ATLAS OF LIVING AUSTRALIA

CITIZEN SCIENCE

FOCUS GROUP REPORT

A user's perspective

Author(s): Benay Wettle

Version: 0.3

Date: 13 May 2010

Revision history

Version	Date	Author(s)	Change description
0.1	28 April 2010	Benay Wettle	Initial draft
0.2	24 June 2010	Tom Brownlie, Katie Mills	Review
0.3	13 May 2010	Benay Wettle	Incorporated Katie's feedback

Related documents

Reference	Document name	Author(s)
DOCREF 1	ALA Business Plan 2008-2009	Donald Hobern
DOCREF 2	Putting the citizen in science – Citizen Science requirements report	Piers Higgs
DOCREF 3	Citizen Science feature requirements analysis	Peter Brenton
DOCREF4	Citizen Science Delivery Plan	Owen Butler

1. Executive Summary 4
1.1. Background 4
1.2. Our approach 4
1.3. Findings 4
1.4. Recommendations 6
2. Introduction 7
2.1. Purpose of this document 7
2.2. Intended audience 7
2.3. Background to ALA 8
2.4. The citizen science project 9
3. Approach 10
3.1. Planning phase 10
3.2. Focus groups 10
3.3. Analysis and report development 13
1 Findings 14
3.4. Perceptions of ALA and citizen science 14
3.5. Perceived benefits of citizen science 15
3.6. Desirable characteristics 17
3.7. Top features 20
3.8. Usage scenarios 25
3.9. Candidates 26
3.10. Issues and concerns 27
4. Recommendations 28
5. Appendix 30
5.1. Participant list 30
5.2. Benefits of Citizen Science 33
5.3. Characteristics 36
5.4. Features 40

1. Executive Summary

1.1. Background

The purpose of this report is to identify high-level user requirements, from a user's perspective, for the online citizen science tool kit, which forms part of the Atlas of Living Australia (ALA) program of work.

Approximately 80 users including citizen scientists and the operational or data mangers of citizen science projects were consulted to produce the findings written in this document.

This document is intended for:

- Members of the ALA project team (especially members involved in any ALA citizen science work and related ALA components of work such as mapping and names services)
- Workshop participants

1.2. Our approach

A total of eight user requirements workshops were conducted in Melbourne, Sydney, Canberra and Perth from 17 March – 7 April 2010. Each workshop contained approximately 6 participants identified as a citizen science operational/data manager or a citizen scientist.

A series of exercises was conducted with each group. The methodology used is detailed in section 3 of this document. Results were totalled and analysed to produce this report.

1.3. Findings

The key findings from the focus groups have been divided into six categories.

1. **Perceptions of ALA and Citizen Science**
   ALA's full capability will only be widely used if the target audience for each service knows it exists. "Citizen Science" is not a familiar term amongst its target audience.

2. **Perceived benefits of citizen science**
   This section describes the benefits of citizen science from the users perspective – valuable promotional material for the ALA Citizen Science tool kit.

3. **Desirable characteristics**
   The target audience for the ALA citizen science tool kit places an extremely high value on "ease of use", "portable/mobile", "fast", and "free" are also important.

4. **Top features**
   Users expect to see their top features in the ALA citizen science tool kit. These are: "data collection form", "identification tools", "maps and reports", "support", "instructions pages", "forums" and "species pages".

5. **Usage scenarios**
   The citizen science tool kit must be easily configurable to meet a wide range of usage scenarios (see section 3.8). The tool kit needs to manage portals, projects, surveys and user roles in such a way that enables each new portal to be configured to meet the needs of the organisation that is setting it up. Ease of use, flexibility and scalability in portal set up and configuration will be the key to the widespread deployment of ALA citizen science portals in Australia.

6. **Concerns**
   "Funding", "technological expertise needed", "data quality" and "remote access" are important considerations for people who run citizen science projects. Each of these areas will need to be considered during the design phase and clearly addressed in the support material for the final citizen science tool kit.

   There is also the possibility that if the citizen science tool kit is not easy to set up and maintain that it will not be used.

1.4. Recommendations

The following 8 recommendations over 5 categories are suggested as a result of this study.

Influencing the design	1. The findings within this document should be used immediately to inform the overall design process for the ALA citizen science toolkit. Specifically: • The tool kit must be easy to use, "portable/mobile", "fast" and "free". • The administration interface should primarily meet the needs of operational managers and the front-end interface should primarily meet the needs of the citizen scientists. Refer to sections 3.6 and 3.7. • Align the top features identified by users in section 3.7 with the initial citizen science requirements to ensure that user priorities are factored into the software development priorities.
ALA features	2. Specific "ALA only" citizen science features identified in section 3.7 should be considered for inclusion into the overall ALA release schedule.
User testing	3. Early prototypes should be tested with end users. This includes testing the administration interface as well as the front-end interface. The usage scenarios provided in section 3.8 should be used as initial test scenarios.
Communications	4. Use alternative language to "citizen science" in the user interface and communication materials. 5. Utilise the benefits outlined in section 3.5 in promotional material for the ALA Citizen Science tool kit. 6. If ALA is aiming for huge uptake of its citizen science software from environmental groups, the ALA and its citizen science capability will need to be promoted to the wider Australian community, possibly via television.
Rollout and ongoing support	7. Develop a plan for rolling out potentially hundreds of citizen science portals. The plan should include resourcing for help and support services, hardware, contingency planning when ALA runs out of funding, etc. 8. The support material for the final ALA Citizen Science tool kit should clearly address: the "funding" requirements needed to successfully roll out a citizen science portal, users concerns with "data quality" and "remote access" capabilities and limitations.

2. Introduction

2.1. Purpose of this document

The purpose of this report is to identify high-level user requirements, from a user's perspective, for the online citizen science tool kit, which forms part of the Atlas of Living Australia (ALA) program of work.

The document is structured into 5 main chapters:

1. Introduction
2. Approach
3. Findings
4. Recommendations
5. Appendix – provides raw data from the workshops

This document will address the following topics:

- User perceptions
- Perceived benefits
- Desirable characteristics
- Top features
- Likely usage scenarios
- Issues and concerns

2.2. Intended audience

The following groups should review this document:

- Members of the ALA project team (especially members involved in any ALA citizen science work)
- An executive summary of this document should be emailed to workshop participants and should also be provided on the ALA website for public consumption

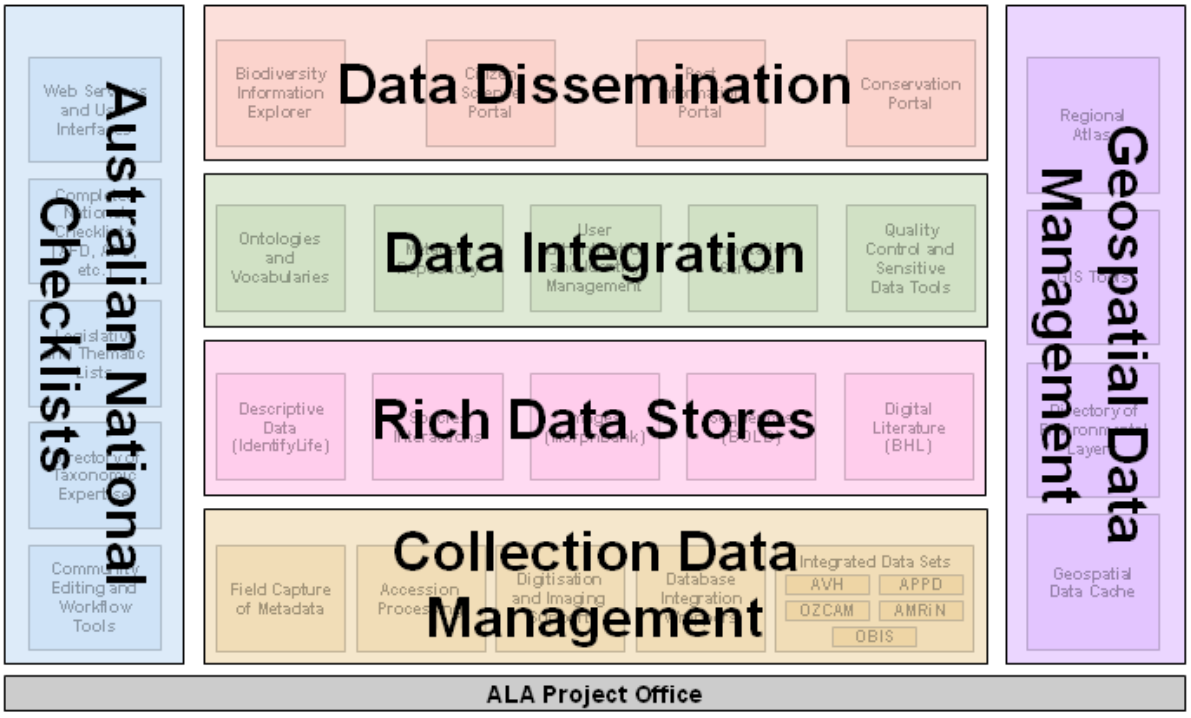
2.3. Background to ALA

ALA aims to develop a **biodiversity data management system** to link Australia's biological knowledge with its scientific and agricultural reference collections and other custodians of biological information. The system should be **authoritative**, **freely accessible**, **distributed and federated** – see

The project aims to:

- Integrate information on all Australian species, including data on **specimens** held by Australia's natural history collections and data from field **observations** of living organisms.
- Support the management and integration of biological data from all areas of research (**molecular** to **ecological**).
- Develop search interfaces and web services to facilitate **discovery** of biological information resources and to support the **use** of biological data in scientific research, policy-making and education.
- Ensure that data relating to Australian organisms is well-managed for **present** needs and organised to meet **future** information requirements.
- Create an environmental data store that will provide a context for the biological data and a means for 'ecological data analyses'.

Figure 1: Overview of ALA functionality



For a complete overview of the project please refer to the *ALA Business Plan 2008-2009* [DOCREF 1].

2.4. The citizen science project

The ALA citizen science tool kit is being built to assist with the collection of field observations primarily made by members of the community who may or may not be trained scientists. Gaia Resources are undertaking development work and will be assisted by the ALA User Centred Design team as required.

In early 2010, two documents were written to assist with scoping the ALA Citizen Science body of work. These are *Putting the citizen in science – Citizen Science requirements report* [DOCREF 2] and *Citizen Science feature requirements analysis* [DOCREF 3]. Both documents provide a review of existing citizen science tools from the author's perspective. These documents have provided the foundation for the citizen science project, which officially commenced in March 2010. For more information on project scheduling please refer to the *Citizen Science Delivery Plan* [DOCREF 4].

This report compliments afore mentioned documents by looking at citizen science through the eyes of the user. Approximately 80 users including citizen scientists and citizen science operational or data managers were consulted to produce the findings written in this document.

The findings from this document will be used to influence the design of the citizen science tool kit.

3. Approach

The following approach was used during this study.

3.1. Planning phase

The ALA User Centred Design team wanted to learn what amateur naturalists and citizen project science coordinators most valued in an online citizen science tool kit. To answer this question with out making any assumptions we decided to run a series of eight focus groups made up of people who would be likely to use an online citizen science tool kit.

In early planning meetings, it was agreed that the focus groups would be held in four capital cities (Melbourne, Sydney, Canberra and Perth). This would ensure involvement with a range of participant types and to highlight any important regional differences.

Two focus groups were conducted in each city. The morning session was with administrators/coordinators of citizen science projects and the afternoon session was with citizen scientists.

Once the workshop framework was decided, participants were recruited through many different means including: personal contacts, referrals from ALA team members and partners, advertisements in the ALA newsletter and CSIRO newsletters.

3.2. Focus groups

A total of eight user requirements workshops were conducted in Melbourne, Sydney, Canberra and Perth from 17 March – 7 April 2010. Each workshop contained from 2 - 15 participants identified as a citizen science operational/data manager or a citizen scientist.

During each workshop, the following activities were conducted:

Participant introductions – each participant took approximately 5 minutes to introduce themself including their name, title, organisation and particular interest in citizen science.

What is citizen science (optional exercise) – With some groups, it became clear, following the introductions, that some participants did not quite understand the term citizen science. For these groups a group brainstorm was conducted to define citizen science and ensure that all participants were on the same page.

Benefits of citizen science brainstorm – The perceived benefits of citizen science were explored as a group. Benefits could be at a personal level, organisational level or society level.

Features brainstorm and money spend – A wish-list of features was brainstormed and then each participant was given $100 worth of monopoly money (one $50, one $20 and three $10 notes) to spend on whichever feature they wished, in whichever way they wished (distributed or all on the one feature). The total amount spent on each feature was totalled for each workshop.

Characteristics – Participants were presented with a range of characteristics that are relevant to a citizen science website including: Well branded, Mobile, Fast, Easy to use, Scalable, Open source, Extendible. As a group we discussed each characteristic and added additional characteristics that were suggested by participants. Participants were asked to rate the characteristics they most preferred by spending five star stickers that were allocated to them at the beginning of the workshop. Stars were spent on any characteristic they wished, in whichever way they wished (distributed or all on the one characteristic).

3.3. Analysis and report development

Findings from these activities were compiled, analysed and summarised into this report.

1 Findings

The key findings from the focus groups have been compiled into this chapter, which has been divided into the following sections:

1. Perceptions of ALA and citizen science
2. Perceived benefits
3. Desirable characteristics
4. Top features
5. Usage scenarios
6. Issues and concerns

3.4. Perceptions of ALA and citizen science

ALA
To open each workshop, the facilitator asked the group who had previously heard of ALA and who could explain what it was. This informal discussion highlighted that there was a very mixed awareness of ALA among participants – some had heard of it and some had not.

When participants across the workshops explained what ALA was, the most common explanation was that ALA is a place for information on Australia's biodiversity (meaning plants animals etc.).

A few participants suggested the use of TV to promote the ALA to the wider community via spotlights in popular science/environmental/biodiversity themed shows.

Implications
ALA's full capability will not be widely used if the target audience for each service does not know it exists.

Citizen Science

The term "Citizen Science" was a familiar term to some participants but many had not been exposed to the term before and were not 100% sure of its meaning. Several participants commented that it was an "American" term.

In groups where it was obvious that the majority of participants were unfamiliar with the meaning of Citizen Science, time was taken to brainstorm a definition. Some of the ideas raised during this brainstorm were that citizen science:

- Is done by people do not have to have a science background

- Is local observation that includes everyone
- Includes formal and/or informal data capture and all observations are valuable
- Helps to identify issues and how to remedy them
- Provides a learning and giving process for the community
- Is a collaboration of knowledge
- Is accessible, open information that is not owned by single entity
- Is interactive

Implications
"Citizen Science" is not a familiar term amongst its target audience and does not adequately reflect its perceived meaning.

3.5. Perceived benefits of citizen science

Workshop participants provided the following ideas during brainstorming exercises on the benefits of citizen science.

For research, citizen science…

- Harnesses and collects valuable data which may otherwise not get recorded
- Provides infrastructure for ongoing monitoring of the environment
- Provides a means to leverage volunteer efforts
- Enables more coverage of Australian species and locations
- New data could lead to scientific breakthroughs

For the community and society, citizen science…

- Gets all sorts of people interested and involved in science
- Breaks down barriers to science
- Creates environmental advocates within society
- Captures local knowledge

- Engages people in common purpose
- Increases the community's awareness of their environment
- Empowers people to make a difference
- Has the potential to free scientific enquiries about biodiversity from political and social agendas
- Participation is likely to increase the respect for and value of biodiversity

For government, citizen science…

- Provides more data for consideration in Environmental Impact Assessments
- Provides a platform to involve the public in government decision-making

For industry, citizen science…

- Attracts funding because it is good public relations
- Increases available data to use as background or basis of investigations

For the citizen scientist, citizen science…

- Offers a sense of belonging
- Gives people something meaningful to contribute to
- Provides personal gratification for participants (they just love doing it).
- Provides people with opportunities to learn, increase their skills and discover new things
- Gives people recognition for their work and has the potential to increase their visibility and credibility in the science community
- Is fee to participate in

Implications
This section describes the benefits of citizen science from the user's perspective – valuable promotional material for the ALA Citizen Science tool kit.

3.6. Desirable characteristics

During each workshop, participants were asked to explore and prioritise characteristics of a successful citizen science website. The results from this exercise have been combined into two tables below: **Table 1** shows the characteristics and priorities of operational managers and **Table 2** shows the characteristics and priorities of citizen scientists.

Table 1: the operational manager's view

No	Characteristics (preferred by operational managers)	Weight	%
1	**Easy to use** - easy to learn, leads you through	32	20%
2	**Portable/mobile**	19	12%
3	**Fast**	18	11%
4	**Interactive/engaging**	15	9%
5	**Free/open source**	14	9%
6	Flexible/customisable	14	9%
7	Well maintained/future proofed/robust	7	4%
8	Data compatibility	6	4%
9	Layered/deep	5	3%
10	Platform independent	5	3%
11	Secure	5	3%
12	Current/dynamic	4	3%
13	Accessible science	4	3%
14	Data is valued/used strategically	4	3%
15	Well branded, clear identity	3	2%
16	Transparent/accountable/incorruptible	2	1%
17	Sexy/attractive	1	1%
18	Scalable	1	1%
19	Re-usable	1	1%

Table 2: the citizen scientist's view

No	Characteristics (preferred by "citizen scientists")	Weight	%
1	**Easy to use** - funnel users to right level of information, use common terminology and pictures	26	25%
2	**Trustworthy**	9	9%
3	**Free** - to participate and to use	9	9%
4	**Portable/mobile** - light version in remote areas	8	8%
5	**Fast**	7	7%
6	Sexy/attractive, visually appealing	6	6%
7	Authoritative	6	6%
8	Long- term	5	5%
9	Inspiring / interesting/wow factor/ "hearts on"	5	5%
10	Interactive	4	4%
12	Secure	3	3%
13	Fun/open to everyone	3	3%
14	Information is followed-up/actioned	3	3%
15	Scalable (for dif sizes of groups)	2	2%
16	Living/not static	2	2%
17	Reliable	1	1%
18	Cross platform(mac/pc)	1	1%
19	Connects with other relevant databases automatically eg ALA, Facebook, Twitter, ect.	1	1%
20	Well branded	1	1%
21	Flexible	1	1%

Summary

Different user types (operational managers and citizen scientists) value different characteristics within a citizen science tool kit as their purposes for the tools are distinctively different. The former needs to set up, manage and report on citizen science project and the latter wants to learn able species and contribute information to the project.

Saying that, it is worth noting that "easy to use", was by far the most important characteristic to both groups. Both types of users rated "easy to use", "portable/mobile", "fast", and "free" in their top 5 characteristics for a successful citizen science website. Operational managers included "interactive/engaging" in their top 5 while citizen scientists included "trustworthy" in their top 5.

Interestingly, 6% of the citizen scientist vote went to "sexy/attractive, visually appealing" while only 1% of the operational manager vote went to that characteristic. Similarly, 9% of the operational managers voted for "flexible/customisable" while 1% of citizen scientists voted for this characteristic.

Implications
The target audience for the ALA citizen science tool kit places an extremely high value on "ease of use" which further reinforces the need for user testing of the software prior to release. "Portable/mobile", "fast", and "free" are also important.

The administrative interface should primarily meet the needs for the operational managers and the front-end interface should primarily meet the needs of the citizen scientists.

3.7. Top features

During each workshop, participants were asked to explore and prioritise features of a successful citizen science website. The results from this exercise have been combined into two tables below: **Table 1** shows the features and priorities of operations/data managers and **Table 2** shows the features and priorities of citizen scientists/amateur naturalists.

Table 1: the operational manager's view

No	Features (operation managers view)	Weight	%
1	**Data collection form** – Citizen scientists should be able to enter multiple observations, record observations over time, photos, sound, video, etc. Should be able to drill down into a map to select a location. The form should be smart with pre-populated fields, prompts for mandatory info, taxon-aware, structured and based on standards. *The form builder* Administrators should get prompts to make sure they are adding value to observation data. The administrator should be able to configure the form to be available on mobile phones, via the website, hard copy or a downloadable spreadsheet. Forms should be simple and customisable to cover a range of species, regions, and different scales. Importantly, data collected should be vetted/quality assured and validated.	1120	35%
2	**Maps and reports** - Reports include coverage of the citizen scientist's data and of the community's data as a whole. Citizen scientists want to know how they compare with other citizen scientists. Reports should be available instantly. Data could be visualised on a map (with related environmental data layers), into tables, diagrams or charts. Reports could help to identify gaps where no surveys have been done It would be good to see a map of all the citizen science projects in Australia (enable identify other groups in an area, and gaps in surveys).	760	24%
3	**Identification tools** – ID tools should include pictures, discussion, sounds, links and known locations of organisms. They will help users to identify species and those that they may be mistaken for.	340	11%
4	**Links to other websites –** Operational managers want to link to other websites for further information where appropriate. They don't want to reinvent information that is already available online.	110	3%
5	**Support** - Help me to set up my portal. Help me set up a scientifically valid citizen science project.	110	3%
6	**Web-based project collaboration –** This feature was suggested in one workshop and due to time constrains was not fully unpacked as a feature.	100	3%
7	**Instructions** - Simple instructions or "How to" pages (e.g. how to conduct survey)	100	3%

No	Features (operation managers view)	Weight	%
8	**Members' forum** – Readers should be able to filter forum items by keyword. Members could post tips for making observations in the field.	100	3%
9	**Species pages** - Pages should include video, calls, the community it lives in, etc. Pages are like a fact sheet on a species.	90	3%
10	**Portal builder** – The builder is where administrators customise their portal, control access and resolution, set up a monitoring site, etc.	80	2%
11	**User registration** – This feature will enable citizen scientists to join a project. The registration form may ask, "How did you find out about us" and enable users to register area(s) of interest for alerts.	70	2%
12	**What's in an area** – This is like a field guide, which lists the species in an area. The guide could be seasonal e.g. show me what migratory birds I can expect to see, flowers in bloom, birds are nesting, etc.	50	2%
13	**Marketing** – There needs to be a way to promote citizen science portals.	50	2%
14	**Overview pages** –these pages provide an explanation of citizen science, why do it and how it works. They may also give an overview of particular projects including funding details and information on the scientific validity of the project.	50	2%
15	**Newsletters –** This feature gives portal administrators the ability to create and send newsletters to their members.	30	1%
16	**Alerts –** Notifies subscribers when project starts in an area that they have registered an interest in or take it one step further and notify them of projects in an area they are physically in (via their GPS sensitive phone).	20	1%
17	**Audit trail**	10	0%
18	**Mini-GIS** – A light version of GIS tools to enable people with slow connections to visualise their data on a map.	10	0%
19	**Data usage statement** – This page should discourage the misuse of information and should explain how to credit data, sound and images.	10	0%
20	**Automatic links with social media**	0	0%
21	**Download the data**	0	0%
22	**Feedback form**	0	0%
23	**Find a scientist/mentor**	0	0%
24	**Member profiles**	0	0%
25	**RSS notification**	0	0%
26	**Sound analysis software**	0	0%

Table 2: the citizen scientist's view

No	Features (citizens scientist's view)	Weight	%
1	**What's in this area? –** Citizen scientists want to download and/or print a checklist of taxa such as all birds, all plants, and all weeds for an area. An area could be a bioregion, set of coordinates, region, etc. Citizen scientists also want to see what's in flower now? What can they expect to see in a specific season? What are the must-see highlights of an area? Species names should link to species pages in the citizen science portal or on other websites.	360	18%
2	**Data collection form** – The form should capture the date, images, location information, season, etc. It can be accessed online, as a paper form, or via mobile. It should have built-in: mandatory terms, quality assurance, and well-described data. Data collected should feeds directly into ALA, but also held locally. The form builder should be smart and force the administrator down certain correct paths.	290	15%
3	**Maps and reports –** Citizen scientists want to see reports on the data they have uploaded and the data the community has uploaded. Data should be viewable on a map and should include mapping over time. Maps should link to ALA, where relevant, for full coverage of citizen science project in Australia. Some participants want access to statistics and further analysis. It should be easy to report data to another body e.g. state government or an organisation such as Birds Australia	260	13%
4	**Identification tools -** Administrators could elect to display any range of keys of varying complexity. The website should definitely have simple, easy, non-technical keys available as well.	190	10%
5	**Support** – There should be scientific support for things like identifying a species and IT support to help with portal set up and form customisation. Online training on how to use the site including podcasts would be good.	130	7%
6	**Search and extract data**	110	6%
7	**Species pages –** Pages should be grouped into simple categories i.e. birds, plants. They should include where a species can be found. Users would like to print a data sheet on the species.	90	5%
8	**Instructions** - Users want information that will help them to be prepared for collecting data in the field. This type of information would need to be customisable for each citizen science project. Content may include information on equipment needed, how to collect and what to collect.	90	4%
9	**Forum** – To enable citizen scientists to share their experiences.	80	4%
10	**News updates** – Updates will help to motivate participants and inspire them by showing the relevance of the project and how data is being used. News may also include weekly bulletins and the latest changes to the website e.g. new data added. News should be available on the website, via email, as hard copy which can be posted to people without internet.	70	4%

No	Features (citizens scientist's view)	Weight	%
11	**Alerts** – Citizen scientists want to subscribe to alerts for a species of interest.	20	5%
12	**Templates** – Administrators for different citizen science projects will need templates for setting up new citizen science portals.	60	3%
13	**Glossary of terms** – Terms should include links to further information, contain pictures and diagrams where relevant, be interactive, smart and relevant to all audiences.	60	3%
14	**Event listing** – This should list the events happening within a local citizen science group and should link to ALA for more citizen science events.	50	3%
15	**Links to other resources – Resources** may include brochures, research and links to other websites.	30	2%
16	**Backed up**	20	1%
17	**User registration** – By registering with the website users can have the option to receive news via email or post.	20	1%
18	**Register of volunteers** – This feature will help organisations recruit people who want to participate in environmental projects. Potential participants would register their interest.	10	1%
19	**Privacy policy/ data sensitivity page/ disclaimers/legal**	10	1%
20	**Data sharing** - Enable citizen science portals to share data with each other	10	1%
21	**Ecosystem profile for an area**	10	1%
22	**Contacts**	0	0%
23	**Page defining citizen science**	0	0%
24	**Opportunity for networking**	0	0%
25	**Control my data / full admin rights**	0	0%

Summary

The "data collection form" (35%) and "maps and reports" (24%) were by far the most important features to operational managers. The next highest feature was "identification tools", which gained 11% of the vote.

The top features from the citizen scientist's viewpoint were more evenly distributed with "what's in this area"(18%), "data collection form" (15%), "maps and reports" (13%) and "identification tools" (10%).

In both of the groups the "data collection form", "identification tools", "maps and reports", and "support" came within the top 5 features while "instructions pages", "forums" and "species pages" were within the top 10 features of both groups.

Interestingly, "what's in an area" was only given 1% of the operational managers vote while it was the highest rated feature (18%) for citizen scientists.

In general, operational managers were interested in features that will reduce their workload

and ensure the integrity of their project, e.g. collection form development tools and support, automated reporting to their members (a lot of this is currently done manually) and self help tools and resources to assist their citizen scientists to successfully participate in the project (e.g. ID tools, instructions, member forums and species information pages). Links to other websites were also important because operational managers do not wish to reinvent content that is already available online.

Citizen scientists are generally interested in doing a good job on the project so they need a good data collection form and tools to educate them about the project and species they are looking for. For example, the older generation is passionate about the accuracy of names.

They are also interested in opportunities to participate in citizen science projects across Australia. This highlights features that would be well suited as an ALA citizen science capability, which has coverage of not only all species and locations in Australia but also potentially, all of the citizen science projects across Australia.

ALA citizen science features include:

- Alerts of citizen projects happening in a region, alerts on a species of interest
- Map of all citizen science projects in Australia
- Gaps in coverage: analysis and reporting on species and or locations that have not been well surveyed
- Environmental events listings
- Register of volunteers interested in an area or species of interest

Implications
Users expect to see their top features in the ALA citizen science tool kit.

The administrative interface should primarily meet the needs for the operational managers and the front-end interface should primarily meet the needs of the citizen scientists.

Users suggested some useful features for ALA citizen science, which may not currently be planned. These should be reviewed by the ALA project team.

3.8. Usage scenarios

Participants raised the following citizen science scenarios during the focus groups.

The scenarios listed in this section are only a small sampling of the wide-ranging uses the ALA Citizen Science tool kit is likely to be expected to fill.

1. Monitor the rehabilitation of an area of land e.g. the Molongolo catchment
2. Consolidate observations of a single species into one place over a long period of time e.g. koalas or Frogwatch, which monitors the same sites and new sites every year with new and returning volunteers.
3. Collect biodiversity information from citizen scientists as a part of a research project e.g. to set traps, collect specimens and mail them to museums
4. Enable landholders to monitor climatic changes in temperature and humidity on their properties
5. Assist with collection digitisation and marking up of scientific literature
6. Track introduced animals, especially insects, throughout the state (similar to the website in England that monitored the distribution of an exotic ladybird)
7. Engage kids in science by encouraging them to survey an area to look at the interaction between plants and insects
8. Manage one citizen science portal which contains many projects
9. Configure the portal with one coordinator in each of three regions who's team collects data in isolation from the other regions. Show the bigger picture of the overall project.
10. A school has several classes that may run citizen science projects

Implications
The citizen science tool kit must be easily configurable to meet a wide range of usage scenarios. The tool kit needs to manage portals, projects, surveys and user roles in such a way that enables each new portal to be configured to meet the needs of the organisation that is setting it up. Ease of use, flexibility and scalability in portal set up and configuration will be the key to the widespread deployment of ALA citizen science portals in Australia.

3.9. Candidates

There was considerable interest from several focus group participants in exploring the option of getting an ALA citizen science portal set up for their organisation.

Interested parties include:

1. Bird Observation and Conservation Council of Australia
2. National Arboretum, Southern Tablelands Ecosystem Park (STEP)
3. ACT Frogwatch
4. Department of Trade and Industry (DTI), Biological Control Agents Project, funded by Caring For Our Country
5. Department of Environment Heritage, Water and the Arts (DEWHA) - Koala project, National Parks and Wildlife and possibly others
6. Molonglo Catchment Group
7. Australian National Botanic Gardens
8. Chittering Landcare Group
9. Night Stalk – Perth Zoo
10. World Wildlife Fund

It should be noted that, to date, the following organisations are already scheduled to receive an ALA Citizen Science portal:

1. Birds Australia, to track Carnaby's Cockatoos
2. Climatewatch
3. Atlas of Living Australia
4. Museum Victoria

Implications
Given the number of organisations that participated in focus groups and the number who have expressed an interest in the ALA Citizen Science tool kit; there is some demand for citizen science tools. This demand will need to be adequately planned for and managed during rollout.

3.10. Issues and concerns

Participants at all or most workshops voiced a few issues and concerns as described below.

Funding & technological know-how

Many groups with a keen interested in citizen science projects lack the funding and or the IT expertise they need to set up and maintain a citizen science portal.

Some comments made by participants were:

"We would consider setting up a citizen science portal but would be constrained by low levels of funding"

"Would like to collect more plant data, especially on the flowering times of plants in the gardens but lacks the funding to coordinate volunteers"

"We would be concerned with maintaining interest and funding in citizen science initiative over time"

Data Quality

The quality of the data provided by citizen science projects was discussed in each workshop. Participants mostly wanted to know that the data would be checked and quality assured before it was integrated into the portal and the ALA.

Participants expected that the data collection form would automatically conform to standards, which would enable data collected from different projects to come together to produce useful products such as maps and reports.

"We need standards to allow data sharing"

"All data collection must meet national and internationally agreed standards"

"There is not enough understanding (by our team) *of how to bring the data together to produce products that can be used"*

Remote Areas

A few participants ran citizen science type initiatives in remote areas and have experienced difficulties with getting online tools to work well in regional areas.

Implications
"Funding", "technological expertise needed", "data quality" and "remote access" are important considerations for people who run citizen science projects. Each of these areas will need to be considered during the design phase and clearly addressed in the support material for the final citizen science tool kit.
There is also the possibility that if the citizen science tool kit is not easy to set up and maintain that it will not be used.

4. Recommendations

Influencing the design

1. The findings within this document should be used to inform the overall design process for the ALA citizen science toolkit, specifically:

    - The tool kit must be "easy to use", "portable/mobile", "fast" and "free".

    - The administrative interface should primarily meet the needs of operational managers and the front-end interface should primarily meet the needs of the citizen scientists. Refer to sections 3.6 and 3.7.

    - Align the top features prioritisation done by users in section 3.7 with the initial citizen science requirements as identified in the Citizen Science Feature Requirements Analysis [DOCREF 3] to ensure that user priorities are factored into software development priorities.

ALA features

2. Specific "ALA only" citizen science features in section 3.7 should be considered for inclusion into the overall ALA release schedule.

User testing

3. Early prototypes should be tested with end users. This includes testing the administration interface as well as the front-end interface. The usage scenarios provided in section 3.8 should be used as test scenarios. Final test plans should be reviewed by relevant members of the ALA project team.

Communications

4. Use alternative language to "citizen science" in the user interface and in communication materials.

5. Utilise the benefits outlined in section 3.5 in promotional material for the ALA Citizen Science tool kit.

6. If ALA is aiming for huge uptake of its citizen science software from environmental groups, the ALA and its citizen science capability will need to be promoted to the wider Australian community, possibly via television.

7. Continue communication with participants of the user centred design workshops.

Rollout and ongoing support

8. Develop a plan for rolling out potentially hundreds of citizen science portals. The plan should include resourcing for help and support services, hardware, contingency planning when ALA runs out of funding, etc.

9. The support material for the final ALA Citizen Science tool kit should clearly address: the "funding" requirements needed to successfully roll out a citizen science portal, users concerns with "data quality" and "remote access" capabilities and limitations.

5. Appendix

5.1. Participant list

This section lists the participants that were involved in focus groups by city.

Melbourne

Name	Title and Organisation
Ely Wallis	Manager Online Collections, Museum Victoria
Gerard Roche	Project Manager Mobile Learning, Museum Victoria
Andrew Silcocks	Coordinator Bird Atlas, Birds Australia.
Peter Houghton	Director of IT and Communications, Earthwatch Australia
James O'Connor	Researcher, Birds Australia
Jenny Lau	Volunteer, Bird Observation and Conservation Council of Australia
David Low	Weed scientist, Department of Trade and Industry
Diane Beruldsen	Materials Science and Engineering, CSIRO
Jen Spry	Volunteer, Birds Australia
Bill Ramsay	Treasurer, Bird Observation and Conservation Australia
Angela Muscat	Programme co-ordinator, Biodiversity and on-line learning, Museum Victoria
Diana Droog	Volunteer, Landcare (Franklin River)
Geoff Moore	Learning Programme co-ordinator, Museum Victoria
Blair Patullo	Project Officer Mobile learning and Sciences on-line, Museum Victoria

Sydney

Name	Title and Organisation
Rachel Maitland	Earthwatch
Paul Flemons	Collection informatics manager, Australian Museum
John Tann	Team leader, Collections Data Management, Atlas of Living Australia
Cathy Merchant	Volunteer, National Parks and Wildlife Service
Ifeanna Tooth	ClimateWatch coordinator, Royal Botanic Gardens Sydney
Brett Summerell	Director of public programs, Royal Botanic Gardens Sydney

Name	Title and Organisation
Holly Parsons	Birds in Backyards [BIB] manager, Birds Australia
Debbie Kent	Collection Manager, State Forests of NSW Insect Collection, Department of Industry and Investment, NSW
Phoebe Meagher	Science communication officer, Australian Museum
Jane Hunter	Professorial Research Fellow and Leader of the eResearch Lab, School of Information Technology and Electrical Engineering, University of Queensland
Sue Lewis	BugWise for Schools officer, Australian Museum
Ann Martin	Volunteer guide with NSW Royal Botanic Gardens
Jenny Pattison	Volunteer guide with NSW Royal Botanic Gardens

Canberra

Name	Title and Organisation
Janet Russell	Friends of the Grasslands
Tony Lawson	Field Naturalists Association of Canberra
Dianna Weaver	Community Information Unit, Department of the Environment Water Heritage and the Arts
Cayne Layton	Honours student, Australian National University
Jill More	Volunteer guide and friend, Australian National Botanic Gardens
Robyn Lawrence	Australian Biological Resources Study at the Department of the Environment Water Heritage and the Arts
Sabrina Sonntag	Communications Officer, Australian National Botanic Gardens
Sonya Kershaw	Kambah Canberra Organic Gardening Society convenor
Helen Eddy-Costa	Taxonomy Research and Information Network and CSIRO Plant Industry
Jeff Tranter	Manager of species and ecosystems communities mapping, Environmental Resources Information Network in the Department of the Environment Water Heritage and the Arts
Cathy Robertson	President, Southern Tablelands Ecosystem Park
Stephen Speer	Manager of Communications and Visitor Services, Australian National Botanic Gardens
Geoff Robertson	President, Friends Of the Grasslands
Murray Fagg	Manager of the Botanical Information Group, Australian National Botanic Gardens
Glenn Johnstone	Environmental Resources Information Network, Department of the Environment Water Heritage and the Arts
Greg Whitbread	Manager of the Integrated Botanical Information System, Australian National Botanic Gardens

Name	Title and Organisation
Jim Croft	Deputy Director Science and Information, Australian National Botanic Gardens and Program Leader for the Australian National Herbarium
David Drynan	Australian bird and bat banding scheme, Department of the Environment Water Heritage and the Arts
Vanessa Keyzer	Molonglo Catchment Project Officer/ Molonglo River Rescue Project Facilitator, Molonglo Catchment Group
Glenda Shelly	Species listing (Koala project), Department of the Environment Water Heritage and the Arts
Linda Beveridge	Southern Tablelands Ecosystem Park
Emma Keightly	ACT and Region Frogwatch, Ginninderra Catchment Group

Perth

Name	Title and Organisation
Suzie Greenway	Education officer and Night Stalk Co-ordinator - Perth Zoo
Tiho Beretovac	Project Manager - Australia Spatial Research Data Commons (ASRDC), CSIRO Earth Science and Research Engineering (CESRE)
Danielle Witham	World Wildlife Fund - Project Manager of Southwest Australia Ecoregion Initiative (SWAEI)
Nicki Mitchell	Lecturer in Conservation Biology - University of Western Australia
Richard Weatherill	Earthwatch
Mark Harvey	Senior Curator - Western Australian Museum
Rod Nowrojee	Manager Environmental Analysis - The Office of the Environmental Protection Authority
Wendy White	Online Projects Developer - Scitech
Judith Beer	Volunteer - Chittering Landcare
Sue Metcalf	Officer - Chittering Landcare

5.2. Benefits of Citizen Science

Below are the raw findings from each focus group for the "benefits brainstorm" exercise.

Operational/data manager's perspective

Melbourne

- Generate information for conservation projects (free?)
- General education
- Anyone can use it
- Create a constituency
- Engage people in common purpose
- Increase skills
- Increase our visibility and credibility
- Get all sorts of people interested in science and get involved – make a difference
- Influence decision makers / management

Sydney

- Gives weight to viability of citizen science
- Increases knowledge and engagement, thus developing responsibility and custodianship
- Captures local knowledge, especially in remote areas, making science accessible to all.
- Captures timely information (no delay in setup of survey) which may otherwise not get recorded if it is not part of an official survey
- Continuous data over a large timescale allows comparisons over time to be made
- Informs decision makers and everyday people
- Collects more data
- Makes science less scary leading to more community involvement with issues – they way the community can make a difference becomes more tangible
- Creates environmental advocates within society
- Gives people something meaningful to contribute – social recognition of the importance of volunteer work.

- Has a value in itself – provides personal gratification for participants (they just love doing it).
- Unpaid – so have more personal power
- Accessible to all

Canberra

- Collection of observations so they don't get los
- Engagement
- Long-term observations for managing climate change
- Sense of belonging
- People get to contribute to something larger than their site.
- Feed related info back to community – show a bigger picture.
- More and cheaper data - helps us to make better decisions
- Enables more monitoring.
- Lead to an increase in scientists by stimulating scientific thinking.

Citizen Scientist's perspective

Melbourne

- DB: Feed up and down, the citizens will become more educated to the larger issues and hopefully understand them.
- Inspire and empowers individuals and communities to make a difference
- Accessing local knowledge (e.g. history)
- Changes attitudes and values
- Opportunity for experiential learning (e.g. when you are involved in a survey you will be impacted)
- Expands people's radar of what's around them
- Demystify science
- Democratising
- Keeps people occupied
- Sense of community

Sydney

- Participation in citizen science might lesson negative behaviour by improving people's environmental values. It could increase community awareness of pollution, weeds, etc as people become aware of how threatened the environment is.
- People get involved.
- Makes me happy – learning and discovering new things.
- Sharing information and educating local people so they respect their environment. Inspiring others. Gives an understanding to others.

Canberra

- Data
- Empowers people to make a difference
- Leverages volunteer efforts
- People get to contribute and learn about their areas of interest
- Harness and collect valuable data
- Freeing scientific enquiries about biodiversity from political and social agendas.
- Breaks down barriers to science to get people to learn
- Increases respect for and value of biodiversity
- Provides valuable data
- More of Australia covered
- Facilitates and fosters connections between different groups
- Ability to reach out to those not already involved

5.3. Characteristics

Below are the raw findings from each focus group for the "characteristics" exercise.

Operational/data managers

Melbourne

No	Characteristic	Weight	%
1	Flexible / customisable	6	27%
8	Easy to use, easy to learn	5	23%
7	Portable / mobile	4	18%
2	Fast	2	9%
4	Open source	2	9%
5	Secure	2	9%
6	Well branded, identity clear	1	5%
3	scalable	0	0%
9	extendable	0	0%
10	Attractive and usable, image rich	0	0%

Sydney

No	Characteristic	Weight	%
1	Fast	12	24%
2	Easy to use	10	20%
3	Interactive/engaging	9	18%
4	Layered/deep	5	10%
5	Current/dynamic	4	8%
6	Flexible	4	8%
7	Portable/Mobile	4	8%
8	Secure	1	2%
9	Sexy/attractive	1	2%
10	Well branded	1	2%
11	Scalable	0	0%

Canberra

No	Characteristic	Weight	%
1	Free	10	20%
2	Simple/easy to use	7	14%
3	Interactive	6	12%
4	Mobile/portable	5	10%
5	Fast	4	8%
6	Leads you through	4	8%
7	Platform independent	4	8%
8	Accessible science	4	8%
9	Data is valued	2	4%
10	Scalable	1	2%
11	Well-branded	1	2%
12	Re-usable	1	2%
13	Attractive/sexy	0	0%
14	Non-prescriptive	0	0%

Perth

No	Characteristic	Weight	%
1	Easy to use	6	18%
2	data compatible (for compatible)	6	18%
3	Well maintained, future proofed	5	15%
4	Flexible – customisatble	4	12%
5	Secure	2	6%
6	Mobile	2	6%
7	open source	2	6%
8	strategic (long term, visionary)	2	6%
9	Robust	2	6%
10	Transparent (accountable, incorruptible)	2	6%
11	Compatible between systems (MAC and PC)	1	3%

Citizen Scientist's perspective

Melbourne

No	Characteristic	Weight	%
1	Flexible / customisable	6	27%
8	Easy to use, easy to learn	5	23%
7	Portable / mobile	4	18%
2	Fast	2	9%
4	Open source	2	9%
5	Secure	2	9%
6	Well branded, identity clear	1	5%
3	Scalable	0	0%
9	Extendable	0	0%
10	Attractive and usable, image rich	0	0%

Sydney

No	Characteristic	Weight	%
1	Fast	12	24%
2	Easy to use	10	20%
3	Interactive/engaging	9	18%
4	Layered/deep	5	10%
5	Current/dynamic	4	8%
6	Flexible	4	8%
7	Portable/Mobile	4	8%
8	Secure	1	2%
9	Sexy/attractive	1	2%
10	Well branded	1	2%
11	Scalable	0	0%

Canberra

No	Characteristic	Weight	%
1	Free	10	20%
2	Simple/easy to use	7	14%
3	Interactive	6	12%
4	Mobile/portable	5	10%
5	Fast	4	8%
6	Leads you through	4	8%
7	Platform independent	4	8%
8	Accessible science	4	8%
9	Data is valued	2	4%
10	Scalable	1	2%
11	Well-branded	1	2%
12	Re-usable	1	2%
13	Attractive/sexy	0	0%
14	Non-prescriptive	0	0%

Perth

No	Characteristic	Weight	%
1	Easy to use	6	18%
2	Data compatible (for compatible)	6	18%
3	Well maintained, future proofed	5	15%
4	Flexible – customisable	4	12%
5	Secure	2	6%
6	Mobile	2	6%
7	Open source	2	6%
8	Strategic (long term, visionary)	2	6%
9	Robust	2	6%
10	Transparent (accountable, incorruptible)	2	6%
11	Compatible between systems (MAC and PC)	1	3%

5.4. Features

Below are the raw findings from each focus group for the "features" exercise.

Operational/data managers

Melbourne

No	Citizen Science Website Feature	Weight	%
1	Data Entry form (available on mobile, photos, calls, based on standards, drill in via map, online hard copy)	250	49%
2	Species profiles (video, calls, etc)	40	8%
3	Data Validation	40	8%
4	Simple instructions	30	6%
5	Tips and tricks for observations (user added)	30	6%
6	Field guide for my region (fine tune, e.g. season)	20	4%
7	Interrogate my data	20	4%
8	Compare me to other users	20	4%
9	Control access and resolution (back end accurate)	20	4%
10	ID tools	10	2%
11	Generate reports	10	2%
12	Send newsletter to members	10	2%
13	Audit trail	10	2%
14	Connect to references on the resource	0	0%
15	Collect demographic info from members	0	0%
16	Map of recordings (customise, based on data form, when surveys done, map of species seasonal, useful for self validation prior to data entry)	0	0%

Sydney

No	Citizen Science Website Feature	Weight	%
1	Data collection form	190	17%
2	Map (instant, show who provided record)	160	15%
3	Data entry form/spreadsheet – enter multiple observations *(observations over time, taxon-aware, mobile, paper, structured, smart, prompts for adding value to observation)*	120	11%
4	Species identification tool	120	11%
5	Identify gaps where no surveys have been done	100	9%
6	Graphs/data visualization	60	5%
7	Members' forum (with key word filter)	60	5%

No	Citizen Science Website Feature	Weight	%
8	Marketing	50	5%
9	Fact sheets	50	5%
10	"How to" (e.g. conduct surveys) guide	50	5%
11	CS explanation (why doing it, how it works)	30	3%
12	Field guide (species in area)	30	3%
13	User registration	30	3%
14	Newsletters	20	2%
15	Show me my data (comparison with others)	20	2%
16	Alerts/notifications (GPS sensitive)	10	1%
17	Links to other websites	0	0%
18	Member profiles/groups	0	0%
19	Automatic links with social media	0	0%
20	RSS (notification)	0	0%
21	Feedback form	0	0%

Canberra

No	Citizen Science Website Feature	Weight	%
1	Identification tools *(picture, discussion, sounds, species links, known locations)*	210	21%
2	Vetted/quality assured (*validated, anti-spam)*	150	15%
3	Reports for citizens and of my community's data (*instant, map, show other related data of interest, diagrams,number of volunteers)*	160	16%
4	Links to other resources	110	11%
5	Web-based project collaboration	100	10%
6	Structured observations	70	7%
7	Geographic ID tools	60	6%
8	Customise my portal	40	4%
9	Advice/support to set up (help me be good at CS)	40	4%
10	Set up monitoring site	20	2%
11	Gap analysis	20	2%
12	Rank collectors	20	2%
13	Mini-GIS	10	1%

No	Citizen Science Website Feature	Weight	%
14	Download the data	0	0%
15	Sound analysis software	0	0%
16	Background profile *(species, community)*	0	0%
17	What is in this area/checklist	0	0%
18	Tutorial on what to collect	0	0%
19	Find a scientist/mentor	0	0%
20	Mailing list	0	0%

Perth

No	Citizen Science Website Feature	Weight	%
1	Data collection template – (Collector, Data collection...), uses standards (use modules – don't re-invent wheel, helps for data interpreters, simple, range of species, region, dif scales.) Data entry form. Coordinator choices, on-line form, paper form, spreadsheets, smart forms, mandatory forms, glossary, upload sound, video; pre-populated fields, prompts / mandatory; online form, paper form, spreadsheets, mobile) (Auto-populate fields (Darwin codes))	240	41%
2	Access information, access via map, downloadable, co-ordinator has choices, Map overlay other GIS / map data,	150	25%
3	Supported for the person creating project	70	12%
4	Registration for users (make sure to ask how did you find out about us)	40	7%
5	Overview of project (including business information and scientific validity, funded by who, scientific validity)	20	3%
6	Map of Citizen Science projects (enable identify other groups in an area, and gaps in surveys)	20	3%
7	Instructions - how to participate in a survey (simple)	20	3%
8	Blog for news and feedback	10	2%
9	Alerts (Register users area of interest), let me register, an area of interest, tell me when project start in the area	10	2%
10	Data usage statement (discourage misuse of information), how to credit data, sound, images)	10	2%
11	Field guide – ID tool, i.e. LUCID (Links to known bodies of knowledge (to help ID))	0	0%
12	Glossary (describe habitats)	0	0%

Citizen Scientist's perspective

Melbourne

No	Citizen Science Website Feature	Weight	%
1	Quality Assurance	180	31%
2	Maps	100	17%
3	Id tool	70	12%
4	Templates	60	10%
5	Search	30	5%
6	Reports	30	5%
7	Data upload form	20	3%
8	Subscribe to alerts for species of interest,	20	3%
9	Instructions – how to	20	3%
10	Register of volunteers (for environmental projects)	10	2%
11	Privacy policy/ data sensitivity page	10	2%
12	Support for identifying a species	10	2%
13	Develop ecosystem profile for an area,	10	2%
14	Enable citizen science portals to share data with each other	10	2%
15	Page defining citizen science	0	0%
16	Print a form or data sheet	0	0%
17	Species page	0	0%
18	Links to other resources	0	0%
19	Info page on training	0	0%
20	Upload photo	0	0%
21	Opportunity for networking	0	0%
22	Download/print checklist	0	0%
23	Contacts information	0	0%
24	Control my data / Full admin rights	0	0%

Sydney

No	Citizen Science Website Feature	Weight	%
1	What's in flower now? What animals/insects will I see now?	50	28%

No	Citizen Science Website Feature	Weight	%
2	Must-see highlights of garden	50	28%
3	Where can I find this plant?	40	22%
4	Print a checklist of taxa such as all birds	20	11%
5	Download brochures (birds, diff types of walk)	20	11%
6	Upload photos	0	0%
7	Upload location of wildlife	0	0%
8	Link to other Websites	0	0%

Canberra

No	Citizen Science Website Feature	Weight	%
1	Report *(to citizen)*	100	12%
2	Forum *(share experiences)*	80	10%
3	ID tools *(electronic, matrix keys, options to vary complexity of key, simple)*	80	10%
4	Search and extract data	80	10%
5	Science and IT support *(online support, help with customisation)*	70	9%
6	Species list for an area/bioregion *(drill down by category, grouped according to type, such as ground covers, define your own, ecosystems, bioregions, gov areas)*	70	9%
7	Enter data *(by mobile phone, images, maps/cords, links to other Websites, season, mandatory terms, form building smart, well described, forces down certain paths)*	70	9%
8	Glossary/definition of terms *(crosslinks, picture, diagram, interactive, smart, all audiences,e.g. habitat make this accessible to all audiences, non-threatending)*	60	7%
9	Guidance for collecting data *(print out, customised, terms, equipment, how to what to collect)*	60	7%
10	Training *(how to use site, podcast, visual)*	50	6%
11	News updates/to motivate *(show relevance, how is my data used, inspire me to keep going)*	30	4%
12	Print data sheet *(maps, links to keys, terms)*	20	2%
13	Backed up	20	2%
14	Latest research *(data entered, reviewed)*	10	1%
15	Statistics/analysis	10	1%
16	What are the other groups doing?	0	0%

No	Citizen Science Website Feature	Weight	%
17	Contacts	0	0%
18	Disclaimers/legal	0	0%
19	Email list	0	0%

Perth

No	Citizen Science Website Feature	Weight	%
1	What can I see here? (check list for an area, download and print, highlight threatened species)	170	43%
2	Event listing for a local citizen science portal (linked to ALA site events)	50	13%
3	News - including weekly bulletins and the latest changes to the site e.g. new data added (must be valuable electronically the website and via email as well as hard copy which is posted out to people without internet access.	40	10%
4	Identification tools (easy, non-technical)	40	10%
5	Species pages (grouped into simple categories ie birds, plants)	30	8%
6	Map - view data on a map. Include mapping over time. Link to ALA for full coverage of Australia.	20	5%
7	Register with the website (option to receive news via email / post)	20	5%
8	Data collection form (feed directly into ALA, but also notify/hold locally), online / paper, mobile	20	5%
9	How to get involved (clear message, breakdown, teachers, individuals, community group)	10	3%
10	Get data out	0	0%
11	Contact details	0	0%

Perth citizens also want to see the following functionality in ALA:

- ALA - location of all surveys useful (but something that ALA would coordinate / make accessible)
- ALA - time line accessible analysis (perhaps on map), link to ALA map
- ALA - visualisation of data (but also Australia wide = manipulated /summarised data) (feature of ALA wide toolkit)
- ALA - What can I see? (anywhere, expected species, and list of surveys done, download and print, highlight threatened species)
- event listing (ALA)