National Policy Statement – Indigenous Biodiversity

Cost Benefit Analysis

1 December 2022 – Final

m.e consulting

Office of the Minister for the Environment
Office of the Associate Minister for the Environment

Addendum to: National Policy Statement for Indigenous Biodiversity: Cost Benefit Analysis

Purpose

1. This addendum provides an update to the National Policy Statement for Indigenous Biodiversity: Cost Benefit Analysis (CBA) that supports the National Policy Statement for Indigenous Biodiversity (NPSIB).
2. It highlights the key changes make to the NPSIB since the CBA was written and their implications for the CBA.

Background

3. The changes made to the NPSIB since the CBA was completed in December 2022, are to:
    - make clear that no part of the NPSIB applies to development, operation, maintenance or upgrade of renewable electricity generation (REG) assets and activities and electricity transmission network (ETN) assets and activities and that they are not considered specified infrastructure. The intention is to address all REG and ETN development within the amendments to the National Policy Statement for Renewable Electricity Generation (NPS-REG), National Policy Statement of Electricity Transmission (NPSET) and the National Environmental Standard for Electricity Transmission (NES-ETA), as consulted on in the discussion document *Strengthening national direction on renewable electricity generation and electricity transmission consultation document*.
    - make other minor wording amendments to fix errors, for clarity and to ensure consistency with other national direction, in particular the National Policy Statement for Freshwater Management (NPSFM) and its policies related to offsetting and compensation.
4. The amendments have not altered the overall intent, objective or policies of the NPSIB. Therefore, these amendments do not impact on or change the analysis and conclusions of the CBA.

Changes made to the NPSIB and their implications for the s32 report

5. The following sets out the key changes made to the NPSIB since the CBA was completed, and the resulting implications for the CBA content.

Specified infrastructure

- An additional paragraph was included as clause 1.3(3) stating nothing in the NPSIB applies to the development, operation, maintenance or upgrade of REG and ETN assets and to clarify that ETN and REG are not considered specified infrastructure under the NPSIB.
- As an adjunct, definitions for 'renewable electricity generation assets', 'electricity transmission network' and 'electricity transmission network assets' were added to clause 1.6.
- These amendments do not change the overall intent of the NPSIB.
- The references in the CBA to specified infrastructure should be read as not including ETN or REG. References to REG such as dams and windfarms are no longer relevant in the context of the CBA analysis or conclusions on the costs and benefits of the NPSIB.

Minor corrections and amendments

- Minor corrections to wording and amendments to ensure consistency with other current and emerging legislation and national policy have been made.
- Minor wording amendments to the definitions and principles of offsetting and compensation in clause 1.6 and appendices 3 and 4 were made to align with the NPSFM as appropriate.
- Clause 3.10(4) was also amended to guide councils in their consideration of consent applications, and on how to apply the effects management hierarchy.
- Some minor wording changes around Māori land clarified further that development is enabled on Māori land.
- These changes ensure consistency across national direction and make no change to the intent or substance of the clauses or appendices. However, the references to clause wording in the CBA do not include these changes so should be read alongside the promulgated NPSIB.

Conclusions

6. The amendments made do not impact on the overall intent of the NPSIB. Nor has there been any change to the objective or policies of the NPSIB. As such they do not impact on or change the overall CBA analysis.
7. The primary impacts of the amendments on the CBA are that:
    - all references in the CBA to REG, dams and wind farms are no longer relevant
    - some of the clause wording in the NPSIB differs a little from that in the CBA
    - the CBA should be read in the context of the promulgated NPSIB.
8. In conclusion, the overall substance and conclusions of the CBA remain accurate and appropriate.

National Policy Statement – Indigenous Biodiversity

Cost Benefit Analysis

Prepared for

Ministry for the Environment

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Executive Summary

This report, prepared by Market Economics (M.E) for the Ministry for the Environment (MfE), provides a cost benefit analysis (CBA) of the provisions of the National Policy Statement for Indigenous Biodiversity (NPSIB) to determine if they will be an efficient way to achieve the objective of maintaining indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss for current and future generations. Efficiency as defined in Section 32 of the Resource Management Act (RMA) requires that anticipated benefits of introducing new regulation outweigh the anticipated costs (and risks).

The Total Economic Value of Indigenous Biodiversity

A key focus of this CBA is ensuring that the scope of benefits delivered by indigenous biodiversity is appropriately identified and the broad order of magnitude of some of those benefits is recognised. This provides the context within which the benefits of implementing the NPSIB can be considered.

Biodiversity is fundamental for all ecosystem services. The benefits of indigenous biodiversity can be expressed according to the ecosystem services that indigenous biodiversity delivers. Ecosystem services, which operate in complex ways to deliver benefits to humans, help us understand how our wellbeing is linked to the wellbeing of natural systems (Roberts et al, 2015). The ecosystem services delivered by indigenous biodiversity can be summarised according to direct and indirect use values and non-use (option, existence, bequest) values, as set out in a Total Economic Value (TEV) framework. This helps show how the biophysical benefits of natural capital flow on to (and sustain) economic, social and cultural benefits.

Research from the IPBES (2019) states that "*nature, through its ecological and evolutionary processes, sustains the quality of the air, fresh water and soils on which humanity depends, distributes fresh water, regulates the climate, provides pollination and pest control and reduces the impact of natural hazards*". Protecting nature is therefore critical to human survival. There is a wide body of evidence that demonstrates that ecosystem services delivered by indigenous biodiversity contributes in a wide variety of ways to the wellbeing of New Zealand and New Zealanders. It contributes to human welfare through provisioning (such as food and fibre), regulating (such as regulating nutrient cycling and greenhouse gas emissions) and cultural ecosystem services (such as spiritual values, recreation, cultural harvest, and knowledge).

To help put the scale of benefits of indigenous biodiversity into perspective, Patterson and Cole (2013) indicatively estimated the net total (use and non-use) economic value of New Zealand's land-based ecosystem services to be around $57 billion for 2012, equivalent to 27% of the country's GDP in that year. Indigenous biodiversity will account for only a portion of this value, and that portion cannot be deduced from the research. However, they specifically examined 'Scrub Ecosystems' landcover that entirely consists of native scrub vegetation and not used for any form of agriculture. This indigenous vegetation, which covered an estimated 4% of New Zealand's land area in 2012, may therefore include land that could be considered as significant natural areas (SNAs). The research showed that erosion control was the most valuable ecosystem service delivered by scrub ecosystems (estimated at $364 million in 2012). This was

followed by climate regulation services ($261 million), waste treatment ($258 million) and nutrient cycling ($215 million). The combined cultural/spiritual/tourism and recreation value of Scrub Ecosystems was estimated at $5 million. The net use value of these ecosystems was $535 million.

Patterson and Cole's (2013) estimated the use value of 'Forest Ecosystems' which consisted of mature indigenous forest (including that in national and forest parks), but also includes significant amounts of plantation forestry (so indigenous vegetation makes up only a portion of the value). The value of erosion control, climate regulation, waste treatment and nutrient cycling in these ecosystems is significant, contributing between $1.2-2.1 billion each to the gross use value, for which indigenous forests will make a strong contribution. Recreation value of forest ecosystems is also high, estimated at $614 million in 2012.

Natural inland wetlands are within scope of the NPSIB under restoration provisions. According to Patterson and Cole (2013) the indicative net use value of wetland ecosystems in New Zealand is $5.1 billion (2012) and the non-use value of New Zealand's wetlands was indicatively estimated at $350 million (similar to the non-use value of national parks on a per hectare basis). The indicative non-use value of national parks in New Zealand was estimated at $7.16 billion, total forest parks was estimated at $743 million, and total land reserves was estimated at $1.2 billion (although this included scientific reserves, historic reserves, wildlife reserves, camping grounds and public domains administered by DOC, with scenic and wildlife reserves most likely to be areas of indigenous biodiversity).

This research shows that even if indigenous vegetation in these various ecosystem types is responsible for only a moderate share of the total net value of regulating, supporting and cultural ecosystem services delivered, that value is significant in dollar terms.

Māori aspirations and well-being are interdependent on ecosystems and ecosystem services' (Harmsworth & Awatere, 2013, page 274). Indigenous biodiversity is central to traditional medical practices (rongoā), Māori knowledge (mātauranga Māori) and food and resource gathering (mahinga kai). It is very difficult to put a dollar value on these ecosystem services.

Indigenous biodiversity also contributes to New Zealand's 'clean green image' on the international stage which helps promote a range of product related exports as well as international tourism activity. Tourism derives considerable direct benefit from the ecosystem services delivered by indigenous biodiversity in New Zealand as well as indirect (amenity) and intangible (cultural and spiritual) aspects of ecosystems (Roberts et al, 2015). For the tourism sector, it was estimated that the loss of this 'clean green image' would result in an annual economic loss of between $938 million (including lost wages and GST) of spend from five major tourism markets. For dairy exports, under worsened environmental perceptions of New Zealand, the average consumer would purchase less New Zealand dairy products, equating to a loss of between $241 million and $569 million (MfE, 2001).

Private and Public Benefits from Indigenous Biodiversity

Importantly, indigenous biodiversity (in one form or another) is valued by the wider public irrespective of whether it occurs on private land (including plantation forestry and agricultural land) or public land (i.e. a public conservation area). The issue of private and public benefits of indigenous biodiversity is particularly relevant given that SNAs (and other indigenous biodiversity outside of SNAs) are to be protected and maintained on both private and public land under the NPSIB.

Landowners potentially benefit from all ecosystem services delivered by indigenous biodiversity when located on their land, with the exception of tourism. In particular, they have the exclusive benefit of consumptive direct use values, as well as non-consumptive direct use values: with SNAs on their property potentially providing opportunities for recreation, exploration and learning. Similarly, landowners have the exclusive benefit of future option values associated with the SNA. Private landowners are also likely to indirectly benefit from all of the functional/regulating services provided by indigenous biodiversity.

Public use values of indigenous biodiversity on private land would appear to be limited to indirect functional/regulating ecosystem services provided by indigenous biodiversity, particularly those that contribute (in aggregate) to catchment level water quality, air quality and climate regulation. Nutrient cycling and shelter benefits are excluded on the basis that these are anticipated to be more localised (and therefore received mainly by the landowner).

Conversely, we have considered the public benefits of indigenous biodiversity when on public land. This captures all households, including those that have SNAs on their land. In terms of direct use values, these are likely to be focussed on non-consumptive benefits, including tourism, recreation, science and education. The wider public also benefits indirectly from the regulating services of SNAs on public land, where again, in aggregate these contribute to catchment level water and air quality and climate regulation. Option values could also apply to the wider public for SNAs on public land, although that future option may be limited to non-extractive direct use values (e.g. having the option to do a hike in a national park in the future).

With regard to existence/intrinsic and bequest (non-use) values, M.E considers that these apply to indigenous biodiversity on private and public land and are not limited to landowner values when indigenous biodiversity is on private land.

Status Quo and Rationale for New Regulation

Given that New Zealand's indigenous biodiversity is in decline and that natural ecosystems continue to degrade, we cannot be complacent and assume that the wide-ranging ecosystem services described above (both tangible and intangible) will indefinitely continue contributing to our wealth and wellbeing at current levels.

While local authorities have obligations to maintain New Zealand's indigenous biodiversity as part of their functions under the RMA, the provisions relating to indigenous biodiversity have proven to be unclear. There is strong evidence that the status quo will lead to an ongoing decline of indigenous biodiversity through further loss of remaining indigenous habitats and ecosystems on private land that are representative of lowland and coastal environments (and which differ from the significantly more extensive indigenous habitats and ecosystems (often on hilly or alpine terrain) typically protected on public conservation land. Without national direction and improved national guidance on this issue, it is likely that councils will continue to manage indigenous biodiversity inconsistently and practice will continue to vary.

The market will not solve the issue of declining indigenous biodiversity on its own. There are no mechanisms in commercial markets through which the outcomes and benefits sought from the NPSIB would be protected and preserved for current and future generations. Nor is there any mechanism to restore that resource in certain locations once lost, including restoring species that are lost altogether. That is because the value of indigenous biodiversity to the community at large is not captured in price signals in

the commercial market. In most instances, commercial markets do not place a high enough value on the indigenous biodiversity resource to influence land use or land development decisions.

In order to reduce or minimise adverse effects on indigenous biodiversity at the aggregate level, land use outcomes need to be influenced at the micro-level (individual land holdings), so that the aggregate outcome from many small-scale and minor adverse effects can be avoided. The NPSIB includes a package of provisions addressing all aspects of terrestrial indigenous biodiversity protection, maintenance, restoration, enhancement and monitoring. Protecting and maintaining indigenous biodiversity will help to protect and maintain the ecosystem services that New Zealanders rely on for their wellbeing. Restoration of indigenous biodiversity can help increase the locations where ecosystem services are delivered and increase the scale and effectiveness of ecosystem services delivered in aggregate. The provisions of the NPSIB will represent a shift in practice in many local authorities across New Zealand.

CBA Approach

The CBA approach adopts a combination of high-level national analysis, district-level case studies, theoretical property-level examples, and literature reviews to help understand the processes through which effects will arise from achieving the objective of the NPSIB and how these translate into costs and benefits for different stakeholder groups.

This CBA does not conclude in a national level Benefit Cost Ratio (BCR) as set out in the Treasury guidance to inform Cabinet decision making. This is due to the unique nature of the cost and benefits arising from the NPSIB which do not lend themselves to practicable or robust quantification in monetary terms.

The costs and benefits of the NPSIB are expected to vary significantly within, and between, regions and districts. They will also vary for different land uses and activities, and for different agencies and stakeholders. The status quo regulatory environment is a key factor for the net regulatory change that can be attributed to the NPSIB in a CBA, and this also varies by district and region. The NPSIB also provides discretion to local authorities as to what policies and rules they insert into District Plans and Regional Policy Statements to implement the objective and policies of the NPSIB. This uncertainty and flexibility make it very challenging to quantify costs for any one district given the data requirements that would be needed to examine costs at a property level and aggregate these up to a district, regional or national level, or find reliable or transferable data on benefits that applies to specific districts or that provides a national picture.

As a result, this report presents a discussion and overview of costs and benefits, some quantified, some monetised and some qualified. Examples are provided where possible to help demonstrate how costs and benefits are likely to apply, and at what scale and significance.

Costs to Central Government

There are a range of anticipated administration costs for central government following commencement of the NPSIB. The combined cost to develop guidance (planned for year 1 following commencement), non-financial support and general administration by central government in years' 1-10 (but concentrated in years' 1-4) equates to an approximate present value of $3.39m (5% discount rate). A portion of this expenditure falls within MfE's baseline operational budget but is included for completeness. This total cost excludes the costs of the effectiveness review after year 10.

There is also a combined funding value provided by MfE of indicatively $14.63m, (present value, 5% discount rate). A portion of this funding is expected to go towards direct support to tangata whenua to aid effective and active engagement with local government implementation processes. This will include costs to cover technical training and other workshops/programmes for iwi (or similar). The balance of this funding is available to those territorial authorities (TAs) needing financial assistance with the cost of identifying SNAs (i.e. where the costs would lead to prohibitive increases in rates, particularly in districts with a small rating base and a large area/number of SNAs on private land).

Indicative estimated costs for DOC to support TAs in identifying SNAs on DOC managed land range between $202,000 and $1,743,000 (present value, 5% discount rate) and are assumed for the purposes of this CBA to be spread evenly over 3 years following commencement of the NPSIB. Total central government administration costs attributable to the NPSIB therefore come to between $18.2m to $19.8m (present value). The significant majority of these costs will be incurred in the short-term (first four years).

Costs to Local Authorities

While the need to manage indigenous biodiversity is already a requirement for local authorities under the RMA (including through objectives, policies and rules in District Plans), anticipated NPSIB costs for local authorities arise from the need to carry out a number of spatial assessments that include a strong focus on engagement and, where practicable, ground truthing; development of biodiversity strategies and monitoring plans; plan changes required to introduce new/amended objectives, policies and methods to manage effects on indigenous biodiversity in accordance with the NPSIB, including in the areas covered by the spatial assessments; and the establishment of council processes to effectively engage and work with tangata whenua on decisions around policy development and local strategies/approaches to protect and maintain indigenous biodiversity under the NPSIB.

This CBA considers potential indicative cost ranges (low-high) faced by local authorities to meet these key requirements of the NPSIB. Generally, these costs assume that the council has to start from scratch, and this therefore represents the maximum cost attributable to the NPSIB. Many councils may only incur a portion of these costs, particularly where they can build on existing work. Some councils for example, have already identified SNAs in their District Plans (with some of these likely to satisfy the requirements of the NPSIB) and some regional councils have Biodiversity Strategies (or are underway for developing one).

SNA assessment costs will vary widely depending on the geography of indigenous biodiversity in each district and whether costs can be shared with neighbouring districts. These costs are estimated to range between $222,000 and $2.2m for TAs (present value, 5% discount rate), and be spread across years 1-4 following commencement. In addition, identifying Taonga with tangata whenua (if appropriate) could cost between an estimated $106,000 to $133,000 (present value, 5% discount rate) during that same period. Mapping specified highly mobile fauna areas (using available data) is estimated to cost regional or unitary councils $106,000 to $133,000 (present value, 5% discount rate), again likely to be incurred in years 1-4 according to M.E assumptions.

For the purposes of this CBA, it has been assumed that local authorities will seek to consolidate NPSIB changes to District Plans and Regional Policy Statements into one plan change (to maximise efficiency and limit costs), timed to coincide with the requirement to notify SNA provisions in Year 5 following commencement. The costs include some assumptions around appeals. For district councils, plan change costs are estimated at between $157,000 to $234,000 (present value), for regional councils, the cost is

lower at an estimated $78,000 to $118,000 (present value) and for unitary authorities, $196,000 to $314,000 (present value).

Regional and unitary councils have additional costs under the NPSIB to produce a Regional Biodiversity Strategy. This is assumed by M.E to be spread over years 1-8 following commencement, but with key outputs completed in by year 5 to tie in with other workstreams. Present value cost estimates range from $81,000 to $242,000 (and exclude costs associated with drafting an implementation plan). A Regional Monitoring Plan is also required. M.E has assumed (given the absence of any specified timing) that this might be developed in year 6. Because the Plan will need to be given effect to, this CBA also estimates an ongoing annual cost to roll out the monitoring programme. When the costs of the initial Plan and ongoing monitoring and reporting are combined, the average annual cost is estimated at between $50,000 and $150,000 attributable to the NPSIB. When considered over the next 30 years (i.e. to 2053), this has a present value cost of $591,000 to $1.8m.

The following summarises the combined indicative cost ranges estimated for each type of local authority. These are a combination of indicative one-off and ongoing costs calculated over a 30-year time horizon and expressed in present value terms (using a 5% discount rate). They are broad order of magnitude costs based on a number of assumptions (and imperfect data). They cover the key requirements (tangible tasks) of the NPSIB but may under-represent some ongoing administration costs for some councils.

- For each TA: $485,000-$2,584,000 (PV) excluding the effect of any SNA funding from central government on these averages.
- For each regional council: $818,000-$2,149,000 (PV).
- For each unitary authority: $1,263,000-$4,695,000 (PV).

As noted above, these costs focus largely on gross costs to give effect to the requirements of the NPSIB, with assumptions around maximising efficiency and therefore cost minimisation. Some councils will need to make only marginal changes to existing practices/documents to meet various requirements of the NPSIB and their net additional implementation and administration costs will be considerably lower than the above estimates over the next 30 years.

Costs to Participants

The NPSIB, the provisions set out clear direction for other parties to participate in local authority implementation processes. Local authorities are directed variously to "*engage with*", "*work with*", "*collaborate with*" and "*involve*" tangata whenua and other stakeholder groups (including landowners). The relevant clauses directing participation apply to tangata whenua in each case, with only one clause also requiring participation by landowners containing land being assessed as SNAs, one clause also requiring participation by DOC to identify highly mobile fauna areas and a further option for DOC to participate in SNA assessment on DOC managed land, two clauses also requiring participation by the community (one generally and one specifically on the matter of the Regional Biodiversity Strategy). The requirement to develop a Regional Biodiversity Strategy also requires regional councils to invite the participation of other relevant stakeholders, as does the requirement to develop a Regional Monitoring Plan.

At a high-level, the participation in resource management planning and decision making required of tangata whenua is not unique to the NPSIB with these requirements already set out in the RMA and in other

national direction. While there is expected to be some overlap with processes and engagement that may already be established between local authorities and tangata whenua, the discourse on terrestrial indigenous biodiversity is unique to the NPSIB and conservatively, M.E treats it as net additional participation activity.

Similarly, landowners and community members generally are frequently invited to participate in the development of objectives, policies and methods in statutory documents, or the development of local/regional non-statutory strategies and plans through the public submissions (schedule 1) process. However, the NPSIB introduces a specific set of changes to provisions and potentially a new Regional Biodiversity Strategy or Monitoring Plan (if not already in existence or under development prior to the commencement of the NPSIB) that are unlikely to have occurred under the status quo in some areas and will therefore generate net additional participation activity (for those that choose to take up the opportunity or that are directly impacted).

As a broad estimate (based on a number of assumptions), the combined total costs for landowners to participate in the identification of SNAs attributable to the NPSIB could equate to a present value of $32.4m nationally (5% discount rate) or an average present value of $264 per landowner. Given the relativities between private landowner participation required and tangata whenua participation required, with the latter being significantly greater and more complex, M.E expects that if aggregate tangata whenua participation costs could be monetised, they would be several orders of magnitude greater than the indicative $32.4m (present value) faced by general landowners.

There are however likely to be a range of benefits associated with that participation, including positive changes in wellbeing associated with cultural expression and volunteering. While it has not been practicable to monetise benefits of participation to individuals in local government processes, M.E considers that they are likely to partly offset participation costs. Depending on the effectiveness of the engagement and the long-term wellbeing outcomes achieved at a local and national level, they may even wholly offset or exceed short-term participation costs for tangata whenua.

Costs to Private Landowners

The CBA examines the potential for net additional transaction (consent), compliance and opportunity costs for landowners resulting from implementation of the NPSIB. These costs arise from: the need to assess and document potential effects on indigenous biodiversity for resource consent applications; the expenses associated with protecting and managing effects on indigenous biodiversity through conditions of consent, including applying the effects management hierarchy; and from constraints on current and future land use associated with the presence of an SNA or indigenous biodiversity outside of an SNA which translates to a reduction of land value; and that would not otherwise occur under the status quo.

These costs will be borne mainly by rural and peri-urban landowners. Direct costs to private landowners relate only to those landowners that contain indigenous biodiversity on their property, which is a subset of all private landowners. To help put this in context, national level analysis estimates that indigenous vegetation cover[1] is found on 7.5% of all general land parcels, 44% of all Māori Land Court parcels and 36% of all Treaty Settlement land parcels. The actual number of property owners than may face cost under the

[1] For this CBA, indigenous land cover is defined according the LDCB and equates to indicative SNAs of moderate to very high certainty (refer Section 3). Indigenous land cover does not capture all areas where indigenous fauna or flora is found.

NPSIB will be a lesser portion again and is unknown. There is too much uncertainty and complexity to robustly estimate how the provisions of the NPSIB (individually or as a bundle) might apply on the ground for private landowners.

This is because not every property that contains an SNA or indigenous biodiversity outside an SNA has further development potential that may result in a consent for new subdivision, use or development. If there is nothing further to be gained on the property, then the NPSIB can take nothing away. Even when there is potential for new subdivision, use or development (or occupation in the case of Māori land), the NPSIB may not result in outcomes (to manage adverse effects on indigenous biodiversity) that are any more stringent than status quo provisions in some District Plans. It is only when the NPSIB imposes constraints that would not have arisen under the status quo that those costs can be attributed to the NPSIB. This is most likely to be in districts that have not already identified SNAs or applied the effects management hierarchy (or that have not taken a strong approach on indigenous vegetation clearance). In most districts, the requirement to avoid some specific effects on SNAs and manage other effects on indigenous biodiversity is expected to have only a marginal effect on transaction, compliance and opportunity costs.

In terms of net additional transaction costs associated with applying for consents that have adverse effects on indigenous biodiversity (and particularly SNAs), this relates to assessment (reporting) of ecological effects. Data collected from ecology consultancies for this CBA indicates that the gross costs for ecological assessment that would be expected to meet the standards required by the NPSIB (by a suitably qualified/experienced consultant) could range from as low as $3,000-7,000 for small scale/simple projects that don't include any fauna assessments or residual effects modelling (minor effects to be managed) through to $70,000-150,000 for large scale/complex projects that deal with more than minor effects on multiple species/ecosystem types and require offset/compensation modelling, or in the case of significant infrastructure projects in sensitive environments, costs could reach closer to $1 million[2] but are considered rare.

Importantly, large development proposals that have significant adverse effects on indigenous biodiversity are already expected to be reported using best practice methods (and applying the effects management hierarchy) irrespective of existing District Plan provisions. The NPSIB is not expected to increase transaction costs for such projects. Rather, it is expected to raise the bar for ecological reporting on small-medium sized development proposals with significant adverse effects on indigenous biodiversity in districts where best practice has not been the norm.

In terms of net additional compliance costs attributable to the NPSIB, a similar situation applies. Under current RMA decision making, there is already an emphasis on consent conditions to manage effects on indigenous biodiversity. However, M.E has assumed, for the purposes of this CBA, that the implementation of the NPSIB, and particularly the requirement to apply the effects management hierarchy and consider consent conditions to achieve restoration in priority areas could lead to more prescriptive and onerous conditions of consent, particularly for those districts where the effects management hierarchy is not already being applied.

Conditions of consent can include costs for planting, fencing, pest control, monitoring and compliance reporting (by the consent holder). In most scenarios where potential for net additional compliance costs

[2] For some large infrastructure projects, the indicative cost range of around $1m will generally be capturing some of the costs associated with the construction phase (e.g. fauna management such as bat surveys or bird nest surveys).

may apply under the NPSIB, the marginal increase in costs is expected to be minor. In some situations, there may also be funding available to help mitigate landowner compliance costs.

Opportunity costs on private landowners attributable to the NPSIB are captured as potential reductions in land value associated with any net additional constraints on new subdivision, use or development (or productive output) in order to manage adverse effects on SNAs (and indigenous biodiversity generally). This may arise if subdivision yield is reduced (or wholly prevented), or development outcomes are sub-optimal on a site relative to what could be achieved under status quo planning provisions.

The NPSIB contains a number of exception clauses that ensure that activities that contribute significantly to social, cultural and economic wellbeing are not unduly constrained by the need to protect SNAs on private land (and have a consent pathway). This includes an enabling approach for specified infrastructure, mining, aggregate extraction, forestry activities, maintaining improved pasture, development of Māori land and constructing a dwelling on lots that existed prior to the commencement of the NPSIB. These exceptions have substantially reduced the probability that the NPSIB will generate significant opportunity costs for private landowners. Having considered situations where the NPSIB may still have a constraining effect on new use, subdivision and development, those opportunity costs have been found to be minor in most cases, most likely limited to general tenure land, and one-off costs to a relatively small number of current landowners.

Benefits to Landowners and the Wider Public

While the total benefits (TEV) of indigenous biodiversity to the wider public and landowners that contain indigenous biodiversity on their properties have been discussed above, these total benefits are not necessarily at stake. The total loss of all ecosystem services delivered by indigenous biodiversity across the country is not anticipated under the status quo in New Zealand. The greatest threat (ongoing decline) is typically in lowland areas on private, unprotected land. Therefore, the TEV is not the relevant metric for understanding the overall national benefits of implementing the NPSIB. Only when land use change involves nearly complete loss of ecosystems, biodiversity features, and disappearance of ecosystem services is the TEV the appropriate measure.

The relevant focus, according to Bateman et al (2011), is the changes in value between policy-relevant scenarios. In this case, the likely change in the provision of ecosystem services without and with the NPSIB. This is the marginal (i.e., per unit) value of ecosystem services delivered by indigenous biodiversity. The NPSIB provides another layer of regulatory protection for indigenous biodiversity in New Zealand – it is one of several existing (and proposed) statutory, non-statutory and voluntary tools that collectively aim to protect, maintain and enhance the state of indigenous biodiversity across the country. If effective, the benefits of implementing the NPSIB are the avoided further loss of indigenous biodiversity value plus the net gains achieved through restoration relative to the status quo. Many of these changes will be gradual and take time to be realised, but once realised, will be ongoing and apply year on year. The TEV of indigenous biodiversity therefore provides only the current baseline from which marginal change attributable to the NPSIB should be measured.

Care is needed though, as a marginal change does not necessarily mean a marginal effect. An example provided in the literature is a small change in water chemistry leading to the total loss of a wetland. Similarly, a small reduction in the population of a threatened species might push it beyond the threshold of reproductive sustainability and recovery. In the other direction, a small improvement in the integrity or

resilience of an SNA may have non-linear benefits for a range of indigenous local flora and fauna and other ecosystem services provided.

Estimating how indigenous biodiversity – with its complex systems, dynamics and non-linear relationships – will respond to the changes implemented by the NPSIB, and then valuing that response, is very difficult to model when marginal values do not apply to non-marginal changes (Roberts et al, 2015) and there is significant spatial variation in the current state (nature, scale and health) of indigenous biodiversity and its status quo regulation and protection. Therefore, quantifying the marginal benefits of implementing the NPSIB is not possible for this CBA.

However, it is more likely than not, that even a marginal improvement in indigenous biodiversity nationally (through avoided decline on private land and restoration on private and public land) has the potential to impact positively and significantly on a wide range of critical ecosystem services that will benefit the wellbeing of current and future generations. The indigenous biodiversity loss avoided, and the restoration of indigenous biodiversity achieved in any one district or region does not just benefit communities in that district or region but will benefit the wellbeing of wider New Zealand (and beyond). This is because indigenous biodiversity is a public good that delivers ecosystem services as the local, catchment and national (and even global) level over the long-term.

Conclusions on Costs and Benefits

Overall, based on the comprehensive assessment of key provisions, M.E considers that the anticipated long-term social, economic, cultural and bio-physical benefits (including non-market values) of implementing the NPSIB will outweigh the anticipated, primarily economic and social, short-term costs.

The NPSIB is expected to generate long-term cultural, social and economic wellbeing net benefits for tangata whenua. These arise from increased capacity and capability to participate in resource management processes, increased opportunities to express cultural identify, a clearer role of tangata whenua in decision making and as kaitiaki, incorporation of tikanga Māori in the management of indigenous biodiversity, better outcomes for the development of Māori lands, and ensuring customary use rights are acknowledged and protected while maintaining, protecting and restoring indigenous biodiversity. The collective wellbeing of tangata whenua is directly linked to the health of natural ecosystems. They therefore benefit from maintaining and restoring indigenous biodiversity over the long-term.

The NPSIB is also expected to instil long-term changes in community awareness of the indigenous biodiversity in New Zealand and its contribution to our economic, social, cultural and environmental wellbeing. This will be achieved through more information sharing, more effective monitoring, more accountability, clear targets and identified locations for restoration.

Despite the challenges and limitations of assessing the anticipated costs and benefits of the NPSIB, M.E considers that the provisions of the NPSIB, as a bundle, are an efficient way to achieve the objective of the NPSIB. While there has not been sufficient data to allow all costs and benefits to be placed on the ground, quantified, or monetised in aggregate for New Zealand, there is a high degree of certainty on the processes through which effects will arise and the nature of the costs and benefits that will and will not be attributable to the NPSIB. There is also high-level information on the relative scale and significance (and broad order of magnitude) of those costs and benefits in the short and long-term and this helps inform a net benefit conclusion.

1 Introduction

The Minister for the Environment has prepared a National Policy Statement for Indigenous Biodiversity (NPSIB) under the Resource Management Act 1991 (RMA). The overarching objective of the NPSIB is to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss and in a way that recognises the mana of tangata whenua as kaitiaki and people and communities as stewards of indigenous biodiversity; protects and restores indigenous biodiversity as necessary to achieve overall maintenance; and provides for the economic, social, and cultural well-being of people and communities now and in the future.

1.1 Purpose of Report

This report, prepared by Market Economics (M.E) for the Ministry for the Environment (MfE), provides a revised cost benefit analysis (CBA) of achieving the objective of the NPSIB. It builds on an earlier Indicative CBA[3] which was prepared prior to consultation on the proposed NPSIB which took place from November 2019 to March 2020 (and included with the draft s32 report). Several changes to the proposal have been made since public consultation which are assessed as part of this report. This revised CBA is based on the final (post exposure draft) version of the NPSIB (November 2022) and considers the NPSIB provisions, individually and in aggregate. A wider scope of costs and benefits has also now been included.

The CBA approach adopts a combination of high-level national analysis, district-level case studies, theoretical property-level examples, and literature reviews to help understand the processes through which effects will arise from achieving the objective of the NPSIB and how these translate into costs and benefits for different stakeholder groups.

The CBA adopts, as the baseline, the Treasury guidance for CBA, notably social CBA.[4] The social perspective is important because of the ubiquitous nature of indigenous biodiversity in all regions of New Zealand, and the wide range of economic, social, cultural and environmental benefits and costs anticipated from the NPSIB.

This CBA does not conclude in a national level Benefit Cost Ratio (BCR) as set out in the Treasury guidance to inform cabinet decision making. This is due to the unique nature of the cost and benefits arising from the NPSIB which do not lend themselves to practicable or robust quantification in monetary terms.[5]

The costs and benefits of the NPSIB are expected to vary significantly within, and between, regions and districts. They will also vary for different land uses and activities, and for different agencies and stakeholders. The status quo regulatory environment is a key factor for the net regulatory change that can

[3] 4Sight and Market Economics (2019), 'NPSIB Draft Section 32 Evaluation and CBA', refer: npisb-section-32-evaluation_0.pdf (environment.govt.nz)

[4] https://treasury.govt.nz/publications/guide/guide-social-cost-benefit-analysis

[5] In the indicative CBA, the potential to monetise more costs and benefits, and extend these to a national level analysis for the final CBA was asserted but has not proven any more practical to achieve.

be attributed to the NPSIB in a CBA, and this also varies by district and region. The NPSIB also provides discretion to local authorities as to what policies and rules they insert into District Plans and Regional Policy Statements to implement the objective and policies of the NPSIB. This uncertainty and flexibility make it very challenging to quantify costs for any one district given the data requirements that would be needed to examine costs at a property level and aggregate these up to a district, regional or national level, or find reliable or transferable data on benefits that applies to specific districts or that provides a national picture. The limitations and key considerations of quantifying costs and benefits are discussed throughout this report.

As a result, this report presents a discussion and overview of costs and benefits, some quantified, some monetised and some qualified. Examples are provided where possible to help demonstrate how costs and benefits are likely to apply, and at what scale and significance. This approach has been agreed with MfE as being the most practicable given the limitations of data etc. The report provides an overall conclusion on costs and benefits, to the extent possible from the information gathered and assessed. This means that the evaluation of the efficiency of the NPSIB provisions needs to be based on an overall assessment of the likely benefits and costs (which is anticipated under s32 of the RMA).

1.2 Report Structure

Section 2 considers the anticipated outcomes for terrestrial indigenous biodiversity and its management in Aotearoa New Zealand under the status quo (no national direction) scenario and establishes a market failure that warrants further regulation by central and local government.

This is followed by some high-level quantitative analysis that examines the current patterns of indigenous landcover and indicative significant natural areas (SNAs) by local authority and land tenure. This provides important context for where the relative costs and benefits of maintaining and protecting indigenous biodiversity within SNAs will fall, and on whom. A more detailed spatial analysis is then discussed for six case study councils.

Section 4 examines the estimated net additional costs to local and central government to implement and administer the NPSIB and Section 5 considers the costs (and benefits) for landowners, tangata whenua and other stakeholders to participate in local authority implementation processes, as prescribed in multiple clauses of the NPSIB. Section 6 completes the assessment of the main costs of the NPSIB, looking at potential transaction, compliance and opportunity costs to landowners associated with maintaining and protecting indigenous biodiversity on private and Māori land.

Section 7 provides a high-level discussion of the market and non-market benefits of terrestrial indigenous biodiversity per se, including achieving the objective of the NPSIB to halt further decline and restore and enhance indigenous biodiversity. This focusses on benefits to landowners whose properties contain indigenous biodiversity and the benefits to all New Zealanders, current and future.

Section 8 contains an overview of net additional costs and benefits of implementing the NPSIB across all local authorities and conclusions on the overall efficiency of the national direction relative to the status quo.

2 The Case for Change

While local authorities have obligations to maintain New Zealand's indigenous biodiversity as part of their functions under the RMA, including recognising and providing for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna as a matter of national importance, the provisions in the RMA relating to indigenous biodiversity have proven to be unclear.

Without national direction and improved national guidance on this issue, it is likely that councils will continue to manage indigenous biodiversity inconsistently and practice will continue to vary. This is discussed in more detail in the revised s32 report (by 4Sight Consulting) and is not repeated here.

In summary though, there is strong evidence that the status quo will lead to an ongoing decline of indigenous biodiversity in New Zealand. In particular, further loss of remaining indigenous habitats and ecosystems on private land that are representative of lowland and coastal environments (and which differ from the significantly more extensive indigenous habitats and ecosystems (often on hilly or alpine terrain) typically protected on public conservation land)[6].

The key costs of the retaining the status quo therefore include (but are not limited to):

- Continued loss of indigenous biodiversity (including taonga species) with associated loss of ecosystem services. Reduction in natural capital.
- Reduction in the mauri of the land. Reduced opportunities for tangata whenua to exercise customary practices and kaitiaki over time.
- Diminishing direct and indirect use values of indigenous habitats (including recreational, scientific, educational and amenity values). Loss of tourism value. Loss of intrinsic, existence and bequest values associated with indigenous biodiversity.
- Ongoing debate, litigation and associated costs and effort as RMA provisions relating to indigenous biodiversity are interpreted and implemented inconsistently between and within regions. Ongoing advocacy costs for those operators that work across regions.
- Inefficiencies will continue because of the uncertainty about council roles for managing indigenous biodiversity.
- Lack of strategic approach to restoration efforts with potentially reduced effectiveness.
- Highly mobile fauna and Threatened or At-Risk (declining) species will continue to be poorly addressed in regulatory frameworks.

[6] Ministry for the Environment & Stats NZ (2018). New Zealand's Environmental Reporting Series: Our land 2018. Retrieved from www.mfe.govt.nz and www.stats.govt.nz

2.1.1 Is There Market Failure?

In light of the status quo scenario, the key question that arises is whether there is a clear need for further regulation (national direction) to protect indigenous biodiversity? For this, a base question is whether the outcomes sought from the NPSIB are likely to be achieved in the absence of a national level 'intervention' like the NPSIB, or through alternative options for intervention (as discussed in the s32 report).

In theory, the starting point is whether it is a situation of likely 'market failure', where the outcomes sought through the NPSIB are unable or unlikely to be achieved through the operation of commercial markets (in combination with current regulation). In this circumstance, the market failure is quite clear.

First, there is evidence of continuing decline in indigenous biodiversity under current market and planning conditions. Second, there are no mechanisms in commercial markets through which the outcomes and benefits sought from the NPSIB would be protected and preserved for current and future generations. Nor is there any mechanism to restore that resource in certain locations once lost, including restoring species that are lost altogether. That is because the value of indigenous biodiversity to the community at large is not captured in price signals in the commercial market. In most instances, commercial markets do not place a high enough value on the indigenous biodiversity resource to influence land use or land development decisions.

An important consideration is that negative outcomes (adverse effects) from reduction or loss of terrestrial indigenous biodiversity arise largely at the macro-level as a consequence of changes in land use patterns, whereas the commercial market functions primarily at the micro-level (individual land holdings). This is a common issue faced by regional or territorial authorities, where adverse effects of land use and land use change are evident and significant at the aggregate level but often appear insignificant at the micro-level (especially in relation to individual land use decisions or consents). This arises because natural systems "*are not attributed value in the same way that some of the things that we easily attribute value to are. That leads to substantial underinvestment in conservation*".[7]

In order to reduce or minimise adverse effects on indigenous biodiversity at the aggregate level, land use outcomes need to be influenced at the micro-level (individual land holdings), so that the aggregate outcome from many small-scale and minor adverse effects can be avoided (to achieve the objectives / purpose of the RMA). As a consequence, commercial markets by themselves are highly unlikely to deliver the outcomes sought by the community (including future generations that do not have a say today) and (stronger) regulation is justified, particularly when it ensures that the values of indigenous biodiversity are better understood and represented in consent decisions at the individual land holding level.

2.2 What the NPSIB Aims to Achieve

The NPSIB is a comprehensive NPS focused on the maintenance of terrestrial indigenous biodiversity. A decision was made by officials to limit the scope of the NPSIB to focus on indigenous biodiversity in the terrestrial environment at this point of time given that there is already other national direction in place to manage indigenous biodiversity in freshwater and coastal environments. This also recognises that the

[7] Brown, M. et al. 2015. Vanishing Nature: Facing New Zealand's Biodiversity Crisis. EDS.

methods to manage terrestrial indigenous biodiversity are well established and there is a greater urgency to protect indigenous biodiversity on private land.

The key focus of the NPSIB is to maintain indigenous biodiversity so that there is at least no overall reduction or loss. This is a core function of regional councils and territorial authorities under section 30(1)(ga) and 30(1)(b)(iii) of the RMA. The NPSIB seeks to[8]:

- Manage indigenous biodiversity in a way that gives effect to the stated decision-making principles[9] and takes a precautionary approach when considering adverse effects;
- Take into account the principles of the Te Tiriti o Waitangi in the management of indigenous biodiversity;
- Enable tangata whenua to exercise kaitiakitanga;
- Improve the integrated management of indigenous biodiversity;
- Manage indigenous biodiversity in a way that ensures it is resilient to climate change;
- Identify SNAs within District Plans;
- Provide for certain established activities that may have adverse effects on indigenous biodiversity, including activities that contribute to New Zealand's social, economic, cultural and environmental wellbeing;
- Restore indigenous biodiversity and increase indigenous vegetation cover using a strategic approach at the regional level; and
- Improve information on indigenous biodiversity as well as monitoring.

To achieve these policies, the NPSIB includes a comprehensive package of provisions addressing all aspects of terrestrial indigenous biodiversity protection, maintenance, restoration, enhancement and monitoring. These provisions will represent a shift in practice in many local authorities across New Zealand, but not all.

[8] The following is a summary of key policies. For all policies refer Part 2, clause 2.2.

[9] Part 1, clause 1.5 of the NPSIB.

3 Spatial Analysis of SNAs

The requirement in clause 3.8 to assess SNAs accounts for a significant share of likely and potential costs and benefits arising from the NPSIB. These costs and benefits stem from the council process needed to identify, assess and map SNAs[10] and the provisions put in place to avoid or manage effects of new subdivision, use and development on those SNAs.[11] Understanding the scale, location and spatial relationships of SNAs with tenure, land use and property boundaries therefore provides useful context for estimating costs and benefits. This section discusses the spatial analysis carried out for this CBA, including high-level findings of nation-wide analysis and more detailed findings for six case study areas.

3.1 Existing SNAs That Have Legal Effect

The 'status' of SNA mapping across New Zealand is a key factor in determining the status quo for this CBA. The following situations apply:

- Some territorial authorities (TAs)[12] already have SNAs (or similar) mapped and scheduled in their Operative District Plans.
- Some TAs have not mapped them but have provided criteria in their plans for how they should be defined or contain a schedule describing their location and attributes.
- Some TAs are currently in the process of mapping SNAs and these processes may have begun prior to the draft NPSIB being notified, or more recently in response to the draft NPSIB. These SNAs may be included in a Proposed District Plan.
- Still other TAs have no SNAs mapped and no process underway.

Based on analysis carried out by M.E for MfE in 2021, it was estimated that 33 TAs had SNAs (or similar) mapped in an Operative District Plan or other statutory document.[13] These are 'existing SNAs' that have legal effect. Existing SNAs are not analysed in any detail in this CBA unless included in the case studies discussed later in this section. Importantly, existing SNAs do not necessarily meet the requirements for identifying and mapping SNAs set out in Appendix 1 of the NPSIB. Clause 3.8(5) gives councils up to 4 years to have existing SNAs evaluated against Appendix 1 by suitable qualified ecologist. A recent evaluation by MfE determined that 44% of districts have already mapped and scheduled SNAs moderately or completely,

[10] Discussed further in Section 4 – Costs to Local and Central Government.

[11] Discussed further in Section 6 – Costs to Private Landowners.

[12] Including unitary authorities.

[13] And those maps were accessible in GIS format.

relative to NPSIB requirements. That leaves 56% of districts with no or only limited SNA schedules (by NPSIB standards).[14]

3.2 Approach to Estimating SNAs

There is no accurate way to estimate what areas will be identified as SNAs under the NPSIB without following the approach in Appendix 1 of the NPSIB (including physical surveys where practicable) or satisfying clause 3.8(8) with regard to Crown-owned land managed by DOC. There is also limited information or spatial datasets that indicate indigenous biodiversity nationally. However, to enable consistent and nation-wide analysis for the purposes of this CBA, a 'proxy' for SNAs under the NPSIB has been developed in consultation with DOC and MfE for each district. These are called 'indicative SNAs' in this report and are based on the current indigenous vegetation land cover in each district contained in the Land Cover Database (LCDB).[15]

Indigenous vegetation land cover has been defined according to four categories in the LCDB:

- Indigenous Forest: combines indigenous forest and broadleaved indigenous hardwoods.
- Indigenous Scrub/Shrubland: combines Manuka and kanuka, Matagouri or Grey Scrub, Fernland, Sub-alpine shrubland, Mangrove.
- Grasslands: combines tussock grassland and depleted grasslands.
- Flaxlands: flaxlands only.

Natural inland wetlands is not a specific land cover in the LCDB. While there is 'Lake or Pond', 'River', 'Estuarine Open Water', 'Herbaceous Freshwater Vegetation' and 'Herbaceous Saline Vegetation' land covers in the LDCB which are categorised as indigenous for the purposes of the Threatened Environments Classification (TEC),[16] these have not been included. Mangroves are however included in Indigenous Scrub/Shrubland but only to the extent that they fall within the 'terrestrial' land area.[17] This analysis also excludes some of the more substrate-driven land covers in the LCDB from indicative SNAs (that are also categorised indigenous in the TEC). This includes 'Permanent Snow and Ice', 'Landslides' and 'Coastal Sand and Gravel'. The latter may include extensive dune communities which can be SNAs under the NPSIB. This is acknowledged as a gap in the indicative SNA coverage for some coastal districts in this report.

The indicative SNA coverage defined for this CBA is likely to overestimate the actual SNA coverage that will be identified under the NPSIB in those areas.[18] Ground-truthing would be expected to remove a portion of this area and add in other areas not captured by the indigenous land cover alone (such as areas of threatened fauna or significant dune communities). The indicative SNAs produced through the spatial

[14] Sharpe, H. September 2021. Completeness of Council SNA Schedules (updated from Myers, S. May 2019), MfE. Note, in some locations, SNA schedules were being dealt with by the Regional Council, or in combination across neighbouring territorial authorities, hence the number of District Plans assessed is less than the number of territorial/unitary authorities.

[15] Nation-wide analysis in this section uses Version 5 of the LCDB (2021) which represents land cover as at 2018.

[16] 2012 version.

[17] This analysis excludes inlets and inland water defined by StatisticsNZ 2022 boundaries.

[18] A high-level comparison of the indicative SNAs to those TAs that have existing SNAs indicates that often, indicative SNAs provide greater land coverage (although those existing SNAs may not satisfy the requirements of the NPSIB).

analysis therefore simply indicate the potential order of magnitude of impacts under the NPSIB in each TA, rather than serve as a robust SNA identification process that will be required under the NPSIB.

That said, within the indicative SNA definition, there is more certainty around some indigenous land covers becoming SNAs under a council evaluation process. Indigenous vegetation that has been reduced to 20% of its pre-human extent in its ecological district as defined in the TEC dataset is one of the criteria for identifying SNAs under the 'rarity and distinctiveness' attribute (Appendix 1 of the NPSIB). Indicative SNAs that fall within these extents are considered to have a 'very high' certainty of being defined as an SNA through a rigorous local process. Outside of those areas, indigenous forest land cover is considered to have a 'high' certainty of being defined as an SNA. The extent to which remaining indigenous land covers included form SNAs is considered more variable between regions and is therefore treated as having a 'moderate' certainty of being defined as an SNA in practice.

3.3 National Level Spatial Analysis

This section provides high-level desktop analysis of indicative SNAs across all New Zealand, irrespective of whether a TA has existing SNAs in their District Plan.[19] Two additional datasets are incorporated in this spatial analysis:

1. Land tenure: The tenure categories are DOC land (land administered by DOC), Crown Land (administered by LINZ), Māori Land Court land (Māori land), Treaty Settlement Land (also included in Māori Land)[20], and everything else classed as 'General' land. M.E has updated this MfE spatial dataset with the latest DOC land area (2021), but all other tenure categories remain unchanged from the original dataset.[21]

2. Cadastral boundaries (primary parcels): This data was downloaded from LINZ (January 2022). M.E has considered only parcel boundaries on General, Māori Land Court and Treaty Settlement land to help understand patterns of parcel coverage by indicative SNAs on private land. We note, primary parcels do not necessarily equate to properties (rating units)[22], as some properties are made up of multiple parcels. As subdivided titled lots, however, primary parcels are the unit of land which can be bought and sold (or transferred/vested) and typically District Plans enable one dwelling per parcel (unless the title was created specifically to avoid residential development – such as a balance lot, or conservation lot).

[19] National analysis excludes the Chatham Islands due to insufficient data.

[20] Māori Land is defined in the NPSIB in section 1.6.

[21] This GIS layer was supplied by MfE for the Draft s32a and Indicative CBA report. MfE provides a clear discussion of the methods used to create the data/layers and the limitations of each dataset. Rather than repeat those caveats and limitations here, we refer readers to the original document: https://www.biodiversitynz.org/uploads/1/0/7/9/107923093/mfe-analysis-from-data-on-land-ownership-land-cover-and-threatened-environments-classification-2018.pdf. M.E has undertaken some additional manipulation of the data supplied to ensure that there is no overlap between tenures (to avoid double counting in the analysis). Where overlaps occurred, M.E has assumed the following hierarchy in order to select a single tenure in the area of overlap: MLC, Treaty, Crown, DOC, General. These assumptions have not been validated 'on the ground'.

[22] The detailed case studies were able to analyse SNA coverage of properties as opposed to primary parcels as property boundaries were supplied from each participating case study council.

Figures 3.1 and 3.2 map indicative SNAs that form the basis of this national level analysis for the North Island and South Island respectively, with TA boundaries also shown.

Figure 3.1 – Moderate-Very High Certainty Indicative SNAs – North Island

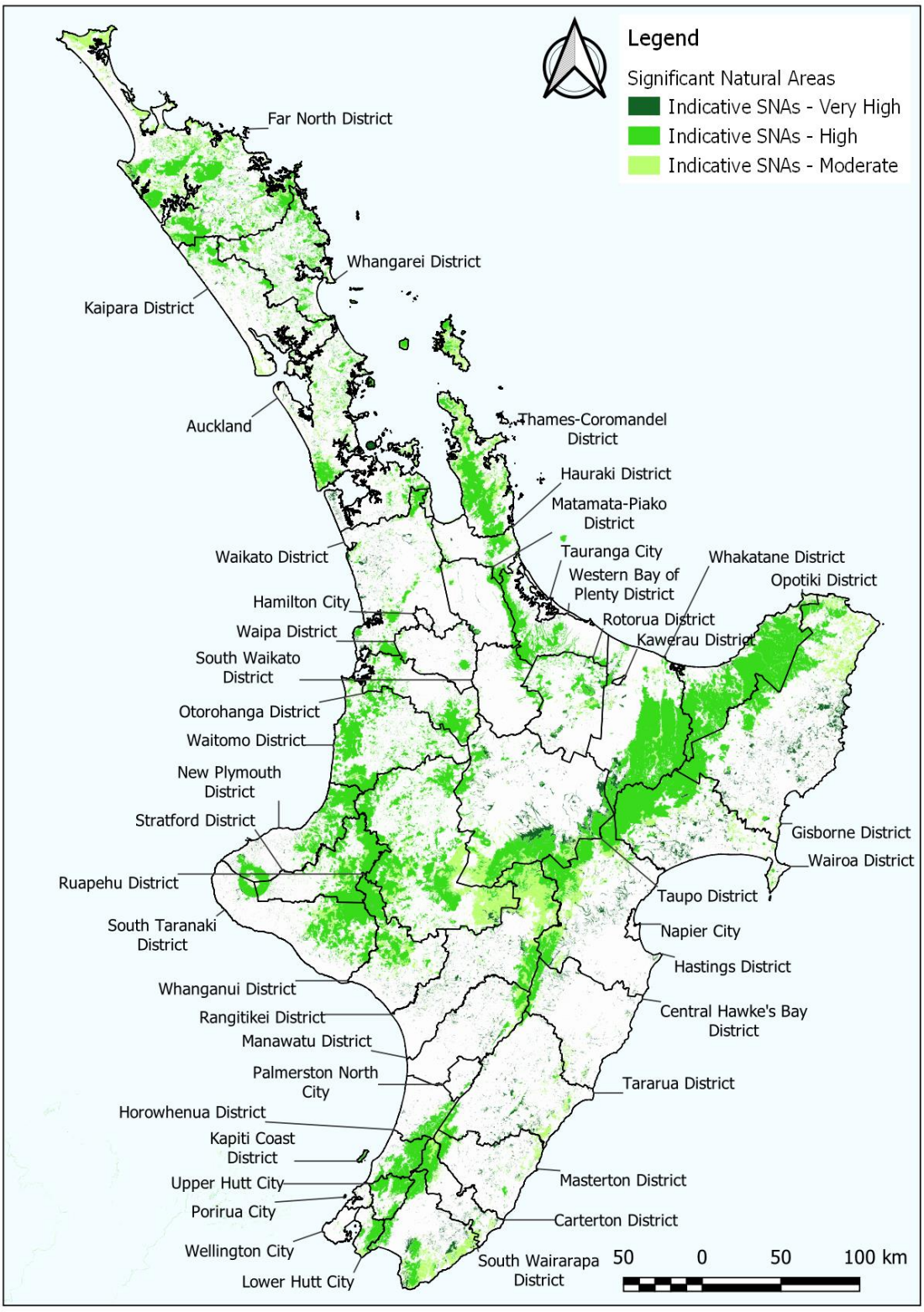


Figure 3.2 - Moderate-Very High Certainty Indicative SNAs – South Island

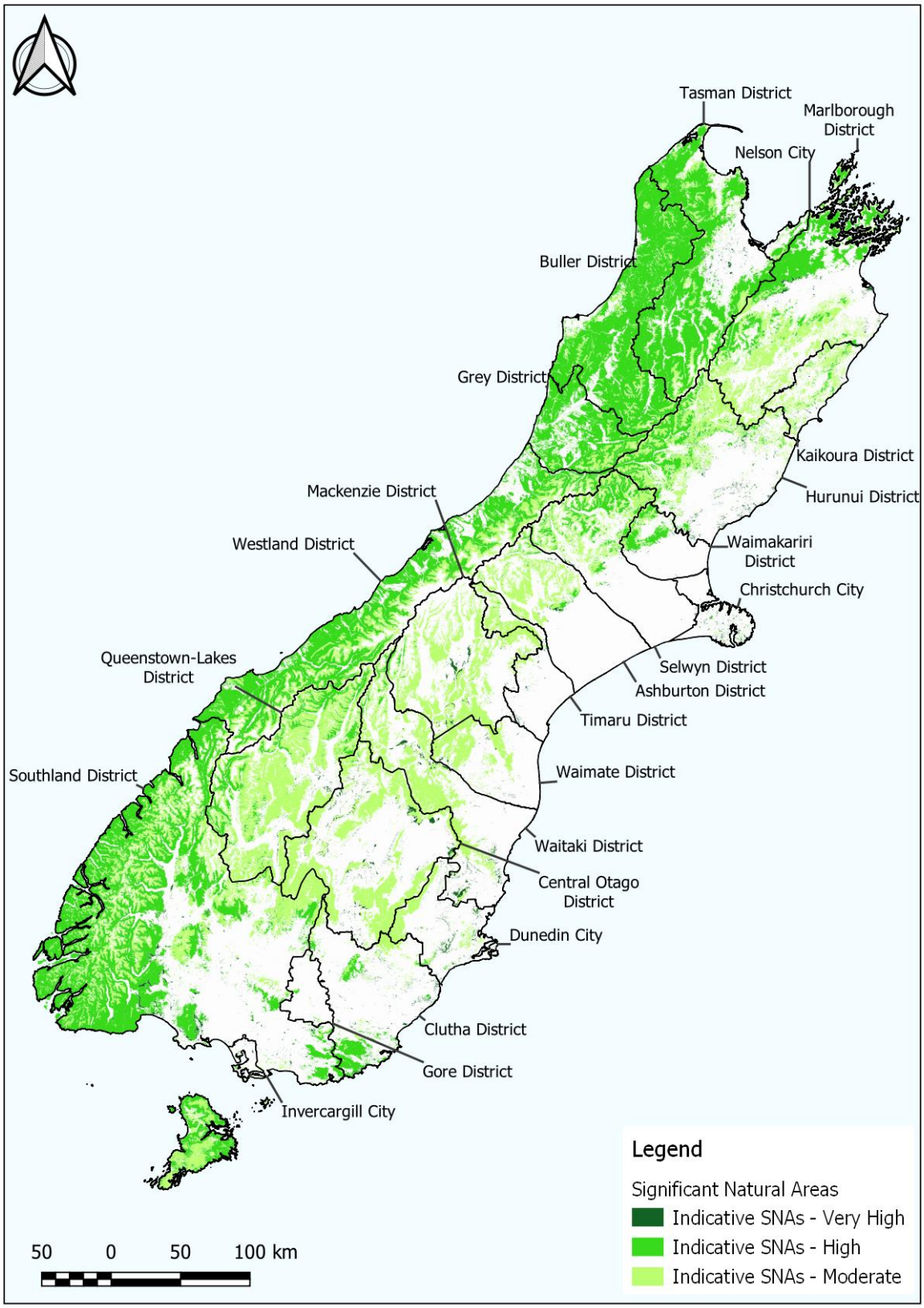


Table 3.1 – Indicative SNAs by Certainty by Territorial Authority

Territorial / Unitary Authority*	Terrestrial Area (Ha)				Share by SNA Certainty				TA Share of National Total			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Ashburton District	1,940	10,880	112,660	125,470	2%	9%	90%	100%	0%	0%	3%	1%
Auckland	9,590	57,160	44,060	110,810	9%	52%	40%	100%	2%	1%	1%	1%
Buller District	820	608,070	79,510	688,410	0%	88%	12%	100%	0%	10%	2%	6%
Carterton District	3,040	19,930	9,810	32,780	9%	61%	30%	100%	1%	0%	0%	0%
Central Hawke's Bay District	7,350	13,480	5,820	26,640	28%	51%	22%	100%	2%	0%	0%	0%
Central Otago District	21,130	1,250	331,650	354,030	6%	0%	94%	100%	5%	0%	8%	3%
Christchurch City	4,030	300	2,330	6,670	60%	4%	35%	100%	1%	0%	0%	0%
Clutha District	8,520	57,620	40,810	106,960	8%	54%	38%	100%	2%	1%	1%	1%
Dunedin City	8,080	2,920	47,390	58,390	14%	5%	81%	100%	2%	0%	1%	1%
Far North District	11,900	147,220	92,390	251,510	5%	59%	37%	100%	3%	2%	2%	2%
Gisborne District	38,760	120,770	47,170	206,710	19%	58%	23%	100%	9%	2%	1%	2%
Gore District	280	1,640	1,260	3,170	9%	52%	40%	100%	0%	0%	0%	0%
Grey District	-	210,920	45,260	256,180	0%	82%	18%	100%	0%	3%	1%	2%
Hamilton City	170	-	-	170	100%	0%	0%	100%	0%	0%	0%	0%
Hastings District	19,190	82,610	45,350	147,150	13%	56%	31%	100%	5%	1%	1%	1%
Hauraki District	890	23,670	3,750	28,310	3%	84%	13%	100%	0%	0%	0%	0%
Horowhenua District	1,360	19,220	2,760	23,330	6%	82%	12%	100%	0%	0%	0%	0%
Hurunui District	12,300	120,070	198,730	331,100	4%	36%	60%	100%	3%	2%	5%	3%
Invercargill City	410	650	1,540	2,600	16%	25%	59%	100%	0%	0%	0%	0%
Kaikoura District	2,150	10,900	61,530	74,580	3%	15%	83%	100%	1%	0%	2%	1%
Kaipara District	4,490	35,720	9,850	50,060	9%	71%	20%	100%	1%	1%	0%	0%
Kapiti Coast District	930	36,780	2,230	39,950	2%	92%	6%	100%	0%	1%	0%	0%
Kawerau District	150	60	60	260	58%	23%	23%	100%	0%	0%	0%	0%
Lower Hutt City	430	14,640	2,200	17,270	2%	85%	13%	100%	0%	0%	0%	0%
Mackenzie District	8,970	6,130	250,970	266,070	3%	2%	94%	100%	2%	0%	6%	3%
Manawatu District	6,270	10,950	8,800	26,010	24%	42%	34%	100%	1%	0%	0%	0%
Marlborough District	9,610	207,630	247,610	464,850	2%	45%	53%	100%	2%	3%	6%	4%
Masterton District	6,320	10,520	9,490	26,330	24%	40%	36%	100%	2%	0%	0%	0%
Matamata-Piako District	2,750	16,520	750	20,010	14%	83%	4%	100%	1%	0%	0%	0%
Napier City	60	-	-	60	100%	0%	0%	100%	0%	0%	0%	0%
Nelson City	330	13,000	4,350	17,690	2%	73%	25%	100%	0%	0%	0%	0%
New Plymouth District	3,210	76,400	8,540	88,150	4%	87%	10%	100%	1%	1%	0%	1%
Opotiki District	2,890	228,170	10,520	241,580	1%	94%	4%	100%	1%	4%	0%	2%
Otorohanga District	1,340	51,280	5,550	58,170	2%	88%	10%	100%	0%	1%	0%	1%
Palmerston North City	690	1,190	30	1,910	36%	62%	2%	100%	0%	0%	0%	0%
Porirua City	260	180	840	1,280	20%	14%	66%	100%	0%	0%	0%	0%
Queenstown-Lakes District	3,840	112,940	474,600	591,390	1%	19%	80%	100%	1%	2%	12%	6%
Rangitikei District	12,730	49,560	75,370	137,660	9%	36%	55%	100%	3%	1%	2%	1%
Rotorua District	6,780	33,610	5,180	45,560	15%	74%	11%	100%	2%	1%	0%	0%
Ruapehu District	2,960	183,060	98,300	284,320	1%	64%	35%	100%	1%	3%	2%	3%
Selwyn District	1,330	85,820	125,080	212,230	1%	40%	59%	100%	0%	1%	3%	2%
South Taranaki District	3,380	87,380	18,800	109,550	3%	80%	17%	100%	1%	1%	0%	1%
South Waikato District	1,020	16,150	790	17,960	6%	90%	4%	100%	0%	0%	0%	0%
South Wairarapa District	13,170	41,050	31,450	85,670	15%	48%	37%	100%	3%	1%	1%	1%
Southland District	26,730	1,179,260	565,720	1,771,710	2%	67%	32%	100%	6%	19%	14%	17%
Stratford District	1,080	91,810	13,030	105,920	1%	87%	12%	100%	0%	1%	0%	1%
Tararua District	14,880	13,390	14,500	42,760	35%	31%	34%	100%	4%	0%	0%	0%
Tasman District	7,560	526,650	118,940	653,160	1%	81%	18%	100%	2%	9%	3%	6%
Taupo District	42,340	118,270	44,510	205,120	21%	58%	22%	100%	10%	2%	1%	2%
Tauranga City	210	30	-	250	84%	12%	0%	100%	0%	0%	0%	0%
Thames-Coromandel District	1,990	88,280	36,700	126,970	2%	70%	29%	100%	0%	1%	1%	1%
Timaru District	1,370	990	42,760	45,120	3%	2%	95%	100%	0%	0%	1%	0%
Upper Hutt City	490	27,690	1,920	30,100	2%	92%	6%	100%	0%	0%	0%	0%
Waikato District	13,860	38,420	10,100	62,390	22%	62%	16%	100%	3%	1%	0%	1%
Waimakariri District	940	31,360	16,460	48,760	2%	64%	34%	100%	0%	1%	0%	0%
Waimate District	2,640	50	84,300	86,990	3%	0%	97%	100%	1%	0%	2%	1%
Waipa District	2,220	7,200	650	10,070	22%	71%	6%	100%	1%	0%	0%	0%
Wairoa District	19,920	117,810	17,260	155,000	13%	76%	11%	100%	5%	2%	0%	1%
Waitaki District	15,450	9,950	205,820	231,220	7%	4%	89%	100%	4%	0%	5%	2%
Waitomo District	1,180	108,210	9,790	119,190	1%	91%	8%	100%	0%	2%	0%	1%
Wellington City	70	130	510	720	10%	18%	71%	100%	0%	0%	0%	0%
Western Bay of Plenty District	1,260	59,970	1,590	62,820	2%	95%	3%	100%	0%	1%	0%	1%
Westland District	-	581,880	251,820	833,700	0%	70%	30%	100%	0%	9%	6%	8%
Whakatane District	11,750	193,470	8,800	214,020	5%	90%	4%	100%	3%	3%	0%	2%
Whanganui District	3,050	60,230	18,410	81,690	4%	74%	23%	100%	1%	1%	0%	1%
Whangarei District	4,350	55,060	13,860	73,260	6%	75%	19%	100%	1%	1%	0%	1%
Total New Zealand (Terrestrial)**	419,190	6,138,160	4,042,560	10,599,900	4%	58%	38%	100%	100%	100%	100%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ * *Excludes Chatham Islands* ** *Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

Table 3.1 summarises the area of indicative SNAs (ha) by TA (with a summary by regional council and other TA level analysis tables included in Appendix A of this report). Key findings from Table 3.1 include:

- Indicative SNAs cover 10.6m ha of New Zealand.
- Very high certainty SNAs (i.e. indigenous land cover where there is less than 20% of original cover remaining) is estimated at nearly 420,000ha, and makes up 4% of total indicative SNAs across New Zealand.
- In some TAs, there are no very high certainty SNAs as remaining indigenous land cover is greater than 20% of original coverage (as determined by the TEC), which does not meet the rarity criteria in Appendix 1 of the NPSIB. This includes Westland and Grey District. In other TAs, 100% of the indicative SNA coverage falls within the very high certainty category. This includes Napier City where there is just 60ha of remaining indigenous land cover (as at 2018) and Hamilton City with 170ha of indigenous land cover. Tauranga City also has a high share of its indicative SNAs in the very high certainty category (84% or 210ha). We note that these districts have tended to be defined relatively close to the urban edge, so do not contain much rural environment where indigenous biodiversity would be expected.
- Taupo District is estimated to account for the largest area of very high certainty indicative SNA (10% of the national total, 42,340ha), followed by Gisborne District (9%, 38,760ha). Southland District, Wairoa District, Hastings City and Central Otago District contribute between 5-6% of total very high certainty indicative SNAs.
- High certainty SNAs (i.e. indigenous forest cover that has greater than 20% of original cover remaining) is estimated at nearly 6.14m ha, and makes up 58% of total indicative SNAs across New Zealand. TAs for which high certainty SNAs make up a particularly high share of their total indicative SNA coverage include Western Bay of Plenty (95%), Opotiki District (94%), Upper Hutt City (92%), Kapiti Coast District (92%), Waitomo District (91%), Whakatane District (90%) and South Waikato District (90%).
- Of the districts that contribute most to high certainty SNAs in terms of area, a significant 19% is found in Southland District, 10% is in Buller District, and 9% each in Tasman and Westland districts (all areas with large National Parks).
- Moderate certainty SNAs (i.e. indigenous scrub/shrubland, grasslands and flaxlands that have greater than 20% of original cover remaining) is estimated at nearly 4.04m ha, and makes up 38% of total indicative SNAs across New Zealand. TAs for which moderate certainty SNAs make up a particularly high share of their total indicative SNA coverage include Waimate District (97%), Timaru District (95%), Mackenzie District (94%), Central Otago District (94%) and Ashburton District (90%).
- Of the districts that contribute most to moderate certainty SNAs in terms of area, a significant 14% is found in Southland District, 12% is in Queenstown Lakes District, and 8% is in Central Otago District.

- When combined to regional council boundaries (Appendix A-1), the West Coast and Southland Regions contain the largest extent of indicative SNA (17% each of the national total), followed by Canterbury Region (13%) and Otago Region (11%), although the latter two regions comprise mainly of indigenous land cover that is estimated to have only a moderate certainty of being identified as an SNA under NPSIB criteria. Hawke's Bay Region contains the largest area of very high certainty SNA (14% of the national total), followed by Waikato Region (13%) and Otago Region (12%).

3.3.1 Indicative SNAs by Land Tenure

M.E has intersected the terrestrial indicative SNAs across New Zealand with land tenure boundaries. Figures 3.3-3.5 provide a summary by hectares and percentage shares (refer Appendix A-2 for the associated national total summary table). Overall, if all indicative SNAs are included, then 65% are located in the DOC estate and 19% on general land. Crown land contains 8% of all indicative SNAs, Māori Land Court land contains an estimated 5% and Treaty Settlement land contains the balance (3%) (Figure 3.3).

The analysis shows that the majority (61%) of very high certainty SNAs fall on general land (which is often located in coastal and lowland areas). Just over a fifth occurs within DOC administered land and 12% on Māori Land Court land. Both Crown and Treaty Settlement land contain a very low share of significantly diminished indigenous vegetation cover.

On the contrary, the majority (76%) of high certainty indicative SNAs fall within the DOC estate and just 13% of this indigenous forest (with >20% remaining) occupies general land. Combined Māori land contains 10% of high certainty SNAs. Indicative SNAs that have a moderate certainty of being defined as SNAs through a council process are once again dominated by DOC land (51% of the total is within DOC tenure). A further 24% is on general land, and 19% on Crown land (Figure 3.3).

Figure 3.3 – Share of National Total Indicative SNA Certainty by Tenure (%)

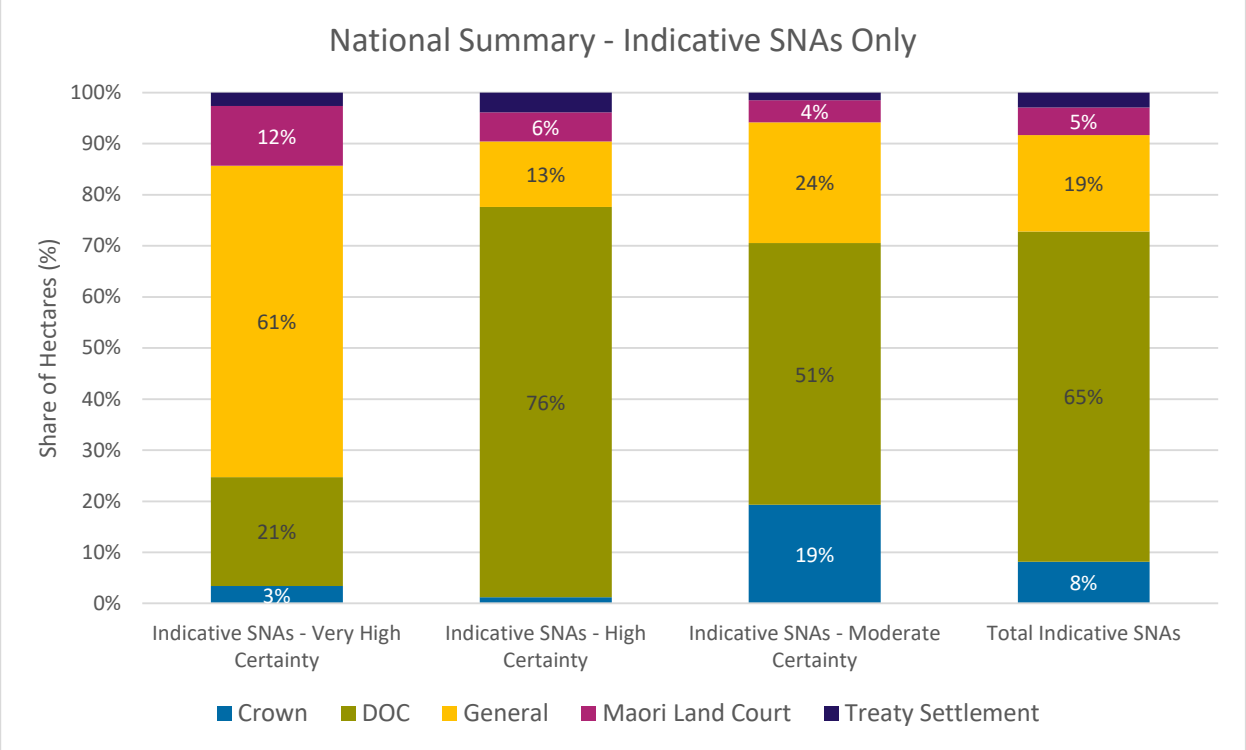


Figure 3.4 – Total National Indicative SNAs by Tenure and Certainty (%)

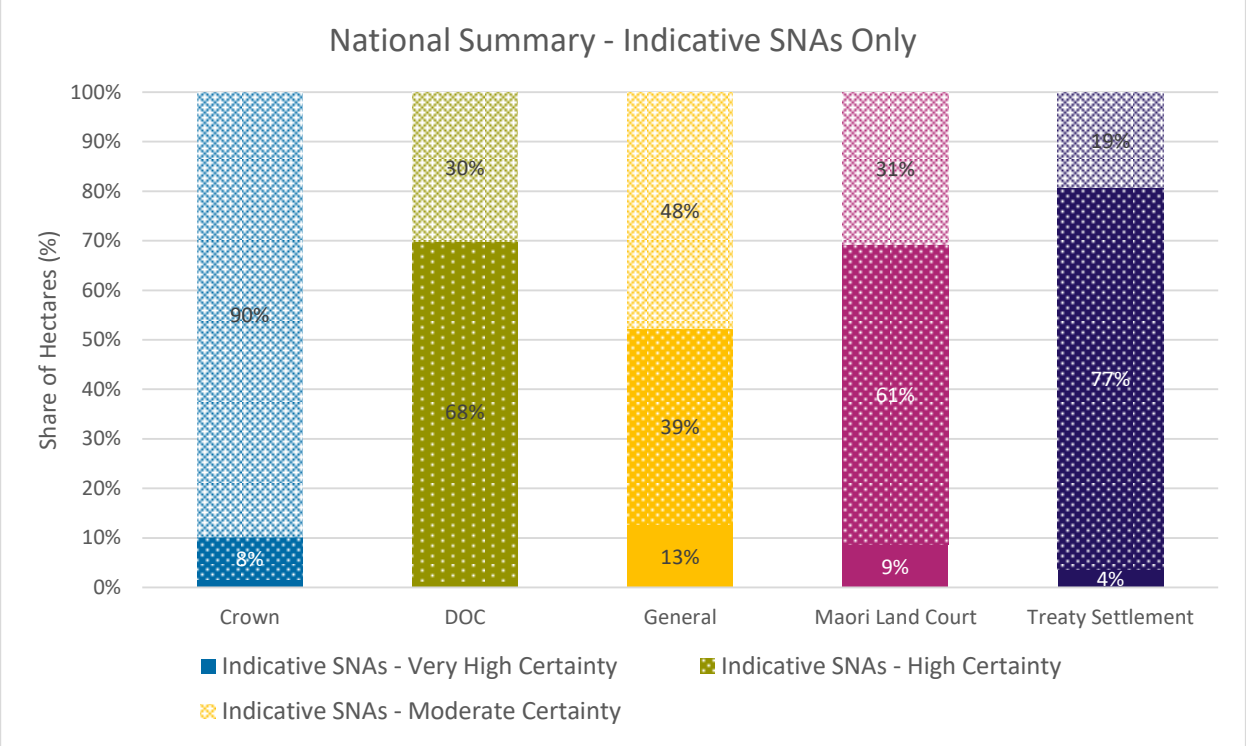
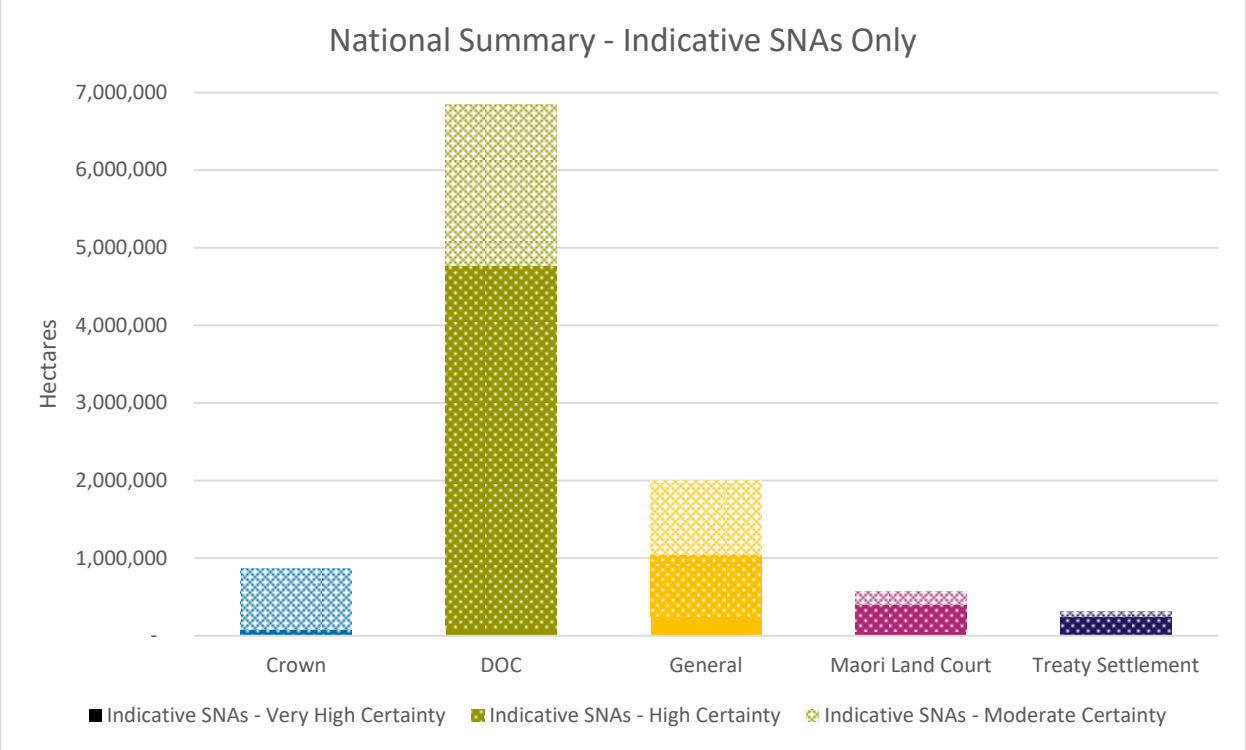


Figure 3.5 – Total National Indicative SNAs by Tenure and Certainty (Ha)



Looking at the data from another perspective (Figure 3.4), just 1% of indicative SNAs in the DOC estate relate to significantly diminished indigenous vegetation while 13% of indicative SNAs on general land (where land clearance has historically been focussed) and 9% on Māori Land Court land fall within this category. Indigenous vegetation administered by DOC is most likely (68%) to be less diminished indigenous forest areas (high certainty SNAs). The same applies on Māori Land Court land (61%) and Treaty Settlement land (77%). Indigenous scrub/shrubland, grasslands and flaxlands (moderate certainty SNAs) make up nearly half of indicative SNAs on general land (48%) but a significant 90% on Crown land. The latter is likely to reflect the high country pastoral leases still held by the Crown.

Appendix A-3 to A-6 contains detailed tables of indicative SNAs by tenure and TA. Key findings include:

- While Crown land plays a relatively small role nationally in indicative SNAs (8%), districts where Crown land plays a more significant role in total indicative SNAs include Waimate District (50%), Mackenzie District (40%) and Central Otago District (36%).
- DOC land plays the most significant role nationally in indicative SNAs (65%), but districts where DOC land plays a more significant role in total indicative SNAs include Westland District (95%), Buller District (95%) and Tasman District (89%). Grey District and Horowhenua District are also significantly above average in the DOC share of their indicative SNAs. These districts will most benefit from clause 3.8(8) which allows councils to treat Crown-owned land managed by DOC that meets certain criteria as qualifying as an SNA(s) based on consultation with DOC.
- General Land plays a moderate role nationally in indicative SNAs (19%), but districts where general land plays an above average role in total indicative SNAs include Hamilton City (100%), Western Bay of Plenty District (99%), Waikato District (98%), Palmerston North City (95%) and

Christchurch City (91%). Porirua City and Napier City are also high in percentage terms for indicative SNAs on general tenure land.

- Combined Māori land plays a similar role nationally in indicative SNAs as Crown land (8%). Districts where combined Māori land plays a more significant role in total indicative SNAs include Whakatane District (74%), Wairoa District (54%), Gisborne District (47%) and Rangitikei District (36%). Māori land in Waipa, Tauranga, Taupō, Rotorua, Ōpōtiki and Kawerau districts all contribute around a third of total district indicative SNAs.

These tenure distributions give an indication of where council's will need to focus efforts for SNA mapping if indicative SNAs are representative of their initial desktop surveys. Those with an above average share of potential SNAs on general and/or Māori land may need to liaise with a greater number of private landowners (or owner representatives), including for physical inspections where practical. While those with an above average share on Crown or DOC land are expected to have relatively less complex access and consultation arrangements. Ultimately though, the complexity (and cost) of mapping SNAs on any tenure of land will depend on the total area of potential SNAs to be reviewed, the scale of individual SNAs, their number and fragmentation over land holdings, whether any can be deemed as SNAs, their proximity to each other, as well as their terrain, characteristics, and many other factors which need to be assessed under the full suite of Appendix 1 criteria.

3.3.2 Indicative SNAs and Private Land Coverage

M.E has estimated the number of primary parcels (not properties) that fall within general, Māori Land Court and Treaty Settlement land tenure[23] and intersected these with indicative SNAs by certainty[24] to understand the national average trends in potential coverage of private land titles. More detailed tables for each tenure are contained in Appendix A-7 to A-9.

[23] Parcels were assigned wholly to the tenure that made up the greatest share of the primary parcel.

[24] Where more than one type of indicative SNA certainty intersected a parcel, the total area of overlap was assigned to the higher of the certainties to avoid double counting of parcels in the analysis.

General Land

Table 3.2 – Total General Tenure Land Parcel Coverage by Total Indicative SNAs – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - All General Parcels									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	79.3%	0.1%	0.6%	0.3%	0.3%	0.2%	0.2%	0.1%	0.8%	81.9%
1ha to 2ha	2.8%	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	3.3%
2ha to 5ha	3.7%	0.1%	0.3%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	4.6%
5ha to 10ha	1.9%	0.1%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	2.5%
10ha to 20ha	1.6%	0.1%	0.3%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	2.2%
20ha to 50ha	1.9%	0.1%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%	2.9%
50ha to 100ha	0.8%	0.1%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%
100ha to 1500ha	0.2%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
150ha to 250ha	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
250ha to 500ha	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
500ha to 1,000ha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
More than 1,000ha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Parcels	92.5%	0.8%	2.8%	0.9%	0.6%	0.5%	0.4%	0.3%	1.2%	100.0%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

Table 3.2 shows that on average across New Zealand, 92.5% of general tenure land parcels of any size contain no indicative SNA coverage, including 79% of all general parcels that are less than 1ha in size (which will be dominated by urban parcels). This means that the clear majority of general parcel owners will not face any direct costs under the NPSIB specifically related to protecting SNAs (but may still be impacted by indigenous biodiversity protection outside of SNAs – not examined here). While these patterns may differ if calculated according to property boundaries (where in rural areas especially a landowner's property may comprise multiple primary parcels, some of which might include SNAs), M.E does not expect that the results would differ significantly from those in Table 3.2.

The analysis shows that 2.8% of all general land parcels contain indicative total SNA coverage of between 1-20%, spread over a range of parcel sizes, but relatively more concentrated in parcels less than 1ha in size and 20-50ha in size. An estimated 1.2% of all general land parcels contain indicative total SNA coverage of greater than or equal to 90%, spread over a range of parcel sizes, but relatively more concentrated in parcels less than 1ha in size. Other coverage categories contribute less than 1% each to the total.

The following analysis (Table 3.3) only applies to the 7.5% (approximately 168,100) general owned parcels that do have some coverage of total indicative SNAs. It shows that 10% of all potentially affected general land parcels have less than 1% SNA coverage (i.e. 100sqm of indicative SNA on a 1ha parcel or 10ha of indicative SNA on a 1,000ha parcel). The significant majority of general parcels that contain an indicative SNA have between 1-20% coverage. This is followed by 16% of affected parcels containing greater than 90% coverage, including 11% of total affected parcels that are less than 1ha in size (most likely 'bush blocks'). This equates to an estimated 18,200 parcels in general ownership. It is not known from this analysis how many of those parcels already contain a dwelling (for example) and how many do not. Assuming a residential dwelling is an anticipated activity on those parcels (through zoning), landowners who have not yet developed a dwelling have a consent pathway via clause 3.11(2) if SNA coverage does not allow for a feasible building platform and significant adverse effects on the SNA (set out in 3.10(2) can be avoided.

Table 3.3 - General Tenure Land Parcels Containing Total Indicative SNAs by Coverage – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - General Land Parcels Containing Indicative SNAs									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	0%	2%	8%	4%	3%	3%	3%	2%	11%	35%
1ha to 2ha	0%	1%	2%	1%	1%	1%	0%	0%	1%	7%
2ha to 5ha	0%	1%	4%	1%	1%	1%	1%	1%	2%	11%
5ha to 10ha	0%	1%	3%	1%	1%	1%	0%	0%	1%	8%
10ha to 20ha	0%	1%	4%	1%	1%	1%	0%	0%	1%	8%
20ha to 50ha	0%	2%	7%	1%	1%	1%	0%	0%	1%	13%
50ha to 100ha	0%	1%	4%	1%	0%	0%	0%	0%	0%	8%
100ha to 1500ha	0%	1%	2%	0%	0%	0%	0%	0%	0%	3%
150ha to 250ha	0%	0%	2%	0%	0%	0%	0%	0%	0%	3%
250ha to 500ha	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%
500ha to 1,000ha	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
More than 1,000ha	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Total Parcels	0%	10%	37%	12%	8%	7%	6%	4%	16%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

Māori Land Court Land

Māori Land Court parcels tend to have a different size distribution relative to general land parcels, with 42% less than 1ha in size compared to 82% in general land tenure. Table 3.4 shows that on average across New Zealand, 66.1% of Māori Land Court tenure parcels of any size contain no indicative SNA coverage, including 37.6% of all Māori Land Court parcels that are less than 1ha in size. This means that two thirds of Māori Land Court parcel owners will not face costs under the NPSIB specifically related to protecting SNAs (but may still be impacted by indigenous biodiversity protection outside of SNAs).[25]

The analysis shows that 9.1% of all Māori Land Court land parcels contain indicative total SNA coverage of between 1-20%, spread over a range of parcel sizes, but relatively more concentrated in parcels between 10 and 50ha in size. An estimated 8.1% of all Māori Land Court land parcels contain indicative total SNA coverage of greater than or equal to 90%, spread over a range of parcel sizes, but relatively more concentrated in parcels less than 1ha in size and 20-50ha in size. Other coverage categories contribute between 2% and 4% of the total.

[25] While these patterns may differ if calculated according to property boundaries (where in rural areas especially a property may comprise multiple parcels, some of which might include SNAs), M.E does not expect that the results would differ significantly from those in Table 3.4.

Table 3.4 – Total MLC Tenure Land Parcel Coverage by Total Indicative SNAs – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - All Maori Land Court Parcels									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	37.6%	0.2%	1.1%	0.5%	0.4%	0.4%	0.3%	0.2%	1.4%	42.0%
1ha to 2ha	6.7%	0.1%	0.5%	0.2%	0.2%	0.2%	0.2%	0.1%	0.5%	8.7%
2ha to 5ha	8.1%	0.2%	0.9%	0.5%	0.4%	0.3%	0.3%	0.2%	0.7%	11.6%
5ha to 10ha	5.1%	0.2%	1.1%	0.5%	0.4%	0.3%	0.3%	0.3%	0.7%	8.8%
10ha to 20ha	3.9%	0.3%	1.3%	0.5%	0.4%	0.4%	0.5%	0.3%	0.9%	8.5%
20ha to 50ha	3.2%	0.4%	1.8%	0.7%	0.6%	0.6%	0.6%	0.5%	1.4%	9.6%
50ha to 100ha	1.0%	0.2%	0.9%	0.3%	0.4%	0.3%	0.3%	0.3%	0.9%	4.5%
100ha to 1500ha	0.3%	0.1%	0.4%	0.2%	0.1%	0.2%	0.2%	0.2%	0.6%	2.2%
150ha to 250ha	0.2%	0.1%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	1.5%
250ha to 500ha	0.1%	0.0%	0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	1.3%
500ha to 1,000ha	0.0%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%
More than 1,000ha	0.0%	0.0%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2%	0.7%
Total Parcels	66.1%	1.9%	9.1%	3.8%	3.1%	2.8%	2.8%	2.3%	8.1%	100.0%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

The following analysis (Table 3.5) only applies to the 33.9% (approximately 10,640) Māori Land Court parcels that do have some coverage of total indicative SNAs. It shows that 6% of all potentially affected Māori Land Court land parcels have less than 1% SNA coverage. Just over a quarter of Māori Land Court parcels that contain an indicative SNA have between 1-20% coverage. This is followed by another quarter (24% or nearly 2,550) of affected parcels containing greater than 90% coverage, including 4% of total affected parcels that are less than 1ha in size. The latter equates to an estimated 430 parcels in iwi/hapū ownership.

Table 3.5 - MLC Tenure Land Parcels Containing Total Indicative SNAs by Coverage – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - Maori Land Court Parcels Containing Indicative SNAs									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	0%	1%	3%	2%	1%	1%	1%	1%	4%	13%
1ha to 2ha	0%	0%	1%	1%	1%	1%	0%	0%	2%	6%
2ha to 5ha	0%	1%	3%	1%	1%	1%	1%	1%	2%	10%
5ha to 10ha	0%	1%	3%	1%	1%	1%	1%	1%	2%	11%
10ha to 20ha	0%	1%	4%	2%	1%	1%	1%	1%	3%	14%
20ha to 50ha	0%	1%	5%	2%	2%	2%	2%	1%	4%	19%
50ha to 100ha	0%	1%	3%	1%	1%	1%	1%	1%	3%	10%
100ha to 1500ha	0%	0%	1%	1%	0%	1%	1%	0%	2%	6%
150ha to 250ha	0%	0%	1%	0%	0%	0%	0%	0%	1%	4%
250ha to 500ha	0%	0%	1%	0%	0%	0%	0%	0%	1%	3%
500ha to 1,000ha	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%
More than 1,000ha	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%
Total Parcels	0%	6%	27%	11%	9%	8%	8%	7%	24%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

As discussed later in Section 6, the NPSIB is considered unlikely to generate any material opportunity costs on Māori Land Court land relative to the status quo, despite an above average share of parcels potentially

containing SNAs, including high coverage by SNAs. The provisions have been developed in response to this situation and are both enabling and flexible in their approach to new use, development and occupation.

Treaty Settlement Land

Treaty Settlement parcels also have a different size distribution relative to general land parcels, with 45% less than 1ha in size compared to 82% in general land tenure, although the size distribution is broadly similar to Māori Land Court parcels (but with slightly more very large blocks).

Table 3.6 shows that on average across New Zealand, 63.8% of Treaty Settlement tenure parcels of any size contain no indicative SNA coverage, including 41.1% of all Treaty Settlement parcels that are less than 1ha in size. This means that nearly two thirds of Treaty Settlement parcel owners will not face costs under the NPSIB specifically related to protecting SNAs (but may still be impacted by indigenous biodiversity protection outside of SNAs).[26]

In total, 36.2% of Treaty Settlement parcels contain some area of indicative SNA. The analysis shows that 15.7% of all Treaty Settlement land parcels contain indicative total SNA coverage of between 1-20%, spread over a range of parcel sizes, but relatively more concentrated in parcels greater than 20ha in size. An estimated 6.1% of all Treaty Settlement land parcels contain indicative total SNA coverage of greater than or equal to 90%, spread over a range of parcel sizes, but relatively more concentrated in parcels less than 1ha in size. Other coverage categories contribute between 1% and 4% of the total.

The following analysis (Table 3.7) only applies to the 36.2% (approximately 1,800) Treaty Settlement parcels that do have some coverage of total indicative SNAs. It shows that 12% of all potentially affected Treaty Settlement land parcels have less than 1% SNA coverage. Two fifths (43%) of parcels that contain an indicative SNA have between 1-20% coverage. This is followed by another 17% (about 300) of affected parcels containing greater than 90% coverage, including 4% of total affected parcels that are less than 1ha in size. The latter equates to an estimated 70 parcels in iwi/hapū ownership.

As above, it is not considered that SNA coverage per se will result in any material opportunity costs for owners of Treaty Settlement land under NPSIB provisions. Iwi will have input into the way in which effects on indigenous biodiversity will be managed on their lands and the outcome could be more enabling that under the status quo in some districts. Transaction and compliance costs linked to SNAs on Māori land may also be lower relative to general land parcels (discussed further in Section 6).

[26] While these patterns may differ if calculated according to property boundaries (where in rural areas especially a property may comprise multiple parcels, some of which might include SNAs), M.E does not expect that the results would differ significantly from those in Table 3.6.

Table 3.6 – Total Treaty Settlement Tenure Land Parcel Coverage by Total Indicative SNAs – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - All Treaty Settlement Parcels									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	41.1%	0.2%	0.9%	0.3%	0.3%	0.4%	0.3%	0.2%	1.5%	45.2%
1ha to 2ha	4.4%	0.1%	0.4%	0.2%	0.1%	0.2%	0.2%	0.1%	0.5%	6.3%
2ha to 5ha	5.0%	0.2%	0.9%	0.3%	0.3%	0.1%	0.2%	0.2%	0.7%	7.9%
5ha to 10ha	2.9%	0.4%	0.9%	0.4%	0.2%	0.1%	0.1%	0.1%	0.4%	5.7%
10ha to 20ha	2.6%	0.1%	1.0%	0.4%	0.2%	0.2%	0.1%	0.1%	0.6%	5.4%
20ha to 50ha	3.3%	0.5%	2.2%	0.6%	0.4%	0.3%	0.2%	0.1%	0.9%	8.5%
50ha to 100ha	1.7%	0.6%	1.9%	0.4%	0.2%	0.2%	0.1%	0.1%	0.5%	5.7%
100ha to 1500ha	0.8%	0.3%	1.1%	0.2%	0.1%	0.1%	0.1%	0.0%	0.2%	3.0%
150ha to 250ha	0.7%	0.5%	1.5%	0.2%	0.2%	0.1%	0.1%	0.0%	0.2%	3.5%
250ha to 500ha	0.5%	0.3%	1.8%	0.3%	0.1%	0.0%	0.0%	0.1%	0.2%	3.3%
500ha to 1,000ha	0.3%	0.3%	1.3%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%	2.2%
More than 1,000ha	0.2%	0.8%	1.6%	0.2%	0.0%	0.1%	0.1%	0.0%	0.3%	3.3%
Total Parcels	63.8%	4.3%	15.7%	3.7%	2.0%	1.8%	1.5%	1.1%	6.1%	100.0%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

Table 3.7 – Treaty Settlement Tenure Land Parcels Containing Total Indicative SNAs by Coverage – New Zealand

Parcel Size	Total Indicative SNAs Parcel Coverage - Treaty Settlement Parcels Containing Indicative SNAs									Total Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage	
Less than 1ha	0%	1%	2%	1%	1%	1%	1%	1%	4%	11%
1ha to 2ha	0%	0%	1%	0%	0%	1%	0%	0%	1%	5%
2ha to 5ha	0%	1%	2%	1%	1%	0%	0%	0%	2%	8%
5ha to 10ha	0%	1%	3%	1%	1%	0%	0%	0%	1%	8%
10ha to 20ha	0%	0%	3%	1%	0%	0%	0%	0%	2%	8%
20ha to 50ha	0%	1%	6%	2%	1%	1%	1%	0%	2%	14%
50ha to 100ha	0%	2%	5%	1%	1%	1%	0%	0%	1%	11%
100ha to 1500ha	0%	1%	3%	1%	0%	0%	0%	0%	1%	6%
150ha to 250ha	0%	1%	4%	0%	0%	0%	0%	0%	1%	8%
250ha to 500ha	0%	1%	5%	1%	0%	0%	0%	0%	1%	8%
500ha to 1,000ha	0%	1%	4%	0%	0%	0%	0%	0%	0%	5%
More than 1,000ha	0%	2%	4%	1%	0%	0%	0%	0%	1%	8%
Total Parcels	0%	12%	43%	10%	6%	5%	4%	3%	17%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

3.4 Case Study Approach

A case study approach (of six districts) was agreed with MfE to help analyse and understand costs and benefits of the NPSIB in more detail for this CBA.[27] The case study sample focused on TAs but also included two unitary authorities as this was the most efficient and effective way to also discuss implementation costs for regional councils. Other factors used to identify a suitable representation of case study areas included:

[27] The case studies were a key focus of the Draft s32 and Indicative CBA report.

- A mixture of SNA mapping approaches/progress relative to the NPSIB requirements;
- Population growth, as areas experiencing strong growth face greater pressures for land use change, subdivision and development;
- Māori land ownership (as defined under Te Ture Whenua Māori Act 1993 Act);
- Scale, nature and significance of indigenous land cover relative to the total district area; and
- Availability and willingness to assist with interviews and data provision (given resource and time constraints).

Table 3.8 identifies the six case studies adopted for this CBA and summarises their attributes against the above criteria.

Table 3.8 – Overview of Case Studies for CBA

Case Study	Population Growth 2018-2043 (Med)	Māori Land (excl. Settlement Land)	Total Indigenous Forest, Scrub/ Shrubland, Tussock Area (ha)	SNA Approach in Plan
Auckland	High. Growth of 37% projected (59% of national population growth in that period)	6,967ha (1% of land area in district). Accounts for 1% of total NZ Māori Land.	126,030ha (26% of land area in district). Accounts for 1% of total NZ indigenous land cover.	Significant Ecological Areas mapped, SNA criteria. *Plan schedule very complete*.
Tasman District	Low. Growth of 9% projected (less than 1% of national population growth in that period)	107ha (less than 1% of land area in district). Accounts for less than 1% of total NZ Māori Land.	658,800ha (69% of land area in district). Accounts for 6% of total NZ indigenous land cover.	No SNA schedule in plan, SNA criteria. *Plan schedule not complete.* Voluntary work to identify SNAs ongoing.
Far North District	Low. Growth of 2% projected (less than 1% of national population growth in that period)	102,613ha (15% of land area in district). Accounts for 8% of total NZ Māori Land.	263,620ha (40% of land area in district). Accounts for 2% of total NZ indigenous land cover.	No SNA schedule, SNA criteria in RPS. *Plan schedule not complete.* SNA mapping currently underway for inclusion in proposed plan.

[28] Based on the 2012 coverage in the LCDB.

[29] Based on analysis and advice from officials and their ecologists.

Waikato District	High. Growth of 35% projected (3% of national population growth in that period)	19,573ha (4% of land area in district). Accounts for 1% of total NZ Māori Land.	66,880ha (15% of land area in district). Accounts for 1% of total NZ indigenous land cover.	SNAs mapped (600+), SNA criteria in RPS. *Proposed Plan schedule very complete.*
Westland District	Decline. Growth of -4% projected (0% of national population growth in that period)	3,841ha (less than 1% of land area in district). Accounts for less than 1% of total NZ Māori Land.	762,870ha (69% of land area in district). Accounts for 8% of total NZ indigenous land cover.	No SNA schedule, SNA criteria. *Plan schedule not complete.*
Southland District	Low. Growth of 2% projected (less than 1% of national population growth in that period)	39,203ha (1% of land area in district). Accounts for 3% of total NZ Māori Land.	1,708,330ha (58% of land area in district). Accounts for 16% of total NZ indigenous land cover.	No SNA schedule, criteria in RPS. *Plan schedule Not complete.*

The spatial analysis for each case study focused on the provisions in the NPSIB relating to SNA identification and avoiding and managing adverse effects on SNAs from new subdivision, use and development and established activities. It is not possible to predict exactly how individual councils will give effect to these NPSIB provisions through objectives, policies, and rules (and other methods). However, it is possible to provide a baseline assessment of the current geography of relevant land uses and land ownership structures and how this intersects with the presence of existing or indicative SNAs in these six districts. This helps us to understand the way in which local planning approaches that give effect to the NPSIB might impact different land use and activities 'on the ground'.

Only Auckland and Waikato District had existing SNAs at the time of analysis (and which closely align with Appendix 1 of the NPSIB). For Far North District, Tasman District, Westland District and Southland District, indicative SNAs were estimated as per the approach described above[30].

Additional spatial layers used in the case studies included operative land use zoning, other designations and overlays in the District Plan, rating property (as opposed to primary parcel) boundaries (including land use codes), other land covers from the LCDB to represent forestry and pasture, national grid (transmission lines and structure) locations, open cast mine data and any other spatial data deemed relevant and available from the respective council. Combined, these layers allow the case study analysis to describe the number, size and distribution of existing and indicative SNAs as well as the incidence of existing and indicative SNAs relative to land tenure, established land uses and specific activities, and other forms of land

[30] Indicative SNAs estimated for the case study analysis pre-dated the national level analysis above. The key difference is that the indigenous vegetation land cover was a 2012 snap-shot, not 2018. There may also have been some variations in the way that the tenure data was cleaned to remove overlaps.

use restrictions. A summary of the spatial analysis is described further below (with the full detail contained in Appendix C of the Draft s32 and Indicative CBA report).[31]

It is noted that the analysis of indigenous biodiversity outside of SNAs is excluded from the spatial analysis (nationally and in the case study areas). Any costs and benefits associated with areas outside of SNAs is qualified elsewhere in this report.

The case studies also involved semi-structured interviews with staff from each of the six case study councils to understand current issues and pressures facing indigenous biodiversity in the district as well as the status quo of protecting, managing and enhancing indigenous biodiversity in statutory and non-statutory resource management documents. Council staff provided information on the potential impacts, benefits and costs of the NPSIB provisions more broadly (as they understood them at that time). The case studies did not involve discussions with tangata whenua, landowners, or other stakeholders likely to be impacted by the NPSIB provisions in each district.

3.5 Case Study – Spatial Analysis Results

3.5.1 High-level Summary

Table 3.9 compares a selection of results from the case study spatial analysis. Waikato District and Auckland have defined a very different number of discrete SNAs, but the combined area is similar – both accounting for 16% of total land area. However, at the time of completing the case study analysis, Auckland had yet to map SNAs on the Hauraki Gulf Islands. Any additional SNAs will raise this percentage and in doing so increase the coverage of DOC administered land which is concentrated on the islands (and currently under-represented).

The case study areas contain very different extents of DOC administered land. Inclusion of DOC land within SNAs is expected to be high (i.e. 87% is included in Waikato District's existing SNAs). This is a relevant issue in terms of both the cost of mapping SNAs and the benefits that the NPSIB can achieve in a district (when much of the indigenous biodiversity is already protected through other legislation). This is discussed briefly in Section 7 of this report.

The spatial analysis indicates that existing SNAs in Waikato and Auckland affect 12% and 6% of general land properties respectively while very high certainty indicative SNAs affect between 0% and 6% of general land properties across the remaining case study areas. However, indicative SNAs of moderate-high certainty could affect up to an additional 7% to 37% of properties. In total, indicative SNAs could affect up to 11% of all general land properties in Southland District (low range) and up to 37% of general land properties in Westland District (high range), with the share affected in Tasman and Far North within this range.

Further, in Waikato and Auckland 0.8% of total general land properties have >80% of existing SNA coverage – with only a small proportion of those being small properties less than 1ha. This percentage share is similar

[31] While there have been some changes to NPSIB provisions since the case studies were completed, the intent of the NPS is unchanged. It is considered that the case study spatial analysis is still applicable and relevant. While 'High' and 'Medium' SNAs are referenced in the original spatial analysis, this distinction is no longer applicable. For those districts relying on indicative SNAs, they can however be treated as 'very high' certainty and 'moderate to high certainty' of being SNAs respectively (to be consistent with terminology used in the new national level spatial analysis in this report).

to the remaining case studies with respect to very high certainty indicative SNAs that cover >80% of property area. But, indicative SNAs of moderate-high certainty could affect up to an additional 1% to 7% of properties with >80% property coverage. In total therefore, indicative SNAs that cover >80% of properties could affect up to 1% of general land properties in Southland District (low range) and up to 10% of general land properties in Westland District (high range), with Tasman and Far North District falling within this range.

The incidence of existing or indicative SNAs on Māori Land Court land is more significant in the case studies. The spatial analysis indicates that existing SNAs in Waikato and Auckland affect 34% and 25% of Māori land properties administered under the Māori Land Court respectively while very high certainty indicative SNAs affect between 0% and 15% of Māori Land Court properties across the remaining case study areas. However, indicative SNAs of moderate-high certainty could affect up to an additional 29% to 73% of Māori Land Court properties. In total, indicative SNAs could affect up to 37% of all Māori Land Court properties in Tasman District (low range) and up to 79% of Māori Land Court properties in Southland District (high range), with the share affected in Westland and Far North within this range.

In terms of Māori Land Court properties with >80% of SNA coverage, in Waikato and Auckland 13% and 5% respectively of total Māori Land Court properties are affected by very extensive SNA coverage. These shares are lower in the remaining case studies with respect to very high certainty indicative SNAs that cover >80% of property area (0% to 4% of properties). But indicative SNAs of moderate-high certainty could affect up to an additional 4% to 55% of Māori Land Court properties with >80% property coverage. In total therefore, indicative SNAs that cover >80% of properties could affect up to 8% of Māori Land Court properties in Tasman District (low range) and up to 59% of Māori Land Court properties in Southland District (high range), with Westland and Far North District falling within this range.

A limitation of the case study spatial analysis is that it does not provide insight on SNAs on general or Māori Land Court land that are already protected through other legislation such as covenants or kawenata.[32] The NPSIB will add another layer to the protection of those areas, but only a marginal change (if any) to landowner costs and rights with respect to new use, subdivision and development in and adjoining those already protected locations.

[32] This is clarified in the NPSIB with respect to Māori Land (Clause 3.18(4)).

Table 3.9 - Comparison of Key Case Study Parameters

High Level Paramaters	Based on Existing SNAs		Based on Indicative SNAs			
	Waikato District	Auckland Region	Far North District	Tasman District	Westland Dsitrict	Southland District
SNA (Terrestrial) Count (n)	697	3,237	N/A	N/A	N/A	N/A
SNA (Terrestrial) Area (ha) - Includes DOC Administered Land	70,693	77,284	263,885 *	658,806*	762,868*	1,708,330*
SNA (Terrestrial) Area (ha) - Excluding DOC Administered Land **	46,316	71,823	166,410 *	86,230 *	48,765 *	225,250 *
Total District Land Area (ha)	435,289	489,228	662,466	956,381	1,164,466	2,927,376
Total District Land Area (ha) - Excluding DOC Administered Land **	419,836	459,920	559,851	339,304	149,788	1,190,714
SNA Coverage of Total District Land Area (%)	16%	16%	40%	69%	66%	58%
SNA Coverage of Total District Land Area - Excluding DOC Administered Land (%) **	11%	16%	30%	25%	33%	19%
DOC Administered Land Area (ha)	26,283	29,176	109,341	625,669	1,036,484	1,829,126
SNA Coverage of DOC Land (%)	87%	19%	89%	92%	69%	81%
Maori Land Court Tenure Land Area (ha)	19,573	6,967	102,613	107	3,841	39,203
SNA Coverage of Maori Land Area (%)	47%	18%	50%	4%	47%	83%
Estimated Number of Maori Land Properties (n)	**659**	**227**	**3,688**	**24**	**105**	**485**
Percentage of Maori Land Court Properties Containing Moderate-High Certainty Indicative SNA (%)	N/A	N/A	48%	29%	62%	73%
Percentage of Maori Land Court Properties Containing >80% Moderate-High Certainty Indicative SNA Coverage (%)	N/A	N/A	17%	4%	25%	55%
Percentage of Maori Land Court Properties Containing Existing or Indicative Very High Certainty SNA (%)	34%	25%	15%	8%	-	6%
Percentage of Maori Land Court Properties Containing >80% Existing or Very High Certainty Indicative SNA Coverage (%)	13%	5%	3%	4%	-	4%
Percentage of Maori Land Court Properties Containing Existing or Total Indicative SNA (all certainties) (%)	**34%**	**25%**	**64%**	**38%**	**62%**	**79%**
Percentage of Maori Land Court Properties Containing >80% Existing or Total Indicative SNA Coverage (%)	**13%**	**5%**	**20%**	**8%**	**25%**	**59%**
General Land Tenure Land Area (ha)	387,992	433,112	403,171	284,707	119,140	981,210
SNA Coverage of General Land (%)	9%	16%	26%	28%	30%	10%
Estimated Number of General Land Properties (n)	**29,475**	**419,049**	**32,198**	**40,667**	**7,727**	**39,497**
Percentage of General Land Properties Containing Moderate-High Certainty Indicative SNA (%)	N/A	N/A	25%	15%	37%	7%
Percentage of General Land Properties Containing >80% Moderate-High Certainty Indicative SNA Coverage (%)	N/A	N/A	7%	4%	10%	1%
Percentage of General Land Properties Containing Existing or Very High Certainty Indicative SNA (%)	12%	6%	6%	6%	-	4%
Percentage of General Land Properties Containing >80% Existing or Very High Certainty Indicative SNA Coverage (%)	0.8%	0.8%	1.0%	1.0%	0.0%	0.2%
Percentage of General Land Properties Containing Existing or Total Indicative SNA (all certainties) (%)	**12%**	**6%**	**31%**	**21%**	**37%**	**11%**
Percentage of General Land Properties Containing >80% Existing or Total Indicative SNA Coverage (%)	**0.8%**	**0.8%**	**8%**	**5%**	**10%**	**1%**

* Proxy for SNAs was based on indigenous land cover (based on a combination of land covers included in the Land Cover Data Base 2012 (LCDB)).
This likely overestimates the extent of SNAs likely to be identified under the NPSIB. Minor variations compared to the more recent national level analysis may apply and are due to the timing of data and slightly different spatial approaches.
** Includes the following tenures: Crown, General, Maori Land Court, Treaty Settlement and Not Specified. Excludes DOC administered land.

3.5.2 Waikato District

The key parameters of the spatial analysis for Waikato District are summarised in Table 3.9. Waikato District has a highly modified landscape with just 15% of its land area containing indigenous land cover according to the LCDB 2012 (66,883ha).[33] About 33% of indigenous cover in the district is classified in the TEC as at-risk or threatened (i.e. having less than 30% of original cover remaining). Terrestrial SNAs in the Proposed District Plan (PDP) cover an estimated 79% of indigenous land cover identified in the LCDB, which indicates that not all indigenous land cover qualified as an SNA under Council's criteria. Indigenous land cover in the LCDB makes up approximately 76% of SNA hectares identified in the PDP, highlighting that SNAs are not limited to indigenous land cover.

Waikato's SNA are shown in Figure 3.6. There are 697 defined SNAs covering an estimated 70,693ha. They have been categorised into 22 different ecosystem types including coastal, sand dunes, terrestrial and wetlands (and combinations of these). The majority of SNAs fall on general land – this tenure makes up 52% of total SNA hectares in the district. Overall, SNAs cover 9% of total general land area in the district.

DOC administered land (also shown in Figure 3.6) makes up 33% of SNA coverage in the district, with all but 13% of DOC's land included in the defined SNAs. There is 103ha of Crown land in SNAs (13% of total Crown land area), but this makes up less than 1% of the total area of SNAs in the district. Treaty Settlement land is a very minor component of defined SNAs (less than 1% of SNA coverage), although the SNAs capture 47% of the total area of Treaty Settlement land. This is equal to the share of Māori Land Court land in the district covered by SNAs. Māori Land Court land makes up 13% of the SNA coverage in the district.

In terms of potential costs on developing Māori land[34], Waikato has the second highest count of estimated Māori Land Court land properties in the six case studies (659). Therefore, the provisions in the NPSIB relating to managing adverse effects on SNAs and the utilisation of Māori land with SNA coverage are of key relevance to Waikato District Council and tangata whenua in the district. A large portion of Māori Land Court properties (66%) have no SNA coverage, so would not be impacted by any SNA effects management provisions but may still be impacted by other provisions that manage indigenous biodiversity outside of SNAs (albeit that tangata whenua will have input into the development of those provisions). The following analysis (Table 3.10) only applies to the 34% of properties that do have some coverage of an existing SNA.

Of the estimated 226 Māori Land Court properties in Waikato District that contain an area of existing SNA, 56% have greater than 50% SNA coverage, and 37% have greater than 80% SNA coverage. Of those with greater than 80% coverage, most are large properties (greater than 10ha), with just 14 properties less than 10ha in size, and 2 less than 1ha in size. When considered in the context of all Māori Land Court properties in Waikato District though, the very high SNA coverage affects only a moderate portion of the total (that is, only 13% have >80% coverage).

[33] Based on analysis of the 2018 LCDB, the terrestrial area of the same selected indigenous land covers is 62,390ha, or 62,480ha including overlap with inlets and inland water. This suggests a reduction in indigenous cover between 2012 and 2018 (and assuming the same level of accuracy for data capture).

[34] Note, Māori land for the purposes of all case studies equates only to land administered under the Te Ture Whenua Māori Act 1993. In the NPSIB, provisions relating to Māori land also include Treaty Settlement land.

Figure 3.6 – Significant Natural Areas by Type – Waikato

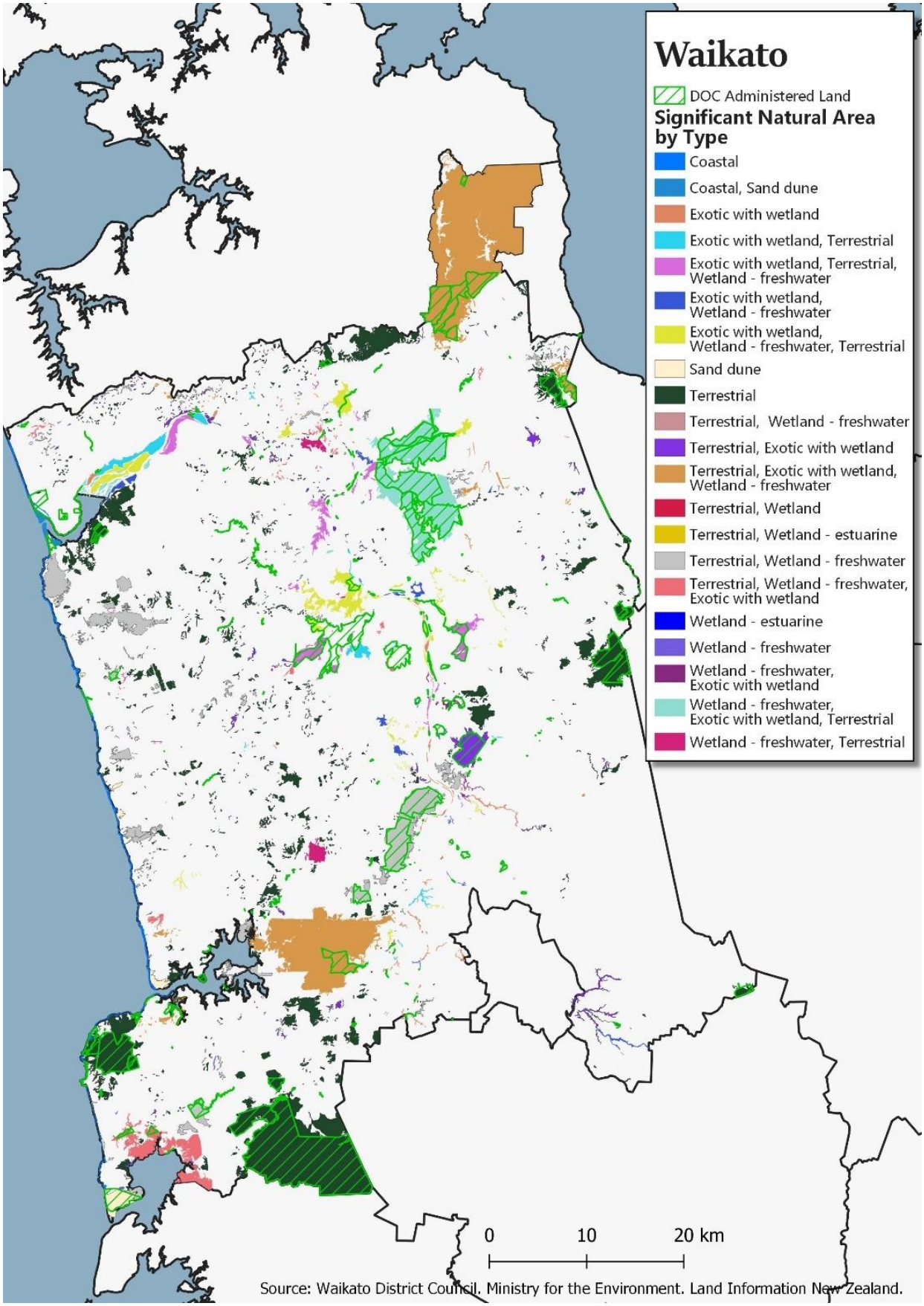


Table 3.10 – Count of Māori Land Court Properties by Size and Existing SNA Coverage - Waikato

Property Size	<1% SNA Coverage	1%-20% SNA Coverage	20%-35% SNA Coverage	35%-50% SNA Coverage	50%-65% SNA Coverage	65%-80% SNA Coverage	80%-90% SNA Coverage	90%-100% SNA Coverage	Total Maori Land Court Properties	Share of Properties (%)
Total Existing SNA Coverage Distribution										
<1ha	-	7	2	1	1	3	-	2	16	7%
1ha-2ha	-	5	1	1	-	1	1	-	9	4%
2ha-5ha	-	4	3	-	-	-	1	3	11	5%
5ha-10ha	-	3	-	1	2	2	3	4	15	7%
10ha-20ha	3	11	3	2	6	6	3	16	50	22%
20ha-50ha	2	12	6	5	5	5	4	18	57	25%
50ha-100ha	1	5	6	2	4	5	5	8	36	16%
100ha-150ha	-	4	1	1	2	1	-	3	12	5%
150ha-250ha	-	-	-	-	-	-	-	6	6	3%
250ha-500ha	-	3	1	1	1	-	-	3	9	4%
500ha-1,000ha	-	1	-	-	-	-	-	2	3	1%
>1,000ha	-	-	-	1	-	-	-	1	2	1%
Total Properties	6	55	23	15	21	23	17	66	226	100%
Share of Properties	*3%*	*24%*	*10%*	*7%*	*9%*	*10%*	*8%*	*29%*	*100%*	

Source: Waikato District Council, MfE, M.E. Properties tagged to Maori Land based on the centroid of the property parcel relative to the tenure land areas.

It is anticipated that smaller sized properties with very high coverage would be more likely to have new occupation, use and development constrained in order to protect SNAs on Māori lands than larger properties, although all properties, irrespective of the amount of coverage could be constrained in some way. That said, the NPSIB exceptions for Māori land are generally enabling of new occupation, use and development, particularly when constrained by SNAs. These provisions are expected to significantly reduce the potential for transaction and compliance costs associated with protecting indigenous biodiversity on Māori Lands for landowners (and avoid the potential for material opportunity costs). This is discussed further in Section 6.

The spatial analysis shows 88% of general owned properties have no SNA coverage in Waikato District. This means that the clear majority of households will not face any costs under the NPSIB specifically related to protecting SNAs (but may still be impacted by indigenous biodiversity protection outside of SNAs). The following analysis (Table 3.11) only applies to the 12% of properties that do have some coverage of an existing SNA.

Table 3.11 – Count of General Land Court Properties by Size and Existing SNA Coverage - Waikato

Property Size	<1% SNA Coverage	1%-20% SNA Coverage	20%-35% SNA Coverage	35%-50% SNA Coverage	50%-65% SNA Coverage	65%-80% SNA Coverage	80%-90% SNA Coverage	90%-100% SNA Coverage	Total General Land Properties	Share of Properties (%)
Total Existing SNA Coverage Distribution										
<1ha	80	208	106	54	47	42	15	50	602	18%
1ha-2ha	29	144	85	59	44	22	12	10	405	12%
2ha-5ha	64	143	88	51	36	25	16	20	443	13%
5ha-10ha	30	161	53	26	15	9	10	8	312	9%
10ha-20ha	53	209	42	29	18	11	14	13	389	11%
20ha-50ha	63	242	32	17	13	11	11	16	405	12%
50ha-100ha	56	178	26	9	9	5	7	8	298	9%
100ha-150ha	38	109	13	3	1	-	1	9	174	5%
150ha-250ha	43	86	9	6	1	2	4	6	157	5%
250ha-500ha	37	87	11	6	1	3	1	1	147	4%
500ha-1,000ha	13	42	2	1	-	-	1	-	59	2%
>1,000ha	1	10	4	-	-	-	1	-	16	0%
Total Properties	507	1,619	471	261	185	130	93	141	3,407	100%
Share of Properties	*15%*	*48%*	*14%*	*8%*	*5%*	*4%*	*3%*	*4%*	*100%*	

Source: Waikato District Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

Of the estimated 3,407 general land properties in Waikato District that contain an area of existing SNA, 16% have greater than 50% SNA coverage, and 7% or 234 have greater than 80% SNA coverage. Of those with greater than 80% coverage, most are less than 10ha in size (141 properties) and 65 are less than 1ha in size. It is much more common for general properties that are <1ha in size that contain an area of existing SNA to have no more than 20% coverage than extensive coverage. When considered in the context of all general land properties in Waikato District though, the very high SNA coverage affects only a very small portion of the total (that is, only 0.8% have >80% coverage).

Exotic forestry cover (as defined in the LCDB only) is relatively minor land use in Waikato District (an estimated 25,571ha). 3% of forestry area in the district contains an SNA and SNAs on forestry land make up just 1% of total SNA area in the district. There are a few larger (i.e. commercial) forestry areas. Most discrete plantation forestry areas (of any size) have zero or less than 1% SNA coverage (82%), and a few (11%) have between 1% and 20% SNA coverage. An estimated 77% of discrete forestry land cover areas are less than 5ha in size and 52% are less than 2ha in size. Section 6 discusses the low likelihood of the NPSIB creating net additional costs for forestry owners that contain SNAs. In the unlikely event that councils apply more stringent rules for forestry harvest in SNAs than the status quo, Section 6 provides some hypothetical scenarios of minor net additional costs that may or may not apply in Waikato District following their implementation of the NPSIB.

The NPSIB provisions relating to periodic vegetation clearance to maintain improved pasture may have particular relevance to Waikato District. Farming (including dairy farming) is central to the Waikato economy. While there is no data that can inform the prevalence of regenerating indigenous cover on pasture-land (to inform the assessment of the NPSIB provisions relating to improved pasture), the analysis shows that 89% of properties containing low or high producing grassland have zero or less than 1% SNA coverage. A further 8% have between 1% and 20% SNA coverage. Those that have higher SNA coverage on their property tend to be smaller lifestyle blocks.

Of key importance, Waikato's SNAs have been identified in advance of the NPSIB, so any net additional costs to landowners attributable to the NPSIB will only come about if the NPSIB provisions to manage adverse effects on SNAs are more stringent that the PDP provisions relating to SNAs and/or the NPSIB SNA criteria results in an increase in SNA coverage in the district.

3.5.3 Auckland

The key parameters of the spatial analysis for Auckland Region are summarised in Table 3.9.

Approximately 37% of the indigenous land cover in Auckland is classified in the TEC as having less than 30% of original coverage remaining. Indigenous vegetation cover in the region is very fragmented with the exception of the Waitakere Ranges, Hunua Ranges and the Hauraki Gulf Islands. This is not surprising given that Auckland is New Zealand's largest urban centre and has grown and continues to grow rapidly with considerable pressure for urban and rural lifestyle development. In total, there is an estimated 126,028ha

of indigenous land cover left in Auckland[35] and just under 89,000ha on the mainland (i.e. excluding the Hauraki Gulf Islands) as at 2012.

Auckland Council's non-marine SNAs (which include wetlands, streams and lakes) cover 79,093ha of land area on the mainland – about 73% of the mainland indigenous land cover according to the LCDB (and 51% of total regional indigenous land cover). Excluding water bodies, the SNAs cover 77,284ha. The geography of the identified SNAs within the Auckland Unitary Plan is shown in Figure 3.7. DOC land makes up a very small share of land tenure on the mainland, although dominates Hauraki Gulf Islands which had yet to be assessed by Auckland Council for the identification of SNAs at the time of the case study analysis. Similarly, Crown land is not a key feature of the region.

Auckland has a moderate count of Māori Land Court properties relative to the other case study areas, with an estimated 227 properties. In terms of hectares, 18% of Māori Land Court land falls within existing SNAs (a relatively low portion). This translates to 25% of Māori Land Court properties that have some SNA coverage. The following analysis (Table 3.12) only applies to the 25% of properties that do have some coverage of an existing SNA.

Table 3.12 – Count of Māori Land Court Properties by Size and Existing SNA Coverage - Auckland

Property Size	<1% SNA Coverage	1%-20% SNA Coverage	20%-35% SNA Coverage	35%-50% SNA Coverage	50%-65% SNA Coverage	65%-80% SNA Coverage	80%-90% SNA Coverage	90%-100% SNA Coverage	Total Maori Land Court Properties	Share of Properties (%)
Total Existing SNA Coverage Distribution										
<1ha	1	2	-	-	1	-	-	-	4	7%
1ha-2ha	1	1	-	1	1	1	-	-	5	9%
2ha-5ha	-	3	-	-	-	-	-	1	4	7%
5ha-10ha	1	4	2	-	-	-	-	-	7	12%
10ha-20ha	-	1	4	1	2	2	2	-	12	21%
20ha-50ha	-	2	1	3	1	2	-	2	11	19%
50ha-100ha	1	-	1	-	1	-	2	2	7	12%
100ha-150ha	-	-	1	1	-	-	-	-	2	4%
150ha-250ha	-	1	1	-	-	-	-	2	4	7%
250ha-500ha	-	-	-	-	-	-	-	-	-	0%
500ha-1,000ha	-	-	-	-	-	-	-	-	-	0%
>1,000ha	-	1	-	-	-	-	-	-	1	2%
Total Properties	4	15	10	6	6	5	4	7	57	100%
Share of Properties	*7%*	*26%*	*18%*	*11%*	*11%*	*9%*	*7%*	*12%*	*100%*	

Source: Auckland Council, MfE, M.E. Properties tagged to Maori Land Court land based on the centroid of the property parcel relative to the tenure land areas.

Of the estimated 57 Māori Land Court properties in Auckland that contain an area of existing SNA, 39% have greater than 50% SNA coverage, and 19% have greater than 80% SNA coverage. Of those with greater than 80% coverage, nearly all are large properties (greater than 10ha), with just 1 property less than 10ha in size. When considered in the context of all Māori Land Court properties in Auckland though, the very high SNA coverage affects only a minor portion of the total (that is, only 5% have >80% coverage).

General land makes up 87% of Auckland's terrestrial SNAs (by area), although SNAs impact only 16% of the total area of general land and 6% of the count of general land properties. The following analysis (Table 3.13) only applies to the 6% of properties that do have some coverage of an existing SNA.

[35] Based on the more recent 2018 LCDB, M.E calculates that there was 116,400ha of indigenous land cover (based on the save vegetation categories). Assuming consistency of the LCDB data capture and assumptions, this would indicate a reduction in indigenous cover between 2012-2018.

Of the estimated 24,430 general land properties in Auckland that contain an area of existing SNA, 36% have greater than 50% SNA coverage, and 13% or 3,239 have greater than 80% SNA coverage. Of those with greater than 80% coverage, most are less than 10ha in size (approximately 3,000 properties) and approximately 1,650 are less than 1ha in size. It is much more common for general properties than are <1ha in size that contain an area of existing SNA to have no more than 20% coverage than extensive coverage. When considered in the context of all general land properties in Auckland though, the very high SNA coverage affects only a very small portion of the total (that is, only 0.8% have >80% coverage).

Table 3.13 – Count of General Land Properties by Size and Existing SNA Coverage - Auckland

Property Size	<1% SNA Coverage	1%-20% SNA Coverage	20%-35% SNA Coverage	35%-50% SNA Coverage	50%-65% SNA Coverage	65%-80% SNA Coverage	80%-90% SNA Coverage	90%-100% SNA Coverage	Total General Land Properties	Share of Properties (%)
Total Existing SNA Coverage Distribution										
<1ha	1,963	3,271	2,568	2,488	2,165	1,765	807	839	15,866	65%
1ha-2ha	187	486	255	236	228	241	178	184	1,995	8%
2ha-5ha	247	669	315	319	285	348	298	452	2,933	12%
5ha-10ha	107	344	138	91	106	113	95	143	1,137	5%
10ha-20ha	91	276	91	52	45	35	43	74	707	3%
20ha-50ha	132	421	95	63	37	34	18	53	853	3%
50ha-100ha	72	253	69	27	13	15	8	23	480	2%
100ha-150ha	29	134	21	8	8	3	5	8	216	1%
150ha-250ha	22	74	19	7	11	3	1	4	141	1%
250ha-500ha	5	50	8	4	1	2	-	1	71	0%
500ha-1,000ha	1	14	1	1	-	1	-	3	21	0%
>1,000ha	-	5	1	-	1	-	-	2	9	0%
Total Properties	2,856	5,997	3,581	3,296	2,900	2,560	1,453	1,786	24,429	100%
Share of Properties	*12%*	*25%*	*15%*	*13%*	*12%*	*10%*	*6%*	*7%*	*100%*	

Source: Auckland Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

As with Waikato District, Auckland's SNAs were included in the Unitary Plan prior to the NPSIB. Therefore, any net additional costs (or benefits) attributable to the protection of SNAs in the NPSIB will only arise if the NPSIB applies more stringent provisions or if the area of SNA needs to increase to include more land.

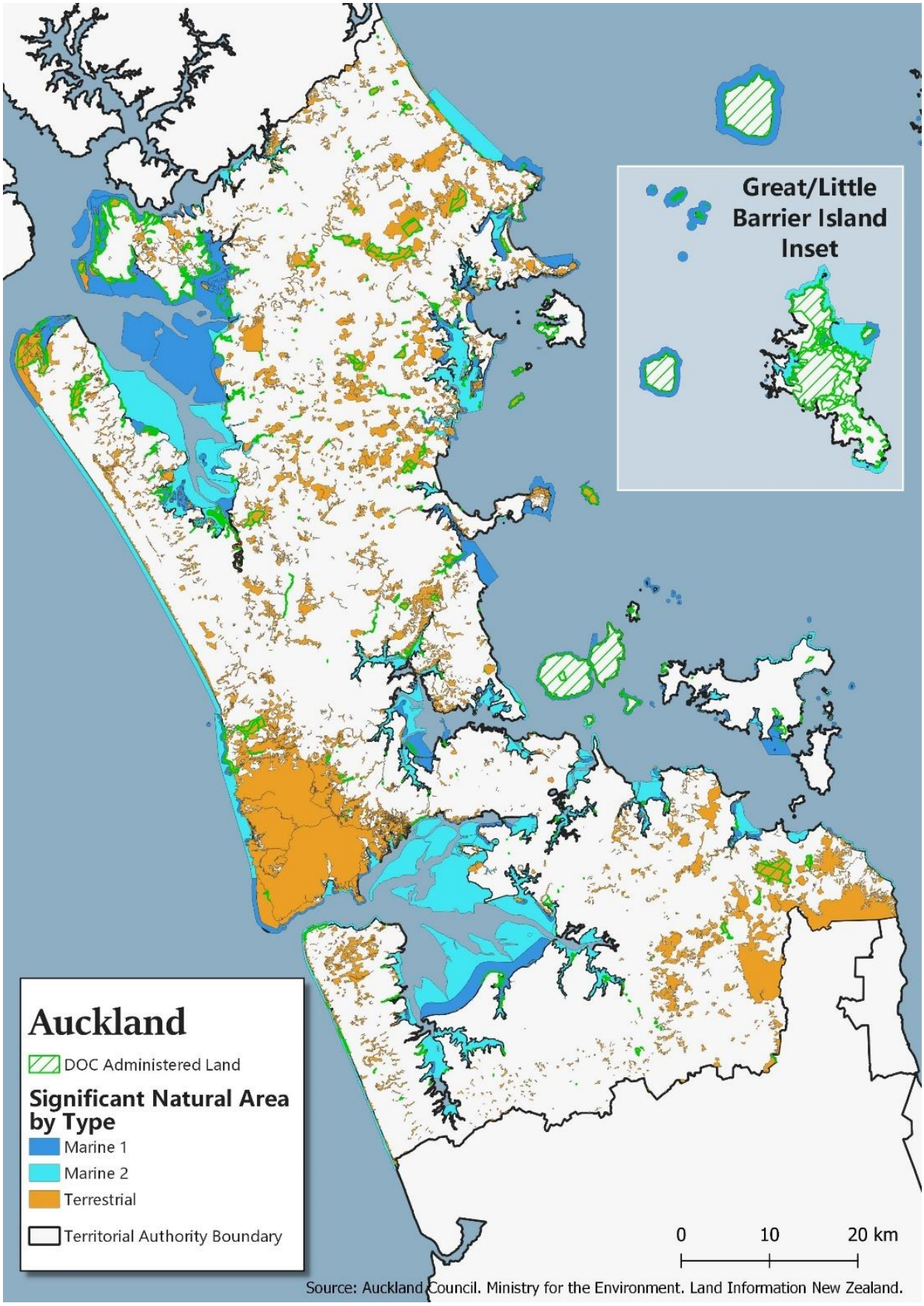
Understanding current land use is a key indicator of established activities on properties containing SNAs. Just over half of SNAs fall within the combined rural zones in the Auckland Unitary Plan. Dairy and farming properties therefore have a high incidence of SNAs as do lifestyle blocks. The Unitary Plan has a specific quarry zone. An estimated 19% of the total zone area is captured by existing SNAs. The quarry zone has been tightly defined to reflect the areas that are likely to be quarried in the future (and the zoning may therefore be considered to satisfy the functional and operational need for aggregate extraction to occur in those locations)[36].

If the aggregate of these zones is considered regionally (or nationally) significant in terms of public benefits and there are no practical alternatives to where quarry expansion within the zone or region occurs[37], then effects on the SNAs from future activities will need to be managed through the effects management hierarchy (with associated transaction and compliance costs) but need not be totally avoided. Of note, the Unitary Plan specifically recognises excavation in parts of the Brookby and Drury quarries cannot practicably avoid adverse effects on SNAs and already requires that effects be mitigated or offset.

[36] Clause 3.11(1)(b).

[37] Clause 3.11(1)(a)(iii) and (c).

Figure 3.7 – Significant Natural Areas by Type – Auckland



There is an estimated 52,824ha of exotic forestry cover in Auckland (according to the 2012 LCDB). Existing SNAs overlap with 3% of the total area of forestry cover or 1,784ha in total. This forestry land accounts for 2% of total SNA coverage in Auckland. All the large forestry blocks (most likely to be commercial plantations) have zero or less than 20% SNA coverage. It is not known how many of the SNAs in Auckland's plantation forests contain Threatened or At-Risk (declining) species present in the area for which long-term populations must be maintained.[38] Forestry is currently a permitted activity in SNAs in Auckland if the activity existed as at September 2013. As per the scenarios discussed later in Section 6, it is considered unlikely that this will change under the NPSIB meaning no net additional transaction, compliance or opportunity costs would be attributable to the NPSIB in Auckland for forestry owners.

With an estimated 39,839 properties containing some form of pasture cover in Auckland, the specific provision enabling periodic clearance of regenerating indigenous vegetation outside of SNAs in the NPSIB (maintenance of improved pasture) should eliminate any potential impacts of the NPSIB on established pastoral farming activities in Auckland (while they are at the same character and scale).

3.5.4 Far North District

The key parameters of the spatial analysis for Far North District are summarised in Table 3.9.

The Far North District has (in 2012) total indigenous land cover estimated at 263,620ha. This same extent is used as the proxy of indicative Far North SNAs and is shown in Figure 3.8.

Half (50%) of Māori Land Court land (by area) in the Far North District falls within indicative SNAs, particularly indicative SNAs that have a moderate to high certainty of being defined locally as SNAs. Just 3% falls within very high certainty indicative SNAs. Māori Land Court land accounts for 20% of the total indicative SNA coverage in the district, although 26% of the very high certainty indicative SNA coverage.

The Far North has more Māori Land Court properties than any other case study council examined (an estimated 3,688)[39]. Only 36% of these properties have no indicative SNA coverage (only Southland District has a lower share in the case study councils). Just under half of Māori land properties (48%) have some indicative Moderate to High Certainty SNA coverage, although 17% have indicative Moderate to High Certainty SNA coverage of greater than 80% of property area. This is an estimated 626 properties. Most of these tend to be large size land parcels (greater than 10ha) with many moderately large (2-10ha) (Table 3.14).

15% of Māori land properties have indicative Very High Certainty SNA coverage (Table 3.14). Specifically, 3% of the total (an estimated 103 properties) have very high (>80%) indicative Very High Certainty SNA coverage. Again, these are generally large properties (greater than 10ha), with a few small properties (less than 1ha). In contrast, only 18% of Treaty Settlement land is captured by the indicative SNAs (and this accounts for 3% of potential SNA area).

[38] Clause 3.14.

[39] Based on matching the central point of properties to the Māori Land Court tenure layer. This may vary from the count identified in the rating database.

Figure 3.8 - Indicative Significant Natural Areas (Proxy Analysis) – Far North

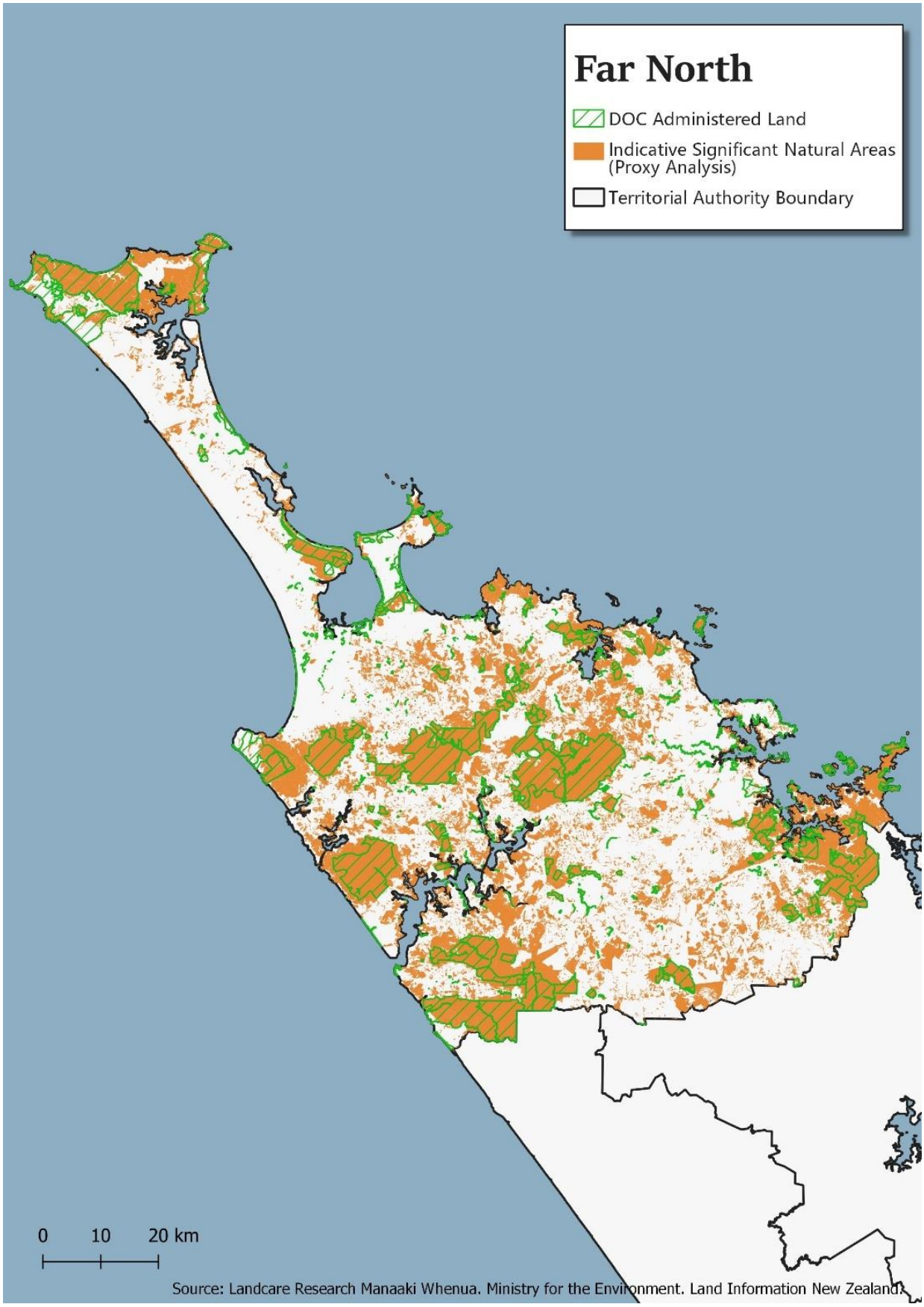


Table 3.14 – Count of Māori Land Court Properties by Size and Indicative SNA Coverage – Far North

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total Maori Land Court Properties	Share of Properties (%)
No SNA Coverage Distribution (36% of total Maori Land Court properties)										
<1ha	656	-	-	-	-	-	-	-	656	49%
1ha-2ha	130	-	-	-	-	-	-	-	130	10%
2ha-5ha	164	-	-	-	-	-	-	-	164	12%
5ha-10ha	91	-	-	-	-	-	-	-	91	7%
10ha-20ha	118	-	-	-	-	-	-	-	118	9%
20ha-50ha	133	-	-	-	-	-	-	-	133	10%
50ha-100ha	25	-	-	-	-	-	-	-	25	2%
100ha-150ha	11	-	-	-	-	-	-	-	11	1%
150ha-250ha	3	-	-	-	-	-	-	-	3	0%
250ha-500ha	5	-	-	-	-	-	-	-	5	0%
500ha-1,000ha	2	-	-	-	-	-	-	-	2	0%
>1,000ha	7	-	-	-	-	-	-	-	7	1%
Total Properties	1,345	-	-	-	-	-	-	-	1,345	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (48% of total Maori Land Court properties)										
<1ha	237	36	24	20	13	9	11	56	406	23%
1ha-2ha	69	18	7	11	8	6	3	27	149	8%
2ha-5ha	77	19	14	17	17	15	10	46	215	12%
5ha-10ha	39	24	17	19	15	19	28	57	218	12%
10ha-20ha	23	23	16	27	23	28	24	78	242	14%
20ha-50ha	13	36	17	21	35	47	46	129	344	19%
50ha-100ha	1	8	7	11	10	15	20	56	128	7%
100ha-150ha	1	3	3	2	1	7	4	20	41	2%
150ha-250ha	-	3	1	2	1	3	1	6	17	1%
250ha-500ha	-	2	-	-	1	1	-	2	6	0%
500ha-1,000ha	-	2	-	-	-	-	-	2	4	0%
>1,000ha	-	4	1	-	-	-	-	-	5	0%
Total Properties	460	178	107	130	124	150	147	479	1,775	100%
Share of Properties	*26%*	*10%*	*6%*	*7%*	*7%*	*8%*	*8%*	*27%*	*100%*	
Very High Certainty Indicative SNA Coverage Distribution (15% of total Maori Land Court properties)										
<1ha	92	19	10	5	10	2	3	13	154	27%
1ha-2ha	-	1	-	-	-	-	-	-	1	0%
2ha-5ha	1	2	2	-	-	-	-	2	7	1%
5ha-10ha	23	12	2	3	8	6	7	9	70	12%
10ha-20ha	-	-	-	-	-	1	-	4	5	1%
20ha-50ha	35	9	1	3	2	4	-	6	60	11%
50ha-100ha	20	22	6	2	5	7	8	15	85	15%
100ha-150ha	1	3	-	1	-	-	-	-	5	1%
150ha-250ha	37	9	7	11	3	3	5	8	83	15%
250ha-500ha	2	1	-	-	-	-	-	-	3	1%
500ha-1,000ha	11	5	2	2	3	4	4	7	38	7%
>1,000ha	12	18	4	4	1	6	6	6	57	10%
Total Properties	234	101	34	31	32	33	33	70	568	100%
Share of Properties	*41%*	*18%*	*6%*	*5%*	*6%*	*6%*	*6%*	*12%*	*100%*	
Total (Moderate to Very High Certainty) Indicative SNA Coverage Distribution (64% of total Maori Land Court properties)										
<1ha	329	55	34	25	23	11	14	69	560	24%
1ha-2ha	69	19	7	11	8	6	3	27	150	6%
2ha-5ha	78	21	16	17	17	15	10	48	222	9%
5ha-10ha	62	36	19	22	23	25	35	66	288	12%
10ha-20ha	23	23	16	27	23	29	24	82	247	11%
20ha-50ha	48	45	18	24	37	51	46	135	404	17%
50ha-100ha	21	30	13	13	15	22	28	71	213	9%
100ha-150ha	2	6	3	3	1	7	4	20	46	2%
150ha-250ha	37	12	8	13	4	6	6	14	100	4%
250ha-500ha	2	3	-	-	1	1	-	2	9	0%
500ha-1,000ha	11	7	2	2	3	4	4	9	42	2%
>1,000ha	12	22	5	4	1	6	6	6	62	3%
Total Properties	694	279	141	161	156	183	180	549	2,343	100%
Share of Properties	*30%*	*12%*	*6%*	*7%*	*7%*	*8%*	*8%*	*23%*	*100%*	

Source: Northland Regional Council, MfE, M.E. Properties tagged to Maori Land based on the centroid of the property parcel relative to the tenure land areas.

** Potential SNAs only, pending ground-truthing.*

The greatest share of indicative SNA land is in general ownership (although only marginally greater than DOC land). This makes up 39% of total indicative SNA area in the district and a slightly higher share of indicative Very High Certainty SNA coverage (47%). However, relative to all general tenure land area, indicative SNAs cover 26% of the total land area. This highlights that general landowners will be most impacted (in quantum terms) by the protection of SNAs (all else being equal), but that only a moderate share of general landowners will be potentially affected. An estimated 69% of general land properties in the district have no SNA coverage (based on the proxy SNA coverage) (Table 3.15).

A further 25% of general land properties have some indicative Moderate to High Certainty SNA coverage and 7% have indicative Moderate to High Certainty SNA coverage of greater than 80%. The remaining 6% of general owned properties have a share of indicative Very High Certainty SNA coverage (and 1% have indicative Very High Certainty SNA coverage of greater than 80%). Many of the general owned properties most at risk of being impacted by the provisions in the NPSIB to avoid and manage adverse effects on SNAs through indicative SNA coverage on their properties are small (<1ha). These are expected to be dominated by bush blocks subdivided in coastal areas such as those close to Kerikeri.

To the extent that these indicative Very High Certainty SNA properties have not already been developed with dwellings, then there is a consenting pathway to allow for the development of dwelling and associated dwelling infrastructure so long as significant adverse effects can be avoided. This provision avoids potential for significant opportunity costs for those landowners, although minor opportunity costs may still apply, as may minor net additional transaction and compliance costs to manage effects on the SNA via the effects management hierarchy. This is discussed in more detail in Section 6.

In Far North District, the NPSIB provisions to provide for periodic indigenous vegetation clearance to maintain improved pasture outside of SNAs is likely to be highly relevant for farmers. This spatial analysis is not able to assess the degree of likely clearance of regenerating indigenous cover outside of indicative SNAs on the estimated 2,502 properties estimated to maintain improved pasture. However, the analysis has identified that an estimated 18% of all pastoral properties have 50% or greater indicative SNA coverage. 27% of pastoral properties in the district have no or less than 1% indicative SNA coverage and 61% of pastoral properties in the district have less than 20% indicative SNA coverage.

There are several large areas of exotic forestry in the Far North. These are generally dispersed but with the largest areas primarily concentrated north of Awanui and often on Treaty Settlement land. In total, there is an estimated 105,080ha of exotic forestry land cover in Far North District. 69% of exotic forestry areas in the district (cohesive polygons) are less than 5ha in size so are not the big 'commercial' forestry blocks. However, 82 discrete areas are greater than 250ha and 14 areas are greater than 1,000ha. This indicates a large number of forests in the district are 'woodlot' forests, potentially associated with a wider farming operation. It is not possible to identify which forestry areas contain an overlap with indicative SNAs because of the limitations of using the proxy SNA approach (i.e. land covers in the LDCB are mutually exclusive).

Table 3.15 – Count of General Land Properties by Size and Indicative SNA Coverage – Far North

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total General Land Properties	Share of Properties (%)
No SNA Coverage Distribution (69% of total general land properties)										
<1ha	17,822	-	-	-	-	-	-	-	17,822	80%
1ha-2ha	1,435	-	-	-	-	-	-	-	1,435	6%
2ha-5ha	1,656	-	-	-	-	-	-	-	1,656	7%
5ha-10ha	584	-	-	-	-	-	-	-	584	3%
10ha-20ha	310	-	-	-	-	-	-	-	310	1%
20ha-50ha	235	-	-	-	-	-	-	-	235	1%
50ha-100ha	71	-	-	-	-	-	-	-	71	0%
100ha-150ha	22	-	-	-	-	-	-	-	22	0%
150ha-250ha	9	-	-	-	-	-	-	-	9	0%
250ha-500ha	3	-	-	-	-	-	-	-	3	0%
500ha-1,000ha	1	-	-	-	-	-	-	-	1	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	22,148	-	-	-	-	-	-	-	22,148	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (25% of total general land properties)										
<1ha	159	634	343	332	254	254	165	757	2,898	36%
1ha-2ha	36	174	69	53	47	53	43	188	663	8%
2ha-5ha	99	299	156	118	92	86	77	257	1,184	15%
5ha-10ha	39	189	92	58	54	60	45	146	683	9%
10ha-20ha	51	189	61	59	76	63	47	138	684	9%
20ha-50ha	61	263	92	75	83	91	71	167	903	11%
50ha-100ha	27	161	64	66	35	36	21	67	477	6%
100ha-150ha	18	83	29	21	12	16	11	17	207	3%
150ha-250ha	9	66	24	21	11	10	9	14	164	2%
250ha-500ha	6	47	19	11	14	7	3	3	110	1%
500ha-1,000ha	2	10	9	3	1	3	1	2	31	0%
>1,000ha	1	6	1	-	1	-	-	-	9	0%
Total Properties	508	2,121	959	817	680	679	493	1,756	8,013	100%
Share of Properties	*6%*	*26%*	*12%*	*10%*	*8%*	*8%*	*6%*	*22%*	*100%*	
Very High Certainty Indicative SNA Coverage Distribution (6% of total general land properties)										
<1ha	29	142	64	60	53	48	15	94	505	25%
1ha-2ha	15	63	17	26	8	14	3	20	166	8%
2ha-5ha	24	118	49	33	19	19	11	21	294	14%
5ha-10ha	17	111	28	18	11	9	7	10	211	10%
10ha-20ha	21	67	20	18	15	4	1	13	159	8%
20ha-50ha	25	101	29	13	14	11	11	9	213	10%
50ha-100ha	17	83	21	14	8	10	1	6	160	8%
100ha-150ha	7	45	18	8	3	3	1	4	89	4%
150ha-250ha	7	69	14	5	3	2	-	4	104	5%
250ha-500ha	4	57	18	8	3	2	1	1	94	5%
500ha-1,000ha	1	15	3	2	1	1	-	2	25	1%
>1,000ha	1	14	2	-	-	-	-	-	17	1%
Total Properties	168	885	283	205	138	123	51	184	2,037	100%
Share of Properties	*8%*	*43%*	*14%*	*10%*	*7%*	*6%*	*3%*	*9%*	*100%*	
Total (Moderate to Very High Certainty) Indicative SNA Coverage Distribution (31% of total general land properties)										
<1ha	188	776	407	392	307	302	180	851	3,403	34%
1ha-2ha	51	237	86	79	55	67	46	208	829	8%
2ha-5ha	123	417	205	151	111	105	88	278	1,478	15%
5ha-10ha	56	300	120	76	65	69	52	156	894	9%
10ha-20ha	72	256	81	77	91	67	48	151	843	8%
20ha-50ha	86	364	121	88	97	102	82	176	1,116	11%
50ha-100ha	44	244	85	80	43	46	22	73	637	6%
100ha-150ha	25	128	47	29	15	19	12	21	296	3%
150ha-250ha	16	135	38	26	14	12	9	18	268	3%
250ha-500ha	10	104	37	19	17	9	4	4	204	2%
500ha-1,000ha	3	25	12	5	2	4	1	4	56	1%
>1,000ha	2	20	3	-	1	-	-	-	26	0%
Total Properties	676	3,006	1,242	1,022	818	802	544	1,940	10,050	100%
Share of Properties	*7%*	*30%*	*12%*	*10%*	*8%*	*8%*	*5%*	*19%*	*100%*	

Source: Northland Regional Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

** Potential SNAs only, pending ground-truthing.*

3.5.5 Tasman District

The key parameters of the spatial analysis for Tasman District are summarised in Table 3.9.

Tasman District contains extensive areas of National Parks and has the highest share of indigenous land cover out of the six case study councils (69%), although this is only slightly higher than Westland (66%). Tasman District Council was approximately halfway through mapping SNAs at the time of carrying out this case study, so for the purposes of this spatial analysis, indigenous land cover has been used as a proxy of indicative SNAs (Figure 3.9). Comparison of this proxy with SNA mapping confirmed to date indicates that outside of DOC land, there is some reasonable overlap, but the proxy over-represents potential SNAs on general (mainly rural) land. This means that the Council's own SNAs would likely impact on fewer property owners than indicated in this spatial analysis (and discussed below).

Tasman District has the second highest share of indicative SNAs comprised of DOC land (89%) which is the same as Southland but lower than Westland (94%). The extensive nature of DOC managed National Parks is evident in Figure 3.4 which shows indicative SNAs in Tasman. Indigenous land cover has been extensively cleared on general owned land, leaving just fragments that equate to less than 10% of the original coverage (i.e. they are highly threatened). This is relevant for the 'rarity and distinctiveness' characteristic in Appendix 1 of the NPSIB. This means that the significant majority of indicative SNAs on general owned land are indicative Very High Certainty SNAs (73% of SNA area) compared to indicative Moderate to High Certainty SNAs (11%).

However, as a portion of the total general land properties in the district, 79% have no indicative SNA coverage (Table 3.16). This means that the vast majority of landowners are not likely to face any opportunity, transaction or compliance costs specifically related to protecting SNAs under the NPSIB. However, they may still be impacted by the provisions in the NPSIB to manage indigenous biodiversity outside of SNAs, and particularly if they are located in the Rural 2 Zone, as this is where the major share of indicative SNAs/indigenous land cover on general land is located.

An estimated 15% of general tenure properties include an area of indicative Moderate to High Certainty SNA (Table 3.16). A 4% share of total general properties (1,791) have 80% or greater property coverage of indicative Moderate to High Certainty SNAs. Many of these are large sized properties (greater than 10ha) or moderately large (2-10ha), so for the purpose of locating a dwelling, for example, there would still be a potentially large area of land free of indicative SNAs that may be appropriate for development. However, an estimated 767 properties are less than 1ha in size and have 90% or greater indicative SNA coverage. If such properties already contain a dwelling, they will generally appear as bush blocks with a house site and driveway added. There are good examples of these around Kaiteriteri.

Figure 3.9 - Indicative Significant Natural Areas (Proxy Analysis) – Tasman District

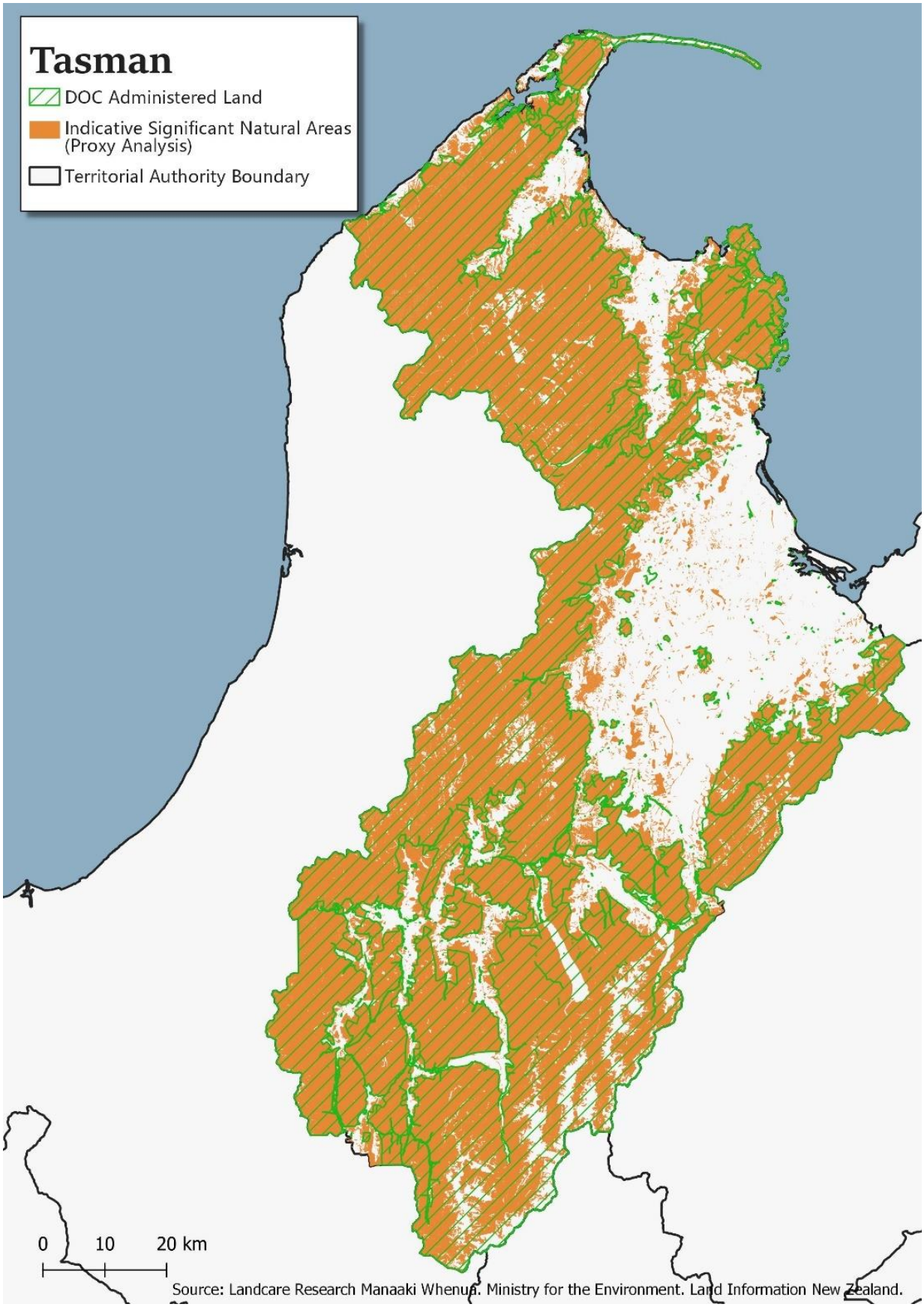


Table 3.16 – Count of General Land Properties by Size and Indicative SNA Coverage – Tasman

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total General Land Properties	Share of Properties (%)
No SNA Coverage Distribution (79% of total general land properties)										
<1ha	24,342	-	-	-	-	-	-	-	24,342	76%
1ha-2ha	1,980	-	-	-	-	-	-	-	1,980	6%
2ha-5ha	2,409	-	-	-	-	-	-	-	2,409	8%
5ha-10ha	1,309	-	-	-	-	-	-	-	1,309	4%
10ha-20ha	1,125	-	-	-	-	-	-	-	1,125	4%
20ha-50ha	733	-	-	-	-	-	-	-	733	2%
50ha-100ha	167	-	-	-	-	-	-	-	167	1%
100ha-150ha	29	-	-	-	-	-	-	-	29	0%
150ha-250ha	6	-	-	-	-	-	-	-	6	0%
250ha-500ha	3	-	-	-	-	-	-	-	3	0%
500ha-1,000ha	-	-	-	-	-	-	-	-	-	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	32,103	-	-	-	-	-	-	-	32,103	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (15% of total general land properties)										
<1ha	62	321	134	137	117	109	86	767	1,733	29%
1ha-2ha	29	126	53	34	43	29	28	146	488	8%
2ha-5ha	44	232	93	80	59	68	47	130	753	13%
5ha-10ha	45	198	83	58	57	47	35	79	602	10%
10ha-20ha	59	205	82	61	55	48	33	70	613	10%
20ha-50ha	75	309	134	90	80	61	37	147	933	16%
50ha-100ha	30	144	53	50	36	39	32	67	451	8%
100ha-150ha	9	38	24	19	18	21	17	15	161	3%
150ha-250ha	3	26	11	14	19	25	11	26	135	2%
250ha-500ha	1	8	7	10	11	14	9	6	66	1%
500ha-1,000ha	-	1	-	1	2	-	-	1	5	0%
>1,000ha	-	-	-	-	-	-	-	2	2	0%
Total Properties	357	1,608	674	554	497	461	335	1,456	5,942	100%
Share of Properties	*6%*	*27%*	*11%*	*9%*	*8%*	*8%*	*6%*	*25%*	*100%*	
Very High Certainty Indicative SNA Coverage Distribution (6% of total general land properties)										
<1ha	32	174	68	43	57	41	21	155	591	23%
1ha-2ha	23	103	35	19	10	13	7	13	223	9%
2ha-5ha	56	169	57	28	23	22	12	27	394	15%
5ha-10ha	44	145	47	16	14	9	7	8	290	11%
10ha-20ha	76	182	29	14	9	5	2	8	325	12%
20ha-50ha	84	293	50	23	20	7	4	16	497	19%
50ha-100ha	36	124	16	12	7	5	-	4	204	8%
100ha-150ha	7	27	5	7	1	2	1	1	51	2%
150ha-250ha	1	14	4	4	3	2	1	1	30	1%
250ha-500ha	1	7	4	-	3	-	-	-	15	1%
500ha-1,000ha	-	-	-	-	-	1	-	-	1	0%
>1,000ha	-	1	-	-	-	-	-	-	1	0%
Total Properties	360	1,239	315	166	147	107	55	233	2,622	100%
Share of Properties	*14%*	*47%*	*12%*	*6%*	*6%*	*4%*	*2%*	*9%*	*100%*	
Total (Moderate to Very High Certainty) Indicative SNA Coverage Distribution (21% of total general land properties)										
<1ha	94	495	202	180	174	150	107	922	2,324	27%
1ha-2ha	52	229	88	53	53	42	35	159	711	8%
2ha-5ha	100	401	150	108	82	90	59	157	1,147	13%
5ha-10ha	89	343	130	74	71	56	42	87	892	10%
10ha-20ha	135	387	111	75	64	53	35	78	938	11%
20ha-50ha	159	602	184	113	100	68	41	163	1,430	17%
50ha-100ha	66	268	69	62	43	44	32	71	655	8%
100ha-150ha	16	65	29	26	19	23	18	16	212	2%
150ha-250ha	4	40	15	18	22	27	12	27	165	2%
250ha-500ha	2	15	11	10	14	14	9	6	81	1%
500ha-1,000ha	-	1	-	1	2	1	-	1	6	0%
>1,000ha	-	1	-	-	-	-	-	2	3	0%
Total Properties	717	2,847	989	720	644	568	390	1,689	8,564	100%
Share of Properties	*8%*	*33%*	*12%*	*8%*	*8%*	*7%*	*5%*	*20%*	*100%*	

Source: Tasman District Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

**Pending ground-truthing*

The remaining 6% of general owned properties include an area of indicative Very High Certainty SNA. This is the same share as in Far North District. An estimated 1% (288) of general owned properties with indicative Very High Certainty SNAs have 80% or greater property coverage. The majority of properties with 90% of greater indicative SNA coverage are less than 1ha in size. As discussed above, it is not known how many of these lots have yet to be developed but if there is no room for a house site (for example) without vegetation or other land clearance, then the NPSIB provides an exemption to allow development of a dwelling and avoid significant opportunity costs for these landowners so long as clause 10(2) can also be satisfied.

In total, there is an estimated 103,912ha of exotic forestry land cover in Tasman District. Just over 90 discrete areas are greater than 250ha and 24 areas are greater than 1,000ha. Some of these are on Treaty Settlement land. It is not possible to identify which forestry areas contain an overlap with indicative SNAs. However, the provisions in the NPSIB are intended to be enabling for plantation forestry that contains SNAs. Net additional costs would only apply if the SNAs contained Threatened or At-Risk (declining) species in the area and the Council adopted more stringent rules than those which manage effects in the NESPF[40] (discussed further in Section 6).

Pastoral farming is a minor component of Tasman's land use and contributes less to the economy than horticulture. The extent of high producing grassland land cover in the LCDB is not extensive and limited to the valley floors. Nonetheless, the intent of the NPSIB is to enable the continued maintenance of improved pasture and may be applicable for some pastoral farmers in Tasman District. Similarly, Tasman District has very few Māori land properties. Only an estimated two properties contain indicative Very High Certainty SNAs and only seven contain indicative Moderate to High Certainty SNAs. Under the NPSIB, the Council is still be expected to work with tangata whenua to develop District Plan provisions to manage effects on indigenous biodiversity on these and any Treaty Settlement properties in the district.

3.5.6 Westland District

The key parameters of the spatial analysis for Westland District are summarised in Table 3.9.

Westland District Council has total indigenous land cover estimated at 762,868ha. This extent is adopted as the proxy for indicative SNAs in Westland (Figure 3.10). This indigenous cover is also largely DOC administered land and subject to existing protections under other legislation.

The approach applied for this spatial analysis to categorise indicative SNA cover into indicative Very High Certainty SNAs and indicative Moderate to High Certainty SNAs, results in no indicative Very High Certainty SNAs in Westland District. This is because there is no indigenous land cover for which there is less than 20% of coverage remaining. The significant majority of indigenous cover in the district has greater than 30% coverage remaining (the level of remaining indigenous cover (compared to the original extent) is estimated at 67%) meaning it would not become an SNA under the rarity and distinctiveness criteria of the NPSIB. There is still potential for these areas of indigenous land cover to become SNAs under other criteria included in Appendix 1 of the NPSIB though.

As outlined above, there is a significant amount of DOC administered land in Westland (1,036,484ha). The spatial analysis indicates that DOC land makes up 94% of total indicative potential SNA hectares in the

[40] National Environmental Standards for Plantation Forestry.

district. 47% of Māori Land Court land in Westland is captured by indicative SNAs, although this land accounts for less than 1% of the indicative SNA coverage in the district. Treaty Settlement land has slightly less coverage in indicative SNAs (43% captured) but this only accounts for 1% of indicative SNA area in the district.

An estimated 5% of the indicative SNA hectares in the district is located on general ownership properties, further highlighting the significant amount of DOC administered land in the district. Indicative SNAs cover 30% of the total area of general tenure land. This highlights that landowners of general land will be less impacted as a group by the protection of SNAs (all else being equal) compared to Māori land or Treaty Settlement landowners. However, in quantum terms general landowners would be most impacted with 2,869 general properties containing indicative SNAs (4,858 or 63% of general land properties have no indicative SNA coverage) (Table 3.17).

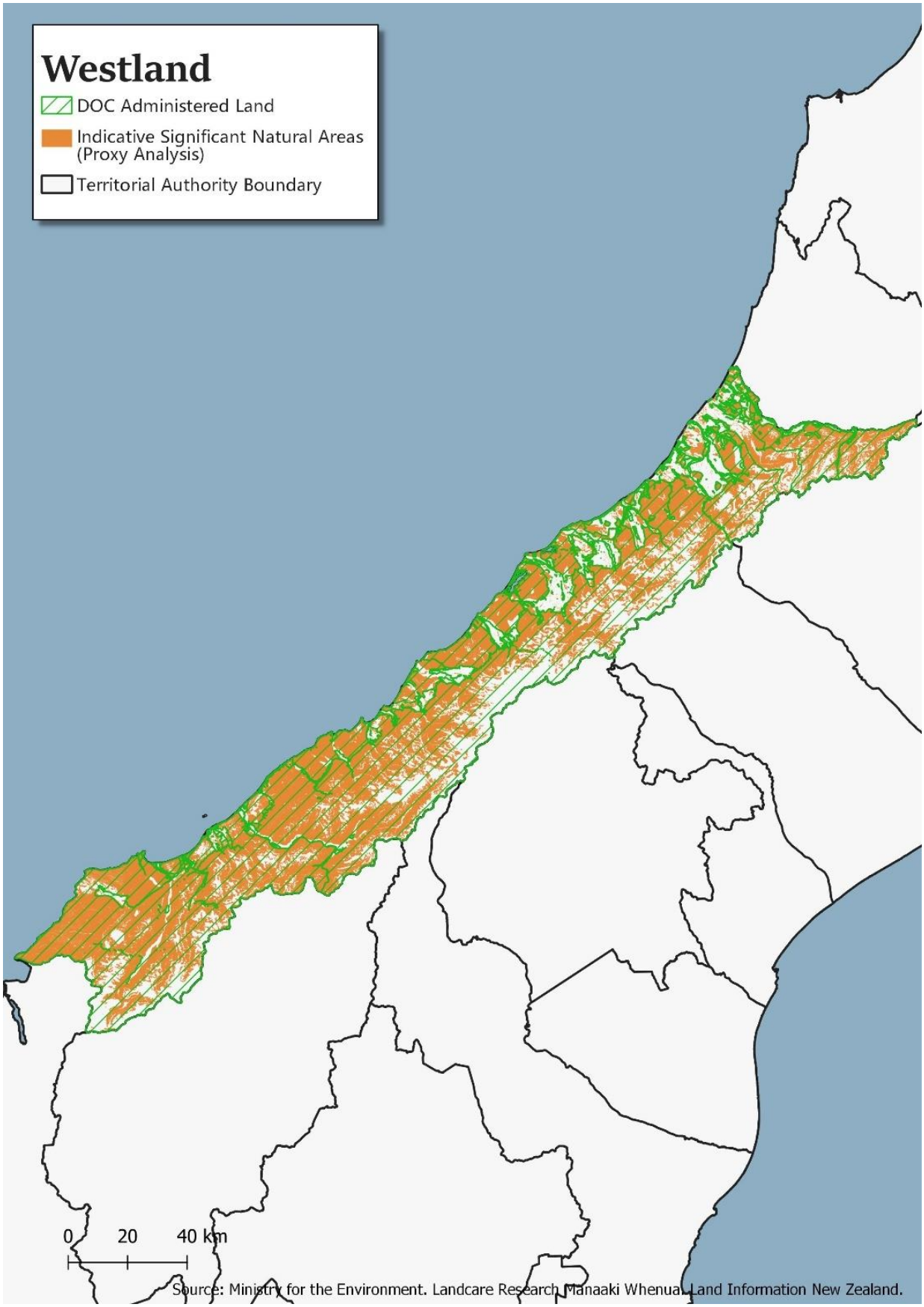
Table 3.17 – Count of General Land Properties by Size and Indicative SNA Coverage – Westland

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total General Land Properties	Share of Properties (%)
No SNA Coverage Distribution (63% of total general land properties)										
<1ha	3,986	-	-	-	-	-	-	-	3,986	82%
1ha-2ha	193	-	-	-	-	-	-	-	193	4%
2ha-5ha	228	-	-	-	-	-	-	-	228	5%
5ha-10ha	115	-	-	-	-	-	-	-	115	2%
10ha-20ha	130	-	-	-	-	-	-	-	130	3%
20ha-50ha	141	-	-	-	-	-	-	-	141	3%
50ha-100ha	59	-	-	-	-	-	-	-	59	1%
100ha-150ha	4	-	-	-	-	-	-	-	4	0%
150ha-250ha	1	-	-	-	-	-	-	-	1	0%
250ha-500ha	1	-	-	-	-	-	-	-	1	0%
500ha-1,000ha	-	-	-	-	-	-	-	-	-	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	4,858	-	-	-	-	-	-	-	4,858	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (37% of total general land properties)										
<1ha	44	205	93	104	94	80	61	423	1,104	38%
1ha-2ha	14	60	24	24	14	12	9	51	208	7%
2ha-5ha	14	84	41	37	33	26	17	62	314	11%
5ha-10ha	15	73	26	29	12	16	3	39	213	7%
10ha-20ha	22	84	29	24	9	10	12	29	219	8%
20ha-50ha	32	180	48	29	22	13	12	18	354	12%
50ha-100ha	31	121	30	26	16	16	8	18	266	9%
100ha-150ha	7	47	11	3	7	6	2	11	94	3%
150ha-250ha	5	26	7	9	9	6	2	2	66	2%
250ha-500ha	1	9	5	1	1	1	1	2	21	1%
500ha-1,000ha	-	3	1	-	2	-	-	-	6	0%
>1,000ha	-	2	-	-	1	-	-	1	4	0%
Total Properties	185	894	315	286	220	186	127	656	2,869	100%
Share of Properties	*6%*	*31%*	*11%*	*10%*	*8%*	*6%*	*4%*	*23%*	*100%*	

Source: Westland District Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

**Pending ground-truthing*

Figure 3.10 - Indicative Significant Natural Areas (Proxy Analysis) – Westland



At 37%, Westland has the highest percentage of general owned properties that have indicative SNA coverage among the six case study councils. However, the spatial analysis indicates there are no general owned properties with Very High Certainty SNA coverage, so this number may come down in practice. An estimated 10% of total general properties have indicative Moderate to High SNA coverage that is greater than 80% of property area. Many of these are large sized properties (greater than 10ha) or moderately large (2-10ha), so they may be able to accommodate future subdivision, use and development without affecting the indicative SNAs. Just over 480 general land properties have both greater than 80% indicative SNA coverage and are less than 1ha in size. The exemption to provide for a residential dwelling to be developed on those properties with effects on the SNA managed through the effects management hierarchy will significantly minimise opportunity costs for any of those landowners that have not yet developed their sites.

There are an estimated 105 Māori Land Court properties in Westland District (the second smallest amount after Tasman among the six case studies). However, 62% of these properties have some indicative Moderate to High Certainty SNA coverage, which is the third highest among the six case study councils below Southland (79%) and Far North (64%) (Table 3.18).

Table 3.18 – Count of Māori Land Court Properties by Size and Indicative SNA Coverage – Westland

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total Maori Land Court Properties	Share of Properties (%)
No SNA Coverage Distribution (38% of total Maori Land Court properties)										
<1ha	16	-	-	-	-	-	-	-	16	40%
1ha-2ha	1	-	-	-	-	-	-	-	1	3%
2ha-5ha	6	-	-	-	-	-	-	-	6	15%
5ha-10ha	7	-	-	-	-	-	-	-	7	18%
10ha-20ha	6	-	-	-	-	-	-	-	6	15%
20ha-50ha	4	-	-	-	-	-	-	-	4	10%
50ha-100ha	-	-	-	-	-	-	-	-	-	0%
100ha-150ha	-	-	-	-	-	-	-	-	-	0%
150ha-250ha	-	-	-	-	-	-	-	-	-	0%
250ha-500ha	-	-	-	-	-	-	-	-	-	0%
500ha-1,000ha	-	-	-	-	-	-	-	-	-	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	40	-	-	-	-	-	-	-	40	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (62% of total Maori Land Court properties)										
<1ha	1	1	2	1	-	-	2	2	9	14%
1ha-2ha	-	1	-	-	-	-	-	2	3	5%
2ha-5ha	1	2	-	-	-	-	1	2	6	9%
5ha-10ha	-	4	-	1	1	-	2	2	10	15%
10ha-20ha	-	3	-	1	3	-	1	2	10	15%
20ha-50ha	1	1	1	-	1	1	-	5	10	15%
50ha-100ha	-	-	1	-	1	1	1	-	4	6%
100ha-150ha	-	-	-	-	1	2	2	-	5	8%
150ha-250ha	-	1	-	-	2	-	2	-	5	8%
250ha-500ha	-	1	-	1	-	-	-	-	2	3%
500ha-1,000ha	-	1	-	-	-	-	-	-	1	2%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	3	15	4	4	9	4	11	15	65	100%
Share of Properties	*5%*	*23%*	*6%*	*6%*	*14%*	*6%*	*17%*	*23%*	*100%*	

Source: Westland District Council, MfE, M.E. Properties tagged to Maori Land based on the centroid of the property parcel relative to the tenure land areas.

**Pending ground-truthing*

A moderately high portion of Māori Land Court properties have greater than 80% indicative SNA coverage, although this equates to only 26 properties due to the limited amount of Māori Land Court land in the district. These are a mix of mostly moderately large (2-10ha) and large (greater than 10ha) properties, with a few small properties (less than 1ha in size). The larger properties may still be able to accommodate future occupation and development without affecting the indicative SNAs, but in any case, any adverse effects will need to be managed within what is anticipated to be a generally enabling planning framework under the NPSIB.

Mining is a key sector of the Westland economy. 42% of open cast mines identified by LINZ are located in indicative SNAs, so there may be opportunity costs associated with avoiding certain adverse effects on those SNAs under the NPSIB. However, these opportunity costs are likely to be substantially reduced (or avoided altogether) if those mining activities provide significant national public benefit. These mines make up just 0.01% of indicative SNA extent in the district. Council noted that all mining consents that impact on indigenous biodiversity are now dealt with by the West Coast Regional Council as Westland District Council has transferred these functions.

3.5.7 Southland District

The key parameters of the spatial analysis for Southland District are summarised in Table 3.9.

At a broad level, Southland District is made up almost entirely of DOC administered land or farmland. The intent of the NPSIB to enable maintenance of improved pasture, including through clearance, where the maintenance of improved pasture may affect an SNA may be of key relevance to farmers in Southland (and more relevant than in the other case studies examined). Indicative SNAs and DOC administered land are shown in Figure 3.11.

Where pastoral farming has occurred, the LCDB indicates there is very little original indigenous cover remaining. However, there may be some mixed indigenous/exotic grasslands that still have high biodiversity value but cannot be seen in the LCDB. An estimated 1% of indicative SNA area relates to indigenous cover where there is just 2% of original coverage left. This falls largely on general owned land, which accounts for 59% of indicative Very High Certainty SNA hectares in the district based on the spatial analysis. By comparison, general owned land has just 5% of the indicative Moderate to High Certainty SNA hectares in the district, with most indicative Moderate to High Certainty SNA hectares located on DOC administered land (87%). Overall, 10% of all general owned land in Southland (by area) is captured by indicative SNAs. In contrast, a significant 83% of the total area of Māori Land Court land in the district is captured by indicative SNAs (this includes land under the South Island Landless Natives Act (SILNA)).

Southland District has an estimated 485 Māori Land Court properties (including SILNA properties). An analysis of indicative SNA coverage and property size shows that 21% have no indicative SNA coverage (Table 3.19). This is the lowest (and therefore worst) proportion of the six case study councils. An estimated 73% of Māori land properties contain an area of indicative Moderate to High Certainty SNA and 55% of the total (269) have 80% or more indicative Moderate to High Certainty SNA coverage (most in fact have between 90% and 100% coverage).

Figure 3.11 - Indicative Significant Natural Areas (Proxy Analysis) – Southland District

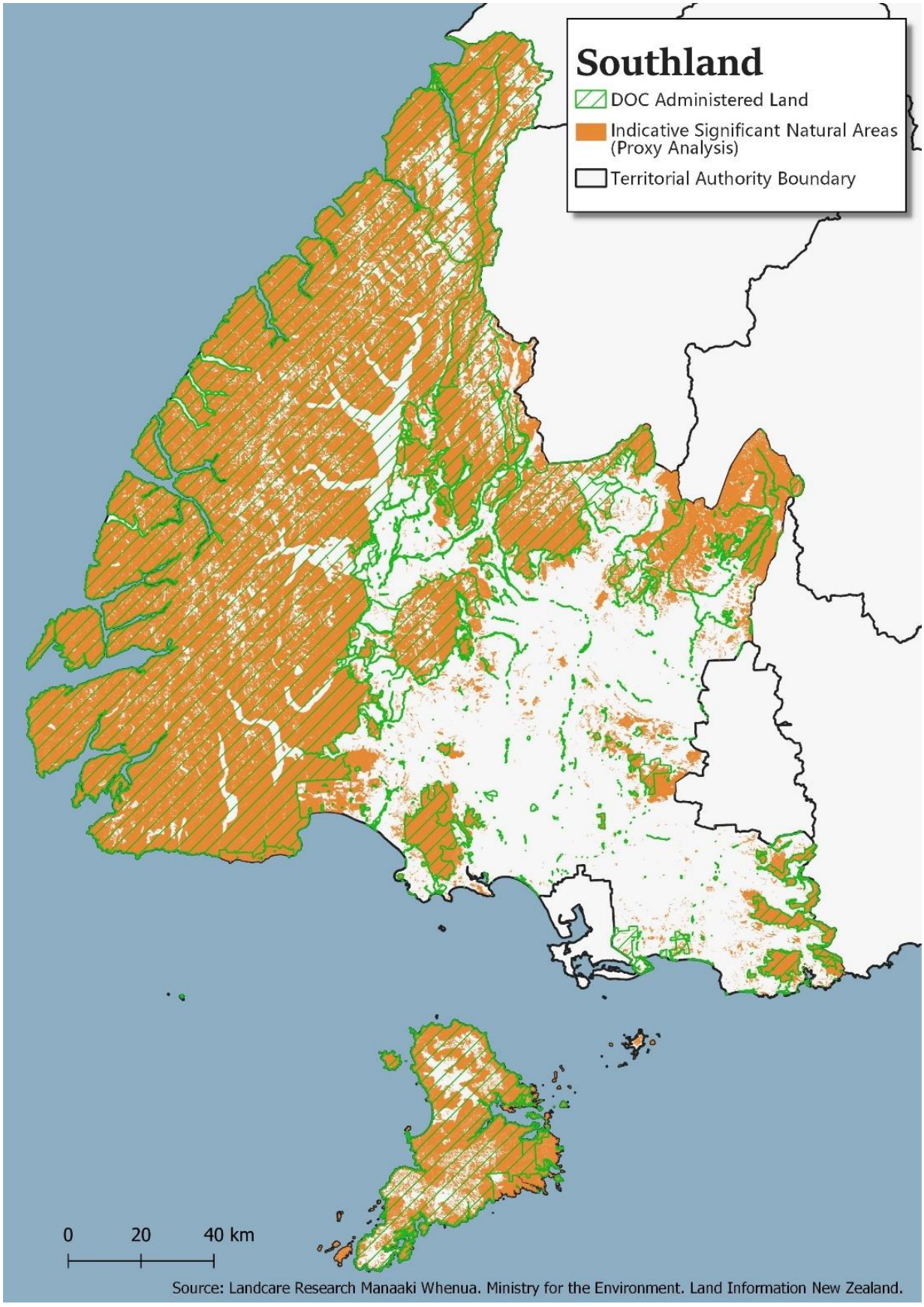


Table 3.19 – Count of Māori Land Court Properties by Size and Indicative SNA Coverage – Southland

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total Maori Land Court Properties	Share of Properties (%)
No SNA Coverage Distribution (21% of total Maori Land Court properties)										
<1ha	69	-	-	-	-	-	-	-	69	68%
1ha-2ha	5	-	-	-	-	-	-	-	5	5%
2ha-5ha	15	-	-	-	-	-	-	-	15	15%
5ha-10ha	4	-	-	-	-	-	-	-	4	4%
10ha-20ha	4	-	-	-	-	-	-	-	4	4%
20ha-50ha	2	-	-	-	-	-	-	-	2	2%
50ha-100ha	1	-	-	-	-	-	-	-	1	1%
100ha-150ha	-	-	-	-	-	-	-	-	-	0%
150ha-250ha	1	-	-	-	-	-	-	-	1	1%
250ha-500ha	-	-	-	-	-	-	-	-	-	0%
500ha-1,000ha	1	-	-	-	-	-	-	-	1	1%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	102	-	-	-	-	-	-	-	102	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (73% of total Maori Land Court properties)										
<1ha	-	-	-	1	1	-	-	6	8	2%
1ha-2ha	-	-	-	-	-	-	1	3	4	1%
2ha-5ha	-	2	3	-	1	5	11	29	51	14%
5ha-10ha	-	-	-	2	2	-	2	11	17	5%
10ha-20ha	-	4	2	3	4	3	2	13	31	9%
20ha-50ha	-	4	-	-	1	3	-	26	34	10%
50ha-100ha	-	1	2	3	1	1	-	37	45	13%
100ha-150ha	-	5	7	2	6	10	7	100	137	39%
150ha-250ha	1	2	-	-	1	1	-	18	23	6%
250ha-500ha	-	-	-	-	-	-	-	1	1	0%
500ha-1,000ha	-	-	-	-	-	-	-	1	1	0%
>1,000ha	-	-	-	-	-	1	-	1	2	1%
Total Properties	1	18	14	11	17	24	23	246	354	100%
Share of Properties	*0%*	*5%*	*4%*	*3%*	*5%*	*7%*	*6%*	*69%*	*100%*	
Very High Certainty Indicative SNA Coverage Distribution (6% of total Maori Land Court properties)										
<1ha	-	1	-	-	-	-	2	-	3	10%
1ha-2ha	-	-	-	-	1	-	-	-	1	3%
2ha-5ha	-	-	-	-	-	-	-	-	-	0%
5ha-10ha	-	-	-	-	-	-	-	-	-	0%
10ha-20ha	-	-	-	-	-	-	-	-	-	0%
20ha-50ha	-	-	-	-	1	-	-	1	2	7%
50ha-100ha	-	1	-	-	-	-	1	4	6	21%
100ha-150ha	-	3	1	-	1	1	1	7	14	48%
150ha-250ha	-	-	-	1	-	-	-	2	3	10%
250ha-500ha	-	-	-	-	-	-	-	-	-	0%
500ha-1,000ha	-	-	-	-	-	-	-	-	-	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	-	5	1	1	3	1	4	14	29	100%
Share of Properties	*0%*	*17%*	*3%*	*3%*	*10%*	*3%*	*14%*	*48%*	*100%*	
Total (Moderate to Very High Certainty) Indicative SNA Coverage Distribution (79% of total Maori Land Court properties)										
<1ha	-	1	-	1	1	-	2	6	11	3%
1ha-2ha	-	-	-	-	1	-	1	3	5	1%
2ha-5ha	-	2	3	-	1	5	11	29	51	13%
5ha-10ha	-	-	-	2	2	-	2	11	17	4%
10ha-20ha	-	4	2	3	4	3	2	13	31	8%
20ha-50ha	-	4	-	-	2	3	-	27	36	9%
50ha-100ha	-	2	2	3	1	1	1	41	51	13%
100ha-150ha	-	8	8	2	7	11	8	107	151	39%
150ha-250ha	1	2	-	1	1	1	-	20	26	7%
250ha-500ha	-	-	-	-	-	-	-	1	1	0%
500ha-1,000ha	-	-	-	-	-	-	-	1	1	0%
>1,000ha	-	-	-	-	-	1	-	1	2	1%
Total Properties	1	23	15	12	20	25	27	260	383	100%
Share of Properties	*0%*	*6%*	*4%*	*3%*	*5%*	*7%*	*7%*	*68%*	*100%*	

Source: Southland District Council, MfE, M.E. Properties tagged to Maori Land based on the centroid of the property parcel relative to the tenure land areas.

**Pending ground-truthing*

A portion of these properties fall within Fiordland National Park therefore the high indicative SNA coverage on these properties is not surprising. Large areas of Māori land are also on Stewart Island / Rakiura. The properties with very high coverage of indicative Moderate to High Certainty SNA are mostly large (greater than 10ha) or moderately large (2-10ha) properties so these properties may be able to accommodate some occupation and development anticipated under the NPSIB (where enabled by the District Plan) without adverse effects on SNAs. As discussed previously though, even high coverage is unlikely to be constraining for development on Māori land under the NPSIB.

The remaining 6% (29 properties) of Māori Land Court properties in Southland District contain an area of indicative Very High Certainty SNA. An estimated 4% of Māori Land Court properties (18) have 80% or more indicative Very High Certainty SNA coverage. Most of these are large (greater than 10ha) or moderately large (2-10ha) properties so again, may be able to accommodate some form of development on areas not covered by indicative Very High Certainty SNA (and will need to manage effects on SNAs for development that does involve vegetation clearance, as will the 9 properties estimated to have 100% SNA coverage).

A significant 89% of general land properties do not contain an area of indicative SNA (Table 3.20). The analysis indicates that 7% of general owned properties include an area of indicative Moderate to High Certainty SNA. Just 1% of total general properties (551 properties) have 80% or greater indicative Moderate to High SNA property coverage. Many of these are large sized properties (greater than 10ha) and may be able to accommodate some development without affecting the indicative SNA. However, an estimated 281 properties are less than 1ha in size and have 90% or greater indicative SNA coverage. If already containing a dwelling, these will generally appear as bush blocks with a house site and driveway added. If any of these existing lots do not already have dwellings, effects on SNAs from a new single dwelling can be managed in accordance with the provisions in the NPSIB. The NPSIB may or may not generate higher transaction and compliance costs under this consenting pathway depending on how vegetation clearance is regulated in the current District Plan. Such scenarios are discussed further in Section 6.

An estimated 4% of general owned properties include an area of indicative Very High Certainty SNA. As with indicative Moderate to High Certainty SNAs, there is a very small portion of general properties (about 30) with 90% of greater indicative Very High Certainty SNA coverage that are less than 1ha in size.

Otherwise in Southland, plantation forestry is not a significant land use (although Southland District Council indicates that this could change in future if more farmland is converted to forestry). Only 1% of identified mining areas fall within indicative Very High Certainty SNAs and 3% falls within indicative Moderate to High Certainty SNAs. This study has not collected data on whether these mining activities provide nationally significant public benefits or not.

Table 3.20 – Count of General Land Properties by Size and Indicative SNA Coverage – Southland

Property Size	<1% Indicative SNA* Coverage	1%-20% Indicative SNA* Coverage	20%-35% Indicative SNA* Coverage	35%-50% Indicative SNA* Coverage	50%-65% Indicative SNA* Coverage	65%-80% Indicative SNA* Coverage	80%-90% Indicative SNA* Coverage	90%-100% Indicative SNA* Coverage	Total General Land Properties	Share of Properties (%)
No SNA Coverage Distribution (89% of total general land properties)										
<1ha	19,796	-	-	-	-	-	-	-	19,796	56%
1ha-2ha	1,849	-	-	-	-	-	-	-	1,849	5%
2ha-5ha	3,316	-	-	-	-	-	-	-	3,316	9%
5ha-10ha	1,683	-	-	-	-	-	-	-	1,683	5%
10ha-20ha	1,695	-	-	-	-	-	-	-	1,695	5%
20ha-50ha	3,856	-	-	-	-	-	-	-	3,856	11%
50ha-100ha	1,966	-	-	-	-	-	-	-	1,966	6%
100ha-150ha	623	-	-	-	-	-	-	-	623	2%
150ha-250ha	233	-	-	-	-	-	-	-	233	1%
250ha-500ha	73	-	-	-	-	-	-	-	73	0%
500ha-1,000ha	6	-	-	-	-	-	-	-	6	0%
>1,000ha	-	-	-	-	-	-	-	-	-	0%
Total Properties	35,096	-	-	-	-	-	-	-	35,096	100%
Share of Properties	*100%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*100%*	
Moderate-High Certainty Indicative SNA Coverage Distribution (7% of total general land properties)										
<1ha	20	72	31	40	27	31	26	281	528	20%
1ha-2ha	8	19	8	6	9	11	6	29	96	4%
2ha-5ha	19	51	21	10	10	9	7	61	188	7%
5ha-10ha	10	51	12	23	9	8	7	21	141	5%
10ha-20ha	24	83	21	15	12	9	8	21	193	7%
20ha-50ha	67	232	53	29	14	11	6	26	438	16%
50ha-100ha	69	289	62	26	16	11	4	14	491	18%
100ha-150ha	38	135	41	12	11	15	3	18	273	10%
150ha-250ha	29	70	21	11	6	7	2	4	150	6%
250ha-500ha	20	55	12	6	4	2	-	3	102	4%
500ha-1,000ha	7	36	7	2	5	3	-	2	62	2%
>1,000ha	3	19	8	8	4	-	-	2	44	2%
Total Properties	314	1,112	297	188	127	117	69	482	2,706	100%
Share of Properties	*12%*	*41%*	*11%*	*7%*	*5%*	*4%*	*3%*	*18%*	*100%*	
Very High Certainty Indicative SNA Coverage Distribution (4% of total general land properties)										
<1ha	6	60	27	27	18	19	10	30	197	12%
1ha-2ha	10	28	10	5	5	5	2	2	67	4%
2ha-5ha	9	50	13	6	7	8	3	5	101	6%
5ha-10ha	17	51	14	6	6	3	2	4	103	6%
10ha-20ha	29	87	20	10	1	4	1	5	157	9%
20ha-50ha	74	227	38	14	8	8	1	6	376	22%
50ha-100ha	63	164	25	10	2	1	3	4	272	16%
100ha-150ha	44	84	15	2	4	2	-	-	151	9%
150ha-250ha	29	78	13	4	-	-	-	1	125	7%
250ha-500ha	10	38	7	4	4	3	2	1	69	4%
500ha-1,000ha	5	31	3	4	1	1	-	3	48	3%
>1,000ha	3	11	11	2	-	1	1	-	29	2%
Total Properties	299	909	196	94	56	55	25	61	1,695	100%
Share of Properties	*18%*	*54%*	*12%*	*6%*	*3%*	*3%*	*1%*	*4%*	*100%*	
Total (Moderate to Very High Certainty) Indicative SNA Coverage Distribution (11% of total general land properties)										
<1ha	26	132	58	67	45	50	36	311	725	16%
1ha-2ha	18	47	18	11	14	16	8	31	163	4%
2ha-5ha	28	101	34	16	17	17	10	66	289	7%
5ha-10ha	27	102	26	29	15	11	9	25	244	6%
10ha-20ha	53	170	41	25	13	13	9	26	350	8%
20ha-50ha	141	459	91	43	22	19	7	32	814	18%
50ha-100ha	132	453	87	36	18	12	7	18	763	17%
100ha-150ha	82	219	56	14	15	17	3	18	424	10%
150ha-250ha	58	148	34	15	6	7	2	5	275	6%
250ha-500ha	30	93	19	10	8	5	2	4	171	4%
500ha-1,000ha	12	67	10	6	6	4	-	5	110	2%
>1,000ha	6	30	19	10	4	1	1	2	73	2%
Total Properties	613	2,021	493	282	183	172	94	543	4,401	100%
Share of Properties	*14%*	*46%*	*11%*	*6%*	*4%*	*4%*	*2%*	*12%*	*100%*	

Source: Southland District Council, MfE, M.E. Properties tagged to General Land based on the centroid of the property parcel relative to the tenure land areas.

**Pending ground-truthing*

4 Costs to Local & Central Government

This section examines the range of estimated implementation and administration costs for territorial authorities and regional/unitary councils (together referred to as local authorities), and central government to give effect to the NPSIB following commencement, and into the future. These costs are directly linked to the clauses in Part 3, Sub-parts 2 and 3 of the NPSIB, with the timing of costs broadly set out in Part 4 (at least in terms of the cut-off dates for various aspects of local authority implementation). Key to this CBA is net additional costs that would not have occurred under the status quo.

4.1 Key Issues and Considerations

Anticipated costs for local authorities arise from the need to carry out a number of spatial assessments that include a strong focus on engagement and, where practicable, ground truthing[41]; development of biodiversity strategies and monitoring plans; plan changes required to introduce new/amended objectives, policies and methods to manage effects on indigenous biodiversity in accordance with the NPSIB, including in the areas covered by the spatial assessments; and the establishment of council processes to effectively engage and work with tangata whenua on decisions around policy development and local strategies/approaches to protect and maintain indigenous biodiversity under the NPSIB.

Costs for central government are related to the need to provide guidance to local authorities (and other organisations) to facilitate the implementation of the NPSIB (which can come in the form of written documents or new staffing roles established to liaise directly with relevant parties); other implementation support initiatives (which may include new funding); and implementation progress/effectiveness reviews which are commonly carried out for new national policy direction.

The following sub-sections set out estimated potential costs for local authorities linked to specific clauses, or bundled clauses in the NPSIB, including data sources and assumptions made by M.E in consultation with 4Sight Consulting and MfE. In many cases, estimated costs have changed from those reported in the earlier Indicative CBA as there is now the benefit of additional data collected during road testing of the draft NPSIB and public submissions. We also now have a clearer idea of the likely implementation plan by MfE and the costs to administer that plan.

A key challenge for this CBA is establishing the status quo so that the net additional costs attributed to the NPSIB can be isolated. This varies considerably by council. As discussed throughout this CBA, local authorities sit on a spectrum between needing to do a lot to give effect to the NPSIB and needing to make only minor changes to fulfil the requirements.

While it is likely that most Regional Policy Statements and District Plans will require some changes to give effect to the NPSIB, this could require just minor changes to align wording/terminology with the NPSIB.

[41] SNA assessment (clause 3.8), specified highly mobile fauna areas (clause 3.20), taonga (if agreed by tangata whenua) (clause 3.19), and vegetation cover in urban and rural environments (clause 3.22). While the outputs of these spatial assessment tasks are discrete, there may be opportunities to gather data on each at the same time.

Such changes needn't go through a schedule 1 RMA process (as specifically provided for under clause 4.4(3) (Existing policy statements and plans) and may therefore incur only minor planning costs for councils in that situation. Most local authorities are however expected to require schedule 1 plan changes – the costs of which will depend on the scope of the changes required, how controversial those changes are locally and whether that plan change is standalone or able to be combined with another plan change or District Plan review.

SNA mapping (discussed further below) is a potentially significant cost for territorial authorities but with the RMA already requiring that SNAs be protected as a matter of national importance, some councils have already mapped and scheduled SNAs in their District Plans, and some other councils will be part way through the process when the NPSIB commences.

According to a recent evaluation by MfE, 26 out of 59 District Plans assessed (44%) moderately or completely satisfied the requirement to map and schedule SNAs in accordance with Appendix 1 of the NPSIB.[42] Such councils may be expected to face no additional costs associated with this core requirement of the NPSIB, or only marginal costs to complete or modify their SNA mapping to meet the new requirements. It is only the costs that would not have been incurred under the status quo that are attributable to the NPSIB. There is relatively more certainty that the 56% of District Plans assessed by MfE will be required to apply the SNA identification process, potentially starting from scratch, and the full costs of that process will be attributable to the NPSIB. Even those full SNA costs will vary by council and are not practicable to estimate in aggregate for this CBA.

The same issues apply to regional councils (or unitary authorities) that have existing biodiversity strategies, are already part-way through developing a biodiversity strategy or have no strategy in place or underway. And again, with regards to indigenous biodiversity monitoring plans, identification of specified highly mobile fauna areas, understanding of indigenous land cover in urban and rural environments etc. The status quo is complex and varies by local authority and by NPSIB requirement. It has not, therefore, been practicable to collect sufficient data that would accurately inform the baseline for assessing local authority costs. Nor is it simple to estimate what net additional costs will be faced by each local authority to give effect to the NPSIB requirements. Even councils have struggled to estimate their future costs if the NPSIB is gazetted when asked.[43]

In light of these issues, this CBA considers potential indicative cost ranges (low-high) faced by local authorities to meet key requirements of the NPSIB. Generally, these costs assume that the council has to start from scratch (unless stated), and this therefore represents the maximum cost attributable to the NPSIB. As discussed above, many councils may only incur a portion of these costs, particularly where they can build on existing work.

Some further assumptions guiding these indicative implementation and administration costs ranges in this Section are discussed below.

[42] Sharpe, H. September 2021. Completeness of Council SNA Schedules (updated from Myers, S. May 2019), MfE. Note, in some locations, SNA schedules were being dealt with by the Regional Council, or in combination across neighbouring territorial authorities, hence the number of District Plans assessed is less than the number of territorial/unitary authorities.

[43] I.e., through road testing workshops or in submissions.

Part 4 of the NPSIB sets out the **timing** for local authorities to implement the NPSIB. In broad terms councils are encouraged to give effect to the NPSIB as soon as practicable, but any changes to policy statements or plans (referred to collectively in this CBA as 'plan changes') are to be notified no later than year 8 (following commencement). There is however an earlier requirement for plan changes that incorporate maps and schedules of SNAs, provisions to manage effects on SNAs, and clause 3.24 to be notified no later than year 5.

Biodiversity Strategies must be complete by year 10, although there is information required to be in those strategies that must inform objectives, policies and methods associated with indigenous biodiversity restoration (clause 3.21)[44], which are to be notified by year 8 (as above). Based on consideration of all the clauses in the NPSIB and the required timeframes, it appears to M.E that there will need to be significant coordination between regional and territorial authorities to ensure that requirements set out in the NPSIB are sequenced and completed so that they can directly inform the development of objectives, policies and methods in order to meet a notified plan change no later than year 8, and in some instances, year 5.

There also seems potential for more than one plan change being required if local authorities take the full time available to them, but this will come at a higher cost compared to coordinating all changes to District Plans and Regional Policy Statements within a single plan change each. To provide present value costs in this Section[45], M.E has therefore assumed that local authorities will seek to maximise efficiencies and reduce costs by completing critical work that informs objectives, policies and methods at a rate that allows for a single plan change to be notified in year 5. The limitation of this assumption is that it may not be feasible for some councils to meet such timeframes. This may be due to insufficient in-house capacity, in-sufficient industry capacity, or cost constraints (or all the above). M.E has not collected any detailed data to inform the probability or significance of these constraints.[46]

The specified timeframes of the NPSIB in Part 4 relative to M.E's assumptions on the timing of costs to local authorities for this CBA are summarised in Figure 4.1. The coloured rows are the time periods specified in the NPSIB. The hatched/stippled fill reflects assumptions made for the CBA on how costs might be spread to meet key deadlines *and* maximise efficiency.

Requirements (clauses) that feed into plan changes that are not explicitly mentioned in Part 4 are also shown. For example, the district-wide assessment of SNAs, identifying taonga with tangata whenua and identifying/recording specified highly mobile fauna areas with tangata whenua, TAs and DOC are all assumed to be completed substantially between years 1-4 to meet a year 5 plan change notification. Similarly, key aspects of Regional Biodiversity Strategies are assumed to be completed by year 5 (and with regional councils not yet underway expected to commence preparation in year 1, well in advance of their year 3 cut-off). The balance of Regional Biodiversity Strategy drafting is assumed to be completed by year 8 (rather than year 10) to reduce potential risks that any further implications for plan changes could still be met by the year 8 cut-off in clause 4.1(2).

[44] There is also a backward linkage where areas where targets set out in a Regional Policy Statement (via a plan change) to increase vegetation cover *may* be identified in the Regional Biodiversity Strategy (Appendix 5(3c).

[45] A discount rate of 5% has been adopted.

[46] MfE will have received feedback in public submissions on the appropriateness of the time frames. M.E has gathered some feedback from ecological consultants indicating that SNA mapping will put considerable strain on industry resources.

Figure 4.1 - NPSIB Specified Timing and CBA Cost Allocation Assumptions by Year

	Commencement date >>>>	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Clause 4.1(2)	Notify any changes to district plans* or regional policy statements** necessary to give effect to the NPS within 8 years						(Post Notification Hearing & Appeals Costs)				
Clause 3.8 (CBA Assumption)	*TAs undertake a district-wide assessment to identify SNAs*										
Clause 4.2(1)	Notify any plan changes necessary to give effect Part 3, Sub-Part 2 (SNAs) and Clause 3.24 (Informaiton Requirements) within 5 years										
Clause 3.19 (CBA Assumption)	*TAs identify taonga with tangata whenua*										
Clause 3.20 (CBA Assumption)	*RCs identify/record specified highly mobile fauna areas with tangata whenau, TAs, DOC*										
Clause 4.2(1)	Regional biodiversity strategies already started by commencement date must update or complete within 10 years		Prioritise outputs for plan change in Y5 >>								
Clause 4.2(2)	Regional biodiversity strategies not already started must initiate preparation within (no later than) 3 years from commencement date and complete by year 10.		Prioritise outputs for plan change in Y5 >>								

*Source: NPSIB, M.E. * Clause 4.2(1), 3.18(1), 3.19(3,6), 3.20(3), 3.21(1), 3.22(4), 3.23(2). ** Clause 4.2(1), 3.18(1), 3.19(6), 3.20(2,3), 3.21(1), 3.22(4), 3.23(2).*

This CBA does not consider how affordable implementation and any ongoing administration costs are for local authorities, although for the case study analysis carried out for the Indicative CBA and draft s32 report, **affordability** concerns were raised by some councils (and particularly West Coast District Council and Southland District Council). M.E is aware that the issue of implementation costs and affordability was specifically raised in some submissions on the draft NPSIB, but we have not collated that information for use in this CBA. The issue was more prevalent for councils with a small rating base and that have yet to start an SNA mapping process. The implied rates increase needed to cover estimated costs was considered to be prohibitive for some communities.

The change made to the NPSIB following consultation on the Exposure Draft that allows TAs to treat large and high-quality areas of DOC managed land as qualifying as SNAs (clause 3.8(8)) is now expected (by M.E) to have significantly mitigated concerns around the affordability of assessing SNAs (discussed further below). M.E notes that there is also a possibility that some funding could be made available from central government for those councils most in need of assistance to implement the NPSIB. Where funding is included as part of the central government's administration costs, then this double-counts the costs estimated for local authorities, as in practice, the costs are transferred from local authorities (rates-payers) to government (all taxpayers). This is discussed further below.

Last, and flowing on from the issue of affordability, this CBA has not considered the potential for opportunity costs for local authorities to direct expenditure to NPSIB implementation. In the event that net additional implementation costs cannot be managed within planned operational budgets in the short-medium-term or recovered (wholly or partly) through an increase in rates or funding (or spread over time

through lending), and would require some trade-off with otherwise planned expenditure, then this may result in an opportunity cost for the local community depending on what the counterfactual spending would have achieved. Again, understanding the financial position of each local authority to manage implementation costs is outside the scope of this CBA and it would not have been practicable to collect such sensitive and speculative data).

4.2 Implementation Costs

This section sets out the indicative cost estimate ranges for implementing specific requirements of the NPSIB by either TAs or regional councils (or unitary authorities) as applicable. The assessment starts with the key spatial assessment tasks. M.E assumes that to maximise efficiency and minimise costs, these tasks would need to get underway in the short-term as they all contribute to the development of provisions (objectives, policies and methods) in District Plans and Regional Policy Statements. This is followed by indicative cost estimates to develop a Regional Biodiversity Strategy. Last, plan change costs are considered to give effect to the NPSIB.

4.2.1 SNA Mapping

To estimate the costs to implement the provisions in the NPSIB to identify SNAs using a nationally consistent process and ecological significance criteria, approximate SNA mapping costs were first collected and assessed from both Auckland Council (which excludes the Hauraki Gulf Islands) and Waikato District Council. The Waikato District Council costs took account of the regional council costs to do preliminary SNA mapping, which have been apportioned to Waikato District Council. These two councils applied slightly different approaches to identify SNAs but both approaches are reasonably aligned with the NPSIB requirements to identify SNAs. The two districts have the least amount of indigenous land cover within the six case studies.

Cost estimates for SNA mapping were also sourced from Tasman District Council and Far North District Council. At the time of the Indicative CBA, Tasman District Council was part way through their SNA mapping process. Far North District Council were in the early stages of their SNA mapping process (collaborating with Whangarei and Kaipara District Councils) but had some estimates for external consulting costs. Far North District Council had originally anticipated replicating the Waikato District process, although this was unlikely to provide the level of ground-truthing that the NPSIB will require.

For the purposes of the Indicative CBA, Auckland SNA mapping costs were determined to be the most accurate and indicative estimates of what might be anticipated to identify SNAs in accordance with the NPSIB requirements. To apply this cost to the other case studies, a ratio of Auckland costs per ha of terrestrial indigenous land cover (excluding the Gulf Islands) was calculated and multiplied by the current indigenous vegetation cover (ha) in each of the case study councils. The cost estimate for SNA mapping captures the following broad components:

- Desktop analysis / data management / overlay production;
- Internal staff time (ecologists/planners);
- External ecologist costs / site visits; and

- Engagement and communication with landowners.

Applying the Auckland cost ratio to total indigenous land cover provided an indication of what additional cost Auckland Council might face (for example) to roll out their current SNA mapping process for the Hauraki Gulf Islands (assuming full application of the Appendix 1 methodology) and also what additional costs Waikato District might face to carry out some additional ground-truthing to meet the NPSIB requirements. These net additional costs were considered to show a reasonable order of magnitude of costs to give effect to the provisions in the NPSIB relating to SNA assessment relative to costs already incurred by each council to map SNAs.

However, applying the Auckland ratio to the indigenous land cover in Tasman, Westland, Southland and Far North districts generated significant cost estimates that were not considered reasonable and far exceeded the estimates provided by Far North District Council and Tasman District Council. The reason that the simple cost ratio generated such high (and unlikely) costs is because these four case studies have considerably more indigenous land cover than Auckland, and a significant share of that cover is administered by DOC. Some broad assumptions were therefore required to provide a preliminary indicative range of costs that could be expected to give effect to the NPSIB provisions to assess SNAs.

One area that has a significant impact on these preliminary results is whether SNA identification on the DOC administered land is required to follow the Appendix 1 process in the NPSIB or a different process/timeframe is provided for. The indicative cost range for SNA identification assumed, for the purposes of the Indicative CBA, that a different and more simple process would be applied to identify SNAs on DOC managed land, such as desktop identification without ground-truthing. As raised above, the final NPSIB now includes a change to this effect (clause 3.8(8)), so the assumptions made for the Indicative CBA are still considered fit for purpose in this final CBA.

Since the Indicative CBA, M.E has taken into account further SNA cost information provided during the road testing of the draft NPSIB and through public submissions. Ten additional councils provided information on actual or expected costs for SNA mapping in their districts (or regions where the work was carried out by the regional council). There were some differences in what was included in the costs supplied. Importantly, these additional cost estimates pre-dated clause 3.8(8) which allows (in consultation with DOC) for areas of DOC managed land to qualify as SNAs without the need to carry out an Appendix 1 assessment if it meets certain criteria. With this in mind, M.E has broadened the range of indicative SNA costs previously reported. This includes reducing the lower range costs and raising the upper range costs.

As such, the indicative range of one-off costs to carry out SNA assessment in accordance with the NPSIB provisions (where no schedule currently exists) is estimated at between:

- Lower end - $250,000: this assumes a collaborative process with small amounts of indigenous land cover relative to the average of all districts/unitary authorities; and
- Higher end - $2,500,000: this assumes non-collaborative process (i.e. no resource/expert sharing or sharing of funding between councils within a region) with large amounts of indigenous land cover relative to the average of all districts/unitary authorities and covering a large number of private landowners.

These costs (Table 4.1) are assumed to be wholly borne by district councils, although it is acknowledged that regional councils are likely to provide some support for this process (e.g. technical input and/or assistance with funding if requested by the territorial authority).

Table 4.1 – Indicative Cost Range – SNA Assessment

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
SNA Mapping with Schedule	District/ Unitary Councils	$ 250,000	Assumes collaborative approach within Region and relatively small amount of indigenous cover. Full process, not amendments or completion of process already underway.	$ 2,500,000	Assumes non-collaborative approach and large amount of indigenous cover. Assumes no ground truthing of DOC managed land. Full process, not amendments or completion of process already underway.	Spread over Yr 1-4 in order to allow for plan change by Yr 5	$222,000-$2,216,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

For clarity, these one-off costs are to carry out SNA assessment when no SNA assessment has previously been completed (i.e. they are gross costs to give effect to the NPSIB). The actual costs that will be incurred by councils to give effect to the NPSIB will vary significantly based on whether they have identified SNAs in the past, the completeness of their SNA schedule, and how aligned that SNA identification and mapping process is with the NPISB requirements.

Feedback from case study councils has confirmed that the effort and cost to undertake SNA assessment was spread over several years (including up to 10+ years so far for Tasman District). For the purposes of the CBA, it has been assumed that SNA mapping costs above would be spread evenly over four years (i.e. years 1-4 after the NPSIB comes into force) to allow time to notify a plan change in year 5 to meet the timeframes in the NPSIB (clause 4.2(1)) (Figure 4.1). In present value terms, the cost per district/unitary council is indicatively between $222,000-$2,216,000 (5% discount rate)[47]. As discussed above, any funding from central government could reduce the burden of this cost on some local authorities.

4.2.2 Taonga Identification

Clause 3.19(1) requires every territorial authority to work in partnership with tangata whenua of any rohe in their district (using an agreed process) to determine the indigenous species, populations, and ecosystems in that rohe that are acknowledged taonga. This process is contingent of tangata whenua's consent to do so, given that full cooperation will result in those taonga being described and potentially mapped in the District Plan.

The cost to implement clause 3.19 was not previously included in the Indicative CBA. Through road testing and submissions on the draft NPSIB, four councils provided costs considered relevant to estimating Taonga identification costs with tangata whenua. It is acknowledged that this is a very small sample on which to base a range of costs potentially applicable to all territorial authorities (and assuming such information is

[47] Standard Treasury discount rate.

not already included in District Plans or other non-statutory documents). Table 4.2 summarises the lower and upper estimate adopted for the purposes of this CBA. Both cost ranges include consultation with tangata whenua, but the higher cost assumes some allowance for a dedicated iwi advisor(s) (which could potentially be a paid role(s)). The total cost to identify, describe and map Taonga is $120,000-$150,000 per council. This is assumed by M.E to be spread evenly over four years to allow for provisions developed to manage effects on Taonga to be notified in year 5 (timed with the SNA plan change) (Figure 4.1). In present value terms, this expenditure equates to between $106,000-$133,000 (5% discount rate).

Table 4.2 – Indicative Cost Range – Taonga Identification

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Taonga Identification	District/ Unitary Councils	$ 120,000	Assumes consultation with tangata whenua.	$ 150,000	Assumes consultation with tangata whenua, dedicated iwi advisor.	Spread over Yr 1-4 in order to allow for plan change by Yr 5	$106,000-$133,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

4.2.3 Specified Highly Mobile Fauna Area Mapping

Another specific spatial analysis task required by clause 3.20 of the NPSIB is for every regional/unitary council to record (if not done so already) areas outside of SNAs that are highly mobile fauna areas. This must be done by working together with tangata whenua (in the manner required by clause 3.3), territorial authorities in its region, and DOC.

Once identified, there is an option to map and describe these areas in a Regional Policy Statement (if practicable and of assistance to managing adverse effects on specified highly mobile fauna). However, providing information to the community on these areas and how to manage adverse effects, as well as develop provisions that will manage the effects of new subdivision, use and development on highly mobile fauna areas is required (and not optional).

The cost to implement clause 3.20 was not previously included in the Indicative CBA. Nor did the road testing and submissions on the draft NPSIB yield any specific cost data for this requirement (as far as M.E is aware). Rather than exclude this tangible aspect of implementation costs for regional/unitary councils, M.E has assumed that costs may be of the same broad order of magnitude as the cost to identify Taonga described above.

Table 4.3 summarises the lower and upper estimate adopted for the purposes of this CBA. Both cost ranges include consultation with tangata whenua and DOC. The lower range assumes that technical input is managed in-house by the regional council and no mapping is included. The upper range assumes some input from external experts (ecologists) and the development of maps for the Regional Policy Statement. Both the lower and upper cost range assume that there is published data available to help (or substantially

help) with the task.[48] The total indicative cost to identify highly mobile fauna areas is therefore estimated (but not verified) as $120,000-$150,000 per regional/unitary council. This is assumed by M.E to be spread evenly over four years to allow for provisions developed to manage effects on highly mobile fauna areas to be notified in year 5 (timed with the SNA plan change) (Figure 4.1). In present value terms, this expenditure equates to between $103,000-$133,000 (5% discount rate).

Table 4.3 – Indicative Cost Range – Highly Mobile Fauna Area Identification

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Highly Mobile Fauna Areas	Regional/ Unitary Councils	$ 120,000	Assumes managed in-house, engagement with tangata whenua and DOC, and information resources published.	$ 150,000	Assumes some input from experts, engagement with tangata whenua and DOC, mapping and detailed information resources published.	Spread over Yr 1-4 in order to allow for plan change by Yr 5	$106,000-$133,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

4.2.4 Vegetation Cover Analysis and Targets

Clause 3.22 (Increasing indigenous vegetation cover) is another specific spatial analysis task required of every regional/unitary council (if not already done so) under the NPSIB. This clause requires regional/unitary councils to assess the percentage of indigenous vegetation cover in each of its urban environments and in its non-urban environments using either desktop analysis and/or ground truthing. This analysis subsequently informs the setting of targets to increase the percentage of indigenous vegetation in those areas over time (clause 3.22(3)).

The cost to implement clause 3.22 was not previously included in the Indicative CBA. Nor did the road testing and submissions on the draft NPSIB yield any specific cost data for this requirement (as far as M.E is aware).

M.E considers that this task can be easily implemented by existing regional council staff. Data, such as the LCDB used in Section 3 of this CBA, may be sufficient for a desk-top analysis when overlaid with urban environment boundaries. This task may also be completed as part of the wider Regional Biodiversity Strategy programme (discussed below). Any costs specifically for this spatial analysis are considered to be very minor and are not examined further.

4.2.5 Regional Biodiversity Strategy

The estimated cost range to prepare a Regional Biodiversity Strategy reported in the Indicative CBA was based on feedback from two case study councils at the time. At the lower end of the range was an indicative cost of $80,000 to amend an existing biodiversity strategy to meet NPSIB requirements, while the upper

[48] Clause 3.20(1) confirms that where there is no information to assist with understanding areas used by specified highly mobile fauna, that regional councils need not plug that information gap.

range reflected the cost ($150,000) to develop a new strategy (where there is no existing strategy). This is a one-off cost borne by regional (or unitary) councils in accordance with clause 3.23 and Appendix 5 of the NPSIB.

Further consideration of the potential costs of producing a Regional Biodiversity Strategy for this final CBA has led M.E to lift the indicative cost range potentially faced by regional/unitary councils. This adjustment takes into account some recent anecdotal information on the cost of externally resourced assessments being used by some regional councils as input to their biodiversity strategies (and allowance for in-house council costs on top of that contracted work). M.E now estimates that the costs could more realistically range from $100,000 (low end) to $300,000 (high end) as summarised in Table 4.4.

Table 4.4 – Indicative Cost Range – Regional Biodiversity Strategy

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Regional Biodiversity Strategy	Regional/ Unitary Councils	$ 100,000	Assumes amendment of existing strategy. Preparation of strategy document only, no implementation programme costs. Assume includes vegetation cover analysis.	$ 300,000	Assumes totally new strategy. Preparation of strategy document only, no implementation programme costs. Assumes includes vegetation cover analysis.	Spread over Yr 1-8 but with some outputs prioritised for plan change by Yr 5 (or no later than Yr 8)	$81,000-$242,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

While territorial authorities are expected to work with the regional councils to assist in developing the strategy, no additional monetary costs are identified here for the purposes of implementing clause 3.23. Relative to other costs directly faced by territorial authorities to implement the NPSIB, contributing to the development of a Regional Biodiversity Strategy is not considered to be significant.[49]

For clarity, the indicative costs in Table 4.4 relate to the preparation and release of the Regional Biodiversity Strategy document that articulates indigenous biodiversity protection, restoration and enhancement actions, but excludes the costs associated with those actions. The indicative costs also exclude any implementation programmes that may be developed as a result of the Regional Biodiversity Strategy in each region. There is insufficient information on how any existing funding by regional councils for restoration planting, for example, might be increased specifically in response to the Regional Biodiversity Strategy or NPSIB generally. The absence of these flow-on costs attributable to clause 3.23 is acknowledged as a gap in this CBA, but not a substantive one.

The NPSIB requires that regional councils that do not have biodiversity strategies must initiate the preparation of the strategy within three years of the commencement date of the NPSIB and must complete it within 10 years of that date. Where a regional council has an existing strategy (or the drafting of one is

[49] One council noted in road testing of the draft NPSIB, that providing support to the Regional Council for the biodiversity strategy may be in the order of $10,000 for example.

in progress), this must be updated or completed to comply with Appendix 5 of the NPSIB within 10 years of commencement date.

For the purposes of this final CBA, and as discussed above, it has been assumed that the strategies would be developed over 8 years following commencement (rather than 10 years), but with those components that inform the development of objectives, policies and methods in District Plans and Regional Policy Statements completed in time for a plan change in year 5 (else not limiting the ability for plan changes no later than year 8 as required by clause 4.1(2), Figure 4.1). Applying a discount rate of 5%, the present value cost of developing Regional Biodiversity Strategies under the NPSIB is therefore estimated at between $81,000-242,000 per regional council/unitary authority (Table 4.4).

4.2.6 District Plan and Regional Policy Statement Plan Changes

As discussed above, it has been assumed by M.E that councils will give effect to all relevant provisions of the NPSIB through a single plan change (or plan review) to maximise efficiency rather than initiate multiple plan changes to give effect to different NPSIB requirements. This reflects the common approach councils take to give effect to national instruments through a single plan change/plan review process,[50] although is a compressed time frame tied to the year 5 incorporation of SNAs and clause 3.24 into District Plans and may not be practical for all councils to notify in that year (with some needing the additional three years available under clause 4.1(2)).

For the earlier Indicative CBA, the estimated cost range of these plan changes was based on an analysis of plan change cost data extracted from the National Monitoring System (NMS) which related to plan changes that gave effect to a national planning instrument. The NMS data covered a three-year period and was divided into both District Plan changes that gave effect to national instruments (the NPS for renewable energy generation and electricity transmission) and Regional Policy Statement/Regional Plan changes that gave effect to national instruments (the NPSFM). While some plan change costs were considered more likely to represent the scale of a plan change potentially required under the NPSIB, the costs of the plan changes varied significantly, so further assumptions were required.

Since that earlier work, there are estimates from six TAs and two regional councils on what they considered to be a likely cost for their plan change to give effect to the NPSIB. Some of these costs were just up to the notification stage, some included the hearing costs and less still took into account potential for appeals. This data has been added to the NMS data, with greater emphasis on the costs inclusive of appeals, as this avoids the risk of under-estimating plan change costs for this CBA. Based on this additional data, M.E have increased the upper range of plan change costs for district councils (but retained the lower range) for this final CBA and made changes to the lower and upper range of costs for unitary authorities.

The following estimates (Table 4.5) reflect indicative cost savings whereby giving effect to the NPSIB can be incorporated into a full plan review (where timing and resources allows) or combined with another plan change and a higher cost where it is standalone plan change. For district councils, a change to a District Plans to give effect to the NPSIB is estimated at between $200,000-300,000. For regional councils, a change to the Regional Policy Statement to give effect to the NPSIB is estimated at between $100,000-150,000.

[50] A notable exception is the NPSFM where regional councils have taken a staged approach to implement the requirements in that NPS.

For unitary authorities, plan change costs to give effect to the NPSIB are estimated to fall between $250,000-400,000. These are one-off costs.

The timing for notifying plan changes is, for the purposes of this CBA, estimated as occurring in year 5 after the NPSIB comes into force. We have however spread costs over years 4-6, to allow for some policy development to occur in parallel with SNA and other spatial analysis tasks in year 4 and post notification costs (including the hearing) and appeals to be addressed indicatively in year 6 (Figure 4.1). At a discount rate of 5%, the present value cost of completing plan changes to implement the NPSIB is estimated at between $157,000-235,000 for district councils, $78,000-$118,000 for regional councils, to $196,000-314,000 for unitary authorities.

Table 4.5 – Indicative Cost Range – Policy Development and Changes to District Plans and RPS

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Plan Change	District Councils	$ 200,000	Assumes amendment and/or development of provisions to give effect to NPS. Assumes incorporation with other plan change/review. Includes litigation stage.	$ 300,000	Assumes amendment and/or development of provisions to give effect to NPS. Assumes standalone plan change. Includes litigation stage.	Spread over Yr 4-6 with notification by the end of Yr 5 and appeals in Yr 6	$157,000-$235,000
Plan Change	Regional Councils	$ 100,000		$ 150,000			$78,000-$118,000
Plan Change	Unitary Authorities	$ 250,000		$ 400,000			$196,000-$314,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

4.3 Administration Costs

Once implemented, M.E expect some ongoing costs to administer the NPSIB within districts and regions. Care is needed to consider only net additional costs attributable to the NPSIB and distinguish these from the normal functions and duties of local authorities over time. Once the NPSIB is given effect to, at what point does it form part of the established regulatory environment?

For instance, compliance and enforcement monitoring is a core function of TAs and the NPSIB does not propose to change this in any way. However, it is a relevant consideration because the NPSIB is anticipated to result in a greater number of consent applications being processed that relate to indigenous biodiversity (particularly for TAs who do not currently define SNAs in their Plan), and potentially more stringent permitted activity standards.[51] Feedback from case study councils is that there are very low numbers of resource consents required for indigenous biodiversity damage/clearance currently and the increase in consent applications under the NPSIB is likely to be relatively small in practice.

M.E has not quantified an estimated net additional cost for consent related compliance and enforcement monitoring for TAs for this CBA, and anecdotally, current practice (the status quo baseline) is often poor in this area, making it hard to determine a reasonable net change in practice costs. That said, three district

[51] These changes are discussed further in Section 6.2 and 6.3.

councils provided some values on potential net increases in compliance monitoring costs. These ranged from $80,000 per annum to $300,000 per annum. Two of these councils related these costs to new biodiversity staff who would cover consent compliance/enforcement as part of their role. Given the small sample of these values, care is needed in assuming that such costs would apply across the board for TAs, or that they are tied specifically to compliance monitoring changes. Many councils may be expected to manage increased consent compliance monitoring with existing staff resources (and no net additional cost).

4.3.1 Regional Monitoring Plan

Clause 3.25 of the NPSIB requires regional councils to develop a Monitoring Plan for indigenous biodiversity in its region. This must be developed with tangata whenua, TAs, relevant agencies and other stakeholders. Developing the Monitoring Plan itself would be a one-off cost but the benefits of the Plan will only be realised once it is implemented as a monitoring programme. Accounting for just the preparation of the plan (which could be included as an implementation cost) therefore does not account for the full range of ongoing administration costs indirectly arising from clause 3.25.

Understanding the administration costs of these monitoring requirements for regional councils in the NPSIB also needs to recognise that currently many councils do little or no state of environment monitoring for indigenous biodiversity and clause 3.25 will require a much more proactive monitoring approach against specific indicators for indigenous biodiversity in each region. As such, the estimated cost range below represents both the initial cost to implement (prepare) the Monitoring Plan and the administration of the Plan over the long-term.

The estimated annual cost range (Table 4.6) is based on feedback from three case study councils collected for the earlier Indicative CBA, and some additional cost estimates provided by several regional councils during road testing of the draft NPSIB. The challenge is distinguishing net additional costs attributable to the NPSIB from any administration of existing plans/programmes. M.E has revised these costs downwards for the final CBA[52] and expressed them as an annual average cost - smoothing the initial Plan development cost and ongoing administration of a monitoring programme across each year while acknowledging that not all indicators would necessarily be monitored on an annual frequency.

At the lower end of the range is an indicative average cost ($50,000 per annum) to amend existing state of environment Monitoring Plans/programmes and reporting to meet NPSIB requirements, while the upper range reflects the average cost ($150,000 per annum) to develop and administer a new Monitoring Plan and programme (where there is currently little monitoring of indigenous biodiversity). The cost is borne by regional councils or unitary authorities in accordance with clause 3.25.

While district councils are expected to work with the regional councils to assist in developing the Monitoring Plan, no additional monetised costs are identified for TAs for the purposes of estimating the costs of clause 3.25. Relative to other direct costs potentially faced by TAs from the NPSIB, contributing to the development of a Regional Monitoring Plan is not considered to be significant.

[52] The potential for national monitoring methods to be developed (refer clause 3.25(3)) is a contributing factor to lowering previous cost estimates.

Table 4.6 – Indicative Cost Range – Regional Monitoring Plan & Programme

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Monitoring Plan (Annual Average)	Regional/ Unitary Councils	$ 50,000	Assumes only limited addition to status quo scope of monitoring. Covers amendment of an existing Plan and net additional monitoring carried out in accordance with the Plan.	$ 150,000	Assumes limited or no existing monitoring of indigenous biodiversity. Covers development of Plan and monitoring carried out in accordance with the Plan.	Y6 Onwards	$552,000-$1,656,000

Indicative estimates only. incorporates feedback from road testing, public submissions and case study interviews. Intended as broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

There are no specific timeframes in the NPSIB for regional councils to develop the Monitoring Plan, so it falls within the general requirement to give effect to the NPSIB as soon as practicable. For the purposes of this CBA, it has been assumed that regional councils would develop the Monitoring Plan in year 6 of the NPSIB coming into force, with the associated monitoring programme and reporting continuing from that point. At a discount rate of 5%, the estimated present value cost of comprehensive regional monitoring of indigenous biodiversity under the NPSIB is estimated at between $552,000-1,656,000 per regional council/unitary authority up to and including the year 2053 (i.e. within the next 30 years).

4.3.2 SNA Updates

Clause 3.9(3) of the NPSIB requires that when a TA does it's 10 yearly District Plan review, it must do another district wide assessment to see if changes are needed to its SNA maps and schedule. This process may be expected to pick up marginal changes in SNAs using existing data as the baseline. It is therefore anticipated to be a more streamlined and cost-effective process (and likely to be less contentious for existing SNAs). M.E considers this update work as an ongoing but infrequent administration cost of the NPSIB for TAs, but one readily absorbed within a District Plan review programme. No specific net additional cost estimates are warranted in our view.

4.3.3 Other Potential Administration Costs

There is potential for other net additional administration costs for local authorities once the NPSIB is given effect to. Some councils identified the following examples during the road testing of the draft NPSIB:

- Net increases in rates remissions (where currently provided to qualifying landowners).
- Net increases in covenant administration.
- Ongoing data management costs.
- Increases in funds provided for the protection and restoration of indigenous biodiversity on private (including Māori) land.

- Increased expenditure on planting and pest control on Council land (including to help meet targets set in the Regional Biodiversity Strategy or fulfil actions arising from monitoring programmes).

- Providing opportunities for kaitiakitanga and tangata whenua involvement in planning processes.[53]

Costs on this list are expected to apply to some councils, but not all, and the costs themselves, while not monetised for this CBA due to insufficient data and a high-level of uncertainty, are also expected to vary significantly across councils.

4.3.4 Central Government Support and Guidance

Last, we consider central government costs for the NPSIB following commencement, which M.E treat as an administration cost for this CBA. These costs are based on a combination of information on approved funding under the 2022 Wellbeing Budget ($19.5m), MfE estimates of detailed guidance costs, indicative cost estimates made by DOC to provide information and support to identify SNAs on DOC managed land, high-level estimates of medium-term administration costs agreed by M.E and MfE for the purposes of this CBA, and M.E assumptions on the net funding for third parties after minor administration costs to manage funding is deducted. M.E has allocated central government costs based on detail provided in the NPSIB Implementation Plan and by DOC.

Table 4.7 shows that the combined cost to develop guidance (planned for year 1 following commencement), non-financial support and general administration by central government in years' 1-10 (but concentrated in years' 1-4) equates to an approximate $4.01m or a present value of $3.39m (5% discount rate). A portion of this expenditure falls within MfE's baseline operational budget but is included for completeness. This total cost excludes the costs of the effectiveness review after year 10.

Table 4.7 also shows a combined funding value provided by MfE of indicatively $16.55m (present value of $14.63m, 5% discount rate). A portion of this funding is expected to go towards direct support to tangata whenua to aid effective and active engagement with local government implementation processes. This will include costs to cover technical training and other workshops/programmes for iwi (or similar). While this cost is acknowledged in Section 5 (Participation Costs), it is not otherwise accounted for elsewhere in this CBA. However, the balance of this funding is available to those TAs needing financial assistance with the cost of identifying SNA (i.e. where the costs would lead to prohibitive increases in rates, particularly in districts with a small rating base and a large area/number of SNAs on private land). These average costs for TAs have been estimated in Section 4.2.1 above.

The portion of funding that may ultimately be allocated to TAs to reduce their implementation costs is unknown and has not been provided by MfE. As such, it is acknowledged here, but care is needed not to double count costs. M.E has assumed that the funding will be used to lower costs to manageable values but will not pay for SNA identification costs in their entirety. The implication is that for some territorial (or unitary) authorities that do receive financial assistance from central government, their SNA mapping costs may be lower than the range stated above (particularly if their direct costs would otherwise have been

[53] M.E notes that the NPSIB is not unique in requiring a greater role for tangata whenua in planning and decision making, as this also applies in other national direction.

close to the bottom of the range). Alternatively, even with central government assistance, their net SNA identification costs may still fall within the estimated range. If it had been practicable to quantify aggregate net additional SNA mapping costs across all territorial/unitary authorities, then that aggregate cost could be reduced to the value of central government funding allocated to SNA identification.

Table 4.7 – Indicative Cost Range – Central Government Support and Guidance

Requirement under NPSIB	Impacted Party	Low ($)	Notes	High ($)	Notes	Year Applicable (M.E) - Assuming Efficiency Maximising Programme*	Present Value 2023-2053 (5% Discount Rate)
Guidance, non-financial support, administration	Central Govt.	$ 4,011,000	Detailed guidance, estalishing partnerships (incentive pilots), funding administration, baseline MfE operational expenditure allocated to the NPSIB.** Excludes progress and effectiveness reviews.	N/A	N/A	Spread over Yr 1-10 (with 3/4 in first four years)	$3,389,000
Indicative financial support		$ 16,549,000	Funding - direct support for tangata whenua (capacity and capability building), direct assistance for SNA identification. *Note, a portion of this funding (for SNA mapping) will reduce costs estimated for territorial authorities/unitary authorities to map SNA (i.e. represents a cost transfer to central government).*	N/A	N/A	Spread over Yr 1-4	$14,634,000
Identifying SNAs on public conservation land		$ 222,000	National level GIS data to support deeming of PCL as SNA and 1 hour/area to support TAs wanting to assess PCL under Appendix 1.	$ 1,920,000	National level GIS data plus 1 hour/area to support deeming of PCL as SNA and 5 hours/area to support TAs wanting to assess PCL under Appendix 1.	Spread over Yr 1-3	$202,000-$1,743,000
Total indicative costs		$ 20,634,000	As above.	$ 22,480,000	N/A	Spread over Yr 1-10 (with 95-96% in first four years)	$18,225,000-$19,766,000

Indicative estimates only. Incorporates feedback from road testing, public submissions and case study interviews. Intended as a broad order of magnitude costs. Costs will vary depending on status quo.

** Assumes that councils would seek to consolidate changes to Plans/Regional Policy Statements in a single plan change and achieve this through a coordinated programme with the Regional Council (and neighbouring TAs where applicable). In the absence of this assumption, the timing requirements of the NPSIB imply a plan change to incorporate SNAs and Information Requirements by Yr 5, and a seperate and later plan change to include provisions informed by work with longer timeframes (such as the Biodiversity Strategy). Assumptions on timing assume no limits to resources or industry capacity (which may be unlikely).*

*** While this is not net additional to MfE's baseline operational budget, this indicative expenditure is included to provide a more comprehensive picture of total costs attributed to the NPSIB. It is a minor component in Y1-4 and accounts for all estimated and indicative costs in Y5-10.*

Table 4.7 shows indicative estimated costs for DOC to support TAs in deeming and assessing (using Appendix 1) SNAs that fall on DOC managed land[54]. High-level mapping (GIS) data is assumed to cover the information requirements of TAs for qualifying areas as SNAs that clearly meet the criteria of clause 3.8(8) under the low range cost, and this is anticipated to be delivered early in year 1 to all councils. The high range cost allows for some additional staff time to collate other existing data to help councils confirm if an area can or cannot be treated as qualifying as an SNA (responding to requests). Some areas of DOC managed land (including Stewardship Land) are still expected to warrant assessment under Appendix 1 of the NPSIB and DOC has estimated costs to support councils in that process. The low range cost allows for

[54] Costs taken from DOC Internal Working Paper, November 2022.

relatively less DOC staff time per area being assessed to collate available data and the high range cost allows for relatively more time.

Overall, DOC indicative estimated support costs range between $222,000 and $1,920,000, and are assumed for the purposes of this CBA to be spread evenly over 3 years following commencement of the NPSIB. This is a present value cost to DOC (central government) of between $202,000 and $1,743,000 (5% discount rate).

M.E notes that total costs to central government in this final CBA (approximately $20.63m-22.48m spread over 10 years) are substantially larger than estimated in the earlier Indicative CBA (which ranged from $2m-$3m spread over 4 years). That previous estimate was based on costs provided by MfE at the time and based on administration costs for other recent national direction. Giving the timing of this final CBA - post public consultation on the exposure draft and post development of MfE's Implementation Plan – the cost estimate is more accurate and reflects MfE's greater understanding on what support will be needed for effective implementation across key stakeholders.

4.4 Summary of Costs to Local & Central Government

The following summarises the combined indicative cost ranges estimated for each type of local authority and central government to implement and administer the NPSIB, over and above the status quo. These are a combination of indicative one-off and ongoing costs calculated over a 30-year time horizon and expressed in present value terms (using a 5% discount rate). They are broad order of magnitude costs based on a number of assumptions (and imperfect data). They cover the key requirements (tangible tasks) of the NPSIB but may under-represent some ongoing administration costs for some councils.

The estimated long-term combined implementation and administration cost ranges are as follows:

- For each TA: $485,000-$2,584,000 (PV) excluding the effect of any SNA funding from central government on these averages.
- For each regional council: $818,000-$2,149,000 (PV).
- For each unitary authority: $1,263,000-$4,695,000 (PV).
- For central government guidance, non-financial support, DOC support: $3,591,000-$5,132,000 (PV).
- For central government financial support to tangata whenua & TAs: $14,634,000 (PV), a portion (unknown) of which will offset direct costs to some TAs indicated by the range above.

As discussed previously, this Section (and the combined costs above) focus largely on gross costs to give effect to the requirements of the NPSIB, with assumptions around maximising efficiency and therefore cost minimisation. Some councils (including some of the case study local authorities) will need to make only marginal changes to existing practices/documents to meet various requirements (clauses) of the NPSIB and their net additional implementation and administration costs will be considerably lower than the above estimates over the next 30 years. It has not been practicable to place each local authority on that spectrum, and as such, it is not considered appropriate or robust to gross these costs up by the number of councils

by type. Doing so would likely significantly over-state total national costs to local authorities attributable to the NPSIB.

5 Costs to Participants

In addition to direct costs for local authorities to implement (and administer) the NPSIB, the provisions set out clear direction for other parties to participate in local authority implementation processes. Local authorities are directed variously to *"engage with"*, *"work with"*, *"collaborate with"* and *"involve"* tangata whenua and other stakeholder groups (including landowners). This section considers the costs of that participation that is attributable the NPSIB and that would not have been incurred under the status quo.

5.1 Scope of Participation

Table 5.1 summarises the scope of participation with local authorities (and excluding engagement between local authorities which is discussed in Section 4). The relevant clauses directing participation apply to tangata whenua in each case, with only one clause also requiring participation by landowners containing land being assessed as SNAs, one clause also requiring participation by DOC to identify highly mobile fauna areas and a further option for DOC to participate in SNA assessment on DOC managed land, two clauses also requiring participation by the community (one generally and one specifically on the matter of the Regional Biodiversity Strategy). The requirement to develop a Regional Biodiversity Strategy also requires regional councils to invite the participation of other relevant stakeholders, as does the requirement to develop a Regional Monitoring Plan.

The requirement for participation is therefore significant for tangata whenua and their involvement will range from:

- high-level help developing culturally appropriate approaches/frameworks to be used by local authorities to implement the NPSIB and sharing information to develop a better understanding of cultural values towards terrestrial indigenous biodiversity, customary use and kaitiakitanga.
- Investigation and decision-making around the desire, scope and practical considerations of entering into more formal indigenous biodiversity management roles for tangata whenua as provided for under the RMA. Depending on the outcome of those investigations, this could lead to further involvement to establish those arrangements and then administer them.
- Specific input on developing provisions that protect and maintain SNAs (including geothermal SNAs), developing provisions that manage effects on indigenous biodiversity on Māori lands, identifying and mapping taonga (if deemed appropriate), identifying and mapping areas of highly mobile fauna, and developing Regional Biodiversity Strategies and Regional Monitoring Plans.

This participation by tangata whenua and DOC will be with regional and territorial authorities (or unitary authorities as applicable), while landowners containing SNAs are only required to participate with territorial authorities and other stakeholders are only required to participate with regional councils. Stakeholders such as the QEII National Trust that are national entities will potentially need to participate in processes with up to 16 regional councils/unitary authorities. They may also be involved as a submitter on changes

to Regional Policy Statements and District Plans across the country. This could be a significant task for those entities particularly if a large number of plan changes are being run simultaneously. As far as DOC is concerned, while the NPSIB may create more plan change work than under the status quo (and condense that work into specific time periods), the work itself is part of DOC's existing mandate. On that basis, M.E has not specifically included net additional advocacy costs for DOC and other stakeholder groups (national or local) within this CBA[55].

Table 5.1 – Prescribed NPSIB Participation with Local Authorities (Excluding Between Local Authorities)

Clause	Local Authorities to Landowners	Local Authorities to Tangata Whenua	Local Authorities to DOC	Local Authorities to Other
High-level Participation Requirements				
3.2 (Role of decision-making principles)		Engage with;		Engage with (communities);
3.3(1) (Tangata whenua as partners)		Involve (to the extent they wish to be involved) as partners;		
3.3(3) (Tangata whenua as partners)		Work with to investigate the use of (a) transfers of delegations, (b) joint management agreements, (c) Mana Whakahono ā Rohe (iwi participation arrangements);		
3.3(6) (Tangata whenua as partners)		Actively involve when developing processes for managing information provided;		
Specified Participation Requirements				
3.8 (Assessing areas that qualify as SNAs)	Engage early with, share information to be reviewed by, provide access;	Engage early with; share information to be reviewed by;	Consult with (optional);	
3.13 (Geothermal SNAs)		Work in partnership with;		
3.18 (Māori lands)		Work in partnership with;		

[55] DOC's participation costs under clause 3.8(8) have been estimated in Section 4.3.4.

3.19 (Identified Taonga)		Work in partnership with; Involve (to the extent they want to be involved);		
3.20 (Specified highly mobile fauna)		Work together with;	Work together with	
3.22 (increasing indigenous vegetation cover)		Consult with;		
3.23 (Regional biodiversity strategies)		In collaboration with;		In collaboration with (communities and other identified stakeholders including QEII National Trust, Ngā Whenua Rāhui and others);
3.25 (Monitoring by regional councils)		Work with; reach agreement with (methods);		Work with (relevant agencies, relevant stakeholders);

At a high-level, the participation in resource management planning and decision making required of tangata whenua is not unique to the NPSIB with these requirements already set out in the RMA and in other national direction. While there is expected to be some overlap with processes and engagement that may already be established between local authorities and tangata whenua, the discourse on terrestrial indigenous biodiversity is unique to the NPSIB and conservatively, M.E treats it as net additional participation activity.

Similarly, landowners and community members generally are frequently invited to participate in the development of objectives, policies and methods in statutory documents, or the development of local/regional non-statutory strategies and plans through the public submissions (schedule 1) process. However, the NPSIB introduces a specific set of changes to provisions and potentially a new Regional Biodiversity Strategy or Monitoring Plan (if not already in existence or under development prior to the commencement of the NPSIB) that are unlikely to have occurred under the status quo in some areas and will therefore generate net additional participation activity (for those that choose to take up the opportunity or that are directly impacted).

5.2 Participation Costs

The NPSIB does not prescribe how local authorities are meant to carry out engagement with tangata whenua or relevant stakeholder groups and agencies such as DOC. More information is expected to be provided through NPSIB guidance from MfE. Methods for engaging with the community are well established and the engagement with landowners of SNAs (particularly to achieve access to private land) is

likely to follow typical communication protocols with the number of landowners participating in SNA identification being the main difference between territorial authorities.

A relevant issue for local authorities is identifying which tangata whenua (including hapu) should be engaged/involved, although M.E has assumed that most councils would have traversed (to varying degrees of success) this issue in the past.

The key **private costs of participating** in NPSIB implementation by local authorities can be broken down as follows:

- The opportunity cost of time spent participating: To monetise this, the Treasury's CBAx Tool[56] provides an indicative cost ratio per 1 hour of "*citizen compliance burden*". This private cost captures the cost of compliance with government processes and so could also apply to tangata whenua, landowners and the community generally (including travel and any training[57] time) but would not apply to other stakeholders who are participating as a business or organisation. This cost ratio could also be appropriate to cover the time spent for tangata whenua to meet amongst themselves on matters/information/decisions being sought from local authorities.[58] The average cost is estimated at $29/hour/person (2022 value).

- Travel cost: M.E considers that the IRD's private vehicle mileage cost for the 2022 income year can be used to estimate maximum potential travel costs to participate in NPSIB processes with local authorities (even if participants choose to use other modes of transport). The rate of $0.83c/km/person is applicable for all engine types.

Despite these unit costs, it is not considered practicable to quantify (monetise) aggregate participation costs attributable to the NPSIB for this CBA because there is insufficient information on how many people will need to participate locally, regionally or nationally; how frequently they will need to participate and over how many hours/days etc; the nature of the participation (in person, in writing, or online); how far (and by what method) those participants need to travel to participate (if in person); and what training may be taken up (where available). The uncertainty is greatest for, but not limited to, tangata whenua participation.

Very indicatively though, M.E has developed a scenario to demonstrate the broad order of magnitude of general landowner participation costs associated with SNA identification required under clause 3.8 of the NPSIB. The national level spatial analysis (Section 3) identifies for example 168,100 general tenure land parcels containing an area of indicative SNA. The number of unique landowners will be less than that (particularly in rural areas as farms often comprise multiple land parcels) and not all indicative SNAs will become SNAs under the NPSIB, and not all districts need to implement clause 3.8 if already done so to an equivalent standard, so this would further reduce the number of impacted general landowners. A potential scenario of costs is as follows:

- 90% of affected general land parcels translating to unique landowners impacted nationally, i.e., 151,290 general landowners.

[56] Source: CBAx, Treasury, September 2021 – Row 137 of impacts database.

[57] If provided/available.

[58] E.g., tangata whenua representatives reporting back to hapu/iwi.

- Occurring in 81% of districts that have not 'completely' scheduled SNAs in a manner that may be expected to meet NPSIB requirements (based on recent assessment by MfE). Assuming that impacted landowners are spread evenly across districts[59], excluding 19% of districts where landowners are expected to have already participated in SNA identification leaves indicatively 122,550 landowners still needing to participate.

- Say 10 hours total time to be available to provide access to ecologists doing on-site evaluations of the SNA, review council communication/findings, and/or attend landowner engagement meetings (including travel time if applicable), but not including any time on plan change submissions or hearings. At $29/hour, this equates to $35.54m in participation time costs nationally.

- If 50% of those impacted landowners had to travel on average 20km (return) to engage with the territorial authority at another location (i.e. council office or local hall), at $0.83/km, this equates to total travel costs of $1.02m.

- Combined total costs for landowners to participate in the identification of SNAs attributable to the NPSIB of $36.56m or on average $300 per landowner. If spread over 4 years[60], this equates to a present value of $32.4m (5% discount rate) or an average present value of $264 per landowner.

Given the relativities between private landowner participation required and tangata whenua participation required (Table 5.1), with the latter being significantly greater and more complex, M.E expects that if aggregate tangata whenua participation costs could be monetised, they would be several orders of magnitude greater than the indicative $32.4m (present value) faced by general landowners containing SNAs still needing to be assessed.

5.3 Incentives and Other Benefits to Offset Costs

With respect to participation costs associated with NPSIB clause 3.8 (Assessing SNAs), landowners, including owners of Māori land, may be eligible for regulatory and non-regulatory incentives *if* an SNA is confirmed on their property. This is discussed further in Section 6. That benefit, which could take the form of long-term rates remissions or one-off additional subdivision rights for example, not only helps compensate any potential opportunity costs associated with new subdivision, use and development that adversely affects SNAs on private land, but could far exceed the time and travel costs of participating in a council's SNA mapping process.

It is also relevant to consider discrete and short-term SNA participation costs in the context of the long-term benefits that landowners receive from ecological services delivered by indigenous biodiversity on their land (this is discussed further in Section 7).

[59] Section 3 shows that this is not likely to be the case based on the spread of indicative SNA.

[60] Refer M.E assumptions in Figure 4.1.

MfE's NPSIB Implementation Plan recognises that the NPSIB has explicit requirements for iwi/Māori to be involved in NPSIB processes, and yet "*many iwi have limited capacity or capability to engage in RMA processes*". In years' 1-5[61] after the commencement of the NPSIB, MfE propose to:

- Provide training and upskilling to enhance capacity of iwi/Māori to be involved in NPSIB processes.
- Provide financial support for iwi/Māori to attain technical expertise to fully engage in NPSIB processes.
- Set up Māori Biodiversity Wānanga to assist Māori to fully participate in the implementation of the NPSIB and any complementary and supporting measures that are developed.

While these new support initiatives are focussed on capability and capacity building for tangata whenua, and do not off-set the opportunity cost of time or travel to participate in training and direct engagement with local authorities, M.E considers that the skills gained via these short-term support packages, will likely have wider (flow-on) long-term benefits for tangata whenua working within RMA frameworks.

Last, the Treasury's CBAx tool includes two benefits that are also potentially relevant to the costs of participation in NPSIB implementation processes. There are limitations in the applicability of both metrics that are not examined here, but assumptions and limitations are set out in the original supporting documents identified in the CBAx database. One is the benefit of "*being able to express cultural identify*"[62]. It is a subjective wellbeing indicator valued in 2021 at (for the general population) between $2,962-$8,891 per person annually for every one-point shift on a 5 point scale. Based on these costs, a one-point improvement in the ability to express cultural identify facilitated by the NPSIB is equal to the cost of 100-300 hours of participation time to comply with government processes. The benefits to wellbeing may also extend to all tangata whenua, and not just those directly participating in local authority processes.

Similarly, there is another subjective wellbeing indicator in the CBAx tool that values the wellbeing benefit of regular volunteering (i.e. on a weekly basis). This private benefit (valued at $664 per person per annum (2022)) is derived from sports-related volunteering in the community and is therefore not directly transferable to participation in potentially irregular local government processes over the short-term. However, it is reasonable to assume that some tangata whenua representatives may have sustained regular involvement (across various NPSIB implementation requirements) across the year, and potentially lasting for years' 1-4 following commencement (or beyond). Therefore, to the extent that this subjective wellbeing benefit is broadly applicable to those regularly volunteering (participating) in sustained local government processes (which M.E has assumed are un-paid roles), the cost of around 23 hours of that participation in each year may be offset by the benefit gained from volunteering that time regularly across the year. Those individuals participating on an ad-hoc or discrete basis with local authorities may gain only a marginal volunteering benefit based on these assumptions.

While this CBA does not attempt to measure the potential net change in wellbeing for tangata whenua participation in NPSIB implementation, these two metrics highlight the potential for both costs and benefits associated with participation in local authority processes.

[61] Equates to phases 2 and 3 of the MfE Implementation Plan.

[62] CBAx 2021, row 192 of the impacts database.

5.4 Summary of Costs to Participants

There is a time (and potentially travel) cost for participating in local authority NPSIB implementation that needs to be accounted for in this CBA (i.e. time spent training and directly engaging, working, and collaborating with local authorities that could otherwise be spent doing something else). In aggregate that cost is likely to be significant for tangata whenua given the breadth of clauses requiring tangata whenua input. It has not been practicable to quantify that cost given the uncertainty of how many tangata whenua will be involved and for what durations (as well as other data needed to robustly quantify costs).

Relative to the cost for tangata whenua, participation costs for landowners of SNAs are only expected to be very minor at an individual level, although significant in aggregate given the large number of potential private properties containing SNAs in districts still needing to identify SNAs in accordance with the NPSIB (and indicatively $32m in present value terms according to one scenario tested above).

Participation costs for other stakeholders, including but not limited to DOC and organisations such as the QEII National Trust are also more limited in scope, but potentially widespread in terms of the number of councils vying for the resources of these entities. This may place a strain on resources in the short-medium term but as advocates for indigenous biodiversity, this CBA does not consider these entities materially adversely impacted by the implementation of the NPSIB by local authorities.

The costs of participation for SNA landowners, tangata whenua - and the community in general when it comes to potential involvement in public consultation and submissions on notified plan changes that give effect to the NPSIB - may be more significant in some districts/regions than others. Costs will depend on what each local authority needs to do to meet the requirements of the NPSIB over and above the status quo. This includes the degree of change needed to engage tangata whenua in RMA processes.

While the financial cost of training/upskilling and resourcing tangata whenua for NPSIB participation is indicated as being met by central government's Implementation Plan (and included already in the costs set out in Section 4.3.4), the time costs of participation must be borne by the individuals involved. There are however likely to be a range of benefits associated with that participation that accrue to those same individuals, including positive changes in wellbeing associated with cultural expression and volunteering.

While it has not been practicable to monetise benefits of participation to individuals in local government processes, M.E considers that they are likely to partly offset participation costs. Depending on the effectiveness of the engagement and the long-term wellbeing outcomes achieved at a local and national level, they may even wholly offset or exceed short-term participation costs for tangata whenua.

Section 7 considers benefits at a higher-level from protecting and maintaining indigenous biodiversity, including from the outcomes that stem from changes made with the help of participation by landowners, tangata whenua and other stakeholders.

6 Costs to Private Landowners

This section examines the potential for net additional transaction (consent), compliance and opportunity costs for landowners resulting from implementation of the NPSIB. These costs arise from: the need to assess and document potential effects on indigenous biodiversity for resource consent applications; the expenses associated with protecting and managing effects on indigenous biodiversity through conditions of consent, including applying the effects management hierarchy; and from constraints on current and future land use associated with the presence of an SNA or indigenous biodiversity outside of an SNA which translates to a reduction of land value; and that would not otherwise occur under the status quo.

This section focusses on potential direct costs to private landowners arising from a range of land use scenarios, as well as potential costs to owners of Māori land (where this differs from costs to owners of general land). For this discussion, private land includes that used for farming, lifestyle, residential, business, forestry, quarrying, and infrastructure etc, that is not Crown or DOC land, but including Crown Pastoral Leases and Licenses. Care is taken to provide a balanced assessment so that situations where the NPSIB would not lead to any net additional transaction, compliance or opportunity costs on private land are also understood (for example, due to existing plan provisions or landowner intentions).

The costs will be borne mainly by rural and peri-urban landowners – where indigenous biodiversity is most commonly found. Direct **costs to private landowners relate only to those landowners that contain indigenous biodiversity on their property, which is a subset of all private landowners**. To help put this in context, national level analysis (Section 3.3) estimates that indigenous vegetation cover[63] is found on:

- 7.5% of all general land parcels[64],
- 44% of all Māori Land Court parcels and
- 36% of all Treaty Settlement land parcels.

Indirect costs to all private landowners (irrespective of whether their property contains indigenous biodiversity) will include those associated with the NPSIB that are passed on through taxes (central government costs) and rates (local government costs).[65] Indirect costs to landowners are not examined here and are instead covered under Section 4 (Costs to Local and Central Government) to avoid double counting.[66]

[63] For this CBA, indigenous land cover is defined according the LDCB and equates to indicative SNAs of moderate to very high certainty (refer Section 3). Indigenous land cover does not capture all areas where indigenous fauna or flora is found.

[64] Based on primary land parcels as registered with LINZ. This is not necessarily the share of unique landowners as properties may contain multiple primary parcels, particularly in rural areas.

[65] Although noting that Māori Land Court land may be exempt from council rates.

[66] It is acknowledged that ultimately council and central government costs are borne by all private landowners and are additive to direct costs faced by some landowners.

6.1 Key Issues and Considerations

It has not been practicable for this CBA to quantify transaction, compliance and opportunity costs in an aggregate sense at a district, regional or national level. It is accepted by the authors that this is a limitation of the report, but there is too much uncertainty and complexity to robustly estimate how the provisions of the NPSIB (individually or as a bundle) might apply on the ground for private landowners. While the importance of identifying costs to landowners in the CBA was a key theme raised in public submissions, it was also accepted by many that quantification was challenging.

There are several factors contributing to the **uncertainty** of information needed to make robust assumptions and estimates of private landowner costs. Some of these factors are discussed below.

First, it is not possible to know exactly how the NPSIB will be implemented by each council and translated into objectives, policies, rules and other methods within their Plans and Policy Statements. Nor is it possible to predict exactly where SNA's will be defined in some districts (and therefore which landowners are impacted). While the NPSIB provides some clear policy direction, there is still an inherent level of flexibility (and hence variation) in how councils "*give effect to*" the NPSIB through plan provisions.[67]

The impacts of certain NPSIB provisions (e.g. clause 3.10 (Managing adverse effects on SNAs of new subdivision, use, and development) will also depend on landowner intentions for land in terms of future use, development and subdivision ambitions (where this is a practical option), and the timing and frequency of future development. This is not known and cannot be predicted. While an opportunity cost on property value may occur irrespective of whether a landowner intends to realise the potential of the land, transaction and consent-related compliance costs would only occur if some form of approval was pursued and given effect to.

For example, the NPSIB may result in the identification and protection of an SNA on private land, but the landowner may have no intention for new use, subdivision, development (or occupation) of that land in or near the SNA, or contemplate changes in established activities that are more intensive, greater in scale and different in character that may affect an SNA.

Alternatively, the landowner may have intentions for new use, subdivision, development or occupation of the land, or contemplate changes to established activities that may impact on an SNA or other indigenous biodiversity. What those intentions are is not possible to determine given that landowners' development intentions vary significantly, and District Plan zoning and rules typically provide for a range of land use outcomes.

If the location, nature and timing of new use, subdivision and development that has potential adverse effects on SNAs and other indigenous biodiversity is uncertain, then quantifying transaction and compliance costs associated with conditions of consent in this CBA is also not practicable. Future consents that will have adverse effects on indigenous biodiversity cannot be predicted, nor the conditions of those consents, and how those conditions might differ from status quo conditions.

Relatedly, the NPSIB does not 'require' that incentives or some sort of financial support/compensation be provided to private landowners who have SNAs and other indigenous biodiversity on their properties.

[67] This is not uncommon for an NPS and is in fact the intent generally (compared to a NES for example).

These mechanisms can help offset compliance and opportunity costs borne by private landowners and are therefore a relevant factor. The NPSIB makes reference to councils *sharing information* about any support and incentives that may be available to landowners,[68] and requires councils to *consider* providing incentives for restoration in priority areas,[69] and *realise* incentives on Māori land.[70]

Currently many regional and district councils do provide regulatory (transferrable development rights, bonus lots, biodiversity plans, etc.) and/or non-regulatory (biodiversity funds, rates remission, technical advice, etc.) support measures to assist protection, maintenance and restoration of indigenous biodiversity. Additionally, central government and other groups (local trusts, QEII National Trust, philanthropic, etc.) currently provide funding/materials/labour to support projects that protect, maintain and restore indigenous biodiversity (some of which take the form of contestable funds).[71] While these measures often don't cover total costs of protection, maintenance and restoration, they may offset them to a significant degree.

Information on existing local government regulatory and non-regulatory (including financial) support for private landowners has not been collated for this CBA and as such the distribution and scope of these status quo support measures is uncertain. It is considered likely that existing support will continue following the commencement of the NPSIB, and that there could be more landowners making use of those existing mechanisms once the NPSIB is implemented (more demand). The key consideration for this CBA is the net change in incentives and other support mechanisms – whether regulatory and non-regulatory incentives and support measures will become more widespread, i.e. in the districts where they are not currently provided. If not, landowners in those districts will be disadvantaged relative to landowners in other districts where incentives and support are available to offset compliance and opportunity costs attributable to the NPSIB. As part of NPSIB implementation planning, M.E understand that central government are investigating and piloting other initiatives that may further support landowners with the costs associated with maintaining indigenous biodiversity in accordance with the NPSIB (over and above existing support).[72]

Information on status quo incentives/funding/support mechanisms and potential changes to these (including geographically) with the NPSIB is needed to better understand who bears the costs of protecting and maintaining indigenous biodiversity on private land. In the absence of this information, it is assumed for the purposes of this CBA that landowners bear (and are responsible for) all net additional direct costs of maintaining and protecting indigenous biodiversity on private land attributable to the NPSIB. This is a worst-case approach as, in practice, some of these costs may be indirectly covered by central government, local government and other funding sources.

[68] Clause 3.8(2)(a).

[69] Clause 3.21(3).

[70] Clause 3.18(5) and Appendix 5(4)(c).

[71] Examples of existing central government support include the Ngā Whenua Rāhui ($6m/annum), Jobs for Nature Community Conservation Fund ($16m – allocated), Jobs for Nature Private Land Biodiversity Fund ($18m – allocated), Jobs for Nature Freshwater Improvement Fund ($55m additional funding), Jobs For Nature Predator Free 2050 ($76m), Jobs for Nature Pest and Weed Control ($10m), Sustainable Food and Fibre Futures ($40m/annum), DOC community fund ($4.6m/annum) and the Nature Heritage Fund ($1.8m/annum).

[72] Some of these pilot initiatives have been funded in the Budget 2022.

Key reasons for the **complexity** of quantifying transaction, compliance and opportunity costs in an aggregate sense is that the status quo regulatory environment must be understood so that the net impact of the NPSIB – as it applies to each property – can be established.

Enabling development[73] does not necessarily mean that every parcel of land can be developed to the Plan maximum as the physical and regulatory constraints of each site limit it's potential. Opportunities to subdivide, use or develop land are typically constrained by a range of factors and these factors do not apply equally across a district or region. These include:

- different base zones as well as instances where a property falls within policy areas/overlays that protect the values of the land (i.e. Outstanding Natural Landscapes or Features or heritage area overlays);
- policy areas that constrain the use of the land (i.e. hazard zones or national grid corridors); or
- features that constrain activities on the land (i.e. sites of significance to Māori).

Where these constraints coincide with the presence of SNAs or indigenous biodiversity outside of SNAs, the opportunities for new use, subdivision and development may already have been reduced relative to other land, and so any opportunity cost attributable to the NPSIB is likely to be marginal.

For a robust assessment of development/subdivision potential, a site-by-site evaluation is required. NPSIB impacts will only apply to land that contains indigenous biodiversity and has practical, feasible development, use, subdivision or occupation potential. Where land use change cannot occur under the status quo, the NPSIB will have little or no ability to adversely affect the value of that property.

Even *if* the development and use outcomes for private land were known (or scenarios could be developed at a parcel level), an analysis of potential opportunity costs on land value for even one district is a significant and complex piece of work that requires considerable local level data, including (but not limited to) spatial data on land/property values and subdivision and land use potential/productivity.[74] M.E has experience in such research and it was not considered a practicable approach for this CBA.

Because of the inherent uncertainty and complexity of assessing and quantifying aggregate impacts on private landowners, it has been agreed with MfE to approach transaction, compliance and opportunity costs for private and Māori landowners in a manner that:

1. Sets out the various processes and pathways through which such costs may or may not arise.

[73] In accordance with the NPS for Urban Development, enabling development equates to activities that have a permitted, controlled or restricted discretionary activity status.

[74] A range of different approaches and techniques can be used to estimate the potential opportunity costs at a district level. The first step is to estimate SNA coverage across the area, and how this coverage impacts different properties. This step has been carried in the spatial analysis of the CBA. A hedonic pricing model is a commonly applied and recommended approach to estimate potential change in value. Under such an approach, the value of land across the relevant zone would first be estimated, and then the value of 'raw' land isolated. The 'raw' land value strips out the potential effects of amenities, location and neighbourhood factors. Next, the shifts in the potential land use (i.e., what an owner could do on the land) would be compared against the current situation. The change in potential use is then translated into a percentage change effect on the land value. The shift is then applied to the relevant portion of the parcels. These parcel level effects can then be aggregated by zone and district to examine the range of impacts in dollar and percentage terms.

2. Provides examples/scenarios of those potential costs so that their scale, significance and probability can be broadly understood in context (although not in aggregate).

To address point 1 above, Figure 6.1 has been developed by M.E. It focusses on the potential consent related compliance and opportunity costs that may arise because of specific clauses of the NPSIB.

While not all clauses were able to be represented in Figure 6.1[75], it covers most of the key clauses expected to give rise to consent related compliance and opportunity costs for private landowners.

Although in the diagram opportunity costs are mostly shown to apply in conjunction with consent related compliance costs,[76] this is not always the case (and is discussed further below). The opportunity costs 'anticipate' the constraints associated with consenting under the NPSIB, but that consent does not need to be applied for in order for the opportunity cost to arise. There is also one pathway – where established or new activities are wholly constrained by an inability to avoid specific adverse effects on an SNA set out in clause 3.10(2) – where opportunity costs are considered likely to apply without incurring consent transaction or compliance costs.

The flow diagram indicates that all costs are attributable to the NPSIB – i.e. it does not consider the potential status quo regulation on a piece of land. This is considered separately in the Sections further below. The flow diagram does not explicitly identify transaction costs (i.e., consent application costs) but their potential occurrence can be inferred from both the presence of indigenous biodiversity on a property and the potential to have effects on that indigenous biodiversity that would need to be assessed.

At a high-level, Figure 6.1 shows that:

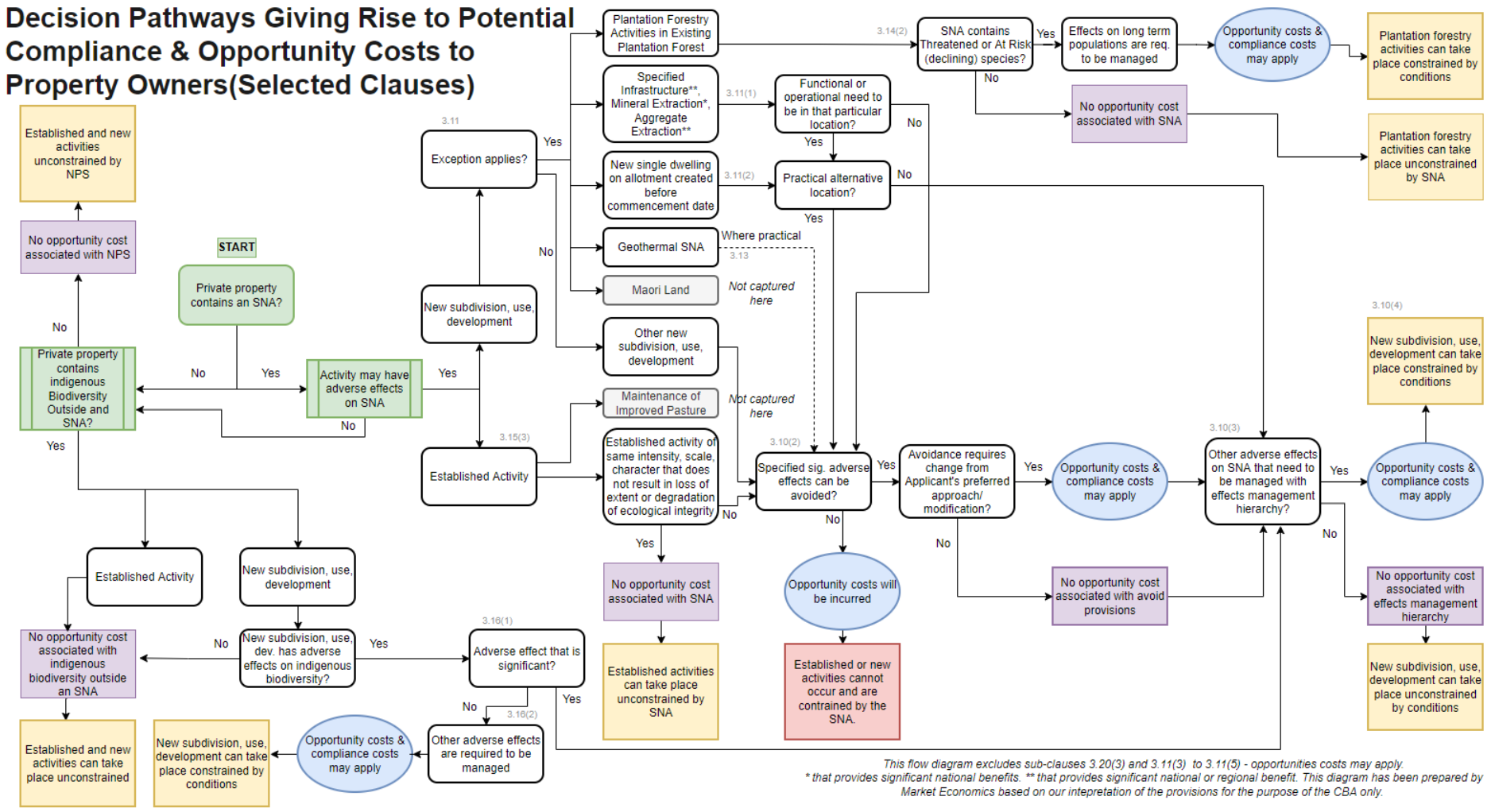
- Where private property or Māori land does not contain an SNA or indigenous biodiversity outside an SNA there would be no transaction, opportunity (reduced land value) or compliance costs attributable to the NPSIB for established or new activities. This is important context. As highlighted above and in Section 3, indigenous biodiversity does not occur on every property. Only a small share of total parcels on general tenure land, and only a moderate share of Māori land parcels, contain an existing SNA or indicative SNA.[77] While the spatial analysis does not confirm the incidence of indigenous biodiversity outside of SNAs, or areas important for specified highly mobile fauna or taonga, **potential costs to landowners are expected to fall on only a relatively small number of parcels/property owners when considered at a district, regional or national level**.

[75] Primarily due to the lack of space in a readable diagram.

[76] Blue ovals in Figure 4.1.

[77] Across the six case study areas, between 6% and 37% of all general land properties contained an area of defined or indicative SNA. Importantly, the lower range is based on actual defined SNAs and the upper range is based on a proxy of SNAs ('Indicative SNAs'). this Indicative SNA coverage is likely to over-represent the likely scale and distribution of SNAs on general land. As such, a lower range is considered more realistic and should be given more weight.

Figure 6.1 – Pathways Through Which Consent Related Compliance and Opportunity Costs May Arise



- Even when a parcel contains an SNA, or part of an SNA, it is possible that established and proposed land use will have no adverse effect on that SNA (or can be designed and located in that way). The spatial analysis shows that many parcels that do contain an SNA have only minor coverage by the SNA. While the spatial analysis does not inform the relative position of that SNA coverage to other land use activities or proposed use, subdivision, development or occupation, it is feasible that established activities could continue, and changes could occur on a parcel of land that would have no adverse effects on SNAs. If there is no other indigenous biodiversity outside of that SNA, or there is but the activity is an established one, again, no opportunity or consent-related compliance costs are attributable to the NPSIB as those activities are not further constrained by the NPSIB. Transaction costs may still apply to demonstrate no adverse effects.

- If a parcel contains an SNA and there is potential for adverse effects from an established activity, but that activity does not change in intensity, scale or character, there are no opportunity or consent-related compliance costs attributable to the NPSIB and the activity can go ahead unconstrained by the NPSIB.

- If a parcel contains an SNA within an existing plantation forest, but that SNA does not contain Threatened or At-Risk (declining) species, there are assumed to be no opportunity or consent-related compliance costs attributable to the NPSIB and the plantation forestry activity can go ahead unconstrained by the NPSIB.

- Opportunity costs and/or consent-related compliance costs will arise if effects of new use, subdivision and development on private land on an SNA or indigenous biodiversity outside of SNAs need to be managed, either by the effects management hierarchy (clause 3.10(3)) or some other way in a District Plan. The consent-related compliance cost is assumed to apply to give effect to the conditions of a consent (examples of this are discussed below). Opportunity costs would apply only if the conditions of consent (approval) resulted in a sub-optimal outcome from a land use, subdivision or development perspective. That is, an opportunity was forgone in order to achieve approval and manage effects on the SNA/indigenous biodiversity.

- It is important not to double count these costs. A more complex and difficult consenting pathway to achieve development, subdivision etc could also be represented (internalised) through a lower value of the land (i.e. the property market will take this uncertainty and cost into account when purchasing land that has development or subdivision potential). However, opportunity costs for the purposes of this CBA relate only to the reduced potential of the land for current owners and excludes other potentially internalised costs so that transaction and compliance costs can be shown separately. Reduced potential could include, for example, a lower yield of subdivided lots or dwellings than would exist under the status quo regulation, an inability to extend an existing building or loss of productive agricultural land. Using this approach, opportunity costs and consent-related transaction and compliance costs can be additive.

- Last, opportunity costs (reduction in property value or in some cases a forgone value uplift[78]) will be greatest (although not always significant) when a new use, subdivision or development is wholly constrained (prevented) by the need to avoid certain adverse effects on an SNA.[79] This only occurs where there is no potential to modify the proposal to avoid the specified effects of clause 3.10(2). There are no consent-related compliance costs assumed for this outcome as there are no conditions of consent or mitigations that incur real costs.

- It is noted that this degree of 'wholly constrained' opportunity cost cannot apply to the development of allotments containing SNAs that were created before the commencement of the NPSIB where there is no practicable alternative location for a new dwelling (clause 3.11(2)). Nor will it apply to significant infrastructure projects, mineral extraction or aggregate extraction proposals that can demonstrate a functional and operational need to be in a particular location where effects on SNAs may arise and where there is no practicable alternative. This is because the NPSIB provisions provide exemptions (consenting pathways) specifically to avoid fully precluding these activities in recognition of the economic, social and cultural benefits they provide, such that adverse effects need only be managed (with transaction costs, compliance costs and lesser opportunity costs potentially applicable).

The following sections provide more specific commentary on potential transaction, compliance and opportunity costs borne by private landowners under the NPSIB.

6.2 Transaction Costs for Property Owners

This section builds on the discussion above and examines the potential transaction costs arising from the NPSIB for private landowners, including owners of Māori land[80]. That is, the additional consent application costs attributable to the NPSIB that would not have occurred under the status quo.

6.2.1 Discussion of Relevant Issues

There are two levels at which net additional transaction costs need to be considered. The first is whether the NPSIB will trigger more consents for private landowners compared with the status quo (and assuming landowner intentions remain unchanged).

M.E has assumed, for the purposes of this CBA, that the implementation of the NPSIB is unlikely to cause a greater requirement for resource consents for most situations of new use, development, subdivision or occupation than already exists in District Plans in districts where SNAs have already been scheduled completely or moderately relative to NPSIB requirements. According to a recent evaluation by MfE, this could equate to 26 out of 59 District Plans assessed (44%).[81]

[78] I.e. a lower return on investment.

[79] Refer red box in Figure 6.1.

[80] For the purposes of this CBA, M.E has assumed that there is no material difference between net additional transaction costs on general land as for Māori land and they can be assessed together.

[81] Sharpe, H. September 2021. Completeness of Council SNA Schedules (updated from Myers, S. May 2019), MfE. Note, in some locations, SNA schedules were being dealt with by the Regional Council, or in combination across neighbouring territorial authorities, hence the number of District Plans assessed is less than the number of territorial/unitary authorities.

For the 56% of District Plans that currently have no or only limited SNA schedules (by NPSIB standards), M.E considers that it is likely that the NPSIB could create a greater requirement for resource consents to manage the effects of some new use, development and subdivision (and some established activities that are greater in scale and character) on SNAs once they are identified. This is because it is likely the SNA schedules will be accompanied by more stringent rules for vegetation clearance/activities in those District Plans.[82]

This is a key assumption for the purposes of this report – that consent costs in their entirety for some new use, development and subdivision activities may be attributable to the NPSIB in some districts but not all.

The second level of potential net additional transaction costs applies when consents are required to manage effects on indigenous biodiversity. As all councils must introduce changes to their District Plans (if provisions do not already reflect NPSIB requirements), the starting point for this effect is all districts.

For the most part, giving effect to the NPSIB in District Plans is expected to add another layer of rigour to the assessment of ecological effects required in the preparation of consent applications (including through application of the effects management hierarchy). However, it is assumed that the NPSIB will not materially add to status quo costs associated with s92 requests (requests for further information once lodged)[83], alter notified/non-notified application status, or add to an applicant's consent hearing costs (where applicable).

The NPSIB prescribes in clause 3.24 (Information requirements) that Regional Policy Statements and District Plans must all be amended to specify that for resource consent applications that would have more than minor adverse effects on indigenous biodiversity, that an assessment report by a suitably qualified ecologist or person with other relevant expertise (such as in mātauranga Māori) is required, and according to a prescribed scope of assessment. This clause (particularly sub-clause 2) is expected to account for the majority of potential net additional transaction costs for landowners that may be attributable to the NPSIB (particularly for small to mid-sized projects that have significant adverse effects), including scenarios where it is determined (as a result of such an assessment) that the specified effects of clause 3.10(2) cannot be avoided, scenarios where the effects management hierarchy must be applied (clause 3.10(3) and clause 3.16(1)), or scenarios where other adverse effects must be managed through other controls that give effect to the objective and policies of the NPSIB (clause 3.16(2)).

The cost of expert ecological assessments is therefore the key focus of potential net additional transaction costs attributable to the NPSIB in this CBA.

Importantly, assessment of effects on indigenous biodiversity (where applicable) is likely to already be a requirement in most District Plans (part of the status quo), particularly around indigenous vegetation clearance (which can often trigger an assessment of ecological significance). This is because the RMA already requires councils to protect significant indigenous biodiversity under s6 and maintain indigenous biodiversity under s30 and 31. However, it is noted that clause 3.20(2) (Specified Highly Mobile Fauna) adds

[82] Some landowners may modify their intentions for the land in order to avoid needing a consent. This behaviour change would help lessen the net increase in consents in districts yet to schedule SNAs, but such modifications may still generate opportunity costs.

[83] Although feedback from one ecologist interviewed for this CBA was that s92 requests could potentially rise under the NPSIB if councils use consent applications to collect and build their data on indigenous biodiversity within the district.

an assessment requirement that has been dealt with less consistently in District Plans[84] and may therefore be a new assessment matter required in some districts. As such, the NPSIB may have no or only a marginal impact on the cost and scope of an ecological assessment through consenting processes. Conversely, there may be some instances where such an assessment was not required by the council and the full cost of that ecological assessment would be attributable to the NPSIB.

A key outcome of clause 3.24 is that it ensures a consistent approach across all territorial authorities when assessing more than minor adverse effects, including certainty on the scope of the assessment (and therefore the information available to decision makers). This in and of itself may lead to greater efficiency in ecological impact assessments that in time help minimise costs to prepare them, although this is countered by the fact that no two assessment sites will be the same.

There are several exemptions in the NPSIB that warrant consideration in terms of the potential to generate net additional transaction costs for private landowners.

Clause 3.14 (Plantation forestry activities) exempts existing plantation forestry owners from clause 3.10 (Managing adverse effects on SNAs of new subdivision, use and development), so that only the long-term population of any Threatened or At-Risk (declining) species in a defined SNA within the plantation forest needs to be maintained during normal forestry activities.[85] Managing these effects is to be determined by local authorities. Of relevance, forestry activities are already regulated through the NESPF[86] and harvests are generally permitted except where they occur on erosion-prone land. Certified plantation forests are also required to manage effects on Threatened and At-Risk (declining) species under the NESPF. Under the NPSIB, District Plan rules can be more stringent than the NESPF in certain circumstances (including to protect SNAs), and this response is expected to vary by council. On balance, M.E has assumed for the purposes of this CBA that clause 3.14 is unlikely to impose much, if any, additional transactions costs on forestry owners above the status quo despite concerns to the contrary by some submitters.[87]

Clause 3.17(2) (Maintenance of improved pasture) requires "*adequate evidence*" that demonstrates that maintenance of improved pasture is part of a regular cycle of periodic maintenance/clearance of that pasture, the adverse effects on an SNA are no worse over time, that a Threatened or At-Risk (declining) species is not adversely affected, and that the land in question has not become an SNA. The NPSIB does not prescribe how councils are to give effect to clause 3.17(2) but the intent of the provision is an enabling one so that farmers can continue established practices of maintaining improved pasture as long as effects don't increase in scale, intensity etc. For this CBA, M.E has assumed that clause 3.17(2) will most likely be given effect to in District Plans through permitted activity rules that state that adverse effects on SNAs will not increase. As such, we have taken the approach that clause 3.17(2) will not generate any net additional transaction costs for private landowners. Any *new* clearance of indigenous vegetation not already part of a regular cycle of maintaining improved pasture would be assessed through the effects management hierarchy (where it has an adverse effect on an SNA) and picked up by clause 3.10 and 3.24 as discussed above.

[84] Based on feedback provided by ecologists contacted for this CBA. Often this is driven by a lack of fauna experts within councils (especially smaller or more rural councils).

[85] I.e. a cycle of planting, harvesting, remediation.

[86] National Environmental Standards – Plantation Forestry.

[87] Supporting guidance is expected to provide further clarification of intended outcomes for plantation forestry activities.

In limited situations, the NPSIB could also be expected to slightly broaden the scope of consent assessment required in order to demonstrate a functional or operational need for activities to be located in or near SNAs, or demonstrate an absence of practicable alternatives.

For example, clause 3.11(1) (Exceptions to clause 3.10(2)) requires applicants for significant specified infrastructure/mineral extraction/aggregate extraction that will have adverse effects on an SNA to demonstrate both a functional or operational need for the new use or development to be in a particular location and that there are no practicable alternative locations for the activity. This is not an uncommon issue for such consent applications to demonstrate. Requirements to demonstrate functional or operational need or practicable alternatives are therefore considered to generate little or no marginal increase in transaction costs and as such, are not examined further.

Given the significant investment hinging on consent approval (particularly for regionally or nationally significant specified infrastructure projects), consent applications of this nature typically take a very comprehensive approach in terms of assessment and documentation. While it is possible that the NPSIB requirements could lead to some additional transaction costs for significant infrastructure/mineral extraction/aggregate extraction consent applications – particularly around demonstrating compliance with the effects management hierarchy or identifying any effects on identified taonga and where relevant including mātauranga Māori and tikanga Māori assessment methodologies, the feedback from a number of ecology consultancies[88] consistently stated that their largest, most comprehensive and longest duration projects are usually associated with large infrastructure projects (such as windfarms, significant roads, quarries or dams), where the effects management hierarchy approach is already applied whether specified in the District Plan or not. In short, while clause 3.11(1) provides a consenting pathway for these economically significant activities where there are potential adverse effects on SNAs, M.E conclude from the feedback gathered that there is unlikely to be a material increase in transaction costs from clause 3.24 for this group of private landowners.

Some consultancies interviewed indicated that larger scale/more complex assessments, particularly where DOC may be a submitter, are already starting to be carried out according to the scope required by the NPSIB, in anticipation of it being gazetted. That is, applicants are front footing the NPSIB requirements already with more comprehensive ecological assessments, including compliance with the effects management hierarchy.

Feedback also indicated that large-scale operators that need to maintain a particular corporate image of sustainability, or manage public perceptions of their activities (because the proposed activity is perceived as 'dirty' (landfills, quarries etc) or the project is under the public spotlight (i.e. works by Waka Kotahi, wind farms, dams etc)), do more in terms of ecological effects management already, and will often raise the bar above regulatory requirements. For these 'gold standard' projects, it is unlikely that the NPSIB will create material net additional costs.

This feedback highlights the key impact that the NPSIB will have on transaction costs (consent applications) compared to the status quo: the NPSIB aims to raise the bar of ecological assessment to achieve best practice. Where ecological assessment practice is good, the NPSIB will result in no, or only minor increases in transaction costs. Comprehensive consent application reporting may already be a requirement of some

[88] M.E is thankful for input to this research provided by Ecology New Zealand, Tipu Consultants, 4Sight Consulting, Alliance Ecology, RMA Ecology, Beca and Boffa Miskell.

District Plans in which case the NPSIB is unlikely to generate any net additional ecological assessment (transaction) costs in those districts. Even when not explicitly prescribed in a District Plan (or Regional Policy Statement), comprehensive ecological reporting may already be the standard delivered for some consent applications.

Where the NPSIB *is* expected to have the greatest effect on indigenous biodiversity effects management transaction (and compliance) costs, is by raising the bar for ecological impact assessments (particularly where adverse effects would be more than minor) that do not follow best practice, or just satisfy the minimum requirements/limited assessment criteria (if any). This is more likely to be smaller projects rather than the bigger projects according to stakeholder feedback. Some ecologists spoken to thought that the biggest change that the NPSIB might bring about in practice will be around mobile fauna assessment, particularly if this directs ecologist to carry out on-site surveys on small-medium size projects where other more cost-effective approaches might have been used to date. Again, only where the NPSIB results in greater scope/effort – and therefore cost – of ecological impact assessments for significant adverse effects, are those net additional transaction costs attributable to the NPSIB.

These factors for determining the probability of net additional ecological assessment transaction costs are summarised in Figure 6.2, with the orange and red cells being the cost outcomes relevant to this CBA.

Figure 6.2 – Simplified Matrix of When the NPSIB May Generate Net Additional Transaction Costs

<table>
<tr><td rowspan="2">Status Quo District Plan provisions for assessing adverse effects on indigenous biodiversity</td><td>High-level of assessment requirements/ full scope of effects/matters of discretion</td><td>Some net additional transaction costs anticipated</td><td>Little or no net additional transaction costs anticipated</td></tr>
<tr><td>Low level of assessment requirements/ limited scope of effects/matters of discretion</td><td>Most net additional transaction costs anticipated</td><td>Little or no net additional transaction costs anticipated</td></tr>
<tr><td colspan="2"></td><td>Low / Minimum</td><td>High / Best Practice</td></tr>
<tr><td colspan="2"></td><td colspan="2">Ecological Impact Assessment quality/comprehensiveness (delivered)</td></tr>
</table>

6.2.2 Scenarios of Potential Transaction Costs for Private Landowners

Table 6.1 sets out some potential scenarios of where transaction (consenting) costs may arise for new use, subdivision or development (or established activities of a greater scale and character). The examples include situations where the NPSIB does not change the need for a consent (but may require additional

assessment detail), as well as situations where consents are generally not expected to be required under the status quo. As discussed above, this may be more likely to apply in those districts who have yet to schedule SNAs (or have applied SNAs in a very limited or incomplete way relative to NPSIB requirements).

The scenarios are focussed on assessing adverse effects on SNAs only. While there may be net additional transaction costs associated with managing adverse effects on indigenous biodiversity outside of SNAs, including effects on specified highly mobile fauna, this has not been explicitly covered. Such scenarios would be similar in nature to those described for SNAs, and any implied net additional transaction costs may be additive to those suggested below. Where a district already defines SNAs and/or has planning provisions that protect or maintain indigenous biodiversity to the same extent required by the NPSIB, it is not reasonable to attribute any additional transaction costs to the NPSIB – they form part of the status quo regulatory environment. The following scenarios would not apply in those districts.

The examples in Table 6.1 are at the property level and are hypothetical and not exhaustive. They consider (at a high-level) the potential land use and the indicative scale and complexity of ecological impact assessment that may be required to satisfy the effects management hierarchy, or other effects management approaches in District Plans that have implemented the NPSIB. The indicative scenarios show examples where there are no transaction costs to private landowners due to the presence of an SNA (green shading), to net additional transaction costs that are likely to be relatively minor or moderate in cost (orange shading), and net additional transaction costs that may be larger relative to the status quo and/or likely to be more costly in real terms (red shading). The dollar value of any net additional transaction cost is not quantified but is discussed further below.

Table 6.1 – Scenarios of Potential Transaction Costs Under the NPSIB

Land Type/Situation	Theoretical Scenario	Potential Outcome	Transaction Cost
Constraints on established activities where no change is anticipated			
A farm contains an SNA.	The farmer wants to clear indigenous vegetation to maintain improved pasture that may adversely affect an SNA.	The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture and the clearance equates to the same area cleared in the past.	The District Plan already required a consent for indigenous vegetation clearance. The NPSIB does not increase the information requirements. No net additional transaction costs attributable to the NPSIB.
			The District Plan did not already require a consent for maintenance of improved pasture. Maintaining improved pasture remains a permitted activity under the NPSIB. No transaction costs apply.
		The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture, but it has been identified that there are Threatened or At-Risk (declining) species in the SNA that may be affected.	The District Plan did not already require a consent for maintenance of improved pasture. Although considered unlikely, it is possible that consent could be required under the NPSIB, with the ecological impact assessment the main net additional cost (and at the low-mid end of the cost range for ecological impact assessments).
A plantation forest is ready for harvest.	The forest does not contain an SNA.	Harvest, remediation and planting occurs unconstrained by the NPSIB.	No net additional transaction costs attributable to the NPSIB.
	The forest contains an SNA.	The SNA in the forest has been assessed at the time of defining the	No net additional transaction costs attributable to the NPSIB.

		SNA (by Council) and determined that it does not contain any Threatened or At-Risk (declining) species.[89] Harvest, remediation and planting occurs unconstrained by the NPSIB. No consent is required.	
		The SNA in the forest does contain Threatened or At-Risk (declining) species.	The District Plan did not already require a consent for forest harvest/ remediation/planting. Activities are managed under the NESPF. The Council does not introduce more stringent regulation under the NPSIB. No net additional transaction costs attributable to the NPSIB.
			The District Plan did not already require a consent for forest harvest/remediation/planting. Activities are managed under the NESPF. Although considered unlikely, the Council does introduce more stringent regulation under the NPSIB and consent is required. The ecological impact assessment is a key net additional cost. Ecologist costs will depend on the size of the SNA, its accessibility and the nature of the Threatened or At-Risk (declining) species. They may be in the mid-high cost range, but the frequency of the cost may be every 30 years.

[89] If this was not included in the schedule for the SNA, then this may be an assessment cost required of the forest owner.

Constraints on new use, subdivision and development or established activities that are greater in scale or character.			
Subdivision of a property containing an area(s) of SNA.	A landowner is able to subdivide off one or more lots in accordance with rules around minimum lot sizes. Each lot includes feasible driveway access and a building site.	Lot boundaries and building platforms/accessways have no adverse effect on the SNA(s) on the property and the SNA(s) has no impact on the location of lot boundaries.	The District Plan already required a consent for subdivision including an assessment of ecological effects. The NPSIB does not increase the information requirements. No net additional transaction costs attributable to the NPSIB.
			The District Plan already required a consent for subdivision but effects on SNAs was not part of the policy framework. The NPSIB increases the information requirements for an ecological impact assessment, but only so far as to demonstrate that any adverse effects have been avoided. Net additional costs are anticipated at the very low end of the cost range.
		The subdivision is large. The location of the SNA on the parent lot means that one or more fewer lots can be created in order to provide suitable access and building platforms and manage effects on the SNA.	The District Plan already required a consent for subdivision but effects on SNAs was not part of the policy framework. The NPSIB increases the information requirements for an ecological impact assessment. Net additional costs are anticipated near the low-mid cost range based on the scale of the project and whether any effects to be managed are more than minor and trigger a more

			detailed ecological report as set out in clause 3.24.
A landowner wants to build a new dwelling on a vacant lot in accordance with the residential density rules of the District Plan. The lot existed prior to the commencement of the NPSIB.	The lot contains an SNA. *This scenario applies equally to rural or residential vacant lots.*	The location of the SNA on the site is not near the preferred building site. The owner is able to build a dwelling and associated infrastructure with no adverse effects on the SNA.	No consent required under the status quo or with NPSIB. No transaction costs attributable to the NPSIB.
		The location of the SNA on the site means that some vegetation clearance of the SNA is required. Effects must be managed.	The District Plan already required a consent for indigenous vegetation clearance. The NPSIB does not increase the information requirements for an ecological impact assessment. No net additional transaction costs are attributable to the NPSIB.
			The District Plan did not already require a consent for vegetation clearance in an SNA. Consent is required. The NPSIB increases the information requirements for an ecological impact assessment. Net additional costs are anticipated at the low end of the cost range to report on minor adverse effects.
		The lot is totally covered with an SNA and/or there is no practicable (and feasible) alternative site for a building platform or associated dwelling infrastructure. A larger amount of SNA clearance is necessary. Greater effects must be managed.	The District Plan did not already require a consent for vegetation clearance in an SNA. Consent is required. The NPSIB increases the information requirements for an ecological impact assessment. Net additional costs for an ecological impact assessment are anticipated in the low cost range for minor

			adverse effects and mid cost range for more than minor effects that trigger a more detailed ecological report as set out in clause 3.24.
A property owner wants to expand the footprint of existing built floorspace (established activity, same use). The extension is enabled by the site standards of the zone.	The property is a residential property and contains an SNA. *This example applies equally for expanding a commercial building in a business zone.*	The location of the SNA on the site is not near the existing dwelling. The owner is able to extend the dwelling with no adverse effects on the SNA.	No consent required under the status quo or with NPSIB scenario. No transaction costs attributable to the NPSIB.
		The location of the SNA on the site means that some vegetation clearance of the SNA is required. Minor effects must be managed.	The District Plan already required a consent for vegetation clearance. The NPSIB does not increase the information requirements for an ecological impact assessment. No net additional transaction costs are attributable to the NPSIB.
			The District Plan did not already require a consent for vegetation clearance in an SNA. Consent is required. The NPSIB increases the information requirements for an ecological impact assessment. Net additional costs are anticipated at the low end of the cost range to report on minor adverse effects.
		The location of the SNA on the site is near the existing dwelling. A larger amount of SNA clearance is necessary. More than minor effects must be managed.	The District Plan did not already require a consent for vegetation clearance in an SNA. Consent is required. The NPSIB increases the information requirements for an ecological impact assessment. Net additional costs for an ecological

			impact assessment are anticipated in the low-mid cost range as they trigger a report specified in clause 3.24.
A property owner needs a consent to increase/carry out significant mining/aggregate extraction or develop significant infrastructure on a site.	The property contains an SNA.	The SNA is not near the area proposed to be developed. The activity would have no adverse effects on the SNA.	The District Plan already required a consent for the activity including an assessment of ecological effects. The NPSIB does not increase the information requirements. No net additional transaction costs attributable to the NPSIB.
		Part of the SNA overlaps the area of the resource to be mined/quarried or developed for infrastructure. There are no practicable alternatives and a functional or operational need for that location is established. Effects on the SNA need to be managed.	The District Plan already required a consent for the activity including an assessment of ecological effects. The NPSIB increases the information requirements, but the applicant's ecologist already recommends a comprehensive assessment approach to maximise the likelihood of achieving consent approval. The NPSIB does not increase the information provided to the council. No net additional transaction costs attributable to the NPSIB.
		There is extensive overlap between the proposed development and the SNA. The whole site is a sensitive environment. More than minor effects need to be managed.	The District Plan already required a consent for the activity including an assessment of ecological effects. The NPSIB further increases the information requirements. Although considered unlikely, the ecologist (applicant) needs to lift the standard of the ecological assessment to demonstrate compliance with the

			effects management hierarchy and satisfy clause 3.24. Net additional transaction costs are attributable to the NPSIB. Net additional costs for an ecological impact assessment are anticipated in the low-high cost range depending on how much additional work is needed to meet best practice. These net additional costs may not however be significant relative to the total project transaction costs (or project value).

6.2.3 Indicative Gross Ecological Impact Assessment Costs

Table 6.1 sets out some scenarios where either the full cost of an ecological impact assessment may be attributable to the NPSIB, or just a marginal increase in the cost of such an assessment above the status quo. To help put those qualitative net additional transaction costs in context, M.E has collected information from a sample of ecological consultancies to establish a range of indicative costs to support different types of resource consent applications (of varying scales of development and/or anticipated effects on indigenous biodiversity). The feedback was relatively consistent when adjusted for assessment inclusions and exclusions.

Table 6.2 sets out the range of costs of the initial baseline impact assessment covering direct actions proposed to avoid, minimise and remedy adverse effects on indigenous biodiversity and identify the presence of any more than minor residual adverse effects. This is for a comprehensive assessment such as anticipated under the NPSIB (clause 3.10(4)(a) and, in the case of more than minor adverse effects, clause 3.24), and as guided by best practice/industry standards.[90]

Where more than minor residual adverse effects are estimated from a proposal following appropriate avoidance and minimisation measures, Table 6.2 set outs the additional range of costs to cover data collection and modelling to inform biodiversity offsetting or compensation recommendations as a second stage of reporting (as prescribed in Appendix 3 (Principles of biodiversity offsetting) and 4 (Principles of biodiversity compensation) of the NPSIB).

Feedback from ecology consultants contacted for this CBA is that the requirement for biodiversity offsetting and compensation is an important one and something that has sometimes been given a token-effort in the past. Any project that is subject to best practice offsetting or compensation necessitates greater effort, more robust data, more transparent assumptions, more certainty on the nature and significance of effects identified and more certainty on the effectiveness of effects management. This is considered a positive outcome in the context of maintaining indigenous biodiversity according to practitioners contacted and the NPSIB is expected to encourage best practice.

While conceptually, and from a policy perspective, biodiversity offsetting and compensation modelling should be effective, experienced practitioners also noted the application of such assessments is often problematic and can get unwieldly. It can require a level of certainty that often cannot be obtained in practice. Often consultants have to rely on existing literature to infer expected benefits or outcomes, but the existing studies rarely compare directly with the offset or compensation site.

The burden of proof needed to provide the certainty that is required (on net gains for example) can be cost prohibitive for landowners or impossible. As a result, a practical approach is often required to manage uncertain or insufficient data on more complex projects (where the offsetting and compensation applies to multiple biodiversity values). Practitioners stated that their clients were usually more comfortable with taking a precautionary approach to avoid complications down the track if recommended actions proved ineffective. For example, they may fence off a greater area than required, or offer up even greater planting or pest control. M.E notes that this feedback is consistent with the NPSIB precautionary approach.

[90] For example, the EIANZ guidelines.

As a rule, the cost and complexity of data collection and modelling is greater when residual impacts relate to lizards, birds and invertebrates (for example). Depending on the nature of effects needing to be modelled, ecologists may be able to make use of existing biodiversity offset calculators (such as the one produced by DOC which is well suited to loss of vegetative cover), draw on an existing overseas model that can reasonably be translated to the New Zealand/site context, or they may need to develop a new customised model. It is anticipated that guidance supporting the NPSIB may lead to more consistent practice for such modelling.

There was also feedback that consent applications would already not be accepted by some councils (particularly those with comprehensive provisions in their District Plans for protecting and maintaining indigenous biodiversity (such as Auckland and Wellington)) unless practicable solutions for biodiversity offsetting or compensation had been demonstrated. Many landowners/developers also seek this information early-on (even if at a preliminary level) so that they can assess the full costs of the project and factor in offset areas in the design of the development. This shows that while the effects management hierarchy might be new for some councils, it is already the status quo for other councils and/or some consent application approaches.

For simplicity in Table 6.2, the low, medium and high range of offset and compensation modelling costs has been aligned with the low, medium and high baseline impact assessments respectively. It is also possible that medium projects (for example) have only small residual modelling requirements and vice-versa, but these combinations have not been shown. Low modelling costs may equate with utilisation of DOC's Biodiversity Offsetting Account System (i.e. calculator), medium-high modelling costs may equate to running multiple models (for different species). For very large/significant projects, a separate figure has not been suggested, and is likely to fall within the overall ecological assessment budget advised (which could reach as high as $1m in some situations).

The costs in Table 6.2 are indicative only and may not represent the full range of possible consent assessment scenarios (ranging from demonstrating how the effects management hierarchy has been applied for managing minor effects to delivering a detailed expert report in accordance with clause 3.24 for more than minor effects on indigenous biodiversity). Costs will also vary between consultancies to some degree depending on the approach undertaken and modelling used and will ultimately be priced according to the nature of the proposed development and the environmental context of the site. There is no standard pricing in the market.

While some examples of potentially relevant development types have been shown against each cost category this is not always straightforward and should be relied on with caution. A large subdivision project for one consultancy might be considered 20 lots, while another consultancy might put this threshold at closer to 500 lots. Similarly, feedback indicated that it is often not the size or land area of the development that influences assessment cost, but the complexity of the habitats being affected. Even very large subdivisions on the urban fringe may be on grazed farmland that has very few ecological values – and is therefore a relatively straightforward assessment. This is recognised in in clause 3.24(1).

As discussed above, the indicative costs relate to the preparation of reports to support the Assessment of Effects (AEE) in the consent application, and do not cover additional costs associated with s92 information requests (although a complete ecological assessment in a consent application should in theory reduce the need for s92 further information requests). They also exclude any costs associated with compliance

(including but not limited to biodiversity management plans, planting or ongoing monitoring and reporting). These are discussed separately in Section 6.3.

Importantly, the costs in Table 6.2 are the gross costs for ecological assessment that would be expected to meet the standards required by the NPSIB by a suitably qualified/experienced consultant. These gross costs could range from as low as $3,000-7,000 for small scale/simple projects that don't include any fauna assessments or residual effects modelling (minor effects to be managed) through to $70,000-150,000 for large scale/complex projects that deal with more than minor effects on multiple species/ecosystem types and require offset/compensation modelling, or in the case of significant infrastructure projects in sensitive environments, costs could reach closer to $1 million[91] but are considered rare.

In some scenarios, the gross cost may be attributable to the NPSIB and in other scenarios these gross costs reflect the status quo and are not attributable to the NPSIB at all. Where the NPSIB creates only a marginal increase in the cost (scope and complexity) of an ecological impact assessment compared to the status quo, then only a portion of the gross costs may apply. It is not possible to estimate what that portion would be as it varies based on a range of factors discussed above, including by how much the bar needs to be lifted to achieve best-practice. Feedback suggests this is more likely linked to small to mid-sized assessments.

Any net additional transaction costs associated with consents applications for new use, occupation, development and subdivision (or established activities that are greater in scale and intensity) will be **discrete costs** to landowners and entirely dependent on the presence of indigenous biodiversity and the land use aspirations of the landowner that require a consent. The timing of these transaction costs is **not limited to the short-term**. The costs will apply (and accrue) from the date of NPSIB commencement (or no later than 5 years after commencement)[92] whenever consents are sought. So long as there is remaining development and subdivision potential of a site, a landowner whose land contains indigenous biodiversity **may incur such transaction costs more than once** (i.e. with each consent application where the activity has the potential for adverse effects).[93]

[91] For some large infrastructure projects, the indicative cost range of around $1m will generally be capturing some of the costs associated with the construction phase (e.g. fauna management such as bat surveys or bird nest surveys).

[92] Clause 4.2 (Timing for planning provisions for SNAs).

[93] Most properties that can be further developed/subdivided would be expected to achieve this with one consent. Only large properties that are perhaps developed/subdivided in stages over time would be more likely to result in multiple, discrete consent applications.

Table 6.2 – Indicative Gross Cost Range of Ecological Impact Assessments to Support Consent Applications

Project/Effects Scale Range	Ecological Impact Assessment (excluding any residual effects modelling). Clause 3.24 reporting may or may not apply.	Residual effects modelling (if applicable) for offsetting/ compensation). Clause 3.24 reporting applies by default.	Total Ecological Impact Assessment including residual modelling (if applicable). Clause 3.24 reporting applies by default.
Small/Low E.g. single dwelling development, or a site with limited biodiversity values (such as grazed farmland).	$3,000-7,000	$2,500	$5,500-$9,500
Medium/Mid E.g. Small-moderate sized residential subdivision, or a site requiring some fauna surveys/modelling.	$15,000-20,000	$10,000-$20,000	$25,000-40,000
Large/High E.g. Large residential subdivision/masterplan area, or a site with multiple impacted habitats such as streams, natural inland wetlands and vegetation, or Threatened or At-Risk (declining) species present.	$50,000-100,000	$20,000-$50,000	$70,000-150,000
Very Large/Very High E.g. Significant infrastructure project (such as windfarm, dam, large roading project), sensitive environments, detailed fauna surveys with prolonged data collection periods.	Up to $1 million		
Notes – cost are broad order of magnitude only for the purposes of this CBA and are intended to reflect the potential costs to produce a report(s) that would be submitted with a consent application (AEE). Costs exclude ongoing information requirements, liaison with Council, any hearing costs etc. Costs exclude GST.			

6.3 Compliance Costs for Property Owners

This section builds on the discussion above and examines the compliance costs potentially arising from the NPSIB for private landowners, including owners of Māori land.[94] That is, the costs of meeting conditions of consent that help to manage effects on indigenous biodiversity where the net additional cost is attributable to the NPSIB and would not have occurred under the status quo.

A concern raised in some submissions is the compliance provisions that might be implemented to protect and maintain indigenous biodiversity in SNAs on private property. The NPSIB does not prescribe how this is to be achieved, just the outcomes that must be met. However, it is understood from officials that the intent of the NPSIB is that potential actions (compliance costs) imposed by councils on private landowners to protect and maintain indigenous biodiversity can only be required in response to resource consent applications on private land that have adverse effects on SNAs or indigenous biodiversity outside of SNAs. This CBA therefore excludes the potential for actions such as fencing[95] to be imposed on private landowners simply because an SNA was identified on their property, for example, and considers only potential consent-related compliance costs.

6.3.1 Discussion of Relevant Issues

Under current RMA decision making, there is already an emphasis on consent conditions to manage effects, including effects on indigenous biodiversity. However, M.E has assumed, for the purposes of this CBA, that the implementation of the NPSIB, and particularly the requirement to:

- apply the effects management hierarchy (clause 3.10(4)(a) or 3.16(2)(a)), and
- consider consent conditions to achieve restoration in priority areas (clause 3.21(4)),

could lead to more prescriptive and onerous conditions of consent, particularly for those districts where the effects management hierarchy is not already being applied. That is, where consents are approved, a greater scope or level of action may be required by the landowner in some circumstances to manage effects on SNAs (or effects on indigenous biodiversity outside of SNAs) in accordance with the effects management hierarchy, including complying with the principles of biodiversity offsetting and compensation (where applicable). Where these changes occur, this will translate into increased costs for landowners to protect and maintain indigenous biodiversity for some situations of new use, development, subdivision or occupation relative to the status quo.

Added to this, there will likely be a greater requirement for consents per se in districts that have not comprehensively scheduled SNAs (discussed above), and these net additional consents will have associated compliance costs that are also attributable to the NPSIB.

[94] For the purposes of this CBA, M.E has assumed that there is no material difference between net additional compliance costs on general land as for Māori land and they can be assessed together. If anything, compliance costs may be less on Māori land given that the effects management hierarchy is not necessarily to be applied and iwi have input to objectives, policies and methods. There is also potentially greater incentives for protecting indigenous biodiversity on Māori land that may reduce the cost of compliance for landowners.

[95] Other examples of costs to landowners include animal pest and plant pest control (including potentially increased on-the-ground efforts if already carried out but proving ineffective to maintain and protect indigenous biodiversity).

This is a key assumption for the purposes of this report – that in some cases, a gross or marginal increase in consent related compliance costs could be attributable to the NPSIB. For the purposes of the discussion below, compliance costs associated with conditions of consent can include one or both of the following:

1. Physical actions required to avoid or manage effects.
2. Monitoring and compliance reporting.

Physical Actions

The physical actions required of landowners to satisfy conditions of consent (which may include biodiversity offsetting and compensation) can be broadly summarised as follows[96]:

- Planting[97] - This may include new areas of riparian or non-riparian planting, or infill/enrichment planting.[98] Landowners may purchase the plants and plant them themselves, or if the task is large, specialised, in difficult locations, or subject to auditing, there are contractors that can supply the plants and do the site preparation and planting.
- Fauna surveys and species translocation/salvage[99] This is carried out by specialist companies.
- Pest animal control – This is often a condition used to improve what indigenous biodiversity is left at an impact site, particularly if residual effects can't be mitigated, but may also apply to offsetting and compensation sites. Animal pest control may be one-off (to knock-back populations), or for a fixed time-period. Depending on the scale of the site/pest issue, this might be something that a landowner can do themselves, else it can be outsourced to a specialist company. Costs can be highly varied depending on the species being controlled and the frequency of control.
- Pest plant control – This tends to focus on the worst exotic species which are often scheduled in a council's pest plant plan. As above, a landowner may be able to carry out this control or it can be outsourced to a specialist company. Costs can be highly varied depending on the species being controlled and frequency of control.
- Fencing – This may range from predator proof fencing, through to fencing to prevent stock grazing, to more simple fencing to create a physical barrier or delineation to prevent clearance encroachment (for example) over time.

There were some indications of these unit costs in submissions to the draft NPSIB. M.E has also sought input on these unit costs from a fencing company and has drawn on a recent report by Forbes Ecology.[100] Table 6.3 provides indicative estimates of the range of costs from those sources for the purposes of this

[96] Due to insufficient data, average costs for species relocation/salvage are not included.

[97] We note that planting can also be a condition of consent to manage landscape, amenity and noise effects. We consider only planting required to manage effects on indigenous biodiversity.

[98] Where the density of existing planting is increased to kick-start or accelerate natural regeneration processes.

[99] See for example: https://www.doc.govt.nz/contentassets/02b1a908bcb34ff1a37652ad357d3e2c/lizard-salvage-and-transfer-nz.pdf

[100] Forbes Ecology, 2021. Review of Actual Forest Restoration Costs – Contract Report Prepared for Te Uru Rakau – New Zealand Forest Service. Thanks also to advice provided by Central Fencing.

CBA. It is noted that conditions of consent may require one or multiple costs to be incurred (the unit costs may therefore be additive). For example, fencing, enrichment planting and pest control combined.

Importantly, planting, pest control, fencing etc is already a common requirement of consents issued under status quo regulation that relate to indigenous biodiversity, or even if not prescribed by existing regulation, is carried out on some projects where clients want to take every opportunity to demonstrate that adverse effects will be managed to protect and maintain indigenous biodiversity. Only where the NPSIB requires that these actions be carried out where it would not otherwise have been a condition of consent, or it requires a higher standard of action than would otherwise have been delivered, are these costs (or marginal costs) attributable to the NPSIB.

Table 6.3 – Indicative Range of Gross Costs for Physical Actions Required by Conditions of Consent to Avoid or Manage Effects on Indigenous Biodiversity

Action/Service Provided	Low (Average unless specified)	High (Average unless specified)
Planting – Forest Restoration[101]	Average: $22,300/ha Max: $57,900/ha	Average: $27,400/ha Max: $73,500/ha
Planting – Infill/Enrichment	$6,900/ha	$15,000/ha
Pest Animal Control	$500/ha/annum	$1,600/ha/annum[102]
Pest Plant Control	$200/ha/annum	$2,000/ha/annum
Fencing – Stock (Sheep Height)	$25/m (mesh) plus $200/corner plus $800/gate	$27/m (7 wire) plus $200/corner plus $1,000/gate
Fencing – Stock (Deer Height)	$30/m (mesh) plus $300/corner plus $1,000/gate	$40/m (mesh) plus $300/corner plus $1,500/gate
Fencing – Predator Proof (Conservation Approved)[103]	$400/m plus $15,000 per fish screen (stream crossing)	

The indicative costs in Table 6.3 are also the total costs to the landowner before any subsidies or funding that may be available. In a recent survey of restoration and reversion/remnant planting projects (Forbes, 2021), the proportion of actual costs met by funding sources (which included One Billion Trees, Regional Council contributions, or QEII National Trust contributions) ranged from 30% to 84%.[104] This means that

[101] Forest restoration planting, 1.5m plant spacing, including costs for seedlings, planting (professional), releasing and blanking. Applies two most popular seedling grades. Excludes transport costs ($2.26/km) for plant delivery (Forbes, 2021).

[102] Based on controlling mice, rats, mustelids, cats and possums in remnant sites.

[103] 1.8m high, capped and dug skirt. Rated to keep mice out.

[104] It is not known if this funding was for the initial establishment cost, or whether it contributes to ongoing costs. We assume the former.

where funding is available to landowners, total project costs, particularly for initial establishment, may be limited to 16% to 70% of the gross costs. Only where there is no financial support do landowners face 100% of the costs. For this CBA, we have not factored in funding/subsidies in order to show the true cost.

Monitoring and compliance reporting

Monitoring and compliance reporting of effects (by the consent holder) is considered a relatively common condition of consent, particularly for larger scale projects, but is sometimes poorly done or impractically prescribed according to feedback from some ecologists contacted. Some consents may require monitoring for only a short time (1-3 years), while other large-scale projects may require monitoring over the long-term (e.g. 30 years), and sometimes at an annual frequency. These cumulative costs (which can add up significantly over time) are borne by the consent holder (landowner) and are separate from compliance monitoring carried out by councils (and touched on in Section 4.3).

The cost of monitoring and reporting will depend on the effects being monitored. Higher costs are associated with a need to survey fauna counts (as these are labour intensive) and lower costs may be associated with monitoring the health and growth of planted areas (i.e. canopy closure). Monitoring and reporting is typically a service provided by ecological consultancies and one consultant interviewed speculated that in the near future, most of consultancy time and resources will be spent on meeting monitoring requirements. This supports the assumption that compliance costs generally will rise to some degree under the NPSIB (although not necessarily evenly across the country).[105] Feedback was that monitoring and reporting costs are difficult to generalise. As such, this CBA does not provide an estimate for the range of compliance monitoring costs potentially faced by landowners (as a base for gauging marginal increases in cost).

Importantly, monitoring and compliance reporting is already a requirement of some consents issued under status quo regulation, or even if not prescribed by existing regulation, may be volunteered on some projects where clients want to take every opportunity to demonstrate that adverse effects will be managed to protect and maintain indigenous biodiversity. Only where the NPSIB requires that monitoring and compliance reporting be carried out where it would not otherwise have been a condition of consent, or it requires a higher standard or frequency of monitoring and reporting than would otherwise have been delivered, are these costs (or marginal costs) attributable to the NPSIB.

6.3.2 Scenarios of Potential Compliance Costs on Private Landowners

Any net additional compliance costs associated with conditions of consent for new use, occupation, development and subdivision under the NPSIB may be **discrete and/or ongoing costs** to landowners and entirely dependent on the presence of indigenous biodiversity and the nature of the activity consented. The timing of these compliance costs is **not limited to the short-term**. The costs will apply (and potentially accrue) for consents issued after the date of NPSIB commencement (or following the implementation timeframes). So long as there is remaining development and subdivision potential of a site, a landowner whose land contains indigenous biodiversity **may incur such compliance costs more than once** (i.e. with each consent application where the activity has the potential for adverse effects).

[105] Potentially relevant context: feedback from one consultant was that the implementation of the NESFM has increased the cost of monitoring by $30,000-$40,000 per project over 5 years (driven by natural inland wetland provisions).

Table 6.4 sets out some potential scenarios of where compliance costs associated with conditions of consent may arise for new use, subdivision or development (or established activities of a greater scale and character). The examples include situations where the NPSIB does not change the cost of meeting consent conditions, as well as situations where conditions of consent, or specific actions to manage effects were not required under status quo regulation/decision making. As discussed above, this may be more likely to apply in those districts who have yet to schedule SNAs or who do not currently apply the effects management hierarchy. Marginal changes in compliance costs attributable to the NPSIB fall in between these scenarios.

The scenarios are focussed on managing effects on SNAs only. While there may be net additional compliance costs associated with managing effects on indigenous biodiversity outside of SNAs, including effects on specified highly mobile fauna areas, this has not been explicitly covered. Such scenarios may be similar in nature to those described for SNAs, and any implied net additional compliance costs may be additive to those suggested below. Where a district already defines SNAs and/or has planning provisions that protect or maintain indigenous biodiversity to the same extent required by the NPSIB, it is not reasonable to attribute any additional compliance costs to the NPSIB – they form part of the status quo regulatory environment. The following scenarios would not apply in those districts.

The examples in Table 6.4 are at the property level and are hypothetical and not exhaustive. They assume consent has been granted with conditions and they consider the potential land use and the indicative scale and complexity of landowner actions/monitoring that may be required – through those conditions – to satisfy the effects management hierarchy, or other effects management approaches in District Plans that have implemented the NPSIB.

The indicative scenarios show examples where there are no net additional compliance costs to private landowners due to the presence of an SNA (green shading), to net additional compliance costs that are likely to be relatively minor or moderate in cost (orange shading), and net additional compliance costs that may be larger relative to the status quo and/or likely to be more costly in real terms (red shading). Where possible, the dollar value of any net additional compliance costs for the stated scenario are estimated based on unit costs described above. The costs do not take into account potential subsidies/funding that may be available for restoration planting, pest control, fencing etc.

Table 6.4 - Scenarios of Potential Consent Condition Compliance Costs Under the NPSIB

Land Type/Situation	Theoretical Scenario	Potential Outcome	Compliance Cost
Constraints on established activities where no change is anticipated			
A farm contains an SNA (roughly square shape).	The farmer wants to clear indigenous vegetation to maintain improved pasture that may adversely affect an SNA.	The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture and the clearance equates to the same area cleared in the past.	The District Plan already required a consent for indigenous vegetation clearance. The NPSIB does not increase the nature of scope of any conditions of consent. No net additional compliance costs attributable to the NPSIB.
			The District Plan did not already require a consent for maintenance of improved pasture. Maintaining improved pasture remains a permitted activity. No compliance costs attributable to the NPSIB.
			The District Plan did not already require a consent for maintenance of improved pasture. Although considered unlikely, it is possible that a consent could be required under the NPSIB. Fencing the SNA (to ensure no incursion of clearance and exclude harmful stock grazing[106]) is a condition of consent. The SNA is 2ha and has no current fencing. No buffer area is required within the fence. The cost to fence

[106] Not all stock grazing is detrimental to SNAs. It depends on the intensity and type of stock, and the nature of the SNA habitat. Feedback stated that sheep grazing in tussock grasslands, for example, can be beneficial for the biodiversity values of that tussock grassland.

			the SNA (assuming 7-wire, 4 corners and 1 gate) is $18,000 (one off).
		The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture, but it has been identified that there are Threatened or At-Risk (declining) species in the SNA that may be affected.	The District Plan did not already require a consent for maintenance of improved pasture. Although considered unlikely, it is possible that a consent could be required under the NPSIB. Fencing the SNA plus annual animal pest control are conditions of consent. The SNA is 4ha and has no current fencing. The farm is a deer farm. No buffer area is required within the fence. The cost to fence the SNA (assuming deer fencing, 4 corners and 1 gate) is $30,450 (one off). Annual pest control in the SNA is $4,000. Total cost in year one is $34,450 plus ongoing costs of $4,000 per annum.
A plantation forest is ready for harvest.	The forest does not contain an SNA.	Harvest, remediation and planting occurs unconstrained by the NPSIB.	No net compliance costs attributable to the NPSIB.
	The forest does contain an SNA.	The SNA does not contain Threatened or At-Risk (declining) species. Harvest, remediation and planting occurs unconstrained by the NPSIB.	No net compliance costs attributable to the NPSIB.
		The SNA contains Threatened or At-Risk (declining) species.	The District Plan did not already require a consent for plantation forestry harvest/ remediation/ planting activities. Effects are managed under the NESPF. The council does not introduce more stringent regulation under the

			NPSIB. No net additional compliance costs attributable to the NPSIB.
			The District Plan did not already require a consent for plantation forestry harvest/ remediation/ planting activities. Effects are managed under the NESPF. Although considered unlikely, the council does introduce more stringent regulation and a consent is required. Consent is granted on the condition that the SNA is felled gradually (over a specified period of time) and annual monitoring of the population of Threatened or At-Risk (declining) species is required for two years (including a pre-harvest baseline survey). Monitoring costs unknown.
Constraints on new use, subdivision and development or established activities that are greater in scale or character.			
Subdivision of a property containing an area(s) of SNA	A landowner is able to subdivide off one or more lots in accordance with rules around minimum lot sizes. Each lot includes feasible driveway access and a building site.	Lot boundaries and building platforms/accessways have no adverse effect on the SNA(s) on the property and the SNA(s) has no impact on the location of lot boundaries.	The District Plan already required a consent for subdivision and included conditions to manage effects on indigenous biodiversity. The NPSIB does not increase conditions of consent. No net additional compliance costs attributable to the NPSIB.
		The subdivision is large. Potential for minor effects on the SNA are identified in relation to roading layout and construction.	The District Plan already required a consent for subdivision but effects on SNAs was not part of the policy framework. The NPSIB increases the conditions of consent to manage

			effects on SNAs. The consent is granted with a condition that native planting is required to buffer the SNA from the adjoining new roadway. The area to be planted and maintained until established is 1ha. The cost of restoration planting is $25,000 and plant pest control for the first 5 years until established is $1,000 per annum. Total cost to manage effects on the SNA is $30,000 (undiscounted).
		The SNA's ecological integrity is degraded. It is 3ha in size.	The District Plan already required a consent for subdivision but effects on SNAs was not part of the policy framework. The NPSIB increases the conditions of consent to manage effects on SNAs. The consent is granted with the condition that the health and resilience of the SNA is enhanced. The consent requires enrichment planting and annual animal and plant pest control. Initial planting and pest control costs are $37,200 and ongoing annual costs are $7,200.
The landowner wants to build a new dwelling on a vacant lot in accordance with the residential density rules of the District Plan. The lot existed prior to the commencement of the	The lot contains an SNA.	The location of the SNA on the site is not near the preferred building site. The owner is able to build a dwelling and associated infrastructure with no adverse effects on the SNA.	No consent required under the status quo or with NPSIB. No compliance costs attributable to the NPSIB.
		The location of the SNA on the site means that some minor vegetation	The District Plan already required a consent for indigenous vegetation clearance and included conditions to

NPSIB. *(Scenarios can also apply for expansion of existing building footprint that requires vegetation clearance or adverse effects on SNAs).*		clearance of the SNA is required. Effects must be managed.	manage effects on indigenous biodiversity. The NPSIB does not increase conditions of consent. No net additional compliance costs attributable to the NPSIB.
			The District Plan did not already require a consent for vegetation clearance in an SNA. The NPSIB increases the conditions of consent to manage effects on SNAs. The consent is granted with the condition that 500sqm of native planting is carried out on-site to offset the loss of habitat (as determined by the AEE). The cost of planting is $1,500.
		The lot is totally covered with an SNA and/or there is no practical (and feasible) alternative site for a building platform or associated dwelling infrastructure. A larger amount of SNA clearance is necessary. Greater effects must be managed.	The District Plan did not already require a consent for vegetation clearance in an SNA. The NPSIB increases the conditions of consent to manage effects on SNAs. The consent is granted with the condition that compensatory action is taken on the remaining area of SNA on the site (as determined by the AEE). Enrichment planting and animal pest control are required. The site is 4,000sqm. Planting costs are $2,500 and animal pest control costs are $400 per annum.
A property owner needs a consent to increase/carry out significant mining/aggregate	The property contains an SNA.	The SNA is not near the area proposed to be developed. The activity would have no adverse effects on the SNA.	The District Plan already required a consent for the activity. The consent is granted with no conditions relating to the SNA. No net

extraction or develop significant infrastructure on a site.			additional compliance costs attributable to the NPSIB.
		There is extensive overlap between the proposed development and the SNA. There are no practical alternatives and a functional or operational need for that location is established. The whole site is a sensitive environment. More than minor effects need to be managed.	The District Plan already required a consent for the activity and required that the effects management hierarchy be applied. The NPSIB does not increase the conditions of consent that would have been issued under the status quo, including offsetting and compensation. No net additional compliance costs attributable to the NPSIB.
			The District Plan already required a consent for the activity. The NPSIB increases the conditions of consent over and above those that would have been required under the status quo. However, the NPSIB conditions of consent are no greater than would have been volunteered by the applicant, including offsetting and compensation. No net additional compliance costs attributable to the NPSIB for a high-profile consent application.
			The District Plan already required a consent for the activity. Although considered unlikely, the NPSIB increases the conditions of consent over and above those that would have been required or volunteered under the status quo. Net additional compliance costs for a high-profile

			consent proposals are however difficult to quantify. Given feedback from ecology consultants, they would not expect compliance costs to be significantly higher than the status quo in this situation.

6.4 Opportunity Costs for Property Owners

This section builds on the discussion above and examines the opportunity costs[107] potentially arising from the NPSIB for private landowners, including owners of Māori land. That is, the difference between unconstrained and constrained value of land where the net additional constraint is attributable to the NPSIB and would not have occurred under the status quo.

This CBA considers two processes through which a reduction in land value can arise from implementation of the NPSIB. The most likely process relates to constraints on future activities and development potential – i.e. new use, occupation, subdivision and development, including changes to established activities that are greater in scale or character. The other process is considered less likely and relates to constraints on established activities, where no change of use or development is necessarily anticipated but the productive potential of the land is reduced in order to maintain indigenous biodiversity in an SNA (i.e. productive land is retired). Situations where this might occur are very limited on the basis that there is not expected to be any statutory requirement for landowners to cease established activities in or around SNAs identified on private land (with controls potentially only applying when consents are required). Scenarios of these two processes are discussed later in this section.

6.4.1 Discussion of Relevant Issues

Opportunity costs on land values are considered most relevant to general and Māori land (particularly Treaty Settlement land) and combined these tenures account for 62% of the country with 18% of that with indigenous land cover (making up 27% of all indigenous land cover according to the LCDB)[108].

Opportunity costs are considered less relevant to Crown and DOC administered land which combined account for 38% of the country with 77% of that with indigenous land cover (making up 73% of all indigenous land cover). Despite the higher indigenous coverage of DOC and Crown land, this land is often protected through other legislation, not typically traded in the property market, and is less subject to pressure and change of use, subdivision or development, or are not valued for their productive potential.[109] The Crown (through taxpayer revenue) pays the cost of that protection and given that DOC's mandate is to protect public conservation land, there is no real opportunity loss (other than perhaps concessions), attributable to implementation of the NPSIB. As such, the focus of this assessment of opportunity costs is on general and Māori land, with Māori land most likely to have above average coverage of indigenous biodiversity.[110]

It is considered that the provisions of the NPSIB have been constructed in a way that gives specific consideration to the way in which the provisions relating to the protection of SNAs and indigenous biodiversity could give rise to constraints on the new use, subdivision and development of general and Māori land. This is evident in:

[107] In microeconomic theory, the opportunity cost of a particular activity is the value or benefit given up by engaging in that activity, relative to engaging in an alternative activity.

[108] Based on Section 3.3 analysis.

[109] The exception being crown land leases/licences which are considered as part of private land for the purposes of this Section.

[110] Refer Section 3.3 – Spatial Analysis.

a) the number of 'exceptions' that have been identified with regards to adverse effects on SNAs,
b) specific activities identified as able to take place, albeit under certain circumstances, and
c) for certain activities, limiting the scope of what effects on indigenous biodiversity should be considered in decision making.

Through these clauses (many modified in response to stakeholder feedback and public consultation), the potential scope of opportunity costs arising from new use, subdivision and development is limited to a range of specific circumstances necessary to achieve the objective of the NPSIB as shown in Figure 6.1 (and discussed below).

Importantly, the NPSIB does not provide any direction on the current or future zoning of general or Māori land. This is contrary to the NPS for Highly Productive Land for example, which guides Council's determination on the best potential use of land in specific locations for primary production, rural lifestyle living or urban expansion. This is a relevant factor in determining the scale of opportunity costs on landowners under the NPSIB, as property values are most strongly influenced by what is enabled on the land through zoning, followed by the size of the land parcel, with location, slope, aspect and other physical attributes also influencing price. In effect, property values are the 'capitalised value' of the economic activity that can be accommodated on that land.

The NPSIB is based on avoiding or managing effects on indigenous biodiversity on each site and therefore targets primarily the location and scale of the activity rather than the nature of the activity itself, which is still determined by the underlying zoning and other spatial overlays and rules in a District Plan. The NPSIB is intended to create (in many districts, but not all) another layer of effects to be considered in decision making for new use, subdivision and development, but in most cases is not the determining factor on what can be realised on general or Māori land. In most cases therefore, any opportunity costs attributable to the NPSIB are likely to have a marginal effect on land values, if any.

6.4.2 Literature Review

To inform an understanding of potential opportunity cost attributable to the NPSIB, a literature review was completed. The review canvased the effects of land use regulations (like those anticipated in District Plans to protect and maintain SNAs and indigenous biodiversity outside of SNAs) on property values and the impacts of environmental amenities on values. Appendix B summarises the findings. Where the change is estimated or quantified, it is reported. We note that not all studies necessarily relate to planning regulation that protects environmental amenities on private land, which is a key focus of this section of the CBA. However, those studies do have wider relevance for protecting SNAs on Crown or DOC land and how that indirectly affects private land values.

It is worth noting that this literature review shows a selection of the relevant studies. There are not many studies that investigate the effects of land use regulations on property values with regards to natural amenities that closely aligns with/reflects the approach being suggested with the SNAs in the NPSIB. Most of the available studies are in the United States and Australia, and consequently they have a different set of conditions that apply. Regardless, there are important points and parallels that can be drawn from the available literature. These include:

- The results are mixed and inconclusive in terms of the direction and size of impacts.

- Looking across the different studies show that there is an underlying tension between the effects of the regulation to protect and enhance environmental values, and the potential to create adverse outcomes like constraints.

- Regulation and land development restrictions that preserve natural amenities can have a positive impact (opportunity benefit) or negative impact (opportunity cost) on property values. The impacts appear to be associated with how natural amenities are traded-off against other attributes. These trade-offs are location specific.

- While some properties may experience an opportunity cost (reduced value) because of regulatory constraints, other properties nearby may experience an opportunity benefit based on their proximity to the area of regulation.

- The regulations and provisions appear to impact values through different mechanism, including generating a scarcity effect, and also changing the scale/intensity of the land use.

A study carried out in 2019 for Wellington City Council (Darroch Limited)[111] is directly relevant to understanding opportunity costs on private landowners that may be attributable to the NPSIB. This study used desktop property valuation techniques to understand how the presence of an SNA (and associated provisions to protect that SNA) affected the development potential and therefore land value of selected properties. The report acknowledged that "*any potential future development or subdivision is captured in the prices paid, even if the landholder does not propose to imminently realise this potential by carrying out the work*" (Darroch, page 12). It also acknowledged that "*any widespread removal of attractive natural features such as native bush and the like can also negatively impact the residual value of the property*" (Darroch, page 9). We understand that the research therefore considered the net effect of realising development opportunities on specific sites.

Key strengths of the research include the detailed assessment of status quo regulations on development potential and how consenting requirements might change with the proposed SNA provisions[112]; and close examination of the established land use, SNA location on the site, topography and other development constraints of each site to distinguish what development is enabled versus what was practical irrespective of the SNA provisions. The research also covered SNAs in different zones.

A limitation of the research is that it was based only on a sample of 18 properties (although given the detail required for each property, this was possibly a practical constraint of the approach taken). While the report claims the sites are representative of properties containing SNAs, this is difficult to confirm. It appears that properties with only a minor area of land within an SNA are not represented in the sample. The report did state that 1,927 private landowners contained an area of preliminary defined SNA in Wellington City. A sample of 18 properties accounts for just 0.9% of all potentially affected properties. Similarly, even if the sample was representative of the 1,927 private landowners containing an area of SNA, it is not possible –

111 https://planningforgrowth.wellington.govt.nz/__data/assets/pdf_file/0016/3247/SNA-Impact-on-Property-Owners-Report-Darroch-2019.pdf

112 For example, on one large vacant residential zoned piece of land that had 100% SNA coverage (and that would be difficult to develop due to its irregular shape and steep contour), multi-unit development on the site currently requires a resource consent, with effects on existing indigenous vegetation already an assessment matter. It was considered that the SNA provisions did not make that assessment significantly more stringent than under the status quo – only a moderate opportunity cost on land value was therefore estimated (-14%).

based on the information provided – to consider the potentially affected properties in the context of total Wellington City private properties (i.e. relative to properties that do not contain an SNA).

The report identified the potential for losses of production but estimating the implication of those losses on land value was outside the scope of the study. The focus was on development potential for residential use (i.e., subdivision that would allow for additional dwellings, or extensions of existing buildings/ dwellings).

A key feature of all 18 Wellington City sample properties was that the SNAs were situated on highly sloping land (that is, properties that contained SNAs had land that was very steep). This land was considered highly constrained for development irrespective of the SNA. This was a significant factor in limiting the net impact of the SNA provisions over and above the status quo in Wellington City sample properties. Table 6.5 provides a summary of the 18 case studies and the estimated reduction in land value under the 'with SNA provisions' scenario).

Of note, half of the non-rural properties assessed (7 out of 14) were determined to have no practicable development potential even without provisions to protect the SNA on those properties. The impact of the SNA provisions on land value was therefore nil. For those non-rural parcels that did have some development potential – this realisable potential ranged from extending the existing buildings to adding additional sections through subdivision.

Table 6.5 – Summary of Land Value Impacts (Opportunity Costs) from Darroch, 2019 (Wellington City)

Property Type	Study ID	Zone (WCC)	Property Size (Ha)	Indicative SNA Coverage (%)	Land Value Impact % (Compared to pre SNA Value)	Average Case Study Land Value Impact %	Average Range of Land Value Impacts Total % *
Rural **	1	Rural	1.9403	Described but not quantified	12%	7%	0-10%
	4	Rural	45	"A large proportion"	5%		
	5	Rural	55	"A portion"	6%		
	7	Rural, Ridgelines Hilltops Overlay	1.7939	100%	5%		
Residential No Potential	2	Outer Res	0.1442	59%	0%	0%	0-5%
	6	Outer Res	0.1509	65%	0%		
	8	Outer Res	0.0799	34%	0%		

	10	Business 1 and Open Space B	0.9252	"Part" of Business 1 area.	0%		
	11	Outer Res	0.3097	"Majority"	0%		
	12	Outer Res	0.0857	40%	0%		
	18	Inner Res	0.2698	Described but not quantified	0%		
Residential Limited Development Potential	3	Outer Res	0.2937	48%	22%	10%	5-20%
	9	Outer Res	0.2366	42%	7%		
	13	Outer Res	0.1940	"Majority"	9%		
	14	Inner Res, Character Area, Hazard Fault Line Overlay	0.4216	Described but not quantified	0%		
Large Blocks with Development Potential	15	Outer Res	0.3331	Not specified.	14%	10%	12-30%
	16	Outer Res	1.982	100%	14%		
	17	Outer Res	0.8367	"Majority"	3%		
Source: Darroch Limited. SNA's – Implementation by Wellington City Council and Impact on Property Owners, 2019. Redacted version. Refer original report for full case study details.							
** It is not clear how the range of value losses has been determined relative to the case study results. For example, where there are case studies showing 0% impact, but the minimum range is 5%, or the case studies showing a 3% impact by the minimum range is 12%. M.E has placed less emphasis on these ranges, and more on the range of the sample impacts.*							
*** Land value impacts exclude any loss of return where an SNA is in an area of exotic/plantation forest and that would prevent harvesting of trees in that extent.*							

Other key findings of the research were that for residential properties containing SNAs with limited development potential – i.e., a second dwelling or several new lots, "*the SNA is likely to have a far greater impact. In these cases, the reduction in land values ranges from 0% to -22% with an average of -10%*" (Darroch, page 23). Note, this finding related to properties with 42% SNA coverage or higher.

Large residential blocks with development potential "*pose the most difficulty*" to gauge impacts on value. These 'large blocks' ranged from 3,330sqm to 1.98ha.[113] Of the three sampled, land value impacts from the SNA provisions ranged from -3% to -14% (average of -10%), although the report subsequently suggests a range of -12-30% for reduced land values in this property category[114].

In Wellington City, the SNAs on Rural zoned land "*generally cover steeper terrain unsuited to development. The loss in value therefore arises from restriction on siting of any dwelling, or in terms of optimising subdivision of the land*" (Darroch, page 14). Opportunity costs in the Rural Zone ranged from -5 to -12% (average -10%), with an overall suggested range of 0% to -10% loss in land value for properties in this category.

The findings from Darroch (2019) and other available literature, limitations notwithstanding, have been taken into consideration in the scope of scenarios discussed below that may or may not give rise to opportunity costs under the NPSIB.

6.4.3 Scenarios of Potential Opportunity Costs for Private Landowners

The following scenarios in Table 6.6 assume that under the status quo, there are no objectives, policies or rules that protect or manage indigenous biodiversity from new use, subdivision and development, or from expansion of established activities. This does not reflect the status quo given existing requirements in the RMA for District Plans to protect SNAs and maintain indigenous biodiversity as confirmed in the case studies examined for the CBA (Section 3.5).[115] Therefore, the opportunity costs below are the worst case scenario where they are attributed wholly to the implementation of the NPSIB (if at all). Where a district already defines SNAs and/or has planning provisions that protect or maintain indigenous biodiversity to the same extent required by the NPSIB, it is not reasonable to attribute any constraints to new use, subdivision and development to (those aspects of) the NPSIB – they form part of the status quo regulatory environment. The following examples would not apply in those districts.

These scenarios are at the property level and are hypothetical and not exhaustive. They apply to general tenure land, with potential for opportunity costs on Māori Land discussed separately below. The sizes of the properties and SNAs or affected land areas are examples only and intended to show a range of impacts across different relativities. They consider the potential land use and the associated value that is embodied in that use. Some examples may be cumulative (i.e. one or more example may apply to the same property). The corresponding benefits to the landowner (and the wider public) of having indigenous biodiversity on The example properties (and the ecosystem services associated with that) are not captured here (and are discussed at a high-level in Section 7).

The indicative scenarios show examples where there are no opportunity costs to general landowners due to the presence of an SNA (green shading), to opportunity costs that are likely to be relatively minor (orange shading), and opportunity costs that may be more significant (red shading).

[113] M.E note that these are likely to be considered small development sites in some districts where greenfield landholdings with residential potential can be significantly larger.

[114] The increase from an average of 10% from the sample and 12-30% is not explained.

[115] Refer Draft s32 and Indicative CBA report for a summary of existing case study council provisions to manage effects on indigenous biodiversity.

Opportunity costs attributable to the NPSIB are considered to be one-off costs that are borne by current owners only, i.e. those owners at the time that the NPSIB comes into effect. This is because current owners may have had unconstrained (or less constrained) opportunities without the NPSIB and reduced opportunities with the NPSIB. The change in the potential value of their land occurs when the NPSIB comes into effect (i.e. in the short-term) even if the opportunity cost is not felt in-the-hand until the land is sold. Once sold, there is no further potential for opportunity costs as new buyers will have already factored in the reduced development (or use) potential of the land in the price they paid and the NPSIB will be part of the status quo regulatory environment for those buyers.

Table 6.6 – Indicative Scenarios of Potential Opportunity Costs Under the NPSIB – General Land

Land Type/Situation	Theoretical Scenario	Potential Outcome	Opportunity Cost
Constraints on established activities where no change is anticipated			
A farm contains an area defined as an SNA.	A farmer wants to clear indigenous vegetation to maintain improved pasture that may adversely affect an SNA.	The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture and the clearance equates to the same area cleared in the past.	The District Plan already required a consent for indigenous vegetation clearance. The NPSIB does not further constrain the use of the land for improved pasture. No net change in the productive potential of the land over time. No productive land is permanently retired because of the SNA. No reduction in land value or opportunity cost attributable to the NPSIB.
			The District Plan did not already require a consent for maintenance of improved pasture. Maintaining improved pasture remains a permitted activity. The NPSIB does not further constrain the use of the land for improved pasture. No net change in the productive potential of the land over time. No productive land is permanently retired because of the SNA. No reduction in land value or opportunity cost attributable to the NPSIB.
		The farmer can provide adequate evidence to demonstrate that the clearance is part of a regular cycle of periodic maintenance of pasture but it has been identified that there are	The District Plan did not already require a consent for maintenance of improved pasture. Although considered unlikely, it is possible that a consent could be required

		Threatened or At-Risk (declining) species in the SNA that may be affected.	under the NPSIB. Consent is granted with conditions to fence the SNA but the clearance activity is otherwise unconstrained. The SNA does not materially contribute to the productive area of land. No net change in the productive potential of the land over time. No productive land is permanently retired because of the SNA. No reduction in land value or opportunity cost attributable to the NPSIB.
		Although considered a low probability scenario, the land previously cleared for improved pasture has itself become an SNA.	The NPSIB wholly constrains the clearance of the new SNA. The land is retired from improved pasture.[116] Indicatively, the retired land is 2ha. The farm is a dairy farm and the total productive area of the farm is indicatively 155ha[117]. Assuming all land was equally productive (average industry operating profit before interest of $2,750/ha[118]), the total loss of 2ha of productive land therefore equates to an estimated 5% reduction in area (with an assumed corresponding reduction in average pre-tax returns (-$5,500/ annum) and land value all else being

[116] In this hypothetical scenario, the farmer may not be precluded from grazing the SNA, but the area would be less productive relative to improved pasture (which can potentially be irrigated and fertilised). The opportunity cost would be correspondingly less if the new SNA retained some degree of productive use.

[117] This is based on the average dairy farm size in New Zealand in 2021 (https://www.statista.com/statistics/1102345/new-zealand-dairy-farm-size/). This is

[118] Refer Appendix C for equivalent earnings before interest, tax, rent and manager wage for other farm types and locations.

			equal)[119]. An opportunity cost of 5% is attributable to the NPSIB.
	A farmer grazes land that has been identified as an SNA.	The grazing of the SNA by stock may or may not have adverse effects on that SNA.	As an established activity that does not change in character or scale, the NPSIB does not impose (via Council) any constraints on grazing. No net change in the productive potential of the land over time. No productive land is permanently retired because of the SNA. No reduction in land value or opportunity cost attributable to the NPSIB.
A plantation forest is ready for harvest.	The forest does not contain an SNA.	Harvest, remediation and planting occurs unconstrained by the NPSIB.	No change in the productive potential of the forest. No reduction in the value of the land for plantation forestry. No opportunity costs attributable to the NPSIB.
	The forest does contain an SNA.	The SNA does not contain Threatened or At-Risk (declining) species. Harvest, remediation and planting occurs unconstrained by the NPSIB.	No change in the productive potential of the forest. No reduction in the value of the land for plantation forestry. No opportunity costs attributable to the NPSIB.
		The SNA contains Threatened or At-Risk (declining) species.	The District Plan did not already require a consent for plantation forestry harvest/ remediation/ planting activities. Effects are managed under the NESPF. The council does not introduce more stringent regulation under the NPSIB. No change in the productive potential of the forest. No reduction

[119] It is not practicable for this CBA to identify the pre and post-impacted land value of the farm in this scenario as this will vary considerably across the country. One method for valuing farms is to base this on farm earnings. It is therefore considered appropriate to assume a pro-rata percentage impact between annual earnings and land value.

			in the value of the land for plantation forestry. No opportunity costs attributable to the NPSIB.
			The District Plan did not already require a consent for plantation forestry harvest/ remediation/ planting activities. Effects are managed under the NESPF. Although considered unlikely, the council does introduce more stringent regulation under the NPSIB. The conditions of consent limit only the way and/or rate at which the SNA can be harvested. The forest is large and the owner can negotiate this without incurring significantly greater harvest costs in the SNA. It is still feasible to harvest the SNA. No material change in the productive potential (net returns) of the forest. No reduction in the value of the land for plantation forestry. No opportunity costs attributable to the NPSIB.
			The District Plan did not already require a consent for plantation forestry harvest/ remediation/ planting activities. Effects are managed under the NESPF. Although considered unlikely, the council does introduce more stringent regulation under the NPSIB. The conditions of consent limit only the way and/or rate at

			which the SNA can be harvested. The forest is a smaller woodlot of 10ha and the owner cannot manage this modified harvesting without incurring significantly greater harvest costs in the SNA (which is 1ha, say). Logging and loading costs are on average $28,000/ha.[120] The cost to harvest the 1ha SNA increases by 50% or $14,000 (example only).[121] This reduces the net return from the SNA from an otherwise $30,000/ha average to just $16,000/ha - but is otherwise still profitable.[122] Net return on the balance of the forest is unaffected. Total harvest net revenue across all 10ha is -5%. Assuming a linear relationship between net revenue (profit) and land value, land value of the forest reduces by -5% (even though no land is retired). This minor opportunity cost is attributable to the NPSIB.
Constraints on new use, subdivision and development or established activities that are greater in scale or character.			
	A landowner is able to subdivide off one or more lots in accordance with rules around	Lot boundaries have no adverse effect on the SNA(s) on the property	No opportunity costs on the yield of subdivision associated with the

[120] 2017/18 log prices: https://www.nzffa.org.nz/farm-forestry-model/the-essentials/roads-earthworks-and-harvesting/reports/report-small-scale-grower-harvest-costs-and-returns/

[121] Other harvest costs (roads and haulage are assumed to be unaffected).

[122] Average logging and loading costs would need to more than double (to reach or exceed the average net return) before it was no longer profitable to harvest the SNA. Even then, the forest owner may still choose to harvest the SNA based on overall forest returns.

Subdivision of a property containing an area(s) of SNA	minimum lot sizes. Each lot includes feasible driveway access and a building site.	and the SNA(s) has no impact on the location of lot boundaries.	presence of an SNA. No reduction in the value of the land. *The market value of the lot containing the SNA may (depending on the purpose of the lot) be perceived as being lower (due the absence of useable land area) or perceived as being higher (where the SNA contributes to the amenity of the property). Such price effects are subjective and likely to depend on the size of the SNA relative to the size of the land parcel. Perceptions of lower value are likely to diminish as the size of the land parcel increases relative to the size of the SNA for rural and rural lifestyle properties.*
		The location of the SNA on the parent lot means that one or more fewer lots can be created while still providing suitable access and building platforms.	There is a marginal loss in land value due to its ability to create fewer lots. The landowner can realise less capital from subdividing their property. The value of that opportunity cost will depend on the zone and reduction in yield. For example, a 100ha parcel currently valued at $55m was anticipated to yield 1,365 lots at a density of 20 dwellings/ha before the NPSIB commenced. It is assumed this subdivision would have a potential market value of

			$345m and would yield a pre-tax profit margin of 39.3% after land and development costs[123]. If 5ha of the parcel could no-longer be cleared because it was identified as an SNA[124], this is a 5% reduction in developable area, and a 5% reduction in yield assuming the same density (1,297 lots). Potential revenue is correspondingly decreased by 5% but due to a mix of fixed and per hectare costs, total costs reduce by 4%. Total profit margin reduces to 37.3%. In order to generate the same pre-NPSIB profit margin (%), a developer would need to pay 5% less for the land. The opportunity cost for the current owner is therefore estimated at a loss of $3.0m in land value. *This example assumes that a developer would not be willing to purchase the land for the original value (undiscounted) and accept a lower profit margin (but no less than indicatively 20%). This is a potential outcome as the constrained scenario*

[123] These calculations are based on the MHUD Commercial Feasibility Model (land development) and adopt pre-defined input settings for development cost rates and section prices. Assumptions of gross site area, site value and loss of developable area due to an SNA are M.E's and hypothetical. The examples assume that the cost of purchasing the land (with finance) is factored into the calculation of profit margin, even though land is already owned (and may be owned without a mortgage).

[124] This is very hypothetical and potentially unlikely as we would expect that it would have been constrained by status quo vegetation clearance rules or simply excluded from the subdivision design in many cases if it would otherwise qualify as an SNA.

			is still commercially feasible. In which case, the current owner would experience no opportunity cost. The example also assumes that the unconstrained and constrained lot sizes are the same. If the yield of lots reduces but the size of the lots increases slightly, then revenue could increase, and the opportunity costs would be lower. There is also potential for the opportunity cost to be reduced to some degree if the retention of a greater area of SNA on the parent lot adds to the perceived market value for buyers of the subdivided lot(s). I.e., the sections attract a higher market value/sqm than they would have if there were more sections and no/less SNA.
			There is a marginal loss in land value due to its ability to create fewer lots. The landowner can realise less capital from subdividing their property. For example, a 4ha parcel currently valued at $2.5m could yield 29 lots at a density of 10 dwellings/ha with a potential market value of $11.5m and would yield a pre-tax profit margin of 27.4% after land and development costs. If 1ha of the parcel could no-longer be cleared

			because it was identified as an SNA, this is a 25% reduction in developable area, and (potentially) a 25% reduction in yield (22 lots). Potential revenue is correspondingly decreased by 25% but due to a mix of fixed and per hectare costs, total costs reduce by 16%. Total profit margin reduces to 13.4% (and is likely to be unfeasible). In order to generate the same pre-NPSIB profit margin (%), a developer would need to pay 25% less for the land. The opportunity cost for the current owner is therefore a loss of $625,000 in land value. *Again, this is a worst case scenario and the same caveats in the scenario above apply. Generally, the greater the reduction in yield the greater the opportunity cost when the subdivisions are of a commercial development scale and commercial feasibility considerations apply.*
		The location of the SNA on the parent lot now means that no additional lots can be created as specified adverse effects on the SNA cannot be avoided. I.e. the SNA coverage is so extensive that appropriate building sites cannot be located on the site(s). This scenario is only considered applicable when	The landowner can realise no additional capital from subdividing their property. The value of that opportunity cost will depend on the zone and reduction in yield. For example, a 1,000sqm vacant property is valued at 459,000. If subdivided into two 500sqm

		the net additional lot yield would have been very small – e.g. 1-2 additional lots.	sections, the total revenue (for both lots) is estimated at $597,000 (as there is not a linear relationship between lot size and value).[125] The NPSIB precludes the opportunity to split the property and it remains a 1,000 lot. The value of the parent lot is limited to its use for one residential dwelling (enabled as of right). The forgone capital gain before subdivision costs is $138,000 and $88,000 (say) after subdivision costs (net return). The landowner is worse off by 19% with this opportunity cost attributable to the NPSIB.
The landowner wants to build a new dwelling on a vacant lot in accordance with the residential density rules of the District Plan. The lot existed prior to the commencement of the NPSIB.	The lot contains an SNA. *This scenario applies equally to rural or residential vacant lots.*	The location of the SNA on the site is not near the preferred building site. The owner is able to build a dwelling and associated infrastructure with no adverse effects on the SNA.	No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA. No reduction in land value.
		The location of the SNA on the site is such that the owner must relocate the building platform and/or access to avoid specified adverse effects on the SNA. I.e., there are practical (and feasible)[126] alternatives.	No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA, but the preferred building site is foregone therefore the property might have a lower value than it might otherwise have had on the market.

[125] Indicative section prices by size in this scenario are taken from the MHUD Commercial Feasibility Model (Land Development).

[126] The NPSIB provisions do not provide direction on whether feasibility to develop falls within the scope of 'practical alternative'. For this CBA, we assume that a location for a dwelling on a site that was cost prohibitive would not be a practical alternative, and so clause 3.10(3) would apply.

			There is potential for this to be offset if the retention of a greater area of SNA on the site adds to the perceived market value for some buyers who value the amenity provided by the SNA more than the amenity lost by the alternative building location.
		The lot is totally covered with an SNA and/or there is no practical (and feasible) alternative site for a building platform or associated dwelling infrastructure).	The property is therefore exempt from needing to avoid specified adverse effects. No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA. No reduction in land value.
A property owner wants to expand the footprint of existing built floorspace (established activity, same use). The extension is enabled by the site standards of the zone.	The property is a residential property and contains an SNA. The owner wants to extend the dwelling. *This example applies equally for expanding a commercial building in a business zone.*	The location of the SNA on the site is not near the existing dwelling. The owner is able to extend the dwelling with no adverse effects on the SNA.	No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA. No constraint on further development potential. No reduction in the value of the land.
		The location of the SNA on the site is near the existing dwelling. The owner is not able to extend the dwelling without clearance of some of the SNA (reducing its extent). The landowner is able to modify their extension plans to manage effects on the SNA through a consent. The outcome is sub-optimal.	No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA, but the ability to further develop the property is more constrained than under the status quo therefore the land might have a lower value than it might otherwise have had on the market. This marginal impact is expected to be minor (especially in the context of the total (capital) value of the property.

			There is potential for this to be offset if the retention of a greater area of SNA on the site adds to the perceived market value for some buyers who value the amenity provided by the SNA more than the value of unconstrained dwelling extension options.
		The location of the SNA on the site is near the existing dwelling. The owner is not able to extend the dwelling without clearance of some of the SNA (reducing its extent). The landowner is not able to modify their extension plans to manage effects on the SNA through a consent. There is no further development potential on the site (in terms of building footprint – vertical development may not be precluded).	No opportunity cost on use of the lot for a residential dwelling associated with the presence of an SNA, but the ability to further develop the property is removed compared with the status quo therefore the land might have a lower value than it might otherwise have had on the market. This marginal impact is expected to be minor-moderate (especially in the context of the total (capital) value of the property. Properties with higher re-development potential (low improvement value relative to land value) are more likely to have impacts at the moderate scale as buyers will factor in that redevelopment of the dwelling will be constrained to the existing footprint. *There is potential for this to be offset if the retention of a greater area of SNA on the site adds to the*

			perceived market value for some buyers who value the amenity provided by the SNA more than value of being able to extend the existing dwelling.
A property owner needs a consent to increase/carry out mining/aggregate extraction on a site. The value of the land is tied to the potential net value of the remaining resource (productive potential).	The property contains an SNA.	The SNA is not near the area proposed to be mined/quarried. The activity would have no adverse effects on the SNA.	No change in the productive potential of the property for further mining/aggregate extraction associated with the presence of an SNA. No reduction in the value of the land. No opportunity cost.
		The SNA overlaps the area of the resource to be mined/quarried. There are practical alternatives that could avoid specified effects on the SNA but they are sub-optimal in terms of extraction volumes.	There is a marginal loss in land value due to its ability to yield less minerals/aggregate compared with the status quo. The landowner can realise less capital from mining/quarrying their property. The value of that opportunity cost will depend on the estimated value of the lost earnings (as translated to land value).
		The SNA overlaps the area of the resource to be mined/quarried. There is a functional or operational need for the activity to take place in the location affecting the SNA. There are no practical alternatives. The activity would have adverse effects on the SNA if it went ahead.	The extracted material can be demonstrated to provide a significant national/regional (as applicable) public benefit. The effects on the SNA must therefore be managed and the activity can go ahead with conditions. No reduction in the productive potential of the site relative to the status quo. No reduction in the value of the land. No opportunity cost associated with the SNA.

			The extracted material cannot be demonstrated to provide a significant national/regional (as applicable) public benefit. The effects on the SNA must therefore be avoided and the activity is precluded. Reduction in the productive potential of the site relative to the status quo. Reduction in the value of the land. The significance of the opportunity cost will depend on the estimated value of the lost earnings (as translated to land value). The site may or may not have a residual land value.

6.4.4 Opportunity Costs on Māori Land

SNAs on Māori land (specifically Māori customary and freehold land) are expected to have more extensive coverage of the property area (refer Section 3). The chances that SNA coverage is so extensive that it could (in the absence of any exceptions in the NPSIB) totally preclude use and development are therefore higher than on general land.

Across the six case study areas, between 25% and 79% of Māori Land Court properties contained an area of defined or indicative SNA (Table 3.5).[127] The lower range is based on actual defined SNAs and the upper range is based on a proxy of (indicative) SNAs. As discussed, indicative SNAs are likely to over-represent the likely scale and distribution of SNAs identified under the NPSIB. As such, the lower range is considered more reliable (albeit a sample of two TAs) and should be given more weight. However, in the case of Māori Land Court or Treaty Settlement land, a higher average range should not be discounted as the scale and nature of Māori land is more variable across the case study councils compared to the land use of general land.[128] For example, at a national level, an estimated average of 44% of Māori Land Court parcels (as opposed to properties) contained an area of indicative SNA (Table 3.4) and an estimated 36% of Treaty Settlement land parcels contained an area of indicative SNA (Table 3.6).

The probabilities of SNAs precluding any form of development on Māori land (through a combination of property size and SNA coverage) are examined further in Sections 3.3 and 3.5.[129] While SNA coverage is higher than on general land, the size distribution of Māori land parcels is different, with a greater share of properties being larger in size. This is relevant because even a small percentage share of property area free of SNAs could be a relatively large area that may be suitable for some form of development or occupation (i.e., for papakainga, marae or associated facilities or other plan enabled activities).

MfE acknowledged, following submission feedback, that the consultation version of the NPSIB was too restrictive on Māori land in light of the historical disadvantages of Māori land for development (specifically Māori Freehold Land administered under the Te Ture Whenua Māori Act 1993)[130]. A brief overview on these constraints and challenges is included in Appendix D.

The current provisions for Māori Land can be summarised as follows (drawn from clause 3.18):

- Geothermal SNAs on Māori land – clause 3.13(1) – the level of protection must provide for new occupation, use and development that enables tangata whenua to use and develop geothermal resources.
- Māori land – clause 3.18 – objectives, policies and methods developed in partnership with tangata whenua and owners of Māori lands to maintain and restore indigenous biodiversity and protect SNAs and identified taonga on Māori land must, where practical:

[127] Combines the share of properties with moderate-high certainty indicative SNA coverage with the share of properties with very high certainty SNA (or actual) coverage.

[128] In Southland District for example, Māori Land Court land is often within the national parks.

[129] See also detail provided in Appendix C of the Draft s32 and Indicative CBA report.

[130] Draft Initial Policy Recommendations Report, MfE, March 2021.

- Enable new occupation, use, and development (as applicable to its zoning).
- Enable the provision of new papakāinga, marae and ancillary community facilities, dwellings, and associated infrastructure.
- Enable alternative approaches to, or locations for new occupation, use and development (with options for offsetting and compensation). This is interpreted by M.E as potentially providing a degree of flexibility relative to what is anticipated in the Plan's zoning.
- Councils must realise opportunities to provide incentives for the protection and maintenance of indigenous biodiversity, including SNAs and identified taonga on Māori land (not limited to restoration and enhancement).

The above NPSIB provisions now provide more certainty that new occupation, use and development will not be precluded on Māori land even when SNA coverage is high/constraining. They provide a flexible and enabling approach for Māori land within and outside of SNAs. The provisions are more prescriptive and directive for providing incentives and flexibility that can be used to minimise the potential for any significant opportunity costs being incurred.

The provisions now also promote the same management approach for Treaty Settlement land that is general/fee-simple land as it does for customary and Māori Freehold land, even though the former tends not to face the same constraints for commercially feasible development discussed in Appendix D.

Overall, M.E consider that there is limited scope for the NPSIB to result in opportunity costs[131] - significant or otherwise - on Māori Land. This position is reached through a combination of:

- provisions that are very enabling (potentially more enabling than the status quo regulatory framework in some districts and relatively more enabling than for general land that may have the same or similar indigenous biodiversity and zoning); and
- protecting indigenous biodiversity on Māori land is embedded in iwi's role as kaitiakitanga (guardians).

The development aspirations for Māori land need to be framed in this context as it means that maximising the development potential of the land (as enabled under a District Plan) is not likely to be the appropriate basis for determining status quo development outcomes (as is the common assumption on general land and the basis for general land market-based valuation). This narrows that probability that status quo development potential (without the NPSIB) will be superior to development potential under the NPSIB. Or conversely, that development potential will be sub-optimal under the NPSIB in order to manage effects on indigenous biodiversity compared to what would otherwise have been achieved.

It is M.E's view that the changes made to the NPSIB provisions for Māori Land will be effective in largely avoiding opportunity costs for new occupation, use and development (whether culturally focussed or targeted at the wider property market). It may even lead to opportunity benefits, particularly on fee-simple

[131] Expressed as reductions in land value (including the development potential of the land irrespective of whether the land is bought and sold in the marketplace).

Treaty Settlement land. As such, M.E has made the assumption that the NPSIB will not lead to any material net additional constraints on Māori Land that could be expressed as a loss of economic potential and land value.

6.5 Summary of Costs to Private Landowners

This section of the CBA has examined the potential for direct, net additional costs to private landowners, including owners of Māori land, to avoid and/or manage effects on indigenous biodiversity under the NPSIB that would not have been borne by private landowners under the status quo. These potential costs are associated with:

- The need to assess ecological effects when consents are required (transaction costs);
- The need to implement conditions of consents when consents are granted (compliance costs);
- Constraints on new use, subdivision or development of private land or constraints to established activities that are greater in intensity, scale and character where outcomes are precluded or sub-optimal (opportunity costs); or (and less common)
- Reductions in the productive potential of land-based primary sector activities such as farming, forestry, quarries and mines where land has an SNA on it and cannot be used productively/is retired (opportunity costs).

To put the number of affected landowners into perspective, only private land that contains indigenous biodiversity could potentially face these costs. At the outset – and considering just indigenous land cover – this is a minor share of total general land parcels (7.4%), and a moderate share of total Māori land properties (44% of Māori Land Court parcels and 36% of Treaty Settlement parcels). Not all indigenous land cover will qualify as an SNA under the NPSIB, and so the share of parcels containing SNAs will be less that these percentages.

Of those properties containing SNAs, only those with productive potential, or potential for new use, subdivision and development or potential for a greater scale, intensity or character of established activities are potentially impacted by the NPSIB. Many properties that contain indigenous biodiversity cannot be further subdivided or support a larger building footprint for example. Those properties will not face transaction, compliance of opportunity costs attributable to the NPSIB.

Further, some properties that are plan enabled for various uses, subdivision or development are already constrained by other factors such as slope, shape and access and cannot realise further potential irrespective of on-site indigenous biodiversity. Those properties will also not face costs attributable the NPSIB.

It is also important to emphasise that all District Plans already contain some protections of indigenous biodiversity in accordance with the RMA, although the strength of those provisions and the extent to which these align with the NPSIB requirements varies. Private properties in districts that already contain SNAs and/or have provisions in District Plans that avoid and manage effects on indigenous biodiversity to the

extent required by the NPSIB must therefore also be disregarded from net additional costs. Costs for private landowners in other districts are also likely to be partly rather than fully attributable to the NPSIB.

The residual properties (once the above criteria (filters) are applied), are those that could potentially experience a reduction in land value (**opportunity cost**) attributable to the NPSIB. While this CBA is unable to estimate how many private properties that is across New Zealand, it is only a fraction of the properties containing indigenous biodiversity. For general land, this is anticipated to be very minor share of total private properties. For Māori land however, it is considered likely that the NPSIB exceptions will effectively remove the potential for opportunity costs (and may in fact give rise to opportunity benefits relative to the status quo in some districts) due to the flexible nature of the provisions which include consideration of incentives for protection of indigenous biodiversity on Māori lands.

In most cases, and based on the literature, any opportunity costs on general land values are estimated to be minor in percentage terms. There seem limited situations in practice where the NPSIB will lead to the retirement of productive farm or plantation forestry land because of the identification of an SNA on that land. This may be limited to rare situations where areas not regularly maintained as improved pasture become SNAs. If through some consenting condition SNAs on farms are required to be fenced to exclude harmful grazing from stock, then this is likely to have only marginal effects on earnings (and in turn land value) as the SNA is likely to be relatively less productive compared to pasture and other grazing areas. It is also more likely that SNAs containing Threatened or At-Risk (declining) species in plantation forests become slightly less profitable (through potentially increased per hectare harvesting costs within the SNA) than be retired (un-harvested). Unless that SNA accounts for a significant share of the plantation, then the impact on overall returns will be minor in percentage terms.

Opportunity costs could be more than minor for property owners of general land where the reduction in subdivision yield with the NPSIB is high in percentage terms, or 100% (totally precluded). Even so, the SNA would need to cover a large area of the property *and* have been able to be cleared under status quo regulation in order to have a significant opportunity cost on land value (with the % reduction in yield considered the same as the % reduction in land value). While the NPSIB may be expected to retain (protect) more indigenous biodiversity within some future subdivisions than might have been the case under the status quo (at the expense of lot yield), it is likely that in many districts, existing provisions for SNAs or vegetation clearance generally, may have had a similar effect on subdivision design and yield and therefore no opportunity costs would be attributable to the NPSIB.

For small scale subdivisions, such as where existing residential or rural lifestyle lots are precluded from subdividing off one additional lot (for example) because of the presence of an SNA, the residual value of that larger property to accommodate a dwelling can help mitigate the opportunity cost (the forgone net return from being able to sell one or both lots).

For those property owners that do suffer opportunity costs, it is a one-off adjustment (marginal change) to land value that occurs at the commencement of the NPSIB (or once provisions that regulate SNAs are implemented).

The number of property owners that face potential **transaction costs** is a sub-set of those that experience opportunity costs (i.e. even fewer property owners). It equates to those property owners (and including

Māori landowners) that seek consents to realise the potential of the land. In most cases, transaction costs are expected to be only minor marginal changes to costs that would have been faced under the status quo and relate to ecological impact assessments (with significant effects needing to be reported in detail by qualified experts), including the need for more robust assessments required by the effects management hierarchy. In these situations, it is not anticipated that the NPSIB will materially increase the costs of consents post-lodgement stage. The potential for transaction costs attributable to the NPSIB to be more than minor is most likely limited to instances when consents would not otherwise have been required, such as in districts that have not already identified SNAs in District Plans.

Transaction costs attributable to the NPSIB are discrete costs, the timing of which will be tied to when private landowners seek resource consents where there are adverse effects on indigenous biodiversity. For most properties in this group, this will be a one-off cost. Costs on Māori Land are not expected to be any greater than costs on general land and could even be lower due the input of Māori landowners into the development of provisions to manage indigenous biodiversity on their lands which may reduce consenting requirements for some activities.

Last, the potential for net additional compliance costs attributable to the NPSIB is anticipated to apply to landowners that applied for resource consent (as described above) to realise development potential on their land, and for which effects on indigenous biodiversity must be managed to a greater extent than would have been required under the status quo. This may or may not occur in conjunction with net additional transaction costs and may or may not occur in conjunction with opportunity costs attributable to the NPSIB.

While there are likely to be many instances where there are little or no net additional compliance costs attributable to the NPSIB, there are anticipated to be some cases where consent related compliance costs are more than could have been faced under the status quo. On single residential lots though, M.E anticipates that any potential net additional compliance costs would be unlikely to adversely affect the cost or feasibility of development to any more than a minor degree. Planting, pest control and fencing are all costs that are heavily influenced by scale. If an SNA is identified as being degraded, this may be a situation whereby the NPSIB results in relatively more costly compliance costs than might have been imposed under the status quo.

Compliance costs attributable to the NPSIB are discrete costs, the timing of which will be tied to when private landowners seek resource consents (recognising that this generally occurs once for each property or very infrequently). While not examined here in detail, net additional compliance costs to private landowners can be significantly reduced or off-set if funding or other incentives/rebates are obtained. Potential costs on Māori Land are not expected to be any greater than costs on general land, and may be less for reasons discussed above (and the potential for incentives to compensate compliance costs on Māori Land is more certain).

While it is not practicable to quantify total transaction, compliance and opportunity costs attributable to the NPSIB across New Zealand, nor the number of affected private property owners, the costs are likely to be distributed over a relatively minor share of total properties. Outcomes are highly dependent on the status quo as it applies at a district (e.g. existing District Plan provisions) and property (e.g. landowner intentions and development potential) level. It should not be assumed that all properties that contain SNAs

or indigenous biodiversity outside of SNAs will face one or more of these costs. For those that do incur costs under the NPSIB, many of the costs will be marginal changes only relative to the status quo. While some landowners may face higher cost or land value impacts, the exceptions in the NPSIB are considered to have effectively avoided the potential for significant costs in most cases.

7 Benefits to Landowners & Wider Public

This section discusses the benefits of maintaining indigenous biodiversity through implementation of the NPSIB for landowners and the wider public, with reference to available literature[132]. These benefits can be expressed according to the different ways that New Zealand's indigenous biodiversity is valued. This includes both market and non-market values.

Understanding the benefits of indigenous biodiversity provides a rationale for its maintenance, protection and restoration. However, there is not a single or definitive source of information that sets out the benefits of protecting, maintaining and restoring indigenous biodiversity in New Zealand (or elsewhere). Instead, there is a plethora of published material which contributes to the collective evidence base. This presents challenges for this CBA, as there are limits to what material can practicably be sourced, considered and incorporated in the following discussion. A high-level discussion has been necessary.

The focus is on ensuring that the scope of benefits delivered by indigenous biodiversity is appropriately identified and the broad order of magnitude of some of those benefits is recognised.[133] This provides the context within which the benefits of implementing the NPSIB can be considered. This is on the premise that the NPSIB will help prevent further decline of existing indigenous biodiversity (as is the case under status quo regulation) and that it will help achieve a net increase in indigenous biodiversity in both existing and new locations.

7.1 Benefits as Ecosystem Services

The basis of this discussion is that the benefits of indigenous biodiversity can be expressed according to the ecosystem services that indigenous biodiversity delivers.

Ecosystem services can be defined as the benefits people obtain from ecosystems (MEA, 2005) which can be categorised (variously) according to supporting, provisioning, regulating and cultural services. Table 7.1 provides an alternative categorisation (Kumar, 2010), although the ecosystem services themselves are generally consistently described across the literature. Ecosystem services, which operate in complex ways to deliver benefits to humans, help us understand how our wellbeing is linked to the wellbeing of natural systems (Roberts et al, 2015).

Internationally, the notion that biodiversity is fundamental for all ecosystem services is largely accepted as a general concept (Roberts et al, 2015). Research from the IPBES (2019) states that "*nature, through its ecological and evolutionary processes, sustains the quality of the air, fresh water and soils on which humanity depends, distributes fresh water, regulates the climate, provides pollination and pest control and reduces the impact of natural hazards*". Protecting nature is therefore critical to human survival. Consistent

[132] A full bibliography for this section is contained in Appendix E.

[133] The absence of in-depth discussion of different benefits should not be interpreted as a lack of published evidence around those benefits.

with international findings, research commissioned by DOC concluded that there is good evidence to suggest that intact natural vegetation in New Zealand improves water quality, helps to maintain a regular water supply, preserves soil fertility, reduces soil erosion and provides flood protection (McAlpine & Wotton, 2009).

Table 7.1 – Typology of Ecosystem Services in The Economics of Ecosystems and Biodiversity Project (2010)

MAIN SERVICE TYPES	
PROVISIONING SERVICES	
1	**Food** (e.g. fish, game, fruit)
2	**Water** (e.g. for drinking, irrigation, cooling)
3	**Raw materials** (e.g. fibre, timber, fuelwood, fodder, fertilizer)
4	**Genetic resources** (e.g. for crop-improvement, medicinal purposes)
5	**Medicinal resources** (e.g. biochemical products, models, test organisms)
6	**Ornamental resources** (e.g. artisan work, decorative plants, pet animals, fashion)
REGULATING SERVICES	
7	**Air quality regulation** (e.g. capturing (fine) dust, chemicals)
8	**Climate regulation** (including C-sequestration, influence of vegetation on rainfall, etc.)
9	**Moderation of extreme events** (e.g. storm protection, flood prevention)
10	**Regulation of water flows** (e.g. natural drainage, irrigation, drought prevention)
11	**Waste treatment** (especially water purification)
12	**Erosion prevention**
13	**Maintenance of soil fertility (including soil formation) and nutrient cycling**
14	**Pollination**
15	**Biological control** (e.g. seed dispersal, pest and disease control)
HABITAT SERVICES	
16	**Maintenance of life cycles of migratory species** (including nursery service)
17	**Maintenance of genetic diversity** (especially through gene pool protection)
CULTURAL AND AMENITY SERVICES	
18	**Aesthetic information**
19	**Opportunities for recreation and tourism**
20	**Inspiration for culture, art and design**
21	**Spiritual experience**
22	**Information for cognitive development**

Source: Kumar (2010: 26).

The available research highlights the fundamental importance of biodiversity and nature for human livelihoods. The biophysical benefits of natural capital flow on to (and sustain) economic, social and cultural benefits. However, the continued depletion of biodiversity is destabilising the functioning of ecosystems which, in turn, is putting at risk the flow of related benefits, such as the provision of food and clean water, mitigation of natural disasters, and physical, mental and spiritual wellbeing. This in turn affects the long-term viability of economic activities and human wellbeing (Ezzine de Blas et al. 2017).

7.2 Ecosystem Services Delivered by Indigenous Biodiversity

Indigenous biodiversity delivers most of the ecosystem services listed in Table 7.1.[134] There is a wide body of evidence, not limited to that cited in this review, that demonstrates that ecosystem services delivered by indigenous biodiversity contribute in a wide variety of ways to the wellbeing of New Zealand and New Zealanders. It contributes to human welfare through provisioning (such as food and fibre), regulating (such as regulating nutrient cycling and greenhouse gas emissions) and cultural ecosystem services (such as spiritual values, recreation, cultural harvest, and knowledge).

These services not only provide for our basic needs and enhance our safety but represent the fundamental essence of what is means to be a New Zealander (Roberts et al, 2015). These benefits flow from private as well as public land, agricultural as well as conservation land, and urban as well as rural land as indigenous biodiversity is spread across the landscape, and not limited to public conservation land. The following provides a high-level qualitative discussion (with some quantified indicators included) of the main ecosystem services delivered by indigenous biodiversity in New Zealand.

Terrestrial indigenous biodiversity (excluding rivers, streams and lakes) is not a key source of raw materials and food in New Zealand relative to other ecosystems (such as exotic forests and agricultural systems that are geared around consumptive use), but these provisioning services do still apply. Native plants and animals provide resources for a range of traditional uses including:

- Wood for construction (shelter), carving and fuel
- Kelp bags for storing and transporting food
- Shells for ornamentation, food preparation, musical instruments
- Flax fibre for rope, baskets, mats, fishing baskets
- Bone, wood, stone and shell for fishhooks.

The harvesting of tītī (sooty shearwater or mutton bird) is one of the last remaining large-scale customary uses of native wildlife. Approximately 400,000 chicks are harvested from the Stewart Island region annually. There are however a range of other terrestrial native plants and animals (not examined here) that are important to iwi as mahinga kai (customary gathering of food and resources).

Today there is increased interest in using native species for a variety of specialist products including using flax leaf gel, manuka oil, kawakawa leaves, and kowhai bark in face creams. Harakeke (flax) is one of the most well-known 'economic' New Zealand plants, with a wide range of cultural and economic uses. Dried sphagnum moss is used as a growing medium for plants such as orchids and in potting mix and wrapping material for transporting seeds and plants. It supports significant economic activity – notably on the West Coast where there are some concessions to harvest it sustainably on public conservation land.

[134] Not all ecosystem services are delivered by indigenous biodiversity. For example, indigenous flora and fauna does not provide water for consumption per se, but habitats of significant indigenous biodiversity may also include water sources and indigenous ecosystems help provide for water purification/filtration.

Sustainable harvest of timber from indigenous forests on private land is tightly regulated now by the Ministry for Primary Industries but is permitted in certain circumstances (although exporting indigenous timber is largely prohibited). Native timber felled in the past (when unregulated) is popular for recycled uses (including building, furniture and decorative products).

Indigenous biodiversity provides a range of services that **support food production** in non-indigenous ecosystems such as farming and horticulture (Roberts et al, 2015) as follows:

- Shelter: crops and stock would not prosper without trees and shrubs to act as wind breaks (and often refuges for natural enemies of pests). Native evergreen species are well adapted to local conditions, provide effective shelter and act as biodiversity reservoirs at the same time.

- Biological control of pests and diseases: an alternative to importing a pest's natural enemies is to make it easier for the existing natural control agents to flourish. Indigenous vegetation provides habitats for natural control species. When natural habitat is available, it can increase the abundance and diversity of the natural enemies of both imported and native pests by providing food resources, shelter and nesting sites. Increasing plant diversity has become an integral part of integrated pest management theory and practice.

- Pollination: Pollination is a critical ecosystem service across the globe. The use of manuka to produce manuka honey is changing public perceptions of the value of manuka - from something fit for firewood to a highly valued native species. Indigenous habitats form an important source of food to help sustain declining honeybee populations in New Zealand (honeybees collect pollen or nectar from 224 native New Zealand plant taxa). There is also increasing interest and recognition of wild pollinators (including bats, bees, moths, birds and butterflies) to complement honeybee pollination. Maintaining biodiversity on or near agro-ecosystems may be critical to ensure that pollinator taxa are available in the face of future environmental change.

Native forests also play a significant role in **stabilising slopes and reducing sediment** transportation in streams through their ability to intercept water via large canopies and varied vegetation, developed understorey and root systems. Research confirms that native forests are more effective in regulating river flow levels than non-indigenous forests which helps mitigate down-stream flooding.

An ecosystem service that most of us take for granted is the provision of **the air we breathe**. Indigenous vegetation (like other forms of vegetation) produces oxygen. Native forests also sequester the most carbon dioxide per hectare, followed by radiata pine forest and indigenous woody scrub. Un-grazed pasture provides very low levels of sequestration by comparison (Roberts et al. 2015). Protected indigenous forest is superior in terms of sequestration because it is not subject to harvest cycles like plantation forestry (which releases the stored carbon). It is estimated that 80% of carbon stored above ground in vegetation in New Zealand is in indigenous forest and scrub which makes up 26% of the land area. Planted forests account for an estimated 5% of the total. Native beach forests in the South Island play a pivotal role as a mass biomass carbon stock within New Zealand.

Indigenous forests and scrubland can **improve air quality** by trapping particulates and absorbing gases like nitrogen dioxide. Being predominantly evergreens, indigenous trees provide this service year-round. Large

areas of indigenous habitat are also effective in slowing the spread of infectious insects such as exotic mosquitoes, with associated health benefits for humans and stock.

Indigenous vegetation can provide noise reduction services, and the presence of evergreen indigenous vegetation in urban areas helps to reduce noise levels. When in combination with heritage parks and other important public places that have adjacent noise sources, the presence of indigenous vegetation can be effective in preserving/protecting the aesthetic experience/enjoyment of those places.

Opportunities to spend time in and exercise in green spaces has been shown to contribute to physical and psychological human health (Roberts et al. 2015). Green spaces can facilitate the development of social capital by providing places to interact and undertake activities with groups, and by strengthening peoples sense of attachment to their living environment. Nature, which includes areas of indigenous habitat, has been proposed to have a restorative effect for people suffering from stress and attention fatigue.

Figure 7.2 (from Roberts et al, 2015) summarises a range of other ecosystem services delivered by indigenous biodiversity. They have been categorised according to how they contribute to seven of Max-Neefs (1991) nine fundamental needs that support human welfare (with many of the services associated with the other two needs (subsistence and protection) covered in the services discussed above). Many of these ecosystem services are experienced more subjectively. For example, natural aspects of the environment (plants and animals) can contribute to a sense of place. For some adults, natural or outdoor environments as well as the sound and sight of native species are often fondly remembered as the most significant places/experiences of their childhood.

Figure 7.1 – How services delivered by New Zealand's indigenous biodiversity and natural landscapes contribute to fundamental needs of wellbeing (excluding subsistence and protection)

Affection	• Opportunities to experience strong affection and respect for nature (biophilia), and particular landscapes, building a sense of place, and to share positive experiences with friends and loved ones in a natural setting
Understanding	• Enhanced learning and development in natural settings • Nature as teacher—wild places as settings for personal development experiences (e.g. Outward Bound) • Indigenous knowledge • Research and education from preschool to tertiary levels leading to greater understanding of how ecosystems function and how our actions affect the provision of these services
Participation	• Settings for a range of shared activities—walking, climbing, sailing, swimming, picnicking • Volunteers participating in biodiversity restoration projects
Idleness/leisure	• Settings for passive and active leisure and recreation—relaxing at the beach or climbing a mountain • Tourists attracted by such settings for their holidays
Creation	• Inspiration for artists—carvers, weavers, painters, photographers, fiction and non-fiction writers, poets, cinematographers, and musicians—and for the artist in us all • Inspiration for innovation in science, technology, engineering and business
Identity	• Our sense of self-definition, our heroes, and how we portray ourselves to customers, tourists, immigrants and the rest of the world • Whakapapa linkages as fundamental markers of identity
Freedom	• Free access to the coast and natural spaces • Opportunities to test oneself and take risks in a range of environments • Wilderness as freedom from sounds and signs of industrialised society, and opportunity for extraordinary experience, flow and adventure

Indigenous ecosystems provide a wide range of learning opportunities at all levels of education. Research and formal and informal transfer of knowledge and skills lead to greater understanding of how ecosystems function and how our actions affect the provisioning of these services that are essential for our wellbeing. Without this understanding, the benefits of protecting indigenous biodiversity are often poorly understood by parts of society.

Roberts et al (2015) canvased a range of studies that show how experience of natural environments (including on our own properties) contributes to physical, motor, cognitive and emotional development. Experiences in natural environments can help us learn about ourselves, help us connect better with others and be therapeutic. Natural spaces also provide a wide range of settings for shared activities such as tramping, climbing, picnicking, walking, cycling or restoration/planting. These activities can promote social cohesion, a sense of belonging and satisfaction through participation and volunteering.

Participation in leisure time activities (which covers play, recreation and tourism) has been linked to both physical and mental health benefits. Roberts et al (2015) describe a range of studies that have attempted to quantify the value of leisure in New Zealand, although the consensus is that it is highly challenging, with limitations on good data to inform market and non-market values. Their discussion is not specific to leisure, recreation or tourism attributable specifically to terrestrial indigenous ecosystems although some activities covered by the studies included visits to national parks and going on bush walks.

Tourism, which in recent years has been New Zealand's biggest export industry, contributing 20.1% of total exports and generating $16.4 billion directly to annual GDP, and a further $11.3 billion indirectly to GDP in the year ending March 2019 (StatisticsNZ), derives considerable direct benefit from the ecosystem services delivered by indigenous biodiversity in New Zealand as well as indirect (amenity) and intangible (cultural and spiritual) aspects of ecosystems (Roberts et al, 2015). Tourism is a key component of the New Zealand economy and culture.

For many domestic and international tourists, the concept of naturalness and the presence of native species is important for creating the wilderness experience that many eco-tourists seek – captured by the marketing slogan of '100% Pure New Zealand'. In research carried out in 2008, it was estimated that 70% of all international and 22% of all domestic trips were reported as involving 'nature-based' activities (albeit that this statistic is not limited to terrestrial indigenous habitats). The contribution of public conservation land to tourism employment has been estimated for several areas in New Zealand including Tongariro National Park (14% of Ruapehu-Taupo region's tourism employment), Fiordland National Park (nearly 10% of Southland's tourism employment (Wouters, 2011), and public conservation land in the West Coast Region (15% of total employment and 13% of household incomes, 2003) (DOC, 2006).

Indigenous biodiversity also contributes to New Zealand's 'clean green image' on the international stage which helps promote a range of product related exports as well as international tourism activity. For the tourism sector, it was estimated that the loss of this 'clean green image' would result in an annual economic loss of between $530 million (excluding lost wages and GST) and $938 million (Inclusive) of spend from five major tourism markets. For dairy exports, under worsened environmental perceptions of New Zealand, the average consumer would purchase less New Zealand dairy products, equating to a loss of between $241 million and $569 million (MfE, 2001).

As New Zealanders, our sense of identity and how we portray ourselves to the rest of the world 'is heavily bound up with the natural world' (Roberts et al, 2015). Our top horticultural export (kiwifruit) is named after a native bird, our top sports teams wear/display the silver fern, the fern's koru is used by our national airline. An abundance of New Zealand artists, (whether carvers, weavers, painters, photographers, writers, cinematographers or musicians), have drawn inspiration from New Zealand's indigenous biodiversity.

Last, but not least, for Māori, whakapapa links to particular mountains, waters and resources are fundamental markers of identify, with traditional beliefs centred around the natural world. This connection is expressed through kaitiakitanga (guardianship) – a way of managing and protecting the environment. "*Māori aspirations and well-being are interdependent on ecosystems and ecosystem services*" (Harmsworth & Awatere, 2013, page 274). Indigenous biodiversity is central to traditional medical practices (rongoā), Māori knowledge (mātauranga Māori) and food and resource gathering (mahinga kai).

Given that New Zealand's indigenous biodiversity is in decline and that natural ecosystems continue to degrade, we cannot be complacent and assume that these wide-ranging ecosystem services described above (both tangible and intangible) will indefinitely continue contributing to our wealth and wellbeing at current levels. There is a risk that New Zealanders may not come to realise the full consequences to their wellbeing of biodiversity decline until the situation has become irreversible, or at least very costly and difficult to overturn (Roberts et al, 2015).

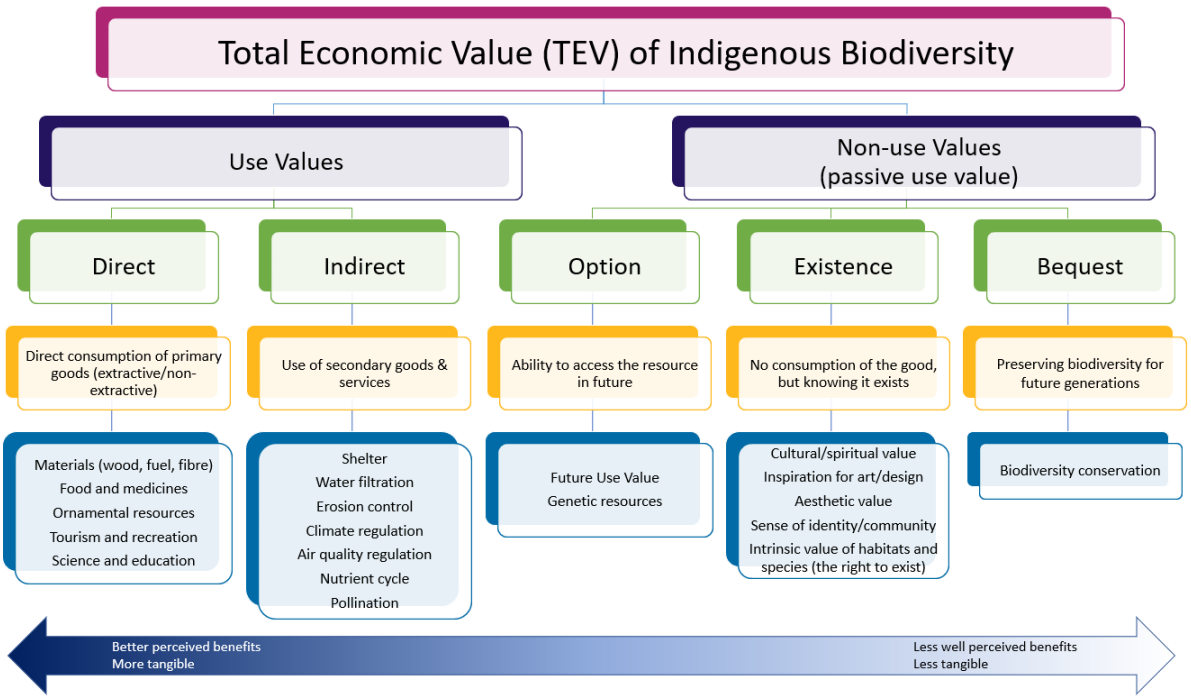
7.3 The Total Economic Value Framework

While there is consensus in the literature on the ecosystem services delivered by indigenous biodiversity (as summarised above), there is not a full understanding of the value of those benefits. Although attaching a dollar value metric to the values of indigenous biodiversity would provide for consistent and quantified assessment of benefits in relation to costs, such valuation is challenging when most ecosystem services are not traded in a market. While provisioning services are often measured by the System of National Accounts and therefore included in GDP calculations, not all provisioning services involve commercial transactions, and this includes many provisioning services associated with indigenous biodiversity.

Adding further complexity to benefit valuation is the fact that indigenous biodiversity has value not only to those who use it, but also to those who have the option of using it now or in the future. For others, just knowing it exists is important.

The Total Economic Value (TEV) framework is useful in this regard as it helps recognise the market and non-market values of indigenous biodiversity (Figure 7.2). The TEV framework is also particularly helpful in highlighting the temporal aspect of values, for current and future generations.

Figure 7.2 – Total Economic Value of Indigenous Biodiversity Using Ecosystem Services



TEV consists of use values, which are derived from actual use of the resource (in this case indigenous biodiversity), and non-use values which involve no actual interaction between humans and ecosystems at a particular point in time. The ecosystem services delivered by indigenous biodiversity fall relatively neatly

across this spectrum of use and non-use values, as indicatively shown by M.E in Figure 7.2.[135] Classifying ecosystem services within a TEV framework provides additional context on how each service is valued by people and communities, over time, and spatially (i.e. local versus non-local or wider benefits).

Use values can be derived from present direct use of the resource, or indirect use. Direct use values refer to the benefits obtained from direct use of ecosystem services. This use can be extractive (e.g. sustainable consumption of food and raw materials provided), or non-extractive use that does not imply consumption such as cultural and amenity ecosystem services. The recreation service is an example of non-consumptive service offered by indigenous biodiversity. For example, a forest or other natural area that provides a place for landowners, local residents or tourists to go walking or hiking (depending on private and public access). Indirect use values are usually associated with functional benefits such as regulating ecosystem services.

Non-use values are increasingly being referred to as 'passive use values', and in this report includes:

- option value, i.e. the value people place on knowing they have the ability to benefit from indigenous biodiversity if they choose to. Protecting indigenous species or habitats from extinction/loss is relevant to option value as those species/habitats may have a valuable role in the future, including roles that we may not be aware of now. Once a species or habitat is extinct/lost, its option value is lost.

- existence value, i.e. people value simply knowing that indigenous biodiversity exists and will continue to do so, regardless of whether they intend to use it or not. New Zealand's biodiversity has unique characteristics of international importance. Given that a large proportion of New Zealand's species are endemic, their extinction would mean they are lost to the world; and

- bequest value, i.e. the value people place on knowing that future generations will have the option of benefits from indigenous biodiversity. Bequest value is a key component of the principle of sustainable management under Part 5 of the Resource Management Act.

7.3.1 Methods for Valuing Indigenous Biodiversity

There are various economic valuation methodologies that can be used in conjunction with the TEV framework that fall into one of these two approaches: revealed preference approach and stated preference approach. Revealed preference techniques are generally used to estimate use values, while stated preference methods are the preferred approach for obtaining estimates of use and non-use values (Mendelsohn & Olmstead, 2009).

Revealed preference studies obtain an individual's preferences through observed behaviour and relies on activities in an actual market (Liekens et al., 2014). Examples are the travel cost method, hedonic pricing, replacement cost and change in productivity. On the other hand, stated preference utilises carefully constructed surveys to ask individuals what their preferences are using surrogate markets or hypothetical scenarios (Adamowicz, Louviere and Williams, 1994). Among those, contingent valuation, choice modelling and benefit transfer method are commonly used valuation techniques. Willingness to pay (WTP) is another

[135] There is more overlap of ecosystem services across direct, indirect, option, existence and bequest values than is shown in this diagram. The intent for Figure 7.1 was to allocate each ecosystem to the main value type.

stated preference technique that can be used to measure benefits from indigenous biodiversity (ecosystem services) where market prices are not available. This involves finding out the maximum amount of money that people (individually or as a household) would be prepared to pay for protecting and restoring indigenous biodiversity. Results from WTP surveys lend themselves to aggregation and 'grossing up' – i.e. applying the average values across the total population or total households.

Using peoples revealed or stated preferences to value indigenous biodiversity does pose some challenges in terms of their reliability. The techniques capture short-term perceptions from respondents with (often) a partial knowledge of ecological functions and processes (Blamey and Common, 1994; Patterson and Cole, 2013). In addition to those neoclassical techniques, other valuation methods can be employed to describe a larger variety of ecological values. Patterson and Cole (2013) suggested relying on multiple approaches instead of one, and to complement the neoclassical valuation approach with others. Despite the limitations, revealed and stated preference-based research provides the best available evidence of monetised indigenous biodiversity values.

7.4 Research that Values Indigenous Biodiversity

The following summarises a range of research that has monetised ecosystem services or aspects of indigenous biodiversity in New Zealand using methods such as those identified above. It does not provide a comprehensive picture that is tailored for the NPSIB but gives a sense of the potential scale of benefits when expressed in dollar values.

7.4.1 National Level Monetised Research

It emerges in the literature that there are a significant number of studies internationally and nationally that have investigated and tried to quantify the benefits of ecosystem services. Some of these studies (discussed further below) undertook a valuation of the market and/or non-market benefits in monetary terms. That said, Roberts et al (2015) considers that ecosystem services research in New Zealand is still in its infancy, and more work is needed to understand the complex relationships, including "*the specific mechanism by which New Zealand's* ***indigenous biodiversity*** *contributes to the maintenance of ecosystem services*" (page 12, emphasis added).

This is a key point in the context of this discussion of benefits, as often the available research is focussed on the ecosystem service itself and it is not clear what portion of that benefit is attributable to indigenous biodiversity versus other types of (non-indigenous) habitats.

For example, areas of non-native and indigenous trees help control erosion, provide wind shelter, provide raw materials, store carbon, create opportunities for recreation and tourism etc. In other words, the ecosystem services delivered by indigenous biodiversity could be delivered by non-indigenous biodiversity – i.e., the substitution may have the same or similar outcome, with no reduction in value.[136] It is therefore important to acknowledge that while indigenous biodiversity delivers a wide range of ecosystem services (discussed above), not all of the value of ecosystem services reported in New Zealand is necessarily

[136] As discussed above, there is evidence that indigenous vegetation is more effective at delivering some ecosystem services relative to other types of vegetation.

attributable to indigenous biodiversity unless there is a clear indication that the values related only to indigenous species and ecosystems. This caveat is directly relevant to the research by Patterson and Cole (2013) relied on below.

At the national landscape level, Patterson and Cole (2013) indicatively estimated the net total (use and non-use) economic value of New Zealand's land-based ecosystem services to be around $57 billion for 2012, equivalent to 27% of the country's GDP in that year. Indigenous biodiversity will account for only a portion of this value, and that portion cannot be deduced from the research. From a gross value perspective (where there is some overlap between ecosystem service types[137]), land-based provisioning ecosystem services had the highest value ($30 billion - partially measured by GDP), followed by supporting services ($22 billion), regulating services ($15 billion), passive or non-use values ($12 billion), and cultural services ($1 billion). Again, this includes contributions from indigenous and non-indigenous ecosystems.

Patterson and Cole (2013) do provide a breakdown of the use value of ecosystem services for particular landcovers, with several relevant to this CBA as they include landcovers where SNAs might be defined or where indigenous biodiversity outside of SNAs may be present.

First, their analysis of 'Intermediate Agricultural – Scrub Ecosystems' represent land that is marginal for pastoral farming (compared to prime/cleared pastoral land) and has significant coverage of scrub and fern vegetation mixed with tracts of exotic grasses.[138] The net value of this ecosystem type – which covered an estimated 19% of the country's land area at the time of the study - was estimated at $2.7 billion in 2012. Food production (meat) and raw materials (mainly wool) make up just over $1 billion of this total – indicating that farming is still a feature of this landcover type. The value of these provisioning services can be excluded as they do not relate to any indigenous vegetation cover of this land (even in services provided by indigenous biodiversity helped support this output). However, combined recreational and cultural services within these ecosystems was estimated at $42 million and gas regulation was estimated at $97 million. While not counted in the net value, supporting services were valued at nearly $1.9 billion, with scrub vegetation playing an important part in slope stability and erosion control (Table 7.2). Even if indigenous vegetation in this ecosystem type is responsible for a small share of the total net value of ecosystem services delivered, that value is still significant in dollar terms.

Second, the 'Scrub Ecosystems' examined landcover that entirely consists of native scrub vegetation and not used for any form of agriculture.[139] This indigenous vegetation, which covered an estimated 4% of New Zealand's land area in 2012, may therefore include land that could be defined as an SNA under the NPSIB. The research showed that erosion control was the most valuable ecosystem service delivered by scrub ecosystems (estimated at $364 million in 2012). This was followed by climate regulation services ($261 million), waste treatment ($258 million) and nutrient cycling ($215 million). The research found that native scrub did not provide significant direct use value, with the combined cultural/spiritual/tourism and

[137] Primarily overlap between supporting services and provisioning services.

[138] This landcover includes Grasslands and mixed Indigenous Scrub, Grassland and Leptospermum Scrub or Fern Grassland and Cassinia Scrub, Tussock Grassland and Sub-alpine scrub, Grassland and Dracophyllum Scrub, Grassland and Gorse Scrub, Grassland and Matagouri, and Grassland with Sweet Briar or Sweet Briar and Matagouri (Newsome, 1987).

[139] The research defines this landcover as mixed broadleaved shrubs, manuka, kanuka, bracken, ferns, subalpine scrub and gorse.

recreation value estimated at $5 million – with much of this landcover being remote/inaccessible (and potentially on private land). The net use value of these ecosystems was $535 million (Table 7.3).

Table 7.2 – Use Value of Ecosystem Services Derived from Intermediate Agriculture-Scrub Ecosystems ($2012 million) (Sourced from Table 4, Patterson & Cole, 2013)

Ecosystem service	Supporting value	Regulating value	Provisioning & cultural value	Provisioning & cultural value not covered by GDP	Gross value	Net value
Water provisioning			42	34	42	42
Food production			857		857	857
Raw materials			171		171	171
Recreation			14	14	14	14
Cultural			28	28	28	28
Gas regulation		97		97	97	97
Waste treatment		1,213		1,213	1,213	1,213
Biological control		320		320	320	320
Soil formation	138			138	138	0
Nutrient cycling	1,007			1,007	1,007	0
Erosion control	404			404	404	0
Pollination	348			348	348	0
Total	1,897	1,630	1,112	3,603	4,639	2,742

Table 7.3 – Use Value of Ecosystem Services Derived from Native Scrub Ecosystems ($2012 million) (Sourced from Table 5, Patterson & Cole, 2013)

Ecosystem service	Supporting value	Regulating value	Provisioning & cultural value	Provisioning & cultural value not covered by GDP	Gross value	Net value
Cultural			5	5	5	5
Climate regulation		261		261	261	261
Waste treatment		258		258	258	258
Biological control		11		11	11	11
Soil formation	29			29	29	0
Nutrient cycling	215			215	215	0
Erosion control	364			364	364	0
Total	608	530	5	1,143	1,143	535

Third, Patterson and Cole's (2013) 'Forest Ecosystem' consists of mature indigenous forest (including that in national and forest parks), but also includes significant amounts of plantation forestry. Care is therefore needed in attributing the net value of this ecosystem type (which covers an estimated 23% of New Zealand's land area) to indigenous vegetation, as it makes up an unknown share of the total landcover.

The net value of this landcover is estimated indicatively at $10.7 billion, although nearly $7 billion relates almost entirely to provision of raw materials tied to commercial exotic forestry areas and not indigenous forest areas. However, the value of erosion control, climate regulation, waste treatment and nutrient cycling in these ecosystems is significant, contributing between $1.2-2.1 billion each to the gross use value, for which indigenous forests will make a strong contribution. Recreation value of forest ecosystems is also high, estimated at $614 million in 2012, but again not limited to indigenous forest areas (Table 7.4). As above, even if indigenous vegetation in this ecosystem type is responsible for a moderate share of the total net value of regulating, supporting and cultural ecosystem services delivered, that value is significant in dollar terms.

Table 7.4 – Use Value of Ecosystem Services Derived from Forest Ecosystems ($2012 million) (Sourced from Table 8, Patterson & Cole, 2013)

Ecosystem service	Supporting value	Regulating value	Provisioning & cultural value	Provisioning & cultural value not covered by GDP	Gross value	Net value
Raw materials			6,983		6,983	6,983
Recreation			614	614	614	614
Cultural			34	34	34	34
Climate regulation		1,503		1,503	1,503	1,503
Waste treatment		1,486		1,486	1,486	1,486
Biological control		68		68	68	68
Soil formation	171			171	171	0
Nutrient cycling	1,233			1,233	1,233	0
Erosion control	2,092			2,092	2,092	0
Total	3,496	3,057	7,631	7,201	14,184	10,688

Natural inland wetlands are within scope of the NPSIB under restoration provisions. According to Patterson and Cole (2013), wetlands are highly productive and dynamic ecosystems, producing a wide variety of ecosystem services and contributing 13% of the gross use value derived from total land-based ecosystems in New Zealand despite accounting for just 0.61% of the land area. The greatest value of wetlands is associated with water storage and retention services, disturbance regulation (storm protection, flood control, drought recovery). They are also valued for processing agricultural run-off, fertiliser and other wastes, as well as aesthetic, education, and scientific value. The indicative net use value of wetland ecosystems in New Zealand is $5.1 billion (2012), although the researchers cautioned that this landcover required further local study, as value estimates relied on overseas data applied to New Zealand (Table 7.5).

Table 7.5 – Use Value of Ecosystem Services Derived from Wetland Ecosystems ($2012 million) (Sourced from Table 9, Patterson & Cole, 2013)

Ecosystem service	Supporting value	Regulating value	Provisioning & cultural value	Provisioning & cultural value not covered by GDP	Gross value	Net value
Water provisioning			14	14	14	14
Recreation			218	218	218	218
Cultural			787	787	787	787
Gas regulation		118		118	118	118
Disturbance regulation		3,242		3,242	3,242	3,242
Waste treatment		743		743	743	743
Refugia	195			195	195	0
Water storage & retention	3,403			3,403	3,403	0
Total	3,598	4,103	1,019	8,720	8,720	5,122

While there are other ecosystem (landcover) types examined by Patterson and Cole (2013), the four types summarised above provide a reasonable match to areas of terrestrial indigenous vegetation where SNAs might be identified. With the exception of scrub ecosystems though, indigenous biodiversity accounts for a share of the landcover within each ecosystem type and therefore only a share of the net values reported. Importantly, the estimated value of ecosystem services delivered by such landcovers relates only to the use values (direct and indirect) of those ecosystems, with non-use or passive values (option, existence and bequest values) net additional.

The research applies a different approach to quantifying non-use values, but helpfully distinguishes national parks, forest parks[140], land reserves and wetlands, so provides relevant context for the TEV of indigenous biodiversity in New Zealand. The research faced a number of limitations[141] in monetising non-use values, including data limited primarily to equivalent overseas existence values, with option and bequest value sometimes under-represented in the figures.

The indicative non-use value of national parks in New Zealand was estimated at $7.16 billion, total forest parks was estimated at $743 million, and total land reserves was estimated at $1.2 billion (although this included scientific reserves, historic reserves, wildlife reserves, camping grounds and public domains administered by DOC, with scenic and wildlife reserves most likely to be areas of indigenous biodiversity).

The research identified that wetlands are becoming increasingly recognised by New Zealanders for their significant passive (non-use) value in addition to their use values (discussed above). This includes their habitat value for indigenous species as well as landscape and aesthetic values. In total, the non-use value

[140] Administered by DOC, the key purpose of the 20 forest parks is, in most cases, to protect the catchments of forested mountain ranges.

[141] Refer to the full article for further details.

of New Zealand's wetlands was indicatively estimated at $350 million (similar to the non-use value of national parks on a per hectare basis). Only the use and non-use value estimates for wetlands could be meaningfully combined to give a TEV in the research, with this reaching an indicative $5.5 billion in 2012.

The research by Patterson and Cole (2013) is useful in that it provides nationwide valuation of land-based ecosystem services, with some insight as to the types and relative significance of different ecosystem services (benefits) that different types of landcovers deliver, including landcovers that are partially or wholly comprised of indigenous vegetation.

The monetary values are annual estimates as at 2012. They reflect the values ascribed by the current generation towards ecosystem services, which the authors note can be a critical limitation when dealing with ecological processes that may be subject to irreversible change across generations. In other words, in the face of changing environmental issues, such as associated with climate change, natural hazards or potential further loss of indigenous biodiversity, some of the ecosystem services delivered by indigenous biodiversity or SNAs might be considered more valuable over time.

7.4.2 Sub-national Level Monetised Research

A number of other studies have also been conducted in New Zealand aimed at quantifying the benefits of protecting and restoring aspects of indigenous biodiversity, rather than representative ecosystems. These studies are often more location or species specific. They are relevant to NPSIB provisions that seek to better protect Threatened or At-Risk (declining) species, taonga species, SNAs with particular attributes or in particular locations, or indigenous biodiversity outside of SNAs.

Among those, Kerr and Sharp (2007) investigated peoples' WTP for preserving different species of fauna and flora from extinction in the Mackenzie Basin. The results from a choice experiment showed that households were willing to pay $95 per year for five years to prevent the *Robust Grasshopper* (B. robustus) becoming extinct in 20 years, $110 per year for the *Bignose Galaxias*, $58 per year for the *Hebe cupressoides*, and $60 per year to prevent large blocks of wilding pines rather than scattered plots. They also found differences between and within local communities. This study speaks to the existence value of specific indigenous species.

In a second study, Kerr and Sharp (2008) looked at community preferences and values associated with the impact of wasps on indigenous species of birds and insects at Lake Rotoiti in Nelson. Using the same methodology, the findings showed that Nelson households were willing to pay $325 and $198 per year to avoid native birds and insects respectively becoming absent from Lake Rotoiti, and $125 and $87 per year for a very healthy native bird and insect population respectively at Lake Rotoiti. They found similar WTP between Nelson and Christchurch households with no statistical distance decay effect. This finding highlights that existence and option values are not limited to local indigenous biodiversity, but applies regionally, nationally (and internationally). In both studies, they used an "*informed citizens*" sample, that valued native species and aesthetics.

In an earlier study conducted by Kerr and Sharp (2003), they applied choice modelling to identify community WTP for attributes of two streams in Auckland, such as water clarity, fish species, fish habitat and native bush. Land disturbance from urbanisation led to on-site and off-site environmental impacts that required mitigation assessment. The average household was willing to make a once-only payment of $1,093

to prevent the hypothetical degradation. They used benefit transfer method to transfer benefit estimates from a survey site to a project site.

The following two studies do not relate to terrestrial indigenous biodiversity which the NPSIB is limited to but provide further New Zealand based evidence of how indigenous biodiversity, including use values such as recreation can be, and are valued. Bell (2008) investigated the invasive European Shore Crab (*Carcinas maenas*) that threatened indigenous species in a representative coastal marine area north of Wellington. From the analysis, he concluded that respondents were willing to pay annually $57 per household over three years to avoid the loss of shellfish species and $54 for not losing the ability for children to paddle along the water's edge. The loss of recreational fishing had a value of $37 per year, similar to the one for loss of vegetation around the estuary ($36/year).

In the freshwater environment, another study looked at the submerged aquatic weed hydrilla (*Hydrilla verticillata*) in Lake Rotoroa in Hamilton (Bell, Cudby and Yap, 2009). They considered the local loss of native species including submerged meadow grass (charophyte species), birds, and fish, and restriction of recreational activities. Their results showed that people were willing to pay more to avoid this invasive species getting into the ecosystem (i.e. a pro-active approach) than to protect existing biodiversity once the pest species had established ($244 per household per year over five years). The highest biodiversity value of $200 was assigned to loss of the native submerged water plants (charophytes), followed by native birds ($164), and loss of fish ($135).

Yao, Scarpa, Harrison and Burns (2019) conducted a study on native species to New Zealand that are currently threatened and live in planted (exotic) forests. The brown kiwi, the giant kokopu, the kakabeak, the Auckland green gecko and the New Zealand bush falcon were included in the study. The main focus was a five-year conservation programme for brown kiwi. The WTP was calculated for four regions (Manawatu-Whanganui, the Bay of Plenty, Waikato, and Northland regions) and the results were also presented at the national level. From the findings, the Waikato region had the highest WTP to cost ratio as compared to other regions. For the whole country, the aggregate WTP value was $111.4 million per year. The net present value of the conservation programme for brown kiwi was estimated at $507 million and the net benefit in perpetuity was estimated at $15.2 million per year. In another study about indigenous forests, Dymond, Ausseil, Shepherd and Janssen (2007) estimated the biodiversity value to be $500 million (1999 $NZ) in a case study in Manawatu/Wanganui Region.

Further review of the literature reveals that some studies have investigated the value of indigenous biodiversity on agriculture land using non-market valuation methods. Among those, Baskaran, Cullen and Colombo (2010) conducted a choice experiment survey in the two New Zealand winegrowing regions (Marlborough and Hawkes Bay) to estimate values of four ecosystem services associated with winegrowing, such as food production (wine residue content), water quality (contamination of groundwater), air quality (climate change due to greenhouse gas emissions), and cultural and aesthetic values (change in agricultural landscapes affecting local diversity). For a policy option that included a 30% increase in native species, they estimated a compensating surplus per household of $164 for Hawkes Bay and $317 for the Marlborough region.

Baskaran, Colombo and Cullen (2013) evaluated conservation and irrigation programs in the Mackenzie basin. Using a choice experiment method, they estimated the average WTP for preventing a loss of 10% of

native plant and animal species to be equal to $49 per household per year and $160 to protect 50%-100% of native plant and animal species in the conservation area. Respondents were willing to pay on average $81 per household per year for a 50% reduction in invasive plants.

Tait et al. (2011) produced an economic assessment of the values for indigenous biodiversity outcomes across urban, lowland freshwater, native forest, farmed landscape and marine environments. They found that the median WTP was $75 per year for good quality biodiversity outcomes in farmed environments, and $46 per year for moderate quality outcomes.

7.5 Total Versus Marginal Ecosystem Service Value

Existing research indicates that the use and non-use values of ecosystem services delivered by indigenous biodiversity (including landcovers that contain indigenous biodiversity) are widely valued and very significant when measured in dollar terms. The research by Patterson and Cole (2013) gives an indication of what value New Zealand and New Zealanders as a whole stand to lose (particularly with regard to direct and indirect use values). While the literature does not always allow the value specifically attributable to indigenous biodiversity to be ascertained, in broad order of magnitude, the benefits are still expected to be significant, and wide ranging in terms of their contribution to human welfare.

The TEV of ecosystem services delivered by indigenous biodiversity (most likely to be measured in billions of dollars annually by M.E estimates) helps to underscore the importance of nature, and therefore communicate to lay audiences why it should be respected and more effort made to protect the ecosystem services it provides.

However, the total loss of all ecosystem services delivered by indigenous biodiversity across the country is not anticipated under the status quo in New Zealand (with the greatest threats typically in lowland areas on private, unprotected land). Therefore, the TEV is not the relevant metric for understanding the overall national benefits of implementing the NPSIB – although it would be applicable at a localised level (i.e., if weighing up the loss or protection of a specific threatened SNA) (Roberts et al, 2015). Only when land use change involves nearly complete loss of ecosystems, biodiversity features, and disappearance of ecosystem services is the TEV the appropriate measure.

The relevant focus, according to Bateman et al (2011), is the changes in value between policy-relevant scenarios. In this case, the likely change in the provision of ecosystem services without and with the NPSIB. This is the marginal (i.e., per unit) value of ecosystem services delivered by indigenous biodiversity. The NPSIB provides another layer of regulatory protection for indigenous biodiversity in New Zealand – it is one of several existing (and proposed) statutory, non-statutory and voluntary tools that collectively aim to protect, maintain and enhance the state of indigenous biodiversity across the country. If effective, the benefits of implementing the NPSIB are the avoided loss of indigenous biodiversity value plus the net gains achieved through restoration relative to the status quo. Many of these changes will be gradual and take time to be realised, but once realised, will be ongoing and apply year on year. The TEV of indigenous biodiversity therefore provides only the current baseline from which marginal change attributable to the NPSIB should be measured.

Care is needed though, as a marginal change does not necessarily mean a marginal effect. An example provided in the literature is a small change in water chemistry leading to the total loss of a wetland. Similarly, a small reduction in the population of a threatened species might push it beyond the threshold of reproductive sustainability and recovery. In the other direction, a small improvement in the integrity or resilience of an SNA may have non-linear benefits for a range of indigenous local flora and fauna and other ecosystem services provided. Farley (2012) states that if ecosystem services are essential, then marginal analysis and monetary valuation are inappropriate tools in the vicinity of thresholds.

Estimating how indigenous biodiversity – with its complex systems, dynamics and non-linear relationships – will respond to the changes implemented by the NPSIB, and then valuing that response, is very difficult to model when marginal values do not apply to non-marginal changes (Roberts et al, 2015) and there is significant spatial variation in the current state (nature, scale and health) of indigenous biodiversity and its status quo regulation and protection. Therefore, quantifying the marginal benefits of implementing the NPSIB is not possible for this CBA.

7.6 Private and Public Benefits of Indigenous Biodiversity

Another relevant consideration, when assessing the (marginal) benefits of the NPSIB is to understand where the benefits of maintaining and protecting indigenous biodiversity fall across the community. Much of the literature examined, including the WTP studies described above, show that indigenous biodiversity (in one form or another) is valued by the wider public irrespective of whether it occurs on private land (including plantation forestry and agricultural land) or public land (i.e. a public conservation areas).

In one New Zealand study, Kaval, Yao, Parminter, and Scimgeour (2007) used both choice modelling and contingent valuation techniques to estimate the value of an increase in native biodiversity on private land, and on public land, respectively, in the Greater Wellington Region. It also demonstrated that individuals recognise the ecosystem services that indigenous biodiversity delivers when located on their own land. When asked what features they valued on an 'ideal' private property, respondents articulated having trees, shrubs or plants, seeing native and non-native birds, having trees for shade and/or shelter, and trees to stabilise the soil in addition to having some lawn for recreation as being important benefits. Similar features (ecosystem services) were valued for local parks and reserves, although the existence value of plants and trees for visitors in the long-term future was also expressed.

The same study measured an increase in perceived wellbeing if residents were to have more native plants and sightings of mobile native fauna in residential areas. That sense of wellbeing further increased if there were more native plants and animals present in local parks and reserves. The last element of the study calculated the mean WTP (through increased rates) for programs that would plant more indigenous vegetation in their community (i.e. through restoration and enhancement projects). The research showed that there was a higher overall WTP for planting on public land, although the mean WTP was similar for planting that occurred on private and public land (respectively $255 and $253 per annum). As a result, the authors concluded that biodiversity enhancement projects were broadly supported within the Wellington region.

The issue of private and public benefits of indigenous biodiversity is particularly relevant given that SNAs (and other indigenous biodiversity outside of SNAs) are to be protected and maintained on both private and public land under the NPSIB. The potential costs of the NPSIB for private landowners have been discussed earlier in this report. A common issue raised in public submissions on the draft NPSIB was the positive benefit that the wider public receives from protecting and maintaining indigenous biodiversity on private land, and in turn, it was argued that public funding should be made available to help cover private costs.

M.E has considered where the benefits of different ecosystem services delivered by indigenous biodiversity fall when that indigenous biodiversity (particularly SNAs, as opposed to mobile indigenous fauna) falls on private versus public (DOC/Crown) land. This high-level assessment takes into account whether the ecological processes or human interactions were localised (in-situ), or non-localised, or both. Accessibility of private property is another key determinant. Using the ecosystem services previously identified in the TEV framework for indigenous biodiversity (Figure 7.2), Figure 7.3 sets out M.E's assumptions.

Figure 7.3 – Indicative Landowner and Public Benefits by Indigenous Biodiversity Tenure

Ecosystem Service (Benefit)	Indigenous Biodiversity on Private Land		Indigenous Biodiversity on Public Land
	Potential or Actual Benefits to **Landowner**	Potential or Actual Benefits to the **Wider Public**	Potential or Actual Benefits to the **Wider Public**
Use Values - Direct			
Materials (wood, fuel, fibre)			
Food and medicines			
Ornamental Resources			
Tourism		*	
Recreation		*	
Science and education		*	
Use Values - Indirect			
Shelter			
Water filtration			
Erosion control			
Climate regulation			
Air quality regulation			
Nutrient cycling and soil formation			
Pollination			
Non-Use Values - Option			
Future use value			
Genetic Resources			
Non-Use Values - Existence			
Cultural and spiritual value			
Inspiration for art/design			
Aesthetic value			
Sense of Identity/community			
Intrinsic value of habitats and species (right to exist)			
Non-Use Values - Bequest			
Biodiversity conservation			

Source: M.E. ** Potential public benefit if access if provided on private land (paid or unpaid).*

Based on M.E's understanding, landowners potentially benefit from all ecosystem services delivered by indigenous biodiversity when located on their land, with the exception of tourism.[142] In particular, they have the exclusive benefit of consumptive direct use values, as well as non-consumptive direct use values: with SNAs on their property potentially providing opportunities for recreation, exploration and learning. Similarly, landowners have the exclusive benefit of future option values associated with the SNA. Private landowners are also likely to indirectly benefit from all of the functional/regulating services provided by indigenous biodiversity.

Public use values of indigenous biodiversity on private land would appear to be limited to indirect functional/regulating ecosystem services provided by indigenous biodiversity, particularly those that contribute (in aggregate) to catchment level water quality, air quality and climate regulation. Nutrient cycling and shelter benefits are excluded on the basis that these are anticipated to be more localised (and therefore received mainly by the landowner). We note that the wider public may benefit from tourism, recreation and education direct use experiences in SNAs on private land *if* access is provided. This is likely to be limited to relatively few situations.

Private landowners who contain an SNA on their property are also represented in the column of wider public benefits of indigenous biodiversity on private land (Figure 7.3, middle column), as they in turn indirectly benefit from SNAs on other private property.

Conversely, we have considered the public benefits of indigenous biodiversity when on public land (and assuming that public land does not constrain public access). This captures all households, including those that have SNAs on their land. In terms of direct use values, these are likely to be focussed on non-consumptive benefits, including tourism, recreation, science and education. Consumptive benefits are excluded as public land is typically protected for conservation purposes (although some exceptions/concessions apply). The wider public also benefits indirectly from the regulating services of SNAs on public land, where again, in aggregate these contribute to catchment level water and air quality and climate regulation. Option values could also apply to the wider public for SNAs on public land, although that future option may be limited to non-extractive direct use values (e.g. having the option to do a hike in a national park in the future).

With regard to existence/intrinsic and bequest values, M.E considers that these apply to indigenous biodiversity on private and public land and are not limited to landowner values when indigenous biodiversity is on private land.

Existence and bequest values can transcend distance, tenure and other boundaries. That said, awareness of indigenous biodiversity on public conservation land is likely to be much greater than awareness of indigenous biodiversity on private land – simply through its large scale[143], accessibility (direct experiences) and promotion/media exposure. This may weigh existence and bequest values held by the wider public towards public land. However, implementation of the NPSIB is expected to increase public awareness of indigenous biodiversity on private land through changes to District Plans, resource consent assessments,

[142] This assumes that landowners are not 'visitors' on their own land. Landowners could however benefit financially if an SNA on their land provided opportunities for commercial eco-tourism.

[143] See Figure 2.3 of this report.

Regional Biodiversity Strategies and Regional Monitoring Plans. This may in turn increase the public existence and bequest values of indigenous biodiversity on private land in the near future.

7.7 Summary of Benefits

Indigenous biodiversity in New Zealand delivers a wide range of ecosystem services that significantly contribute to the wellbeing of people and communities. These services span direct and indirect use values and non-use values. They are a mix of services that can be measured through market transaction and services for which no market exists. They are benefits that are received at a property level, through to a community, catchment, regional and national level (and arguably international level). They range from preventing erosion and filtering wastes on the one hand, to inspiring art, supporting tourism and other export industries, and contributing to the very identity of New Zealanders on the other hand.

Protecting and maintaining indigenous biodiversity therefore helps to protect and maintain those ecosystem services. Restoration of indigenous biodiversity can help increase the locations where ecosystem services are delivered and increase the scale and effectiveness of ecosystem services delivered in aggregate.

Indigenous biodiversity is both a public good and a private good. However, even when indigenous biodiversity occurs on private land, it provides public benefits. Protecting and enhancing terrestrial indigenous biodiversity benefits all New Zealanders (and in fact all life, as it contributes to the wellbeing of the biosphere).

Quantifying and monetising the benefits anticipated from the implementation of the NPSIB is challenging and has not been attempted for this CBA. This is because it would be necessary to account for the marginal effect of the NPSIB over and above the status quo regulation in each territorial authority. This requires comprehensive estimates of the current TEV of indigenous biodiversity, the rate and nature of net change that may be achieved (in aggregate across all districts/regions) and an understanding of the dynamics between incremental improvements (including avoided further losses) and non-linear benefits. These are complex issues with significant uncertainty. As such, this CBA relies on existing research on the value of ecosystem services delivered by indigenous biodiversity – both quantified and qualified.

The benefits of the NPSIB will take time to be realised. They are long-term, cumulative effects that are critical for the wellbeing of current and future generations.

8 Overview and Conclusions

This section brings together the costs and benefits attributable to the NPSIB that have been discussed throughout this CBA. This includes a summary of costs and benefits by impacted party (the wider community, tangata whenua, private landowners, local authorities, central government and other non-government organisations), and brief commentary on costs relative to benefits for each of those impacted parties. This is followed by a discussion on short versus long-term costs and benefits and overall conclusions on net efficiency outcomes.

8.1 Summary of Costs and Benefits of the NPSIB

Table 8.1 provides a high-level summary of costs and benefits by the main impacted parties discussed throughout this report. Understanding who pays and who benefits is a key aspect of CBA and helps put the effects of adopting the NPSIB 'on the ground'. Knowledge, even partial knowledge, of the size/number of those impacted parties helps put the aggregate scale and significance of costs and benefits into perspective. This is important when costs and benefits are a mix of quantified and qualified outcomes and a single measure of efficiency (i.e. a benefit-cost ratio) is not able to be calculated.

Those that bear the costs and benefits of implementing the NPSIB include:

- the community at large (wider public) – this includes all individuals, tangata whenua, general and Māori landowners in New Zealand.[144] *Current residential population estimate is 5,127,100 (year end March 2022)*[145].
- Tangata whenua – these costs and benefits are discrete from (and additional to) the costs and benefits for the community at large. *Indicatively, New Zealand's estimated resident Māori ethnic population was 875,300 (17.1 percent of the national population, year end June 2021)*[146].
- Landowners whose properties contain indigenous biodiversity – this includes owners of Māori land, land used for mining, quarrying or infrastructure, and Crown pastoral leases/licences. These costs and benefits are discrete from (and additional to) the costs and benefits for the community at large. *Count uncertain*.
- Local authorities – includes territorial (*61*), regional (*11*) and unitary (*6*) authorities.
- Central government.

[144] This CBA has focused on costs and benefits felt within New Zealand, but there are some benefits to the community at large that could also apply at an international/global level. That is, protecting, maintaining and restoring indigenous biodiversity in New Zealand benefits those beyond New Zealand (and vice versa).

[145] Costs and benefits to all New Zealanders may extend to New Zealanders living overseas.

[146] Costs and benefits to tangata whenua may extend to tangata whenua living overseas.

- Selected non-government organisations (NGOs) – includes national level and local level organisations. These costs and benefits are discrete from (and additional to) the costs and benefits for the community at large. *Count uncertain*.

Table 8.1 – Summary of Costs and Benefits by Main Impacted Parties

Bearer	Benefits	Costs
Community at large (including tangata whenua and owners of private/ Māori land containing indigenous biodiversity)	• **Ecosystem services** delivered by indigenous biodiversity on private and public land that contribute to human welfare (i.e. provisioning, regulating and cultural services) are maintained, protected and in some locations enhanced. Ecosystem services benefiting the wider public include: o Shelter/shade (mainly limited to public land) o Visual screening / noise mitigation o Biodiversity reservoirs (including refuges for natural enemies of pests and pollinators) o Erosion control, nutrient cycling and soil formation (mainly limited to public land), regulating water quality and air quality o Recreation, leisure, and learning experiences (all mainly limited to public land) o Aesthetic value, cultural value, intrinsic value, sense of identity. o Option/future use value and bequest value (for future generations) (both limited to public land). These ecosystem service (welfare) benefits arise through better local and aggregate (catchment-level) outcomes (i.e. marginal changes to the state of indigenous biodiversity compared with the status quo) and are perpetual, long-term benefits to communities. *[Environmental] [Economic] [Social] [Cultural]* • Potential increases in the **tourism value** (expressed as GDP, employment, or income benefits) of New Zealand's natural areas as a consequence of an enhanced state of the country's indigenous biodiversity over the long-term, and/or,	• **Potential increases in council rates** for private landowners if existing council income or central government funding assistance for SNA assessment is not adequate to cover net additional NPSIB implementation and administration costs. Effect may be limited to the short-medium term. The ability to treat large and high-quality areas of DOC managed land as SNAs is expected to significantly reduce SNA assessment costs in some districts where this option is taken up, reducing the probability and/or scale of any rates increases to cover council costs. *[Economic]* • Potential **opportunity costs for alternative uses of (primarily public) land in areas to be restored**/enhanced as a consequence of the NPSIB due to targets set in Regional Policy Statements to increase vegetation cover. Effect may be felt over the long-term. *[Economic] [Social]* • Opportunity cost of time, as well as travel costs for those community members **participating (i.e. as submitters) in council activities that implement the NPSIB** (District Plan changes and other consultation processes). Effect limited to the short-term. It has not been practicable to monetise this participation cost. *[Economic] [Social]*

	avoided loss of existing tourism value as a result of maintaining current levels of indigenous biodiversity and New Zealand's 'clean green image'. Arises through better local and aggregate outcomes. Flow-on effects across multiple sectors – employment and income benefits. *[Economic] [Social]* • Potential increases in the **value of product-related exports** (expressed as GDP, employment, or income benefits) of New Zealand's as a consequence of an enhanced state of the country's indigenous biodiversity over the long-term, and/or, avoided loss of existing product-related exports as a result of maintaining current levels of indigenous biodiversity and environmental perceptions of New Zealand. Arises through better local and aggregate outcomes. Flow-on effects across multiple sectors – employment and income benefits. *[Economic] [Social]* • **Greater awareness** of the state of indigenous biodiversity (in aggregate and in specific areas of New Zealand) as well greater certainty of what effects must be avoided in and out of SNAs as a result of changes to District Plans, regional council monitoring requirements and the sharing of information. Better understanding of the welfare benefits of indigenous biodiversity leads to improved stewardship/kaitiakitanga of the land. *[Social]* • Greater certainty for community members of areas identified for protection, enhancement, restoration and the actions being undertaken regarding those areas and the methods available. Potential **increase in volunteering opportunities** which contribute to social wellbeing and cohesion. *[Social]* • Participation in local authority NPSIB implementation processes contributes to long-term positive change in the wellbeing of communities through an **ability to express views and share information/experiences** and from volunteering in civic engagement and governance. *[Social]*	
Tangata whenua (in	• The **long-term capacity and capability** of tangata whenua (collectively) to	• There will be a cost for tangata whenua representatives to resource necessary

addition to wider community benefits and costs)	effectively participate in resource management processes is enhanced through training opportunities and workshops provided to selected representatives by central government (technical skills development and education and subsequent knowledge transfer). *[Social] [Cultural]* • Participation in local authority implementation processes contributes to long-term positive change in the wellbeing of tangata whenua (collectively) through an **ability for representatives to express cultural identity** and from representatives volunteering in civic engagement and governance. *[Cultural]* • Tangata whenua aspirations and wellbeing (collectively) which are directly linked to ecosystem services delivered by indigenous biodiversity and indigenous ecosystems, including those related to traditional medical practices, Māori knowledge and food and resource gathering, are maintained and enhanced in restoration areas. *[Cultural]*	training and active engagement with local authorities on the development of provisions in District Plans and Regional Policy Statements, Regional Biodiversity Strategies and Regional Monitoring Plans, and the spatial analysis of highly mobile fauna areas and Taonga. This is measured in terms of the **short-term opportunity cost of time and related travel costs**. It has not been practicable to monetise this participation cost. *[Economic] [Social]*
Owners of private land (including Māori Lands and Crown pastoral leases and licences) containing indigenous biodiversity (in addition to wider community benefits and costs)	• **Ecosystem services** delivered by indigenous biodiversity located on private/Māori land that contribute to landowner welfare (i.e. provisioning, regulating and cultural services) are maintained, protected and in some locations enhanced. Localised ecosystem services benefiting the private landowners include: o Shelter/shade o Visual screening / noise mitigation o Biodiversity reservoirs (including refuges for natural enemies of pests and pollinators) o Source of food and raw materials o Erosion control, nutrient cycling and soil formation, regulating water quality (where applicable to the property) and air quality o Recreation, leisure, and learning experiences o Aesthetic value, cultural value, intrinsic value, sense of identity.	• Landowners containing SNAs, including owners of land used for infrastructure, mining and quarrying, and owners of Māori land, are anticipated to face **short-term opportunity costs of time and other real costs** to provide/ facilitate access to council staff/representatives to confirm SNA boundaries and description. Based on high-level assumptions, nationally this participation cost (mainly an opportunity cost) is estimated to total $32,400,000 across all impacted landowners or an average of $264 each (2023-2053, present value, discount rate 5%). This broad order of magnitude estimate is a one-off short-term cost. Those same landowners may also face opportunity costs of time and other real costs to participate in plan changes if they contest SNAs defined on their land. *[Economic] [Social]* • Landowners, including owners of land used for infrastructure, mining and quarrying, and to a lesser extent owners of Māori land, may incur increased **transaction costs** (mainly ecological assessment costs) when new use,

	○ Option/future use value and bequest value (for future landowners) These ecosystem service (welfare) benefits arise through better property-level outcomes (i.e. marginal changes to the state of indigenous biodiversity on private land compared with the status quo) and are perpetual, long-term benefits to landowners. *[Environmental] [Economic] [Social] [Cultural]* • Potential net **opportunity benefits** for development/occupation on Māori Lands, particularly Treaty Settlement Land, from flexible and enabling provisions for new use, development and occupation that may adversely affect indigenous biodiversity, including incentives made available from TAs. *[Economic] [Social] [Cultural]*	occupation, development or subdivision (or established activities that are greater in scale and intensity) that requires a consent and has adverse effects on indigenous biodiversity. Any more than minor increase in consent application costs are more likely to be marginal increases on status quo costs and apply in those TAs that did not previously define SNAs or implement an effects management hierarchy and/or where small to mid-sized assessments of more than minor effects carried out under the status quo would not meet best practice. Transaction costs attributable to the NPSIB are likely to be one-off or infrequent costs for properties falling within this group. *[Economic]* • Landowners, including owners of land used for infrastructure, mining and quarrying, and to a lesser extent owners of Māori land, may incur increased **compliance costs** (conditions of consent to manage effects on indigenous biodiversity). Any more than minor increase in consent compliance costs (net of any funding, rebates or incentives that may be obtained) are more likely to be marginal increases on status quo costs and apply in those TAs that did not previously define SNAs or implement an effects management hierarchy and/or where effects relate to priority areas for restoration. Compliance costs attributable to the NPSIB are likely to be one-off or infrequent costs for properties falling within this group. *[Economic]* • Landowners of general land, including owners of land used for infrastructure, mining and quarrying (but excluding owners of Māori lands), may incur **opportunity costs** (marginal reductions in land value) associated with constraints on the potential for new subdivision, use and development or changes to established activities that are greater in scale or character on land containing SNAs where that SNA effectively precludes these activities in total or limits the extent of what could otherwise be achieved (over and above operative rules). Any more than minor opportunity costs (net of any funding,

		rebates or incentives that may be obtained) are more likely to apply in those TAs that did not previously define SNAs or implement an effects management hierarchy. Opportunity costs attributable to the NPSIB will be one-off short-term costs for current owners of properties falling within this group. *[Economic]*
Local authorities	• TAs – **greater certainty** on the location and attributes of SNAs and indigenous biodiversity outside of SNAs. The complexity and sensitivity of identifying SNAs post-commencement is reduced through clear policy direction to ignore tenure and property boundaries, with possible **cost savings** on these processes in the short-term. *[Economic]* • Greater **efficiency** in how local authorities manage indigenous biodiversity under the RMA, including a clearer understanding of the roles of district and regional councils. **Potential for reduced litigation costs** for councils in plan making and resource consents over time. *[Economic]* • **Better (and more informed) decision making** through clear policy guidance on what adverse effects on indigenous biodiversity are to be considered (and in accordance with an effects management hierarchy in relation to SNAs), with potential **costs savings** on these processes over the long-term. *[Economic]* • **Relationships** and partnerships between local authorities, tangata whenua and landowners are potentially strengthened and endure over time. *[Social]*	• TAs – **implementation costs** for SNA assessment (where not funded by central government), taonga mapping, developing provisions to manage effects on indigenous biodiversity and give effect to the NPSIB through a plan change(s). When all of these tasks need to be implemented, total core costs per TA range from an estimated $485,000 - $2,584,000 each (2023-2053, present value, discount rate 5%, excluding any central government funding). These broad-order of magnitude but upper-limit cost estimates are largely one-off short-term costs. *[Economic]* • TAs – Minor net additional costs per council to provide input to regional council **implementation**. Potential net increases in consent **compliance monitoring and enforcement costs**. Potential net additional **administration costs** to establish active engagement processes with tangata whenua, manage additional data, meet increased demand for biodiversity funding/incentives, **increased expenditure on planting and pest control** to meet targets and monitoring outcomes when not otherwise funded from regional councils or central government. These minor costs are a mix of one-off short-term costs and minor ongoing costs. *[Economic]* • Regional councils – **implementation costs** to map highly mobile fauna areas (where information is available), map vegetation cover and develop targets, develop a Regional Biodiversity Strategy, and Regional Monitoring Plan, develop provisions to manage effects on indigenous biodiversity and give effect to the NPSIB through a change(s) to the RPS. Potential **administration costs** to deliver a regional monitoring programme over the long-term. When

		all of these tasks need to be implemented, total core costs per regional council range from an estimated $818,000 - $2,149,000 each (2023-2053, present value, discount rate 5%). These broad order of magnitude but upper-limit cost estimates are largely one-off short-term costs. *[Economic]* • Regional councils – Potential minor net additional **administration costs** per council to establish active engagement processes with tangata whenua, manage additional data, meet increased demand for biodiversity funding/incentives, **increased expenditure on planting and pest control** to meet targets and monitoring outcomes when not otherwise funded from central government. These minor costs are a mix of one-off short-term costs and minor ongoing costs. *[Economic]* • Unitary authorities – as above combined with some cost efficiencies. Total core costs per unitary authority (when all tasks need to be implemented), range from an estimated $1,263,000 - $4,695,000 each (2023-2053, present value, discount rate 5%, excluding any SNA funding from central government). These broad order of magnitude but upper-limit cost estimates are largely one-off short-term costs. *[Economic]*
Central Government	• **Greater long-term evidence and certainty** of the status and trends of indigenous biodiversity (in aggregate and in specific areas of New Zealand) as a result of regional monitoring and improved data collection and reporting. May allow greater effectiveness and efficiency of central government biodiversity-related operations in the long-term. *[Economic]*	• NPSIB **administration, support (including DOC support) and guidance costs**. Core costs estimated at $3,591,000 - $5,132,000 (2023-2053, present value, discount rate 5%). Excludes additional funding provided to local authorities to **reduce costs of SNA** mapping (accounted elsewhere above) and capacity and capability building for tangata whenua (**training**) equivalent to a combined present value of $14,634,000 (2023-2053, discount rate of 5%)). The significant majority of these costs will be incurred in the short-term (first four years). *[Economic]*
NGOs (national level including but not limited to Forest &	• Participation in local authority NPSIB implementation processes contributes to long-term positive change in the wellbeing of organisations and their	• Potential **net additional operational/administration costs** to actively participate in NPSIB implementation by local authorities

Bird, QEII National Trust, Infrastructure bodies, sectoral advocates such as farming, forestry, mining and local level trusts and advocate groups)	representatives (and indirectly their members) through an **ability to express views and share information/experiences** and where applicable, from volunteering in civic engagement and governance. *[Social]* • **Greater certainty** around where effects on indigenous biodiversity need to be managed (and how) and around areas identified for protection and restoration, and the actions being undertaken regarding those areas (including methods available). May allow greater coordination and efficiency of operations in the long-term. *[Economic]* • The greater consistency of SNA mapping and regulation across the country (and associated improvements in practice) may lead to **reduced advocacy and litigation costs** in the long-term. *[Economic]* • Potential increased funding and resources made available for restoration planting projects attributable to the NPSIB. Some NGOs will be the direct recipients (beneficiaries) of that funding, which could **sustain more paid and unpaid roles working in restoration and pest control**.	(where specifically requested), and/or participate in public consultation and hearings (as submitters) as part of their advocacy role. Applies if the NPSIB requires an increase in resources (labour or hours worked) or travel costs compared with the status quo. Short-term cost. *[Economic]* • NGO staff/representatives may face net additional **short-term opportunity costs of time** associated with their participation in NPSIB implementation processes. *[Social]*

Evaluating the potential net costs or benefits for each impacted party in isolation is not the key purpose of this CBA. Section 32 of the RMA is concerned with overall benefits relative to overall costs, and this CBA seeks to inform the s32 evaluation. However, there is some merit in this evaluation, if only to help inform issues of equity and fairness of adopting the NPSIB, which may be of wider interest for central government decision making.

While not all costs and benefits are monetised in aggregate, based on the analysis and research carried out for this CBA, M.E consider that for the wider public, tangata whenua and NGOs, the benefits of adopting the NPSIB (over and above the status quo) are highly likely to outweigh the costs when considered over the long-term and in present value terms. For central government and local authorities, the costs are likely to outweigh the benefits returning to those parties over the long-term[147]. That is not surprising as a key role of central and local government is to "*promote the social, economic, environmental, and cultural well-being of communities in the present and for the future*" (Local Government Act 2002, section 10 (1)). The net benefits to the wider community cannot be realised, in this case, without the net costs to central and local government. Last, the net outcome for landowners containing indigenous biodiversity, including SNAs) is less clear (for reasons discussed throughout this report). Not all landowners in this group bear costs attributable to the NPSIB, but all landowners in this group receive some localised (property-level) benefits

[147] This CBA does not consider the consequent effects for central government such as retained or increased tax and GST income generated from the portion of tourism, primary production, exports etc. attributable to the NPSIB.

from the presence of indigenous biodiversity on their properties (ecosystem services benefits). When considering only the benefits and costs summarised in the Landowner row of Table 8.1, M.E considers it possible that the costs to this group may outweigh the benefits if able to be quantified in aggregate. However, landowners containing indigenous biodiversity also accrue a share of the net benefits to the wider public and tangata whenua, and when these are factored in, M.E consider is possible that benefits to this landowner group outweigh the costs. Certainly, incentives (financial and non-financial) are key for this group to help mitigate the costs of protecting, maintaining and (where applicable) restoring indigenous biodiversity.

8.2 Conclusions

While the overview above provides a breakdown of costs and benefits by impacted party, a key finding of this CBA is the dichotomy between the short and long-term nature of effects (costs and benefits) of the NPSIB. The temporal distribution of costs and benefits is important, particularly when reversing the trend of declining indigenous biodiversity will take time and achieving net gains in indigenous biodiversity will be a gradual and incremental process. There is a tendency to focus on the immediate or short-term effects and lose sight of the long-term effects, which will be felt by future generations. As such, this sub-section presents M.E's conclusions through the lens of short and long-term outcomes. It captures the timing (and scale) of costs and benefits.

8.2.1 Short-term Costs and Benefits

All new national direction introduced under the RMA comes at some cost to central government (administration costs) and local authorities (implementation costs and administration costs). The NPSIB is not unique in this regard. Given the timing of Government's Implementation Plan and when councils must give effect to the NPSIB following commencement, these costs are concentrated in the short-term, and are largely one-off costs.

Relative to actual or estimated central government administration costs for other recent national direction that M.E is aware of, the planned spending by central government for the NPSIB is relatively high. However, this is largely driven by an approach designed to respond to the pressures that the NPSIB places on tangata whenua to actively engage in NPSIB implementation and future decision making at a local level. A portion of central government costs is also set aside to reduce the financial cost for some TAs to assess SNAs (indirectly minimising the costs passed on to rate payers). This planned spending by central government is therefore appropriate and will help reduce some key obstacles to implement the NPSIB and effectively achieve the objective.

While there is some data on how local authorities currently manage adverse effects on indigenous biodiversity, and relative to NPSIB requirements, there is incomplete data to fully understand the status quo. This makes it difficult to determine which requirements each local authority will need to implement (and to what degree) to give effect to the NPSIB. Council's will sit on a spectrum of implementation costs ranging from needing to implement all discrete tasks and some needing to implement only some. No council is expected to avoid all implementation and administration costs.

The requirement to quantify indigenous vegetation land cover in urban and rural areas and set minimum targets is a task unique to the NPSIB and one that councils are not expected to have done already. Even if all regional councils need to carry this out, it is a task that can likely be implemented with relevantly little cost to regional councils (if limited to a desktop assessment), so even in aggregate the short-term cost of that clause in the NPSIB would be minor.

Not all territorial authorities/unitary authorities will need to assess SNAs to meet NPSIB requirements as some councils are likely to have satisfied the criteria of Appendix 1. Many will need to start from scratch, and some will need to modify existing approaches. As above, some central government funding is being made available to help improve the affordability of complying with this requirement in the timeframes set. The option to treat large and high-quality areas of DOC managed land as qualifying as SNAs will also significantly minimise costs for some TAs, particularly where DOC land makes up a substantial share of indigenous vegetation cover.

Similarly, not all regional councils will need to start from scratch with a Regional Biodiversity Strategy or Monitoring Plan. Some TAs may not need to map taonga species if that is the preference of tangata whenua. All local authorities are likely to need to carry out at least one plan change, and some may have opportunities to do that efficiently to minimise costs.

This CBA has estimated the worst-case short-term implementation and administration costs for local authorities where all tasks are required to be carried out, although allowing for situations where existing documents need only be modified in some cases and for different approaches to resource the work required – giving a low and high-cost range. However, as discussed above, these costs will over-estimate costs for some local authorities. Given the uncertainty around the status quo, it was not practicable to present robust aggregate costs for local authorities. While not quantified, aggregate implementation and administration costs for local authorities are considered to be the main cost of the NPSIB in the short-term.

With implementation and administration of the NPSIB by local authorities in the short-term – particularly outcomes that follow a Schedule One process under the RMA, there comes participation costs for some community members. While participation in public consultation and engagement is optional, those that do participate give up their time to do so, and as such there are opportunity costs of time and potentially net additional travel costs that would not have occurred in the absence of the NPSIB. In most cases, such participation costs are considered minor at the individual level, although potentially significant at the aggregate (national) level.

Landowners whose properties contain potential SNAs are encouraged to work with Councils to identify and confirm SNAs, including facilitating on-site assessments. Again, there are opportunity costs of time and potential travel costs to landowners associated with this requirement. In most cases, such participation costs are considered minor at the individual level and relatively few landowners across New Zealand will be impacted. Very indicatively, M.E estimates that in aggregate, these short-term costs could sum to around $32m in present value terms.

Representatives of tangata whenua in each district/region will also be required to actively engage with local authorities across most aspects of NPSIB implementation. While training costs are planned to be funded by central government, there is an opportunity cost of time and potential net additional travel costs

associated with both the training and subsequent active engagement with councils by those representatives. Relative to SNA landowner and general community participation, the commitment (measured in hours) by tangata whenua representatives is expected to be greater at an individual level. In aggregate the participation cost for tangata whenua is expected to be significant. However, it has not been practicable to quantify that cost given the uncertainty of how many tangata whenua representatives will be involved in each district/region and for what durations over the short-term.

The costs of participation for SNA landowners, tangata whenua, and the community in general may be more significant in some districts/regions than others. Costs will depend on what each local authority needs to do to meet the requirements of the NPSIB over and above the status quo. This includes the degree of change needed to engage tangata whenua in RMA processes, with the NPSIB not the only regulatory instrument to introduce these requirements. Collectively, total short-term participation costs will be significant at a national level, but such costs are not without reward.

There are short-term wellbeing benefits to individuals from engaging in government processes. These are associated with an ability to express ones cultural identify and volunteer in the community. The benefit of expressing cultural identify is not limited to those individual tangata whenua participants, but is likely to apply to all tangata whenua whom they represent. M.E anticipates that for many individuals, these short-term benefits will off-set or extensively compensate their short-term participation costs.

Landowners who participate in the process to identify an SNA(s) on their property in the short-term may also be eligible for opportunity benefits associated with that SNA if confirmed. Existing examples include additional subdivision rights if SNAs are protected[148] or rates remissions. To the extent that such opportunity benefits apply, they arise in the short-term and far outweigh the cost of participation. However, some general landowners with SNAs may also incur opportunity costs attributable to the NPSIB associated with constraints on new subdivision, use and development (or new activities that are larger in scale and character than established activities). These opportunity costs occur in the form of a one-off reduction in land value felt in the short-term and will in most cases be minor in percentage terms. The NPSIB provisions are such that the probability of significant opportunity costs on land value occurring is very low.

There seem limited situations in practice where the NPSIB will lead to the retirement of productive farm or forestry land because of the identification of an SNA on that land. Likely impacted SNA landowners include only those properties that have further potential for subdivision, use and development *and* that are located in districts where the NSPIB introduces new constraints to realising that potential in order to protect, maintain or restore SNAs (i.e. that would not have occurred under the status quo). Properties likely to experience short-term opportunity costs are estimated to be only a fraction of the properties containing indigenous biodiversity and excludes Māori land. For general land, this is anticipated to be a minor share of total private properties. It has not been practicable to quantify these aggregate opportunity costs across New Zealand.

[148] There may be net additional costs associated with this (such as applying a covenant) that are not captured here.

As discussed above, the provision of regulatory and non-regulatory incentives (opportunity benefits associated with SNAs on private property) - which councils are encouraged to be consider under the NPSIB – may also help mitigate (partially or wholly) any opportunity costs.

The final short-term effect of the NPSIB relates to potential net additional consent application (transaction) and compliance costs for private landowners. These can arise when landowners seek to realise further potential for subdivision, use, occupation and development that may adversely affect an SNA through resource consent applications. While the timing of consent applications is not limited to the short-term, the cost adjustment will apply from the time that District Plans give effect to the NPSIB, so these costs are included in this time period.

Net additional transaction and/or compliance costs (they are not necessarily additive) will be felt by only a portion of those SNA properties that experience opportunity costs discussed above (so a very minor share of total private properties, and including a portion of Māori land properties in this case). This is key for putting aggregate costs into perspective. These costs are estimated to be minor marginal increases per consent relative to the status quo, and more likely to occur in TAs that have not already mapped SNAs or where application of the effects management hierarchy is not standard practice. Some landowners will also be able to obtain (contestable) funding that can reduce the private cost of compliance. It is estimated that this funding pool may increase under the NPSIB – and helps share the cost of protecting, maintaining and restoring indigenous biodiversity on private property.

8.2.2 Long-term Costs and Benefits

The NPSIB will generate some long-term administration costs for local authorities that may not have occurred under the status quo. When averaged over the long term, these annual costs are expected to be relatively minor. They include potential net increases in consent compliance monitoring and enforcement costs associated with consents or activities that have adverse effects on indigenous biodiversity. There are also ongoing environmental monitoring costs for regional councils (to carry out their Regional Monitoring Plans). TAs will need to reassess SNAs at a district-level but this will be infrequent and tied in with a wider District Plan Review process – representing only a marginal increase in the scope and cost of that review.

Last, local authorities may face increased annual expenditure (directly or indirectly) on restoration planting/pest control over the long-term, particularly while they are working towards meeting minimum 10% indigenous vegetation coverage targets in their urban and non-urban environments or they have further increased their targets. However, there are also potential long-term benefits for local authorities attributable to the NPSIB such as reduced litigation costs. Corresponding benefits may also be felt by NGOs in the long-term in terms of reduced resource management participation and advocacy costs on indigenous biodiversity issues due to greater certainty and consistency on how and where effects are to be managed.

While the majority of participation costs for tangata whenua will be concentrated in the short-term, there may be ongoing participation costs as part of the partnerships formed with local authorities to manage indigenous biodiversity. These costs (i.e. opportunity cost of time and travel costs) are anticipated by minor.

Importantly, the NPSIB is expected to generate long-term cultural, social and economic wellbeing benefits for tangata whenua. These arise from increased capacity and capability to participate in resource management processes, increased opportunities to express cultural identify, a clearer role of tangata

whenua in decision making and as kaitiaki, incorporation of tikanga Māori in the management of indigenous biodiversity, better outcomes for the development of Māori lands, and ensuring customary use rights are acknowledged and protected while maintaining, protecting and restoring indigenous biodiversity. The collective wellbeing of tangata whenua is directly linked to the health of natural ecosystems. They therefore benefit from maintaining and restoring indigenous biodiversity over the long-term.

Overall, the long-term marginal environmental benefits of achieving the objective of the NPSIB will be felt by current and future generations and are significant. Ecosystem service (welfare) benefits delivered by indigenous biodiversity at the property, local and catchment level are perpetual, long-term benefits to landowners and the wider community. For every year that indigenous biodiversity is maintained, the full TEV can be experienced (compared with the counterfactual (status quo) where the TEV continues to diminish over time). Maintaining indigenous biodiversity ensures that future generations reap the same significant use and non-use benefits of indigenous biodiversity as current generations.

The indigenous biodiversity loss avoided, and the restoration of indigenous biodiversity achieved in any one district or region does not just benefit communities in that district or region, but will benefit the wellbeing of wider New Zealand (and beyond). This is because indigenous biodiversity is a public good that delivers ecosystem services as the local, catchment and national (and even global) level.

There may be long-term opportunity costs for the wider community in terms of alternative uses of (public) land used for restoration. However, any such costs are considered to be minor. As indigenous habitat expands (to meet targets set at the regional level) and degraded SNAs are restored, ecosystem services delivered by indigenous biodiversity at the local and catchment level will incrementally increase in net terms (commensurate with the gains made), leading to increases in wellbeing for the whole community.

The above long-term environmental benefits achieved from maintaining and restoring indigenous biodiversity are unlikely to be spread evenly across New Zealand. The NPSIB provisions will have a greater marginal effect on indigenous biodiversity on land outside DOC managed land (which is already protected by other legislation). General land is where the greatest decline in indigenous biodiversity has occurred and continues to occur as a result of established activities, land use change and continued development pressures.

Notwithstanding that *any* long-term maintenance of indigenous biodiversity on general land will be a positive outcome that generates multi-generational benefits within and beyond property boundaries, TAs where the major share of remaining indigenous land cover occurs on DOC land will have fewer opportunities (in a relative sense) to have a positive impact on maintaining indigenous biodiversity, although they can have a positive impact through restoration of indigenous biodiversity on general (and Crown) land in both urban and non-urban settings. Those same councils may not realise the potential benefits of greater regulatory efficiency and reduced litigation costs as strongly as some other councils simple because under the status quo, managing the effects on indigenous biodiversity may be a relatively minor issue.

Conversely, TAs that have a large share of indigenous biodiversity occurs on general land will have greater opportunities (in a relative sense) to have a positive impact on maintaining that indigenous biodiversity, in addition to potential gains made through restoration activities. Those TAs may also be more likely to realise

the benefits achieved by greater national direction in terms of a clearer definition of roles, integrated management, input from tangata whenua and reduced litigation due to uncertainty and inconsistency over the long-term.

New Zealand's tourism and export market is highly dependent on the state of the country's indigenous biodiversity. Maintaining indigenous biodiversity means that the tourism value of natural areas is retained over the long-term. The losses that would be avoided over the long-term are significant in dollar and employment terms, with significant flow-on economic and social benefits to many sectors. Similarly, New Zealand's reputation as a clean, green and environmentally responsible country is retained under the NPSIB (and potentially improves) in so far as the status of indigenous biodiversity contributes to that reputation. If the international community were to consider news of another species going extinct in New Zealand, they will not care if it was due to habitat loss on private land or public land. We are judged by our aggregate outcomes. A key focus of the NPSIB is bringing about positive changes at a property level, which cumulatively will lead to positive change at the aggregate level. This is key to avoiding reductions in the value of our product-related exports (which are also key to the nation's long-term social and economic wellbeing).

Finally, the NPSIB is expected to instil long-term changes in community awareness of the indigenous biodiversity in New Zealand and its contribution to our economic, social, cultural and environmental wellbeing. This will be achieved through more information sharing, more effective monitoring, more accountability, clear targets and identified locations for restoration.

8.2.3 Overall Findings

Overall, M.E considers that the long-term social, economic, cultural and bio-physical benefits (including non-market values) of implementing the NPSIB will outweigh the primarily economic and social short-term costs. The provisions of the NPSIB, as a bundle, are therefore considered to be an efficient way to achieve the objective of the NPSIB. While there has not been sufficient data to allow all costs and benefits to be placed on the ground, quantified, or monetised in aggregate for New Zealand, there is a high degree of certainty on the processes through which effects will arise and the nature of the costs and benefits that will and will not be attributable to the NPSIB. There is also high-level information on the relative scale and significance (and broad order of magnitude) of those costs and benefits in the short and long-term and this helps inform a net benefit conclusion.

Appendix A – Detailed National Indicative SNA Analysis

1 - Indicative SNAs by Certainty by Region

Regional Council*	Terrestrial Area (Ha)				Share by SNA Certainty				RC Share of National Total			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Auckland Region	9,590	57,160	44,060	110,810	9%	52%	40%	100%	2%	1%	1%	1%
Bay of Plenty Region	26,410	516,060	26,000	568,480	5%	91%	5%	100%	6%	8%	1%	5%
Canterbury Region	41,000	276,060	1,074,850	1,391,900	3%	20%	77%	100%	10%	4%	27%	13%
Gisborne Region	38,760	120,770	47,170	206,710	19%	58%	23%	100%	9%	2%	1%	2%
Hawke's Bay Region	58,620	266,090	115,840	440,560	13%	60%	26%	100%	14%	4%	3%	4%
Marlborough Region	9,610	207,630	247,610	464,850	2%	45%	53%	100%	2%	3%	6%	4%
Nelson Region	330	13,000	4,350	17,690	2%	73%	25%	100%	0%	0%	0%	0%
Northland Region	20,740	237,990	116,100	374,830	6%	63%	31%	100%	5%	4%	3%	4%
Otago Region	51,690	175,150	920,230	1,147,080	5%	15%	80%	100%	12%	3%	23%	11%
Southland Region	27,420	1,181,550	568,510	1,777,480	2%	66%	32%	100%	7%	19%	14%	17%
Taranaki Region	7,540	210,200	35,080	252,820	3%	83%	14%	100%	2%	3%	1%	2%
Tasman Region	7,560	526,650	118,940	653,160	1%	81%	18%	100%	2%	9%	3%	6%
Waikato Region	53,330	421,960	100,400	575,690	9%	73%	17%	100%	13%	7%	2%	5%
Wellington Region	25,420	150,980	60,660	237,060	11%	64%	26%	100%	6%	2%	2%	2%
West Coast Region	820	1,400,880	376,590	1,778,290	0%	79%	21%	100%	0%	23%	9%	17%
Total New Zealand (Terrestrial)**	419,190	6,138,160	4,042,560	10,599,900	4%	58%	38%	100%	100%	100%	100%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ ** Excludes Chatham Islands* *** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

2 – Total New Zealand Indicative SNAs by Certainty by Tenure

Tenure *	Terrestrial Area (Ha)			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Indicative Terrestrial SNA (Ha)				
Crown	14,260	73,590	779,820	867,670
DOC	89,340	4,688,410	2,072,080	6,849,840
General	255,470	788,950	954,930	1,999,350
Maori Land Court	49,110	349,270	176,320	574,700
Treaty Settlement	11,010	237,930	59,410	308,350
Sub-Total Maori Land	*60,120*	*587,210*	*235,720*	*883,050*
Total New Zealand (Terrestrial)**	419,190	6,138,160	4,042,560	10,599,900
Share of Indicative SNA by Certainty (%)				
Crown	2%	8%	90%	100%
DOC	1%	68%	30%	100%
General	13%	39%	48%	100%
Maori Land Court	9%	61%	31%	100%
Treaty Settlement	4%	77%	19%	100%
Sub-Total Maori Land	*7%*	*66%*	*27%*	*100%*
Total New Zealand (Terrestrial)**	4%	58%	38%	100%
Tenure & Certainty Share of Total Indicative SNA (%)				
Crown	0%	1%	7%	8%
DOC	1%	44%	20%	65%
General	2%	7%	9%	19%
Maori Land Court	0%	3%	2%	5%
Treaty Settlement	0%	2%	1%	3%
Sub-Total Maori Land	*1%*	*6%*	*2%*	*8%*
Total New Zealand (Terrestrial)**	4%	58%	38%	100%
Tenure Share of National Total (%)				
Crown	3%	1%	19%	8%
DOC	21%	76%	51%	65%
General	61%	13%	24%	19%
Maori Land Court	12%	6%	4%	5%
Treaty Settlement	3%	4%	1%	3%
Sub-Total Maori Land	*14%*	*10%*	*6%*	*8%*
Total New Zealand (Terrestrial)**	100%	100%	100%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ

** Tenure types aggregated from separate sources. M.E has applied assumptions where tenure areas overlapped. Refer Report.*

*** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries) and Chatham Islands*

3 – Indicative SNAs by Certainty by Territorial Authority and Tenure (Ha)

Territorial / Unitary Authority*	Crown				DOC				General				Maori Land Court				Treaty Settlement				*Sub-Total Maori Land*				Total All Tenures			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	*Indicative SNAs - Very High Certainty*	*Indicative SNAs - High Certainty*	*Indicative SNAs - Moderate Certainty*	*Total Indicative SNAs*	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Ashburton District	40	1,190	32,540	33,770	870	9,030	70,290	80,200	1,030	660	9,820	11,510	-	-	-	-	-	-	-	-	-	-	-	-	1,940	10,880	112,660	125,470
Auckland	60	-	20	80	2,850	10,350	8,920	22,120	6,370	44,710	32,740	83,810	220	1,140	1,750	3,110	100	970	630	1,690	310	2,110	2,380	4,800	9,590	57,160	44,060	110,810
Buller District	-	1,790	1,130	2,910	440	582,520	72,340	655,300	350	22,230	5,240	27,820	40	710	-	750	-	820	810	1,630	40	1,530	810	2,380	820	608,070	79,510	688,410
Carterton District	180	100	10	290	150	18,520	5,110	23,780	2,580	1,300	4,560	8,450	130	-	130	260	-	-	-	-	130	-	130	260	3,040	19,930	9,810	32,780
Central Hawke's Bay District	-	-	-	-	480	11,500	2,370	14,350	6,400	1,760	3,250	11,410	420	210	190	820	50	10	-	60	470	210	190	880	7,350	13,480	5,820	26,640
Central Otago District	3,430	950	121,420	125,790	1,390	110	91,840	93,340	16,280	200	118,140	134,620	-	-	-	-	20	-	250	270	20	-	250	270	21,130	1,250	331,650	354,030
Christchurch City	-	-	-	-	120	190	180	500	3,850	120	2,110	6,080	40	-	40	70	10	-	-	10	50	-	40	90	4,030	300	2,330	6,670
Clutha District	-	350	6,260	6,610	1,350	45,320	16,450	63,120	6,400	9,510	15,550	31,470	660	1,820	990	3,470	110	630	1,560	2,290	770	2,440	2,540	5,760	8,520	57,620	40,810	106,960
Dunedin City	40	-	3,370	3,400	850	1,680	21,710	24,250	7,000	1,150	22,210	30,370	170	40	10	220	30	50	80	160	200	80	100	380	8,080	2,920	47,390	58,390
Far North District	50	1,140	1,130	2,320	2,270	71,660	22,180	96,120	5,970	50,050	40,050	96,080	3,110	23,450	22,500	49,060	500	910	6,520	7,930	3,610	24,360	29,020	56,990	11,900	147,220	92,390	251,510
Gisborne District	110	50	110	280	1,400	51,160	420	52,980	24,390	20,800	11,880	57,070	12,060	32,270	33,420	77,750	800	16,480	1,340	18,630	12,860	48,760	34,760	96,380	38,760	120,770	47,170	206,710
Gore District	-	-	-	-	10	740	70	830	260	890	1,190	2,340	-	-	-	-	-	-	-	-	-	-	-	-	280	1,640	1,260	3,170
Grey District	-	6,120	350	6,470	-	178,960	40,730	219,700	-	23,280	3,890	27,170	-	320	40	360	-	2,250	230	2,480	-	2,570	280	2,850	-	210,920	45,260	256,180
Hamilton City	-	-	-	-	-	-	-	-	170	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	170	-	-	170
Hastings District	40	-	10	60	3,530	44,940	29,730	78,200	13,340	12,750	5,950	32,040	1,260	24,230	8,140	33,630	1,030	700	1,510	3,230	2,290	24,930	9,650	36,860	19,190	82,610	45,350	147,150
Hauraki District	-	100	-	100	40	15,940	1,390	17,360	750	6,730	1,990	9,480	100	890	370	1,370	-	-	-	-	100	900	370	1,370	890	23,670	3,750	28,310
Horowhenua District	20	10	-	40	600	16,550	2,060	19,210	520	2,330	650	3,500	190	320	30	540	30	-	20	50	220	320	50	590	1,360	19,220	2,760	23,330
Hurunui District	160	12,030	32,640	44,830	410	96,110	122,860	219,380	10,840	9,610	40,150	60,610	-	-	-	-	900	2,320	3,070	6,280	900	2,320	3,070	6,280	12,300	120,070	198,730	331,100
Invercargill City	-	-	20	20	40	280	700	1,020	370	360	820	1,550	-	20	-	20	-	-	-	-	-	20	-	20	410	650	1,540	2,600
Kaikoura District	100	10	1,540	1,640	710	7,420	31,670	39,800	1,330	3,440	27,870	32,640	-	20	370	390	10	20	80	110	10	40	450	500	2,150	10,900	61,530	74,580
Kaipara District	20	-	40	50	320	16,540	2,840	19,690	3,390	18,110	5,090	26,580	730	510	1,750	2,990	40	570	140	750	770	1,080	1,890	3,740	4,490	35,720	9,850	50,060
Kapiti Coast District	-	-	-	-	370	29,380	1,820	31,580	540	6,720	390	7,660	20	670	20	700	-	-	-	-	20	670	20	700	930	36,780	2,230	39,950
Kawerau District	-	-	-	-	70	40	20	130	40	-	10	50	10	-	10	20	30	10	10	60	50	10	20	80	150	60	60	260
Lower Hutt City	-	-	-	-	130	5,150	140	5,420	300	9,430	2,040	11,770	-	60	20	80	-	-	-	-	-	60	20	80	430	14,640	2,200	17,270
Mackenzie District	2,790	1,360	103,460	107,610	850	4,670	86,620	92,140	5,320	100	60,890	66,310	-	-	-	-	10	-	-	10	10	-	-	10	8,970	6,130	250,970	266,070
Manawatu District	-	-	-	-	1,280	9,790	8,260	19,330	4,950	1,150	530	6,630	40	-	-	50	-	-	-	-	40	-	-	50	6,270	10,950	8,800	26,010
Marlborough District	170	3,780	39,160	43,100	4,020	178,680	138,120	320,830	5,130	22,040	63,080	90,260	30	2,370	2,520	4,930	260	760	4,720	5,740	290	3,130	7,240	10,660	9,610	207,630	247,610	464,850
Masterton District	170	40	-	210	150	8,820	2,500	11,470	5,940	1,470	6,930	14,340	40	10	-	50	30	190	50	260	70	190	50	310	6,320	10,520	9,490	26,330
Matamata-Piako District	10	350	-	360	1,280	10,430	70	11,780	970	4,340	670	5,980	70	1,190	10	1,260	420	200	-	630	490	1,390	10	1,890	2,750	16,520	750	20,010
Napier City	-	-	-	-	-	-	-	-	50	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	60
Nelson City	-	60	-	60	-	4,860	340	5,200	300	7,080	3,620	11,000	-	670	150	820	30	340	230	600	30	1,010	380	1,420	330	13,000	4,350	17,690
New Plymouth District	-	-	-	-	710	45,550	1,530	47,790	2,340	26,610	6,840	35,780	140	2,440	140	2,730	10	1,800	30	1,840	150	4,250	170	4,570	3,210	76,400	8,540	88,150
Opotiki District	-	-	-	-	100	147,920	820	148,850	530	16,670	4,020	21,220	2,260	57,440	5,670	65,370	-	6,130	-	6,130	2,260	63,570	5,670	71,510	2,890	228,170	10,520	241,580
Otorohanga District	10	60	10	90	150	30,130	2,070	32,350	570	15,210	2,570	18,350	570	5,730	800	7,100	40	140	100	280	610	5,880	900	7,380	1,340	51,280	5,550	58,170
Palmerston North City	-	-	-	-	20	80	-	100	670	1,120	30	1,820	-	-	-	-	-	-	-	-	-	-	-	-	690	1,190	30	1,910
Porirua City	-	-	-	-	-	10	10	10	230	170	720	1,120	30	-	110	140	-	-	-	-	30	-	110	140	260	180	840	1,280
Queenstown-Lakes District	650	9,680	180,840	191,170	620	95,940	213,240	309,810	2,570	3,600	50,580	56,750	-	10	-	10	-	3,710	29,930	33,650	-	3,720	29,930	33,660	3,840	112,940	474,600	591,390
Rangitikei District	-	-	-	-	1,520	31,990	19,140	52,650	9,360	7,480	18,650	35,490	1,840	10,100	37,580	49,520	10	-	-	10	1,850	10,100	37,580	49,520	12,730	49,560	75,370	137,660
Rotorua District	50	10	10	70	2,970	9,880	2,210	15,060	2,190	12,560	780	15,520	1,290	9,990	2,020	13,300	270	1,170	160	1,610	1,570	11,160	2,180	14,900	6,780	33,610	5,180	45,560
Ruapehu District	-	410	650	1,060	80	118,580	28,790	147,450	2,700	46,180	61,740	110,620	190	17,850	7,070	25,100	-	40	40	90	190	17,890	7,110	25,190	2,960	183,060	98,300	284,320
Selwyn District	90	7,220	41,650	48,960	90	75,590	65,680	141,370	1,140	3,010	17,740	21,900	-	-	-	-	-	-	-	-	-	-	-	-	1,330	85,820	125,080	212,230
South Taranaki District	10	550	-	560	370	49,000	3,370	52,730	2,610	36,280	15,160	54,050	380	1,550	270	2,200	10	-	-	10	390	1,550	270	2,210	3,380	87,380	18,800	109,550
South Waikato District	30	80	20	130	100	13,210	80	13,400	730	1,990	420	3,150	150	790	270	1,200	-	70	-	80	150	860	270	1,280	1,020	16,150	790	17,960
South Wairarapa District	-	-	-	-	1,890	35,190	2,800	39,890	10,800	5,460	28,110	44,370	480	400	540	1,410	-	-	-	-	480	400	540	1,410	13,170	41,050	31,450	85,670
Southland District	2,640	15,780	76,390	94,810	13,110	1,106,050	436,380	1,555,540	9,140	28,740	49,680	87,570	1,570	27,400	2,320	31,280	280	1,290	940	2,510	1,840	28,690	3,260	33,790	26,730	1,179,260	565,720	1,771,710
Stratford District	-	1,500	430	1,940	230	62,550	4,200	66,980	830	19,630	8,050	28,520	20	8,120	340	8,480	-	-	-	-	20	8,120	340	8,480	1,080	91,810	13,030	105,920
Tararua District	-	-	-	-	1,510	9,690	2,750	13,940	12,950	3,690	8,780	25,420	420	10	2,970	3,390	-	10	-	10	420	10	2,970	3,400	14,880	13,390	14,500	42,760
Tasman District	10	160	70	240	1,960	483,190	93,460	578,610	5,000	39,860	23,740	68,600	-	-	-	-	590	3,440	1,670	5,700	590	3,440	1,670	5,710	7,560	526,650	118,940	653,160
Taupo District	200	40	130	370	22,910	81,900	20,530	125,340	6,660	4,200	3,320	14,180	10,710	31,970	20,480	63,160	1,860	170	50	2,070	12,560	32,130	20,530	65,230	42,340	118,270	44,510	205,120
Tauranga City	10	-	-	10	-	-	-	-	130	30	-	160	70	-	-	80	-	-	-	-	70	-	-	80	210	30	-	250
Thames-Coromandel District	60	1,520	840	2,420	250	64,970	10,950	76,170	1,540	15,890	21,660	39,100	140	5,530	3,210	8,870	-	370	40	410	140	5,900	3,250	9,280	1,990	88,280	36,700	126,970
Timaru District	30	40	13,310	13,370	240	820	22,720	23,780	1,100	130	6,660	7,890	-	-	-	-	-	-	70	70	-	-	70	70	1,370	990	42,760	45,120
Upper Hutt City	-	-	-	-	-	650	-	650	490	27,010	1,910	29,410	-	-	-	-	-	20	10	40	-	20	10	40	490	27,690	1,920	30,100
Waikato District	30	-	-	30	1,240	15,270	650	17,160	9,850	17,760	8,080	35,690	2,680	5,160	1,260	9,100	60	230	120	420	2,750	5,390	1,380	9,520	13,860	38,420	10,100	62,390
Waimakariri District	60	3,290	6,330	9,680	180	22,840	5,510	28,520	550	5,060	4,610	10,210	20	40	-	60	130	140	10	280	150	180	10	340	940	31,360	16,460	48,760
Waimate District	520	-	43,110	43,630	20	-	18,510	18,530	2,090	50	22,240	24,370	-	-	-	-	-	-	450	450	-	-	450	450	2,640	50	84,300	86,990
Waipa District	50	60	20	120	200	1,890	110	2,200	1,880	2,180	490	4,560	60	630	20	710	30	2,430	10	2,480	90	3,070	30	3,190	2,220	7,200	650	10,070
Wairoa District	-	30	70	110	2,180	26,600	2,920	31,710	10,820	19,350	9,000	39,170	4,670	4,350	4,470	13,480	2,260	67,470	800	70,530	6,930	71,820	5,270	84,010	19,920	117,810	17,260	155,000
Waitaki District	2,360	480	72,270	75,110	2,600	8,660	85,510	96,770	10,330	820	47,970	59,120	-	-	-	-	150	-	60	220	150	-	60	220	15,450	9,950	205,820	231,220
Waitomo District	-	840	220	1,060	120	52,970	1,060	54,150	670	38,040	4,070	42,780	380	16,340	4,440	21,160	-	20	10	30	380	16,360	4,450	21,190	1,180	108,210	9,790	119,190
Wellington City	-	-	-	-	-	-	-	-	70	130	510	710	-	-	-	-	-	-	-	-	-	-	-	-	70	130	510	720
Western Bay of Plenty District	-	20	-	20	100	34,620	330	35,050	1,040	18,460	1,120	20,620	110	5,280	120	5,510	-	1,590	20	1,620	120	6,870	140	7,130	1,260	59,970	1,590	62,820
Westland District	-	750	110	850	-	549,740	241,020	790,760	-	26,660	9,050	35,710	-	1,460	210	1,670	-	3,270	1,440	4,710	-	4,730	1,650	6,380	-	581,880	251,820	833,700
Whakatane District	10	40	-	50	7,340	32,930	400	40,670	2,570	8,220	3,230	14,020	980	35,110	3,020	39,110	850	117,170	2,140	120,160	1,830	152,270	5,170	159,270	11,750	193,470	8,800	214,020
Whanganui District	-	-	-	10	250	35,800	2,100	38,150	2,520	16,780	12,130	31,430	260	7,640	4,150	12,050	20	-	20	50	280	7,650	4,170	12,100	3,050	60,230	18,410	81,690
Whangarei District	50	1,600	110	1,760	290	12,840	1,450	14,580	3,640	37,560	9,940	51,150	360	3,050	2,370	5,780	-	-	-	-	360	3,050	2,370	5,780	4,350	55,060	13,860	73,260
Total New Zealand (Terrestrial)**	14,260	73,590	779,820	867,670	89,340	4,688,410	2,072,080	6,849,840	255,470	788,950	954,930	1,999,350	49,110	349,270	176,320	574,700	11,010	237,930	59,410	308,350	60,120	587,210	235,720	883,050	419,190	6,138,160	4,042,560	10,599,900

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ ** Excludes Chatham Islands* *** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

4 – Indicative SNAs by Certainty by Territorial Authority and Tenure (%)

Territorial / Unitary Authority*	Crown				DOC				General				Maori Land Court				Treaty Settlement				*Sub-Total Maori Land*				Total All Tenures			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	*Indicative SNAs - Very High Certainty*	*Indicative SNAs - High Certainty*	*Indicative SNAs - Moderate Certainty*	*Total Indicative SNAs*	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Ashburton District	2%	11%	29%	27%	45%	83%	62%	64%	53%	6%	9%	9%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Auckland	1%	0%	0%	0%	30%	18%	20%	20%	66%	78%	74%	76%	2%	2%	4%	3%	1%	2%	1%	2%	*3%*	*4%*	*5%*	*4%*	100%	100%	100%	100%
Buller District	0%	0%	1%	0%	54%	96%	91%	95%	43%	4%	7%	4%	5%	0%	0%	0%	0%	0%	1%	0%	*5%*	*0%*	*1%*	*0%*	100%	100%	100%	100%
Carterton District	6%	1%	0%	1%	5%	93%	52%	73%	85%	7%	46%	26%	4%	0%	1%	1%	0%	0%	0%	0%	*4%*	*0%*	*1%*	*1%*	100%	100%	100%	100%
Central Hawke's Bay District	0%	0%	0%	0%	7%	85%	41%	54%	87%	13%	56%	43%	6%	2%	3%	3%	1%	0%	0%	0%	*6%*	*2%*	*3%*	*3%*	100%	100%	100%	100%
Central Otago District	16%	76%	37%	36%	7%	9%	28%	26%	77%	16%	36%	38%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Christchurch City	0%	0%	0%	0%	3%	63%	8%	7%	96%	40%	91%	91%	1%	0%	2%	1%	0%	0%	0%	0%	*1%*	*0%*	*2%*	*1%*	100%	100%	100%	100%
Clutha District	0%	1%	15%	6%	16%	79%	40%	59%	75%	17%	38%	29%	8%	3%	2%	3%	1%	1%	4%	2%	*9%*	*4%*	*6%*	*5%*	100%	100%	100%	100%
Dunedin City	0%	0%	7%	6%	11%	58%	46%	42%	87%	39%	47%	52%	2%	1%	0%	0%	0%	2%	0%	0%	*2%*	*3%*	*0%*	*1%*	100%	100%	100%	100%
Far North District	0%	1%	1%	1%	19%	49%	24%	38%	50%	34%	43%	38%	26%	16%	24%	20%	4%	1%	7%	3%	*30%*	*17%*	*31%*	*23%*	100%	100%	100%	100%
Gisborne District	0%	0%	0%	0%	4%	42%	1%	26%	63%	17%	25%	28%	31%	27%	71%	38%	2%	14%	3%	9%	*33%*	*40%*	*74%*	*47%*	100%	100%	100%	100%
Gore District	0%	0%	0%	0%	4%	45%	6%	26%	93%	54%	94%	74%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Grey District	0%	3%	1%	3%	0%	85%	90%	86%	0%	11%	9%	11%	0%	0%	0%	0%	0%	1%	1%	1%	*0%*	*1%*	*1%*	*1%*	0%	100%	100%	100%
Hamilton City	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	0%	0%	100%
Hastings District	0%	0%	0%	0%	18%	54%	66%	53%	70%	15%	13%	22%	7%	29%	18%	23%	5%	1%	3%	2%	*12%*	*30%*	*21%*	*25%*	100%	100%	100%	100%
Hauraki District	0%	0%	0%	0%	4%	67%	37%	61%	84%	28%	53%	33%	11%	4%	10%	5%	0%	0%	0%	0%	*11%*	*4%*	*10%*	*5%*	100%	100%	100%	100%
Horowhenua District	1%	0%	0%	0%	44%	86%	75%	82%	38%	12%	24%	15%	14%	2%	1%	2%	2%	0%	1%	0%	*16%*	*2%*	*2%*	*3%*	100%	100%	100%	100%
Hurunui District	1%	10%	16%	14%	3%	80%	62%	66%	88%	8%	20%	18%	0%	0%	0%	0%	7%	2%	2%	2%	*7%*	*2%*	*2%*	*2%*	100%	100%	100%	100%
Invercargill City	0%	0%	1%	1%	10%	43%	45%	39%	90%	55%	53%	60%	0%	3%	0%	1%	0%	0%	0%	0%	*0%*	*3%*	*0%*	*1%*	100%	100%	100%	100%
Kaikoura District	5%	0%	3%	2%	33%	68%	51%	53%	62%	32%	45%	44%	0%	0%	1%	1%	0%	0%	0%	0%	*0%*	*0%*	*1%*	*1%*	100%	100%	100%	100%
Kaipara District	0%	0%	0%	0%	7%	46%	29%	39%	76%	51%	52%	53%	16%	1%	18%	6%	1%	2%	1%	1%	*17%*	*3%*	*19%*	*7%*	100%	100%	100%	100%
Kapiti Coast District	0%	0%	0%	0%	40%	80%	82%	79%	58%	18%	17%	19%	2%	2%	1%	2%	0%	0%	0%	1%	*2%*	*2%*	*1%*	*2%*	100%	100%	100%	100%
Kawerau District	0%	0%	0%	0%	47%	67%	33%	50%	27%	0%	17%	19%	7%	0%	17%	8%	20%	17%	17%	23%	*33%*	*17%*	*33%*	*31%*	100%	100%	100%	100%
Lower Hutt City	0%	0%	0%	0%	30%	35%	6%	31%	70%	64%	93%	68%	0%	0%	1%	0%	0%	0%	0%	0%	*0%*	*0%*	*1%*	*0%*	100%	100%	100%	100%
Mackenzie District	31%	22%	41%	40%	9%	76%	35%	35%	59%	2%	24%	25%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Manawatu District	0%	0%	0%	0%	20%	89%	94%	74%	79%	11%	6%	25%	1%	0%	0%	0%	0%	0%	0%	0%	*1%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Marlborough District	2%	2%	16%	9%	42%	86%	56%	69%	53%	11%	25%	19%	0%	1%	1%	1%	3%	0%	2%	1%	*3%*	*2%*	*3%*	*2%*	100%	100%	100%	100%
Masterton District	3%	0%	0%	1%	2%	84%	26%	44%	94%	14%	73%	54%	1%	0%	0%	0%	0%	2%	1%	1%	*1%*	*2%*	*1%*	*1%*	100%	100%	100%	100%
Matamata-Piako District	0%	2%	0%	2%	47%	63%	9%	59%	35%	26%	89%	30%	3%	7%	1%	6%	15%	1%	0%	3%	*18%*	*8%*	*1%*	*9%*	100%	100%	100%	100%
Napier City	0%	0%	0%	0%	0%	0%	0%	0%	83%	0%	0%	83%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	0%	0%	100%
Nelson City	0%	0%	0%	0%	0%	37%	8%	29%	91%	54%	83%	62%	0%	5%	3%	5%	9%	3%	5%	3%	*9%*	*8%*	*9%*	*8%*	100%	100%	100%	100%
New Plymouth District	0%	0%	0%	0%	22%	60%	18%	54%	73%	35%	80%	41%	4%	3%	2%	3%	0%	2%	0%	2%	*5%*	*6%*	*2%*	*5%*	100%	100%	100%	100%
Opotiki District	0%	0%	0%	0%	3%	65%	8%	62%	18%	7%	38%	9%	78%	25%	54%	27%	0%	3%	0%	3%	*78%*	*28%*	*54%*	*30%*	100%	100%	100%	100%
Otorohanga District	1%	0%	0%	0%	11%	59%	37%	56%	43%	30%	46%	32%	43%	11%	14%	12%	3%	0%	2%	0%	*46%*	*11%*	*16%*	*13%*	100%	100%	100%	100%
Palmerston North City	0%	0%	0%	0%	3%	7%	0%	5%	97%	94%	100%	95%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Porirua City	0%	0%	0%	0%	0%	6%	1%	1%	88%	94%	86%	88%	12%	0%	13%	11%	0%	0%	0%	0%	*12%*	*0%*	*13%*	*11%*	100%	100%	100%	100%
Queenstown-Lakes District	17%	9%	38%	32%	16%	85%	45%	52%	67%	3%	11%	10%	0%	0%	0%	0%	0%	3%	6%	6%	*0%*	*3%*	*6%*	*6%*	100%	100%	100%	100%
Rangitikei District	0%	0%	0%	0%	12%	65%	25%	38%	74%	15%	25%	26%	14%	20%	50%	36%	0%	0%	0%	0%	*15%*	*20%*	*50%*	*36%*	100%	100%	100%	100%
Rotorua District	1%	0%	0%	0%	44%	29%	43%	33%	32%	37%	15%	34%	19%	30%	39%	29%	4%	3%	3%	4%	*23%*	*33%*	*42%*	*33%*	100%	100%	100%	100%
Ruapehu District	0%	0%	1%	0%	3%	65%	29%	52%	91%	25%	63%	39%	6%	10%	7%	9%	0%	0%	0%	0%	*6%*	*10%*	*7%*	*9%*	100%	100%	100%	100%
Selwyn District	7%	8%	33%	23%	7%	88%	53%	67%	86%	4%	14%	10%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
South Taranaki District	0%	1%	0%	1%	11%	56%	18%	48%	77%	42%	81%	49%	11%	2%	1%	2%	0%	0%	0%	0%	*12%*	*2%*	*1%*	*2%*	100%	100%	100%	100%
South Waikato District	3%	0%	3%	1%	10%	82%	10%	75%	72%	12%	53%	18%	15%	5%	34%	7%	0%	0%	0%	0%	*15%*	*5%*	*34%*	*7%*	100%	100%	100%	100%
South Wairarapa District	0%	0%	0%	0%	14%	86%	9%	47%	82%	13%	89%	52%	4%	1%	2%	2%	0%	0%	0%	0%	*4%*	*1%*	*2%*	*2%*	100%	100%	100%	100%
Southland District	10%	1%	14%	5%	49%	94%	77%	88%	34%	2%	9%	5%	6%	2%	0%	2%	1%	0%	0%	0%	*7%*	*2%*	*1%*	*2%*	100%	100%	100%	100%
Stratford District	0%	2%	3%	2%	21%	68%	32%	63%	77%	21%	62%	27%	2%	9%	3%	8%	0%	0%	0%	0%	*2%*	*9%*	*3%*	*8%*	100%	100%	100%	100%
Tararua District	0%	0%	0%	0%	10%	72%	19%	33%	87%	28%	61%	59%	3%	0%	20%	8%	0%	0%	0%	0%	*3%*	*0%*	*20%*	*8%*	100%	100%	100%	100%
Tasman District	0%	0%	0%	0%	26%	92%	79%	89%	66%	8%	20%	11%	0%	0%	0%	0%	8%	1%	1%	1%	*8%*	*1%*	*1%*	*1%*	100%	100%	100%	100%
Taupo District	0%	0%	0%	0%	54%	69%	46%	61%	16%	4%	7%	7%	25%	27%	46%	31%	4%	0%	0%	1%	*30%*	*27%*	*46%*	*32%*	100%	100%	100%	100%
Tauranga City	5%	0%	0%	4%	0%	0%	0%	0%	62%	100%	0%	64%	33%	0%	0%	32%	0%	0%	0%	0%	*33%*	*0%*	*0%*	*32%*	100%	100%	0%	100%
Thames-Coromandel District	3%	2%	2%	2%	13%	74%	30%	60%	77%	18%	59%	31%	7%	6%	9%	7%	0%	0%	0%	0%	*7%*	*7%*	*9%*	*7%*	100%	100%	100%	100%
Timaru District	2%	4%	31%	30%	18%	83%	53%	53%	80%	13%	16%	17%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Upper Hutt City	0%	0%	0%	0%	0%	2%	0%	2%	100%	98%	99%	98%	0%	0%	0%	0%	0%	0%	1%	0%	*0%*	*0%*	*1%*	*0%*	100%	100%	100%	100%
Waikato District	0%	0%	0%	0%	9%	40%	6%	28%	71%	46%	80%	57%	19%	13%	12%	15%	0%	1%	1%	1%	*20%*	*14%*	*14%*	*15%*	100%	100%	100%	100%
Waimakariri District	6%	10%	38%	20%	19%	73%	33%	58%	59%	16%	28%	21%	2%	0%	0%	0%	14%	0%	0%	1%	*16%*	*1%*	*0%*	*1%*	100%	100%	100%	100%
Waimate District	20%	0%	51%	50%	1%	0%	22%	21%	79%	100%	26%	28%	0%	0%	0%	0%	0%	0%	1%	1%	*0%*	*0%*	*1%*	*1%*	100%	100%	100%	100%
Waipa District	2%	1%	3%	1%	9%	26%	17%	22%	85%	30%	75%	45%	3%	9%	3%	7%	1%	34%	2%	25%	*4%*	*43%*	*5%*	*32%*	100%	100%	100%	100%
Wairoa District	0%	0%	0%	0%	11%	23%	17%	20%	54%	16%	52%	25%	23%	4%	26%	9%	11%	57%	5%	46%	*35%*	*61%*	*31%*	*54%*	100%	100%	100%	100%
Waitaki District	15%	5%	35%	32%	17%	87%	42%	42%	67%	8%	23%	26%	0%	0%	0%	0%	1%	0%	0%	0%	*1%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Waitomo District	0%	1%	2%	1%	10%	49%	11%	45%	57%	35%	42%	36%	32%	15%	45%	18%	0%	0%	0%	0%	*32%*	*15%*	*45%*	*18%*	100%	100%	100%	100%
Wellington City	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	99%	0%	0%	0%	0%	0%	0%	0%	0%	*0%*	*0%*	*0%*	*0%*	100%	100%	100%	100%
Western Bay of Plenty District	0%	0%	0%	0%	8%	58%	21%	56%	83%	31%	70%	33%	9%	9%	8%	9%	0%	3%	1%	3%	*10%*	*11%*	*9%*	*11%*	100%	100%	100%	100%
Westland District	0%	0%	0%	0%	0%	94%	96%	95%	0%	5%	4%	4%	0%	0%	0%	0%	0%	1%	1%	1%	*0%*	*1%*	*1%*	*1%*	0%	100%	100%	100%
Whakatane District	0%	0%	0%	0%	62%	17%	5%	19%	22%	4%	37%	7%	8%	18%	34%	18%	7%	61%	24%	56%	*16%*	*79%*	*59%*	*74%*	100%	100%	100%	100%
Whanganui District	0%	0%	0%	0%	8%	59%	11%	47%	83%	28%	66%	38%	9%	13%	23%	15%	1%	0%	0%	0%	*9%*	*13%*	*23%*	*15%*	100%	100%	100%	100%
Whangarei District	1%	3%	1%	2%	7%	23%	10%	20%	84%	68%	72%	70%	8%	6%	17%	8%	0%	0%	0%	0%	*8%*	*6%*	*17%*	*8%*	100%	100%	100%	100%
Total New Zealand (Terrestrial)**	3%	1%	19%	8%	21%	76%	51%	65%	61%	13%	24%	19%	12%	6%	4%	5%	3%	4%	1%	3%	*14%*	*10%*	*6%*	*8%*	100%	100%	100%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ   ** Excludes Chatham Islands*   *** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

5 – Indicative SNAs by Certainty by Territorial Authority and Tenure (TA Share % of National Total)

Territorial / Unitary Authority*	Crown				DOC				General				Maori Land Court				Treaty Settlement				*Sub-Total Maori Land*				Total All Tenures			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	*Indicative SNAs - Very High Certainty*	*Indicative SNAs - High Certainty*	*Indicative SNAs - Moderate Certainty*	*Total Indicative SNAs*	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Ashburton District	0%	2%	4%	4%	1%	0%	3%	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	1%
Auckland	0%	0%	0%	0%	3%	0%	0%	0%	2%	6%	3%	4%	0%	0%	1%	1%	1%	0%	1%	1%	1%	0%	1%	1%	2%	1%	1%	1%
Buller District	0%	2%	0%	0%	0%	12%	3%	10%	0%	3%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	10%	2%	6%
Carterton District	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Central Hawke's Bay District	0%	0%	0%	0%	1%	0%	0%	0%	3%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%
Central Otago District	24%	1%	16%	14%	2%	0%	4%	1%	6%	0%	12%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	8%	3%
Christchurch City	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Clutha District	0%	0%	1%	1%	2%	1%	1%	1%	3%	1%	2%	2%	1%	1%	1%	1%	1%	0%	3%	1%	1%	0%	1%	1%	2%	1%	1%	1%
Dunedin City	0%	0%	0%	0%	1%	0%	1%	0%	3%	0%	2%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	1%	1%
Far North District	0%	2%	0%	0%	3%	2%	1%	1%	2%	6%	4%	5%	6%	7%	13%	9%	5%	0%	11%	3%	6%	4%	12%	6%	3%	2%	2%	2%
Gisborne District	1%	0%	0%	0%	2%	1%	0%	1%	10%	3%	1%	3%	25%	9%	19%	14%	7%	7%	2%	6%	21%	8%	15%	11%	9%	2%	1%	2%
Gore District	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grey District	0%	8%	0%	1%	0%	4%	2%	3%	0%	3%	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	3%	1%	2%
Hamilton City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hastings District	0%	0%	0%	0%	4%	1%	1%	1%	5%	2%	1%	2%	3%	7%	5%	6%	9%	0%	3%	1%	4%	4%	4%	4%	5%	1%	1%	1%
Hauraki District	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Horowhenua District	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Hurunui District	1%	16%	4%	5%	0%	2%	6%	3%	4%	1%	4%	3%	0%	0%	0%	0%	8%	1%	5%	2%	1%	0%	1%	1%	3%	2%	5%	3%
Invercargill City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kaikoura District	1%	0%	0%	0%	1%	0%	2%	1%	1%	0%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%
Kaipara District	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%	1%	0%	1%	0%	1%	1%	0%	0%
Kapiti Coast District	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Kawerau District	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lower Hutt City	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mackenzie District	20%	2%	13%	12%	1%	0%	4%	1%	2%	0%	6%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	6%	3%
Manawatu District	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Marlborough District	1%	5%	5%	5%	4%	4%	7%	5%	2%	3%	7%	5%	0%	1%	1%	1%	2%	0%	8%	2%	0%	1%	3%	1%	2%	3%	6%	4%
Masterton District	1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Matamata-Piako District	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%
Napier City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Nelson City	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
New Plymouth District	0%	0%	0%	0%	1%	1%	0%	1%	1%	3%	1%	2%	0%	1%	0%	0%	0%	1%	0%	1%	0%	1%	0%	1%	1%	1%	0%	1%
Opotiki District	0%	0%	0%	0%	0%	3%	0%	2%	0%	2%	0%	1%	5%	16%	3%	11%	0%	3%	0%	2%	4%	11%	2%	8%	1%	4%	0%	2%
Otorohanga District	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	1%	1%	2%	0%	1%	0%	0%	0%	0%	1%	1%	0%	1%	0%	1%	0%	1%
Palmerston North City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Porirua City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Queenstown-Lakes District	5%	13%	23%	22%	1%	2%	10%	5%	1%	0%	5%	3%	0%	0%	0%	0%	0%	2%	50%	11%	0%	1%	13%	4%	1%	2%	12%	6%
Rangitikei District	0%	0%	0%	0%	2%	1%	1%	1%	4%	1%	2%	2%	4%	3%	21%	9%	0%	0%	0%	0%	3%	2%	16%	6%	3%	1%	2%	1%
Rotorua District	0%	0%	0%	0%	3%	0%	0%	0%	1%	2%	0%	1%	3%	3%	1%	2%	2%	0%	0%	1%	3%	2%	1%	2%	2%	1%	0%	0%
Ruapehu District	0%	1%	0%	0%	0%	3%	1%	2%	1%	6%	6%	6%	0%	5%	4%	4%	0%	0%	0%	0%	0%	3%	3%	3%	1%	3%	2%	3%
Selwyn District	1%	10%	5%	6%	0%	2%	3%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	2%
South Taranaki District	0%	1%	0%	0%	0%	1%	0%	1%	1%	5%	2%	3%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	1%	1%	0%	1%
South Waikato District	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
South Wairarapa District	0%	0%	0%	0%	2%	1%	0%	1%	4%	1%	3%	2%	1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	3%	1%	1%	1%
Southland District	19%	21%	10%	11%	15%	24%	21%	23%	4%	4%	5%	4%	3%	8%	1%	5%	3%	1%	2%	1%	3%	5%	1%	4%	6%	19%	14%	17%
Stratford District	0%	2%	0%	0%	0%	1%	0%	1%	0%	2%	1%	1%	0%	2%	0%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	0%	1%
Tararua District	0%	0%	0%	0%	2%	0%	0%	0%	5%	0%	1%	1%	1%	0%	2%	1%	0%	0%	0%	0%	1%	0%	1%	0%	4%	0%	0%	0%
Tasman District	0%	0%	0%	0%	2%	10%	5%	8%	2%	5%	2%	3%	0%	0%	0%	0%	5%	1%	3%	2%	1%	1%	1%	1%	2%	9%	3%	6%
Taupo District	1%	0%	0%	0%	26%	2%	1%	2%	3%	1%	0%	1%	22%	9%	12%	11%	17%	0%	0%	1%	21%	5%	9%	7%	10%	2%	1%	2%
Tauranga City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Thames-Coromandel District	0%	2%	0%	0%	0%	1%	1%	1%	1%	2%	2%	2%	0%	2%	2%	2%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%	1%	1%
Timaru District	0%	0%	2%	2%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Upper Hutt City	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Waikato District	0%	0%	0%	0%	1%	0%	0%	0%	4%	2%	1%	2%	5%	1%	1%	2%	1%	0%	0%	0%	5%	1%	1%	1%	3%	1%	0%	1%
Waimakariri District	0%	4%	1%	1%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
Waimate District	4%	0%	6%	5%	0%	0%	1%	0%	1%	0%	2%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	2%	1%
Waipa District	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	0%	0%	0%
Wairoa District	0%	0%	0%	0%	2%	1%	0%	0%	4%	2%	1%	2%	10%	1%	3%	2%	21%	28%	1%	23%	12%	12%	2%	10%	5%	2%	0%	1%
Waitaki District	17%	1%	9%	9%	3%	0%	4%	1%	4%	0%	5%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	4%	0%	5%	2%
Waitomo District	0%	1%	0%	0%	0%	1%	0%	1%	0%	5%	0%	2%	1%	5%	3%	4%	0%	0%	0%	0%	1%	3%	2%	2%	0%	2%	0%	1%
Wellington City	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Western Bay of Plenty District	0%	0%	0%	0%	0%	1%	0%	1%	0%	2%	0%	1%	0%	2%	0%	1%	0%	1%	0%	1%	0%	1%	0%	1%	0%	1%	0%	1%
Westland District	0%	1%	0%	0%	0%	12%	12%	12%	0%	3%	1%	2%	0%	0%	0%	0%	0%	1%	2%	2%	0%	1%	1%	1%	0%	9%	6%	8%
Whakatane District	0%	0%	0%	0%	8%	1%	0%	1%	1%	1%	0%	1%	2%	10%	2%	7%	8%	49%	4%	39%	3%	26%	2%	18%	3%	3%	0%	2%
Whanganui District	0%	0%	0%	0%	0%	1%	0%	1%	1%	2%	1%	2%	1%	2%	2%	2%	0%	0%	0%	0%	0%	1%	2%	1%	1%	1%	0%	1%
Whangarei District	0%	2%	0%	0%	0%	0%	0%	0%	1%	5%	1%	3%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	1%
Total New Zealand (Terrestrial)**	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ *   * ** Excludes Chatham Islands* *   * *** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

6 – Indicative SNAs by Certainty by Territorial Authority and Tenure (Certainty % Share of Tenure Total)

Territorial / Unitary Authority*	Crown				DOC				General				Maori Land Court				Treaty Settlement				*Sub-Total Maori Land*				Total All Tenures			
	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs	*Indicative SNAs - Very High Certainty*	*Indicative SNAs - High Certainty*	*Indicative SNAs - Moderate Certainty*	*Total Indicative SNAs*	Indicative SNAs - Very High Certainty	Indicative SNAs - High Certainty	Indicative SNAs - Moderate Certainty	Total Indicative SNAs
Ashburton District	0%	4%	96%	100%	1%	11%	88%	100%	9%	6%	85%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	9%	90%	100%
Auckland	75%	0%	25%	100%	13%	47%	40%	100%	8%	53%	39%	100%	7%	37%	56%	100%	6%	57%	37%	100%	6%	44%	50%	100%	9%	52%	40%	100%
Buller District	0%	62%	39%	100%	0%	89%	11%	100%	1%	80%	19%	100%	5%	95%	0%	100%	0%	50%	50%	100%	2%	64%	34%	100%	0%	88%	12%	100%
Carterton District	62%	34%	3%	100%	1%	78%	21%	100%	31%	15%	54%	100%	50%	0%	50%	100%	0%	0%	0%	0%	50%	0%	50%	100%	9%	61%	30%	100%
Central Hawke's Bay District	0%	0%	0%	0%	3%	80%	17%	100%	56%	15%	28%	100%	51%	26%	23%	100%	83%	17%	0%	100%	53%	24%	22%	100%	28%	51%	22%	100%
Central Otago District	3%	1%	97%	100%	1%	0%	98%	100%	12%	0%	88%	100%	0%	0%	0%	0%	7%	0%	93%	100%	7%	0%	93%	100%	6%	0%	94%	100%
Christchurch City	0%	0%	0%	0%	24%	38%	36%	100%	63%	2%	35%	100%	57%	0%	57%	100%	100%	0%	0%	100%	56%	0%	44%	100%	60%	4%	35%	100%
Clutha District	0%	5%	95%	100%	2%	72%	26%	100%	20%	30%	49%	100%	19%	52%	29%	100%	5%	28%	68%	100%	13%	42%	44%	100%	8%	54%	38%	100%
Dunedin City	1%	0%	99%	100%	4%	7%	90%	100%	23%	4%	73%	100%	77%	18%	5%	100%	19%	31%	50%	100%	53%	21%	26%	100%	14%	5%	81%	100%
Far North District	2%	49%	49%	100%	2%	75%	23%	100%	6%	52%	42%	100%	6%	48%	46%	100%	6%	11%	82%	100%	6%	43%	51%	100%	5%	59%	37%	100%
Gisborne District	39%	18%	39%	100%	3%	97%	1%	100%	43%	36%	21%	100%	16%	42%	43%	100%	4%	88%	7%	100%	13%	51%	36%	100%	19%	58%	23%	100%
Gore District	0%	0%	0%	0%	1%	89%	8%	100%	11%	38%	51%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	52%	40%	100%
Grey District	0%	95%	5%	100%	0%	81%	19%	100%	0%	86%	14%	100%	0%	89%	11%	100%	0%	91%	9%	100%	0%	90%	10%	100%	0%	82%	18%	100%
Hamilton City	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%
Hastings District	67%	0%	17%	100%	5%	57%	38%	100%	42%	40%	19%	100%	4%	72%	24%	100%	32%	22%	47%	100%	6%	68%	26%	100%	13%	56%	31%	100%
Hauraki District	0%	100%	0%	100%	0%	92%	8%	100%	8%	71%	21%	100%	7%	65%	27%	100%	0%	0%	0%	0%	7%	66%	27%	100%	3%	84%	13%	100%
Horowhenua District	50%	25%	0%	100%	3%	86%	11%	100%	15%	67%	19%	100%	35%	59%	6%	100%	60%	0%	40%	100%	37%	54%	8%	100%	6%	82%	12%	100%
Hurunui District	0%	27%	73%	100%	0%	44%	56%	100%	18%	16%	66%	100%	0%	0%	0%	0%	14%	37%	49%	100%	14%	37%	49%	100%	4%	36%	60%	100%
Invercargill City	0%	0%	100%	100%	4%	27%	69%	100%	24%	23%	53%	100%	0%	100%	0%	100%	0%	0%	0%	0%	0%	100%	0%	100%	16%	25%	59%	100%
Kaikoura District	6%	1%	94%	100%	2%	19%	80%	100%	4%	11%	85%	100%	0%	5%	95%	100%	9%	18%	73%	100%	2%	8%	90%	100%	3%	15%	83%	100%
Kaipara District	40%	0%	80%	100%	2%	84%	14%	100%	13%	68%	19%	100%	24%	17%	59%	100%	5%	76%	19%	100%	21%	29%	51%	100%	9%	71%	20%	100%
Kapiti Coast District	0%	0%	0%	0%	1%	93%	6%	100%	7%	88%	5%	100%	3%	96%	3%	100%	0%	0%	0%	0%	3%	96%	3%	100%	2%	92%	6%	100%
Kawerau District	0%	0%	0%	0%	54%	31%	15%	100%	80%	0%	20%	100%	50%	0%	50%	100%	50%	17%	17%	100%	63%	13%	25%	100%	58%	23%	23%	100%
Lower Hutt City	0%	0%	0%	0%	2%	95%	3%	100%	3%	80%	17%	100%	0%	75%	25%	100%	0%	0%	0%	0%	0%	75%	25%	100%	2%	85%	13%	100%
Mackenzie District	3%	1%	96%	100%	1%	5%	94%	100%	8%	0%	92%	100%	0%	0%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%	3%	2%	94%	100%
Manawatu District	0%	0%	0%	0%	7%	51%	43%	100%	75%	17%	8%	100%	80%	0%	0%	100%	0%	0%	0%	0%	80%	0%	0%	100%	24%	42%	34%	100%
Marlborough District	0%	9%	91%	100%	1%	56%	43%	100%	6%	24%	70%	100%	1%	48%	51%	100%	5%	13%	82%	100%	3%	29%	68%	100%	2%	45%	53%	100%
Masterton District	81%	19%	0%	100%	1%	77%	22%	100%	41%	10%	48%	100%	80%	20%	0%	100%	12%	73%	19%	100%	23%	61%	16%	100%	24%	40%	36%	100%
Matamata-Piako District	3%	97%	0%	100%	11%	89%	1%	100%	16%	73%	11%	100%	6%	94%	1%	100%	67%	32%	0%	100%	26%	74%	1%	100%	14%	83%	4%	100%
Napier City	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%
Nelson City	0%	100%	0%	100%	0%	93%	7%	100%	3%	64%	33%	100%	0%	82%	18%	100%	5%	57%	38%	100%	2%	71%	27%	100%	2%	73%	25%	100%
New Plymouth District	0%	0%	0%	0%	1%	95%	3%	100%	7%	74%	19%	100%	5%	89%	5%	100%	1%	98%	2%	100%	3%	93%	4%	100%	4%	87%	10%	100%
Opotiki District	0%	0%	0%	0%	0%	99%	1%	100%	2%	79%	19%	100%	3%	88%	9%	100%	0%	100%	0%	100%	3%	89%	8%	100%	1%	94%	4%	100%
Otorohanga District	11%	67%	11%	100%	0%	93%	6%	100%	3%	83%	14%	100%	8%	81%	11%	100%	14%	50%	36%	100%	8%	80%	12%	100%	2%	88%	10%	100%
Palmerston North City	0%	0%	0%	0%	20%	80%	0%	100%	37%	62%	2%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%	62%	2%	100%
Porirua City	0%	0%	0%	0%	0%	100%	100%	100%	21%	15%	64%	100%	21%	0%	79%	100%	0%	0%	0%	0%	21%	0%	79%	100%	20%	14%	66%	100%
Queenstown-Lakes District	0%	5%	95%	100%	0%	31%	69%	100%	5%	6%	89%	100%	0%	100%	0%	100%	0%	11%	89%	100%	0%	11%	89%	100%	1%	19%	80%	100%
Rangitikei District	0%	0%	0%	0%	3%	61%	36%	100%	26%	21%	53%	100%	4%	20%	76%	100%	100%	0%	0%	100%	4%	20%	76%	100%	9%	36%	55%	100%
Rotorua District	71%	14%	14%	100%	20%	66%	15%	100%	14%	81%	5%	100%	10%	75%	15%	100%	17%	73%	10%	100%	11%	75%	15%	100%	15%	74%	11%	100%
Ruapehu District	0%	39%	61%	100%	0%	80%	20%	100%	2%	42%	56%	100%	1%	71%	28%	100%	0%	44%	44%	100%	1%	71%	28%	100%	1%	64%	35%	100%
Selwyn District	0%	15%	85%	100%	0%	53%	46%	100%	5%	14%	81%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	40%	59%	100%
South Taranaki District	2%	98%	0%	100%	1%	93%	6%	100%	5%	67%	28%	100%	17%	70%	12%	100%	100%	0%	0%	100%	18%	70%	12%	100%	3%	80%	17%	100%
South Waikato District	23%	62%	15%	100%	1%	99%	1%	100%	23%	63%	13%	100%	13%	66%	23%	100%	0%	88%	0%	100%	12%	67%	21%	100%	6%	90%	4%	100%
South Wairarapa District	0%	0%	0%	0%	5%	88%	7%	100%	24%	12%	63%	100%	34%	28%	38%	100%	0%	0%	0%	0%	34%	28%	38%	100%	15%	48%	37%	100%
Southland District	3%	17%	81%	100%	1%	71%	28%	100%	10%	33%	57%	100%	5%	88%	7%	100%	11%	51%	37%	100%	5%	85%	10%	100%	2%	67%	32%	100%
Stratford District	0%	77%	22%	100%	0%	93%	6%	100%	3%	69%	28%	100%	0%	96%	4%	100%	0%	0%	0%	0%	0%	96%	4%	100%	1%	87%	12%	100%
Tararua District	0%	0%	0%	0%	11%	70%	20%	100%	51%	15%	35%	100%	12%	0%	88%	100%	0%	100%	0%	100%	12%	0%	87%	100%	35%	31%	34%	100%
Tasman District	4%	67%	29%	100%	0%	84%	16%	100%	7%	58%	35%	100%	0%	0%	0%	0%	10%	60%	29%	100%	10%	60%	29%	100%	1%	81%	18%	100%
Taupo District	54%	11%	35%	100%	18%	65%	16%	100%	47%	30%	23%	100%	17%	51%	32%	100%	90%	8%	2%	100%	19%	49%	31%	100%	21%	58%	22%	100%
Tauranga City	100%	0%	0%	100%	0%	0%	0%	0%	81%	19%	0%	100%	88%	0%	0%	100%	0%	0%	0%	0%	88%	0%	0%	100%	84%	12%	0%	100%
Thames-Coromandel District	2%	63%	35%	100%	0%	85%	14%	100%	4%	41%	55%	100%	2%	62%	36%	100%	0%	90%	10%	100%	2%	64%	35%	100%	2%	70%	29%	100%
Timaru District	0%	0%	100%	100%	1%	3%	96%	100%	14%	2%	84%	100%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	100%	3%	2%	95%	100%
Upper Hutt City	0%	0%	0%	0%	0%	100%	0%	100%	2%	92%	6%	100%	0%	0%	0%	0%	0%	50%	25%	100%	0%	50%	25%	100%	2%	92%	6%	100%
Waikato District	100%	0%	0%	100%	7%	89%	4%	100%	28%	50%	23%	100%	29%	57%	14%	100%	14%	55%	29%	100%	29%	57%	14%	100%	22%	62%	16%	100%
Waimakariri District	1%	34%	65%	100%	1%	80%	19%	100%	5%	50%	45%	100%	33%	67%	0%	100%	46%	50%	4%	100%	44%	53%	3%	100%	2%	64%	34%	100%
Waimate District	1%	0%	99%	100%	0%	0%	100%	100%	9%	0%	91%	100%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	100%	3%	0%	97%	100%
Waipa District	42%	50%	17%	100%	9%	86%	5%	100%	41%	48%	11%	100%	8%	89%	3%	100%	1%	98%	0%	100%	3%	96%	1%	100%	22%	71%	6%	100%
Wairoa District	0%	27%	64%	100%	7%	84%	9%	100%	28%	49%	23%	100%	35%	32%	33%	100%	3%	96%	1%	100%	8%	85%	6%	100%	13%	76%	11%	100%
Waitaki District	3%	1%	96%	100%	3%	9%	88%	100%	17%	1%	81%	100%	0%	0%	0%	0%	68%	0%	27%	100%	68%	0%	27%	100%	7%	4%	89%	100%
Waitomo District	0%	79%	21%	100%	0%	98%	2%	100%	2%	89%	10%	100%	2%	77%	21%	100%	0%	67%	33%	100%	2%	77%	21%	100%	1%	91%	8%	100%
Wellington City	0%	0%	0%	0%	0%	0%	0%	0%	10%	18%	72%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	18%	71%	100%
Western Bay of Plenty District	0%	100%	0%	100%	0%	99%	1%	100%	5%	90%	5%	100%	2%	96%	2%	100%	0%	98%	1%	100%	2%	96%	2%	100%	2%	95%	3%	100%
Westland District	0%	88%	13%	100%	0%	70%	30%	100%	0%	75%	25%	100%	0%	87%	13%	100%	0%	69%	31%	100%	0%	74%	26%	100%	0%	70%	30%	100%
Whakatane District	20%	80%	0%	100%	18%	81%	1%	100%	18%	59%	23%	100%	3%	90%	8%	100%	1%	98%	2%	100%	1%	96%	3%	100%	5%	90%	4%	100%
Whanganui District	0%	0%	0%	100%	1%	94%	6%	100%	8%	53%	39%	100%	2%	63%	34%	100%	40%	0%	40%	100%	2%	63%	34%	100%	4%	74%	23%	100%
Whangarei District	3%	91%	6%	100%	2%	88%	10%	100%	7%	73%	19%	100%	6%	53%	41%	100%	0%	0%	0%	0%	6%	53%	41%	100%	6%	75%	19%	100%
Total New Zealand (Terrestrial)**	2%	8%	90%	100%	1%	68%	30%	100%	13%	39%	48%	100%	9%	61%	31%	100%	4%	77%	19%	100%	7%	66%	27%	100%	4%	58%	38%	100%

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ ** Excludes Chatham Islands* *** Mainland plus Islands. Excludes Inland Water and Inlets as defined by SNZ (2022 Boundaries)*

7 - Indicative SNAs by General Land Parcel Coverage (National Summary)

Parcel Size	Indicative SNAs Parcel Coverage									Total Parcels	Share of Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage		
No Indicative SNAs on General Land											
Less than 1ha	1,767,202	-	-	-	-	-	-	-	-	1,767,202	86%
1ha to 2ha	62,282	-	-	-	-	-	-	-	-	62,282	3%
2ha to 5ha	82,604	-	-	-	-	-	-	-	-	82,604	4%
5ha to 10ha	42,306	-	-	-	-	-	-	-	-	42,306	2%
10ha to 20ha	34,857	-	-	-	-	-	-	-	-	34,857	2%
20ha to 50ha	43,248	-	-	-	-	-	-	-	-	43,248	2%
50ha to 100ha	17,287	-	-	-	-	-	-	-	-	17,287	1%
100ha to 1500ha	5,093	-	-	-	-	-	-	-	-	5,093	0%
150ha to 250ha	2,996	-	-	-	-	-	-	-	-	2,996	0%
250ha to 500ha	1,176	-	-	-	-	-	-	-	-	1,176	0%
500ha to 1,000ha	208	-	-	-	-	-	-	-	-	208	0%
More than 1,000ha	51	-	-	-	-	-	-	-	-	51	0%
Total Parcels	2,059,310	-	-	-	-	-	-	-	-	2,059,310	100%
Share of Parcels	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%	
Very High Certainty Indicative SNAs on General Land											
Less than 1ha	-	1,195	5,110	2,488	2,027	1,785	1,451	945	3,870	18,871	26%
1ha to 2ha	-	385	1,656	699	477	409	318	152	369	4,465	6%
2ha to 5ha	-	814	3,129	1,084	778	556	426	237	450	7,474	10%
5ha to 10ha	-	743	2,772	838	503	348	260	166	261	5,891	8%
10ha to 20ha	-	945	3,463	855	485	349	231	131	201	6,660	9%
20ha to 50ha	-	1,805	6,673	1,184	586	422	310	153	254	11,387	16%
50ha to 100ha	-	1,157	4,389	667	341	212	146	76	138	7,126	10%
100ha to 1500ha	-	515	1,883	311	148	84	86	43	64	3,134	4%
150ha to 250ha	-	566	1,753	298	128	93	59	53	64	3,014	4%
250ha to 500ha	-	382	1,403	235	118	76	53	35	45	2,347	3%
500ha to 1,000ha	-	130	592	114	83	50	24	17	27	1,037	1%
More than 1,000ha	-	48	299	104	75	52	31	15	19	643	1%
Total Parcels	-	8,685	33,122	8,877	5,749	4,436	3,395	2,023	5,762	72,049	100%
Share of Parcels	0%	12%	46%	12%	8%	6%	5%	3%	8%	100%	
High Certainty Indicative SNAs on General Land											
Less than 1ha	-	1,109	5,157	2,675	2,533	2,264	2,034	1,332	9,388	26,492	39%
1ha to 2ha	-	337	1,304	500	443	375	334	233	1,044	4,570	7%
2ha to 5ha	-	540	2,079	946	710	648	607	410	1,448	7,388	11%
5ha to 10ha	-	407	1,485	599	462	353	329	238	704	4,577	7%
10ha to 20ha	-	567	2,131	683	474	365	298	201	646	5,365	8%
20ha to 50ha	-	965	3,723	991	652	475	359	251	750	8,166	12%
50ha to 100ha	-	629	2,466	634	411	292	270	142	361	5,205	8%
100ha to 1500ha	-	202	973	291	182	124	116	78	149	2,115	3%
150ha to 250ha	-	171	779	240	151	115	98	70	143	1,767	3%
250ha to 500ha	-	93	448	158	108	99	68	49	83	1,106	2%
500ha to 1,000ha	-	25	124	43	36	27	20	11	45	331	0%
More than 1,000ha	-	3	43	23	20	13	11	8	15	136	0%
Total Parcels	-	5,048	20,712	7,783	6,182	5,150	4,544	3,023	14,776	67,218	100%
Share of Parcels	0%	8%	31%	12%	9%	8%	7%	4%	22%	100%	
Moderate Certainty Indicative SNAs on General Land											
Less than 1ha	-	663	2,590	1,192	1,019	908	810	528	4,937	12,647	44%
1ha to 2ha	-	253	732	292	257	230	182	135	572	2,653	9%
2ha to 5ha	-	418	1,154	487	376	305	265	218	722	3,945	14%
5ha to 10ha	-	265	787	273	166	168	154	84	285	2,182	8%
10ha to 20ha	-	326	796	224	170	160	93	64	210	2,043	7%
20ha to 50ha	-	512	1,108	257	165	131	104	73	159	2,509	9%
50ha to 100ha	-	265	618	107	56	60	41	29	54	1,230	4%
100ha to 1500ha	-	146	305	62	36	20	21	13	27	630	2%
150ha to 250ha	-	102	196	30	19	12	6	8	13	386	1%
250ha to 500ha	-	81	132	26	20	11	9	10	14	303	1%
500ha to 1,000ha	-	37	69	15	20	17	5	8	6	177	1%
More than 1,000ha	-	14	44	22	17	10	2	5	7	121	0%
Total Parcels	-	3,082	8,531	2,987	2,321	2,032	1,692	1,175	7,006	28,826	100%
Share of Parcels	0%	11%	30%	10%	8%	7%	6%	4%	24%	100%	
Total Indicative SNAs on General Land											
Less than 1ha	-	2,967	12,857	6,355	5,579	4,957	4,295	2,805	18,195	58,010	35%
1ha to 2ha	-	975	3,692	1,491	1,177	1,014	834	520	1,985	11,688	7%
2ha to 5ha	-	1,772	6,362	2,517	1,864	1,509	1,298	865	2,620	18,807	11%
5ha to 10ha	-	1,415	5,044	1,710	1,131	869	743	488	1,250	12,650	8%
10ha to 20ha	-	1,838	6,390	1,762	1,129	874	622	396	1,057	14,068	8%
20ha to 50ha	-	3,282	11,504	2,432	1,403	1,028	773	477	1,163	22,062	13%
50ha to 100ha	-	2,051	7,473	1,408	808	564	457	247	553	13,561	8%
100ha to 1500ha	-	863	3,161	664	366	228	223	134	240	5,879	3%
150ha to 250ha	-	839	2,728	568	298	220	163	131	220	5,167	3%
250ha to 500ha	-	556	1,983	419	246	186	130	94	142	3,756	2%
500ha to 1,000ha	-	192	785	172	139	94	49	36	78	1,545	1%
More than 1,000ha	-	65	386	149	112	75	44	28	41	900	1%
Total Parcels	-	16,815	62,365	19,647	14,252	11,618	9,631	6,221	27,544	168,093	100%
Share of Parcels	0%	10%	37%	12%	8%	7%	6%	4%	16%	100%	

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

8 - Indicative SNAs by Māori Land Court Land Parcel Coverage (National Summary)

Parcel Size	Indicative SNAs Parcel Coverage									Total Parcels	Share of Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage		
No Indicative SNAs on Maori Land Court Land											
Less than 1ha	11,799	-	-	-	-	-	-	-	-	11,799	57%
1ha to 2ha	2,106	-	-	-	-	-	-	-	-	2,106	10%
2ha to 5ha	2,546	-	-	-	-	-	-	-	-	2,546	12%
5ha to 10ha	1,596	-	-	-	-	-	-	-	-	1,596	8%
10ha to 20ha	1,222	-	-	-	-	-	-	-	-	1,222	6%
20ha to 50ha	1,005	-	-	-	-	-	-	-	-	1,005	5%
50ha to 100ha	300	-	-	-	-	-	-	-	-	300	1%
100ha to 1500ha	86	-	-	-	-	-	-	-	-	86	0%
150ha to 250ha	51	-	-	-	-	-	-	-	-	51	0%
250ha to 500ha	31	-	-	-	-	-	-	-	-	31	0%
500ha to 1,000ha	11	-	-	-	-	-	-	-	-	11	0%
More than 1,000ha	-	-	-	-	-	-	-	-	-	-	0%
Total Parcels	20,753	-	-	-	-	-	-	-	-	20,753	100%
Share of Parcels	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%	
Very High Certainty Indicative SNAs on Maori Land Court Land											
Less than 1ha	-	33	164	68	45	50	34	27	148	569	11%
1ha to 2ha	-	21	87	35	30	22	23	9	37	264	5%
2ha to 5ha	-	30	194	88	67	45	39	30	84	577	11%
5ha to 10ha	-	37	208	94	64	42	45	40	70	600	11%
10ha to 20ha	-	51	245	109	74	68	66	46	95	754	14%
20ha to 50ha	-	57	311	110	95	86	101	80	160	1,000	19%
50ha to 100ha	-	28	133	49	68	45	48	49	107	527	10%
100ha to 1500ha	-	14	81	35	19	26	29	16	69	289	5%
150ha to 250ha	-	10	63	14	18	21	16	13	56	211	4%
250ha to 500ha	-	9	72	28	22	16	18	11	32	208	4%
500ha to 1,000ha	-	12	45	12	6	6	5	5	19	110	2%
More than 1,000ha	-	10	47	27	16	10	7	8	31	156	3%
Total Parcels	-	312	1,650	669	524	437	431	334	908	5,265	100%
Share of Parcels	0%	6%	31%	13%	10%	8%	8%	6%	17%	100%	
High Certainty Indicative SNAs on Maori Land Court Land											
Less than 1ha	-	12	64	36	20	23	17	22	111	305	9%
1ha to 2ha	-	8	26	6	6	15	9	7	46	123	4%
2ha to 5ha	-	8	45	25	23	19	23	23	87	253	8%
5ha to 10ha	-	15	64	22	27	29	25	29	102	313	10%
10ha to 20ha	-	15	86	22	32	36	62	31	145	429	13%
20ha to 50ha	-	29	119	69	60	66	60	48	228	679	21%
50ha to 100ha	-	26	101	39	38	29	31	32	178	474	14%
100ha to 1500ha	-	7	47	17	9	25	24	29	125	283	9%
150ha to 250ha	-	5	38	19	11	14	18	7	51	163	5%
250ha to 500ha	-	3	31	20	10	8	7	7	43	129	4%
500ha to 1,000ha	-	3	15	6	5	3	3	5	29	69	2%
More than 1,000ha	-	1	12	6	9	5	-	4	19	56	2%
Total Parcels	-	132	648	287	250	272	279	244	1,164	3,276	100%
Share of Parcels	0%	4%	20%	9%	8%	8%	9%	7%	36%	100%	
Moderate Certainty Indicative SNAs on Maori Land Court Land											
Less than 1ha	-	33	120	57	45	40	29	28	171	523	25%
1ha to 2ha	-	18	38	22	19	18	19	9	84	227	11%
2ha to 5ha	-	24	59	30	29	32	27	18	62	281	13%
5ha to 10ha	-	15	72	29	25	21	22	18	44	246	12%
10ha to 20ha	-	18	63	31	32	34	26	23	42	269	13%
20ha to 50ha	-	27	120	27	32	21	27	24	51	329	16%
50ha to 100ha	-	10	35	14	12	8	14	10	12	115	5%
100ha to 1500ha	-	5	11	4	5	6	3	5	4	43	2%
150ha to 250ha	-	3	18	4	1	-	8	-	1	35	2%
250ha to 500ha	-	3	12	3	1	5	-	-	1	25	1%
500ha to 1,000ha	-	2	2	2	-	-	-	-	3	9	0%
More than 1,000ha	-	-	1	-	-	-	-	-	-	1	0%
Total Parcels	-	158	551	223	201	185	175	135	475	2,103	100%
Share of Parcels	0%	8%	26%	11%	10%	9%	8%	6%	23%	100%	
Total Indicative SNAs on Maori Land Court Land											
Less than 1ha	-	78	348	161	110	113	80	77	430	1,397	13%
1ha to 2ha	-	47	151	63	55	55	51	25	167	614	6%
2ha to 5ha	-	62	298	143	119	96	89	71	233	1,111	10%
5ha to 10ha	-	67	344	145	116	92	92	87	216	1,159	11%
10ha to 20ha	-	84	394	162	138	138	154	100	282	1,452	14%
20ha to 50ha	-	113	550	206	187	173	188	152	439	2,008	19%
50ha to 100ha	-	64	269	102	118	82	93	91	297	1,116	10%
100ha to 1500ha	-	26	139	56	33	57	56	50	198	615	6%
150ha to 250ha	-	18	119	37	30	35	42	20	108	409	4%
250ha to 500ha	-	15	115	51	33	29	25	18	76	362	3%
500ha to 1,000ha	-	17	62	20	11	9	8	10	51	188	2%
More than 1,000ha	-	11	60	33	25	15	7	12	50	213	2%
Total Parcels	-	602	2,849	1,179	975	894	885	713	2,547	10,644	100%
Share of Parcels	0%	6%	27%	11%	9%	8%	8%	7%	24%	100%	

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

9 - Indicative SNAs by Treaty Settlement Land Parcel Coverage (National Summary)

Parcel Size	Indicative SNAs Parcel Coverage									Total Parcels	Share of Parcels
	No Coverage	<1% Coverage	1% - 20% Coverage	20% - 35% Coverage	35% - 50% Coverage	50% - 65% Coverage	65% - 80% Coverage	80% - 90% Coverage	90% - 100% Coverage		
No Indicative SNAs on Treaty Settlement Land											
Less than 1ha	2,048	-	-	-	-	-	-	-	-	2,048	64%
1ha to 2ha	221	-	-	-	-	-	-	-	-	221	7%
2ha to 5ha	250	-	-	-	-	-	-	-	-	250	8%
5ha to 10ha	145	-	-	-	-	-	-	-	-	145	5%
10ha to 20ha	131	-	-	-	-	-	-	-	-	131	4%
20ha to 50ha	165	-	-	-	-	-	-	-	-	165	5%
50ha to 100ha	84	-	-	-	-	-	-	-	-	84	3%
100ha to 1500ha	42	-	-	-	-	-	-	-	-	42	1%
150ha to 250ha	37	-	-	-	-	-	-	-	-	37	1%
250ha to 500ha	26	-	-	-	-	-	-	-	-	26	1%
500ha to 1,000ha	16	-	-	-	-	-	-	-	-	16	1%
More than 1,000ha	12	-	-	-	-	-	-	-	-	12	0%
Total Parcels	3,177	-	-	-	-	-	-	-	-	3,177	100%
Share of Parcels	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%	
Very High Certainty Indicative SNAs on Treaty Settlement Land											
Less than 1ha	-	4	14	3	2	6	4	2	23	58	7%
1ha to 2ha	-	2	6	4	3	6	6	4	7	38	5%
2ha to 5ha	-	4	18	6	4	3	5	2	10	52	6%
5ha to 10ha	-	8	19	11	9	2	3	1	5	58	7%
10ha to 20ha	-	2	25	12	3	4	3	3	12	64	8%
20ha to 50ha	-	12	54	11	13	6	8	3	9	116	14%
50ha to 100ha	-	16	45	12	8	8	3	2	7	101	12%
100ha to 1500ha	-	7	17	5	1	2	2	-	3	37	5%
150ha to 250ha	-	11	34	4	4	-	2	-	3	58	7%
250ha to 500ha	-	7	51	10	1	-	1	1	5	76	9%
500ha to 1,000ha	-	10	41	3	-	2	1	-	2	59	7%
More than 1,000ha	-	30	57	4	1	2	-	-	9	103	13%
Total Parcels	-	113	381	85	49	41	38	18	95	820	100%
Share of Parcels	0%	14%	46%	10%	6%	5%	5%	2%	12%	100%	
High Certainty Indicative SNAs on Treaty Settlement Land											
Less than 1ha	-	3	8	4	4	3	-	2	21	45	7%
1ha to 2ha	-	1	10	3	-	4	1	1	14	34	5%
2ha to 5ha	-	4	13	4	7	4	3	6	15	56	8%
5ha to 10ha	-	3	18	4	2	3	2	6	12	50	7%
10ha to 20ha	-	2	18	5	2	4	3	2	15	51	8%
20ha to 50ha	-	7	43	18	5	7	1	2	32	115	17%
50ha to 100ha	-	7	38	7	3	4	2	1	16	78	12%
100ha to 1500ha	-	5	36	5	4	1	1	1	9	62	9%
150ha to 250ha	-	9	38	5	4	1	-	1	9	67	10%
250ha to 500ha	-	-	33	6	3	1	-	3	6	52	8%
500ha to 1,000ha	-	4	22	1	1	1	1	-	1	31	5%
More than 1,000ha	-	4	18	8	-	1	3	-	3	37	5%
Total Parcels	-	49	295	70	35	34	17	25	153	678	100%
Share of Parcels	0%	7%	44%	10%	5%	5%	3%	4%	23%	100%	
Moderate Certainty Indicative SNAs on Treaty Settlement Land											
Less than 1ha	-	4	23	8	7	10	11	6	30	99	33%
1ha to 2ha	-	3	6	1	1	1	1	2	4	19	6%
2ha to 5ha	-	3	13	5	4	-	1	-	8	34	11%
5ha to 10ha	-	7	9	6	1	-	2	-	5	30	10%
10ha to 20ha	-	2	7	4	3	1	1	1	4	23	8%
20ha to 50ha	-	7	15	3	1	-	1	-	2	29	10%
50ha to 100ha	-	5	11	1	-	-	-	1	1	19	6%
100ha to 1500ha	-	3	4	2	-	-	-	-	-	9	3%
150ha to 250ha	-	5	4	-	-	2	1	-	-	12	4%
250ha to 500ha	-	8	4	-	-	-	-	-	-	12	4%
500ha to 1,000ha	-	2	4	-	-	-	-	-	-	6	2%
More than 1,000ha	-	4	5	-	1	-	1	-	1	12	4%
Total Parcels	-	53	105	30	18	14	19	10	55	304	100%
Share of Parcels	0%	17%	35%	10%	6%	5%	6%	3%	18%	100%	
Total Indicative SNAs on Treaty Settlement Land											
Less than 1ha	-	11	45	15	13	19	15	10	74	202	11%
1ha to 2ha	-	6	22	8	4	11	8	7	25	91	5%
2ha to 5ha	-	11	44	15	15	7	9	8	33	142	8%
5ha to 10ha	-	18	46	21	12	5	7	7	22	138	8%
10ha to 20ha	-	6	50	21	8	9	7	6	31	138	8%
20ha to 50ha	-	26	112	32	19	13	10	5	43	260	14%
50ha to 100ha	-	28	94	20	11	12	5	4	24	198	11%
100ha to 1500ha	-	15	57	12	5	3	3	1	12	108	6%
150ha to 250ha	-	25	76	9	8	3	3	1	12	137	8%
250ha to 500ha	-	15	88	16	4	1	1	4	11	140	8%
500ha to 1,000ha	-	16	67	4	1	3	2	-	3	96	5%
More than 1,000ha	-	38	80	12	2	3	4	-	13	152	8%
Total Parcels	-	215	781	185	102	89	74	53	303	1,802	100%
Share of Parcels	0%	12%	43%	10%	6%	5%	4%	3%	17%	100%	

Source: MfE, LCDB v5,TEC (2012), M.E, SNZ, LINZ

Appendix B – Literature Review on Regulation Impacts on Property Values

The following summarises the findings of a literature review examining the impact of environmental regulation on property values. These findings are discussed further in Section 6.4.2.

Title	Location	Key Points	% Change in Land Value
Fernandez, Mario A (2019). *A Review of Applications of Hedonic Pricing Models in the New Zealand Housing Market.*	New Zealand	The study provides a review of applications of hedonic pricing models in the New Zealand context. One of the applications discussed looked at the effects of environmental amenities across market segments and time in Auckland.	-
Ball Michael, Cigdem Melek, Taylor Elizabeth, & Wood Gavin (2014). *Urban Growth Boundaries and their Impact on Land Prices.*	Melbourne metropolitan area, Australia	The study found that residential land prices rose substantially after introducing an urban growth boundary in Melbourne, but not much outside of it. The boundaries of zoning and 'overlay' areas (e.g. environmentally significant landscapes) were identified. The findings suggested that the net outcome in areas of environmental significance was a decrease in land values. This is because the restrictions on what could be built, depressed demand by more than the demand increased (price pressures) due to the constraints preserving the character of attractive neighbourhoods.	Negative relationship (scarcity effects), and linkages to other factors in the wider market.
Jaeger William K., Plantinga Andrew J., & Grou Cyrus (2012). *How has Oregon's Land Use Planning System Affected Property Values?*	Oregon and Washington State, US	Their analysis indicated that land values had generally risen since the introduction of Oregon's land use planning system. The land values in Oregon had increased at rates like those in a comparator location (Washington). Values of land zoned for exclusive farm or forest use had risen at similar or higher rates than the residential use. Results suggested that differences across zoning types do not reflect systematic adverse effects on land use regulations.	Neutral
Gibbons S., Mourato S. & Resende G. (2014). *The Amenity Value of English Nature: A Hedonic Price Approach*.	England, UK	The authors estimated the amenity value associated with proximity to natural habitats (e.g. green space, woodlands and other local environmental amenities). Gardens, green space and areas of water within the census ward all attract a considerable positive price premium. There is also a strong positive effect from freshwater and flood plain locations, broadleaved woodland, coniferous woodland and enclosed farmland.	• 0.4% for wetland, flood plains. • 1% domestic gardens, green space, areas of water). • 5% national parks.
Thorsnes, Alexander & Kidson (2015). *Low-income housing in high-amenity areas: Long-run*	Dunedin, New Zealand	This study tested the effect of local variation in several natural amenities (views, sun exposure and proximity to the beach) using data on property sales in Dunedin in 2005. They found evidence that	• 3.5% (one more hour of sun).

Title	Location	Key Points	% Change in Land Value
effects on residential development.		relatively high-income households are attracted to affordable housing in areas with good natural amenities. House sizes and household incomes are lower in areas of private housing closer to public housing areas.	• 55% (1km proximity to the beach). • 18% (good landscape), • 25% (good water view)
Allpress, Balderston & Nunns (2016). *How do Aucklanders value their parks? A hedonic analysis of the impact of proximity to open space on residential property values.*	Auckland, New Zealand	The authors of this study explore whether parks have an impact on housing prices. They find that for every 500m an apartment is away from the nearest regional park or neighbourhood park, there is a price discount of 13.7% and 16.4%, respectively.	• Inverse relationship with distance. • Positive effect of being located near parks (regional and local).
Fernandez & Bucaram (2019). *The Changing Face of Environmental Amenities: Heterogeneity across Housing Submarkets and Time.*	Auckland, New Zealand	The study considers house sales between 2000 and 2016 and using hedonic models using unconditional quantile regressions (to control for submarkets) and included interactions between all amenities and time effects. This explores the changes in the capitalization patterns. Environmental amenities were represented by the distance between house and the nearest coastal feature (coastline, beaches, harbours and bays), marine areas, and open spaces. The research found a differentiated patterns of valuing the amenities. Households complete a trade-off between ecosystem services of open spaces and regulations on development. The outcome of the trade-off depends on the specifics of the location of houses.	• Environmental amenities may imply simultaneously either price premiums or discounts (i.e. some conflicting). For example, beaches may add price premiums of 5.1% in houses in the upper-end of the distribution, but also price discounts of 2.1% in the lower-end of the distribution.
Beaton (1991). *The impact of regional land-use controls on property values: The case of the New Jersey pinelands.*	Pinelands region, New Jersey, US	This study considered the link between regulation designed to preserve open spaces and other environmental amenities. The analysis found that protecting and enhancing could in fact have a positive effect on property values.	• Positive effect with increase of between 10-24%.
Spalatro and Provencher (2001). *An analysis of minimum frontage zoning to preserve lakefront amenities.*	Wisconsin, US	Limits on the development density had positive net effects on property values of lake front properties that outweighed losses from restrictions. The study suggests that the potential gains from the scarcity effect could in fact be greater than the initial impacts of introducing the regulation	• Mixed results but pointing to neutral to positive outcomes.

Title	Location	Key Points	% Change in Land Value
Nickerson and Lynch (2001). *The effect of farmland preservation programs on farmland prices.* Lynch et al. (2007). *Are farmland preservation program easement restrictions capitalized into farmland prices? What can a propensity score matching analysis tell us?*	Maryland, US	The study looked at the effects of preserving agricultural land on land values. They found that a voluntary preservation program involving the purchase of development rights (on agricultural land) had no significant effects on property values. Later (2007), the authors reviewed and repeated their study. The study then found negative effects of the farmland preservation programme depending on how the analysis was completed.	Mixed with neutral to negative impacts.
Anderson and Weinhold (2005). *Do Conservation Easements Reduce Land Prices? The Case of South-Central Wisconsin.*	Wisconsin, US	Conservation easements on agricultural land had no significant effects on property values.	Neutral
Earnhart (2006). *Using contingent-pricing analysis to value open space and its duration at residential locations.*	Lawrence, Kansas, US	Using a stated preference technique, the study estimated the aesthetic benefits generated by open space near residential areas. The study found that development restrictions that preserve open space amenities can positively impact the value of neighbouring properties. The assessment also found that short-lasting open spaces do not add value.	Around a 5% impact on value.
Thorsnes (2002). *The value of a suburban forest preserve: estimates from sales of vacant residential building lots.*		Thorsnes estimated the market value of proximity to forest preserves as capitalised into the sale prices of vacant building lots in residential subdivisions that on one side border a preserve. The analysis suggests that the proximity premium is localized (so diminishes with distance)	Large (19-35%) effect that diminishes quickly with distance.
Mahan et al. (2000). *Valuing urban wetlands: A property price approach.*	Portland, Oregon	The analysis found evidence of higher property value near wetlands, especially where the wetlands are strongly influenced by regulations.	Positive effect of environmental regulation
Netusil (2005). *The effect of environmental zoning and amenities on property values: Portland, Oregon.*	Portland, Oregon, US	Netusil examined prices of properties inside and outside environmental zones. Amenities are found to influence a property's sale price with the effect varying by amenity type and proximity. The findings did not provide evidence of negative effects in more stringent zoning.	
White E.M. & Leefers L.A. (2007). *Influence of Natural Amenities on Residential Property Values in a Rural Setting*	Wexford County, Michigan, US	The hedonic pricing models use transaction data for two rural residential parcel types in a rural country in Michigan: developed parcels located in subdivisions, and developed parcels not located in subdivisions. The results suggest that the impacts of natural amenities on parcel sale price vary. In fact, findings in rural parcels differ from urban and suburban parcels where the natural amenities may be scarce.	In contrast to the literature, proximity to public land and forested land had no statistically significant impact on sales price. Proximity to a premium lake and subdivision open areas positively

Title	Location	Key Points	% Change in Land Value
			affected the values of some parcel types.

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Appendix C – Farm Revenues & Profits Per Hectare

Gross Farm Revenue ($/ha) – Mean (2019/20) – Total revenue from farm operations for the year

Sheep & Beef Farms – Otago/Southland – Class 1 South Island High Country	$195
Sheep & Beef Farms – Otago/Southland – Class 2 South Island Hill Country	$568
Sheep & Beef Farms – Otago/Southland – Class 6 South Island Finishing/Breeding	$1134
Sheep & Beef Farms – Otago/Southland – Class 7 South Island Finishing	$1751
Sheep & Beef Farms – Northland/Waikato/BoP – Class 3 North Island Hard Hill	$832
Sheep & Beef Farms – Northland/Waikato/BoP – Class 4 North Island Hill Country	$1247
Sheep & Beef Farms – Northland/Waikato/BoP – Class 5 North Island Finishing	$2175
Sheep & Beef Farms – Taranaki/Manawatu – Class 3 North Island Hard Hill	$922
Sheep & Beef Farms – Taranaki/Manawatu – Class 4 North Island Hill Country	$1209
Sheep & Beef Farms – Taranaki/Manawatu – Class 5 North Island Finishing	$1750
Sheep & Beef Farms – Marlb./Canterbury – Class 1 South Island High Country	$195
Sheep & Beef Farms – Marlb./Canterbury – Class 2 South Island Hill Country	$535
Sheep & Beef Farms – Marlb./Canterbury – Class 6 South Island Finishing/Breeding	$1507
Sheep & Beef Farms – Marlb./Canterbury – Class 8 South Island Mixed Finishing	$3597
Sheep & Beef Farms – Northland– Class 4 North Island Hill Country	$1166
Sheep & Beef Farms – East Coast – Class 3 North Island Hard Hill	$903
Sheep & Beef Farms – East Coast– Class 4 North Island Hill Country	$1049
Sheep & Beef Farms – East Coast – Class 5 North Island Finishing	$1393
Dairy Farms – NZ Average	$6240-11058

EBITRm ($/ha) – Mean (2019/20) – Earnings (Profit) Before Interest, Tax, Rent and Manager Wage

Sheep & Beef Farms – Otago/Southland – Class 1 South Island High Country	$64
Sheep & Beef Farms – Otago/Southland – Class 2 South Island Hill Country	$211
Sheep & Beef Farms – Otago/Southland – Class 6 South Island Finishing/Breeding	$482
Sheep & Beef Farms – Otago/Southland – Class 7 South Island Finishing	$750
Sheep & Beef Farms – Northland/Waikato/BoP – Class 3 North Island Hard Hill	$311
Sheep & Beef Farms – Northland/Waikato/BoP – Class 4 North Island Hill Country	$518
Sheep & Beef Farms – Northland/Waikato/BoP – Class 5 North Island Finishing	$970
Sheep & Beef Farms – Taranaki/Manawatu – Class 3 North Island Hard Hill	$290
Sheep & Beef Farms – Taranaki/Manawatu – Class 4 North Island Hill Country	$510
Sheep & Beef Farms – Taranaki/Manawatu – Class 5 North Island Finishing	$766
Sheep & Beef Farms – Marlb./Canterbury – Class 1 South Island High Country	$64
Sheep & Beef Farms – Marlb./Canterbury – Class 2 South Island Hill Country	$189
Sheep & Beef Farms – Marlb./Canterbury – Class 6 South Island Finishing/Breeding	$525
Sheep & Beef Farms – Marlb./Canterbury – Class 8 South Island Mixed Finishing	$981
Sheep & Beef Farms – Northland– Class 4 North Island Hill Country	$522
Sheep & Beef Farms – East Coast – Class 3 North Island Hard Hill	$340
Sheep & Beef Farms – East Coast– Class 4 North Island Hill Country	$415

Sheep & Beef Farms – East Coast – Class 5 North Island Finishing	$623
Dairy Farms – NZ Average (Operating Profit before Interest)	$2750
Farm Forestry NZ – Woodlots – nominal non-discounted return per annum (2017/18 log prices)	$1150

Economic Farm Surplus ($/ha) – Mean (2019/20) – the return available to the owner-operator of a freehold, unencumbered farm after allowance has been made for labour and management input.

Sheep & Beef Farms – Otago/Southland – Class 1 South Island High Country	$36
Sheep & Beef Farms – Otago/Southland – Class 2 South Island Hill Country	$100
Sheep & Beef Farms – Otago/Southland – Class 6 South Island Finishing/Breeding	$241
Sheep & Beef Farms – Otago/Southland – Class 7 South Island Finishing	$286
Sheep & Beef Farms – Northland/Waikato/BoP – Class 3 North Island Hard Hill	$112
Sheep & Beef Farms – Northland/Waikato/BoP – Class 4 North Island Hill Country	$192
Sheep & Beef Farms – Northland/Waikato/BoP – Class 5 North Island Finishing	$482
Sheep & Beef Farms – Taranaki/Manawatu – Class 3 North Island Hard Hill	$124
Sheep & Beef Farms – Taranaki/Manawatu – Class 4 North Island Hill Country	$242
Sheep & Beef Farms – Taranaki/Manawatu – Class 5 North Island Finishing	$250
Sheep & Beef Farms – Marlb./Canterbury – Class 1 South Island High Country	$36
Sheep & Beef Farms – Marlb./Canterbury – Class 2 South Island Hill Country	$85
Sheep & Beef Farms – Marlb./Canterbury – Class 6 South Island Finishing/Breeding	$182
Sheep & Beef Farms – Marlb./Canterbury – Class 8 South Island Mixed Finishing	$429
Sheep & Beef Farms – Northland– Class 4 North Island Hill Country	$205
Sheep & Beef Farms – East Coast – Class 3 North Island Hard Hill	$177
Sheep & Beef Farms – East Coast– Class 4 North Island Hill Country	$186
Sheep & Beef Farms – East Coast – Class 5 North Island Finishing	$271

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Appendix D – Constraints to Developing Māori Customary and Freehold Land

The Te Ture Whenua Māori Act 1993 (or Māori Land Act 1993) recognises that land is a 'taonga tuku iho' or an ancestral treasure handed down and promotes the retention of land while also facilitating the occupation, development, and utilisation of Whenua Māori by its owners and their whānau, hapū and descendants. Jurisdiction of the Act rests for the most part with the Māori Land Court. Whenua Māori is often multiply-owned. It may be vested in a Trust or a Māori incorporation, who manage the land on behalf of the owners of the land (i.e., shareholders).

Potential for Whenua Māori looks different for every block and depends on owners' aspirations and the location and state of the land. Aspirations for Whenua Māori may include economic, cultural, environmental, or social outcomes, or combinations of these. However, use of the land, particularly for economic and social outcomes, is not straight forward and presents a number of challenges for the owners of the land compared to the development of general land. Some issues in administering Whenua Māori within the structures of the Te Ture Whenua Māori Act include a lack commerciality,[149] processes can be cumbersome due to high-level of beneficiary (owner) participation, Māori Land Court intervention can be time consuming and costly and the restrictions on alienation can impede development[150].

In most cases, the land takes the form of a 'block', which may be an amalgamation of one or more lots. As Whenua Māori, subdivision or partitioning is possible, but the ownership of the new parcels remains the same. Owners can apply to the Māori Land Court to partition their interests out of the block (so that they hold their interests solely) however the Court is unlikely to agree if it would render the remaining land less capable of development (for example, an uneconomic size or more difficult to access)[151]. Subdivision may provide some advantages when it comes to managing land use (including leasing areas of land, managing easements and vesting of roads), but equally, legal lots can be defined without a need to change the primary parcel boundaries.[152]

[149] This includes a lack of commercial knowledge of the trustees/governors and/or constraints to deliver commercial developments that are commercially feasible.

[150] https://www.tpk.govt.nz/en/whakamahia/effective-governance/what-is-governance/structures-under-te-ture-whenua-Māori-land-act-199#:~:text=General%20land%20owned%20by%20M%C4%81ori%20means%20general%20land%20that%20is,whom%20a%20majority%20are%20M%C4%81ori.

[151] The Māori Land Court will generally only allow a partition if it can be shown that there is a good reason to do so. Consideration is given to the fact that once an individual's interests are partitioned out, it is much easier to lose/sell that interest which is contrary to the Act's over-arching purpose of retaining the land by owners as a taonga.

[152] The latest NPSIB provisions recognise that subdivision is not a key feature of Māori Land administered under the Māori Land Act and the term has been removed. M.E note that general (or fee simple) land owned by Tangata Whenua can be commercially developed just like any other general land. On this land, subdivision is relevant.

A significant characteristic of Whenua Māori is that it cannot be alienated (which includes sold, gifted, long-term leased or mortgaged) unless it complies with the Act (including its purpose, being the retention, use and development of the land) . Many such alienations must be approved by the Court. The sale of Whenua Māori is expected to be a rare occurrence as it runs counter to the intention of the land to provide an asset for the iwi, hapū and whanau in perpetuity. However, it might be considered if there is sufficient owners support, the Court's pre-requisites are met and considered in the best interest of the trust, including to free up capital to facilitate development on remaining whenua land.

There are a range of ways in which a Trust or incorporation (or legal owners if these structures don't apply) can directly utilise Whenua Māori. This includes forestry or agriculture managed by representatives of the owners. It may also include tourism operations, or other commercial or community/cultural facilities. While sometimes difficult, whenua Māori can be used to secure finance or a mortgage to fund development just like any other interest in land. Despite this, a lack of access to capital is known to be a key constraint to realising the development potential of Whenua Māori.

Developing a papakāinga is another option gaining traction within urban areas. Papakāinga typically refers to development of three or more houses, built on Whenua Māori, operating as an intentional community according to kaupapa Māori[153]. Developing a papakāinga on whenua Māori can be a long process, but there is help available to support Trusts in this process, including the Kāinga Whenua loan scheme which provides loans to Whenua Māori trusts and individuals with a right to occupy multiple-owned Māori land. While government funding is available for some aspects of papakāinga development, before any application for funding can be made, the owners have to do a significant amount of pre-work to secure owner agreement to develop the land. This can take some 12-18 months (or more) and is onerous, time consuming and often unfunded. If these constraints can be overcome, developing a papakāinga on Whenua Māori can be a way to help whānau with quality affordable housing and to provide ongoing accommodation and/or revenue for future generations.

Alternatively, Whenua Māori can be made available to non-owners to use. The two main methods are leases and licences[154]. With the right party, leasing or licencing Whenua Māori can[155]:

- help to provide a steady annual rental income,
- help to lift the state of the whenua and improve its long-term sustainability, for example through more regular maintenance and upkeep,
- keep the costs of maintaining the whenua down, for example the lessee typically pays the rates and/or insurance,
- gives Trusts control over what happens on the whenua — when and how it can be accessed, how things are used,
- give Trustees who are not ahi kā reassurance that their land is being cared for,

[153] http://mychoices.goodhomes.co.nz/SectionB/b37.html

[154] https://Māorilandcourt.govt.nz/your-Māori-land/using-your-Māori-land/leases-and-licences/

[155] https://www.tupu.nz/en/kokiri/whenua-leases/what-is-a-whenua-lease

- help Trustees and owners learn more about the whenua and what to do with it. A good lessee can become a partner.

However, leasing Whenua Māori also adds risk for Trusts. It's very important to get leaseholders with the right skills, knowledge and motivation. Plans need to be put in place for how to manage any issues that may arise. Most Māori land trustees are volunteers (or paid a very minimal fee) with no management staff. As a result, it is difficult to recruit qualified trustees to devote a huge amount of time to oversee development. These capacity and capability issues are another factor that is constraining the development of Whenua Māori – historically and presently.

Appendix E – Benefits Bibliography

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