

Use of Key Performance Indicators in the Planning and Management of Public Open Space

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Introduction

Public open space managers are increasingly being required to show that their work unit outputs are aligned with customer requirements, while being delivered in an efficient and effective manner. This management requirement has been compounded by two additional factors. Firstly, in the light of ecologically sustainable development, managers have statutory and ethical obligations to plan and manage the environment, both built and natural, in an effective and sustainable manner. Secondly, the incorporation of best practice principles into government organisations business management systems requires managers to establish best practice standards and models.

While the concept of benchmarking originated in the private sector as a means for business to enhance or regain market share, the technique has been shown to produce notable benefits for public sector organisations in establishing standards and providing an assessment of level of service on a comparative basis. The selection of Key Performance Indicators (KPIs) is one of the most crucial aspects of benchmarking. KPIs have been shown to be a beneficial means of assisting managers in measuring different aspects of organisational performance, and monitoring selected issues or conditions over time for the purposes of evaluating progress towards or away from a desired direction.

This paper offers a brief introduction to Key Performance Indicators, and outlines and discusses the evolution, methodology and findings of Benchmarking Programs based on KPIs, conducted by IOSS within Australia.

What is a Key Performance Indicator (KPI)

Performance indicators are measures of different aspects of organisational performance (AusIndustry, 1995) that enable selected issues or conditions to be monitored over time for the purposes of evaluating progress towards or away from a desired direction (Hart, 1999).

Key Performance Indicators (KPIs) reflect the idea that some aspects of organisational performance are more important than others.

Key Performance Indicators represent a set of measures focusing on the aspects of organisational performance that are most crucial for the current and future success of the organisation.

(AusIndustry, 1995)

KPIs are therefore focussed either on the critical aspects of organisational performance that require improvement, or on the aspects that must be kept within a specified level to ensure the continued success of the organisation (AusIndustry, 1995).

Often it has been found that KPIs used by organisations are very general, in that they don't address specific issues in relation to measuring a single goal, being more akin to performance standards or targets. KPIs should not be targets or standards, but rather, indicators which gauge an extent of achievement (Meredith, 1997).

Types of Key Performance Indicators

Indicators may be process-based (eg compliance with guidelines), activity-based (eg dollars spent, numbers employed) or outcome-based indicators (eg goals achieved, success of services). KPIs are particularly beneficial when they are linked to policy concerns or outcomes.

KPIs can be categorised in a number of ways, some of which are:

- Quantitative KPIs:
The amount of a product or service
- Qualitative KPIs:
Structured perception of structured feedback
- Cost efficiency KPIs:
The unit cost of achieving a specified amount of service
- Cost effectiveness of KPIs:
The unit cost of achieving a specified amount of service to a designated level of quality
- Timeliness / Responsiveness KPIs:
The time taken to perform a service, or the number of transactions or products within a time cycle
- Work team productivity KPIs:
The amount of output of a workforce unit or group

(Earthlines consortium, 1999)

Open Space Planning & Management Key Performance Indicator National Program

Introduction

Integrated Open Space Services – IOSS has been undertaking a number of Benchmarking and Key Performance Indicator (KPI) Programs in open space planning and management within Australia over the past five years. To date these programs have involved 75 Government Authorities in Western Australia, Northern Territory, Queensland, New South Wales, Victoria, Tasmania and South Australia.

The 'Key Performance Indicator Program' is a national, ongoing program which has been developed to assist government organisations to quantify critical elements of their open space planning and management activities. The KPIs selected and implemented are used in a two-fold manner:

- As a tool to benchmark individual organisational performance against other organisations; and
- As 'stand alone' indicators for individual organisations to monitor their outputs and progress over time.

The program has been used to assist planners and managers to:

- Ensure their work is conducted in an efficient and effective manner;
- Align their work outputs with customer requirements;

- Meet statutory and ethical obligations to plan and manage the environment, both built and natural, in an effective and sustainable manner;
- Incorporate best practice standards and models;
- Monitor progress towards desired outcomes;
- Direct resources to highest priorities;
- Draw attention to negative trends; and
- Provide sound, credible data to inform policy, budgetary and other decision making.

Program Origins

The program originated as the 'Landscape Management Comparison Study 2000/01', which collected general information from participating Government Authorities in Melbourne and South East Queensland on operational structures and budgets, parkland hectareage and number of residents. Pitfalls of the program included lack of auditing of the data obtained from authorities and the collection of superfluous data, which while interesting, was regarded as quite meaningless, and not critical or necessarily relevant to the operation of the concerned authorities.

Program Evolution

With the experience gained from the original study, the program subsequently changed direction and become the 'Street Tree and Park Management KPI Program'. This program identified a number of Key Performance Indicators which were considered critical to the success of participating authorities. The KPIs were developed with the participating authorities, and based on a criteria of:

- Meaningful / Relevance - Importance to core business
- Measurability
- Achievability / Feasibility
- Commonly used terms
- Predictability
- Validity

This program further evolved in 2002/03 to include a number of Sydney Government Authorities. Also in this year, a program commenced in Perth which identified and measured KPIs in Natural Area Planning and Management.

Due to requests from a number of government organisations, the Open Space Planning & Management Key Performance Indicator Program has now expanded into three national components:

1. Street Tree and Park Management KPI Program
2. Natural Area Planning and Management KPI Program
3. Open Space Planning KPI Program

Each organisation is able to assess their organisation's performance on a National basis, Regional basis, and via National Partnerships – where similar organisations from different regions are grouped together (based for example on geophysical characteristics, population size etc).

Program Methodology

INITIAL ESTABLISHMENT AND MEASUREMENT OF KPIS

The establishment and initial measurement of KPIS within each of the three components follows a similar pattern to the steps outlined below:

- Step 1. Gathering and Sharing of Information Relevant to the KPIS.**
The objective in embarking on this step has been to raise the shared understanding between participant organisations about issues and topics that can be used to generate KPIS. This process has involved completion of questionnaire surveys; the confidential sharing of participant group policies, standards, indicators, etc. relevant to the suite of KPIS; and review of current relevant literature.
- Step 2. Determination of KPIS and Calculation Methods.**
Through facilitated discussions/workshops and applied expertise, a suite of KPIS and their calculation methods are determined.
- Step 3. Measurement of KPIS.**
Each participant organisation calculates their KPIS in accordance with the Calculation Methods.
- Step 4. Audit of Measurements.**
The calculations undertaken by each organisation are audited through site visits, follow up and discussion. Information is also sought about what is working or not working during the process.
- Step 5. Publication of Interim Findings (Optional).**
In some cases, due to delays in participant organisations completing their calculations, an Interim Report has been circulated. This enables those organisations who have completed their work use of the information whilst the others are finishing their calculations.
- Step 6. Review of Process and Determination of KPIS for Next Monitoring Program.**
Whilst the information is still fresh, participants through workshops and notes completed during the audit process review the process and KPIS.
- Step 7. Compilation and Circulation of Final Reports.**
Each organisation receives a final report outlining the process which was undertaken, and their results/rankings compared to regional and inter-regional mean, median, highest and lowest scores.

ONGOING MEASUREMENT OF KPIS

Once a suite of KPIS have been developed and undergone the initial measurement process, the ongoing measurement process is as follows:

- Step 1. Determination of KPIS and Calculation Methods.** Through the outcomes of the Review Process of the previous measurement cycle and applied expertise, a suite of KPIS and their calculation methods are determined.
- Step 2. Measurement of KPIS.**
- Step 3. Audit of Measurements.**
- Step 4. Publication of Interim Findings (Optional).**
- Step 5. Review of Process and Determination of KPIS for Next Monitoring Program.**

Step 6. Compilation and Circulation of Final Reports..

CONFIDENTIALITY

As a principle to ensure confidentiality, individual organisation's results are not shared with another organisation. Rather, overall results (mean, median, highest and lowest) are stated. Some groups, however, have independently shared results.

Challenges of Program

Although the program has been beneficial for participating Government Authorities, there are a number of challenges associated with the program:

1. Despite the information provided to participants at the commencement of each year's program, some participants don't fully grasp the commitment required by participating organisations. The time taken by the participating authorities to gather and organise the data can be quite lengthy, especially when organisational systems aren't currently in place which allows ease of data access. This can result in the program going overtime, and participating authorities not receiving the completed results in time for use in the budget process.
2. There have been concerns raised about discrepancies of data given by other authorities, despite the audit process.
3. There appears to be a lack of understanding about the use of KPIs. In themselves, KPIs do not provide a solution, but rather a tool to help gauge the efficiency/effectiveness of planning and operational activities.
4. The inherent differences which exist between organisations can make it difficult to compare activities without a very detailed examination of processes and resources.
5. Generally, park managers find it difficult to meet timeframe and other program requirements, especially when they have many more urgent matters to take care of.

As the program is one of evolution through consistent review and adaptation, solutions to these challenges are continually being sought and tested. Ways in which some of the abovementioned challenges can be overcome include:

1. Developing an ongoing program in which the KPI data base is updated on a yearly basis by participants, with the most up to date information available on a secure web site.
2. Developing a personalised timeframe for each participant to gather information and report on their KPIs based on their workload and easefulness on gathering information.
3. Promote a greater level of available support through regular follow up based on personalised programs and data audits.

The following sections outline the current components of the program, and give some case studies.

Street Tree and Park Management KPI Program

This program evolved along the eastern seaboard over the last few years and draws on the knowledge base of the initial KPI Program, where a suite of standard national KPIs was

developed by the participating street tree and park managers in SE Queensland, Melbourne and Sydney. There is scope within the program to develop and implement, in addition to the national KPIs, a specific group of indicators within each region. The standard national KPIs for Street Tree and Park Management are:

1. Mowing Cost per Hectare for Sportsfields and Other Parklands.
2. User Satisfaction with Park Management.
3. Recurrent Cost of Developed Park Management per Resident, Ratepayer and Hectare.
4. Percentage of Parks Facilities Current Value to Replacement Value.
5. Percentage of Parks Expenditure to Council Budget.
6. Street Tree Management Category Costs per Resident, Ratepayer, Tree and Kilometre of Urban Road.
7. Customer Requests for Street Trees and Parks.

As an adjunct to the program, each year a theme area is identified for detailed investigation. This year, Playground Management has been chosen as the theme topic. The results of a questionnaire (circulated in September 2003) and a literature review on playground management and current issues will be presented in a report to participating organisations.

Other potential themes include:

- Sportfield Management
- Irrigation Management
- Public Toilet Management
- Capital Works Management
- Staffing Structures and Levels

Natural Area Planning & Management KPI Program

(Urban Natural Area includes bushland, wetlands, foreshores etc within or in close proximity to urban areas)

Recently, IOSS conducted an investigative study into the development of KPIs for the management of natural areas by Local Government Authorities. It was found that in the field of natural area management, KPIs can be a valuable tool for guiding the development and evaluation of natural area management plans and policies, evaluating the performance of agencies and management programs, and assessing land management impacts on the environment. However, the use of KPIs in natural area management is still developing, with little formal work having been undertaken by Local Government Authorities in Australia.

Subsequent to the preliminary study, a number of Local Government Authorities within the Perth region, in conjunction with IOSS, developed a series of KPIs for this field. The KPIs developed to date, sit under the five broad areas of:

- Key Threatening Process Indicators
- Management Indicators
- Budgetary Indicators
- Community Perception Indicators
- Conservation Land Allocation Indicators

While the field of natural area management can pose extra challenges for the development of KPIs within a benchmarking program, in that organisations, not to mention regions, can differ

greatly in terms of resources, political direction, species and condition of native communities, a number of issues facing natural area managers are pertinent across the board and benefit can be obtained from both a regional and national suite of KPIs.

The program has now expanded to include Government Authorities in the eastern states.

Open Space Planning KPI Program

Over time, a number of planners have requested that a series of KPIs be developed for open space planning to assist Local Government Authorities to gauge the effectiveness of their open space planning activities. This program is still in the development phase, and specific KPIs have yet to be defined. Subject areas for consideration in the process of KPI development in this field could include:

- Development of a standard set of open space categories for benchmarking purposes.
- Quantification of the type and style of parks facilities for each open space category.
- Examination of developer contributions and development application processes.
- Examination of how local government authorities resource their open space planning activities.
- Investigation of planning for sustainable land use management.

Case Study – 2002/03 Street Tree and Park Management KPI Program

INTRODUCTION

Three regions were involved in the program of 2002/03, South East Queensland, Melbourne and Sydney. The participating government authorities included:

South East Queensland	Melbourne	Sydney
Brisbane City Council	City of Boroondara	Ashfield Council
Caboolture Shire Council	City of Brimbank	Baulkham Hills Shire Council
Caloundra City Council	City of Darebin	Botany Bay Council
Gold Coast City Council	City of Frankston	Burwood Council
Hervey Bay City Council	City of Glen Eira	Centennial Park & Moore Park Trust
Ipswich City Council	City of Hobsons Bay	City of Campbelltown
Logan City Council	City of Kingston	Fairfield City Council
Maroochy Shire Council	City of Manningham	Gosford City Council
Pine Rivers Shire Council	City of Maribyrnong	Ku-ring-gai City Council
Redcliffe City Council	City of Moonee Valley	Manly Council
Redland Shire Council	City of Moreland	North Sydney Council
	City of Port Phillip	Parramatta City Council
	City of Stonnington	Ryde City Council
	City of Whitehorse	Waverley City Council
	City of Yarra	Willoughby City Council

METHODOLOGY

The methodology followed the process mentioned above, while the audit process involved the following activities:

1. Examination of the unaudited figures during a site visit or phone conversation with officers responsible for compiling each council's information.
2. Checking the information with calculation methods.
3. Adjusting the figures where necessary to better comply with the calculation methods.

4. Inclusion of some data where only a minor discrepancy from the calculation methods appeared evident and there was no practical means by which a correct adjustment could be made.
5. Deletion of figures, which may have been too inaccurate and could have compromised the integrity of the results.

RESULTS

	No. *	Mean	Median	Highest	Lowest
Mowing Cost/Hectare/Category/Cut					
Sportsfields Mowing Cost/ha/cut - Overall	26	\$69.64	\$64.62	\$169.42	\$26.87
SEQ Region	3	\$54.94	\$58.64	\$79.76	\$26.43
Melbourne Region	13	\$70.54	\$64.55	\$218.22	\$21.12
Sydney Region	10	\$83.45	\$70.67	\$210.29	\$33.05
High Profile (Regional) Parklands Mowing Cost/ha/cut - Overall	25	\$124.23	\$99.50	\$309.57	\$38.82
SEQ Region	4	\$100.40	\$89.13	\$164.69	\$58.64
Melbourne Region	12	\$133	\$123	\$278	\$27
Sydney Region	9	\$139.44	\$86.65	\$485.69	\$31.19
Low to Medium Profile (Local/District) Parklands Mowing Cost/ha/cut - Overall	30	\$143.75	\$143.75	\$408.83	\$44.22
SEQ Region	5	\$91.65	\$99.69	\$134.47	\$29.27
Melbourne Region	13	\$160.51	\$195.10	\$430.91	\$64.39
Sydney Region	12	\$179.08	\$136.46	\$661.11	\$39.00
Total Mowing Cost/ha/cut - Overall	30	\$110.10	\$97.71	\$215.46	\$46.26
SEQ Region	5	\$87.78	\$78.17	\$129.32	\$29.80
Melbourne Region	13	\$114.57	\$105.77	\$220.74	\$63.39
Sydney Region	12	\$127.95	\$109.17	\$296.31	\$45.60
Recurrent Cost of Developed and Conservation Parkland Maintenance					
Cost of Developed Park Management/Resident – Overall	28	\$32.15	\$33.18	\$46.05	\$14.91
SEQ Region	6	\$46.35	\$45.09	\$59.95	\$29.50
Melbourne Region	12	\$26.33	\$27.48	\$37.09	\$10.76
Sydney Region	10	\$23.78	\$26.98	\$41.11	\$4.46
Cost of Conservation Park Management/Resident - Overall	25	\$3.80	\$3.18	\$9.74	\$0.29
SEQ Region	6	\$3.48	\$3.23	\$7.63	\$0.21
Melbourne Region	11	\$3.13	\$2.68	\$5.24	\$0.57
Sydney Region	8	\$4.81	\$3.62	\$16.35	\$0.10
Cost of Park Management/Resident - Overall	28	\$35.54	\$36.35	\$55.57	\$18.96
SEQ Region	6	\$49.82	\$51.04	\$62.23	\$33.62
Melbourne Region	12	\$29.11	\$28.54	\$56.03	\$15.56

	No. *	Mean	Median	Highest	Lowest
Sydney Region	10	\$27.68	\$29.48	\$48.43	\$7.69
Cost of Developed Park Management/Ratepayer – Overall					
SEQ Region	6	\$104.44	\$107.74	\$116.44	\$77.15
Melbourne Region	12	\$59.87	\$62.74	\$88.24	\$25.23
Sydney Region	9	\$61.34	\$71.52	\$120.60	\$5.92
Cost of Conservation Park Management/Ratepayer - Overall					
SEQ Region	6	\$8.20	\$7.68	\$17.63	\$0.55
Melbourne Region	11	\$7.64	\$6.56	\$16.18	\$0.98
Sydney Region	7	\$14.48	\$11.43	\$49.09	\$3.92
Cost of Park Management/Ratepayer - Overall					
SEQ Region	6	\$112.63	\$113.49	\$133.09	\$87.92
Melbourne Region	12	\$66.66	\$69.66	\$148.65	\$36.50
Sydney Region	9	\$72.75	\$72.25	\$145.43	\$10.22
Cost of Developed Park Management/Hectare – Overall					
SEQ Region	6	\$6,113.88	\$6,538.67	\$8,379.19	\$1,622.16
Melbourne Region	12	\$9,292.69	\$9,125.25	\$25,434.82	\$2,764.25
Sydney Region	10	\$16,698.94	\$11,406.64	\$40,000.00	\$1,818.15
Cost of Conservation Park Management/Hectare – Overall					
SEQ Region	6	\$436.84	\$389.82	\$983.38	\$47.66
Melbourne Region	11	\$5,688.97	\$5,936.51	\$18,571.43	\$635.71
Sydney Region	8	\$3,618.25	\$2,182.85	\$9,310.34	\$94.07
Cost of Park Management/Hectare - Overall					
SEQ Region	6	\$2,809.38	\$2,806.00	\$4,197.84	\$1,381.67
Melbourne Region	12	\$8,362.69	\$7,605.80	\$37,545.98	\$2,507.85
Sydney Region	10	\$11,652.24	\$7,835.40	\$38,117.30	\$218.79
Percentage of Parks Facilities Current Value to Replacement Value					
% of Park Facility Current Value to Replacement Value – Overall	13	63.3%	62.5%	76.4%	47.2%
SEQ Region	6	61.8%	62.9%	66.7%	52.5%
Melbourne Region	7	64.9%	62.1%	86.2%	41.9%
Percentage of Park Expenditure to Council Budget					
% Parks Recurrent to Council Recurrent Expenditure – Overall	28	6.0%	5.6%	9.8%	3.6%
SEQ Region	6	5.4%	4.7%	10.0%	3.0%
Melbourne Region	13	5.8%	5.7%	7.8%	4.5%
Sydney Region	9	6.8%	6.4%	11.6%	3.2%
% Parks Capital to Council Capital Expenditure –					
	28	7.6%	6.5%	18.5%	2.5%

	No. *	Mean	Median	Highest	Lowest
Overall					
SEQ Region	6	3.2%	2.6%	5.5%	1.8%
Melbourne Region	13	11.8%	9.9%	35.6%	4.5%
Sydney Region	9	7.8%	6.9%	14.3%	1.2%
% Parks Expenditure to Council Expenditure – Overall	29	6.3%	5.9%	10.0%	3.7%
SEQ Region	6	4.8%	4.0%	8.1%	3.5%
Melbourne Region	13	6.9%	6.5%	10.4%	5.3%
Sydney Region	10	7.3%	7.2%	11.6%	2.4%
Street Tree Management Costs/Resident, Ratepayer Tree & Kilometre of Urban Road					
Recently Planted Street Annual Cost/tree – Overall	22	\$61.07	\$40.56	\$142.30	\$23.09
SEQ Region	4	\$34.61	\$35.23	\$50.00	\$18.00
Melbourne Region	11	\$118.04	\$58.00	\$320.00	\$41.67
Sydney Region	7	\$30.56	\$28.44	\$56.89	\$9.59
Maturing Street Tree Annual Cost/tree - Overall	23	\$9.05	\$7.71	\$18.83	\$2.27
SEQ Region	4	\$2.84	\$2.68	\$4.93	\$1.08
Melbourne Region	12	\$17.06	\$15.70	\$34.17	\$1.50
Sydney Region	7	\$7.25	\$4.76	\$17.38	\$4.23
Mature Street Tree Annual Cost/tree - Overall	26	\$15.81	\$9.33	\$39.34	\$3.88
SEQ Region	5	\$17.27	\$4.62	\$51.15	\$2.41
Melbourne Region	12	\$19.75	\$17.53	\$36.87	\$6.84
Sydney Region	9	\$10.41	\$5.85	\$29.99	\$2.41
Over Mature Street Tree Annual Cost/tree – Overall	20	\$43.49	\$16.18	\$114.63	\$4.88
SEQ Region	3	\$86.39	\$6.75	\$250.00	\$2.41
Melbourne Region	10	\$23.91	\$15.67	\$59.43	\$7.48
Sydney Region	7	\$20.18	\$26.12	\$34.46	\$4.76
Total Street Tree Management Cost/tree - Overall	28	\$14.65	\$11.71	\$35.38	\$3.98
SEQ Region	6	\$9.89	\$6.44	\$25.40	\$2.41
Melbourne Region	13	\$22.33	\$20.46	\$50.74	\$6.49
Sydney Region	9	\$11.73	\$8.23	\$29.99	\$3.04
Recently Planted Street Annual Cost/resident - Overall	26	\$1.42	\$1.27	\$3.88	\$0.21
SEQ Region	5	\$0.89	\$1.05	\$1.21	\$0.18
Melbourne Region	12	\$2.55	\$2.01	\$7.32	\$0.36
Sydney Region	9	\$0.82	\$0.75	\$3.12	\$0.10
Maturing Street Tree Annual Cost/resident - Overall	24	\$1.70	\$1.63	\$4.18	\$0.17
SEQ Region	4	\$1.36	\$1.61	\$1.95	\$0.25

	No. *	Mean	Median	Highest	Lowest
Melbourne Region	12	\$2.87	\$2.46	\$8.93	\$0.11
Sydney Region	8	\$0.89	\$0.81	\$1.67	\$0.15
Mature Street Tree Annual Cost/resident – Overall					
	27	\$2.92	\$1.94	\$9.11	\$0.50
SEQ Region	5	\$3.01	\$1.51	\$8.65	\$0.59
Melbourne Region	12	\$3.38	\$2.78	\$11.18	\$0.86
Sydney Region	10	\$2.36	\$1.53	\$7.50	\$0.06
Over Mature Street Tree Annual Cost/resident - Overall					
	20	\$0.82	\$0.77	\$1.58	\$0.25
SEQ Region	3	\$0.42	\$0.35	\$0.59	\$0.32
Melbourne Region	10	\$0.87	\$0.69	\$1.81	\$0.41
Sydney Region	7	\$1.19	\$1.27	\$2.34	\$0.02
Total Street Tree Management Cost/resident - Overall					
	29	\$6.18	\$5.45	\$12.51	\$2.61
SEQ Region	6	\$4.75	\$4.11	\$9.71	\$2.36
Melbourne Region	13	\$9.14	\$7.67	\$20.03	\$3.73
Sydney Region	10	\$4.64	\$4.57	\$7.81	\$1.73
Recently Planted Street Annual Cost/ratepayer - Overall					
	26	\$3.02	\$2.95	\$7.64	\$0.58
SEQ Region	5	\$2.06	\$2.74	\$2.90	\$0.35
Melbourne Region	12	\$5.21	\$3.96	\$15.88	\$1.11
Sydney Region	9	\$1.79	\$2.14	\$4.15	\$0.29
Maturing Street Tree Annual Cost/ratepayer - Overall					
	24	\$3.60	\$3.55	\$7.90	\$0.45
SEQ Region	4	\$2.79	\$3.30	\$4.00	\$0.56
Melbourne Region	12	\$5.83	\$5.68	\$15.30	\$0.35
Sydney Region	8	\$2.17	\$1.66	\$4.41	\$0.44
Mature Street Tree Annual Cost/ratepayer - Overall					
	27	\$7.22	\$4.14	\$24.06	\$1.18
SEQ Region	5	\$7.45	\$2.48	\$23.86	\$1.54
Melbourne Region	12	\$7.51	\$6.10	\$26.89	\$1.91
Sydney Region	10	\$6.71	\$3.83	\$21.42	\$0.09
Over Mature Street Tree Annual Cost/ratepayer - Overall					
	21	\$1.93	\$1.76	\$4.03	\$0.47
SEQ Region	3	\$0.83	\$0.83	\$0.97	\$0.69
Melbourne Region	10	\$2.05	\$1.65	\$4.24	\$0.71
Sydney Region	8	\$2.90	\$2.80	\$6.88	\$0.01
Total Street Tree Management Cost/ratepayer – Overall					
	29	\$14.45	\$13.02	\$32.26	\$7.57
SEQ Region	6	\$11.25	\$8.47	\$26.76	\$6.25
Melbourne Region	13	\$19.74	\$18.07	\$46.56	\$11.41

	No. *	Mean	Median	Highest	Lowest
Sydney Region	10	\$12.38	\$12.53	\$23.45	\$5.04
Recently Planted Street Annual Cost/km - Overall					
	23	\$6,721.37	\$3,094.12	\$23,476.89	\$572.58
SEQ Region	4	\$4,885.46	\$2,677.93	\$12,857.14	\$1,328.84
Melbourne Region	12	\$11,572.81	\$5,514.22	\$38,823.53	\$138.89
Sydney Region	7	\$3,705.86	\$1,090.23	\$18,750.00	\$250.00
Maturing Street Tree Annual Cost/km - Overall					
	21	\$1,117.51	\$804.72	\$2,416.52	\$227.65
SEQ Region	3	\$582.59	\$271.70	\$1,397.85	\$78.21
Melbourne Region	12	\$1,878.33	\$1,391.39	\$4,251.70	\$100.00
Sydney Region	6	\$891.61	\$751.07	\$1,600.00	\$504.74
Mature Street Tree Annual Cost/km - Overall					
	24	\$1,562.87	\$1,169.57	\$3,152.15	\$355.48
SEQ Region	4	\$1,350.74	\$882.18	\$3,384.62	\$253.97
Melbourne Region	12	\$2,053.78	\$1,553.21	\$3,714.22	\$309.17
Sydney Region	8	\$1,284.10	\$1,073.32	\$2,357.60	\$503.32
Over Mature Street Tree Annual Cost/km – Overall					
	18	\$4,308.49	\$4,029.81	\$7,988.20	\$1,114.01
SEQ Region	2	\$7,535.71	\$7,535.71	\$12,500.00	\$2,571.43
Melbourne Region	10	\$2,630.33	\$1,389.48	\$7,117.60	\$265.00
Sydney Region	6	\$2,759.41	\$3,164.25	\$4,347.00	\$505.61
Total Street Tree Management Cost/km - Overall					
	27	\$1,476.99	\$1,232.49	\$3,313.40	\$399.76
SEQ Region	6	\$787.15	\$471.70	\$2,048.28	\$343.52
Melbourne Region	13	\$2,291.74	\$1,801.89	\$5,534.32	\$351.15
Sydney Region	8	\$1,352.09	\$1,423.89	\$2,357.60	\$504.62

No.* The number of authorities who supplied data

Conclusion

The Open Space Planning and Management Key Performance Indicator Program allows open space planners and managers to constructively compare their service delivery and economic performances in a proactive and confidential environment. The information generated from the KPI Program feeds into formal and informal continuous improvement cycles and provides a means for resource identification during business planning and budgetary processes. Additionally, the program has promoted a collegial culture amongst open space professionals and contributed to improving the management of public open space throughout Australia.

Authors Biography

David Vial is a co-director of Integrated Open Space Services – IOSS, a firm that specializes in the planning and management of open space. From the 1970's to mid 1980's David worked in the public and private sector of the parks and recreation industry in south east Australia. Between 1986 and 1989 David served as an academic at Charles Sturt University, presenting internal and external curriculum in recreation, landscape design, soil science and amenity horticulture. From 1989 to 1997, when IOSS was formed, David worked with the Brisbane City Council in a number of positions associated with open space planning and management.

Michelle Prior is a co-director of IOSS. She holds a Bachelor of Urban and Regional Planning, and is currently completing a Masters of Natural Resources and a Bachelor of Laws. Prior to joining IOSS, Michelle was involved in the management and program delivery in the aquatic recreation industry.

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