

Appendix A

The Business Case for Water Projects

Engineers are often faced with the challenges of how to justify the level of funding required. Our 'Mordialloc Industrial Precinct' project was no different.

While our project started as a basic road rehabilitation initiative, it became clear that with an innovative approach we could also achieve significant water quality and re-use outcomes.

At the same time, the City of Kingston was partnering with AECOM to develop an 'Integrated Water Cycle Strategy' with the aim of confirming water sensitive targets for our municipality, long term funding requirements and identifying the most cost effective types of water related solutions.



One of the questions investigated as part of this project was :

How can we supplement 'triple bottom line' decision making, so that the best 'all-round' water projects are more likely to receive funding approval?

From this work, Council and AECOM developed the idea of creating a 'Water Sensitive Cities Score' (WSCS). This score-card system helps to recognise projects with multiple benefits and ensures that future project selection is a true reflection of the principles of a Water Sensitive City¹. The WSC Score evaluates projects against the following categories:

- Water quality & natural asset protection
- Potable mains water reduction & alternative water supply
- Resource sustainability
- Providing amenity & protecting ecosystem services
- Building awareness & education

The scoring process outlined in the following table clearly highlights the water sensitive merits of competing projects (both structural and non-structural). It also highlights each project's effectiveness in providing multiple benefits to the broader community and the environment via the treatment and use of stormwater.

What was the criteria?

We decided that to be effective, the scoring system needed to:

- Be simple to use;
- Not require complex calculations and investigations as this would limit its uptake;
- Use information that was generally available at the concept design stage when funding decisions are made; and
- Be able to clearly communicate the effectiveness of competing water projects to non-technical decision makers.

¹ A Water Sensitive City is a liveable city that has healthy ecosystems and waterways. It is a place that uses rainwater, groundwater, surface water, wastewater, stormwater and potable mains water appropriately and where built and natural environments are in harmony.

Water Sensitive Cities Score card

The following table summaries the minimum requirement for a project to achieve a certain 'score':

Water Quality	
Very High	Meets or exceeds best practice targets for TSS, TP and TN ²
High	Is within 20% of best practice targets for TSS, TP and TN
Medium	Delivers some water quality improvement
No change	No change to water quality
Negative	Results in an increase in stormwater pollutants
Potable Mains Water Reduction & Alternative Water Supply	
Very High	Results in potable mains water savings, or an alternative water supply, of greater than 5 ML/yr
High	Results in potable mains water savings, or an alternative water supply, of 1-5 ML/yr
Medium	Results in potable mains water savings, or an alternative water supply, of up to 1 ML/yr
No change	No change to potable mains water demand or no alternative water supplied
Negative	Results in an increase in potable mains water demand
Energy Savings	
Very High	Surplus/positive energy generation over the life of the project
High	Zero net energy use over the life of the project
Medium	Some energy savings over current, ongoing energy resource requirements
No change	No change where there are already ongoing energy resource requirements
Negative	Increase in additional energy resources
Liveability and Environmental Protection	
Very High	On a regional scale, major improvement of amenity through provision of valuable/functional green spaces and/or provides significant protection for a regional natural asset
High	On a local scale, improvement of amenity through provision of valuable/functional green spaces and/or provides significant protection for a local natural asset
Medium	Delivers some improvement to local amenity
No change	No change in the local amenity
Negative	Is detrimental to the local amenity.
Building Awareness & Education	
Very High	High profile project that provides significant city-wide or national opportunities for interaction and education
High	Provides regional opportunities for interaction and education
Medium	Provides local opportunities for interaction and education
No change	Has no opportunity to influence behavioural change
Negative	Promotes poor behaviour in water sustainability

² Total Suspended solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN)

Case Studies to test the Score Card

Case Study 1: 'Mordialloc Industrial Precinct Project'

The Mordialloc project was evaluated against the score with the following results. The project was designed to exceed best practice stormwater management, save around 4ML of potable water each year and its unique nature will generate major interest. For these reasons, the project was rated as a 'Very High' score for both 'Water Quality' and 'Building Awareness & Education'.

	Water Quality	Potable Mains Water Reduction & Alternative Water Supply	Energy Savings	Liveability	Building Awareness & Education
Kingston Industrial Stormwater project	V High	High	High	Medium	V High

Case Study 2 - Kingston Town Hall Waterless Urinals

This project involved the upgrade of 27 conventional urinals (flushed with potable mains water) to waterless urinals at the Kingston Town Hall. On average, this project saves around 1.2ML of potable water each year.

	Water Quality	Potable Mains Water Reduction & Alternative Water Supply	Energy Savings	Liveability	Building Awareness & Education
Kingston Town Hall Waterless Urinals	No Change	High	No Change	No Change	High

While the WSC score for this project demonstrates a limited scope for integrated water management, the score does reflect the importance of the Building Awareness & Education component of this project due to its high profile and the large number of people who visit the facility each year. In this case the tool clearly communicates the two key values of this project.

Case Study 3 – Kingston Warm Season Grass Conversion Program

The City of Kingston manages a program of warm season grass conversions at recreation reserves across the municipality. Cool season grasses typically have irrigation demands of up to 6 ML/year. However; once established, warm season grasses, only require ~ 2.5 ML/year.

	Water Quality	Potable Mains Water Reduction & Alternative Water Supply	Energy Savings	Liveability	Building Awareness & Education
Warm Season Grass Conversion Program	No Change	High	No Change	High	High

Warm season grass conversions are an excellent way for Council to maintain a large number of safe playing surfaces within allocated water targets. This project scores ‘High’ for Potable Mains Water Reduction given the anticipated reduction in demand after conversion. The project scores ‘High’ for Liveability as the program allows Council to increase the number of valuable (irrigated/safe/green) playing fields that can be irrigated given a limited supply of mains water for irrigation.

Conclusion

The above score card results clearly demonstrate that Case Study 1 (Mordialloc Industrial Precinct Project) achieves the highest results across all five measures. The business case (whether to proceed) would also need to take into consideration usual practices such as affordability, benefit cost ratios, community needs, planning approvals and timeframes.