

The Grove Library as an example: A “green” library in terms of ongoing community engagement, community expectations, information provision and sharing, and partnerships

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Abstract:

The Grove Library in Perth, Western Australia, is an example of an aspirational community statement about an environmentally sustainable future, expressed through its library.

There is inevitably a sense of euphoria around the opening of a new “green” public building, with an optimistic expectation that all systems will perform as designed. However, the intent that The Grove should be a pioneer demonstration building implicitly included acceptance of the risk that some of the untried technologies would not perform as anticipated. The challenge is to analyse and accept any shortcomings as equally valid “learnings”, rather than allow them to overshadow the overall success of the project.

This paper is not, however, a treatise on the technological aspects of the building. The ordinary business of a new library goes on while staff and the management work through challenges with the infrastructure, as is equally true of conventionally designed new buildings.

This paper explores the community expectations and realities around an aspirational green building; the on-going interaction of a green library with its staff, customers and visitors; and the programming opportunities and synergies that underpin community engagement with a green library.

Keywords: Green library, environmentally sustainable design, library programs, public libraries

The Grove's place on the planet

The Grove project is located in Perth, the capital of the Australian state of Western Australia. Perth is often described as “the most isolated city in the world”, literally perched on the edge of the Indian Ocean, and thousands of kilometres from the nearest city. A very flat land, there are few mountains to capture rain, and therefore, few major rivers. The residents of Perth rely on tapping the reserves of ancient underground aquifers, replenished by unreliable surface rain; and government owned desalination plants, which are now supplying 50% of Perth's water. Most of Perth lies at almost dead sea level, and so any effects of climate change will be felt early and profoundly by its population of 1.9 million residents.

The Grove Library, the subject of this paper, is located in one of the most desirable and wealthiest urban areas of Perth. The traditional owners of the land are the Whadjuk people, part of the larger group of Nyoongar people. The suburb of Peppermint Grove lies on the narrow isthmus between the sandy beaches of the Indian Ocean to the west and the picturesque lower reaches of the Swan River to the east. While Peppermint Grove is a privileged, low-density suburb, the library serves a diverse demographic, as its neighbouring suburbs, Mosman Park and Cottesloe, until recent times also included a mix of light industry, and continue to provide homes for the working and middle classes. Politically, the three suburbs consistently return conservative politicians, at all levels of government.

The Grove Precinct includes the Grove Library, a community learning centre, child health service, café, and local government offices, and is jointly owned and managed by three neighbouring local governments – the Towns of Cottesloe and Mosman Park and the Shire of Peppermint Grove. The total population of these three suburbs is around 19,000 residents.

The new Grove library is conceived

The first Grove Library was built in 1967. By 2002, it was obvious that the existing library was no longer adequate in terms of either usable space or new media technologies. The combined Library Committee of the three local governments undertook several consultations which identified that a modern new library would need an area considerably larger than the existing building.

The brief for a new library was developed in 2005 by Tricia Hille, Library Manager from 2002 to 2011. The brief included a detailed section on ecological sustainability, partly based on the Town of Cottesloe's 2002 Sustainability Policy.

The Grove turns green

Early consultation with the community about the new library centred on the predictable concerns of total cost, room for extra bookstock, and provision of space for activities and new technologies. However, at a public meeting to discuss the new library development held in 2005, a small number of community members raised questions about incorporating environmentally friendly features into the development. One of the partner Councils (Cottesloe) already had a strong environmental ethos, and the other Councils were also developing in that direction. Several Councillors and members of the Friends of the Library group had “green” leanings, and they kept sustainability issues at the forefront of community

debate. Thus the tiny green seed of community sentiment was sown into a fertile soil, and took root.

Three architects were selected and paid to develop concept plans. The focus on sustainability strongly influenced the final choice of architect, with Cox Howlett and Bailey Woodland's design impressing the selection panel by including many environmentally friendly design features. They were appointed in July 2006.

The design team had initially designed a "basic" green building, but as the design developed through the consultation phase, the feedback was to include as many green initiatives as possible. The architects put together a comprehensive list of sustainable features that could be considered for the project, and were frankly astounded when the three councils approved everything on the list. The result was a highly complex project, with the Grove being one of the first public buildings in Australia to incorporate such a wide range of integrated and cutting-edge environmentally sustainable design (ESD) features.

The Grove's risky gestation

However, some residents and elected members objected strenuously to their Councils committing to major expenditure of any kind, let alone on green initiatives. The local press was a ready amplifier of these opinions, and so it was critical to create a space where people who would potentially support the project could be informed and also heard.

Therefore a major element of getting the whole project "over the line" in the three local governments was a communication plan prepared by Oak Ridge Communication Group with input from high profile environmental expert Josh Byrne (*well known in Australia for his appearances on a popular television gardening program*), to address the Project's communication needs and to create awareness, understanding and support for the many benefits of the proposed project. This allowed the collation and dissemination of credible, easy to understand information sheets and press releases; and greatly assisted the promotional activities of the Friends of the Library such as letterbox drops, surveys and letter writing campaigns.

June 2009 was a critical time for the project. Construction had started, but there was still ongoing debate about installing some of the ESD features. A funding grant application had been submitted to a new Federal Government program, "Green Precincts", but there had been no confirmation that it had been successful. However, at intense Council meetings, all three Councils committed to ALL of the ESD features suggested by the architect, regardless of whether the government funding would be provided. It was later announced that the Grove had been successful in gaining \$1.5 million from the Australian Government towards funding of the ESD features.

The total final cost of the project was \$18.4 million; the ESD components were costed at \$3.7 million. The majority of the capital for the project was raised by each of the local governments (mainly through borrowings) in proportion to the population size of each of their respective local government areas.

The Grove is (finally) born

The Grove Library and the other services in the Grove Precinct were opened to the public on 16 August 2010, on time and on budget. The official opening was held in September 2010.

The Grove's environmentally sustainable design (ESD) features: the list

Responsible Demolition of Existing Building

- 80% of demolition materials salvaged

Climate Sensitive Design:

- Site orientation and shading – optimal positioning to take advantage of seasonal changes in the angle of the sun
- Thermal mass – heavy mass rocks in the library basement, as well as rain water tanks, acting as storage for thermal energy– cool in summer and warm in winter.
- Coil heat recovery system – uses the air conditioning units' exhaust air to preheat or precool intake air (depending on outside air temperature)
- In-ground (geothermal) heat exchange – cool water is pumped from a deep underground aquifer, runs through a heat exchanger, and is re-injected back into another section of the aquifer at a higher temperature, thus reducing the load on the air conditioning system

Encouragement of Sustainable Transport Options:

- The Grove is located close to the shopping precinct, encouraging multiple purpose trips rather than single purpose journeys
- The Grove is close to frequent bus and train services
- Bicycle riders are served with end of trip facilities such as bicycle racks, undercover bicycle storage, water bottle refill station, change rooms and shower

Renewable Energy Generation:

- 20Kw photovoltaic system (supplies 14% of Grove's electricity consumption)
- Solar hot water
- Wind turbines – 1Kw capacity – demonstration and visual educational feature

Energy Efficiency:

- Dimmed fluorescent and sensor controlled lighting system (*building commissioned too early for consideration of LED lighting, but consideration is being given to retrofitting*)
- Natural lighting through clerestory, windows, and lighting domes
- Natural ventilation of the underground car park (no need for extraction fans)
- High performance argon gas filled double glazing
- Solar control glass with low emissivity coating
- Roof and car park insulation

Water efficiency:

- Water efficient dishwashers, taps, toilets, and waterless urinals
- Onsite underground rainwater collection and storage with a total capacity of 250,000 litres
- Grey, yellow and black water treatment systems*

Environmental furnishings:

- Furnishings and fittings selected on the basis of suppliers' green credentials in terms of carbon footprint, use of recycled materials, and materials with low volatile organic compound emissions
- Plates, cups, glasses, knives and forks provided in commercial quantities for use for events, to avoid single use plastic utensils

Landscape:

- Storm water treatment system consisting of a gross pollution trap, and natural filtration in sedge beds before natural discharge to the aquifer
- Use of low water demanding native plants
- Irrigation system integrated with wastewater treatment system*
- Sensory and shade gardens, some food plants included
- Green wall garden beds as a demonstration of a vertical landscape

**No longer in operation - see following paragraphs*

The Grove - first steps

It is often stated that it is better to be at the “leading edge” than the “bleeding edge” of innovation – that sometimes early adopters pay the price for being the “guinea pigs” of a new technology.

Some technologies, such as site orientation, double glazing, solar hot water systems and photovoltaic systems, were tried and true green technologies with predictable and known performance and costs. More unusual technologies such as harnessing geothermal resources to cool the building, wastewater treatment and re-use on site, and wind turbines for electricity generation in an urban setting, were less predictable.

For example, the first production bore of the in-ground heat exchange system failed and had to be replaced quite early in the project, at some expense, due to unpredictable geological characteristics unique to the site. The wind turbines were found to be installed too low to overcome turbulence caused by adjacent trees and buildings, and since have been raised (from 7 metres to 14 metres) at the consultant's expense. The complex waste water reuse system, which relied in part on biological processes to break down waste matter, failed often due to the death of the micro and macro organisms; the company which supplied the units went out of business; and as the cost of maintenance of the units was high compared to the amount of water saved, it was decided to decommission this part of the system pending a better process or solution becoming available in the future. Consequently, the rainwater system will be retrofitted to enable its use for irrigation. Other problems with treating rainwater for internal use have also been rectified.

These problems have been easy targets for detractors of the project. They have also caused additional expenses for the three local governments, and this, combined with turnover in Councillors in the normal process of elections, means that political support for further remedial expenditure is not assured.

Learning from experience

In retrospect, it could be said that the project suffered from the widely recognized management phenomenon of over-optimism during project planning.¹ Factors that create a culture of over-optimism include weaknesses in the quality of available data and modelling techniques.² In the case of the Grove, this was an inherent risk as many of the technologies had not been tried on this scale in a public building before.

Another identified risk factor is complexity³ – there was always going to be a challenge in integrating disparate systems including water, solar and wind power; geothermal, passive, hydraulic and mechanical systems; digital and analogue controls and monitoring: requiring the input and coordination of a wide range of suppliers and consultants. The software required to integrate these systems within the Building Management System (BMS) also proved difficult to bring to reliable operating condition.

There is inevitably a sense of euphoria around the opening of a new “green” public building, with an optimistic expectation that all systems will perform as designed from day one. When this is not the case, the collective confidence is somewhat dented. However, the intent that The Grove should be a pioneer education and demonstration building implicitly included acceptance of the risk that some of the untried technologies would not perform as anticipated. The ongoing challenge is to analyse and accept any shortcomings as equally valid “learnings”, rather than allow them to overshadow the overall success of the green technologies that are working well, or have an excellent prospect of performing well, with some remedial adjustments.

Despite its issues, the Grove Library is now recognized as one of the most impressive libraries in Perth, both in terms of its architecture and ESD features, but also in terms of performance outcomes and innovative practice across all aspects of library services. Regrettably this paper does not allow expansion into these topics, but will discuss the ongoing interaction of a green library with its staff, customers and visitors; and the programming opportunities and synergies that underpin community engagement with a green library.

The Grove as a living lesson: Vision and Mission

An ethos developed early on in the Project that the Grove Library would be the focus of an ongoing community education strategy about the benefits and practical actions that the community can take to secure a sustainable future. The strategy combines promotional activities, online information and resources, educational tools and community events to deliver a program that has local, as well as potentially national and global reach.

¹ National Audit Office (UK) Over-optimism in Government Projects: Report 2013

² Ibid p 5

³ Ibid

To achieve this, the green theme has been embedded into every aspect of the Grove Library's business, including branding, vision and mission statements.

The Grove's tag line, "Leading, Learning, Living" was devised not only to express the Grove Library's general educative role in the life of the community, but also leading by example.

The following are extracts from The Grove Library's current Vision and Mission Statement:

The Grove Library's Vision is:

"Confident, connected communities leading the way in learning and sustainable living."

The Grove has a special Mission to educate the broader community about sustainability.

The relevant objective under **Leading** is: *Leading by example in sustainable practices including showcasing the Environmentally Sustainable Design features of the building to encourage emulation and adoption ranging from personal to commercial applications.*

The relevant objective under **Learning** is: *Providing resources about sustainable living and partnering with organisations in the sustainable and green network to provide sustainable knowledge and training.*

Green Library = Green Staff?

The sustainable theme runs through every aspect of the Grove Library's operations, including raising the staff's awareness of the impact of their activities, even the smallest ones, on the environment. Thus the cleaning contractors use low toxicity cleaning products; all paper for printing and photocopying is sourced from recycled stock; refuse bins throughout the library for both staff and customers separate recyclable materials from landfill; the library provides a collection point for recycling batteries, mobile phones and printer cartridges; library events are analysed in terms of reducing waste. The staff participate in a "green team" to consider ongoing ways of applying the "reduce, reuse, recycle" mantra to library operations.

Staff also contribute food scraps for an onsite worm farm and compost tumblers, as well as maintaining a small herb and vegetable garden on site. Staff have recently salvaged a wooden pallet, which held a delivery to the library, to be repurposed as a vertical herb garden, and several staff are eagerly participating in this project.

To paraphrase Kermit the Frog, it isn't (always) easy being green. It should be acknowledged that staff have been intimately affected by the challenges with the building, both in terms of their personal comfort, and by criticism directed at them about issues over which they have no control. It is difficult to maintain unwavering enthusiasm for a green building during a 40 degree centigrade Summer heatwave (common in Perth), when the air conditioning is not working; or when a member of the public is complaining about recent newspaper articles about the cost of the building. However, the staff in the main have remained stoic and committed to supporting management while the challenges are addressed.

Another insight gained is that library management must also be ready to step up to the challenge of managing a green building. At a minimum they must be willing to inform themselves about sustainable technologies, as they will need to work with an interdisciplinary team of suppliers and consultants to ensure that the original investment and community aspirations in a green building are maintained and fully exploited.

The Grove as an on-going inspiration

The greatest source of education and inspiration is the building itself. However, to capitalize on the building as a learning tool, it has been necessary for it to be interpreted for a range of audiences, from children, students, members of the community, through to architects, engineers and industry professionals.

One response to this challenge has included, where possible, allowing features to be visible: one obvious example is the wind turbines. Some photovoltaic panels were installed in a sub-optimal location at the front of the building, simply so that they can be seen; and some parts of the building which would normally be hidden have “ports” showing their workings (such as the viewing windows to the thermal maze), or are referenced in the landscape design (for example, the round shapes of the large underground rainwater tanks are playfully outlined as virtual ponds in the sensory play area).

In addition, interpretive signage, fact sheets and on-line resources were developed by the contracted communications firm, in conjunction with environmental media personality Josh Byrne, to ensure complex information was able to be communicated effectively to a general audience. A series of fact sheets not only describe the ESD features of the Grove, but include tips for community members on how to scale sustainable practices to a domestic setting. All of these resources can be viewed on the Grove Precinct’s website www.thegroveprecinct.com.

Industry Tours

The high profile of the Grove project, both as the only Green Precincts funded project in Western Australia, and as the winner of numerous industry awards (see appendix below), has resulted in a high level of interest from industry professionals including library, local government, public works, architects, builders, environmental engineers, and academics. In addition, elected members from other local governments often request a tour of the facility. Approximately 200 individuals and small groups have been given a personalized tour of the Grove’s features over the past four years.

Engagement with the Public

Public engagement was built early with media personality Josh Byrne being recognized as the informal “ambassador” of the new project. A highly successful community planting day was held on Saturday 21 May 2011, in partnership with the Water Corporation (State Government water authority). The event program showcased The Grove’s environmental features and water conservation strategies, and included hands-on planting with Josh Byrne joined by The Honourable Colin Barnett, Premier of Western Australia. The event included guided site tours of The Grove, live entertainment, storytelling, eco activities for children, and information stalls on all things ‘sustainable’.

This initial event established relationships with environmental groups and organisations who quickly saw the potential of the Grove to host and complement their own activities and agendas. The Grove has also been used to promote local government programs, including Earth Carers and “Living Smart” courses for householders. These programs have also regularly partnered with the Grove to host themed activities such as Sustainable September, Plastic Free July, and Climate Smart. School also groups regularly visit the Grove to learn about the ESD features.

Other environmental and sustainability groups who have held events at the Grove and/or have an ongoing relationship include: Coastcare, Millennium Kids (Sustainability Ambassadors Youth Group), Slow Food Forum, Climate Change Commission, Native Plant Subsidy Scheme, and the Climate Smart Community Information Forum held in March 2014, which attracted around 500 participants. School also groups regularly visit the Grove to learn about the ESD features.

Rather than attempt to describe the individual activities and events, one event will be used as a showcase. The Less is More Festival is an example of a grassroots movement to encourage sustainable practices. Earth Carers approached the Grove Library to host the event as the ESD features perfectly complemented the aims of the Festival. The first Festival was held in 2012, and was well attended. A second Festival followed in 2013, and was so successful it was recognized with an award for Community Event of the Year by the Shire of Peppermint Grove. The most successful Festival to date was held in February 2014. Estimated attendance throughout the day was over 1,000. This year's highlights included workshops on bicycle maintenance; keeping chickens; bread, cheese and yogurt making; de-cluttering; work/life balance and retirement; and growing nutrient dense food. The event itself was low cost, both for the Grove and for the organisers. All presenters were volunteers, passionate about their subject; and attendance at all events within the Festival was free of charge. The Less is More Festival is now an established annual event on the alternative lifestyle calendar in Perth.

Engagement with the Grove... as a Library

Visits to the library increased by 100%, memberships by 50% and loans by 20% almost immediately after opening, and these measures have largely been maintained at the higher plateau.

As Hauke suggests, a library's green credentials are a potentially powerful marketing tool, by demonstrating an empathetic concern for their customers' health and wellbeing, as well as aspirations for their tax dollars to be spent on sustainable and/or cost effective public facilities.⁴

Given the focus and interest in the environmental features and activities at the Grove, it should be no surprise that this focus extends to the collection. The Grove acquires and maintains a showcase collection of books and magazines on environmental issues and sustainable living, and these are identified with a green “spot” on the spine. These resources are frequently highlighted when the Grove hosts green-themed activities and events.

⁴ Hauke, Petra Going green as a marketing tool for libraries: environmentally sustainable management practices, IFLA WLIC 2013

The Grove also regularly incorporates green themes in children's programming. For instance, the upcoming Halloween event for 2014 has been themed as "Hallowgreen".

Conclusion

The Grove Library is a showcase green library, an architecturally attractive urban sanctuary which is a source of pride to its local community. It has a role to play in telling the story of this particular community's strivings for a sustainable future. This story is not finished.

Innovation in the building has infused every aspect of library services, including raising the bar on innovation in other areas such as digital services, customer service, staff engagement, and management practices. These are other stories, for other papers and presentations.

With ongoing community support, the future for The Grove Library is optimistic.

The final word – by Mayor Ron Norris

Mayor Ron Norris has been a Councillor at the Town of Mosman Park since 1987, and Mayor since 2006

When the 3 Councils decided to proceed with the Library project the first thing we did was consult with our communities. That consultation yielded 3 clear messages. First, that a new, larger Library was needed. Second, the Library should allow for all the developing media technologies we could afford. Third, the design should contain as many environmentally sustainable design (ESD) initiatives as possible. So the design of the new building, particularly the ESD features, was dictated by community demand.

From the start of the project the intention was to explore and incorporate all aspects of environmental sustainability. We wanted to minimise water usage and recycle as much water as possible. We wanted to generate power from both solar and wind. Integrating these technologies proved to be a challenge but we now know what works and what doesn't.

The underlying ethos for the building was education and demonstration. We wanted to show Library users what the building was doing so they could imagine how they could apply the same technologies in the household domestic context. The fact that we needed to make changes and even abandon some technologies doesn't mean they are a failure; we just haven't got them working yet. Environmental sustainability in buildings is an evolving science and we must expose residents to ESD initiatives as they become achievable and affordable.

By any measure I consider our Library has been a huge success both technically and socially.

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Grove Precinct Website www.thegroveprecinct.com

Grove Library Website www.thegrovelibrary.com

Appendix 1: Grove Library Awards and Recognition

2011 Australian Institute of Architects (WA Chapter) Walter Greenham Sustainable Architecture Award

2011 Australian Institute of Building (Western Australia) Professional Excellence in Building Award (PS Structures)

2011 Landscape Industries Association Western Australia Overall Winner (Designer) (Newforms Landscape Architecture)

2012 Illuminating Engineering Society Award of Commendation – Exterior Areas (WA) (Engineering Technology Consultants)

2012 National Local Government Award in the “*Energy Smart*” category

2012 Museums Australia Multimedia and Publication Design Award Commendation (*History in your Pocket app*)

2014 State Library of Western Australia Foundation Award for Excellence (*History in your Pocket and the Peppermint Grove History Trail apps*)