

Appendix E

Multi-Criteria Assessment



Category	Category Weighting	Category Weighting (factored)	Criteria	Criteria Description	Criteria Weighting	Metric	-3	-2	-1	0	1	2	3
Economic	1	0.20	Reduction in Flood Damages	Where an economic assessment has been undertaken for an option, this would be an explicit value. Where no economic assessment has been undertaken, this should be an estimate based on catchment damages and flood behaviour.	5	Change in Annual Average Damage	> \$500,000	\$50,000 to \$500,000	< \$50,000	No change	> -\$50,000	-\$50,000 to -\$500,000	< -\$500,000
			Capital Cost	Cost of constructing or implementing the option.	2.5	Capital cost of option	> \$500,000	\$50,000 to \$500,000	< \$50,000	Existing infrastructure or council policy continued	N/A	N/A	N/A
			Operating and Maintenance Costs	Annual costs associated with operation and / or maintenance of the option. This is assumed to be in addition to existing maintenance programs undertaken by Council.	2.5	Annual operating cost of option	> \$50,000	\$5,000 to \$50,000	< \$5,000	No cost in addition to council's existing maintenance program	N/A	N/A	N/A
			Implementation Complexity	Consideration of constraints related to implementing the option (e.g. traffic impacts, works located on private property, etc).	3	Implementation or construction timeframe and challenges	Implementation timeframe > 1 year with major constraints, challenges and uncertainties which may render the option unfeasible	Implementation timeframe > 1 year with significant constraints, challenges and uncertainties which may increase costs or timeframes significantly	Implementation timeframe 6 months to 1 year with some significant constraints and challenges which may increase costs or timeframes slightly	N/A	Implementation timeframe < 6 months with significant constraints, challenges and uncertainties which may increase costs or timeframes significantly	Implementation timeframe < 6 months with constraints, challenges and uncertainties which may increase costs or timeframes slightly	Implementation timeframe < 6 months with no constraints or challenges / No construction requirements (e.g. planning related option)
			Staging of Works	If works can be staged this may increase the viability of the option, by spreading out costs.	3	Ability to stage proposed works	N/A	N/A	N/A	Works cannot be staged	Some minor components of the works may be staged	Significant components of the works can be staged	N/A
Social	1	0.20	Increased Community Flood Awareness	Increased flood awareness often results in a community preparing and responding to flooding better. This can result in both a reduction in property damages, social disruption and risk to life.	5	Level of likely increased awareness	N/A	N/A	N/A	No increased awareness of flooding and appropriate response	N/A	Increased awareness likely to protect property	Increased awareness likely to protect life
			Reduction in Risk to Life	Reduction in risk to life and social impacts can be achieved by reducing the number of properties being flooded, or through other means such as reducing flood depths on roads, informing the community of flooding (e.g. flood depth markers).	5	Change in number of properties with over floor flooding in 100 Year ARI event	Increase: > 1 property	N/A	N/A	No change	Reduction: 1 to 5 properties	Reduction: 6 to 12 properties	Reduction: > 12 properties
			Emergency Access and Traffic Disruption	Reducing flooding of access routes, or providing alternative access during flooding.	4	Flood depth and duration changes for critical transport routes in 100 Year ARI event	Key access roads become flooded that were previously flood free	Significant increase in local or main road flooding	Minor increase in local or main road flooding	No change	Minor decrease in local or main road flooding	Significant decrease in local or main road flooding	All roads flood free in vicinity of option
			Compatible with Council's Plans and Policies	Are the works permissible within the landuse zone, and in accordance with the DCP	3	Level of compatibility	Conflicts directly with objectives of several plans and policies	Some conflicts with several objectives or direct conflicts with one or few objectives	Minor conflicts with one or very few objectives	Not relevant to objectives	Minor support for one or very few objectives	Some support for several objectives or achieving one or few objectives	Achieving objectives of several plans and policies
			Likely Community Support	Likely community support to be estimated based on previous community engagement, and public exhibition of draft FRMS.	3	Level of agreement	Strong opposition by numerous submissions	Moderate opposition in several submissions	Individual submissions with opposition	No responses	Individual submissions with support	Moderate support in several submissions	Strong support by numerous submissions
Environmental	0.5	0.13	Flora / Fauna Impacts	Impacts on flora and fauna based on Council's vegetation GIS data and the presence of vegetation	3	Impacts or benefits to flora / fauna	Likely broad-scale vegetation / habitat impacts and/or impacts on threatened species	Likely isolated vegetation / habitat impacts	Removal of isolated trees or minor landscaping	No impact	Planting of isolated trees or minor landscaping	Likely isolated vegetation / habitat benefits	Likely broad-scale vegetation / habitat benefits and/or benefits for threatened species
			Acid Sulfate Soils	Impacts on ASS based on state based ASS mapping.	3	Disruption of PASS	N/A	Likely to disturb land identified as 'high probability of occurrence' of ASS	Likely to disturb land identified as 'low probability of occurrence' of ASS	Works not within areas identified as ASS	N/A	N/A	N/A
			Visual Impacts		3	Impact of completed works on visual amenity	Complete loss of existing valued visual amenity	Partial loss of existing valued visual amenity	N/A	No change	N/A	Moderate improvement to visual amenity	Significant improvement to visual amenity
			Recreational Space		3	Impact on passive/active recreational areas	Significant reduction in recreational space	Minor reduction in recreational space	Loss of recreational opportunity	No impact	Embellishment of existing recreational space	Minor increase in recreational space	Significant creation of additional recreational space

Option ID	Option Description	Capital Cost	Recurrent Cost	Reduction in AAD	BCR	Economic					Change in OF 100yr	Social					Environmental				Score	Rank
						Reduction in Flood Damages	Capital Cost	Operating and Maintenance Costs	Implementation Complexity	Staging of Works		0.20					0.13					
												Increased Community Flood Awareness	Reduction in Risk to Life	Emergency Access and Traffic Disruption	Compatible with Council's Plans and Policies	Likely Community Support	Flora / Fauna Impacts	Acid Sulfate Soils	Visual Impacts	Recreational Space		
					-6.00	5	2.5	2.5	3	3		5	5	4	3	3	3	3	3	3		
FM DT1	Davistown Foreshore Barrier	\$ 12,343,000	\$ 5,000	\$ 1,490,000	1.77	3	-3	-1	-2	2	-149	0	3	3	3	2	-2	-2	-1	1	7.8	1
FM DT2	Davistown Foreshore Barrier (all properties protected)	\$ 19,454,000	\$ 8,000	\$ 2,080,000	1.57	3	-3	-2	-3	2	-201	0	3	3	3	2	-2	-2	-1	1	6.7	3
FM DT3	Davistown foreshore barrier (5%AEP Crest)	\$ 13,341,000	\$ 5,000	NA	NA	2	-3	-1	-2	2	0	0	0	2	3	2	-2	-2	-1	1	3.0	12
FM DT4	Road drainage improvements	\$ 2,072,000	\$ 3,000	NA	NA	0	-3	-1	-1	2	0	0	0	1	1	3	0	0	0	0	1.8	16
FM DT5	Drainage easement (Davistown Memorial Park to Paringa Ave)	<i>This option addresses an inter-allotment drainage issue for private property owners to address and has not been assessed further in this FRMS</i>																				
FM DT6	Wetland dredging	<i>The environmental impacts inhibit any further assessment of this option</i>																				
FM EB1	Pomona Road drainage upgrades	\$ 371,000	\$ 5,000	NA	NA	0	-1	-1	1	2	0	0	0	1	1	2	-1	0	0	0	3.0	13
FM EB2	Seawall construction guidelines	\$ 10,000	\$ -	NA	NA	0	-1	0	3	0	0	0	0	0	2	1	0	0	0	0	3.1	11
FM EB3	Maintenance and upgrade of private seawalls	\$ 435,000	\$ 5,000	NA	NA	0	-1	-1	-1	2	0	0	0	0	1	1	0	-1	0	0	0.4	20
FM EB4	Empire Bay foreshore barrier	\$ 4,554,000	\$ 3,000	\$ 1,469,000	4.72	3	-3	-1	-3	2	-47	0	3	3	2	2	-2	-2	-1	0	6.3	5
FM EB5	Drainage easement (Myrtle to Kendall Rd)	\$ 6,481,000	\$ 4,000	\$ 170,000	0.43	2	-3	-1	-3	1	-7	0	2	2	2	2	2	-2	2	3	6.8	2
FM EB6	Pomona Road easement and drainage upgrades	\$ 737,000	\$ 2,000	\$ 91,000	1.75	2	-2	-1	-3	1	0	0	0	2	1	1	-1	0	-1	0	1.3	18
FM EB7	Empire Bay Drive easement	\$ 310,000	\$ 1,000	\$ 10,000	0.46	1	-1	-1	-1	1	0	0	0	0	1	2	-1	0	0	0	1.4	17
PM1	Land Use Planning Recommendations	\$ -	\$ -	NA	NA	1	0	0	3	0	0	0	0	0	3	3	0	0	0	0	6.4	4
PM2	Voluntary House Purchase	<i>No properties qualify for a Voluntary House Purchase Program</i>																				
PM3	Voluntary House Raising	\$ 500,000	\$ -	\$ 47,000	1.38	1	-2	0	-1	1	-2	0	0	1	0	1	3	0	0	0	3.4	10
PM4	Property Flood Risk Education Program	\$ 100,000	\$ 5,000	NA	NA	1	-2	-1	3	0	0	2	0	0	1	2	0	0	0	0	5.1	6
EM1	Review of evacuation centre locations	\$ -	\$ -	NA	NA	0	0	0	3	0	0	0	0	0	1	2	0	0	0	0	3.6	8
EM2	Road raising	\$ 13,545,000	\$ -	NA	NA	0	-3	0	-3	2	0	0	0	3	1	2	-1	-2	0	0	0.9	19
EM3	Drainage upgrades on Empire Bay Drive	\$ 180,000	\$ -	NA	NA	0	-2	0	-2	2	0	0	0	3	1	2	0	0	0	0	2.8	14
EM4	Flood warning systems	\$ 50,000	\$ 5,000	NA	NA	1	-1	-1	2	1	0	0	0	0	1	2	0	0	0	0	3.6	8
EM5	Flood warning signage	\$ 100,000	\$ -	NA	NA	0	-2	0	3	2	0	0	0	0	1	-1	0	0	0	0	2.0	15
EM6	Flood Education Programs	\$ 100,000	\$ 5,000	NA	NA	0	-2	-1	3	0	0	3	0	0	1	1	0	0	0	0	4.5	7