



Botanic Gardens Trust
SYDNEY

Perceptions of Service Quality at the Royal Botanic Gardens, Sydney.

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Centre for
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1.1 Introduction This study is the result of discussions between researchers at the University of South Australia and stakeholders of a representative range of Australian and New Zealand Botanic Gardens. The implementation of the study is an important step in the internal and external benchmarking of visitor service quality at major gardens.

This specific study was undertaken to provide the Botanic Gardens Trust (the Trust), especially the staff at the Royal Botanic Gardens estate in Sydney with feedback to use as part of base-line management information. From this information, the staff can consider ways to improve and develop strategies to correct any apparent deficiencies in visitor services as suggested by indicators of service quality and data analysis reported in this, and subsequent reviews.

1.2 Methodology Data for this study was collected using the **VISITOR SERVICE QUALITY SURVEY** questionnaire under the guidance of the protocols developed by researchers from the University of South Australia (UniSA). The questionnaire used at the Royal Botanic Gardens was adapted from previous studies conducted in 2003, 2005 (Adelaide) and 2006 (Dunedin). Copies of the questionnaire developed for the Trust and the UniSA protocol or administration guide are provided as Appendices 1, and 2.

Six Trust Community Education staff and contractors were trained to administer the survey and provided valuable input into suitable location points and safety procedures. They also provided feedback for future improvements for repeat surveys.

Adult visitors to the gardens were intercepted on a 'next-available' basis and asked to complete a self-administered questionnaire in March 2007. **The collection took place between Thursday 8 March and Wednesday 14 March.**

Adult visitors were intercepted at various location points identified on the map in Appendix 3.

123 responses collected from shop/restaurant/path,
110 from Henry Lawson Gate,
93 from Woolloomooloo Gate,
91 from Opera House Gate,
54 from Palace Garden Gate,
18 from Morshead Fountain Gate, and
10 from Conservation Gate.

A total of 499 were collected with 10 deemed invalid due to being incomplete. These were excluded from the sample and **489 self-administered questionnaires were suitable for analysis**. The times chosen to administer the questionnaire were selected to produce a representative sample of visitors to the Royal Botanic Gardens over a one week period incorporating both weekdays and weekends. **Survey times included all hours of the day that the Gardens were open**. Completed questionnaires from 489 adult respondents were used in the analysis. Adults with school groups or attending special events, as well as staff on duty during the data collection times were excluded from the study.

1.3 Analysis

The questionnaire was developed to provide Trust staff with diagnostic value in the area of visitor profiles and service quality management.

Trust staff have an in-depth understanding of the wider environmental context in which the Royal Botanic Gardens operates, and are best placed to interpret the results provided in this report. Accordingly, the special circumstances of the Gardens must be considered in interpreting the results provided in this study. This study should not be treated in isolation but be used, as part of (albeit an important and the most recently collated part of) the total information on which management decisions are based.

1.4 Confidentiality

The information contained in the report is the property of the Trust and CT & LM and may not be reproduced or transmitted in any form without their joint consent. CT & LM may choose to use information gathered for further research and education and is committed to do so whilst protecting the confidentiality of the Botanic Gardens Trust. Outcomes of research efforts are usually reported in professional association journals or forums such as industry conferences. An abstract of a relevant, related publication is included as Appendix 4 (Crilley & Price, 2006).

1.5 Report Snapshot

A user friendly Report Snapshot is included as Appendix 5. This document is a brief summary of the findings and will allow staff, visitors and stakeholders a quick overview of results contained in this report.

2 OVERVIEW OF RESULTS FOR ADULT VISITORS

2.1 Summary Profile of Respondents and Patterns of Use

Activity undertaken First activity choice indicates the majority of respondents recorded their primary activities as 'Walk', 'View plants', or 'Relax/read'. Thirty nine respondents did not list a second activity and 83 did not list a third.

Figure 1 Activities Undertaken

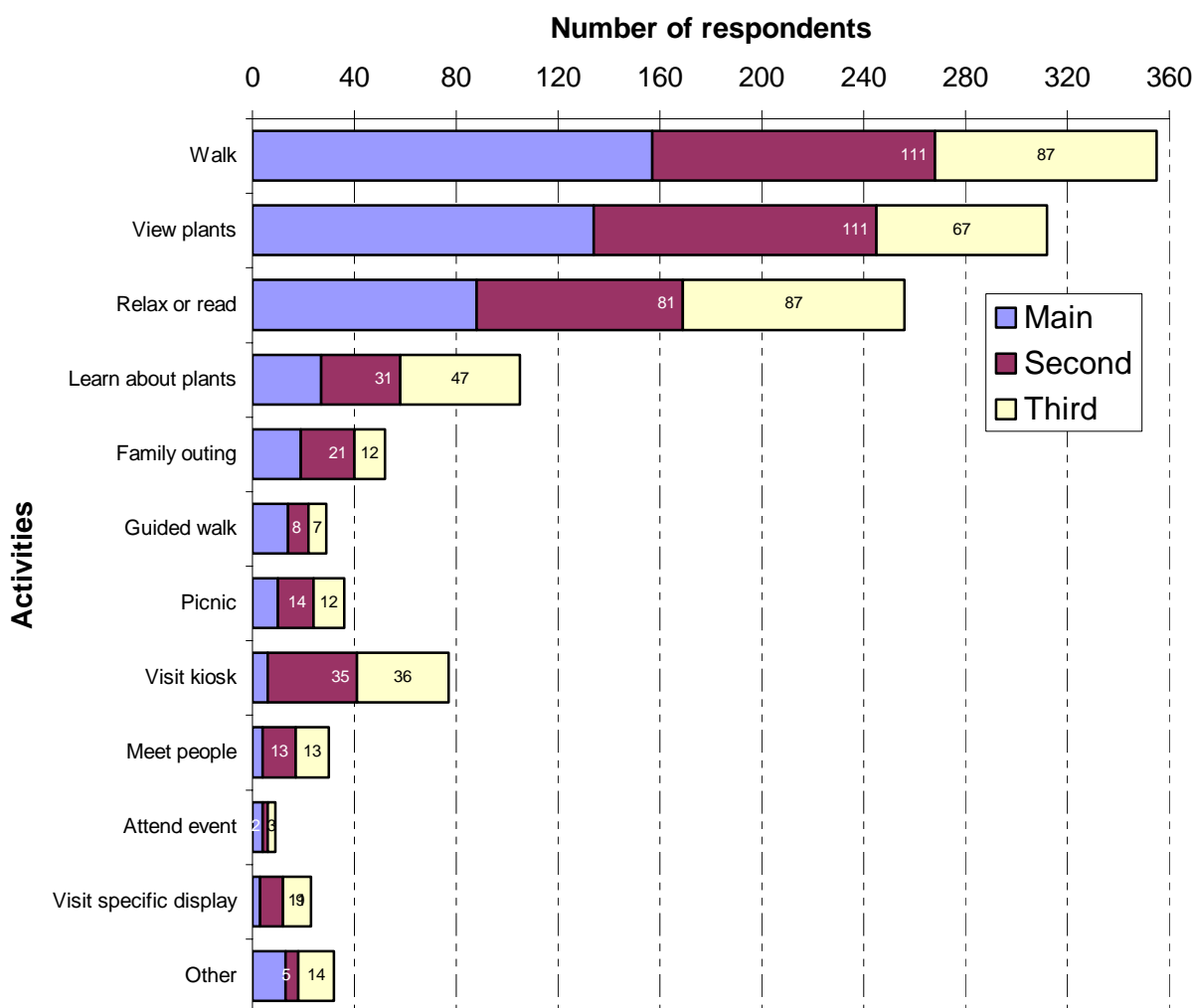


Table 1 Activities undertaken during visit

	First activity %	Second activity %	Third activity %
Walk	33	23	18
View plants	28	23	14
Relax/read	18	17	18
Learn about plants	6	7	10
Family outing	4	4	3
Guided walk	3	2	2
Picnic	2	3	3
Visit a specific display	1	2	2
Meet people	0	3	3
Visit kiosk	1	7	8
Attend a special event	1	0	1
Other	3	1	3

Person/s attended with

The majority of respondents visited the Royal Botanic Gardens with a partner or spouse (n=198) or alone (n=132). Comparatively few respondents attended with family (n=65) or friends (n=85). Of the 153 respondents whom attended with family, friends or a combination of the two, just 15 attended with children under the age of five, and seven attended with children in the five to fifteen age group.

Figure 2 Group visitors attended with

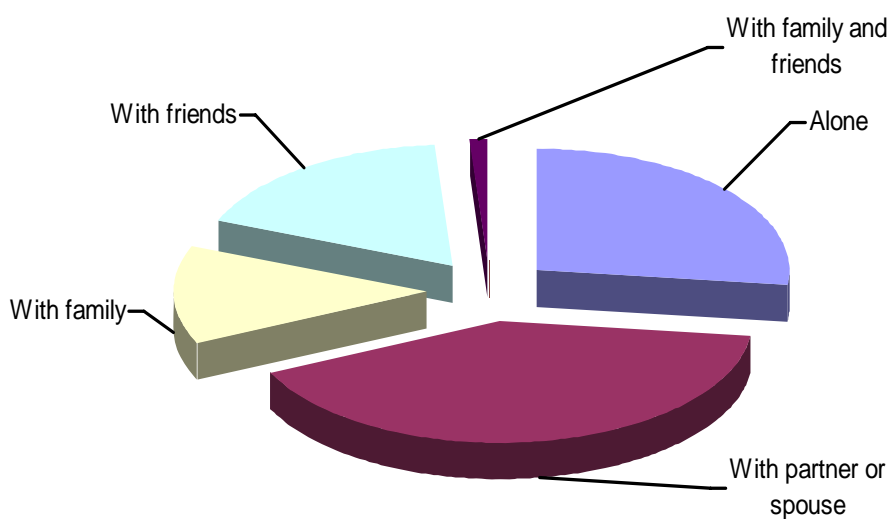


Table 2 Visitors attended the Gardens with

	%
With partner or spouse	41
Alone	27
With friends	18
With family	13
With family and friends	1
Other	-

Table 3 Did your group include children

	%
Children under 5 years	3
Children 5 to 15 years	1
No children	96

Mode of transport Respondents travelled to the gardens mainly by walking (n=338) and public transport (n=95).

Table 4 How did you get to the Gardens today

	%
Walk	70
Public transport	20
Private car	9
Tour bus	1

Length of visit The majority of respondents had a relatively short visit with 202 staying less than one hour and another 201 staying for up to two hours. A further 71 stayed at the Gardens for between three and five hours with only four respondents staying for longer.

Table 5 On average, time spent at the Gardens per visit is

	%
1 hour	42
2 hours	42
3 hours	9
4 hours	4
5 hours or more	2

Time of visit Respondents were quite evenly divided between morning and afternoon arrival at the Gardens, with 33 commencing their visit before 9 am, 211 arriving between 9 am and noon, 197 arriving between noon and 3 pm, and 46 arriving after 3 pm.

Table 6 Visitors time of arrival today

	%
Before 9am	7
Between 9am and noon	43
Between noon and 3pm	41
After 3pm	9

Gender Two hundred and seven respondents were male and 230 were female.

Table 7 Gender of visitors

	%
Male	47
Female	53

Education

The majority of respondents had completed education to tertiary level (n=307), with 88 attaining a vocational or technical qualification and 75 noting secondary as their highest level of education completed.

Table 8 Level of education

	%
Tertiary	64
Vocational or technical	18
Secondary	16
Primary some secondary	2

Age category

Respondents were quite evenly represented across the age categories from 20 to 64 (n=434) with 11 in the 15 to 19 category and 41 aged 65 or more.

Table 9 Age group profile of visitors surveyed

	%
15-19	2
20-29	22
30-39	16
40-49	16
50-59	20
60-64	15
65 years and over	8

Residential address

There was a relatively even split between Australian (n=234) and overseas respondents (n=250). One hundred and eighteen respondents noted the UK as their country of residence, 29 were from the USA, 15 from Canada, 64 from Western Europe, and 22 respondents were from various other overseas locations. Approximately 155 were New South Wales residents, 17 of the respondents were from Victoria, with the remaining 11 a combination of South Australian, Northern Territory, Queensland and Western Australian residents.

Table 10 Location of residence

Postcode*	%
NSW	42
2011	(4.6%)
2000	(2.3%)
VIC	3
QLD, WA, SA, NT	2
UK	24
Western Europe	13
USA	6
Canada	3
Other overseas	5

**State and overseas summary included in this table. Postcode categories for NSW include those with a frequency of 2% or greater. All other postcodes in this study recorded a frequency of 1.3% or less.*

Number of visits

For 202 respondents this was their first visit to the Gardens (not surprising given the representation of overseas residents in the sample). One hundred and thirty three had visited between two and five times, 43 from six to twelve times and 102 were regular visitors indicating more than twelve previous visits.

Table 11 Number of visits to the Gardens in the past year

	%
1	42
2-5	28
6-12	9
More than 12	21

Prompt for visit

Despite the high percentage of overseas tourists, it appears that most respondents based their decision to visit the gardens on the fact that either they had always known of the Gardens' existence or a word-of-mouth recommendation.

Table 12 Main prompt for today's visit

Prompt	%
Always known	34
Friend/colleague/relative	21
Tourist information centre	7
Another botanic garden	5
Other	33

Role of the Gardens

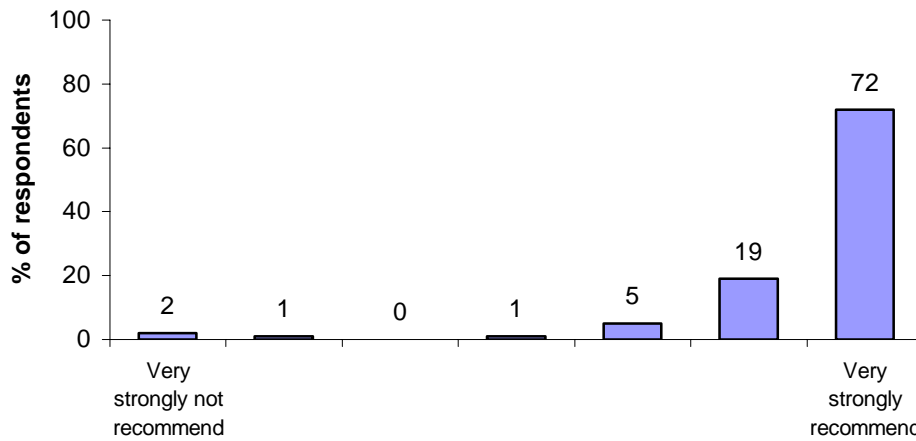
A relatively high proportion of visitors (n=347) were aware that education and interpretation concerning plant conservation are roles of the Gardens.

Table 13 Did you know that education and interpretation are roles?

Roles of the Gardens	%
Yes	72
No	18
Unsure	10

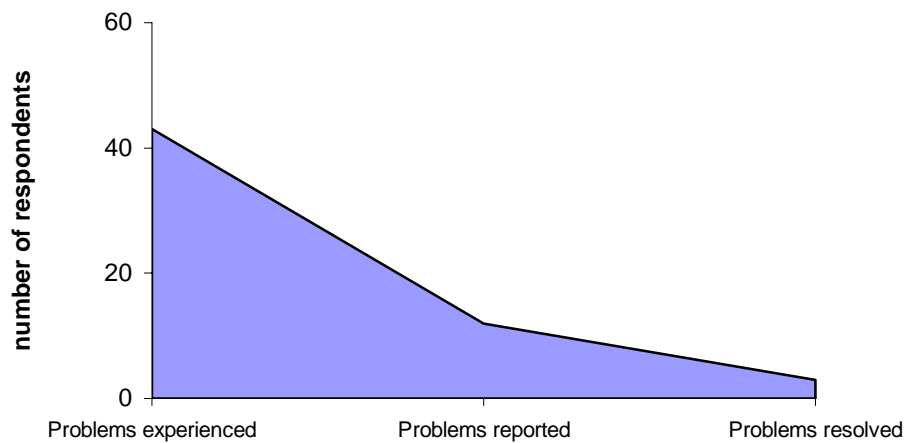
2.2 Visitor Behaviour, After the Visit

Figure 3 Level of Recommendation



Visitor advocacy results show that 96 per cent of visitors (n=462) are willing to 'recommend' the Gardens to other potential visitor (see Figure 3). Of these, 72 per cent (n=346) indicated they would be willing to 'very strongly recommend' the Gardens.

Figure 4 Problems experienced, reported and resolved



The percentage of visitors who experienced problems during their visit was nine per cent or 43 visitors. Of those visitors experiencing a problem, 28 per cent or 12 visitors, reported the problem to staff and 25 per cent of reported problems (or 3) were resolved (see Figure 4).

2.3 Visitor Service Quality (VSQ)

Service quality is described as the extent to which visitor expectations or attributes of importance are matched by the perceived level of service provision. Previous experience with respondents completing this section of the questionnaire has shown that some are overwhelmed when they first see it although if it is explained they are able to answer it. To this end, survey administrators were trained to explain to visitors that one column referred to 'what did you expect' and the other to 'what did you receive'.

Table 13 shows the average/mean ratings for importance and performance of service quality attributes as calculated from the 489 individual respondents. The 23 service quality attributes consist of four underlying dimensions: 1 Staff & safety, 2 Sensory aesthetics, 3 Services and 4 Engagement. The 23 attributes are grouped into these dimensions in Table 14.

Table 14: Summary for Visitor Service Quality, by Importance ratings

*The scale used for this part of the questionnaire ranges from 1 ('disagree') to 6 ('very strongly agree')

VSQ ATTRIBUTES (attributes paraphrased)	Importance mean rating (1-6)* 2007	Performance mean rating (1-6)* 2007	VSQ Gap between P & I for RBG, Sydney	Median of Mean VSQ Gaps for 6 Gardens**
STAFF & SAFETY				
I feel safe when visiting the Gardens	5.4	5.5	0.1	0.1
Staff are friendly and responsive	4.9	4.8	-0.1	-0.1
Staff & volunteers experienced & knowledgeable	4.8	4.5	-0.3	-0.2
Staff & volunteers presentable & identifiable	4.7	4.6	-0.1	-0.1
SENSORY AESTHETICS				
Peaceful and tranquil	5.3	5.1	-0.2	-0.2
Pleasing physical layout	5.2	5.0	-0.2	-0.2
Plants appear healthy	5.1	5.0	-0.1	-0.2
Easily accessible	5.1	4.9	-0.2	-0.2
Beds appear well maintained	5.0	5.0	0.0	-0.1
Wide diversity of plants	5.0	5.0	0.0	-0.1
Lawns are well presented	4.9	5.1	0.2	0.2
Special collections of plants	4.8	4.8	0.0	0.0
SERVICES				
Directional signage	4.9	4.8	-0.1	-0.2
Built amenities clean & well presented	4.9	4.6	-0.3	-0.3
Plants adequately labelled	4.8	4.6	-0.2	-0.2
Signs informative & interesting	4.8	4.5	-0.3	-0.4
Accurate current information	4.7	4.5	-0.2	-0.3
Food and drink provide value for money	4.2	3.8	-0.4	-0.5
Suitable food and drink facilities	4.1	4.0	-0.1	-0.2
ENGAGEMENT				
Presents well as a key tourist attraction	5.0	5.2	0.2	0.1
Broad range of experiences	4.7	4.8	0.1	0.0
Opportunities to learn about plants	4.6	4.4	-0.2	-0.2
Interactive opportunities & demonstrations	4.1	3.9	-0.2	-0.1

2.3 Visitor Service Quality (VSQ) *continued...*

For visitor importance, a high mean (strongly agree) may represent the impact of promotional messages or the visitors' previous experiences. Alternately, a low mean on importance (disagree/not very important) may indicate the visitor has relatively limited interest or need for this service attribute.

A high mean for performance may indicate a Garden's relative strength as identified by visitors. A low mean for performance may identify a relative weakness of the Gardens on this service attribute. Alternatively, a low mean may be due to a unique circumstance of the Gardens, such as site works, that is understood and accepted by management.

In interpreting Table 14 the importance rating can be taken as indicative of the visitors' priority for the attributes. The rating range of 4.1 to 5.4 suggests visitors have clear priorities in service quality. Since larger VSQ gaps indicate a mismatch between the visitors' importance rating and their perception of performance of the Garden delivering on that attribute, these larger gaps need to be noted. In determining the relative strength of an attribute, it is also helpful to consider the middle figure (the median of mean column) from the six Gardens involved in the survey.

The far right column (or fourth set of figures) in Table 14 is the median (middle score) of VSQ gaps for the six Gardens in this study).

The VSQ gap for RBG, Sydney is very small for all but three attributes. Table 14 results identify possible strengths of service at the Gardens. These relative strengths appear to include:

- ✓ *I feel safe when visiting the Gardens*
- ✓ *The Gardens present well as a key tourist attraction*
- ✓ *The Gardens offer a broad range of experiences*

A number of attributes were rated relatively low on current performance and resulted in larger VSQ gaps. These attributes could be considered priorities for management intervention if visitor service quality is an important aspect of the Gardens. An attribute in this category includes:

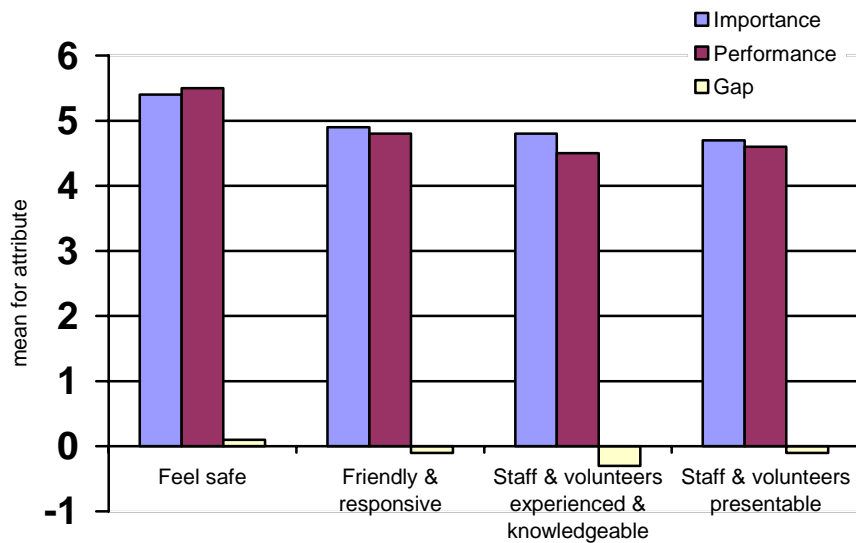
- *The Gardens have built amenities that are clean and well presented*

In the 'discussion', cross-tabulation analysis has been conducted on the attribute recording higher importance means, and larger VSQ gaps. If particular relationships are evident from these cross-tabulations, or previous research, then additional analysis was conducted and results are reported.

A VSQ gap of -0.2 or larger has been analysed although the Trust should be aware that the largest VSQ gap was only -0.4 and while there is always room for improvement this is not a particularly negative result.

Furthermore, visitors' comments in Table 2.4.1, p14 and Appendix 8 support this interpretation.

Figure 5 Visitor Service Qualities for the Dimensions Relating to 'Staff and Safety'



The following attribute/s from the 'Staff and Safety' dimension were identified as service quality strengths

I feel safe when visiting the Gardens

Safety was considered a relatively important feature of visitors 'perceptions of service quality' at the Royal Botanic Gardens, Sydney. The importance mean of 5.4 was the highest for the survey, as was the performance mean of 5.5. The VSQ gap of 0.1 indicates that performance exceeded expectation and given visitors place importance on feeling safe, this is a strength worthy of promotion.

Cross tabulations on this attribute indicated that male visitors, particularly those attending later in the day, and 15-19 year olds felt the safest. Females attending before 9am and 30-39 year olds felt relatively less safe. Other cross-tabulations conducted (who attended with, attended with children) failed to indicate particularly large or small gaps. Staff may wish to discuss this issue in more detail with early morning female visitors in order to identify possible reasons or causes for this relative concern with safety and what might be done to make them feel safer.

Table 15 VSQ Cross-tabulation for Feel safe

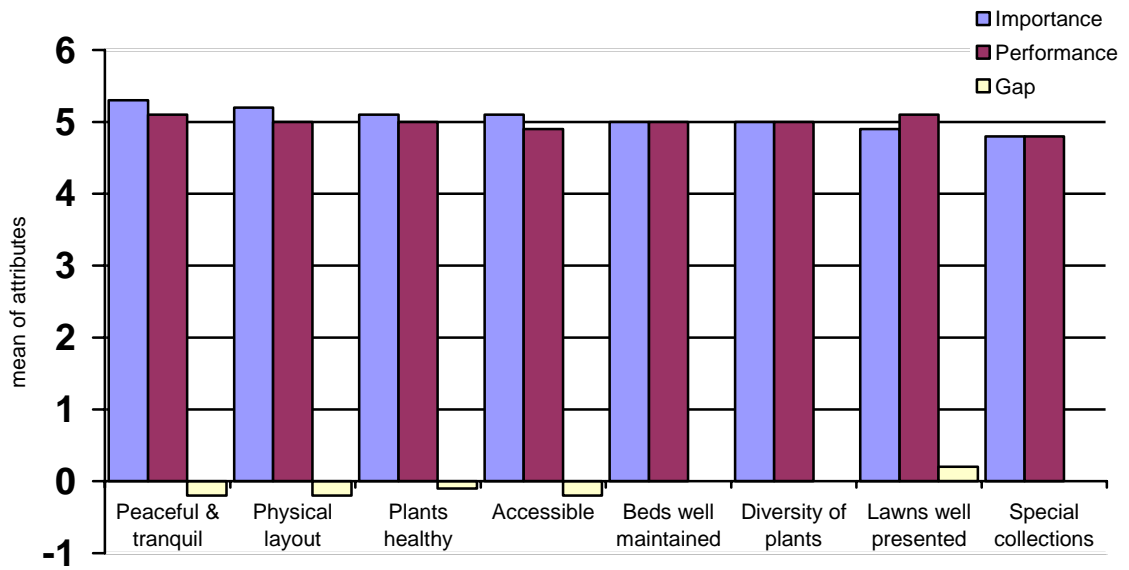
VSQ Attribute: <i>Feeling of Safety</i>	Cross tabulation VSQ gap	No of respondents reporting (n=489)
1. Females arriving before 9am	-0.28	18

The Gardens have staff and volunteers who are experienced and knowledgeable

The VSQ gap of -0.3 might be attributed to many visitors not encountering staff or volunteers. Does the Trust want to encourage interaction of this type? If it does, effective strategies such as targeted promotion need to be considered.

Figure 6

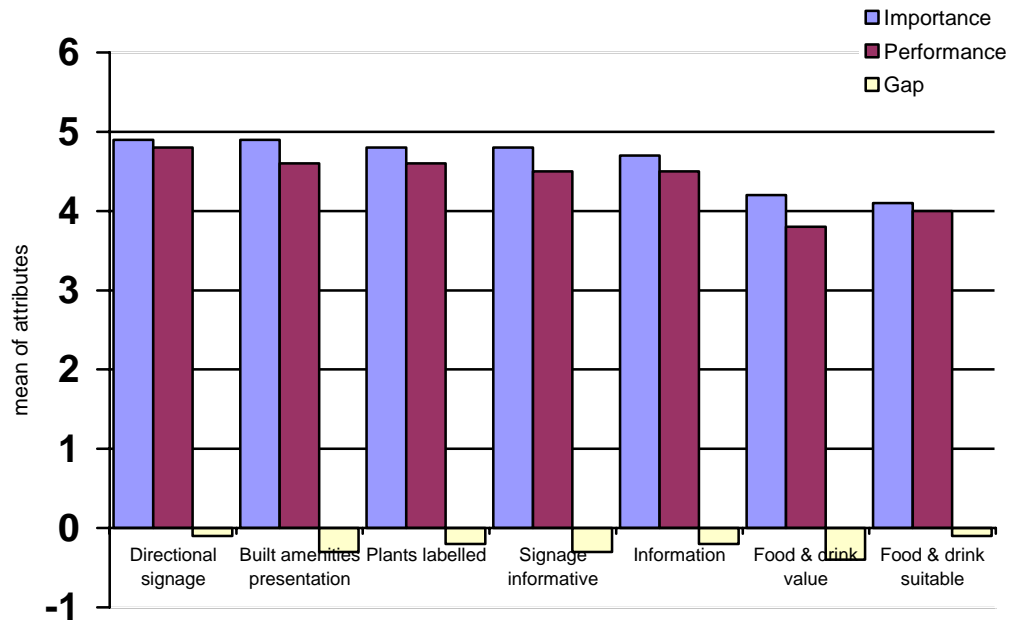
Visitor Service Qualities for the Dimension 'Sensory Aesthetics'



No attributes from the 'Sensory Aesthetics' dimension were identified as particular service quality strengths or attributes for improvement.

*All rated relatively high on importance and visitors perceive these closely matching their perceptions of performance.
All VSQ gaps compared favourably with the median for the six Gardens.*

Figure 7 Visitor Service Qualities for the Dimension 'Services'



The following attribute from the 'Services' dimension was identified as an attribute for possible improvement.

The Gardens have built amenities that are clean and well presented

This attribute recorded a moderately high importance mean of 4.9 and a lower performance mean of 4.6. The VSQ gap of -0.3 is the second largest for the survey.

Although 'food and drink provide value for money' has a -0.4 VSQ gap it was rated second lowest of all attributes for importance.

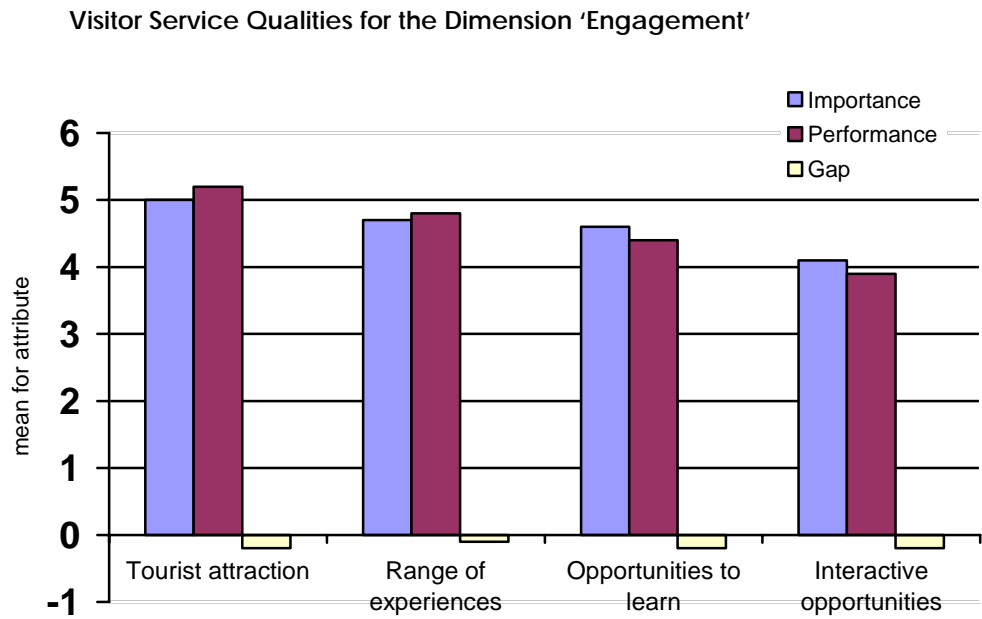
It is worth noting that amenity cleanliness and presentation did not feature highly as a negative aspect in visitors written comments (Section 2.4 & Appendix 8) with only four (n=4) related comments.

Other than visitors attending 6-12 times (as below), comparison of means for a range of visitor sub-categories failed to identify any with particularly large VSQ gaps for this attribute. Therefore this seems to suggest that cross tabulations with key demographic variables indicated no major differences in perceptions of the cleanliness and presentation of amenities based on age, gender, activity type, mode of transport, and time used at the Royal Botanic Gardens. Accordingly, this perception appears to be a general one, rather than being associated with specific visitors.

Table 16 VSQ Cross-tabulation for Built Amenities

VSQ Attribute: <i>Built amenities</i>	Cross tabulation VSQ gap	No of respondents reporting (n=489)
Mean VSQ gap for all respondents -0.3		
1. Visitors attending 6-12 times	-0.60	43

Figure 8



The following attributes from the 'Engagement' dimension were identified as particular service quality strengths

The Gardens present well as a key tourist attraction

This attribute attained an importance mean of 5.0 and a performance mean of 5.2 resulting in a VSQ gap of +0.2. This is one of the higher importance means for the study, and one of the higher performance results. This suggests that visitors to the RBGS perceive this attribute of service quality as a relatively high priority and perceive the level of performance on this attribute as possibly, more than expected.

Visitors' written comments indicate that some perceive the purpose or role of the Gardens is as a tourist attraction (n=23).

The Gardens offer a broad range of experiences

This attribute recorded a moderate importance mean of 4.7 and a higher result for performance of 4.8 (a VSQ gap of 0.1) indicating that visitors perceive the range of experiences offered at the Gardens as more than adequate.

2.4 Summary of Written Responses from Visitors

Visitors' written responses to three open questions in Section C of the questionnaire are summarized into the following themes. The themes emerged from analysis of the comments and were not pre-determined.

A number of these emerging themes can assist in understanding the VSQ ratings and VSQ gaps in Table 13. One example of the value in cross-referencing is to action the clear awareness of education as a major role of the Gardens.

Tables 2 and 3 identified most visitors did not have school-age children with them on their visit and this suggests the need for interpretation strategies clearly targeting adults and couples as a distinct segment of visitors.

2.4.1 Main Purpose/Role of the Gardens

Table 17 Visitors' perceptions of main purpose or role of the Gardens.

Theme identified	Number of comments	Sample comment verbatim
Place to relax/peaceful/restful	155	<i>'peaceful space for residents, tourists and animal life'</i>
Education/Research	143	<i>'national and international environmental reference source'</i>
Near city retreat/haven	103	<i>'natural alternative to built city environment'</i>
Display/View plants	80	<i>'display various plants to the public'</i>
Conservation	70	<i>'maintaining a preserved natural environment'</i>
Beautiful area for people to enjoy	54	<i>'enjoy natural beauty'</i>
Recreation	44	<i>'cool place to hang out'</i>
Tourist attraction	27	Comments for this and the below themes were generally a repeat of the theme identifier.
Open space	23	
Access to/appreciation of nature	18	
Personal healing/restore spirit	9	
Lungs of the city	9	
Place to go with family	5	
Public gardens/Free access for all	3	
Other	10	

A complete listing of visitors' written responses to this question are included as Appendix 8.

2.4.2 Evidence of Main Purpose/Role of the Gardens

Table 18 Evidence of education and interpretation as main purpose or role of the Gardens.

Theme identified	Number of comments	Sample comment verbatim
Signage/Information provided	183	<i>'signs about water conservation'</i>
Special displays/Sections	49	<i>'Australian history section'</i>
Guided tours	29	<i>'guided school children'</i>
None	22	<i>'no'</i>
Healthy plants	17	<i>'compacted soil under trees'</i>
Rare/Threatened species section	16	<i>'Wolemi pine'</i>
Fenced off areas	12	<i>'some out of bounds areas (regeneration)'</i>
Other	36	<i>'fountains use recycled water'</i>

A complete listing of visitors' written responses to this question are included as Appendix 8.

2.4.3 Problems identified and Listed by Respondents

Table 19 Problems identified and listed by respondents.

Theme identified	Number of comments	Sample comment verbatim
Bats	12	<i>'concerned about damage bats are doing to plants'</i>
Signage	12	<i>'exits not clearly signed' 'need labels even on common plants'</i>
Facilities	5	<i>'access for prams not great'</i>
Food and drink	5	<i>'food range elitist not basic'</i>
Behaviour of other visitors	4	<i>'joggers rude and pushing past'</i>
Opening/closing times	3	<i>'shop closes too early in the afternoon'</i>
Cleanliness	3	<i>'restrooms unclean'</i>
Other	6	<i>'huge spiders/ibis intrusive'</i>

A complete listing of visitors' written responses to this question are included as Appendix 8.

3 SUMMARY OF PERCEPTIONS AND ISSUES OF VISITOR SERVICE QUALITY AT ROYAL BOTANIC GARDENS SYDNEY

Visitors to the Royal Botanic Gardens, Sydney see its role as a place for relaxation, education, and a recreation destination. Visitors attend for reasons such as viewing plants, relaxing and recreating with family and friends, and to learn about plants.

Overall, visitors' rate dimensions of 'staff and safety', and 'engagement' positively. Of interest was the fact that there were few specific groups of visitors that held particularly strong positive or negative feelings about the attributes relative to other visitors. A small number of tests will be conducted on the consolidated data set and reported in a consolidated report (Appendix 7 indicates content). Any significantly different ratings by different visitor characteristics will be reported.

As a percentage of total visitors relatively few attended with family (13%) or friends (18%).

By a very large margin, the majority of visitors visit the Gardens for less than three hours. The time of arrival is evenly split between 9am and noon, and noon and 3pm.

All age groups from 20-29 through to 60-64 are relatively evenly represented with very few visitors aged 15 to 19, or over 65 years.

The Gardens attract visitors relatively evenly from NSW and the western world, and less predominantly from other Australian states or Asia.

Eight of the 23 service quality attributes were rated as being delivered at a level matching or exceeding visitors' ratings of importance on that attribute. Negative gaps were quite small and do not suggest or demand immediate intervention efforts.

In a comparative sense, visitors to the Royal Botanic Gardens, Sydney rate service quality relatively similar to the mean of ratings by visitors to all six gardens in this study. Variations of perceptions will be discussed more in the consolidated report.

Appendix 1

Visitor Service Quality Survey Questionnaire

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Appendix 2

Survey Protocol and Questionnaire Administration Guide

Appendix 3

Map Indicating Data Collection Sites

Royal Botanic Gardens and Domain



SYDNEY HARBOUR



Appendix 4

A Recent Publication Abstract and References

Appendix 5
Report Snapshot

Appendix 6
VSQ Explained

Visitor Service Quality (VSQ)

Service quality is described as the extent to which visitor expectations or attributes of importance are matched by perceived service provision. Importance, rather than expectation was used with the rationale that service quality at the Gardens reflects the extent that the 'importance' level assigned to an attribute is met by the Garden's perceived 'performance' on that same attribute. A VSQ figure is generated by subtracting importance (I) from performance (P), i.e.,

$$P \text{ minus } I = \text{VSQ}$$

The main value of visitor-determined service quality results to managers is to identify significant differences between attributes of importance to visitors and their perceptions of the Garden's performance on delivering or providing these same attributes.

The attributes of visitor service quality for Adelaide Botanic Gardens were developed from focus groups with visitors. The attributes of service quality identified in the focus groups were pilot tested at the gardens through a survey of visitors in March 2003, and senior staff of the Botanic Gardens of Adelaide reviewed these results before finalising the questionnaire used for their study. These attributes were further reviewed for this study, and considered acceptable after successful modifications and testing at the Dunedin Botanical Gardens in 2006.

Visitors rated all 23 attributes important and exploratory factor analysis of performance ratings identified four underlying factors, or dimensions of visitor service quality in the 2003 study at ABG. These dimensions and their service quality attributes are presented in Table 14 in the report.

Appendix 7

Additional Reporting & Analysis:

Results from the six capital city gardens will be analysed to assess generic or across-gardens issues.

- Service quality as a predictor of future behaviour
- Attainment of benefits as a predictor of future behaviour
- Significant differences of service quality, by characteristics
- Visitor profile comparisons across six capital city botanic gardens

VISITOR SERVICE QUALITY ANALYSIS (to be conducted)

This section reports on ANOVA conducted for selected variables for VSQ gaps. *One-Way ANOVA* is used to identify any statistical significant differences between the means of more than two different groups of visitors, or categories of visitors. The confidence interval chosen was 95 per cent. Missing responses were excluded analysis-by-analysis (pair wise). Results of *F* tests and post-hoc tests are provided if they were significant at the $p \leq 0.05$.

All post hoc test results are from the Tukey HSD post-hoc test unless the assumption of homogeneity of variance of the data is violated, as determined by the Levene's test (Hair et al., 1998 p. 68). If the Levene's test suggested the assumption of homogeneity of variance of the data was violated, results of any significant difference between the variances for groups are reported using the Dunnett's T_3 post hoc test.

It should be noted that a number of other attributes in analysed variables were found to be significantly different in VSQ gap. However, these have not been reported on as numbers for attributes in each of these variables was less than 10. This affects the reliability of the statistical analysis and therefore they have been omitted from discussion and Table ?.

The summary result of these tests is reported in Table ?.

RELIABILITY ANALYSIS

Cronbach alpha (reliability) analysis was used to test for the scale reliability of the items used in the questionnaire as an attribute of service quality. Results of 0.70 from a maximum of 1.0 are regarded as acceptable and values below this may be accepted in social research if the research is exploratory in nature.

The overall Cronbach alpha for the 23 VSQ 'importance' items, with 390 cases, was .925 and therefore, the items were considered reliable for the study and further analysis.

The overall Cronbach alpha for the 23 VSQ 'performance' items, with 238 cases, was .944 and therefore, the items were considered reliable for the study and further analysis. The mean for each VSQ 'importance' and 'performance' attribute is provided in Table 14 in the report.

RESPONSE RATES

MISSING DATA

Analysis of the responses to each section of the questionnaire; A Your thoughts on service quality at the Botanic Gardens; B You and your visit; C Overall, indicate the following 'missing' values for each section:

In section A of the 489 respondents, on average, 13 did not respond to each individual importance attribute in this section (the 'missing' range was from 1 to 45). Of the 489 respondents, on average 6 did not respond to each individual performance attribute of this section (the 'missing' range was from one to 13)

In section B of the 489 respondents, on average, 11 did not respond to each individual question in the section (the 'missing' range was from 2 to 52).

In section C of the 489 respondents, on average, 17 did not respond to each individual question in the section (the 'missing' range was from 6 to 40).

Appendix 8

Respondents Written Comments Listed Verbatim

MAIN PURPOSE/ROLE OF GARDENS

	Visitor comments (multiples recorded)
Place to relax/peaceful/restful place	Relaxation/relax/relating place to be 126 Peace & quiet/tranquillity 17 Tranquil, peaceful space for residents, tourists & animal life 4 Peaceful 4 Pleasure 4
Education/Research	Information 13 Research 4 Sense of history Education 89 Historical 3 Science 2 Information about plants 6 Learn about plants/trees 12 Education on wildlife 2 National & International environmental reference source Expand knowledge 4 Horticulture 2 Discover Conservatory 2 Biology
Display/view plants	Showcase Australian plants 11 Provide plants Examples Opportunity to experience indigenous plants 2 Display plants 21 Display landscape See plants See rare plants 2 Lots of interesting plants 2 Display various plants to public 5 Showcase plants 14 Display unique/ variety plants & trees 17 Herbarium Nursery facility
Near city retreat/haven	Sanctuary (oasis) in the city 60 Natural alternative to built city environment 7 Nice oasis Keep Sydney beautiful Balance some nature in city 10 Compliment the city 9 Parkland 3 Escape from city 7 Wonderful views Respite 4 Modernization
Protect endangered plants/biodiversity	Diversity View plant diversity To maintain plant & garden diversity 2 Host bat colony- endangered & a wonderful feature of Sydney
Beautiful area for people to enjoy	Beautiful 4 Provide diverse area of nature for general public 4 Enjoy natural beauty 11 Public enjoyment 24 Enjoyment 10
Recreation	Social 2 Leisure Walking 9 Running 2 Recreation 22 Cool place to hang out

Place to go with family

Access to/appreciation of nature

Conservation

Public gardens/free access for all

Personal healing/restore spirit

Tourist attraction

Place of natural beauty

Meeting place

Awareness of environment

Lungs of the city

Open space

Other

Exercise 6

Family outing 2

Beautiful picnic place 3

House collection of international flora for all to see

Provide a pleasant, healthy environment

Combine special plants & animals

Fascination

Appreciate nature 9

Environment

Scenic

Conservation 27

Preserve our plants for the future 4

Plant preservation 21

Maintaining a preserved natural environment 8

Take care of the environment

Propagation 4

Facilities for the people 2

A place for residents & visitors to spend time not money

Walking meditation

Place of solace for visitors to admire the harbour 2

This place is food for the soul

Contemplation 2

Holistic symbol

Uplifts the spirit & restores the soul

Reduce the stress of our silly society

Tourist attraction 23

Sightseeing 2

City attraction 2

Much needed green corridor

Meeting place

Public awareness 2

Part of culture

Lungs of the city 9

Green space 13

Open space 8

Public space

Outdoor space

Most important for the city

Display animals

Presentation

Amenity 2

Birds seeing/watching 3

Showcase harbour

Valuable social/educational amenity

EVIDENCE OF EDUCATION/INTERPRETATION ROLE

	Visitor comment
Signage/information provided	Signage/signs/labels 85 Photo displays Brochures 3 Plants well labelled 42 Labels on trees 6 Signs on activities Flying fox notices Display/information boards 16 Books in the store Some signs 5 Flying fox display 3 Greenhouses- times on door History Information booths Calender of activities Information available at & around shop area Interpretive signage 2 Signs about water conservation Signs- keeping fungi out of Aust. Information provision 2 Educational signs Info on indigenous plants Signs in herb garden Signs in rainforest walk
Healthy plants	Range of plants 2 Figs Well cared for gardens 3 Compacted soil under trees Healthy plants 6 Outlay of gardens 2 Green grass even in summer Composting facility
Guided tours	Guided school children 17 Guided Tours 12
Rare/threatened species section	Threatened Rare species section 3 Preservation of endangered species Rare plant section 2 Saving endangered plant Care of endangered species Plant protection
Protected/fenced off areas	Wollemi pine 7 Sectioned off lawns Grass beds near the conservatorium Protection of some plants & trees 2 Fencing 2 Fenced trees 3 Some out of bounds areas (regeneration) Saving endangered tree Isolation & protection of some large old trees
Friends of garden group	Friend of the garden 3 Talking to onsite staff 2 Volunteers
Research/education buildings	Plant groups flowers blooming Educational facilities Buildings Herbarium Plant diagnostic unit Exhibitions 4
Bookshop Special displays/sections	Variety of plants Displays Encouraged to walk on grass Glass houses Tropical house 2 Autumn calendar

None

Other

Green house 2
Views from the gardens 2
Australian history section
Succulent garden 3
Aboriginal display 2
Herb garden 2
Orchid exhibit 2
Movie in tropical house 2
Sex & death exhibition 3
Specialist facilities
Plant nursery
Palms, Bamboo Varieties
Grass feature
No 19
Did not see
Unsure 2
I don't know
Mulching
Quiet space
Clean environment
So many people here (busy) 10
Cleaning
Twin road renovation
Wollemi pines for sale
Tree lopping
Fountains use recycled water
Using bore water
Simple observation
Plant sale
Use of natural means for plant growth

VISITORS' PROBLEM AREAS

	Problem Areas
Opening/closing times	Government house closed at 4pm Pyramid & Arc closed at 4pm Shop closes too early in the afternoon
Plants	
Signage	Many interesting plants unlabelled, visitors new to Australia need labels even on common plants Exits not clearly signed Show the aboriginals respect by showing information about them for tourists Signs from each end not sufficient to direct Directional signage needs improvement Poor map signage- get sent wrong place 2 Less information for special plants Signage- a bit confusing/ not enough sometimes Finding the way out
Parking	
Staff	Poor service in coffee shop
Facilities	Access for prams not great 2 Difficult finding toilets 2 There are too few moveable benches
Food & drink	More drinking fountains needed Food outlet massively overpriced Food range 'elitist' not basic Roll very dry due to being kept warm too long Service in café, wedding party of 20 did not pre ordered- staff stretched
Cleanliness	Ponds unclean Restrooms unclean Rubbish bins are not evident
Maintenance	Large h2o leak from outlet near Mrs Macquarie's chair 2
Other	Someone who had mental issues Horrible bat smells2 Too many bats/ flying fox 3 Too many ibis The noise from the bats White cockatoos- course sounds Baby ducks trapped in ponds Fruit bats need to be culled or moved, they are an eyesore and health hazard. The gardens have a duty of care to visitors to remove any health risks i.e. fruit bat faeces and urine. Huge spiders The bats sound & smell is revolting Despite fading signage, cyclists have free range of gardens Joggers- rude & pushing past (aggressive) 3 Bats seem to be destroying the trees, very ugly to see & disturbing as a visitor Get rid of bats- unsightly- awful Concerned about damage bats are doing to plants Visited after reading 'friends' magazine, strongly oppose removal of flying fox Previously an ibis tried to eat my toe Ibis intrusive- very dirty