Effective public participation is fundamental for marine conservation - lessons from a large scale MPA

Jon C. Day

Australian Research Council Centre for Coral Reef Studies, James Cook University, Australia

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Short title/running head: Effective public participation in MPAs

Abstract

The Representative Areas Program (RAP) was, at the time, the most comprehensive process of community involvement and participatory planning for any environmental issue in Australia. The RAP was a key component of the widely acclaimed rezoning of the Great Barrier Reef Marine Park, and although completed in 2003, many lessons learned are still relevant today. This paper provides an analysis of the comprehensive public participation program that significantly influenced the final planning outcome. It provides insights into a fundamental component of effective marine planning, assessing what worked well and what did not in terms of public engagement. Some aspects of the public participation program were innovative, and some were more effective than others. The outcome was one-third of the Marine Park was declared as highly protected no-take zones in 2004, with the remainder of the park also zoned to provide lower levels of protection. The methods used to engage the public and the 25 lessons discussed in this paper should be of interest for practitioners, policy makers and academics elsewhere aiming for 'good practice' approaches to achieve environmental conservation.

Keywords: marine planning, public engagement, stakeholders, environmental decision-making, Great Barrier Reef

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Corresponding author:
Jon Day
Email: jon.day@my.jcu.edu.au
Phone: +61 (0)419 404 167
Mailing Address: 17 Queen Street, North Ward QLD Australia 4810

Introduction

In recent decades, public participation (also known as 'public engagement', 'community participation' or 'stakeholder involvement') has become a regular part of environmental decision-making. Defined as *'the involvement of those affected[1] by a decision in the decision-making process'* (International Association for Public Participation, quoted in VAGO 2015), public participation is today widely endorsed in academic and policy circles (e.g. Petts and Leach 2000; Beierle and Konisky 2000; Rowe and Frewer 2005; Reed 2008; Victorian Auditor-General's Office (VAGO) 2015).

Many authors (e.g. Backstrand, 2003; Innes and Booher 2007; Petts, 2006, 2008; also multiple authors in Supplementary Information Table T1) consider that effective public participation is the 'right thing to do', leading to better decisions and building public trust in key decisions and decision-makers. Appelstrand (2002:289) refers to public participation as constituting *"a prerequisite for legitimacy – and thus acceptance of laws... and decisions"*. Similarly, many government agencies today promote public participation as an essential part of decision-making, recognising *'the credibility of a decision is enhanced when it is perceived to be the product of an open and deliberative process'* (VAGO, 2015:2).

Many papers examined in Supplementary Table T1 highlight the importance of public participation in environmental planning, but only a few drill down to specifically discuss how this should be undertaken at different stages of the overall planning process, or evaluate the effectiveness of various methods of engagement. Furthermore, very few papers deal specifically with these aspects when planning a large-scale marine protected area (MPA), an increasing trend for many MPAs today.

This paper complements the existing literature, summarizes the methods used for public participation within the Great Barrier Reef (GBR), documents the lessons learned, and suggests which methods may be useful elsewhere[2].

The Great Barrier Reef context

The GBR is globally significant, being the largest coral reef ecosystem on earth with an amazing diversity of plants, animals and habitats. Today the Great Barrier Reef Marine Park (GBRMP) is a large multiple-use marine park covering 344,400 km^2 (Supplementary Information Text1 provides details about the GBR context and the statutory planning process).

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[1] affected = interested in, or impacted by on, the decision (VAGO 2015)
[2] The author was the GBRMPA Director responsible for commencing and coordinating the RAP; he also spent 28 years working in the Great Barrier Reef.

When the GBR legislation was initially proclaimed in 1975, it introduced the concept of a multiple-use marine park allowing "reasonable use" of natural resources to co-exist with conservation. The Act specified that a zoning plan, with spatially derived zones, was to be the key management tool for the GBRMP, with the zoning plan defining the purposes for which certain zones could be used or entered.

The Act (s. 32) also requires a minimum of two formal (i.e. statutory) phases of public consultation when preparing a zoning plan, each for 'not less than one month' during which time 'interested persons' are invited to make representations[3]. The first phase seeks public input prior to developing a draft zoning plan, and the second phase provides for public comments on the draft plan.

The Representative Areas Program

A comprehensive and controversial rezoning of the entire GBRMP occurred during the period 1999–2003. The Representative Areas Program (RAP) rezoned the entire Marine Park during a single planning process. When the revised zoning plan for the GBRMP came into effect 1st July 2004, the proportion of the park protected in no-take zones increased from < 5% to more than 33 percent (117,000 km^2), the world's largest systematically derived network of no-take zones (Fernandes et al. 2005).

During the RAP, a greater level of public participation occurred than was legally required, in terms of both the nature and duration of the formal consultation phases, and by supplementing the formal process with significant informal consultations (Day et al. 2004).

The first formal Community Participation phase (7 May – 7 August 2002)

The first formal Community Participation phase (CP1) was extremely resource-intensive and involved a variety of techniques (see Table 1 and Supplementary Information Table T2). These were aimed at maximising public engagement, ensuring the widest possible cross section of the users and communities were aware of RAP and had opportunities to provide submissions prior to the preparation of a draft zoning plan (see Table 2A, lessons 1-7).

The first formal participation phase ran for three months, far beyond the one month required by the legislation. Given the scale of the program, and to facilitate and encourage community participation, the GBRMPA also embarked on a public awareness campaign (Method **8 in Supplementary Table T2). Considering the importance of the GBR at the local, national and international scale, the public participation program aimed to reach all interest groups but had a

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[3] The term used in the *Great Barrier Reef Marine Park Act 1975* is 'representations' but virtually all stakeholders understand this to mean a written submission

focus on local communities and users given they were more closely involved in the Marine Park.

A wide range of meetings occurred within the GBR catchment area including local communities, commercial and recreational fishing organizations, key federal and state politicians, Indigenous people (many whom are recognized Traditional Owners), tourism operators and conservation groups (see Table 2, Lessons 1-5,7, 8-10). Similarly, meetings occurred with representatives of organizations such as the Association of Marine Park Tourism Operators, Sunfish, major NGOs, and all branches of the Queensland Seafood Industry Association. While some of these meetings were large and formal, many were small and informal but all provided an invaluable exchange of information.

A key part of public understanding required the simplifying of technical terms; therefore, as questions arose in the consultations, the GBRMPA responded by developed a series of technical information sheets (method **14, Supplementary Table T2) and used layman's terms to communicate.

Table 1 - Some statistics prior to, and during, the first formal phase of public participation during the RAP rezoning (after Day et al. 2004)

Type of public participation	Further information
Community Information Sessions undertaken in 22 regional centres	Day et al. 2004; Thomson et al. 2004; Jago et al. 2004; GBRMPA 2005
200 meetings, engaging some 6,000 people face-to-face about RAP	
33,000 submission brochures distributed	
4,000+ telephone calls received by GBRMPA's free-call number	
1,500+ Community Service Announcements on television	
100+ newspaper articles	
70 Newspaper advertisements (at beginning and end of CP1)	
Radio interviews (over 60) and TV spots (approximately 10)	
6,800 visits (~38,000 hits) to RAP webpages on GBRMPA website	

The unprecedented level of publicity outlined in Table 1 and the high level of community engagement resulted in 10,190 written submissions being received in CP1. This unanticipated number of submissions required innovative ways to collate and consider the information submitted to help develop a draft Zoning Plan (Innes et al. 2003).

The community Information sessions

Many elements used to engage the public were highly successful, in particular the Community Information Sessions. These resulted from previous experience that 'normal' public meetings (where the presenters sit in front of the public and answer questions, usually after a presentation), were not effective for a useful exchange of knowledge and views. Public meetings had often become opportunities for a noisy minority to dominate, resulting in frustrations both in the audience and with those trying to run the meeting.

Instead, community information sessions comprised 3-4 duplicates of information 'displays' set up and manned by agency staff in regional centres on pre-advertised dates and times (generally 3pm-7pm) (Thompson et al. 2004). They were open to any interested persons wishing to obtain information, make their comments, or hear what the GBRMPA was proposing in an informative and inclusive environment. These sessions were held in schools and community halls, allowing community members to discuss their concerns and ideas directly with a GBRMPA staff member in an informal and non-threatening environment.

Recognizing the diverse uses of the region, the GBRMPA had previously recruited staff who had a high level of 'credibility' and previous work experience with various user groups and industries. These officers were invaluable in the community information sessions; their detailed knowledge and familiarity with specific stakeholder concerns built trust between the GBRMPA, the key sectors and interested members of the public, and enhanced the ability to collect detailed and spatially explicit information (Day et al. 2004) (see Table 2, particularly lessons 12, 16, 19 and 21).

Prior training of all involved staff was an important aspect that led to the success of these consultative sessions. While these sessions required a high degree of prior organisation and a large commitment in terms of resources and staff, including senior staff in GBRMPA, the response and results indicated it was well worth the effort for both the public and the agency.

There were also advantages having the planning principles widely available so everyone was aware of the principles used to develop the new zoning network (Day et al. 2004).

The success of CP1 was due to a combination of many ways of engaging (including those listed in Supplementary Information, Table T2 but particularly the Community Information Sessions); the result was a huge amount of constructive input rather than vague concerns or collective frustration.

The second formal phase of public participation (2 June – 4 August 2003)

Following consideration of all the submissions from CP1, the draft zoning plan was published in June 2003. The second formal phase of community participation (CP2) then occurred over two months (again, exceeding the one-month legal requirement). This phase encompassed hundreds of formal and informal meetings inviting community discussion of the draft plan along with the continuing use of many of the methods listed in Table 1[4].

Public engagement during RAP was not confined to only the two formal phases; rather it occurred throughout the entire planning program from 1999-2003. During the two formal phases of community participation, GBRMPA staff had meetings in every major town adjacent to the GBR, including information sessions with people in over 90 population centres. In total, there were many hundreds of formal and informal meetings aimed at discussing the political, social, and economic aspects of the rezoning.

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[4] Comparative figures for CP2 1 can be found on the web at http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/second-community-participation-phase

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Convincing fishers they needed to write a submission

When the Draft Zoning Plan was released for public comment, there was an outcry from some fishers who, for the first time, realised the proposed extent of no-take zones (an increase from the existing 5% of the Marine Park to around 30% in the Draft Plan). Many claimed the proposed zones were "*… over my special fishing spot!*" However when pressed, many admitted they had not put in a submission or had not mentioned their special spot. The planners pointed out that they were not aware of every special fishing spot in the GBR, but if they knew about such concerns, then at least they would be able to consider them and hopefully develop a more acceptable Draft Zoning Plan. Reiterating the intention was to develop a network that met the biodiversity principles, but as far as possible minimised impacts on users, there was begrudging acceptance from most complainants to make a submission! As a result, GBRMPA received a further 21,500 submissions in CP2, commenting on the draft zoning plan.

Dealing with the public submissions

The approximately 31,600 written public submissions received in the two formal phases — 10,190 in CP1 and 21,500 in CP2 — were unprecedented in any planning program in the GBRMP. Many GBR locals were 'familiar' with the submission process from previous experiences with GBR planning so this helped the response rate (see also Table 2, Lessons 13, 17, 22 and 23).

The high number of submissions necessitated the development of faster and more effective systems (Innes et al. 2003). Each submission was processed (scanned, contact details recorded, acknowledgement sent with a unique number assigned, etc.), and then analysed using locality identifiers and keywords against a range of themes and attributes. All this information was entered into a database with a web-based query tool designed to aid the planning teams (explained in Innes et al. 2003). This approach was also important for building trust, as the agency was able to demonstrate the submissions were being taken seriously.

A large number of the submissions involved spatial information, including approximately 5,800 maps in the second formal phase alone. The GBRMPA considered, coded, and analysed all 31,600 submissions, and digitized or scanned many maps.

How planning decisions were made

The planning for the GBRMP was undertaken in three broad regional groupings, each considering the range of available information to develop potential zoning options including the best available scientific advice, the submissions, the public comments from the community information sessions but also the views of the 'silent majority' (See Table 2, lesson 11). The planners utilized various approaches to integrate and evaluate all this information and the three regional groups then combined their proposals to maximize the protection of biodiversity while

minimizing the social and economic impacts where possible. Computerized decision-support tools helped to analyse various options for zoning networks, guided primarily by the suite of eleven biophysical operating principles (Fernandes et al 2009 but also Table 2, Lesson 25).

The final zoning network was developed from a combination of expert opinion, stakeholder involvement, decision-support tools and some pragmatic modifications. Importantly, the public participation was not just token-consultation. Significant changes occurred between the original zoning, the draft zoning plan, and the final zoning plan that was accepted by the Australian Parliament (see Figure 1). Many of these changes resulted from the detailed information provided in submissions and other information received.
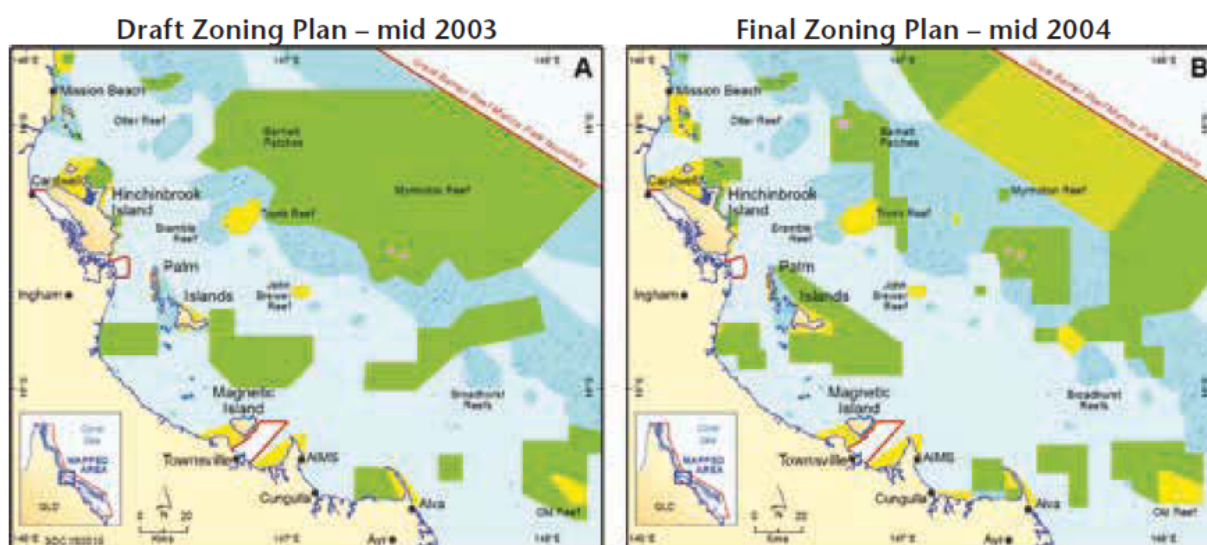

Figure 1 – Extent of the zoning changes that occurred between (A) the draft zoning plan and (B) the final zoning plan, addressing stakeholders concerns while still meeting the overall objective of protecting the range of biodiversity
(Area shown is a small portion of the GBRMP near Townsville)
(© Commonwealth of Australia, 2015)

The final approval process

In December 2003, the revised zoning plan was tabled in the Australian Parliament. Media attention and interest-group lobbyists ensured that most members of Parliament were aware of the planning process, the high levels of public participation, and the significant changes that occurred between the draft and the final plan.

The final zoning plan included various compromises and left virtually all sectors feeling somewhat aggrieved. However, there was also widespread recognition that no single sector got exactly what it wanted, and that public participation had effected huge changes during the planning process (Day 2016); see also Table 2, lesson 18.

Discussion

The entire RAP planning program that led to the 2003 Zoning Plan was wide-ranging and comprehensive (Fernandes et al. 2009; Day 2011). It was, at the time, the most comprehensive program of public participation for any planning task in the GBR and possibly in Australia, extending over four years and costing an estimated AUD$12 million (Osmond et al. 2010).

While the overall planning costs may appear high, they seem acceptable when put into the context that in one year (2015–16) the GBR contributed $6.4 billion in value added, direct and indirect, to the Australian economy (Deloitte Access Economics 2017). Unfortunately no breakdown of the costs exists solely for the public participation components but it was a considerable proportion of the overall planning costs.

Thompson et al. (2004) address seven key lessons about public communication learned during the RAP (including differing cultural and sectoral views, and lack of 100% scientific certainty); Day (2016b) provides an online summary of many of the lessons learned.

Tables 2A-2C provide an expanded list of 25 lessons learned from RAP presented in three groupings:

> Table 2A - Lessons to be considered at the commencement of a planning program
>
> Table 2B - Lessons applying throughout the planning program
>
> Table 2C - Lessons to be applied if, and when, required.

Supplementary Information Table T2 assesses 35 separate methods used to engage the public throughout the planning and implementation phases of the RAP. Assessing these methods against the four levels of stakeholder consultation described by Petts and Leach (2000) shows:

- Twenty-one methods ranked as Level 1 (i.e. education/information)
- Eleven methods ranked as Level 2 (i.e. information feedback)
- Two ranked as Level 3 (i.e. consultation)
- One ranked as Level 3/4 (i.e. extended involvement)

Hurlbert and Gupta (2015:101) maintain, however, *"…different levels of engagement are appropriate in different contexts depending on the objectives and the capacity of stakeholders"*.

Table 2 – Key lessons learned about public participation from the RAP/rezoning:

Table 2A - Lessons to be considered at the <u>commencement</u> of a planning program
[Note (**x) indicates the number in Supplementary Table T2 where more information is available about this method]

Key lessons learnt *(with the relevant phase of planning shown* *in **bold**)*	Explanation (using the RAP or other GBRMPA planning as the example)
1. Ensure all stakeholders know the reason(s) why the planning process is happening; why they should be involved and how they can get involved.	Some stakeholders had *'a problem understanding there was a problem'* ... they could not understand why a new zoning plan was needed. Stakeholders needed to be informed that the GBR was 'under pressure' (see Lessons 4 and 5) and the level of biodiversity protection was insufficient; only then were many willing to accept RAP as part of the solution. Also, don't wait until you have 'perfect' information for planning, as you will never start.
2. Assume everyone does not have the same knowledge/information base; keep the messages simple (as far as possible)	Information sharing should be multi-directional. Technical Information sheets (**14) were made available. Needed to remind stakeholders to focus on the problem (protecting biodiversity) rather than what the consequences might mean (e.g. reduced fishing areas?). See also Bush et al. 2011; McKinley 1998.
3. Ensure anyone who is affected or interested understands the planning process, when they should get involved and any constraints on the process	A clear timeframe and planning framework needs to be established at the start of the process; however, some flexibility is needed to deal with unforeseen circumstances (see Lesson 20) which may lead to an expanded timetable. Also need to be honest about which planning aspects stakeholders will be able to influence e.g. what is open for input and what is not (e.g. some legal aspects were not-negotiable). Maguire et al. (2012) maintain there are times during the process when all stakeholders should be involved and other times when only targeted representatives should be involved. See also Bryson et al. 2013; Nabatchi and Amsler 2104.
4. Ensure your stakeholders understand the key issues and the key terms that will be used during planning (may need non-technical language and/or graphics to explain complex issues).	Many stakeholders initially had little understanding, or were misinformed, about the key issues/pressures. Many had not heard of 'biodiversity', or did not understand its importance for the GBR's future. Needed to communicate in layman's terms to the majority of stakeholders but also in technical terms to the experts, so communication messages were appropriately tailored for different stakeholder groups (see *'Crossing the Blue Highway'* (**16); Gilliland and Laffoley 2008; Weik and Walter 2009.

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5. Clarify the clear objective of the planning (e.g. *it's not about managing fishing but it's about protecting biodiversity*) – and don't promise what you may not be able to deliver!	Many outspoken critics maintained that increasing no-take areas would not benefit fisheries and would have adverse impacts on the distribution of fishing effort. They needed to be continually reminded that RAP was not about fisheries management, but was about protecting the full range of biodiversity. GBRMPA, however, still believed the rezoning would have positive benefits for fish stocks despite the fact this was not the prime objective (this turned out to be true). See also Gilliland and Laffoley 2008; Pomeroy and Douvere 2008.
6. The media can be a great/influential ally – or a fierce and critical opponent; therefore a trained media spokesperson in your team who knows the topic and how to present well is an advantage	Work closely with all forms of media so they get to know you and how you work. Expect that some media will be critical or opposed to what you are doing – and be prepared to counter those views with clear and concise messages. Having specialised skills in media can be a real advantage; Sayce et al. (2013) suggest hiring professional public engagement specialists if that expertise is unavailable in-house. For RAP, a senior Director with expertise in public/political engagement was recruited; his role ensured most public participation aspects worked as intended throughout the planning process e.g. directing the key campaigns (**8).
7. Most planning processes require political approval at some stage. Start early; don't wait until the end of the planning process to get political buy-in. Note also the timelines favoured by politicians are often incompatible with comprehensive planning processes.	The level to which your political masters are aware of the issues, the implications of your recommendations and the full range of public views, will help them make the best possible decisions; a 'Leader's Guide' (**11) therefore helped politicians and other key players. Contacting these people prior to CP1 was important, and whenever possible, senior GBRMPA officers undertook personal briefings. These ensured politicians had the correct information, had materials to give to their constituents, and had a GBRMPA contact if required. Remember politicians are usually more interested in what the wider community thinks than just those who send submissions. They are also interested in which of their constituents you have engaged, so keep a running list of all meetings/ engagement events and the numbers present.

Table 2B - Lessons applying <u>throughout</u> a planning program

*[Note (**x) indicates the number in Supplementary Table T2 where more information is available about this method]*

8. Public engagement (both formal and informal) needs to happen throughout the entire planning program, not just during the formal/statutory times	Engaging throughout the planning program invariably means better outcomes. Take on locally informed perspectives from as wide a viewpoint as practicable; in RAP this was achieved by ongoing interaction with the 12 Local Marine Advisory Committees (**12) along the GBR coast, all of whom provided excellent opportunities for information exchange to and from the planners. Periodic *Update* brochures (**15) kept the public informed of progress outside the formal engagement periods.
9. Be prepared to refute contrary claims and misinformation – address it as soon as is possible, as leaving such claims exacerbates the problem.	A fact sheet titled '*Correcting the Mis-information*' (**22) proved useful to publicly refute wrong or misleading claims. Misinformation can arise in many ways, whether it is due to a misunderstanding or deliberate mischievous behaviour – but leaving it unaddressed in the community exacerbates the problem. The running list of meetings was also useful when constituents claimed they did not have an opportunity to get involved – the list clearly showed the opportunities they ignored! See also Lewandowsky et al. 2012; Ecker et al. 2014
10. As far as possible, avoid public meetings; recognise the 'noisy minority' usually does not represent the silent majority (see also 11 below).	Previous planning programs showed that public meetings were often not conducive to an effective exchange of all differing views. The 'noisy minority' rarely equates to all those with an interest in the future of your MPA. One place to avoid such meetings is any venue where alcohol may be available. GBRMPA was required to attend some public meeting when they were arranged by others; however we learnt how to turn those to our advantage by providing the fact sheet '*Correcting the Mis-information*' and ensuring sufficient staff were present to answer questions one-on one before, during and after the meeting.
11. Don't ignore those stakeholders who choose to remain silent; consider ways to understand and collate their views.	The silent majority can often be 'drowned-out' by the vocal minority who are highly motivated to voice their concerns. The Community Information Sessions (**23) ensured that all interested parties had an opportunity to be heard and ask questions. Many MPA supporters (the 'silent majority') do not voice their views or write a submission, and may not be motivated to act if they believe everything is okay. There is a need to monitor the wider community attitudes and awareness, especially to inform the decision-makers/politicians. See also Stephenson and Lawson 2013.

12. Recognise you may be dealing with issues that may impact someone's livelihood; this is a critical requirement – a good understanding of relevant industries is reassuring for those who think their livelihoods might be affected	Many stakeholders felt RAP would have adverse implications for their financial and operating future, leading to some discussions being very emotive and personal. Whenever issues affecting a stakeholder's livelihood are discussed, it is critical that a young/naïve/inexperienced officer does not represent the agency. GBRMPA used officers who really knew the issues e.g. an ex-fisheries manager understood the concerns of all types of fishers and knew how to talk with them; an ex-tourism employee knew what was important for tourist operators; etc. A minimum of two officers attended all meetings even if only with a small audience (mainly for corroboration/back-up during any discussions but also from a workplace safety perspective).
13. Reiterate to all stakeholders that, in terms of the submissions, it is not a numbers game	During RAP, stakeholders needed to be reminded that 1-2 well-argued submissions are more convincing than 10-20 proforma submissions that say exactly the same thing; it was not a numbers game but more about the quality of any arguments submitted. The analysis must ensure the substance of submissions is considered rather than the number of times a comment is made; each submission must be considered on its merits. However, groups were encouraged to submit joint submissions (while clarifying how many people that one submission represented); many groups complied and submitted well-argued joint submissions.
14. Expect there will be conflicts sometime during your planning process.	There is no simple way of creating a conflict-free consultative mechanism for large complex MPAs. While many decision-makers would like to have consensus-based decision-making, *"consensus is not an achievable goal for stakeholder processes dealing with issues of this magnitude"* (Helms 2002 in Day et al. 2004:258). There were many conflicting views about RAP and its outcomes, so no single solution would totally satisfy all users and stakeholders.
15. Recognise that scientific knowledge is, in many areas 'provisional, uncertain and incomplete' (Backstrand 2003)	A lack of scientific certainty is not a valid reason to not proceed; use the best available science. During the RAP, the Scientific Steering Committee's advice was that none of their recommendations (i.e. the biophysical operational principles, see **4) were for 'ideal' or 'desired' amounts of protection. They were the best possible estimates based on the available literature, expert knowledge, and their knowledge of the GBR system at that time; however, they acknowledged their recommendations might need reviewing when new information becomes available. See also Bradshaw and Borchers 2000; Oreskes 2004; Fleming and Jones 2012.

16. Utilise traditional/ local knowledge, formal scientific knowledge and expert knowledge	It was important to recognise and utilise all forms of local knowledge as well as expert opinion. Fishers and tourist operators, who are regularly on the water, often know as much (or more?) about the local environment than many researchers – so draw upon their knowledge and use it to augment the best available scientific data. Be wary if information differs widely, but recognise that some sectors and cultures view and value the marine environment in differing ways.
17. Provide feedback, and show the public that their comments do make a difference ... also be able to show this to decision-makers	Ensure any consultation is not seen as 'token'; i.e. all comments and submissions must be considered and planners should be able to demonstrate where comments have made a difference – and if not, why not. Manage expectations to maintain confidence and build trust. However, do not fuel unrealistic expectations or promise what you can't deliver.
18. There is rarely a 'win-win' in complex planning tasks; compromises are often the only possible outcome	Ensure your political masters are aware there are likely to be 'winners and losers'. Political 'trade-offs' near the end of a planning process are a reality (and may actually be essential to achieve an outcome). Recognise it is unlikely you will keep everyone happy - compromises are often the outcome. See also Rees et al. 2010; Christensen 2004.
19. No successful public engagement campaign can be conducted solely from within your office	It is essential to get out into the community and to engage with the wider public (not just the users) - where they work, where they recreate and where they feel comfortable. The Community Info Sessions (** 23 and Lesson 21 below) and LMACs (**12) all provided neutral/non-threatening venues for user/public/agency interactions. Also use media (**18-20), 'champions (**9) and displays (**17) to raise the planning profile in the community.
20. 'Expect the unexpected' – and ensure there is sufficient flexibility in your planning process to cope	There were many unexpected aspects during RAP, including the unprecedented number of submissions, some implications of unexpected political events (i.e. appointment of a new Minister), or the unanticipated political influence of the small but powerful charter fishing sector. Such unforeseen events required additional efforts and/or led to the initial timelines being extended.

Table 2C - Lessons applied <u>as/when required</u> in a planning program

*[Note (**x) indicates the number in Supplementary Table T2 where more information is available about this method]*

21. A two-way flow of knowledge is essential, so create a conducive environment for effective engagement (e.g. community information sessions)	The Community Information Sessions (**23) in numerous local centres were particularly successful allowing information exchange and promoting understanding of the RAP program and its objectives. Advertising about forthcoming Community Info. Sessions in local media ahead of time was important (**19-20), as was the choice of suitable venues/times in each location. We learned during CP1 that even more local communities should have been visited so this was addressed in CP2.
22. Think carefully what you ask in any submission form - open questions are very hard to code/quantify	The submission form used for CP1 (**7) included many open questions which produced long rambling answers; these proved hard to code as were the large maps that were also distributed. CP2 was far more effective as a simple two-page A3 size submission form that contained specific questions. Not everyone used the CP2 submission form, but scanning and coding were much easier for those who did.
23. It is easier to ask specific questions about a map with areas/blocks pre-marked and numbered, than have to code individually submitted maps	During CP1, large blank maps (**10) were provided free to the public; however many marked the map in differing ways showing their areas of interest. Some 5800 submissions contained maps indicating places that people wanted as no-take zones (or not), or proposed another zone type. This spatial information was allocated to mapping units by an overlay (and standard rules for interpretation), allowing spatial data to be entered into the submissions database. Detailed maps were digitised to preserve specific boundaries for future reference.
24. Assuming you do engage effectively, be prepared for more submissions than you expected	Submissions were received in a number of formats: letters, reports, proformas, and petitions (**21) as well as the GBRMPA submission form (**7). Lessons were learned during the process (e.g. during CP1 we started photocopying all submissions but quickly realised this was a waste of time/paper, whereas electronically scanning all submissions was the preferred approach).
25. Recognise many stakeholders are wary of 'black-box' models they do not understand; nor is it possible to get all the necessary planning variables into a model.	Analytical decision- support tools (DST) like *Marxan* or *Seasketch*, may assist planners but they rarely produce the final planning outcome. While such tools may generate 'a solution', it is inevitably refined if/when socio-economic values and political compromises are introduced (often the most fundamental determinants for a socially acceptable outcome). Stortini et al. (2015) propose a DST to help evaluate different boundary options. However, do not expect all the necessary social, economic and political information can be realistically used in such analytical tools, and remember: *"Garbage in, garbage out"*.

Each of the 35 methods in Supplementary Table T2 has their own strengths and weaknesses; they included both traditional and innovative methods of engagement some of which might be regarded as novel or 'unconventional' (Sayce et al. 2013), including:

- The '*Correcting the Mis-information'* Fact sheet,
- Use of telephone polling to understand the views of the 'silent majority'
- Effective use of publicity campaigns and 'champions' to promote the need for a rezoning
- *'Crossing the Blue Highway'* brochure to highlight connectivity and need to protect a range of habitats
- All zoning co-ordinates made publically available for download onto personal GPS/plotters.

Many useful lessons were learned (Tables 2A-2C) and the public participation components were a critical part of the overall planning, leading to significant changes to the final outcome as shown in Figure 1.

There are undoubtedly varying views as to the overall effectiveness of the public participation components of the RAP. One subjective indicator of effectiveness is the huge number of changes that occurred between the draft and the final plans; another is the national and international awards in the following years recognising the overall planning program[5]. The fact the outcome remains in effect today after 14 years is a further indication of the success of the overall program.

Petts (2006) maintains the form of public engagement is not as important as the way in which it is conducted. Consequently, a more pragmatic approach to determine the effectiveness of the public participation in the RAP is demonstrated by the two (admittedly subjective) assessments shown in the Supplementary Information (i.e. Tables T3 and T4). These highlight areas where, in hindsight, the overall planning process could be improved, including:

- Increased resourcing (the entire planning process was undertaken using existing resources)
- An initial under-estimate of the time required to undertake such a complex task; and
- Improved monitoring of the progress against the original timelines and costs.

Some of the positive benefits of the public participation aspects during RAP were:

1. The increased awareness amongst many stakeholders about the need to protect a range of habitats and the importance of biodiversity (termed 'beyond-process social learning' by Bull, Petts and Evans 2007).

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[5] The RAP received some 12 national and international awards in the period 2004-2010 – see
http://www.gbrmpa.gov.au/about-us/corporate-information/awards-and-recognitions

2. Combining local knowledge with expert opinion was an important part of the planning process. GBRMPA was able to develop an effective way of collating the best available science from the scientific community (i.e. the map of bioregions and the biophysical operating principles/socio-economic cultural management principles) as well as spatially relevant information from the public (through maps provided with public submissions and the community information sessions). Collectively these helped develop a draft plan that, as far as practicable, met the statutory goals. Virtually all of this spatial information was provided *gratis*, with only minimal resources expended to gather these datasets.

3. The clear relationship between the level of public participation and the final outcome.

As a major planning program, the RAP has influenced many other marine conservation efforts both within Australia and internationally, and set international benchmarks in marine conservation. It is important to recognise, however, that what worked as an effective process in the GBR may not necessarily work elsewhere. The wide range of methods used in the RAP enhanced both the level and diversity of public engagement and collectively contributed to the overall success of the public participation program.

However, when it comes to public engagement, no one approach should be universally applied for any MPA, large or small, and it is up to planners to choose those elements that best suit their situation. Many MPAs around the world have different management models and objectives, and it is important to consider the specific political, economic, social, and managerial context of the GBR when translating any lessons to other areas. Such factors as a relatively low population along the GBR coast, a reasonably high standard of living, and well-established and relatively stable governance across all levels of government probably mean the planning/management approaches used in the GBRMP may not be relevant or achievable in other areas (Day 2011).

Table 3 provides guidance as to which lessons learned and which methods of engagement might be applicable for small and large MPAs, as well as MPAs in developing countries.

Table 3 – Relevance of experience in public participation for MPAs elsewhere

(Methods considered most important shown **bold**/underlined)

	Relevance for small MPAs	Relevance for large MPAs	Relevance for developing countries
Lessons learned about public participation from RAP/rezoning (refer to this paper **Table 2A-2C**)	Lessons 1-25	Lessons 1-25	Lessons 1-21 (Note #6 may not require a trained media spokesperson on the planning team, but social media is still an important role).
Materials available in various public participation phases during RAP (refer to online **Supplementary Table T2)**	Methods **1**, **3-5**, **7-9**, 11, **12**, 15, **17**-20, **22**, **23**, **26-30**, **35**	Methods **1**, **3-5**, **7-9**, **11-13**, 14,**15**, **17-20**, **22**, **23**, **25**, **26-30**, **33**, **35**	Methods 1, 3, **5**, 8, **9**, 11, **12**, 15, **22**, **23**, **26**, **27**, **29**, **30**, 35
Additional methods for public participation			
Petts and Leach (2000)	Teleconferencing; Site visits; Focus groups/ forums; Open-House on the internet	Informational video; Teleconferencing; Site visits; Deliberative polls; Focus groups/forums; Open-House on internet; Citizen's Juries; Consensus conference; Visioning; Visioning on internet	Site visits; Focus groups/ forums
Sayce et al. (2013)	Messages to Listserv; E-newsletter; Social media; Hosted community events	Messages to Listserv; E-newsletter; Social media; Hosted community events; Online comment forms; Live webcast of public meetings	Social media; Hosted community events

Conclusions

This paper outlines many 'traditional' methods of public participation but also outlines some innovative ways to effectively engage the public in the RAP. The result was a very successful outcome in the GBR resulting from a comprehensive but systematic process. As Petts (2008) points out, *"engagement processes have to be competent if they (and hence inherently the institutions that organise and promote them) and the participants ... are to be trusted."*

The need to positively engage all those who have an interest in the GBR has been one of the most significant lessons learnt in the GBRMP for over 30 years and is now well recognised by the managing agency for many differing levels of planning and park management (Day 2016).

The overall success in the RAP was dependent upon a number of factors, not the least being that effective public engagement was widely supported throughout the agency at all levels. The provision of appropriate resources, training, the development of effective management systems within the agency (e.g. the database to cope with the submissions, the list of all community engagement events) and the willingness of most staff to readily assist were examples of this support, but effective leadership also played a role.

New techniques of public engagement (including online processes and the use of social media) have grown rapidly since the RAP occurred, and will all need to be considered when a future rezoning occurs (see Supplementary Information, Text 1).

Ultimately, the public participation aspects of any planning process should be tailored for the situation and must consider the relevant context. It is also important to recognise that almost all planning processes are political, and whether planners like it or not, and irrespective of the level of public participation, there are likely to be political compromises imposed at the end of most planning processes.

Nevertheless, it is hoped that some of the lessons outlined in this paper may be useful for practitioners, policy makers or academics elsewhere who are aiming to achieve practical and policy outcomes for environmental conservation.

Supplementary Information

Additional supporting material may be found in the on-line version of this article at
<mark>http:xxxxxxxxxxxxxxxxxxxxxxxx</mark>

1. **Table T1** – Comparative analysis of key references for public participation in environmental planning

2. **Table T2 -** Materials made publically available in the various public participation phases during the Representative Areas Program (RAP)

3. **Table T3**- Six elements of good practice in public participation in government decision-making *(after VAGO, 2015)*

4. **Table T4** – Five key management elements for effective public engagement *(after Petts, 2006)*

5. **Supporting Information Text 1** – Background: The Great Barrier Reef context

6. **References for Supplementary Information**

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==Supplementary Information== **Table T1 – Comparative analysis of key references about public participation in environmental planning**

Relative scoring: A= **Excellent**   B = **Very good**   C = **Good**   D = **OK**

Relevance to this paper: ⭐⭐⭐ *Highly relevant*   ⭐⭐ *Worth a read*   ⭐ *Some relevance*

References (in alphabetical order)	Key aspects covered	Guidelines for participation	Who should participate?	Methods of Participation	Participation lessons learned	No. of methods discussed	Overall relevance to this paper
Baker et al. 2007	What is effective participation?	B	B	B	B	>20	⭐⭐⭐
Bryson et al. 2012	Guidelines for designing public participation processes	B	C	C	B	<5	⭐⭐
Flannery and Cinneide 2012a	Evaluation of stakeholder participation	C	D	D	C	<5	⭐
Flannery and Cinneide 2012b	Deriving lessons relating to MSP from Canada	C	C	C	C	<5	⭐⭐
Fleming and Jones 2012	Fairer stakeholder involvement in MSP	C	C	C	B	<5	⭐⭐
Gilliland and Laffoley 2008	Stakeholder engagement as key element of MSP	B	B	D	C	<5	⭐⭐
Gopnik et al. 2011	Stakeholder participation in coastal and marine planning	B	C	D	C	<5	⭐
Gopnik et al. 2012	Early stakeholder engagement in MSP	D	B	C	C	<5	⭐
Gunton et al. 2010	Best Practice guidelines for collaborative planning	A	B	D	C	<5	⭐⭐
Jay et al. 2016	Stakeholder issues and governance for transboundary MSP	B	C	C	C	<5	⭐⭐
Konisky and Bieerle	Innovative processes for public participation	C	C	C	B	<5	⭐⭐
Maguire et al. 2012	Role of stakeholders In marine planning	B	B	C	C	<5	⭐⭐

Effective public participation in MPAs

Petts and Leach 2000	Methods for public participation	A	C	A	B	>20	★★★
Pomeroy and Douvere 2008	Engaging stakeholders in MSP processes	B	B	C	C	<5	★★
Reed 2008	Literature review of stakeholder participation	C	B	C	B	<5	★★
Rees et al. 2010	Win-win scenario for marine conservation						
Ritchie and Ellis 2010	Stakeholder engagement in MSP	C	C	D	B	<5	★
Rowe and Frewer 2005	Public engagement mechanisms	B	C	A	B	>40	★★★
Sayce et al. 2013	Evolution of outreach and engagement strategies	B	C	A	B	>20	★★★
Shucksmith et al. 2014	Regional MSP – data collection and mapping	C	C	C	D	<5	★

Another write-up of the public participation aspects of RAP is available online at:

Day, J.C. 2016b. Public participation to strengthen and legitimize planning processes. *Blue Solutions*.

This online set of 'solutions' comprises six building blocks, each with their own lessons learned:

1. Written public submissions during the planning

2. Assessing the views of those who don't want to get involved

3. Correcting misinformation and unrealistic expectations

4. Ongoing/continuing public engagement during the planning

5. Targeted educational material

6. Engaging politicians and champions throughout the planning

Supplementary Information Table T2 - Materials enhancing public participation made publically available during the Representative Areas Program in the Great Barrier Reef (adapted from Day et al. 2004)

Type of material	Details of the material developed for public engagement	Relevant phase(s) in RAP	Levels 1-4 (Petts & Leach 2000)	More information
1. Introductory brochure	Mailed out to stakeholders with a letter from the GBRMPA Chairperson at the start of the formal phase advising that the GBRMPA was reviewing the zoning of the Marine Park and how to get a Submissions Brochure	CP1	Level 1	
2. Draft Bioregions Map	Draft colour map showing reef and non-reef bioregions of the GBR. Released in 2000 seeking community feedback. Various changes occurred following stakeholder comments, leading to #3 below	Research & planning	Level 3	Separate info sheets (A4) for each bioregion (70 in total) were prepared but were less useful than anticipated! See 'Information sheets'' at http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/docs/representative-areas-program-publications
3. Final Bioregions Map	Colour map showing reef and non-reef bioregions of the GBR. Updated in March 2001 based on community feedback. Important underpinning for the RAP/rezoning	Research & planning	Level 2	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0004/25906/gbrmpa_bioregions_2001_06.pdf
4. Biophysical principles and Socio-economic and management principles	Biophysical Operational Principles (BOPs = Tech. Info. Sheet #6) http://www.gbrmpa.gov.au/__data/assets/pdf_file/0011/6212/tech_sheet_06.pdf and Social, economic, cultural and management operational principles (SEC = Tech. Info. Sheet #7) http://www.gbrmpa.gov.au/__data/assets/pdf_file/0012/6213/tech_sheet_07.pdf	Throughout RAP (but especially Research & planning, CP1, CP2)	Level 2	The BOPs were recommended by the Scientific Steering Committee and were a key component of the planning and the analytical assessment of the options (Fernandes et al. 2009) Both sets of principles were helpful to show the public the basis behind the decision-making.
5. Frequently Asked Questions (FAQs)	Q&A based on the most commonly asked questions from the informal consultation with stakeholder. These FAQs were made available at meetings and presentations and on the web site	Throughout RAP	Level 2	FAQs were one of the Technical Information sheets (see **14 below)
6. 'Pie-chart' maps	Colour maps showing the percentage of existing 'no-take' areas within reef and non-reef bioregions. These were subsequently updated, and the hyperlinked pdfs (see right-hand column) show graphically the extent on no-take areas in each bioregion comparing the old and new zoning	CP1	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0011/17300/nonreef-bioregions-in-the-gbrmp-and-gbrwh.pdf and http://www.gbrmpa.gov.au/__data/assets/pdf_file/0012/17301/reef-bioregions-in-the-gbrmp-and-gbrwh.pdf

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7. Submission Brochure	Mailed out upon request and also available on the RAP website; in CP1 included a questionnaire and information about how to obtain more detailed maps to help gather information for decision-making; in CP2, it was a simple A3 questionnaire	CP1 and CP2	Level 2	http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/docs/lessons/rap_brochure.pdf
8. Publicity campaigns	Two specific publicity campaigns were organised at key stages during the planning process: • The *'Under Pressure'* campaign helped set the scene as to why a new zoning plan was required • *'Let's keep it great'* was a key message to gain collective buy-in for the necessary planning changes; the Champions (see **9) played a huge role in this campaign	As required	Level 1	These campaigns were run on TV (see **18 below) and print media (**19) and were important to address Lessons 1, 3, 4 and 5 in this paper)
9. Using 'champions' can help raise awareness in some parts of the community	Well recognised personnel (e.g. sporting heroes, national identities, community leaders) endorsing the planning process or delivering key messages can be helpful to raise the planning profile, especially with lay people	CP1 and CP2	Level 1	Be careful to use a mix of champions (not everyone is enamoured by a sporting hero!) noting that some have greater credibility with differing stakeholders.
10. Detailed submission maps	18 detailed maps covering the full extent of the GBR coastline designed to get detailed spatial information from submitters including where new 'no-take' areas (or Green Zones) should, or should not, be located	CP1	Level 2	While somewhat useful, these were used to varying degrees; they were not helpful if someone maintained "they fished equally over the entire area"
11. Leaders Guide	Developed to introduce RAP to politicians at local State and Federal level along the Queensland coast and to representatives of peak bodies.	CP1	Level 1	
12. Local Marine Advisory Committees (LMACs)	Voluntary community-based committees established in 1999. Very useful during RAP and remain ongoing today; they enable local communities to have effective input into managing the GBRMP and provide a community forum for interest groups, government and the community to discuss issues around marine resources.	Throughout RAP	Levels 3/4	http://www.gbrmpa.gov.au/about-us/local-marine-advisory-committees
13. RAP/ rezoning website	RAP website included virtually all the publically available information and was highlighted on the GBRMPA homepage (today this website is no longer available(	Throughout RAP	Level 2	Much of the information from original webpages now moved to http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap
14. Technical Information sheets	'Stand-alone' information sheets covering 15 different topics (e.g. *Biodiversity and why it is important; the Biophysical operational principles*) distributed as hard copies and available on the RAP website.	CP1	Level 1	http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/docs/representative-areas-program-publications

15. Update newsletters/ brochures	Periodically released (six updates from May 2000 to March 2003) to keep stakeholders informed of progress; distributed as hard copies and available on the RAP website	Throughout RAP	Level 1	http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/docs/representative-areas-program-publications
16. 'Crossing the Blue Highway' Poster	A poster providing a unique visual representation of the importance of 'connectivity' concept, which underpinned the need for a 'representative' approach to zoning; extremely useful as an educational tool for a wide range of stakeholders	CP1	Level 1	http://abc.net.au/science/bluehighway/ Demonstrated 'connectivity' in the marine environment, the links between land and sea, and also within the habitats of the GBR
17. Unstaffed exhibits/ displays	Small scale exhibits or displays set up in public venues (e.g. libraries or council offices) to provide access to information e.g. copies of the draft plan	CP1 and CP2	Level 1	The establishment of a small display may often lead to a story in the local newspaper which helps to generate publicity
18. Television advertising	Used to raise awareness among the broader community of the Marine Park and biodiversity, and to increase the perception of risk to the GBR.	CP1 and CP2	Level 1	These TV adverts went to air two weeks prior to commencement of CP1 and CP2, regionally as a paid advertisement and nationally as a Community Service Announcement
19. Advertise-ments in regional and national newspapers	Advised the general public that the GBRMPA was reviewing the zoning of the Marine Park and how to contact the GBRMPA; also used to advertise the phases for formal engagement	CP1 and CP2	Level 1	Some paid advertisements also then led to a story in the local newspaper; so it is worth cultivating a good relationship with local media as they can be very supportive (see Lesson 6).
20. Radio spots in regional centres	Advised the general public that the GBRMPA was reviewing the zoning of the Marine Park and how to contact the GBRMPA	CP1 and CP2	Level 1	Again, it is worth cultivating a good relationship with local radio contacts as they can be very supportive (see Lesson 6).
21. Differing formats used for public submissions	Written submissions of any type (e.g. detailed reports, through to personal submissions and even proformas) submitted during either of the two formal phases of public participation	CP1 and CP2	Level 2	It is important to stress that it was not a numbers game in terms of the number of submissions received (see Lesson 13).
22. Fact sheet correcting mis-information	'Correcting misinformation, misunderstandings and providing the facts' (Fact Sheet No 29). http://www.gbrmpa.gov.au/__data/assets/pdf_file/0006/16674/Correcting-misinformation.pdf	As required	Level 2	However it is also important to recognise when it is appropriate to debate an issue (i.e. giving that issue more 'air time' and prominence) and when it is better to just let it go without prolonging it.
23. Community information sessions/ staffed displays	Information 'displays' set up and manned in regional centres on pre-advertised dates and times (generally for a half-day period from 3pm-7pm). They were open to any interested persons wishing to obtain information, make their comments and to meet GBRMPA officers for two-way flow of information.	CP1 and CP2	Level 2	These information sessions were the primary way to contact stakeholders and interested public all along the GBR coast; 3 separate teams worked concurrently to ensure all centres were covered as quickly as possible.

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24. Public meetings	A formal gathering of interested and affected persons (wherever possible, such meetings were avoided and community info sessions planned – see **234 above)	Periodically during RAP	Level 2	Public meetings were NOT a preferred method to engage – however, GBRMPA staff attended when invited (see Lesson 10).
25. Staffed telephone lines	A free-call number for anyone to call to obtain information, ask questions or request further information	CP1 and CP2	Level 2	Required a roster in the office to ensure a staff member was available during all business hours
26. Draft Zoning plan	This is the statutory Zoning Plan which was released for public comment; however most users were more interested in the zoning maps than the actual statutory plan	CP1	Level 3	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0015/6171/draft_zoning_plan_2003.pdf
27. Draft Zoning maps	The draft zoning maps were provided for users to make comments	CP1	Level 1	
28. Techniques to monitor community awareness	During RAP we monitored community attitudes and awareness by: • Commissioning public telephone polling to determine the real level of public support • Media analyses and some face-to-face interviews and surveys	Periodically during RAP	Level 2	Understanding the views of the 'silent majority' was important (see Lesson 11) and of particular interest to the politicians.
29. Final Zoning Plan	The actual *Zoning Plan 2003* is the legal document that includes, for each zone type, the legal objectives and the use and entry provisions	Implementation	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0015/3390/GBRMPA-zoning-plan-2003.pdf
30. Final Zoning maps	19 zoning maps which together cover the entire GBR at 1:250,000 scale are freely available from boating and fishing shops all along the GBR coast	Implementation	Level 1	
31. Report on Zoning	A report explaining how the zoning was undertaken and the rationale for most of the zoning decisions	Implementation	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0016/6172/gbrmpa_report_on_zoning.pdf
32. Definition of 'one hook'	A diagram developed to assist public understanding of the legal definition of only 'one hook' which is allowed to be used in the Conservation Park (yellow) Zone	Implementation	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0009/6300/hook_definitions_diagram.pdf
33. Zoning co-ordinates	Latitude /longitude coordinates for all the no-take (green) zones and no-go (pink) zones were made available for users to key into their GPS or plotters	Implementation	Level 1	http://www.gbrmpa.gov.au/zoning-permits-and-plans/rap/education,-surveillance-and-enforcement
34. Regulatory Impact Statement	Required by law to accompany the draft legislation going to the Parliament	Parliamentary approval	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0017/6173/RIS_25-11-03.pdf
35. Report on the social and economic impacts	An independent report (prepared by PDP Australia P/L in November 2003) titled *'An economic and social evaluation of Implementing the Representative Areas Program by rezoning the Great Barrier Reef Marine Park'*; this was one of three such reports presented to the politicians.	Implementation	Level 1	http://www.gbrmpa.gov.au/__data/assets/pdf_file/0012/6204/PDP_Report_23-12-03.pdf http://www.gbrmpa.gov.au/__data/assets/pdf_file/0011/6203/JUG_SR_09-12-03.pdf http://www.gbrmpa.gov.au/__data/assets/pdf_file/0010/6202/BTR_Report_23-12-03.pdf

Supplementary Information Table T3 - An assessment of how RAP performed against six 'good practice' elements of public participation in government decision-making

The best-practice guidance developed by the Victorian Auditor-General's Office (VAGO, 2015) poses 20 questions across six elements of good practice in government decision-making. The assessment shown below rates the RAP/rezoning as 'effective' for 17 out of the 20 questions across all six elements involving public participation in the VAGO approach. ☐: Effective ☐ Improvement needed

'Good practice' element	Examples of the evidence required in the VAGO strategy to assess whether each element of 'good practice' was achieved in RAP			
1. Clearly define the decision required and the scope of the public participation exercise	1.1 The decision needed was clear; conduct a rezoning of the GBR in a way that better protected the range of biodiversity throughout the GBR; (this fitted in with the governments *Oceans Policy* at the time)	1.2 The legal requirements for framing the public participation was clearly known (see s. 32 in the GBRMP Act) but it was decided to go further than what was the legal minimum.	1.3 The RAP objective was clearly defined (*'Protect the biodiversity but do it in a way that minimised the impacts on users'*) as was the scope of the public participation exercise. Initial expectations around the level of participation were set at realistic levels	
2. Understand who is affected and how they should be included	2.1 GBRMPA used a variety of ways to identify the stakeholders affected by, interested in, or who could influence and inform the decision	2.2 By the completion of CP2, GBRMPA understood the nature and intensity of all stakeholder's interests and how they may be affected by various options.	2.3 and 2.4 GBRMPA understood the various stakeholders, their capacity and willingness to participate and ensured an appropriate balance of views was represented	2.5 GBRMPA explained explicitly to stakeholders their roles in the decision-making, including what was an appropriate level of influence
3. Identify the resources, skills and time required for effective public participation	3.1 GBRMPA made a bid for additional resources but had to make do with the existing resources; nevertheless an effective participation process was undertaken using just those existing resources	3.2 GBRMPA definitely identified the specialist skills necessary to meaningfully engage with all participants and ensured all the community information sessions were manned by a variety of experts	3.3 The initial estimate within GBRMPA for the time required to undertake an effective participation process was an under-estimate; especially as the level of engagement was unprecedented and there were unexpected political events which impacted the timeline	
4. Document the public participation and management approach	4.1 GBRMPA documented how they intended to capture participants comments to ensure a complete and accurate reflection of the participation	4.2 GBRMPA identified the risks that threatened the objectives (e.g. overlooking a key stakeholder group) and mitigated/managed those risks	4.3 GBRMPA put in place an appropriate governance and management structure for planning (i.e. including a dedicated planning team) and for achieving the objectives	4.4 There was monitoring, and an evaluation process in place for reporting the success of the participation.

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5. **Implement the public participation plan and monitor its progress**	5.1 GBRMPA applied the level of public participation as was stipulated in the Act, but then went much further than was legally required	5.2 Monitoring of the objectives did occur (e.g. as post-hoc auditing against the Biophysical planning principles); however monitoring of the budget and progress against original time-lines could have been improved	5.3 GBRMPA did respond effectively to the risks identified during the planning and the public participation; this included considering the safety of staff in some contentious situations; the political risks of various possible outcomes and options to achieve results
6. **Evaluate the public participation exercise and apply continuous improvement**	6.1 An independent assessment of management effectiveness (Hockings et al. 2009) assessed the entire public participation process).	6.2 GBRMPA documented and applied the lessons from the public participation process (see *Report on the Zoning, GBRMPA 2000x*)	

Supplementary Information Table T4 – Five key management elements for effective public engagement

Petts (2006) lists 33 different requirements across five key elements of engagement management shown in the left-hand column of the table below. Assessing these 33 requirements against what happened in RAP shows:

- 45% (n. 15) of these requirements were rated as **very effectively addressed**
- 48% (n. 16) were rated as **effective**
- 7% (n. 2) were rated as **not effectively addressed**

Management Element	Requirements	Effectiveness in RAP?	References justifying the rating
1. Recruitment of representative interests	-Locally informed perspectives from a variety of viewpoints	Very effective	Day et al. 2004; Fernandes, 2005
	-Sufficient time for recruitment	Not effective	
	-Recruitment by lead facilitator to provide contact continuity	Effective	
	-Direct contact with potential participants	Effective	
	-Core participants engaged through whole process	Effective	
	-Information provision to wider community	Very effective	
2. Active Facilitation	-Independence from project decision/delivery agencies	Effective	Day et al. 2004; Thompson et al. 2004; Fernandes et al. 2005, 2009; GBRMPA 2005
	-Act in interests of lay and expert participants	Effective	
	-Control the more dominant voice while encouraging the weaker	Effective	
	-Significant facilitation experience	Effective	
	-Subject knowledge and ability to synthesize technical information	Very effective	
	-Maintenance of balance between assistance and direction	Very effective	
	-Assist discussion by elucidating issues and making essential linkages	Very effective	
	-Ongoing participant contact within and outside of meetings	Very effective	
3. Collaborative Framing	-Achieve buy-in by showing issue framing is not closed down	Effective	
	-Agreed upon terms of reference and ground rules	Very effective	
	-Time to explore all issues but ensure focus on what is possible	Effective	
	-Continuous use of narrative and visual prompts	Effective	
	-Capitalize on and be seen to value local and experiential knowledge	Very effective	
	-Co-produced lay and expert framing and priorities for action	Effective	
	-Mechanism to ensure that official agencies recognize all local issues	Effective	

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4. Optimizing Interaction	-Project team pre meetings	Very effective	Day et al. 2004; Fernandes et al. 2005, 2009
	-Making technical presentations publicly understandable	Very effective	
	-Bringing public concerns into an expert discourse	Very effective	
	-Expert and public informal and formal interaction throughout	Very effective	
	-Continuous individual expert involvement	Very effective	
	-Site visits	Very effective	
	-Background information provision	Very effective	
	-Small group and plenary discussions	Effective	
5. Managing the Unexpected	-Sufficient funds to allow flexibility of process	Not effective	
	-Facilitator close monitoring of process	Effective	
	-Open communication when problems arise	Effective	
	-Manage expectations to maintain confidence and build trust	Effective	

– Text 1

Background - The Great Barrier Reef context (including the statutory planning process)

Australia's Great Barrier Reef (GBR) is globally significant, being the largest coral reef ecosystem on earth with an amazing diversity of plants, animals, and habitats. In 1981, the International Union for the Conservation of Nature (IUCN) noted *"If any coral reef in the world were to be chosen for the World Heritage List, the Great Barrier Reef is the site to be chosen"* (IUCN, 1981).

Today the Great Barrier Reef Marine Park (GBRMP) is a large multiple-use marine park covering 344,400 km^2. While it is no longer the world's largest marine protected area (MPA), the GBRMPA is equivalent in area to Italy or Japan or Malaysia and extends over 14 degrees of latitude. Its expansive latitudinal and cross-shelf diversity means the GBRMP contains arguably more biodiversity than any other MPA on the planet (Day 2016).

When the GBR legislation was initially proclaimed in 1975, the Marine Park comprised only the outer boundary of the area and there was no internal zoning. The 1975 legislation introduced the concept of a multiple-use marine park allowing 'reasonable use' of natural resources to co-exist with conservation. To achieve this, the Act specified that spatially derived zones in a plan (i.e. a zoning plan) was to be the key management tool for the GBRMP, with zoning plans defining the purposes for which certain zones could be used or entered.

The Act (section 32) also stipulated a comprehensive and systematic process to develop a zoning plan including a minimum of two formal (i.e. statutory) phases of public consultation. Since the 1975 legislation was proclaimed, public 'representations' have been required by law to be a key part of all GBR planning processes. How this occurred has evolved over successive planning processes in the GBR.

In the early 1980s, the first zoning plans were sequentially developed for parts of the GBRMP, but it was not until 1988 that virtually the full extent of the entire GBRMP was zoned. The managing agency therefore has had substantial experience with seeking public input on a large scale, having engaged in eight major public participation programs over the period 1982-1999.

Even after decades of planning, by the late 1990s less than 5% of the entire GBRMP was zoned in highly protected 'no-take' zones; that is, zones that prohibit the removal of resources by activities such as fishing, collecting or mining. A large proportion of the no-take zones occurred in the remote northern sector of the GBRMP and concerns were raised that the levels

of biodiversity protection across the entire GBRMP were inadequate. While some coral reefs habitats were represented in highly protected zones, many related habitats were not sufficiently protected 'in perpetuity'[6] to ensure the range of biodiversity across the GBR remained (Day et al. 2004).

As a result, a comprehensive, but controversial, rezoning of the entire GBRMP occurred during the period 1999–2003. The Representative Areas Program (RAP) rezoned the entire Marine Park during a single planning process, but it took over 4 years to complete (Day et al. 2004; Fernandes et al. 2005; Day 2016a).

The RAP/rezoning of the Marine Park involved primarily engaging people and communities living adjacent to the GBR, but also included comments and perspectives from all over Australia and the world. Consequently, the RAP was at the time, one of the most comprehensive community involvement processes for any environmental issue in Australia's history.

In November 2003, the revised zoning plan was presented to the Federal Minister along with a regulatory impact assessment. When the new zoning plan was tabled in the Australian Parliament, the federal government introduced a Structural Adjustment Package to assist fishers, fishery related businesses, employees, and communities adversely affected by the rezoning (Macintosh et al. 2010 provides a critique of this package).

Media attention and interest-group lobbyists ensured that many members of Parliament were aware of the planning process, the high levels of public participation, and the significant changes that occurred between the draft and the final plan. After a statutory period for parliamentary consideration, the Federal Parliament passed the new Zoning Plan for the GBRMP in March 2004; the plan then came into effect on 1st July 2004.

When the revised Zoning Plan became law, the proportion of the park protected by no-take zones increased from around 5% to more than 33 percent (117,000 km^2), the world's largest network of no-take zones (compare Figs 2 and 3 in Day (2008); also Fernandes et al. 2005). One significant outcome was not so much the overall percentage of the Marine Park that was highly protected. Rather, the fact it was a representative outcome ensuring no-take zones protected examples of every one of the 70 bioregions; furthermore, multiple examples of no-take zones were protected in virtually all bioregions, providing some 'insurance' against possible future losses.

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[6] GBRMPA's Goal at the time was to provide for *"…the protection, wise use, understanding and enjoyment of the Great Barrier Reef in perpetuity"*.

Various assessments of the outcome have been undertaken; for example, Fernandes et al. (2005) assessed the degree to which the biophysical operating principles were achieved; the 'Report on the Zoning' (GBRMPA, 2005) explained the rationale for many of the zoning decisions. An independent and public review of the zoning program was conducted in 2006 (Commonwealth of Australia, 2006) and included a case study on the Capricorn-Bunker group of islands, a small part of the GBRMP. This case study highlighted the many zoning changes that occurred in that area based on the public input[7]. The independent review concluded the revised zoning plan achieved its objectives in that it protected the range of biodiversity throughout the GBR but did so in a way that minimized the impacts on users.

Today the eight different zone types provide high levels of protection for specific areas, while allowing a variety of other uses to occur in certain zones. The multiple-use zoning system allows activities such as shipping, commercial fishing, recreational fishing, aquaculture, tourism, boating, diving, developmental works including dredging, and military training to all occur in specified areas (not necessarily just one zone type) – but many of these activities are also governed by a range of other management tools, including permits with permit conditions (Day 2016).

Given the dynamic state of the GBR, and changes in population pressures, use patterns and technology, it is extremely likely another rezoning in the GBR will need to be undertaken sometime in the future. While the legislation outlines the broad planning process, more contemporary techniques of public participation will require consideration, including those mentioned in Table 3 (e.g. Petts and Leach 2000; Sayce et al. 2013).

Previously untried methods of public participation will need to be considered in the future (including online comment forms, informational videos and the use of social media), but as various authors discuss (e.g. Lee and Kwak 2012; Wang and Bryer 2012; Sayce et al. 2013; Nabatchi and Amsler 2014), these newer methods also have some advantages and disadvantages.

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[7] See pages 78-90 in the Review Panel Report titled *'Review of the Great Barrier Reef Marine Park Act 1975'* (Commonwealth of Australia, 2006).

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