

The background features a large teal triangle on the right side, containing white text. The left side of the image shows a 3D bar chart with numerous grey bars of varying heights, creating a sense of depth and perspective.

## **PUBLIC PARTICIPATION IN RESOURCE CONSENTING:**

**“COUNTING THE COST  
OF KNOWLEDGE &  
COMMUNICATION BARRIERS  
& EXAMINING DESIGN-LED  
COMMUNICATION AS A MEANS  
OF OVERCOMING THEM”**

**Resource Management  
Theory & Practice**

**Draft Article  
(Unreleased)**

## **Public Participation in Resource Consenting: Counting the True Cost of Knowledge and Communication Barriers and Examining Design-led Visual Communication as a Means of Overcoming Them**

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### **INTRODUCTION**

*“At every level, environmental issues raise the most pressing questions of who gets the benefit and who carries the cost. In every environmental issue you will find competing interests and competing values, whether those interests and values are explicit or not and whether they can be quantified in a generally accepted way or not. They are intensely inherently political.” (David Lange)*

As David Lange’s quote keenly captures, environmental decisions and the issues they raise often cut to the core of the values and interests that communities, iwi and individuals hold dear. Lange’s comment has never been more relevant than it is today. As we place increasing demands on the natural resource and ecological spaces we live in via technological and industrial activities that have unprecedented capacity to alter the receiving environment, the resulting environmental decisions that must be made via resource-consenting processes:

- perpetually challenge, and often reshuffle, the priorities we accord to an array of competing environmental, social, economic, and cultural values and interests; and
- further outstrip the capacity of science to keep pace with (i.e. detect, understand and accurately predict) the associated ecological impacts.

Furthermore, as our communities become increasingly diverse, so do the array of values and interests that must be taken into account (Geoffrey Palmer and Andrew Butler A Constitution for Aotearoa New Zealand (Victoria University Press, Wellington, 2017)).

Against the above backdrop, a strong case can be made that public participation is increasingly pivotal to consenting, within the sustainable management framework provided by the Resource Management Act 1991 (RMA).

In this respect, we lean heavily upon public participation to marshal a full understanding of the nature and extent of a proposed activity's environmental effects; the corresponding interests and values impacted; and the preferences and priorities of the impacted community and individuals. In light of the diversity of interests and values at play, the co-design and conflict resolution opportunities that public participation affords are also increasingly valuable.

The above circumstances and associated demands they place on public participation also raise the perennial question of whether current practices and tools used to facilitate participation are fit-for-purpose and capable of yielding the outcomes decision-makers rely on to arrive at consent decisions that promote sustainable management. In this respect, the increasing scale and complexity of large-scale industrial activities, and a corresponding increase in the complexity, technicality and volume of written information that one must understand, digest and recall to participate meaningfully in a consenting process, raises a real question of whether comprehension, knowledge and related communication barriers frustrate the ability of most members of the public to participate in consenting processes in a meaningful way.

Owing to the above, this article first seeks to re-examine the circumstances unique to environmental decision making that give rise to the need for public consultation. This provides useful context to re-emphasise and take stock of the more specific and often forgotten reasons that underpin why public participation is critical to achieving sustainable management. This article then examines and quantifies the potential impacts and costs that exclusionary comprehension and knowledge barriers may have on consenting decisions and the environment.

Finally, this article responds to the problems identified above by proposing as an alternative to traditional written modes of communication, the use of emerging and innovative design-led methods of communicating complex, technical and voluminous information and data, which can assist to bridge knowledge and communication gaps that limit or undermine the effectiveness of public participation efforts, and in turn, enhance the ability of decision-makers to arrive at decisions that better promote



*ENVIRONMENTAL*

*DECISION-MAKING &*

*PUBLIC PARTICIPATION*

## CHALLENGE OF ENVIRONMENTAL DECISION-MAKING

It is widely acknowledged that centralised law-making, where elected officials in Parliament translate policies (that account for the interests, needs, and ultimately value judgements of the voting public) into nationally imposed legislative rules, is generally not well-suited to the resource management setting (Peter Salmon “Access to Environmental Justice” [1998] 2 NZJEL 1).

Fundamentally, this is because such predetermined rules, which must be relatively prescriptive to meet legal certainty requirements, cannot anticipate and appropriately respond to the typically complex, uncertain and multi-scale effects of human activities, which tend to impact a plurality of often competing environmental, social, economic, and cultural values and interests. Especially as the effects human activities have on such interests tend to (see Sian Elias “Righting Environmental Justice” (address to the Resource Management Law Association, Salmon Lecture, Auckland, 25 July 2013); Mark Reed “Stakeholder participation for environmental management: A literature review” [2008] 141 Biological Conservation 2417):

- vary between locations depending on the specific unique, sensitive or significant characteristics of the receiving environment;
- vary over time as community priorities in environmental matters inevitably move as social priorities and experiences change; and
- be difficult to identify, understand and gauge, due to the complexity and variability of such impacts, as well as the multi-disciplinary and resource-intensive nature of this exercise.

Instead, these practical realities demand a transparent decision-making process that is considerably more “flexible to changing circumstances described above, and which embraces a diversity of knowledge and values” – i.e. which brings to bear the dexterity, scrutiny, and collective knowledge needed to adequately deal with the technical complexity, value-laden and often contentious nature of environmental decision-making (Reed, 2008 at 2418).

This realisation is reflected in the RMA, and in particular, its end goal of “sustainable management” (Elizabeth Toomey “Public participation in resource management: the New Zealand experience” [2012] 16 NZJEL 117).

Essentially, it requires that the “use, development, and protection” of natural and physical resources are managed in a way that enables “people and communities to provide for their social, economic, and cultural well-being”, provided the activities engaged in when doing so do not prevent the ecological preservation, inter-generational equity and environmental protection requirements in s 5(2)(a), (b) and (c) of the RMA being met at the same time (*Environmental Defence Society Inc v New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593).

Given the highly circumstantial nature of environmental decisions and corresponding flexibility it demands, the RMA does not provide any direction as to the degree of emphasis and weight that ought to be placed on social and economic factors vis-à-vis often competing physical environmental factors, and in turn, whether “use and development” on the one hand, or “protection” on the other, should prevail in a given case (Derek Nolan (ed) *Environmental and Resource Management Law* (4th ed, LexisNexis, Wellington, 2011)). As a result, this policy decision is not predetermined by Parliament, but rather, is delegated to decision-makers and the courts, who must make a value judgement on behalf of the community as a whole (see Janet McLean “New Zealand’s Resource Management Act 1991: Process with Purpose?” (1992) 7 *Otago LR* 538; *North Shore City Council v Auckland Regional Council* [1997] NZRMA 59).

## ENTER PUBLIC PARTICIPATION

Public participation has long been considered integral to achieving sustainable management, so much so it is considered a “founding principle” of the RMA and like sustainable management-based regimes (Sarah Nolan “Affected Persons under the Resource Management Act 1991” (2007) 13 *CLR* 121). As Hansard for the first RMA bill notes: “Public participation is at the very heart of the structure and the philosophy of the Act. It cannot work without it.” ([20 March 2003] 607 *NZPD* 4302). In the Supreme Court decision of *Westfield (New Zealand) Ltd v North Shore City Council* [2005] 2 *NZSC* 17, 2 *NZLR* 597, Keith J provides the most authoritative description as to the objectives of public participation under the RMA:

*“[46] The purposes of those public participatory processes are twofold – first, **to recognise and protect as appropriate** the particular rights and interests of those affected and more general public interests and, second, **to enhance the quality of the decision making.**” (emphasis added)*



Regarding the latter objective, Keith J goes on to note at [25] that it is “the general policy of the Act that better substantive decision-making results from public participation”, a view also shared in *Murray v Whakatane District Council* [1999] 3 NZLR 276 (HC) where it was held that public involvement in resource management processes results in more informed decision-making, and ultimately, better environmental outcomes.

## **PRECISE BENEFITS OF PUBLIC PARTICIPATION**

While there is a lack of consensus as the precise reasoning behind why public participation is so integral to achieving sustainable management, a suite of “normative” and “practical” benefits that participation affords the decision-making process collectively form that rationale that underpins this view (Thomas Beierle *Public Participation in Environmental Decisions: An Evaluation Framework Using Social Goals* [Discussion Paper 99-06, Resources for the Future, November 1998]; Reed, 2008).

### ***Normative Reasons for Public Participation***

Normative reasoning asserts that as environmental decisions impact a wide array of private, public and environmental values and interests that often conflict in a way that cannot be reconciled (Nolan, 2007), public participation is necessary to accord the decision-making process democratic legitimacy and ensure it is fair (i.e. the first objective of participation under the RMA identified by Keith J, see Reed, 2008). In terms of fairness, natural justice dictates that where a decision maker is entitled to or is required to exercise their discretionary powers, they must do so fairly, and as such, they are subject to a legal duty “... to afford the person or persons affected the opportunity to make submissions or answer the case” (Kenneth Palmer *Local Government Law in New Zealand* [2nd ed, The Law Book Company, Sydney, 1993] at 65). In this sense participation is a critical means of recognising and protecting as appropriate, “the particular rights and interests of those affected and more general public interests” (A O’Mara “Procedural fairness and public participation in planning” (2004) 21 *Environmental and Planning Law Journal* 62).

Regarding democratic legitimacy, it is asserted that because environmental decisions are so value-laden they constitute political, or rather, policy decisions, that typically ought to be made via a democratic process. Thus, to accord environmental decisions a semblance of democratic legitimacy, the values of all affected persons need to be communicated

to and accounted for by decision makers, particularly as the values, experiences and priorities of the impacted community will move around or differ between locations and shift over time (Sian Elias, 2013). As noted in Yvonne Rydin & Mark Pennington “Public Participation and Local Environmental Planning: The collective action problem and the potential of social capital” (2000) 5 Local Environment 153:

*“The policy process is seen as a locus for the articulation of values and preferences on policy options, and public participation is a means of bringing the pattern of values and preferences represented within the policy process closer to that existing within society as a whole.” (at 154)*

In illustrating the importance of this, the Parliamentary Commissioner for the Environment notes (Office of the Parliamentary Commissioner for the Environment Public Participation in Environmental Decision-Making: Discussion Paper (February, 1996) (1996 Discussion Paper):

*“In relation to environmental decision making, there are many levels at which public participation may occur or be appropriate: national policies and legislation; regional and district policies, plans and consents; other government administrative decisions or consents; and legal appeals of decisions. Involvement may be by individuals directly, or through representatives or groups. ... If conflict is not resolved in the decision making process it will remain, manifesting in such forms as perennial re-litigation of issues, public distrust, anger and cynicism, civil disobedience, and political instability. Generally, communities are more supportive of programmes and decisions that they have been involved in developing than those they feel have been imposed without consideration of their concerns. Community “ownership” of environmental problems also helps ensure sustainable solutions.” (at 8)*

Overall, properly executed and effective participation enables a fuller range of competing views, values and interests from all relevant stakeholders to be represented on equal footing. In this respect, it is argued that participation reduces the likelihood of certain groups and interests being marginalised, thereby increasing the pool of views on policy expressed as well as “the likelihood that environmental decisions are perceived to be holistic and fair, accounting for a diversity of values and needs and recognising the complexity of human-environmental interactions” (Reed, 2008 at 2420).



### *Practical Reasons for Public Participation*

Practical claims centre around how the quality, durability and efficiency of decisions can be enhanced through engagement with public stakeholders (i.e. the second objective of participation under the RMA identified by Keith J), because, in addition to being a source of values, assumptions, and preferences, the public are a valuable source of facts and innovative alternatives (Beierle, 1998; Rydin & Mark Pennington 2000). In this sense, it is argued public participation may generate input that, for example:

- enables a decision to be based on more complete information that anticipates unexpected negative outcomes before they occur; input which can “reduce ‘error costs’ as a member of the public may contribute important relevant information that otherwise would not come to the attention of the decision maker” (emphasis added) (Nolan, 2007 at 123);
- leads to the research informing the decision to be more robust, by providing higher quality information inputs, and in doing so draw expertise, knowledge and other information resources that decision-makers would otherwise not benefit from (Nolan, 2007; Reed, 2008; Beierle, 1998);
- enables the provision of key detailed local knowledge (i.e. beyond the incorporation of public preferences into policy goals) for example, about the local environment and its use by local communities, that is critical to achieving environmental goals sought by the decision-making process (Reed, 2008; Beierle, 1998);
- enables interventions and technologies to be better adapted to local socio-cultural and environmental conditions, which may in turn enhance “their rate of adoption and diffusion among target groups, and their capacity to meet local needs and priorities” (Reed, 2008 at 2420).
- informs the design of the proposed project “with a variety of ideas and perspectives, and in this way increase the likelihood that local needs and priorities are successfully met” (Reed, 2008 at 2420); and
- helps establish common ground, trust and understanding of various viewpoints between participants, which may in turn reduce conflict, enable joint development of workable solutions that accommodate all priorities and interests alerted to via participation, and ultimately, lead to a sense of ownership over the process and outcomes and enhanced support of the decisions reached (Nolan, 2007; Reed, 2008; Beierle, 1998).



*COMMUNICATION & OTHER*

*BARRIERS THAT THWART*

*INFORMED PARTICIPATION*

## WRITTEN INFORMATION AND EFFECTIVE PARTICIPATION

It is long acknowledged that effective public participation remains difficult to achieve due to myriad legal and practical barriers (David Grinlinton “‘Public Interest’ Participation and Costs Awards under the RMA” (1996) 1 BMRB 213; Salmon 1998). Efforts to improve public participation, however, predominantly focus on addressing legal barriers, leaving at large most practical impediments, which if left unaddressed, may render redundant any legal enhancements to the participation process. For this reason, this article focuses on communication and knowledge barriers, which are arguably chief amongst the practical cohort.

It goes without saying that for public participation to be effective, it must be informed. Specifically, to participate in a meaningful way, participants must have the access to all “key documents and data” (Toomey, 2012). In the *Air New Zealand v Wellington International Airport* [1993] 1 NZLR 671 (CA) decision, the Court of Appeal states (at 30) that this is an essential element of consultation, which requires the party obliged to consult to provide enough information to enable the person consulted to be “adequately informed so as to be able to make intelligent and useful responses”. Physical access to all key documents alone however is not enough to allow informed participation. As Reed (2008) notes:

*“It is not enough simply to provide stakeholders with the opportunity to participate in decision-making though; they must actually be able to participate ... When decisions are highly technical, this may involve educating participants, developing the knowledge and confidence that is necessary for them to meaningfully engage in the process.” (at 2422)*

Accordingly, among other things, public submitters must also have the capacity and capability needed to fully comprehend, digest, recall, and ultimately respond to, the typically high volumes of complex, technical and specialist subject matter contained in those documents germane to the decision at hand (Grinlinton, 1996 as cited in Salmon, 1998).

While in an ideal world, we would be able to understand and digest all the relevant information, data and issues associated with a proposed activity (including the inherent uncertainties and trade-offs associated with various potential outcomes), this is typically too ambitious for more than a handful. For example, the recent Trans-Tasman

Resources' application to mine the sea-floor off the coast of Taranaki entailed: 800 pages of impact assessment and appendices describing the proposal and its impacts supported by 42 scientific reports; evidence from over 50 experts in various specialist fields; and a variety of other technical and legal information and data. As Beierle (1998) notes in his authoritative article on the subject:

*"Knowledge about environmental issues allows the public to carry out the role envisioned in major environmental legislation of identifying violations, applying community pressure, enforcing laws, and contributing to permitting and rulemaking ... [and] ensures that the technical complexity of issues does not hamper the public's ability to participate in decision-making." (at 5)*

In this context Salmon (1998) notes (at 11) that "getting access to the relevant information, so as to enable fully informed involvement, may be difficult as well as expensive" before going on to cite another article which states that: "In order for such environmental information to facilitate political participation, the information must be ... comprehensible ... In order to effectively support political participation, freedom of environmental information has to be "user friendly." (emphasis added) (Neil AF Popovic "The Right to Participate in Decisions That Affect the Environment" (1993) 10 Pace Env'tl L Rev 683 at 695–696).

In this sense members of the public may simply not participate because they find the key information and data that they must become acquainted in order to provide informed input too imposing or impenetrable, and thus, will forego any attempt to engage with it. Alternatively, they may engage but be unable to properly discern from a complex matrix of technical documents, the full array of likely environmental effects of the proposed activity, albeit generally or as it concerns their interests and prioritised values in particular. The impact of this is illustrated well in Leanne Thompson and others "Barriers to communication – how these critical aspects were addressed during the public participation for the rezoning of the Great Barrier Reef Marine Park" (2004) <[www.gbrmpa.gov.au/\\_\\_data/assets/pdf\\_file/0019/6175/Breaking\\_through\\_the\\_barriers\\_15April0420FINAL.pdf](http://www.gbrmpa.gov.au/__data/assets/pdf_file/0019/6175/Breaking_through_the_barriers_15April0420FINAL.pdf)>.

The Parliamentary Commissioner for the Environment also acknowledges in their 1996 Discussion Paper that comprehension and knowledge barriers are capable of operating as a real impediment to meaningful and effective participation:

*"Information about the process itself and the proposal under consideration, should be freely shared and understood by all participants. If one party has the resources to pay for detailed information and others are unable to buy information or pay for the information to be checked and explained, the parties will be unable to negotiate on equal*

*terms ... Under the RMA, the inability to access information for whatever reason, is a very real barrier to participation, in the decision-making process ... Submissions to the PCE ... and persons consulted in this investigation suggest that levels of knowledge and understanding are still low, representing a significant barrier to effective participation in all resource management processes.” (at 56 and 57) participate in decision-making.” (at 5)*

Accordingly, it can be said that the general public’s often limited ability to comprehend and digest key information associated with a proposed project (especially large-scale activities that tend to entail more complex and pervasive environment impacts), may in some cases rob participation processes of their ability to imbue the decisions they support with the normative and practical benefits deemed so essential to achieving sustainable management. Demonstrable ecological, economic, social, and cultural costs may result if an impeded public consultation process, for example, leads to:

- a failure to gauge and consider the pattern of local values and preferences and corresponding negative impact on the perceived probity, fairness and democratic legitimacy of the decision;
- compromised completeness and quality of the information inputs (for example, regarding range, nature and extent of environmental effects), which may result in decision-making errors and lower-quality decisions (for example, failure to impose necessary conditions to mitigate or avoid harm or approval of consents that should be declined) and subsequently, lead to avoidable environmental harm that is graver and more pervasive than realised; and
- missed opportunities to adjust a proposed project’s design so that it better conforms to local values and priorities and has less detrimental impact on public and private values and interests by avoiding conflict, increased cost, protracted process (for example, as a result of decisions being appealed) and enduring ill feeling.

## **COMPOUNDING BARRIERS TO MEANINGFUL PUBLIC PARTICIPATION**

The knowledge and comprehension barriers above are typically also accompanied by a number of related communications barriers, which further undermine the public’s ability to engage with and digest key consenting information in lengthy and complex technical documents.

First, cognitive biases can undermine the effective transfer of information and data required to provide informed participation, from the key documents made available for this purpose, to the member of the public, and, from members of the public, back to the other participants and decision-makers. The most dominant of these appears to be confirmation bias, which refers to the filtering of information to fit previously formed views and values, and, in particular, a tendency to (see Thompson, 2004):

- accept as reliable, emphasise, and consequently, better commit to memory, information that supports such pre-existing views and values; and
- treat as unreliable, filter out (i.e. under-emphasise, dismiss and not readily commit to memory) information that does not support or counters existing views and values.

The above can lead to “anchoring”, where an individual accords undue weight to the features they cherry-picked on the above basis, thereby skewing their submission or feedback accordingly (Janis L Dickinson and Rick Bonney *Citizen Science: Public Participation in Environmental Research* (Cornell University Press, New York, 2012)).

While confirmation bias is always present, it is more likely to flourish when given room to do so by a lack of knowledge, understanding and certainty (i.e. the countervailing rational force that a robust understanding of all material facts affords). Importantly, it is especially operative “when we are dealing with highly polarized emotional and political issues” like contentious environmental and resource use matters (Kevin C Elliott *A Tapestry of Values: An Introduction to Values in Science* (Oxford University Press, Oxford, 2017) at 102). Evidence also suggests it is made worse when more, rather than less, scientific information is made available, as it equips people with a more sophisticated array of facts they can cherry-pick to further support their preconceived position (Elliott, 2017).

“Confidence bias” is also particularly impactful in the resource management setting (Institute of Medicine *Environmental Decisions in the Face of Uncertainty* (The National Academies Press, Washington DC, 2013)). The term refers to people’s tendency to be overconfident about the truth and accuracy of judgements they make based on the use of heuristics (i.e. the informal and practical problem solving short-cuts like an educated guess or the application of common sense), which we tend to resort to when the cognitive heavily-lifting required to work through all available data is deemed too great, or it is impossible to identify an optimal solution with any degree of certainty and precision.

Most practitioners will have witnessed instances where some, if not all, of the phenomena noted above have compromised the quality, completeness and objectivity of a consulted group’s understanding of a proposed large-scale activity, and in turn, the quality, completeness and even the relevance of the subsequent discourse and submissions.

Such biases are particularly disruptive to the public participation process when coupled with digital technology and social media platforms like Facebook, which give public stakeholders unprecedented ability to broadcast to very large audience groups, their interpretation of issues and resulting views associated with a proposed activity, regardless of the accuracy of what they are saying (see The Government and Public Sector Practice The Leaders' Report <[wpp.com/govtpractice/leaders-report](http://wpp.com/govtpractice/leaders-report)>). This is particularly problematic when the views expressed:

- are compromised by confirmation bias, or, are incomplete and incorrect as a result of being based on a heuristic assessment that is not in any way informed by the key information and data required to contribute in an effective and informed manner; and
- subsequently cause others to base their input to the participation process entirely on piecemeal selection of potentially compromised views found on social media, because for example, such unofficial sources are considered more credible than, or a viable substitute to, the full suite of key information and data made available.

Leanne Thompson and others provide an excellent example of how the above phenomena corrupted the quality of public input during the public participation phase of the process for rezoning areas of the Great Barrier Reef Marine Park and led to significant costs which were avoidable.





***ADDRESSING***

***COMMUNICATION &***

***KNOWLEDGE BARRIERS***

***THROUGH DESIGN***

## ADDRESSING COMMUNICATION BARRIERS THROUGH DESIGN

As the above demonstrates, written modes of communication typically employed to convey the high volumes of complex and technical content to public stakeholders often inhibit informed participation and thus compromise the public participation process's ability to yield the beneficial outcomes essential to achieving sustainable management. In other words, the default means of communication are not fit-for-purpose. Like any task, one must choose the right tools for the job (Reed, 2008). In this context one author notes, "successful knowledge sharing ... requires a structure or system to facilitate knowledge sharing (how)" (Misook Heo and Natalie Toomey "Supporting sustained willingness to share knowledge with visual feedback" (2016) 54 Computers in Human Behaviour 388 at 388). Reed notes (at 2424) that the tools used to facilitate this "should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement", and ultimately, on the basis of what is necessary to enable the relevant stakeholder group to "fairly and effectively shape the environmental decision [in question]".

In the resource consent setting, the comprehension and communication barriers noted above, coupled with the fact that public stakeholders are highly heterogeneous groups of individuals whose abilities to digest and accurately recall voluminous and complex information vary wildly, is instructive to identifying modes of communication that will be effective. In particular, this article argues that for reasons set out below, the challenges imposed by these barriers and circumstances strongly indicate that highly visual modes of communication should be an integral part of the system employed by resource consent public participation processes to facilitate knowledge-sharing.

### ***What are "visual, design-led modes of communication" and what are their benefits?***

At its most basic, this refers to information visualisation where detailed information and data is transformed into visual representations that provide individuals with a more immediate, albeit higher-level, understanding without need for further explanation (Stephen Cummings and Duncan Angwin "Stratography: The art of conceptualizing and communicating strategy" (2011) 54 Business Horizons 435). Explaining this in the context of conveying lengthy and complex corporate strategy documents to large numbers of employees, Cummings and Angwin (2011) note how scientific evidence has established that:

*“... people can receive and understand complexity far more readily if it is presented graphically, rather than textually; further, individuals have better recall of pictures, while printed words receive less ‘processing attention’”. (at 436)*

As another author (Heo and Toomey, 2016) notes:

*“Many knowledge sharing communities and projects have adopted visualizations to facilitate group and self awareness to promote contribution. The insight facilitated by these visualizations has been shown to help encourage individuals to share their knowledge and to sustain their motivation to participate. Enhanced individual motivation and self and group awareness have been further shown to encourage reflection based on personal performance”. (at 389)*

In practice, data visualisation entails drawing on a combination of graphical mapping, recognition symbols, and supporting plain-language text to render otherwise complex, technical, and specialised information and data into a form that bridges communication gaps and overcomes knowledge and comprehension barriers (Cummings and Angwin, 2011). In particular:

- graphical mapping: entails reducing lengthy text explanations of complex, technical and often highly conceptual or seemingly abstract legal and scientific concepts to a visual framework form, which, much like a well-designed operating system, does a lot of the cognitive “heavily lifting” during the communication of the information, rather than deferring this task to the recipient and user;
- recognition symbols: (i.e. discrete symbolic visual cues that carry widely-understood meanings and associations) further supplement the above, by providing clear way points that help one navigate content on a given page and quickly ascertain and digest the related detailed subject matter; and
- reduced amounts of supporting text: are used in conjunction with graphical maps to provide the much-needed detail that cannot be reduced to a visual format, however this text content is imbued with critical meaning and context by the above easier to digest visual content that primes the viewer with the requisite assumed knowledge they need to make comprehending and taking in the text in an intelligible manner much easier.

The best practice criteria that underpin the above approach to information and data visualisation draw on current thinking across multiple disciplines such as cartography, educational philosophy, optics, graphic design, and military protocol. In explaining this multi-modal approach Cummings and Angwin (2011) explains:

*“Multimodality typically enhances the ability to communicate meaning. Effective multi-modal graphical representations of space also have a synaesthetic effect; that is, they develop relationships with readers from the initial eye contact to engage other senses, which then start working together to give the map greater meaning. A good map makes you want to touch the image; trace what you see with your finger; talk to the person next to you about it and hear what they have to say, including whether they see what you see. If you’ve ever been in London, you may recall just how tactile the Tube map is: it invites you to trace your route with your finger; to share your perspective on it with your travelling companions; to annotate it with additions, reminders, and doodles particular to individual aims and goals. And as with any map, once you have added to it physically, you and your co-customizers have a greater mental connection with it. Consequently, a good graphical representation does more than just depict: it can also aid communication, network, and integrate senses within a person or between people.” (at 441)*

While a detailed and comprehensive trawling of other benefits are beyond this article, examples of the key benefits that it can afford include (see Cummings and Angwin, 2011; Heo and Toomey, 2016; Stephanie Zimmermann, Beverly Davenport Sypher and John Haas “A Communication Metamyth in the Workplace: The Assumption that More is Better” (1996) 33 International Journal of Business Communication 185):

- Facilitating engagement, by attracting and focusing the eye and creating a sense that the viewer is capable of understanding and quickly taking some value from the visual document.
- “Enabling the eye to move in a comfortable manner, to quickly grasp presentation of the terrain and the key relationships” (Cummings and Angwin (2011) at 438), for example, by liberating one from the right and then right to left movement they are restricted to when reading text, visual maps allow one to digest information in a way that enable them to readily identify antecedents and relationships between actions, which in turn enhances memory.

- Enabling the audience to see both the actual complexity and interconnectedness of things in a simple, big picture can increase confidence and reduce stress. Furthermore, it constrains the operation of confirmation bias by limiting the ability to cherry pick and take discrete information and data elements out of context and bend them to suit their preconceived narrative.
- Engage the viewer in a manner that encourages them to look for relationships; because the human brain inherently seeks patterns and connections. This process suspends pre-conceived beliefs and responses, thereby reducing the effects of confirmation bias.
- As a sum result of the above effects, a mnemonic impact that enables one to commit to memory more readily, and to recall in a complete and accurate fashion, the information and data conveyed.

#### ***Application to Public Participation in Resource Consenting***

In terms of how they may surface and take part in consenting processes, it is primarily envisaged that such design-led and visual approaches be employed to produce communication tools that supplement and support the typical array of more lengthy and detailed written material found in typical consenting-process documentation. For example, this design driven approach can be used to create:

- “visual dashboards” that preface key written documents by providing a conceptual map of all the relevant moving parts within, thereby priming the reader with some initial prior knowledge and giving them a framework on which they can hang the more detailed information encountered when reading the long-form document; and
- medium-detail synopsis documents, which, using the tools identified above, provide abridged versions of lengthy documents that are accessible, leverage the benefits of visual dashboards, but operate as a viable substitute to reading the full-length document to which they relate.

It is also possible to substitute lengthier text-based documents like consent applications and impact assessments for design-based alternatives. While such alternatives retain more text than the highly visual tools mentioned above, they overcome knowledge, comprehension and communication barriers by basing the way content is assembled and conveyed to the relevant audience on user-experience (i.e. “UX Design”) and user interface thinking (i.e. UI Design).

Specifically, these barriers are overcome because these use, experience and information design and management disciplines, which are most commonly employed in web design, focus on ensuring ease of use, navigability, accessibility and understandability based on an understanding of the capability, relevant behaviours and needs of a specific identifiable end user.

This design approach, which is highly flexible and can be adapted to suit the requirements and circumstances in a given case, is often employed in other settings (for example, communication of large and complex corporate strategies), where it enjoys great success over its text-based predecessors (Cummings and Angwin, 2011), and increasingly, in the medical setting.





*CONCLUDING*

*REMARKS*



## CONCLUDING REMARKS

The above communication tools are by no means a panacea for the comprehension, knowledge and communication barriers discussed. It is, however, hoped that they can erode such barriers to an extent that enables public participants to understand and know enough about facts and issues at hand, so that if called on to provide information and their views during a public consultation process, they can do so in the most effective, unbiased manner possible, and ultimately, enhance the likelihood of reaching a decision that achieves sustainable management.

In this sense, the novel design-based tools discussed in this article may be equated to several strong practical strides in the right direction; strides that we must take before we start to further doubt and attack the efficacy of public participation as a whole. In a Radio New Zealand podcast, Michael Mansfield QC makes this exact point, albeit in the context of challenges to the jury system founded on the notion ordinary persons are simply unable to understand and recall large quantities of complex scientific information; to which he responds (Michael Mansfield QC, “In the Pursuit of Truth” (Podcast, 5 August 2017) Radio New Zealand [www.radionz.co.nz/national/programmes/saturday/audio/201853681/michael-mansfield-qc-in-pursuit-of-the-truth](http://www.radionz.co.nz/national/programmes/saturday/audio/201853681/michael-mansfield-qc-in-pursuit-of-the-truth)):

*“I’m sorry to say I totally disagree ... Jury’s [can] understand. The problem is ... one of communication ... everyone is capable of understanding, but not ... if [the evidence] is not explained fully ... In the cases I’ve done ... **I’ve ensured that every step of the questioning and the evidence that is presented to the jury, is explained, either visually, so that the scientist has to come along and say look, this is what it looks like, and this is how I got to this conclusion** ... [in this sense] it is not the jury that is getting it wrong, [thus] the attack on the jury system is a false one. **It is not the jury at fault its the system [that is] at fault in the way the evidence is prepared.**” (emphasis added)*

## **Purpose**

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## **For further information**

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The background features a 3D bar chart with numerous light gray rectangular bars of varying heights, arranged in a grid-like pattern on a dark surface. A large, solid teal triangle is positioned on the right side of the image, partially overlapping the chart. The word "END" is written in white, bold, sans-serif capital letters within the teal triangle.

END