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Report

Making GREAT Freshwater Policy and Decision Making for Future Generations.

Prepared for:

International Rivers Symposium
Brisbane, September 2017

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We reserve the right, but are under no obligation, to revise or amend our report if any additional information (particularly as regards the assumptions we have relied upon) which exists on the date of our report, but was not drawn to our attention during its preparation, subsequently comes to light.

Report prepared by: .....

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Contents

Executive Summary

The concept of sustainable development requires us to consider and provide for the needs of future generations. In New Zealand this is specifically included within the Resource Management Act 1991 to guide the management of natural resources.

In early 2017 Perception Planning Ltd undertook research that indicated that there was very little explicit consideration of future generations by regional council's in New Zealand within their Regional Policy Statement's[1]. This research provides a platform on which, as policy makers, we can begin to think about how to consider the needs of future generations in policy development and decision making within New Zealand, and in particular, how this can be done well.

This report outlines the development of the concept of 'sustainable development' and from this the requirement to consider the needs of future generations in policy and decision making.

In exploring how to do this well, this report examines the concepts of intergenerational equity and intergenerational rights and obligations, and uses these concepts as a base to create an GREAT approach to easily and effectively consider the needs of future generations within policy and decision making.

A GREAT approach to considering future generations in policy development is;

GENERATIONAL ACKNOWLEDGEMENT

Consider current and future generations *equally and transparently* in policy making. We have an obligation to future generations to give them a resource that they can use as they see fit, so acknowledge this from the outset and action it.

RESOURCE DIVERSITY

Conserve the diversity of freshwater options to leave a robust resource for future generations. Identify the current freshwater options in the region that are being managed. Make sure policy frameworks cover them all.

ECOLOGICAL BOTTOM LINES

[1] Perception Planning "The consideration of the needs of future generations"

Establish ecological bottom lines to provide a bare minimum of quality for ecosystem health and for certainty of environmental outcomes. R + E provide a healthy freshwater resource for future generations to use.

ACCESS

Provide equitable rights of access to resources for future generations. We should not make freshwater hard, expensive or impossible for future generations to access. Allocation decisions should not lock up resources for decades.

TOOLS

Include rules and methods in research and policy to ensure that G-R-E-A can happen. Consider tools like research and development, monitoring, review, enforcement, maintenance, and consent conditions and representation in decisions.

The GREAT approach can be used in a local, regional, national or global context, because what the concept is trying to achieve is the same at any scale.

Making GREAT decisions for future generations does not have to be hard, but based on our analysis in a New Zealand context, it requires us to adapt our thinking, ask questions and ensure that the policy development and the decisions are reflective of the intergenerational obligation to future generations. Future generations have a right to a reasonably secure, flexible resource base to use for their own needs and preferences, and as the current generation there this an obligation on us to ensure that this happens.

1 Background

In early 2017 Fish and Game New Zealand engaged Perception Planning Limited to undertake a high-level review of New Zealand's Regional Policy Statements (RPS) to determine whether they explicitly included the term 'future generations'.

This research is used a starting point in establishing the extent to which regional councils in New Zealand have, through their planning documents, considered and implemented their obligation under the Resource Management Act 1991 (RMA), to sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations[2].

In New Zealand, regional council's[3] are tasked with the management of resources (i.e. fresh water, land and air) and their use, while district councils[4] control the use, development and subdivision of land and the effects of land use activities. Each regional council is required to prepare an RPS to provide an overview of the resource management issues of a region and outline the policies and methods to achieve the integrated management of the natural and physical resources within that region. There is an obligation on regional council's, through the Resource Management Act, to consider the needs of future generations, and direct the management of resources in a way that will meet these needs through their policies and methods within the RPS. This, by its nature, requires regional councils to develop and implement regional policy with a future focus.

If guidance about how the needs of future generations are to be provided for is done at a regional level, through RPS and regional plans, then it will be followed by district councils because the RMA specifies that a district plan must give effect to a RPS and must not be inconsistent with any regional plan. If, however no such guidance is provided at the regional level, it becomes less clear if there will be any meaningful consideration of provision for future generations at district level.

The findings of this research revealed that only 11% of references to future generations were included within an objective or policy within an RPS and gave specific direction as to how the consideration on future generations was to be achieved for that region.

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[2] Section 5 of the RMA

[3] There are a total of 16 across the country

[4] There are a total of 63 across the country

The lack of explicit references to future generations gives us an indication that consideration of the needs of future generations could be done much better. As experienced planning professionals within local government policy development in New Zealand, we are also aware of an absence of explicit or transparent consideration of the needs of future generations during policy making.

Demonstrating clear consideration of the needs of future generations will look different in each council, and we acknowledge that there is no 'right way' for this to be done. For this reason, we have not undertaken further detailed research to determine if Council's have given consideration to the needs of future generations in an implicit matter, but rather, we use this report to focuses attention on ways that Councils could do this well within the New Zealand context of freshwater management.

2 Why consider the needs of Future Generations?

2.1 Sustainable Development

The concept of sustainable development and its consideration of future generations first emerged from United Nations Conference on the Human Environment in 1972. At this conference, the Stockholm Declaration[5] stated 26 principles to help guide nations toward environmental preservation. Two of them relate to future generations, in particular:

> *Principle 1- Man has the fundamental right of freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and wellbeing, and he bears a solemn responsibility to protect and improve the environment for present and future generations.*
>
> *Principle 2 - The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.*

Following this introduction, The World Commission on the Environment set out principles for environmental and sustainable development within the Brundtland report[6]. The Brundtland report defined sustainable development as:

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[5] "Declaration of the United Nations Conference on the Human Environment" In Report of the United Nations Conference on the Human Environment ACONF48/14REVL at 3 (1973), (1972) 11 ILM 1416

[6] World Commission on Environment and Development, *Our Common Future*, (Oxford University Press, Oxford, 1987) ("Brundtland Report")

> *"…. development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*[7]

The Brundtland report contained two concepts; the concept of needs, and the idea of limitations. Rather than viewing 'development' and 'environment' as competing values, one to be scarified for the other, the Bruntland report approached the two as inseparable – needs that could only be met within the limitations in the environment:[8]

> *Failures to manage the environment and to sustain development threatened to overwhelm all countries. Environment and development are not separate challenges; they are inexorably linked. Development cannot subsist on a deteriorating environmental resource base; the environment cannot be protected when growth leaves out of account the costs of environmental destruction. These problems cannot be treated separately by fragmented institutions and policies. They are linked in a complex system of cause and effect.* [9]

On the international stage, sustainable development as a principle was affirmed at the Earth Summit in Rio de Janeiro in 1992, with Principle 4 of the Rio Declaration stating:

> *In order to achieve sustainable development, environmental protections now constitute an integral part of the development process and cannot be considered in isolation from it.*

This principle was subsequently reaffirmed at Rio+20 in 2012[10].

Sustainable development remains a central principle on the international environmental stage since its introduction over 50 years ago. Recognising the needs of future generations is pivotal to the concept of sustainable development, which relies on a commitment to equity with future generations

2.2 The Resource Management Act 1991

In the New Zealand context, the Resource Management Act 1991 introduced the concept of sustainable development into New Zealand law, derived from the Brundtland report.

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[7] World Commission on Environment and Development, *Our Common Future*, (Oxford University Press, Oxford, 1987) ("Brundtland Report"), Chapter 1, paragraph 2.

[8] *Setting the scene for the 'New Thinking on Sustainability' Conference*, Sir Geoffrey Palmer QC, (2015) 13 NZJPIL, Victoria University of Wellington Legal Research Paper No. 5/2016

[9] World Commission on Environment and Development, *Our Common Future*, (Oxford University Press, Oxford, 1987) ("Brundtland Report"), paragraph 40.

[10] United Nations Conference on Sustainable Development *The Future We Want* GA Re 66/288, A/Res/66/288(2012).

Section 5 - Purpose of the Resource Management Act 1991 (the Act) states (emphasis added);

(1) The purpose of this Act is to promote the sustainable management[11] of natural and physical resources.

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

*(a) **sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and***
(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

In addition to the purpose of the Act, section 7 requires that in achieving the purpose of the Act, *particular regard* is given to other matters including kaitiakitanga[12] and the ethic of stewardship[13], concepts that both encompass sustainable management. Kaitiakitanga entails the active protection and responsibility for natural and physical resources by tangata whenua[14], based on the Māori world view. The responsibility of kaitiakitanga is twofold: first, there is the ultimate aim of protecting mauri[15] and, secondly, there is the duty to pass the environment on to future generations in a state which is as good as, or better than, the current state.[16]

3 What are the needs of Future Generations?

As outlined above the concept of sustainable development, and explicitly within the purpose of RMA, there is a requirement to '*sustain the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future*

[11] The Act uses the term 'sustainable management' as opposed to sustainable development as the later broad concept includes social inequities and global redistribution of wealth, both of which fall outside of the scope of the Act.

[12] Māori term to describe guardianship, stewardship, trusteeship

[13] Section 7(a) and 7(aa) of the Resource Management Act 1991.

[14] Māori term for indigneous people

[15] Māori term to describe the life force, vital essence, and the essential quality and vitality of a being or entity.

[16] Canterbury Regional Policy Statement 2013 (Revised February 2017), Section 2.2.4, pg 2-7

generations".

At first reading this requirement to consider the needs of future generations can appear onerous and provokes a number of questions for policy and decision makers to determine, including;

- Who are the future generations?
- What is a need?
- What are the needs of future generations?
- What is 'reasonably foreseeable'?

In reality however, a number of these questions do not need to be answered to achieve this obligation under the Act.

As a starting point, for some of the questions listed above, we do know the answer.

"A 'need' is to require (something) because it is essential or very important rather than just desirable"[17]. From this, it can be inferred that in providing for future generations, there is a requirement to sustain the potential of natural and physical resources that provide for those things that are likely to be (foreseeable) essential or very important to future generations. There is not a requirement to provide for every need.

For identity, future generations are immediate successive or more distant generations. Consideration of future generations includes consideration of those that are born and those that are not yet born.

The good news is what we do know already is all we need to know. Establishing what the reasonably foreseeable needs of future generations might be does not require knowledge of what these needs are, or the specific makeup of future generations. As stated by Edith Brown Weiss, in her paper "*In Fairness To Future Generations and Sustainable Development.";*

> *We should not be required, as the present generation, to predict the needs or preferences of future generations as this is an impossible feat. Instead, we need to use the principles of intergenerational equity in order to achieve a reasonable secure and flexible resource base for future generations, which they can use for their own needs and preferences (emphasis added).*[18]

[17] Oxford Dictionary

[18] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-26, 23

4 Intergenerational Equity

Sustainable development relies on a commitment to equity with future generations. It requires looking at the earth and its resources not only as an investment opportunity for the current generation, but as a trust passed from past generations for the benefit of the current generation, and to be passed on to future generations for their use[19].

The theory of intergeneration equity requires that the present generation is both a trustee, responsible for the robustness and integrity of natural resources, and a beneficiary, with the right to use and benefit from resources[20].

From the concept of intergenerational equity comes an obligation to consider future generations needs equally to that of the current generation. Current decision makers should give full consideration to an assessment of the international principles of intergenerational equity,[21] in order to consider the needs of future generations equally alongside their own, and to then apply those principles in a national, regional or local context.

The principles of intergeneration equity are;

- **Options** – conserving the resource options for use by future generations;
- **Quality** – ensuring the resource is of a quality suitable to be left to future generations;
- **Access** – ensuring equitable rights of access to resources for future generations.

The detail of each principle is explored further below.

4.1 Options

This principle requires each generation to conserve resource options, or resource diversity. Future generations are entitled to resource diversity at a level that is at least comparable to what has been enjoyed by previous generations[22].

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[19] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-20

[20] Ibid 20

[21] Ibid 19-26

[22] Ibid 22

To achieve this, the diversity of the natural resource base needs to be conserved to preserve the components of diversity that provide the maximum robustness for the resource.[23] Applying this principle will assist in ensuring that there is resource for future generations to satisfy their values and solve their problems. [24]

As an example, when considering the management of freshwater, preserving options may mean maintaining a diversity of water source options, for example groundwater (aquifers) and surface water (river, streams, lakes, reservoirs, springs, wetlands). This will ensure that the freshwater resource is sufficiently diverse to be robust, and allow for future generations to choose how they use the resource in future. This means that the current generation cannot exploit a resource option (i.e. rivers) on the basis that there are other resource options available (i.e. aquifers).

4.2 Quality

The intergenerational equity principle of quality requires that each generation leave the planet's resources in no worse condition than it received it[25]. This means that there is a minimum level of robustness in the resource that must be passed on to future generations[26].

To apply this principle, there is a need to know what the current quality of the resource is, and what the minimum level of quality is needed to achieve a robust resource.

4.3 Access

The intergenerational equity principle of access requires that each generation should provide its members with an equitable rights of access to resources that has been experienced by past generations and to conserve this access for future generations.

Future generations should not be required to pay an extraordinarily high price for an essential resource because the present or past generation refused to put a price on

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[23] Weiss, Edith Brown. *Managing Water Resources in the West Under Conditions of Climate Uncertainty: A Proceedings. Chapter 2 - Sharing Water Resources with Future Generations (1991).*

[24] Ibid 22

[25] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-26, 23

[26] Weiss, Edith Brown. *Managing Water Resources in the West Under Conditions of Climate Uncertainty: A Proceedings. Chapter 2 - Sharing Water Resources with Future Generations (1991).*

accessing the resource, deferring the cost of its depletion to future generations[27]. For example, the current generation should not allow the use of a resource in a way that results in a resource quality that it is no longer able to be used by future generations without significant and costly remediation works, or in the case of finite resources the loss of the resource.

5 Intergenerational Obligation and Rights

The principles of options, quality and access form a set of intergenerational obligations and rights.[28] It is the right of future generations have to a resource base for their own needs and preferences, and the obligation on the current generation to provide that resource.

Applying this to freshwater management means applying the options, quality and access principles to establish the nature of the freshwater resource that the current generations enjoys and their obligation to pass this on to future generations. And it is the right of future generation to receive the freshwater resource.

In practise this means managing resources by ensuring that all policy and decisions that we make are developed in a way that consider the principles of intergenerational equity. In developing policy we should evaluate and assess the implications of our policies on the options, quality and access to the freshwater resources that we are managing. If the policies we make are able to guide decisions that consider the principles of intergenerational equity, then we can be confident that our future generations will receive a resource that has the capability to use as they see fit.

6 Implementing intergenerational rights

To ensure that future generation receive a resource with sufficient diversity, robustness and accessibility, policy and decision makers need to explore the tools and methods available to enable this obligation to be fulfilled.

The methods or tools needed to enable policy and decision makers to implement this right will be dependent on the resource being managed and the level of information

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[27] Weiss, Edith Brown. *Managing Water Resources in the West Under Conditions of Climate Uncertainty: A Proceedings. Chapter 2 - Sharing Water Resources with Future Generations (1991).*

[28] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-26, 23

available. The table below identifies some methods or tools that may assist in the achievement of this obligation.

Tool	Application
Representation in Administration and Judicial Decisions	Representation of the interests of future generations in decision-making processes could involve the formation of a 'futures commission' or the appointment of a futures 'ombudsman' for future generations. This would ensure that the obligation to give consideration to the needs of future generations is the responsibility of an independent body tasked with achieving the environmental outcomes necessary to achieve the intergenerational equity of resources. Another way of doing this in New Zealand may be to construct a National Policy Statement (NPS) under the RMA that requires decision makers to go through an express analytical process considering future generations.
Research and Development	Long-term research and development is essential for intergenerational equity, as it provides the base of information which we can use as evidence for policy and decision making, and the consideration of future generations. For example, research and development could include the investigation and development of substitutes for depleted resources, examine ways to extract and use resources more efficiently, or provides evidence to confidently set current and appropriate environmental bottom lines. Research is fundamental to understanding and managing long-term threats to environmental quality (i.e lag times for contaminants entering freshwater) As it is such an important tool, the onus for undertaking research and development should be placed on both the private and public sectors.
Monitoring	In the absence of monitoring, there is no way to judge a

Tool	Application
	generation's stewardship of resources.[29] This tool is essential to ensuring measures are put in place to regularly collect information and make assessments about the condition of our resources, the way resources are being used, and the implications of use. Without this tool, there can be no confidence that a resource of a sufficient nature to meet intergenerational obligations can be provided. For example, in establishing policy that sets a freshwater quantity allocation regime, monitoring should be an essential tool for both the resource user and the council, to demonstrate that the allocation is being complied with. Monitoring is also needed to ensure that information is collected to enable the continued reassessment of the appropriateness and success of the regime. For example, measuring and recording the amount and rate of water taken for use by each resource user and then transferring this information to the resource manager (i.e. the council) to combine with information from all other sources to understand the total amount and rate of water taken and when this occurs. This information can then be regularly analysed to ensure that the amount of water taken is appropriate for the freshwater body. Monitoring, like research and development, should be a requirement of any policy and decision making.
Maintenance	Maintenance is critical in intergenerational equity to ensure that the costs of the decisions made by current generations in managing resources will not be unduly passed on to future generations. If maintenance is considered part of the intergenerational equity question, the criteria of the ease and the cost of maintenance becomes essential when considering a new investment[30],

[29] Weiss, Edith Brown. *Managing Water Resources in the West Under Conditions of Climate Uncertainty: A Proceedings. Chapter 2 - Sharing Water Resources with Future Generations (1991).*

[30] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-26, 25

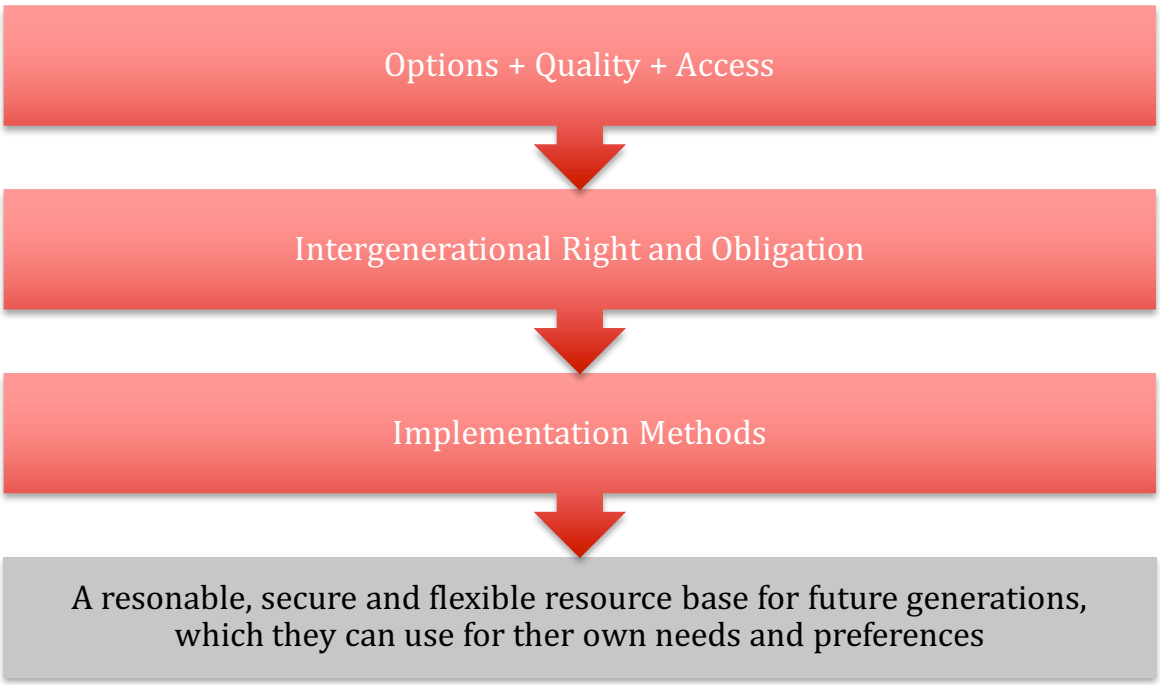
Tool	Application
	rather than an add on to investment. If maintenance is not considered appropriately and provided for in decision making or policy, and is not achieved, then the current generation benefits from this investment for very short time at the expense of future generations. The legacy of decisions needs to be considered within the decision making process. For example, responsible investment in infrastructure (e.g. water mains pipes and associated components) needs to ensure that the maintenance of the components is considered from the outset. This will ensure that the true cost of the infrastructure to both current and future generations is recognised. It will also ensure that future generations are not burdened with excessive costs or depletion of a resource. For example, when extracting potable water the use of cheaper pipes with a shorter lifespan and therefore require replacement sooner, needs to be evaluated as a total cost against pipes that may be more expensive, but more durable pipes therefore with a longer life.
Focus on assessing the long-term impacts	This tool ties in closely with the research and development and monitoring tools. There is a need to assess long term impacts of the use of our resources. Current generations need to understand the impact of their actions and decisions beyond their generation to ensure that the options for, quality of and access to resources are retained for future generations.
Market	Correctly understanding the fundamental entitlement among generations is critical to ensuring that future generations can realise their equal claim to use and benefit from the natural environment along with the current generations. When this entitlement is understood,

Tool	Application
	the relevant economic instruments can be designed to achieve intergenerational equity efficiently[31]. This may involve giving future generations representation using economic instruments, i.e. a value in the market.
Enforcement of existing rules	Enforcement is critical in all policy and decision making. If rules are not enforced then there is effectively no point in establishing rules in the first place. Enforcement must be undertaken to ensure that resources are being managed, used, maintained and enhanced, in a way that secures the availability of that resource for future generations.
Education	Education is critical and involves raising awareness of the principles associated with intergenerational rights and obligations, and providing information on how this can be achieved. New Zealand's Department of Conservation, Ministry of the Environment and Ministry of Education have recently announced an Environmental Education for Sustainability Strategy[32] aimed at teaching all New Zealanders how to take action against sustainability challenges both locally and globally. Bringing a future generations focus within such strategies would assist in highlighting the future generation obligation to all audiences.

By asking the right questions in developing policy and using the appropriate tools, policy and decision makers can be confident in managing natural resources in a way that provides for the needs of future generations.

[31] Weiss, Edith Brown. "*In Fairness To Future Generations and Sustainable Development.*" American University International Law Review 8, no. 1 (1992): 19-26, 25

[32] New Zealand's Department of Conservation, Ministry of the Environment and Ministry of Education "*Environmental Education for Sustainability Strategy and Action Plan 2017-2021"*



7 How to develop GREAT policy and make GREAT decisions for future generations: Freshwater management in New Zealand.

The burning question that comes from this research and literature review, is how policy and decision makers can ensure that policy direction and decisions consider the needs of future generations, as required by the RMA, to achieve sustainable management.

To do this well, the best way is to apply a process to policy development and decision making that is not onerous or difficult, that is flexible to apply at various scales and resource types, and that can demonstrate an active and considered approach to assessing the potential impacts of policy and decisions on the ability of natural resources to provide for the needs of future generations. It is essential that this approach is brought to the forefront of policy development and decision making within New Zealand and internationally.

In reviewing and analysing the research around sustainable development and intergenerational equity, this report has extracted the key components of how to consider future generations, and developed a GREAT process that can be applied to the management of natural resources.

The GREAT future generations process is;

G – Generational Acknowledgement

R – Resource Diversity

E – Ecological Bottom Lines

A – Access

T - Tools

7.1 Generational Acknowledgement

The first step to providing GREAT policy development and decision making for future generations is realising that understanding the needs of future generations is not required. What is required is clear acknowledgement of the obligation to provide for future generations, and the duty to consider future generations equally with that of the current generations.

There is obligation on the current generation to create policy and make decisions that will ensure that a flexible, reasonable and secure resource is available for future generations to use for their own needs.

In the management of freshwater, policy and decision makers need to go through an express analytical process considering future generations, being transparent and explicit where possible, to demonstrate how the policy or decision will contribute to providing a robust freshwater resource for future generations to use. Following 'generational acknowledgement' the process in 'R', 'E', 'A' and 'T' can be applied to ensure that this is undertaken.

In New Zealand, this should involve explicit consideration and demonstration of the application of the GREAT process in Section 32 analysis reports required when plans and policy statements are created and reviewed under the Act.

7.2 Resource Diversity

This step requires assessment and consideration of the current diversity of the natural resource that is being managed. This is necessary to ensure that our policy and decision making is contributing to the preservation of this diversity and in providing a resource with maximum robustness for future generations.

In freshwater management, this involves the identification of what the diversity and options are for the management of freshwater within the region.

Resource Diversity Questions

- What are the options for this resource? (i.e. freshwater (rivers, streams, lakes, reservoirs, groundwater)
- Does the policy framework identify all the options for this resource? (i.e. all freshwater sources); or
- Does this policy or decision serve to conserve a particular option, or help to preserve the diversity of the resource? (i.e. policy for rivers or policy for lakes or may be combined if applicable)

Freshwater in New Zealand is available in two main forms being groundwater and surface water. Groundwater includes aquifers, while surface water includes rivers, streams, lakes, wetlands and reservoirs.

As a minimum, the obligation to future generations would require that there is a policy framework for freshwater management that includes management of all freshwater options within the region. Policy and decision making should be clear about the resource option or options that it is managing, to a scale that is appropriate to the resource (i.e. the management of river and streams within a specific catchment, or the management of lakes within the region). It also requires policy makers to look at how polices work together to sustain freshwater resource options across the region for future generations.

This may also require policy and decision makers to recognise that some freshwater options may not be as good as others, for example are not as flexible as others in use, or take longer to regenerate. With intergenerational equity in mind this may require a move away from use of resource options that are slower to be renewed.

7.3 Ecological Bottom Lines

In this step, there is a need to ensure that the policy or decision contributes to maintaining or enhancing the quality of the resource, in order to provide a resource with a level of robustness that can be passed on to future generations.

This requires setting 'Ecological bottom lines' in policy and decision making. Ecological bottom lines are the lowest level at which a natural resource can be considered to sustain ecological health.

Applying an ecological bottom line means that there is certainty for the environment in the management of the resource and decision making[33]. Being aware of this limit, allows each generation (including future generations) to choose to how they manage a freshwater resource to reach, maintain or operate above this bottom line.

New Zealand court decisions have confirmed that the 'environmental bottom line approach' is consistent within the definition of sustainable management[34].

Ecological Bottom Line Questions

- What factors contribute to the quality of the resource? (i.e. flow, biodiversity)
- What is known about the current quality of the resource?
- Is there enough information to understand the resource well?
- Is there information to be confident to set ecological bottom lines (i.e. what resource quality achieves for ecosystem health)?
- What is not known, and how can this information be obtained?
- Is the precautionary approach being applied where there is not sufficient information or where information is uncertain?
- If ecological bottom lines can be confidently set, are these bottom lines adaptable and subject to review over time? This needs to include the acknowledge that bottom lines maybe different across generations, and subject to changes in climactic conditions.
- Will this policy or decision serve to ensure that the resource is not passed on in any worse condition than it was received?

As a starting point, policy and decision makers need to know the quality of the freshwater they are managing. This could be at a regional, local or catchment-wide scale or for a particular river, stream or lake, depending on who the policy or decision maker is and the scope of the policy or decision. This also requires policy makers to identify those attributes of the freshwater resource that contribute to its quality, and ensure that each of those aspects is managed.

[33] Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd [2014] NZSC 38,

[34] Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd [2014] NZSC 38,

Ecological bottom lines must be established by current scientific expertise, and policy must manage the fresh water resource to achieve these bottom lines.

If the quality of freshwater resource is not known, or there is not enough information to be confident in establishing a bottom line, a precautionary approach must be taken. In addition, measures must be put in place to ascertain quality, and monitor the resource as a priority. This may call for the need for interim standards. There is a need to ensure that in developing a policy framework for freshwater management there has been sufficient investment in appropriate research and development to enable quality to be ascertained and bottom lines set.

Where water quality falls under a bottom line, the current generation's obligation must be to manage the catchment in a way that improves water quality to ensure it gets back up to at least the bottom line.

Alternatively, there may be a catchment that is pristine and quality is exceeding the ecological bottom line. In this case, the current generations obligation should be to maintain the quality of the resource in its current state.

There is an argument to be made, in the case of a pristine catchment, that in this instance it could be up to the current generation can choose how and to what extent they manage the use of freshwater provided the quality of the resource does not dip below the bottom line. For example when considering the use of this resource, the current generation could decide:

a. to use the maximum freshwater resource available up to the bottom line point to provide for maximum beneficial use, or
b. curtail use and provide for a buffer above the bottom line, or
c. restrict use to maintain the resource in its pristine condition.

We do however raise considerable caution on the application of this approach, primarily because of the difficulty in the ability to set 100% guaranteed bottom lines to maintain ecosystem health. Ecological bottom lines may change over time. This may be the result of climate change and the availability of new information from research and monitoring. In addition, the current generation has an obligation to pass on a resource in a state no worse that it was received, and this approach in contrary to that notion.

For example, if a pristine river can be used to a point that bottom lines are met, and these bottom lines are later found to be incorrect or may require change, then a degradation in quality of that freshwater resource would have occurred that will be passed on to future generations.

Any policy framework should ensure that there is provision for these bottom lines to be reviewed and amended if required, at specified intervals, and includes requirements for appropriate monitoring to enable the measurement and maintenance of water quality.

In addition to the consideration of ecological bottom lines, we believe that there maybe scope within intergenerational equity to consider cultural bottom lines when developing freshwater management policy.

Within New Zealand there is an obligation from the Treaty of Waitangi[35] to manage natural resources in partnership with tangata whenua. Ecological bottom lines have been used as a proxy for cultural health of freshwater resources in New Zealand for some time, however there needs to be acknowledgment that ecological bottom lines and cultural health are not necessarily the same thing. For example a freshwater resource that has been used to receive human waste might be of sufficient quality to meet ecological bottom lines, however the water resource is unlikely to be considered suitable to sustain cultural uses.

Expanding the consideration of the effects of our policy making and decisions on ecological bottom lines to consider implications for the cultural uses of resource for future generations should be an integral part of our intergenerational obligation.

7.4 Access

We have an intergenerational obligation to future generations to ensure that access to freshwater resources is not unnecessarily restricted. There are a number of ways that this could occur, and policy and decisions must not allow for access restriction.

This step requires consideration of whether the policy or decision will restrict future access to the resource in anyway.

[35] The Treaty of Waitangi is New Zealand's founding document, It is an agreement (in Maori and English), that was made between the British Crown and Maori in 1840.

Access Questions

- Will this policy or decision restrict how future generations use the resource? This requires acknowledgement that access restriction to a resource many be required short-term intra-generationally (i.e. within the current generation) in order to assist in achieving ecological bottom lines, i.e. consents for terms to restrict consumption, in order to conserve the resource and safeguard ecological bottom lines) but;
- Does this policy/decision have the potential to make access more difficult or expensive to obtain for future generations?

For example, providing a policy and rule framework that allows for a water take permit to be renewed with little assessment on expiry. While this provides maximum certainty to current users that their permit will likely be renewed it may restrict how access to that freshwater resource can be allocated in the future, and restrict the ability of future generations to choose how that resource should be used.

Policy or decisions that will make the freshwater resource more difficult or expensive for future generations to obtain is also contrary to the intergenerational obligation. For example, restricting nutrient allocation (i.e. nitrogen loss rights) in catchments based on existing rates (grandparenting) has the effect of making future changes to the use of land less flexible and potentially more expensive for sites where land has been underdeveloped in the past.

Another example is where a generation allows for the depletion of a freshwater resource to an extent that it is no longer available, for example where river has been managed in a way that causes the quality of the river to deteriorate to a point that it is not longer useable. An example of this industrial waste causing contamination of the sediments in a river making it toxic for life and unsafe to swim or fish. It may be possible for this contamination to be remediated but that process is likely to be highly expensive, contentious and time consuming. This example would mean that the freshwater source is either impossible for future generations to use, or will be highly expensive or difficult for future generations to use given the amount of remediation works that would need to occur.

7.5 Tools

This step requires policy or decision makers to assesses the tools that are required to ensure the GREAT approach above is achieved. Relevant tools may involve:

- Research and development, representation in decision making, monitoring, review, enforcement, maintenance or timeframes that are practical and reasonable, and education.

Tools Questions

- What is required to ensure that 'R', 'E' and 'A' above are achieved? (i.e. if current water quality is not know, what tools are required to find out this information, both in the short and long term.)
- Are the tools required included within the rule frameworks or in consent conditions, or other methods?

As policy makers, intergenerational obligation requires ecological bottom lines to be set for the management of a water catchment. In order to set those bottom lines, clear scientific research/data is required to determine what an appropriate bottom line might be. Upon setting the bottom line, monitoring is required to ensure that bottom lines are met, and ongoing research and development is required to monitor the appropriateness of the bottom line over time and allow for review, particularly in light of new information or advances in technology.

For example, the use of proven scientific research/data to establish appropriate nitrogen levels in a river to safeguard the life-supporting capacity of the river and maintain ecosystem health. This level is then carried forward in to policy as an ecological bottom line on which the nitrogen in the catchment can be allocated. Monitoring is required within the rules framework to ensure that allocation levels are not exceeded and that the bottom line is not compromised. In addition, the Council needs to invest additional resource into enforcement and future research and development in order to ensure that there is appropriate information available, to review both allocation and bottom lines at regular intervals.

8 Conclusion

Being GREAT at considering future generations, is not rocket science. It requires awareness of the obligation to future generations, and to consciously think about future generations when developing policy and in decision making. It involves making sure that there is acknowledgement of the right of future generations to receive resources in a condition that enables use as future generations deem appropriate. It is the current generations role to make sure that this happens!

Based on analysis in a New Zealand context, making GREAT decisions for future generations requires us to adapt our thinking and start asking questions to ensure that the policy developed and the decisions made are reflective of the current generations intergenerational obligation to future generations. The aim is to provide future generations with a reasonably secure, flexible resource base to use for their own needs and preferences.

The GREAT approach to considering the needs for managing resources will not unduly restrict the current generation being able to use resources for beneficial use, but it places a requirement on current decisions to consider the effects of the uses of resources on future generations, equally to that of their own.

Using the GREAT approach means that the 'needs of future generations' is no longer a 'tag on' to development of policy or decision. While policy and decisions that seek to maintain and enhance resources are, by their nature, likely to have a positive outcome for future generations, a lack of specific consideration from the outset of the obligation to provide for future generations may not result in GREAT outcomes.

It does not matter at what scale the GREAT approach is applied. It can be used in a local, regional, national or global context as the concept and what it is trying to achieve are the same regardless of scale.

Lets take action, applying GREAT consideration of future generations to all policy and decision making and making this part of 'normal' policy and decision making process.