelaide Plains Council	6.5
The Barossa Council	26.1
City of Playford	49.8
Light Regional Council	11.8
Town of Gawler	2.9

Table 4-2 Proportion distribution for each funding principle (weighted)

Local Government Authority	Future Costs Avoided	Water Inflow	Waterway Length	Ability to Pay	Total	% of Total
Adelaide Hills Council	0.0	0.0	0.08	0.083	0.2	2.3
Adelaide Plains Council	0.5	0.0	0.08	0.083	0.6	9.2
The Barossa Council	0.0	0.0	0.61	0.083	0.7	10.2
City of Playford	4.5	0.0	0.23	0.083	4.8	68.7
Light Regional Council	0.0	0.0	0.36	0.083	0.5	6.4
Town of Gawler	0.0	0.0	0.13	0.083	0.2	3.1
Total	**5.0**	**0.0**	**1.5**	**0.5**	**7.0**	**100**

5 RECOMMENDATIONS

Water Technology recommends the following future works:

- Present study to stakeholders highlighting the preliminary nature of the inputs and results, and that this study's primary purpose is to demonstrate an application of the tool, and not for decision-making
- Seek feedback from stakeholders on what inputs and model functions could be changed for future applications via facilitated workshop
- Identify additional mitigation options, or combinations of options, and evaluate the Gawler River Flood Mitigation Cost Sharing Model
- Refine the flood damages approach in future applications of the tool (potentially using the approach to be formulated in the Gawler River SMP).

6 REFERENCES

AWE (2017) Gawler River 2016 Flood Review Project Report. Prepared for the Gawler River Floodplain Management Authority. Date September 2017.

AWE (2016) A Findings Report for the Gawler River Flood Mitigation Scheme - Mitigations Options Findings. Final Report. Prepared for the Gawler River Floodplain Management Authority. Date March 2016.

Government of South Australia (2021), NatureMaps 3.0,

http://spatialwebapps.environment.sa.gov.au/naturemaps/?viewer=naturemaps&layerTheme=&scale=72223.819286&basemap=aW1hZ2VyeQ%3D%3D&center=15460231.345632222%2C-4124951.7016124455&layers=0ac81w0F7qrE008vyD0tuokm3seeob0B%2BlpP04zzJt3mCG%2Ba068riM30AslE3LBcJ20joCFv0UrNtQ0vVrAx3fmniy04R9wz0U0ZQW, Accessed 18 august 2021.

Tonkin (2018) Northern floodway Project Prospectus. Prepared for GRFMA June 2018. Ref No. 20180193

Water Technology (2021) Gawler River Mitigation Cost Sharing Model Summary. Prepared for Gawler River Floodplain management Authority. Date 11 March 2021.

ATTACHMENT A
AFFLUX FLOOD MAPS

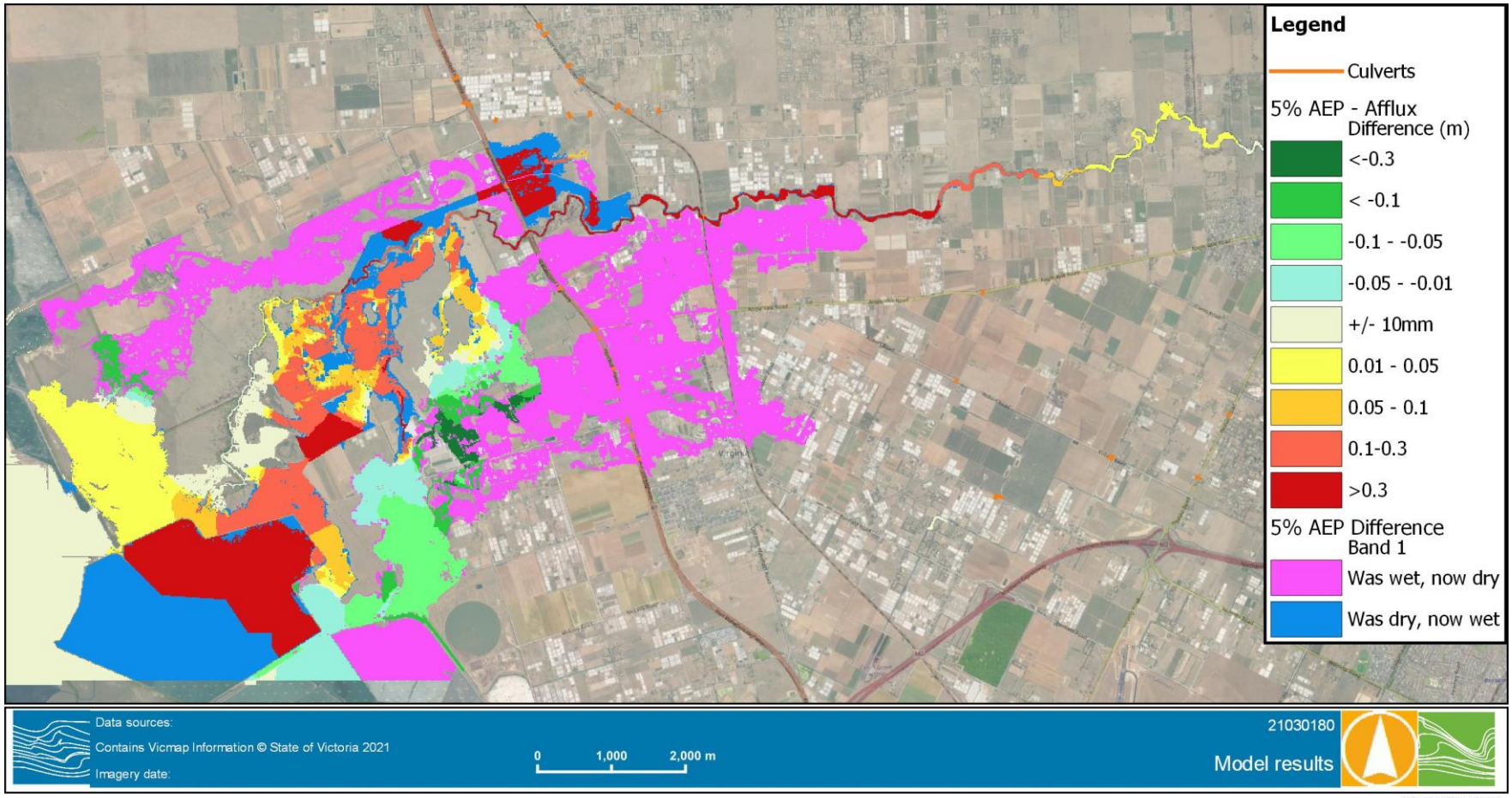

Figure 6-1 Afflux flood map for Northern Floodway (5% AEP)

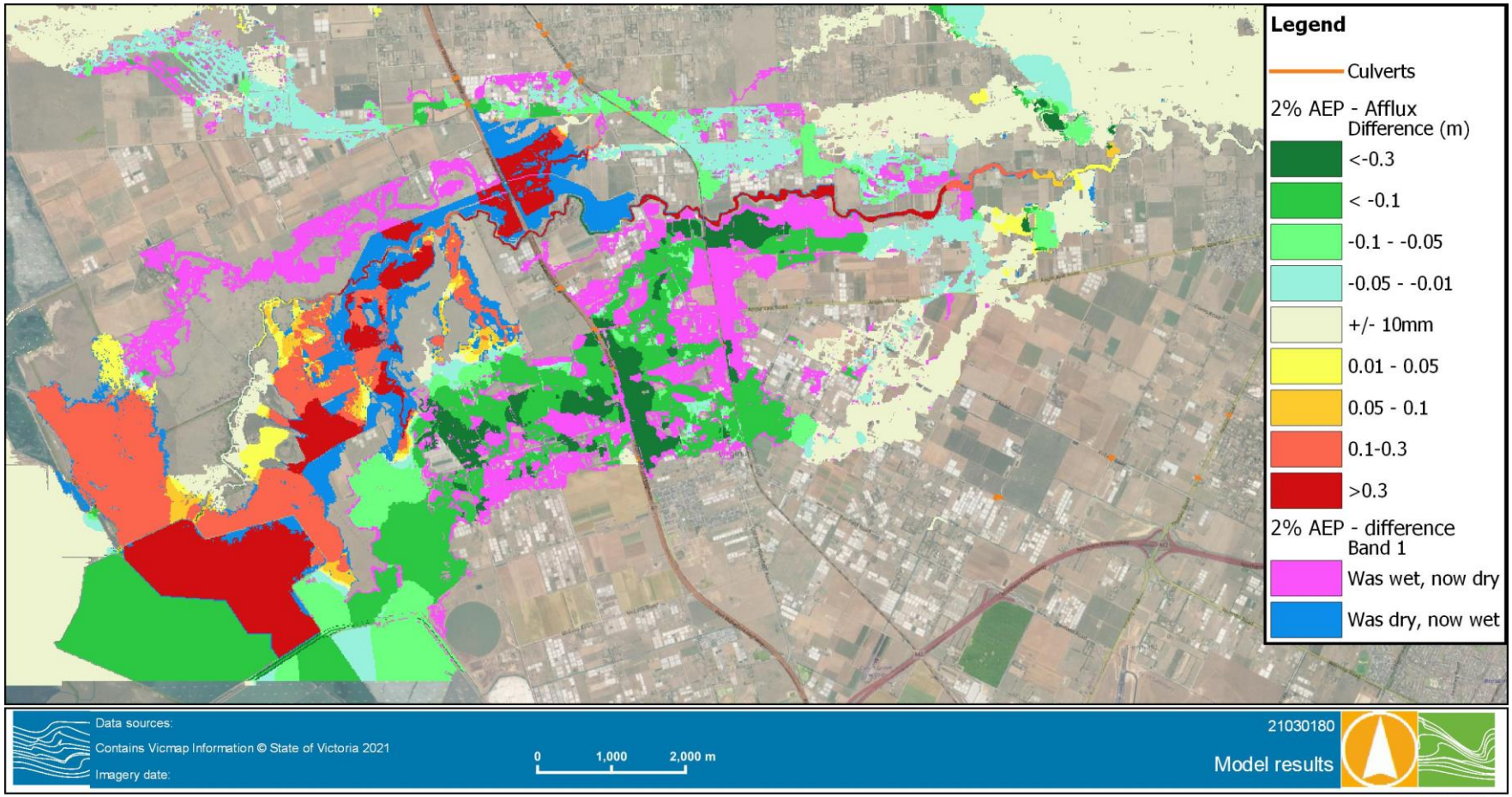

Figure 6-2 Afflux flood map for Northern Floodway (2% AEP)

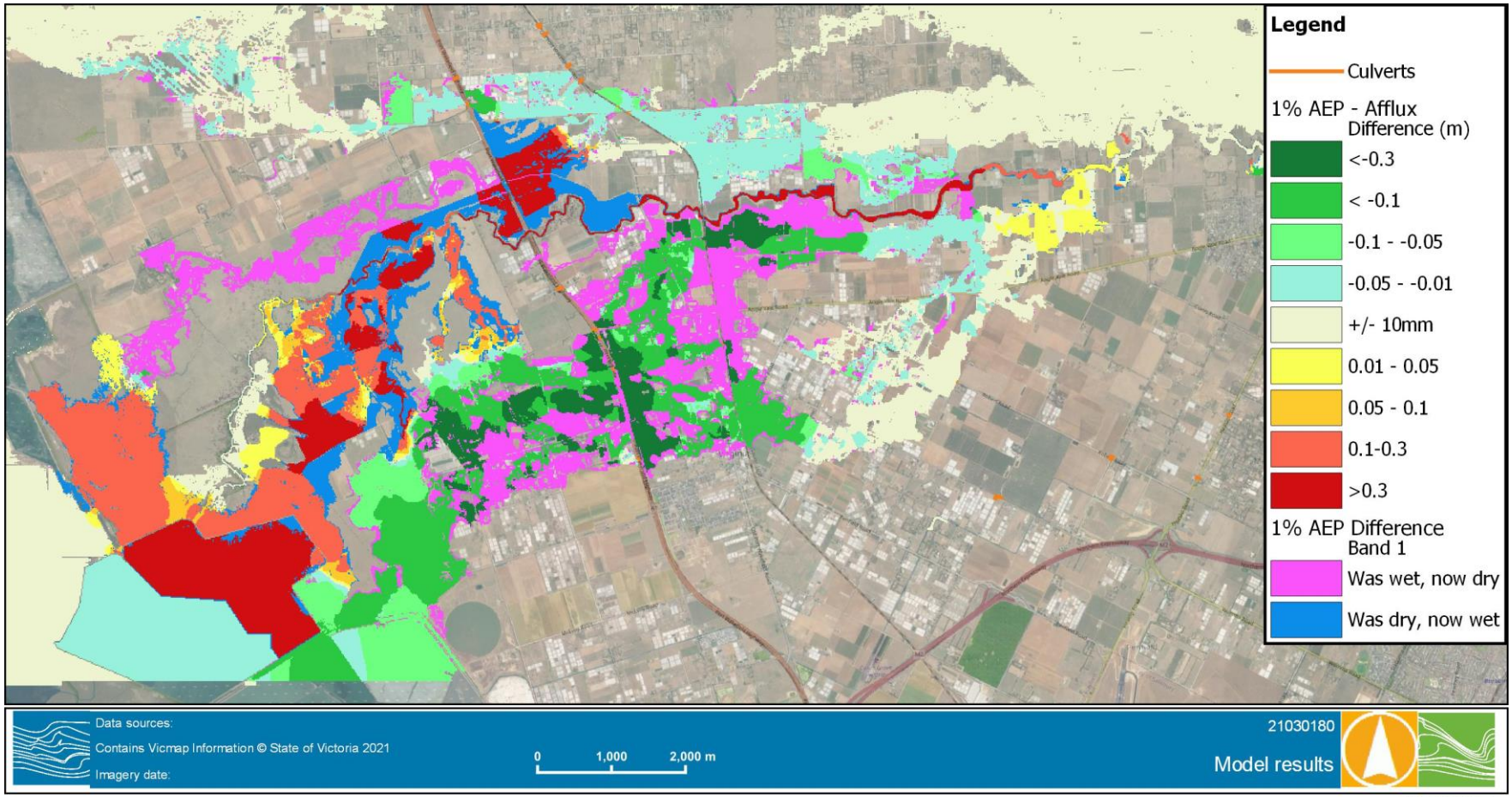

Figure 6-3 Afflux flood map for Northern Floodway (1% AEP)

ATTACHMENT B
FLOOD DAMAGES ASSESSMENT

1 METHODOLOGY

A high-level flood damages assessment was carried out for the purposes of this study. 147 different land use types (bases on 2020 land use data, DataSA) were grouped into the categories in Table B-1. The categories matched previously used categories for the Playford SMP.

The land uses were assigned a damage costs/km² of flooded land. Costs were adjusted to 2021$ values using the CPI index shown in Table B-2. Importantly, the following were not considered in the damages estimate:

- Height and duration of inundation
- Intangible damages.

A more detailed flood damages assessment will be carried out as part of the Gawler River Stormwater Management Plan. The assumptions here were considered suitable for the high-level estimates required to demonstrate the cost-sharing tool and should not be relied upon for other studies.

Table B-1-1 Areal flood damage estimate for flooded land used for this study

CATEGORY	COST / KM²
COMMERCIAL/INDUSTRIAL	$ 1,864,137
CROPPING	$ 38,882
GRAZING	$ 42,436
GREENHOUSE CROPS	$ 7,956,473
IRRIGATED OLEAGINOUS	$ 237,263
IRRIGATED PERENNIAL HORTICULTURE	$ 1,550,573
IRRIGATED VEGETABLES AND HERBS	$ 7,325,269
IRRIGATED VINE FRUITS	$ 522,502
ROADS	$ 7,630,053
RURAL RESIDENTIAL	$ 5,134,137
SERVICES	$ 4,940,721
URBAN RESIDENTIAL	$ 30,804,824

For determining the cost/km², the following assumptions have been used:

- Assumed 150 buildings per km² for commercial/industrial land, with a unit cost of $12,428/building
- Assumed 150 buildings per km² for rural residential land, with a unit cost of $34,228/building
- Assumed 900 buildings per km² for urban residential land, with a unit cost of $34,228/building
- Assumed unit cost of $45,780/linear km for flood damaged roads, with assumed road width of 6m
- Assumed unit cost of $9,881/linear km for flood damaged services, with assumed corridor width of 2m

Table B-1-2 CPI Index

Year	Index
2021	117.9
2020	116.10
2019	115.13
2018	112.8
2017	111.2
2016	109.1
2015	107.7

2 RESULTS

The flood damages assessment was carried out by applying the cost / sq.km rate to the area of flooded land for each land use category for the Baseline and Northern Floodway scenarios. Table B-3 shows the flood damages estimate for the Baseline scenario and Table B-4 the results for the Northern Floodway Scenario.

Table B-2-1 Flood damages estimate – Baseline scenario

Local Government Authority Area	5% AEP - Cost	5% AEP - % OF TOTAL	2% AEP - Cost	2% AEP - % OF TOTAL	1% AEP - Cost	1% AEP - % OF TOTAL
ADELAIDE PLAINS COUNCIL	$7,199,620	15%	$79,616,230	46%	$94,582,094	46%
CITY OF PLAYFORD	$35,772,225	74%	$62,554,107	36%	$63,760,656	31%
LIGHT REGIONAL COUNCIL	$2,341,991	5%	$13,582,138	8%	$16,955,247	8%
THE BAROSSA COUNCIL	$4,170	0%	$10,400	0%	$13,199	0%
TOWN OF GAWLER	$3,054,785	6%	$18,247,687	10%	$29,946,806	15%
TOTAL	**$48,372,790**		**$174,010,562**		**$205,258,001**	

Table B-2-2 Flood damages estimate – Northern Floodway scenario

Local Government Authority Area	5% AEP - Cost	5% AEP - % OF TOTAL	2% AEP - Cost	2% AEP - % OF TOTAL	1% AEP - Cost	1% AEP - % OF TOTAL
ADELAIDE PLAINS COUNCIL	$5,443,230	36%	$76,056,694	49%	$92,921,640	50%
CITY OF PLAYFORD	$4,144,998	28%	$46,034,226	30%	$46,867,417	25%
LIGHT REGIONAL COUNCIL	$2,341,991	16%	$13,582,894	9%	$16,949,929	9%
THE BAROSSA COUNCIL	$4,170	0%	$10,400	0%	$13,199	0%
TOWN OF GAWLER	$3,054,785	20%	$18,221,852	12%	$29,917,200	16%
TOTAL	**$14,989,174**		**$153,906,065**		**$186,669,384**	

Table B-5 shows a comparison of the estimated damages for the baseline scenario between the current study and those developed by AWE (2016). The AWE (2016) values have been adjusted to 2021$ values.

The total damages for the baseline scenario for the current study exceed the estimated damages in AWE (2016) by approximately 30%. The estimated damages for the 1%AEP (1 in 100 year ARI) are comparable to those estimated in AWE (2016). However, the flood damages estimate in this study may overestimate the flood damages for the 5% AEP (1 in 20 year ARI) and the 2% AEP compared with AWE (2016).

Table B-2-3 Comparison of flood damages from the current study and AWE (2016)

Event	AWE (2016) estimate damages (2016$)	AWE (2016) estimate damages (2021$)	Current study estimated damages (2021$)
5% AEP / 1 in 20 Year ARI	24	26	48
2% AEP / 1 in 50 Year ARI	102	110	174
1% AEP / 1 in 100 Year ARI	182	197	205
Total	**308**	**333**	**428**

3 SENSITIVITY ANALYSIS OF FLOOD DAMAGES ESTIMATES

For the purposes of this study, as the total flood damages estimate is used in the costing tool, a variance of 30% from previous studies is considered acceptable for the purposes of demonstrating the tool.

However, as the relative variation of the estimated damages is higher for the 5% AEP event, which is the intended level of service to be provided by the Northern Floodway project, this might result in an overestimate of the damages savings for City of Playford where most of the flood damages occur for the 5% AEP flood extent.

A sensitivity analysis for the estimated damages for the 5% AEP event was carried out by varying the inputs into the costing tool for City of Playford. The inputs into the costing for the damages for estimated damages for the 5% AEP event within the City of Playford and the Adelaide Plains Council were reduced by 30% for the both the Baseline scenario and Northern Floodway scenario.

4 REFERENCE

AWE (2016) A Findings Report for the Gawler River Flood Mitigation Scheme - Mitigations Options Findings. Final Report. Prepared for the Gawler River Floodplain Management Authority. Date March 2016

ATTACHMENT C
COST MODEL INPUTS AND RESULTS

1 COST MODEL INPUTS

Flood damages estimates Baseline Scenario:						
	BASE CASE 20Y	% OF TOTAL	BASE CASE 50Y	% OF TOTAL	BASE CASE 100Y	% OF TOTAL
ADELAIDE PLAINS COUNCIL	$7,199,620	15%	$79,616,230	46%	$94,582,094	46%
CITY OF PLAYFORD	$35,772,225	74%	$62,554,107	36%	$63,760,656	31%
LIGHT REGIONAL COUNCIL	$2,341,991	5%	$13,582,138	8%	$16,955,247	8%
THE BAROSSA COUNCIL	$4,170	0%	$10,400	0%	$13,199	0%
TOWN OF GAWLER	$3,054,785	6%	$18,247,687	10%	$29,946,806	15%
TOTAL	$48,372,790		$174,010,562		$205,258,001	
Flood damages estimates Mitigation (Northern Floodway):						
	MITIGATION 20Y	% OF TOTAL	MITIGATION 50Y	% OF TOTAL	MITIGATION 100Y	% OF TOTAL
ADELAIDE PLAINS COUNCIL	$5,443,230	36%	$76,056,694	49%	$92,921,640	50%
CITY OF PLAYFORD	$4,144,998	28%	$46,034,226	30%	$46,867,417	25%
LIGHT REGIONAL COUNCIL	$2,341,991	16%	$13,582,894	9%	$16,949,929	9%
THE BAROSSA COUNCIL	$4,170	0%	$10,400	0%	$13,199	0%
TOWN OF GAWLER	$3,054,785	20%	$18,221,852	12%	$29,917,200	16%
TOTAL	$14,989,174		$153,906,065		$186,669,384	

Figure C-1-1 Cost damage estimates

Future costs avoided:							
	Adelaide Hills	Adelaide Plains	Barossa Council	City of Playford	Light Regional Council	Town of Gawler	TOTAL:
Total cost of damages:	Damage in $	Damage in $	Damage in $	Damage in $	Damage in $	Damage in $	Damage in $
10% AEP	-	-	-	-	-	-	$0
5% AEP	$0	$1,756,390	$0	$31,627,227	$0	$0	$33,383,616
2%AEP	$0	$3,559,536	$0	$16,519,882	-$756	$25,835	$20,104,497
1% AEP	$0	$1,660,454	$0	$16,893,240	$5,318	$29,605	$18,588,617
0.5% AEP	-	-	-	-	-	-	$0
TOTAL	$0	$6,976,380	$0	$65,040,348	$4,563	$55,440	$72,076,731
Percentage of Total	0	10	0	90	0	0	

Figure C-1-2 Future costs avoided

	Inflow (m3/s)						Peak flowrate
	Adelaide Hills Council	Adelaide Plains Council	The Barossa Council	City of Playford	Light Regional Council	Town of Gawler	cms
North Para River 800m DS Turretfield Flood Control	0.0	0.0	87.9	0.0	215.1	0.0	303
Mt McKenzie	0.0	0.0	72.3	0.0	0.0	0.0	72
Penrice	0.0	0.0	99.6	0.0	0.0	0.0	100
South Para	5.9	0.0	45.0	45.1	0.0	0.0	96
Yaldara	0.0	0.0	237.4	0.0	32.4	0.0	270
South Para Reservoir	41.2	0.0	87.6	0.0	0.0	0.0	129
Gawler Junction	0.0	0.0	33.2	1.0	5.2	16.0	55
D/S of Gawler Junction	0.0	0.0	0.0	5.4	1.5	10.2	17
Total	47.2	0.0	663.0	51.5	254.2	26.2	1042.0
% of Total	4.5	0.0	63.6	4.9	24.4	2.5	

Figure C 1-3 Water Inflow inputs (excluding Forestry SA land)

Fifth order streams and above														
FID	ReachLeng	Adelaide Hills Council	Adelaide Plains Council	Barossa Council	City of Playford	Light Regional Council	Town of Gawler	Adelaide Hills Council	Adelaide Plains Council	Barossa Council	City of Playford	Light Regional Council	Town of Gawler	
	km	%						Length (km)						
1	4.005			100%				0.0	0.0	4.0	0.0	0.0	0.0	Changes in blue
2	10.74					100%		0.0	0.0	0.0	0.0	10.7	0.0	
31	21.113			50%	50%			0.0	0.0	10.6	10.6	0.0	0.0	
32	6.3	50%		50%				3.2	0.0	3.2	0.0	0.0	0.0	
4	7.41	100%						7.4	0.0	0.0	0.0	0.0	0.0	
5	21.442		50%		50%			0.0	10.7	0.0	10.7	0.0	0.0	
6	30.317			100%				0.0	0.0	30.3	0.0	0.0	0.0	
7	4.178				100%			0.0	0.0	0.0	4.2	0.0	0.0	
8	5.676						100%	0.0	0.0	0.0	0.0	0.0	5.7	
9	50.581			50%		50%		0.0	0.0	25.3	0.0	25.3	0.0	
10	7.121						100%	0.0	0.0	0.0	0.0	0.0	7.1	
11	7.302			100%				0.0	0.0	7.3	0.0	0.0	0.0	
12	9.024					50%	50%	0.0	0.0	0.0	0.0	4.5	4.5	
13	9.916				50%	50%		0.0	0.0	0.0	5.0	5.0	0.0	
14	1.82					100%		0.0	0.0	0.0	0.0	1.8	0.0	
							Total (km)	10.6	10.7	80.6	30.4	47.3	17.3	196.9
							% of Total	5.4	5.4	40.9	15.4	24.0	8.8	
												Check	*OK*	

Figure 1-4 Waterway length inputs (excluding Forestry SA land)

Ability to Pay		
LGA	Ability to Pay	% of Total
Adelaide Hills Council	0.2	16.7
Adelaide Plains Council	0.2	16.7
Barossa Regional Council	0.2	16.7
City of Playford	0.2	16.7
Light Regional Council	0.2	16.7
Town of Gawler	0.2	16.7
Total	1.2	100.0

Figure C-1-5 Ability to pay assumptions

2 COST MODEL RESULTS

Key Funding Principle

Future Costs Avoided	Water Inflow	Waterway Length	Ability to Pay
50%	30%	15%	5%
		Check	*OK*

Proportion distribution for each funding principle (unweighted)

LGA	Future Costs Avoided	Water Inflow	Waterway Length	Ability to Pay	Total
Adelaide Hills Council	0.0	0.452	0.5	1.7	2.7
Adelaide Plains Council	1.0	0.000	0.5	1.7	3.2
Barossa Regional Council	0.0	6.362	4.1	1.7	12.1
City of Playford	9.0	0.494	1.5	1.7	12.7
Light Regional Council	0.0	2.439	2.4	1.7	6.5
Town of Gawler	0.0	0.252	0.9	1.7	2.8
Check	*OK*	*OK*	*OK*	*OK*	*OK*

Proportion distribution for each funding principle (weighted)

LGA	Future Costs Avoided	Water Inflow	Waterway Length	Ability to Pay	Total	% of Total
Adelaide Hills Council	0.0	0.1	0.08	0.083	0.3	3.0
Adelaide Plains Council	0.5	0.0	0.08	0.083	0.6	6.5
Barossa Regional Council	0.0	1.9	0.61	0.083	2.6	26.1
City of Playford	4.5	0.1	0.23	0.083	5.0	49.8
Light Regional Council	0.0	0.7	0.36	0.083	1.2	11.8
Town of Gawler	0.0	0.1	0.13	0.083	0.3	2.9
	5.0	3.0	1.5	0.5	10.0	100

Figure C-2-1 Summary results

WATER TECHNOLOGY
WATER, COASTAL & ENVIRONMENTAL CONSULTANTS

ATTACHMENT D
SA LOCAL GOVERNMENT GRANTS COMMISSION FUNDING RATIONALE

The following SA Local Government Grants Commission funding rationale has influenced thinking on how best to articulate ability to pay (pers. comm. D Hitchcock, GRFMA, 2021):

> *An effort or policy neutral approach will be used in assessing expenditure requirements and revenue raising capacity of each local governing body. This means as far as practicable, policies of individual local governing bodies in terms of expenditure and revenue effort will not affect the grant determination.*
>
> *It is understood each council's capacity to raise revenue is assessed using property valuations, which represents its taxation base for setting rates. The Commission compares each council's valuation per capita against the State average valuation per capita in the category of residential, commercial, industrial, rural and other. The Commission then assumes councils make the average rating effort in each category and applies the average rate in the dollar. The rate that council sets is not considered, consistent with the effort neutrality principle that all calculations are interdependent of council policy practices*

RECOMMENDATION

"that Council, having considered the matter of Agenda Item 20.1 – *Gawler River Floodplain Management Authority – Charter Review 2* in confidence under sections 90(2) and 90(3)(b) of the *Local Government Act 1999*, resolves:

1. **That the staff report pertaining to Agenda Item 20.1 – *Gawler River Floodplain Management Authority – Charter Review 2* remains confidential and not available for public inspection until further order of the Council except such disclosure as the Chief Executive Officer determines necessary or appropriate for the purpose of furthering the discussions or actions contemplated;**
2. **Pursuant to section 91(9)(a) of the *Local Government Act 1999*, the confidentiality of the matter will be reviewed every 12 months; and**
3. **Pursuant to section 91(9)(c) of the *Local Government Act 1999*, Council delegates the power to revoke this confidentiality order to the Chief Executive Officer."**