

OREWA CBD ICNMP – STORMWATER EVALUATION MATRIX

SCORING SHEET

SCORING SHEET								Issue: Current flooding in CBD at Moana Ave/Tamariki Ave/Moenui Ave/Riverside Rd – Pipe diversion options to beach																Issue: Current flooding in CBD at Moana Ave/Tamariki Ave/Moenui Ave/Riverside Rd – Domet Creek							
General Category	Objectives	Score 1 to 5	Assessment Method	Indicator	Comment / Explanation	Weighting	Weighting Justification	Option 1		Option 2		Option 12		Option 13		Option 14		Option 15		Option 20 (OPUS)		Option 24		Option 4		Option 5		Option 18 (OPUS)		Option 19 (OPUS)	
								New pipe to new outlet at Riverside Rd	WS	Upgraded existing pipe to existing outlet at Moana Ave	WS	New pipe to new outlet at Tamariki Ave	WS	New pipe to upgraded existing outlet at Moana Ave	WS	New pipe to new outlet at Moenui Ave	WS	New pipe to new ssa outfall at Moana Ave	WS	New pipe to new outfall at Moana Ave	WS	New pipe to new outfall at Moana Ave	WS	New pipe and pump to new outlet at Riverside Rd	WS	New pipe to new outlet at Riverside Rd	WS	New pipe to connection at Riverside Rd	WS	New pipe to new outlet at Riverside Rd	WS
								Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS
Environment		Score 1 to 5	Quantitative	Amount of contaminants to receiving environment / effectiveness of stormwater treatment	Estimate change in contaminant discharge potential (post-pre option) and score as follows: 5 - >=75% removal 3 - Between 50% and 75% removal 2 - Between 30 and 50% removal 1 - <30% removal, estuary discharge 0 - No removal	0.08		1	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.08	1	0.08	1	0.08	1	0.08
Environment		Score 1 to 5	Qualitative	Incorporates habitat restoration and/or protection	Evaluate habitat potential and score as follows: 5 - Maximises potential 3 - Some habitat development/protection 2 - Minimal effect, improved outfall protection 1 - No change 0 - Negative effect	0.04		2	0.08	1	0.04	2	0.08	1	0.04	2	0.08	5	0.2	2	0.08	2	0.08	2	0.08	2	0.08	1	0.04	2	0.08
Environment				Physical impacts to Beach	Score as follows: 5 - Reduces existing impacts 4 - Existing outfall, low estimated impacts 3 - Existing outfall, med-high estimated impacts 2 - New outfall, low estimated impacts 0 - New outfall, med-high estimated impacts	0.08		0	0	4	0.32	0	0	4	0.32	0	0	5	0.4	4	0.32	4	0.32	5	0.4	5	0.4	3	0.24	4	0.32
Cost	To provide cost effective solutions	Score 1 to 5	Quantitative	Capital cost	Score as: 1 - Extra high cost (>2000k) 2 - High cost (1000-1999k) 3 - Medium cost (500-999k) 4 - Low cost (<499k) 5 - No cost	0.12		2	0.24	2	0.24	2	0.24	3	0.36	2	0.24	1	0.12	4	0.48	4	0.48	1	0.12	2	0.24	4	0.48	2	0.24
Cost				Capital Cost Value (\$k)				1,345		1,099		1,004		869		1,004		4,678		108		406		2,568		1,982		266		1,678	
Cost	To provide cost effective solutions	Score 1 to 5		Maintenance costs / year	Score as: 1 - Extra high cost 2 - High cost 3 - Medium cost 4 - Low cost 5 - No cost	0.1		4	0.4	3	0.3	3	0.3	4	0.4	3	0.3	3	0.3	4	0.4	4	0.4	4	0.4	3	0.3	4	0.4	3	0.3
Cost	To provide cost effective solutions	Score 1 to 5		Land cost likely	Make assumptions for \$/m ² Score as above	0.05		3	0.15	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	4	0.2	3	0.15	4	0.2	4	0.2	4	0.2
Community	Meet the social needs of the district population including growth	Score 1 to 5	Qualitative	Considers planned future growth	How flexible is this option? 5 - Totally flexible, can adjust for growth beyond dp 3 - Flexible for dp growth (can be staged) 1 - Not very flexible 0 - Constrained	0.05		2	0.1	1	0.05	1	0.05	1	0.05	1	0.05	0	0	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05
Community	Amenity	Score 1 to 5	Qualitative	Incorporate amenity into design	5 - Design has strong amenity component 4 - Design can be easily adjusted to allow amenity 3 - Additional cost to increase amenity 1 - No amenity value 0 - Negative amenity effect	0.05		1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	3	0.15	3	0.15	1	0.05	1	0.05	1	0.05	1	0.05
Community	Amenity	Score 1 to 5	Qualitative	To prevent loss of existing amenity	Score as follows: 5 - No loss 3 - Minor loss 1 - Significant loss	0.06		5	0.3	3	0.18	1	0.06	3	0.18	1	0.06	3	0.18	3	0.18	3	0.18	5	0.3	5	0.3	5	0.3	5	0.3
Community	To protect the health and safety of the public by controlling or mitigating the adverse impacts of flooding where practical.	Score 1 to 5	Quantitative	Median drop in relative flood level for 5 year event	Score as follows: 5 - >0.25m 4 - 0.20-0.24m 3 - 0.15-0.19m 2 - 0.10-0.14m 1 - <0.09m	0.15		2	0.12	1	0.06	1	0.06	1	0.06	1	0.06	1	0.06	1	0.06	3	0.18	1	0.06	1	0.06	1	0.06	1	0.06
	Project Risk	Score 1 to 5 5 if not applicable		Risk of cost escalation due to construction unknowns	5 - Low risk 2 - Medium risk 1 - High risk	0.05		2	0.1	3	0.15	2	0.1	2	0.1	2	0.1	1	0.05	3	0.15	3	0.15	2	0.1	2	0.1	3	0.15	3	0.15
				Risk of consent decline with authorities	5 - Low risk 2 - Medium risk 1 - High risk	0.05		3	0.15	2	0.1	2	0.1	3	0.15	2	0.1	2	0.1	5	0.25	5	0.25	2	0.1	3	0.15	4	0.2	3	0.15
				Risk of operational failure	5 - Low risk 2 - Medium risk 1 - High risk	0.07		4	0.28	4	0.28	4	0.28	4	0.28	4	0.28	1	0.07	5	0.35	5	0.35	3	0.21	4	0.28	5	0.35	4	0.28
				Risk of land availability (negotiation breakdowns, increase in land cost, etc)	5 - Low risk 2 - Medium risk 1 - High risk	0.05		4	0.2	3	0.15	3	0.15	4	0.2	3	0.15	4	0.2	4	0.2	4	0.2	3	0.15	4	0.2	4	0.2	4	0.2
Community	Interaction with reef proposal	Score 1 to 5	Qualitative	Potential impact to reef proposal	5 - Positive impact on reef proposal 3 - No impact on reef proposal 1 - Perceived negative impact on reef proposal	0.02		1	1.02	3	3.06	1	1.02	3	3.06	1	1.02	3	3.06	3	3.06	3	3.06	5	5.1	5	5.1	5	5.1	5	5.1
						1.02	Totals	36	3.27	35	5.18	27	2.69	38	5.45	27	2.69	34	4.99	46	5.93	48	6.05	39	7.35	43	7.59	46	7.9	43	7.56

OREWA CBD ICNMP – STORMWATER EVALUATION MATRIX

SCORING SHEET						- Pipe diversion options to		Issue: Current flooding in Doment Cres/Dan Tori PI – Pipe/channel upgrade options to Doment Creek				Issue: Current flooding in Doment Florence Ave – Pipe diversion options to Doment Creek				Issue: Current flooding in Alice Ave/Edward Ave – Pipe upgrade options to beach		Issue: Current flooding in Elizabeth Street – Pipe upgrade options to beach		Issue: Minor Infrastructure Problems – Managed Infrastructure Upgrades		Issue: Beach erosion protection						
General Category	Objectives	Score 1 to 5	Assessment Method	Indicator	Comment / Explanation	Option 22		Option 6		Option 10		Option 11		Option 3		Option 16		Option 17		Option 21 (OPUS)		Option 25		Option 23		1 –	2 –	
						New pressure pipe servicing future development in Florence Ave to new outlet at Riverside Rd		New pipe and new concrete channel		New pipe and upgraded vegetated channel		Upgraded channel (Option 6) and new tidal gate		New storage in Victor Eaves Reserve		New pipe to new outlet at Florence Ave		New pipe at Florence Ave and Lillian Place to upgraded existing outlet		Upgraded existing pipe to existing outlet at Remembrance Reserve		Upgraded existing pipe to existing outlet at Noel Ave		Managed Infrastructure Upgrades (Various Locations)		Upgrade outlet structure		New low flow outlet pipe
						Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score
Environment		Score 1 to 5	Quantitative	Amount of contaminants to receiving environment / effectiveness of stormwater treatment	Estimate change in contaminant discharge potential (post-pre option) and score as follows: 5 - >=75% removal 3 - Between 50% and 75% removal 2 - Between 30 and 50% removal 1 - <30% removal, estuary discharge 0 - No removal	1	0.08	1	0.08	2	0.16	1	0.08	1	0.08	0	0	0	0	0	0	0	0	1	0.08	1	0.08	1
Environment		Score 1 to 5	Qualitative	Incorporates habitat restoration and/or protection	Evaluate habitat potential and score as follows: 5 - Maximises potential 3 - Some habitat development/protection 2 - Minimal effect, improved outfall protection 1 - No change 0 - Negative effect	3	0.12	2	0.08	4	0.16	2	0.08	3	0.12	2	0.08	2	0.08	2	0.08	2	0.08	3	0.12	2	0.08	3
Environment				Physical impacts to Beach	Score as follows: 5 - Reduces existing impacts 4 - Existing outfall, low estimated impacts 3 - no effect 2 - Existing outfall, med-high estimated impacts 1 - New outfall, low estimated impacts 0 - New outfall, med-high estimated impacts	2	0.16	4	0.32	5	0.4	4	0.32	3	0.24	3	0.24	3	0.24	4	0.32	4	0.32	5	0.4	4	0.32	5
Cost	To provide cost effective solutions	Score 1 to 5	Quantitative	Capital cost	Score as: 1 - Extra high cost (>2000k) 2 - High cost (1000-1999k) 3 - Medium cost (500-999k) 4 - Low cost (<499k) 5 - No cost	1	0.12	2	0.24	3	0.36	2	0.24	4	0.48	4	0.48	3	0.36	4	0.48	4	0.48	4	0.48	4	0.48	4
Cost				Capital Cost Value (\$k)		2,667		1,200		537		2,000		260		230		633		303		0		0				
Cost	To provide cost effective solutions	Score 1 to 5		Maintenance costs / year	Score as: 1 - Extra high cost 2 - High cost 3 - Medium cost 4 - Low cost 5 - No cost	4	0.4	4	0.4	2	0.2	2	0.2	3	0.3	4	0.4	4	0.4	4	0.4	4	0.4	4	0.4	4	0.4	3
Cost	To provide cost effective solutions	Score 1 to 5		Land cost likely	Make assumptions for \$/m ² Score as above	3	0.15	3	0.15	2	0.1	2	0.1	3	0.15	5	0.25	5	0.25	4	0.2	4	0.2	4	0.2	5	0.25	5
Community	Meet the social needs of the district population including growth	Score 1 to 5	Qualitative	Considers planned future growth	How flexible is this option? 5 - Totally flexible, can adjust for growth beyond dp 3 - Flexible for dp growth (can be staged) 1 - Not very flexible 0 - Constrained	3	0.15	1	0.05	0	0	5	0.25	3	0.15	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	1
Community	Amenity	Score 1 to 5	Qualitative	Incorporate amenity into design	5 - Design has strong amenity component 4 - Design can be easily adjusted to allow amenity 3 - Additional cost to increase amenity 1 - No amenity value 0 - Negative amenity effect	1	0.05	1	0.05	3	0.15	2	0.1	3	0.15	1	0.05	1	0.05	1	0.05	1	0.05	1	0.05	3	0.15	5
Community	Amenity	Score 1 to 5	Qualitative	To prevent loss of existing amenity	Score as follows: 5 - No loss 3 - Minor loss 1 - Significant loss	5	0.3	5	0.3	5	0.3	5	0.3	1	0.06	1	0.06	3	0.18	3	0.18	3	0.18	4	0.24	5	0.3	5
Community	To protect the health and safety of the public by controlling or mitigating the adverse impacts of flooding where practical.	Score 1 to 5	Quantitative	Median drop in relative flood level for 5 year event	Score as follows: 5 - >0.25m 4 - 0.20-0.24m 3 - 0.15-0.19m 2 - 0.10-0.14m 1 - <0.09m	4	0.24	2	0.12	1	0.06	2	0.12	1	0.06	5	0.3	4	0.24	3	0.18	2	0.12	1	0.06	0	0	0
	Project Risk	Score 1 to 5 if not applicable		Risk of cost escalation due to construction unknowns	5 - Low risk 2 - Medium risk 1 - High risk	2	0.1	3	0.15	3	0.15	3	0.15	5	0.25	4	0.2	3	0.15	3	0.15	3	0.15	5	0.25	4	0.2	2
				Risk of consent decline with authorities	5 - Low risk 2 - Medium risk 1 - High risk	2	0.1	5	0.25	5	0.25	4	0.2	4	0.2	4	0.2	3	0.15	4	0.2	4	0.2	5	0.25	5	0.25	2
				Risk of operational failure	5 - Low risk 2 - Medium risk 1 - High risk	4	0.28	5	0.35	2	0.14	3	0.21	5	0.35	4	0.28	4	0.28	4	0.28	4	0.28	5	0.35	5	0.35	2
				Risk of land availability (negotiation breakdowns, increase in land cost, etc)	5 - Low risk 2 - Medium risk 1 - High risk	4	0.2	5	0.25	2	0.1	4	0.2	3	0.15	5	0.25	3	0.15	4	0.2	4	0.2	5	0.25	5	0.25	5
Community	Interaction with reef proposal	Score 1 to 5	Qualitative	Potential impact to reef proposal	5 - Positive impact on reef proposal 3 - No impact on reef proposal 1 - Perceived negative impact on reef proposal	5	5.1	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	5	5.1	5
						44	7.55	46	5.85	42	5.59	44	5.61	45	5.8	46	5.9	42	5.64	44	5.83	43	5.77	51	6.24	53	8.26	48

OREWA CBD ICNMP – STORMWATER EVALUATION MATRIX

SCORING SHEET					Issue: Potential future flooding																Issue: Erosion and stability				Issue: Diffuse contaminants - Existing							
General Category	Objectives	Score 1 to 5	Assessment Method	Indicator	Comment / Explanation	3-		1-		2-		3-		4-		5-		6-		7-		8-		1-		2-		1-		2-		
						WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	WS	Score	
Environment		Score 1 to 5	Quantitative	Amount of contaminants to receiving environment / effectiveness of stormwater treatment	Estimate change in contaminant discharge potential (post-pre option) and score as follows: 5 - >=75% removal 3 - Between 50% and 75% removal 2 - Between 30 and 50% removal 1 - <30% removal, estuary discharge 0 - No removal	0.08	1	0.08	0	0	1	0.08	1	0.08	1	0.08	2	0.16	0	0	2	0.16	2	0.16	3	0.24	3	0.24	2	0.16	2	0.16
Environment		Score 1 to 5	Qualitative	Incorporates habitat restoration and/or protection	Evaluate habitat potential and score as follows: 5 - Maximises potential 3 - Some habitat development/protection 2 - Minimal effect, improved outfall protection 1 - No change 0 - Negative effect	0.12	3	0.12	1	0.04	1	0.04	3	0.12	3	0.12	3	0.12	1	0.04	2	0.08	2	0.08	3	0.12	5	0.2	3	0.12	4	0.16
Environment				Physical impacts to Beach	Score as follows: 5 - Reduces existing impacts 4 - Existing outfall, low estimated impacts 3 - no effect 2 - Existing outfall, med-high estimated impacts 2 - New outfall, low estimated impacts 0 - New outfall, med-high estimated impacts	0.4	5	0.4	3	0.24	3	0.24	5	0.4	5	0.4	5	0.4	3	0.24	5	0.4	5	0.4	3	0.24	3	0.24	5	0.4	5	0.4
Cost	To provide cost effective solutions	Score 1 to 5	Quantitative	Capital cost	Score as: 1 - Extra high cost (>2000k) 2 - High cost (1000-1999k) 3 - Medium cost (500-999k) 4 - Low cost (<499k) 5 - No cost	0.48	4	0.48	5	0.6	4	0.48	5	0.6	3	0.36	3	0.36	5	0.6	2	0.24	2	0.24	4	0.48	4	0.48	3	0.36	3	0.36
Cost	To provide cost effective solutions	Score 1 to 5		Maintenance costs / year	Score as: 1 - Extra high cost 2 - High cost 3 - Medium cost 4 - Low cost 5 - No cost	0.3	3	0.3	5	0.5	4	0.4	5	0.5	4	0.4	3	0.3	5	0.5	2	0.2	2	0.2	4	0.4	4	0.4	3	0.3	2	0.2
Cost	To provide cost effective solutions	Score 1 to 5		Land cost likely	Make assumptions for \$/m ² Score as above	0.25	5	0.25	4	0.2	4	0.2	4	0.2	2	0.1	2	0.1	4	0.2	4	0.2	2	0.1	5	0.25	5	0.25	4	0.2	3	0.15
Community	Meet the social needs of the district population including growth	Score 1 to 5	Qualitative	Considers planned future growth	How flexible is this option? 5 - Totally flexible, can adjust for growth beyond dp 3 - Flexible for dp growth (can be staged) 1 - Not very flexible 0 - Constrained	0.05	1	0.05	5	0.25	3	0.15	3	0.15	5	0.25	5	0.25	5	0.25	5	0.25	3	0.15	5	0.25	3	0.15	3	0.15	5	0.25
Community	Amenity	Score 1 to 5	Qualitative	Incorporate amenity into design	5 - Design has strong amenity component 4 - Design can be easily adjusted to allow amenity 3 - Additional cost to increase amenity 1 - No amenity value 0 - Negative amenity effect	0.25	4	0.2	4	0.2	4	0.2	3	0.15	4	0.2	4	0.2	4	0.2	3	0.15	3	0.15	3	0.15	4	0.2	3	0.15	4	0.2
Community	Amenity	Score 1 to 5	Qualitative	To prevent loss of existing amenity	Score as follows: 5 - No loss 3 - Minor loss 1 - Significant loss	0.3	5	0.3	5	0.3	5	0.3	5	0.3	5	0.3	5	0.3	5	0.3	3	0.18	5	0.3	5	0.3	5	0.3	5	0.3	5	0.3
Community	To protect the health and safety of the public by controlling or mitigating the adverse impacts of flooding where practical.	Score 1 to 5	Quantitative	Median drop in relative flood level for 5 year event	Score as follows: 5 - >0.25m 4 - 0.20-0.24m 3 - 0.15-0.19m 2 - 0.10-0.14m 1 - <0.09m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.06	0	0	0	0	0	0	0	0	0	
	Project Risk	Score 1 to 5 if not applicable		Risk of cost escalation due to construction unknowns	5 - Low risk 2 - Medium risk 1 - High risk	0.1	4	0.2	5	0.25	5	0.25	5	0.25	5	0.25	3	0.15	5	0.25	2	0.1	3	0.15	5	0.25	5	0.25	3	0.15	4	0.2
				Risk of consent decline with authorities	5 - Low risk 2 - Medium risk 1 - High risk	0.1	5	0.25	5	0.25	5	0.25	5	0.25	5	0.25	5	0.25	5	0.25	5	0.25	4	0.2	5	0.25	5	0.25	3	0.15	5	0.25
				Risk of operational failure	5 - Low risk 2 - Medium risk 1 - High risk	0.14	3	0.21	2	0.14	3	0.21	1	0.07	2	0.14	2	0.14	2	0.14	1	0.07	3	0.21	2	0.14	2	0.14	2	0.14	4	0.28
				Risk of land availability (negotiation breakdowns, increase in land cost, etc)	5 - Low risk 2 - Medium risk 1 - High risk	0.25	5	0.25	2	0.1	2	0.1	2	0.1	2	0.1	2	0.1	2	0.1	2	0.1	2	0.1	5	0.25	2	0.1	3	0.15	2	0.1
Community	Interaction with reef proposal	Score 1 to 5	Qualitative	Potential impact to reef proposal	5 - Positive impact on reef proposal 3 - No impact on reef proposal 1 - Perceived negative impact on reef proposal	5.1	5	5.1	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06	3	3.06
						7.92	53	8.19	49	6.13	47	5.96	50	6.23	49	6.01	47	5.89	49	6.13	42	5.5	41	5.5	55	6.38	53	6.26	45	5.79	51	6.07

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SCORE SUMMARY				
Issue	Option	Raw Score	Weighted Score	Rank (weighted)
Issue: Current flooding in CBD at Moana Ave/Tamariki Ave/Moenui Ave/Riverside Rd – Pipe diversion options to beach	1	36	3.30	6
	2	35	5.20	4
	12	27	2.70	7
	13	38	5.50	3
	14	27	2.70	7
	15	34	5.00	5
	20	46	5.90	2
	24	48	6.10	1
Issue: Current flooding in CBD at Moana Ave/Tamariki Ave/Moenui Ave/Riverside Rd – Pipe diversion options to Doment Creek	4	39	7.40	5
	5	43	7.60	2
	18	46	7.90	1
	19	43	7.60	2
	22	44	7.60	2
Issue: Current flooding in Doment Cres/Dan Tori PI – Pipe/channel upgrade options to Doment Creek	6	46	5.90	1
	10	42	5.60	2
	11	44	5.60	2
Issue: Current flooding in Doment Florence Ave – Pipe diversion options to Doment Creek	3	45	5.80	2
	16	46	5.90	1
	17	42	5.60	3
Issue: Current flooding in Alice Ave/Edward Ave – Pipe upgrade options to beach	21	44	5.80	1
Issue: Current flooding in Elizabeth St – Pipe upgrade options to beach	25	43	5.80	1
Issue: Minor Infrastructure Problems – Managed Infrastructure Upgrades	23	51	6.20	1
Issue: Potential future flooding	1 - Secondary flow path required	49	6.13	2
	2 - Flood hazard design	47	5.96	5
	3 - Limit impervious	50	6.23	1
	4 - Hydrological neutrality	49	6.01	4
	5 - LID	47	5.89	6
	6 - Secondary flow path design	49	6.13	2
	7 - On site storage	42	5.50	7
	8 - Catchment based storage	41	5.50	3
Issue: Construction Erosion	1 - Sedimentation and erosion control plans	55	6.38	1
	2 - Limit soil exposure	53	6.26	2
Issue: Diffuse contaminants - existing	1 - Enhance existing treatment	45	5.79	2
	2 - Incorporate treatment into capital works	51	6.07	1
Issue: Diffuse contaminants - future	1 - At source treatment	49	6.04	1
	2 - Catchment based treatment	46	5.91	2