

Local Government Infrastructure Plan 2017 Schedule of Works Model Extrinsic Material

Extrinsic Material – Schedule of Works Model

1.0 Introduction

The following document explains the process by which the Schedule of Works model has been compiled for Moreton Bay Regional Council.

2.0 Model inputs

2.1 General Inputs

Input	Value	Reason
Base Year	2016	To coincide with a census year and to better align with existing asset data.
Term	15 years	To coincide with other forecast data.
Discounted Cash flow applied?	Yes	For more accurate calculation of costs.
Average ten year bond rate	4.00%	<p>Average Bond yield over five years to 25/03/2014</p> 
Basic Margin on ten year bond rate	3.00%	Based on guidance provided in Local Government Bulletin 06/01 for larger Councils.
WACC Option	1	The inputs for Option 2 were unknown and it was more accurate to select option 1.
Capital Escalation - Future Capex	2.23%	<p>Long range forecast average of Building Construction Queensland (BCQ - Table 6427.0) and Road and Bridge Construction Queensland (R&BCQ - 6427.0) indices.</p> <p>This coincides with Council's Long Term Financial Forecast. <i>See below table for further information.</i></p>
Historical Capex rates	Various (see table below)	<p>Average of Building Construction Queensland (BCQ - Table 6427.0) and Road and Bridge Construction Queensland (R&BCQ - 6427.0) indices.</p> <p>This coincides with Council's Long Term Financial Forecast. <i>See below table for further information.</i></p>
Land Escalation	5.00%	Based on prior 10 year period of land valuation growth for Moreton Bay region (incorporating pre amalgamation Council data)

Charges Escalation Rate	2.71%	The Road and Bridge Construction Queensland (R&BCQ - 6427.0) index over a ten year period has been utilised to obtain an appropriate escalation rate. <i>See below table for further information.</i>
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Capital Expenditure Escalation Rate

Year	BCQ	R&BCQ	Average	Increase
30 June 2016 (predicted)			110.26	2.23%
30 June 2015	109.2	106.3	107.8	2.28%
30 June 2014	103.8	107.0	105.4	2.23%
30 June 2013	101.7	104.5	103.1	1.78%
30 June 2012	100.0	102.5	101.3	0.60%
30 June 2011	101.0	100.3	100.7	2.97%
30 June 2010	99.0	96.6	97.8	-0.10%
30 June 2009	100.5	95.2	97.9	1.24%
30 June 2008	101.5	91.8	96.7	8.17%
30 June 2007	95.5	83.2	89.4	

Charges Escalation Rate

Year	R&BCQ	Increase
30 June 2016 (predicted)		2.71%
30 June 2015	106.3	-0.01%
30 June 2014	107.0	2.39%
30 June 2013	104.5	1.95%
30 June 2012	102.5	2.19%
30 June 2011	100.3	3.83%
30 June 2010	96.6	1.47%
30 June 2009	95.2	3.70%
30 June 2008	91.8	10.34%
30 June 2007	83.2	

2.2 Unit Rates

The Unit Rates have been applied to the value of existing and new assets. Existing Asset unit rates are based on the rates used to value Council's assets, and are the audited rates as at 30 June 2015. This rates are as follows for each of the networks:

Water: Council has no water assets

Sewer: Council has no sewer assets

Transport: Unit rates are as per the valuation undertaken at 31 December 2014. Valuation year is shown as 2014.

Active Transport: Same valuation methodology as Transport network.

Stormwater: Values for Stormwater network assets are as per the listing provided by Network planners (RIO Ref: A12791974).

Open Space: The valuation for park embellishments has been taken from actual costs of equipment, with values used for the land based on values for suburbs for land within the different flood height zones. As the costs are based on actual values with purchase prices over a range of years the valuation year has been set as 2016.

2.3 Demand Forecast

Demand for each network has been determined as follows:

Stormwater

Existing developed area (2010) and future developable area (2031) were provided for each catchment. Using a weighted average impervious fraction (based on the number of land types and their respective impervious fractions), demand was able to be calculated and smoothed across all years for each catchment.

Open Space

Demand is based on population for each of the 5 different service catchments across the forecast period. Demand is provided in 5 year cohorts (2011, 2016, 2021, 2026, 2031, Ultimate).

Community Facilities

Demand is based on the population of each of the 14 different service catchments across the forecast period. Demand is provided in 5 year cohorts (2011, 2016, 2021, 2026, 2031, Ultimate).

Transport

Demand is based on total daily car trips for Residential and Employment purposes across the forecast period. Demand is provided in 5 year cohorts (2011, 2016, 2021, 2026, 2031, Ultimate).

Active Transport

Demand is based on total daily active transport trips for Residential and Employment purposes across the forecast period. Demand is provided in 5 year cohorts (2011, 2016, 2021, 2026, 2031, Ultimate).

2.4 Existing trunk assets

The value of Existing Trunk Assets for each network is shown in the below table:

Network	Present Day (2016) Value of existing assets (\$)
Stormwater	\$ 443,796,336
Open Space	\$ 836,388,811
Community Facilities	\$ 78,764,837
Transport	\$ 864,632,679
Active Transport	\$ 30,938,295
Total value of existing assets	\$ 2,254,728,373

2.5 Future trunk assets

The value of Future Trunk Assets for each network is shown in the below table:

Network	Establishment Cost (\$)	NPV of future assets (\$)
Stormwater	\$354,183,394	\$ 265,036,962
Open Space	\$402,691,230	\$ 322,687,681
Community Facilities	\$2,856,440	\$ 2,749,411
Transport	\$582,507,616	\$ 451,651,845

Active Transport	\$86,230,517	\$ 62,997,525
Total value of existing assets	\$1,428,469,197	\$ 1,105,123,424

3.0 Model modifications

Some minor modifications were made to the model to correct errors to calculations. In one instance, a particular calculation issue was discussed with the preparer of the model and a revised version of the model was provided to Council. The notes on this discussion are shown in Appendix A.

A summary of these changes is shown below, along with some information about peculiarities found within the model:

Worksheet	Cells	Details
General Input Sheet	G49	<ul style="list-style-type: none"> Named cell range "ICSInf" doesn't appear to reference to anything meaningful in the model.
Catchment Demand - Parks & Comm <i>Fixed by update to model on 06/11/15</i>	E81:AH110	<ul style="list-style-type: none"> Doesn't allow for a 15 year timeframe, as formulae include references to column H (year cohort 2036) Where ultimate demand is met prior to end of year range (2017-2046 in MBRC model), the demand for each year after is the Ultimate Demand amount, and should be zero.
Catchment Demand Road Transport <i>Fixed by update to model on 06/11/15</i>	E81:AH110	<ul style="list-style-type: none"> Doesn't allow for a 15 year timeframe, as formulae include references to column H (year cohort 2036) Where ultimate demand is met prior to end of year range (2017-2046 in MBRC model), the demand for each year after is the Ultimate Demand amount, and should be zero.
Catchment Demand - Stormwater <i>Fixed by update to model on 06/11/15</i>	E81:AH110	<ul style="list-style-type: none"> Doesn't allow for a 15 year timeframe, as formulae include references to column H (year cohort 2036) Where ultimate demand is met prior to end of year range (2017-2046 in MBRC model), the demand for each year after is the Ultimate Demand amount, and should be zero.
Future Trunk Assets - Water	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Future Trunk Assets - Sewer	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Future Trunk Assets - Parks	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Future Trunk Assets - Transport	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Future Trunk Assets - Stormwater	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Existing Trunk Assets - Water	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Existing Trunk Assets - Sewer	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Existing Trunk Assets - Stormwater	V14-AY14 BD14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year. Value changed to "1" to allow calculation of existing asset values and correct "DIV/0!" error

	BJ14	Value changed to "1" to allow calculation of existing asset values and correct "DIV/0!" error
Existing Trunk Assets - Transportation	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Existing Trunk Assets - Parks	V14-AY14	Catchment calculation is referencing to a blank column in the demand sheet. Assumed that it should be 2031 year.
Summary Cost Schedule	G7:I7	The word "Infrastrcutrue" has been replaced with "Infrastructure"

4.0 Model Outputs

4.1 Summary Cost Schedule

Catchment		Demand			Cost of Trunk Infrastructure (\$)			Cost per Unit Demand (\$)
No	Name	Existing (A)	NPV Future (B)	TOTAL (A)+ (B)	Existing (C) (\$)	NPV Future (D) (\$)	TOTAL (C)+ (D) (\$)	
Water Supply								
					-	-	-	-
	Totals	-	-	-	\$ -	\$ -	\$ -	
Sewerage								
					-	-	-	-
	Totals	-	-	-	-	-	-	
Stormwater								
1	Bribie Island	719	55	773	8,692,167	-	8,692,167	11,239
2	Pumicestone Passage	760	328	1,089	17,506,297	123,245	17,629,542	16,193
3	Redcliffe	1,213	65	1,278	29,998,502	39,049,529	69,048,030	54,041
4	Mary River	-	-	-	1,105	-	1,105	-
5	Caboolture River (not including Caboolture West investigation area)	3,836	717	4,553	100,516,553	88,598,203	189,114,756	41,535
6	Burpengary Creek	1,627	197	1,823	50,956,284	41,606,743	92,563,027	50,767
7	Hays Inlet	2,278	502	2,780	70,917,793	17,951,945	88,869,738	31,969
8	Brisbane Coastal	386	8	394	22,378,759	4,441,249	26,820,008	68,109
9	Byron Creek	-	-	-	-	-	-	-
10	Neurum Creek	-	-	-	349,390	-	349,390	-
11	Sideling Creek	373	8	382	3,101,130	-	3,101,130	8,123
12	Lower Pine River	3,627	272	3,899	125,775,863	63,642,948	189,418,811	48,579
13	Upper Pine River	683	8	691	7,947,780	3,426,117	11,373,897	16,457
14	Stanley River	602	26	628	5,654,713	6,196,985	11,851,697	18,858
	Totals	16,104	2,186	18,290	443,796,336	265,036,962	708,833,299	
Transport								
1	Urban North	374,170	147,852	522,022	367,809,826	218,597,924	586,407,749	1,123
2	Urban South	506,859	184,734	691,593	459,748,203	279,103,646	738,851,849	1,068

3	Urban East	176,137	32,600	208,737	47,566,059	14,039,840	61,605,899	295
4	Rural North	44,334	12,042	56,376	5,855,125	1,173,451	7,028,575	125
5	Rural South	79,665	3,429	83,094	14,591,763	1,734,510	16,326,273	196
Totals		1,181,165	380,656	1,561,821	895,570,975	514,649,371	1,410,220,345	
Parks and Community								
1	Caboolture	79,303	20,017	99,320	133,862,562	64,173,743	198,036,395	1,994
2	Coastal Communities and Bribie Island	32,968	1,284	34,252	90,953,056	20,729,189	111,682,244	3,261
3	North Lakes, Redcliffe, Moreton Bay Rail Corridor	179,925	44,410	224,335	388,674,752	165,796,976	554,471,728	2,472
4	Rural	34,959	7,252	42,211	48,432,819	26,268,744	74,701,563	1,770
5	Strathpine	92,754	10,862	103,616	174,465,533	45,719,030	220,184,563	2,125
6	Community Facilities	437,068	91,539	528,607	78,764,837	2,749,411	81,514,248	154
Totals		856,977	175,365	1,032,342	915,153,648	325,393,681	1,240,590,741	

4.2 Summary cash Flow Projections

Item	Network	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Anticipated Cost (Cap X in \$000)	Water	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Sewerage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Stormwater	\$49,246	\$36,566	\$36,347	\$10,502	\$7,574	\$7,575	\$18,690	\$7,072	\$46,306	\$3,562	\$13,393	\$11,744	\$11,153	\$73,118	\$2,220	\$98,857
	Transport	\$125,666	\$219	\$1,870	\$14,787	\$0	\$300,336	\$1,272	\$111,005	\$0	\$0	\$78,057	\$0	\$0	\$0	\$0	\$141,494
	Parks and Community	\$67,876	\$0	\$0	\$111,971	\$0	\$98,544	\$0	\$0	\$0	\$0	\$121,063	\$0	\$0	\$0	\$0	\$94,791
	Total Cost	\$242,788	\$36,784	\$38,217	\$137,260	\$7,574	\$406,455	\$19,962	\$118,077	\$46,306	\$3,562	\$212,512	\$11,744	\$11,153	\$73,118	\$2,220	\$335,143
Anticipated Charges Revenue (\$000)	Residential Charges	\$60,227	\$57,096	\$58,643	\$60,233	\$61,865	\$63,541	\$50,844	\$52,222	\$53,638	\$55,091	\$56,584	\$42,270	\$43,415	\$44,592	\$45,800	\$47,041
	Comm/Ind Charges	\$0	\$17,608	\$18,085	\$18,575	\$19,079	\$19,596	\$18,585	\$19,088	\$19,606	\$20,137	\$20,683	\$18,990	\$19,505	\$20,033	\$20,576	\$21,134
	Total revenue	\$60,227	\$74,704	\$76,728	\$78,808	\$80,943	\$83,137	\$69,429	\$71,311	\$73,243	\$75,228	\$77,267	\$61,260	\$62,920	\$62,920	\$66,376	\$68,175
Annual CF (\$000)	-\$182,561	\$37,920	\$38,512	-\$58,453	\$73,369	-\$323,318	\$49,468	-\$46,766	\$26,938	\$71,666	-\$135,245	\$49,516	\$51,767	-\$8,494	\$64,156	-\$266,968	
Cumulative CF (\$000)	-\$182,561	-\$144,641	-\$106,129	-\$164,582	-\$91,213	-\$414,532	-\$365,064	-\$411,830	-\$384,892	-\$313,226	-\$448,471	-\$398,955	-\$347,189	-\$355,683	-\$291,527	-\$558,494	

Appendix A

Summary of conversation with Jan Cilliers - Department of Infrastructure, Local Government and Planning

A calculation issue was observed in calculating the incremental demand for the networks, when not using all columns in the 5 year cohort table for demand for each network.

A discussion was held with Jan at 2:00pm on Friday 30-Oct-15 to raise with him the issue about 15 year timeframes, and the fact that if you don't have anything in the final year (column H), the demand turns negative. Jan suggested adding in the final figure, but that doesn't help either as the demand for the next five years is then included.

Also, mentioned was the Ultimate Demand issue where it is being included in the demand for the year once the Ultimate Demand is met. This is definitely a big issue and Jan was going to talk to their contractor about it.

Jan responded that he would have a look at the issues. A new version was received from Jan on 6 November 2015 containing an update to the demand formulae that corrected the issue. I advised that this had corrected the problem and he advised that he would be the version of the model on the web site.

Version Control

Version #	Date	Detail
1	15/04/2016	Create document
2	06/05/2016	Version Control table added File name added to Footer
3	20/10/2016	Updated Future Trunk Assets costs table, Summary Cost Schedule and Cash Flow Projections tables.
4	11/01/2017	Updated tables 2.4, 2.5 and 4.1 to reflect changes to future Transport assets that had missed having the Project Owners Cost added to them.
5	17/02/2017	Updated Tables 2.4, 2.5, 4.1 and 4.2 to reflect the removal of 101-107 Duffield Road, Margate from existing Open Space assets.