New Zealand's Biological Heritage National Science Challenge Scoping Panel Report

Strategic Outcome 1: A Biological Heritage Scorecard for Aotearoa New Zealand

Section 1: Creating Impact

Vision and link to the Challenge mission

A number of national and regional reporting mechanisms demonstrate that Aotearoa New Zealand's (NZ's) biological heritage (BH) is in **dangerous decline. Key drivers of this include threat of non-native species incursion, species loss and habitat loss**. There are a large number of organisations and initiatives which are involved in measuring our BH, including the Ministry for the Environment, Department of Conservation, Waitangi Tribunal, Ministry for Primary Industries, Regional government and NGOs (discussed further on p.19). Despite this, effective action to reverse these trends has not yet eventuated. Our comprehensive scan of key stakeholders across conservation and production landscapes indicates that **various reporting mechanisms have failed to galvanize action** for the following reasons:

- Design – reporting has not been designed using the language, worldviews, and action orientations of key stakeholders, and they therefore do not engage in action;
- Know-how – reporting has not provided achievable, prioritised, 'hands on' actions at local scales, particularly across production landscapes, that key stakeholders can implement to improve BH status;
- Markets – international markets are increasingly demanding environmental reporting from NZ's land-based industries which reflects the priorities and demands of international consumers rather than safeguarding of NZ's BH;
- Competing demands – BH objectives are competing with other economic and social objectives and to date have not been prioritised due to lack of visibility and perceived value.

The risks of failing to accurately and regularly monitor changes in NZ's BH were clearly identified in a recent report by the Parliamentary Commissioner for the Environment. The PCE noted:

> "Every year we delay the collection of data in an area identified as a significant gap, we commit New Zealand to flying blind in that area. …. We cannot make economically efficient or socially fair environmental rules if we cannot measure authoritatively what is happening to the physical resource base on which our wellbeing ultimately depends."

Strategic Objective One (SO1) of the Biological Heritage National Science Challenge (BHNSC) is to develop a Biological Heritage Scorecard (BHS) that will make explicit the current state of NZ's BH in a way that inspires action to reverse this decline. We identify a clear and **significant risk** that the BHS becomes another reporting mechanism outlining the decline of NZ's BH but failing to inspire effective action.

Current BH reporting and monitoring approaches are static. We will develop them into action-orientated systems that guide production and conservation practices to reverse BH trends. We

will achieve this through co-designing with Key Influencers (KIs) that can generate substantial impact and reverse NZs BH decline. These KIs include iwi, primary industries, banks, investors, accounting firms, environmental NGOs, and urban communities. Many indicators and much information on the status of NZ's BH exists, but how sectors 'choose' to engage with it, and, how scientists engage with each sector community has not been addressed. Crucially, scorecard elements need to be of practical importance and relevance for each KI. We see it is critical that the BHS supports the design of prioritised sets of incremental objectives and actions to achieve a 100-year BH restoration goal. We propose a strategy whereby a scorecard encourages and directs incremental investments by private landowners, investors, and communities to generate large intergenerational cumulative impacts resulting in reversing declines in NZ's BH.

2024 Goals

Guiding Principle:
We give equitable consideration and implementation of Te Ao Māori understanding, values, approaches and opportunities.

SO1: Biological Heritage Scorecard 2024 Goals:

1. We know what & how to measure.
2. Scorecard(s) are co-designed to be catalysts for action by key influencers.
3. We measure scorecard influence and adapt the scorecard(s) for enduring impact and whakamanatanga (empowerment).

Beneficiaries

There are three fundamental beneficiaries of the BHS. First, we view our landscapes and waterways as beneficiaries, and from a Māori perspective as our kin, understanding them to be inherently valuable. Consequently, we seek to grow and maintain their health and life-giving capacity for their own sake and that of our other non-human relations that depend upon them (i.e. native flora and fauna). Second, we understand that our own human oranga/wellbeing is intimately tied to the health and life-giving capacity of our landscapes and waterways. Maintaining and growing their health ultimately leads to improvements in our own wellbeing – and thus we consider the current human generation to be beneficiaries. Third, we consider that future generations will be fundamental beneficiaries, who in four generations time will enjoy thriving BH across NZ. Mō tātou, ā, mō kā uri ā muri ake nei – For us and our children after us.

In addition to our fundamental beneficiaries we have identified seven investment beneficiaries. The investment beneficiaries are the KIs to whom the research and science investment will flow, but whom for this venture also requires reciprocal investment from. These beneficiaries/KIs are outlined below:

- Hapū and Iwi – Research investment will support the development of a framework and process that will allow hapū and iwi to rapidly build BH scorecards that reflect their own intimate whakapapa connections and relationships to landscapes. Furthermore, the process will support the embedding of scorecards into iwi management plans (IMPs). This will ensure that scorecards are locally relevant, cascade into regional council policy, and reflect the unique tikanga and kawa of each participating Māori authority. These may appear different to current metrics of scorecards, to ensure they are fit for purpose.

- Industry – Research investment will support the co-development of incremental and prioritised objectives and actions to restore BH across our production landscapes and waterways over a 100-year timeframe. We propose focussing on a farm collective and a forestry collective.
- The New Zealand Stock Exchange (NZX) – Thirty trillion dollars a year is now invested globally into impact portfolios designed to capitalise businesses that meet environmental, social and governance (ESG) sustainability criteria. The NZX is looking at ESG impact investment criteria for NZ resident companies. Research investment would be directed toward co-building NZ BHS investment criteria for the NZX that would direct investment capital into business activities that maintain and enhance NZ's BH and economy.
- Banks – The largest investors in NZ production landscapes, predominantly farming and forestry, are banks. Research investment will be directed toward key banks to co-develop financing criteria that guide lending toward business practices that enhance NZ's BH. This will aim to facilitate a system-change in the way we value our environment in the context of productive land use.
- Environmental, Social and Governance (ESG) accounting organisations – Many large financial auditing firms are developing ESG criteria for auditing purposes. Such auditing criteria are also offered by some Non-Governmental Organisations (NGOs) (e.g. Forest Stewardship Council). However, to date they do not have specific mechanisms for auditing businesses according to their impact on NZ BH. Research investment will be directed toward co-developing BH auditing criteria for, and with, these organisations.
- Environmental NGOs – As a group, environmentally focused NGOS are often willing and empowered to work more closely in their region with iwi and science, to step up to ecosystem change in novel ways. Like iwi, this may involve focusing on the geographical area they occupy.
- Urban Dwellers and Communities - In many cities and towns in NZ, where 86% of Kiwis live, there are isolated initiatives to maintain and enhance NZ's BH. Research investment will be directed toward urban communities to facilitate closer alignment among science, iwi and engagement expertise. This aims to increase the relevance and level of participation of local communities in supporting the co-development of a scorecard/s, so that it reflects local conditions and inspires local action, while building national awareness of NZ BH status.

Our final set of beneficiaries are the key individuals and science institutions that will drive this BHS initiative. First, influential leaders will be identified for each KI area (i.e. from hapū and iwi, industry, NZX, ESG accounting firms, urban dwellers). They will be appointed into leadership roles within the BH initiative based upon their interest in NZ's BH, and their influential roles in transforming and innovating within their respective fields. Second, we will support champions within each KI area to extend, implement, and operationalise BH scorecards inside specific iwi, catchments, banks, accounting firms, and the NZX. Third, funding will support our science team, made up of a range of specialists across NZ's science and governmental sectors. Working together, these leaders, champions, and science team members will create positive impact for all the beneficiaries, by operationalising, translating and championing the BHS.

Delivery pathways

The primary pathway for delivering impact is to build direct connections and relationships with KIs that have the capacity to transform management practice and culture across NZ's landscapes.

First, relationships will be developed by ensuring influential Sector Leaders (SL) from each KI group assume ownership of this national BHS, and drive uptake within their respective areas. The SLs will form a steering group to govern this initiative. Second, co-development requires Sector Champions (SC) that are currently employed within relevant businesses, industries, and community trusts/institutions, to have

a portion of their time allocated to institutionally embedding the national BHS within their operations. Third, we determine that a multidisciplinary research and development team is key for collaborating with SCs to co-develop meaningful indicators for measuring BH and establishing sets of objectives and on-ground actions most likely to transform stewardship/kaitiaki across KIs. Figure 1 shows this delivery structure.

Figure 1. Delivery Structure, which is comprised of two main elements: the Guardians of the Scorecard, who act as a steering group (blue) who advise the Research and Development Group (red).

The delivery pathway is outlined in more detail below:

1. Establish a 'Guardians of the Scorecard' (GoS) steering group - the purpose of the group is to provide the initiative with trusted, influential leaders embedded within KIs. The group will be formed as follows:
    a. Appoint a distinguished national leader[1] as chair (or leaders as rotating chairs), with experience across iwi, governmental, conservation, industry, and community sectors.
    b. Appoint a diverse group of respected and influential SLs with leading roles in their respective sectors (e.g. iwi, farming, forestry, investment). This national leadership group should be established based on their ability to embed the BHS within their respective sectors.
2. Establish a research and development team - the purpose of this R & D team is to co-develop the national BHS under the governance of the steering group, and in partnership between the SCs and the science team. The team will embody multiple features that will capture cross-cultural perspectives, different disciplinary angles, different generational insights, and avoid status quo or institutional lock-in thinking. The process and features for team development are outlined below:
    a. Appoint an R & D team leader.
    b. Appoint SCs currently embedded under KIs.
    c. Appoint multidisciplinary research team that captures the following attributes:
        i. Engagement & communications expertise;
        ii. Biophysical scientists with detailed knowledge of ecosystems processes, population ecology and data science;
        iii. Indicator developers and environment auditors;
        iv. Social scientists;

[1] The leader should have significant experience and networks across iwi, KI, and governmental sectors and adequate time to fulfil their role.

v. Complex systems scientists;
vi. Experience across key stakeholder groups;
vii. Mixture of early, mid, and late career researchers;
viii. Experience in the development of indicators and scorecards with Māori.

3. Establish the 100-year BioHeritage vision - with the support of the R&D team, the GoS establishes a four-generation 100-year BioHeritage protection and restoration vision and goal for NZ. The high-level vision will be informed by a synthesis of existing iwi and Crown policies and strategies. Where necessary, new policies may be suggested, with possible implementation through the BH Strategic Outcome 7 (Adaptive Governance and Policies). The vision setting will be a unique part of the project and attempt to bring together Māori and industry leadership to lead the vision formation and gain sector buy-in. It is anticipated that the vision may need to change over time, but this is likely to be well-beyond the timeframe of this proposed programme.
4. Develop the indicator set - the R&D team will develop a national bicultural and novel BH indicator set (which may utilise existing national and international indicators) that enables measurement of progress against the 100-year national BH protection and restoration goal and can easily be presented as a scorecard tailored to be meaningful to each KI. More proximal goals will likely also be identified, to provide shorter term motivation for achieving improvements in scores (e.g. by 2030). The indicator set will need to:
    a. Reflect and resonate with Māori and national values that connect NZ's BH status to oranga, hauora, whai rawa, social, and economic well beings.
    b. Involve a review, synthesis, and possible incorporation of existing BH indicators as developed by iwi, governmental agencies (e.g. Treasury, MfE, DoC), industry, environmental auditing NGOs, accounting firms, and investment regulators.
5. Develop the scorecards - in partnership with the R&D team, SCs will develop fit-for-purpose scorecards with each KI that will (perhaps not at their inception but eventually) report against the national BioHeritage scorecard:
    a. With hapū and iwi:
        i. Review, identify, and synthesise existing BH assessment criteria, or indicator sets, already developed and utilised by hapū and iwi.
        ii. Incorporating existing approaches, develop a framework and process that will allow hapū and iwi to rapidly build BH scorecards into Iwi Management Plans (IMPs).
    b. With industries in production landscapes, principally farming and forestry:
        i. Co-establish a set of targets to reach the 100-year BioHeritage goal.
        ii. Review, identify, and synthesise existing BH assessment criteria, or indicator sets, already utilised within industries.
        iii. Incorporating existing approaches, identify and prioritise actions, based on highest impact, to inform feasible and staged on-ground (on-farm/in-forest) actions to develop and then meet BH targets.
        iv. Establish target-based scorecard to report against 100-year goals.
    c. With the New Zealand Stock Exchange (NZX):
        i. Co-develop NZ BH impact investment criteria for New Zealand resident companies to guide impact investors into stocks that contribute to the NZ 100-year BioHeritage restoration goal[1].

[1] For example see Biosecurity 2025's 'Biosecurity Business Pledge' which aims to integrate proactive biosecurity practices into business activities and supply chains https://www.thisisus.nz/biosecuritybusinesspledge/

d. With banks:
    i. Work with willing banks to develop financing criteria that guide lending toward businesses with practices that enhance NZ's BH.
e. With ESG accounting firms and NGOs:
    i. Review, identify, and synthesise existing BH assessment criteria, or indicator sets, already utilised by ESG auditors.
    ii. Incorporating existing frameworks, develop BH business auditing criteria to accompany financial, social, and governance auditing processes permitting large accounting firms to audit businesses according to their BH impact.
f. With urban dwellers:
    i. Review, identify, and synthesise existing BH assessment criteria, or indicator sets, already developed for, or utilised within, urban settings.

This delivery pathway aims to develop a scorecard that will permit communities in urban areas to track changes in local biodiversity such as native species abundance or availability of ecosystem services as a mechanism to reflect the outcomes of community-led initiatives.

The above delivery pathway is ambitious - seeking to transform the practices and behaviours of industries, businesses, and communities. There is a risk that effort may be spread too thin and little is achieved. However, the initial stages will not involve working across entire KI sectors. Instead, based upon the national bicultural BH indicator set, scorecards will start with a nucleus focus and be incrementally scaled-up within each KI sector, beginning with willing partners. This will allow time for genuine co-development and gaining buy-in from KIs and end users. It will also increase feasibility of using an agile approach, where key lessons are harnessed for scaling-up of the scorecards across entire sectors. This is based on the premise that a smaller scale initiative with KIs that have a high-degree of buy-in to the process will be more agile and able to change course as required, compared with a complex and multi-faceted sector-wide scorecard. We therefore see it as critical that the BHS is incrementally scaled-up within each sector, to prevent an overly ambitious scorecard product which does not resonate or gain shared ownership with the KIs, who are critical to its success. This part of the proposed programme aligns strongly with the BHNSC innovation pathway concerning scale-out and adoption.

To execute this delivery plan, a single pilot will be co-developed with each of the seven KIs. These groups, and the target-based scorecards, will act as extension hubs for the scaling of the scorecard across their larger sector:

- **With hapū and iwi**, specifically with a single Māori authority, before being trialled with others;
- **For production landscapes**, a willing farmer group and forester group will be partnered with to prioritise and co-develop short, medium, and long-term actions and objectives to achieve the 100-year BH goal (for example, in the form of a programme logic model);
- **With the NZX**, an initial focus will be placed on the co-development of one or two impact investment criteria to be tested with a willing sustainability focused enterprise, before any scaling occurs;
- **One willing bank** will be worked with initially to co-develop and trial lending guides;
- **A single prominent ESG auditor** will be partnered with to co-develop an initial simple set of BH auditing criteria;
- With one environmental NGO; who will be invited to co-develop a scorecard for their sector; and
- **One willing urban BH restoration initiative** will be partnered with.

In the co-development process with KIs, emphasis will be placed on agile development, where frequent iterations between science specialists and partners will ensure tailoring and adaptation of scorecards to contexts.

In sum, the delivery structure of the BHS initiative involves development of both a steering group and a research and development group (made-up of SCs and a science team) (Fig. 1). The delivery pathway involves: the co-development of a 100-year BH restoration vision; the co-development of a BH indicator set against that vision; and the co-development of scorecards with KIs that report against the BH indicator set. This is outlined in Figure 2.

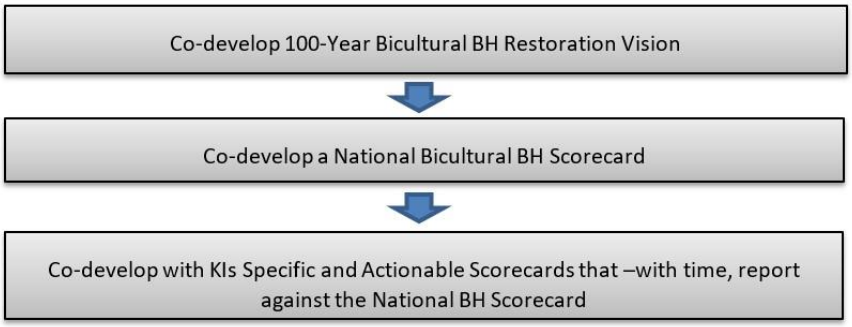

Figure 2. Delivery pathway, which should follow a cascading series of co-development actions.

The goals and delivery pathway of SO1 have crossover with other SOs, which should be recognised and utilised for efficiency during the co-development process (Table 1).

We also recognise that the delivery of SO1's goals can be greatly assisted by close collaboration with other similar work and initiatives happening outside of the Challenge. The recent PCE's report is one example. The report is a high profile initiative with recommendations that have considerable alignment with SO1's goals. For example, the report concludes: "the Commissioner recommends developing a comprehensive, nationally coordinated environmental monitoring system. In addition, he calls for a mandated strategy to prioritise and incrementally fill data gaps."

Several specific recommendations from the PCE are couched in terms of amending the Environmental Reporting Act. However the concepts behind those recommendations strongly agree with the analysis that was done by SO1 before the report came out. For example, the PCE recommends:

- "Adding a clearer purpose to the Environmental Reporting Act," which we believe should be informed by the 100-year bioheritage protection and restoration vision.
- "Establishing a standing science advisory panel," which is similar to SO1's research and development team except that we explicitly stress the need to capture cross-cultural perspectives, different disciplinary angles, and different generational insights.
- "Requiring a formal response from the Government to state of the environment reports," which would be one component of our broader goal of ensuring that the scorecard(s) are catalysts for action.

Table 1. The SO1 BHS initiative will dovetail with other BioHeritage Science Challenge SO groups' goals.

SO Group	Areas of crossover
SO2	Goals: "1. Defining and quantifying NZ BH values to inform policy and governance decisions; 2. Establishing social partnerships among citizens and decision-makers; 3. To scale out new technologies; 4. Convey the level of public opinion regarding the maintenance of NZ's BH. " SO2 has a related role to play in defining the 100-year BH vision for the scorecard, given its key role in understanding how and to what extent BH is valued. Furthermore, given the strong intended partnership of SO1 with KIs, SO2 has a role to play in supporting partnership development and the incorporation of new technologies. SO2 will be crucial in ensuring that the way the BHS communicates resonates with our different national audiences.
SO3	Focused on anticipating both emerging & latent biosecurity risks and avoiding new or recurring invasions. Biosecurity will likely be a major concern for the KIs that will be involved in SO1 planning and implementation. Discoveries from SO3 should be cascaded into on-ground objectives and actions on-farm, in-forest, and in-takiwā (tribal area) to mitigate biosecurity risk, while informing the investment risk strategies and auditing criteria of investors and auditors.
SO4 & SO5	Both involve threat detection and eradication technologies with clear applications in SO1. Optimally an understanding of the mutual benefits is achieved so that these cascade into on-ground strategies and actions linked to reporting against BHS goals.
SO6	Intentions here are to quantify socioecological linkages for the restoration of ecosystems, which will be related to the urban KIs.
SO7	This group's goals involve the development of policy and therefore the regulatory instruments of SO7 will inform the identification and prioritisation of the national bicultural set of BH indicators in SO1.

Risks

Different discourses, experiences, and technical backgrounds

The primary risk in this investment strategy concerns the ability of SCs and the ST to understand one another (Fig. 2). Firstly, the SCs work within different sector environments, whether rūnanga, marae komiti, on-farm, in-industry, accounting firms, or investment environments. Each sector has its own discourse, forms of logic, and operations that are distinctly different. Similarly, within the ST, there are scientists and technicians from different disciplines following distinct discourses and forms of logic (ontologies). There is a significant risk of tensions, and subsequently silos developing if the demand of SC for practical 'hands on' approaches for measuring and acting upon BH decline prove technically complex or intangible such that the ST struggle to meet them. Similarly, there are likely to be tensions within the ST between different disciplines as, for example, data scientists seek clean reliable data, while population ecologists grapple with data uncertainty. The key to ameliorating such tensions is coming to understand each other's discourses, experiences, and technical backgrounds and to arrive at a higher-level group discourse that transcends silos. We propose this risk can be mitigated by the recruitment of a process coach, who can help to translate, reconcile and arbitrate between groups (described further below).

This risk may also relate to the expectation (from some parties) that the BHS comply with traditional epistemological approaches; for example, by utilising indicators which are standardised, quantifiable and scalable to a national level. However, we urge that it essential that each sector express ownership of their scores and finds them useful, and this may mean that initially their scores are in a different form (e.g. A score for mauri may not be a number, and may be regionally specific, to begin with). Then, via the co-development path, utilising an iterative, adaptive approach, the results will become both quantifiable and comparable nationwide. This will be critical to ensure the BHS is enduring, promotes action among end users, and is a **fundamental attribute of what makes the proposed BHS different to previous scorecard systems.** This will allow for local ownership of scorecards and provision for 'less than perfect' metrics, avoiding top-down driven monitoring and reporting that has inhibited uptake. However, greater comfort and understanding of uncertainty across stakeholders will be necessary.

Initial investment required for co-development and BHS evolution

Associated with the aforementioned risk, the proposed delivery and BHS adaptation process will require co-investment from KIs (both time and financial), to enable co-development to occur. The development of substantial, KI-specific scorecards through co-development processes can take some time. It will therefore be critical that:

- Co-investors are made aware of the longer-term vision, strategy and implementation plan for the BHS in order to unify expectations.
- The SCs and KIs fully understand and support the proposed process, can provide ongoing enthusiasm and support for the BHS, and are prepared to participate in successive iterations to ensure a fit for purpose end-product.
- Monitoring and evaluation (M&E) within the project can provide sufficient evidence of the less concrete outcomes which occur in preliminary stages, to reassure co-investors that the process is working (to be explained further shortly).
- Early 'wins' are achieved, whereby one or two indicators are identified early for sector-specific scorecards.

Becoming cornered

Our business scan demonstrated that farming industries and investment communities feel targeted by the general public and government for the environmental problems NZ faces and decline of our BH. Although keen to participate in the BHS initiative there were fears that the BHS might be used as a mechanism to target and blame industry and investors. To mitigate this possibility those interviewed outlined the need to develop a scorecard that allowed small annual investments to be made (e.g. on-farm, in-forest, etc.) in initiatives that would cumulatively generate large impacts on NZ's BH status. Likely, measuring and reporting on these initiatives, against long-term intergenerational BH restoration goals is the optimal means of mitigating risks associated with 'blame' and would serve to build trust. In addition, we note that Māori could provide a leading role given their heavy presence in the primary production industries while also maintaining strong kaitiaki standards and interests. In short Māori could offer a way of transcending economic-environmental divisions and tensions, as they may be seen as having less vested interests than government or industry.

Economic downturns

The participation of KIs in the initiative will be dependent upon the BHS being a priority initiative that they wish to engage with. Economic downturns, or other crises (e.g. bioincursions), can focus communities and industries onto activities essential for economic survival. In such circumstances, involvement in the BHS strategic objective may be side-lined. If an economic downturn is KI specific (e.g. dairy farming) then this risk could be mitigated by focusing on solutions so that the KI does not become heavily affected by the downturn. However, when economic downturn is across KIs there may be no mechanisms for effectively mitigating this risk.

Developed but not implemented

The third goal of this scoping panel report is to measure the scorecard's influence. There is a possibility that the scorecards co-developed with KIs are not actually implemented or operationalised due to resistance across industries, organisations, or communities. Scorecard reporting should be positively framed to encourage interest and lasting sector action and engagement as negative messages sometimes stymie uptake and further action.

Consequently, it is vital to monitor whether the BHS gains traction and has the desired impact. This will be achieved through embedded M&E throughout the BHS development and roll-out process. This will require tailored monitoring and evaluation plans, and could include sector-specific programme logic models which guide appropriate feedback mechanisms throughout the development process. In latter stages of development, the proposed BHS should be 'road-tested' with case studies and then sectors, to assess likely reception and the scorecard's ability to inspire action for NZ BH (working in conjunction with SO2). The testing process will allow for rapid feedback on adjustments and changes needed to scorecards to fit the context of each KI. Evaluation of the scorecard's early impacts on social, cultural, and economic metrics as well as environmental BH outcomes will also be critical. If the BHS is not gaining traction, monitoring should signal this, so that interventions may be made, elements of the initiative dropped, or the whole programme stopped.

Communications and relationship management

We envisage there will be several relationships between groups within the proposed delivery structure which will be critical to manage effectively. Figure 3 suggests potential processes and mechanisms to manage these relationships.

First, it will be useful to have a designated process coach who can facilitate the relationships both between and within the SC and ST groups. The function of this role will be to bring an outside, objective perspective to interactions between and within the groups, given the high likelihood of different (and potentially competing or conflicting) priorities. This role will therefore be responsible for promoting reflexivity[1] and adaptive project management (essential for agile approaches), effective communication across disciplines and sectors to enable transdisciplinarity, and balancing of agendas. A process coach can also assist the SC and ST groups to consider how they are progressing toward their outcomes, and whether they are responding appropriately to changes outside of the project, which may affect implementation (e.g. policy changes). In this way, the coach plays both an internal and external facing role, as facilitator, supporter, challenger, and driver for the project[2].

This role will be supported by a designated M&E champion, who will embed M&E across the delivery structure, and throughout the course of the BHS development and roll-out. The function of this role will be to track how the BHS development is progressing, providing evidence of this, as well as the anticipated and actual impacts of the BHS (i.e. process and outcome/impact evaluation). This role will be critical for communication and relationship management because the champion will provide evidence-based guidance on progress; what is working, what is not working, and how to improve effectiveness of both the way the group is working, and the outputs produced (the BHS).

It is expected that both the process coach and M&E champion will bring with them a toolbox of methods and resources which will assist with facilitating effective communication and relationship management

[1] Reflectivity is using a reflective, adaptive approach, where the project team frequently asks 'How are we tracking?', and 'Is there anything we could be doing better?'. This can be described in the 'action learning cycle' (plan, do, observe, reflect), or through a specific 'reflexive monitor' role.

[2] For more information see Fielke, S., Nelson, T., Blackett, P., Bewsell, D., Bayne, K., Park, N., Rijswijk, K. & Small, B. (2017). Hitting the bullseye: Learning to become ad reflexive monitor in New Zealand. Outlook on Agriculture, 46(2), 117-124.

within the delivery structure. This might include tools for capturing feedback, such as evaluation forms, and narrative methods (e.g. ORIDs), agile project planning and project management tools, and methods for measuring progress (e.g. rubrics and KPIs). This is likely to be supported by methods for frequent communication, such as fortnightly skype calls, alongside a centralised hub for storage and sharing of key resources (particularly within the ST). Together, these roles, toolkits and methods will ensure the delivery structure functions in the proposed way and is continually reflecting on ways to improve functioning.

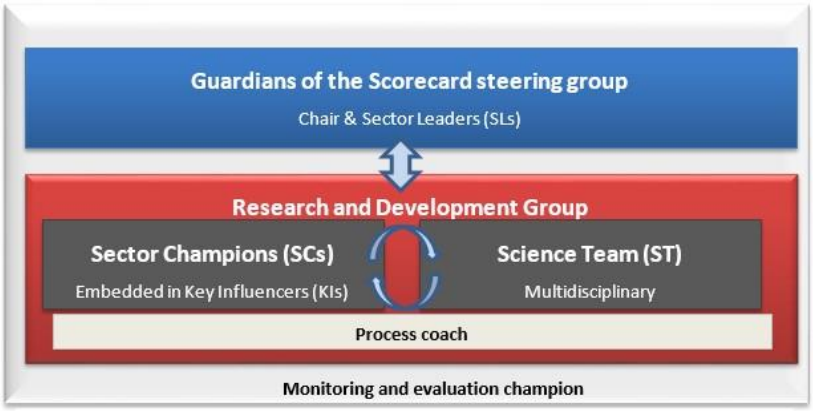

Figure 3. Relationship management and communication within proposed delivery structure. Modified from Figure 1.

For communication outside of the delivery structure, it will be critical that the BHS is communicated alongside a compelling, relevant and accessible narrative, for each of the sectors and audiences involved. Communication will need to be qualitative and quantitative, providing a picture of the state of NZ's BH and how this is changing, what this means for given sectors and audiences (e.g. drinkability or swimmability equivalent), and what individuals and sectors can do to contribute to improved BH. Channels for this information (e.g. infographic, online dashboard, television report) will be co-designed with SCs and KIs, to be most effective with the target audiences. For example, with hapū and iwi, careful consideration will need to be given as to how to quantify and communicate measurement of concepts such as mauri. It is anticipated that KIs will assist with communication regarding the BHS (both in development and regarding transmission of results), as we acknowledge both the importance of having a trusted party convey critical information, and the role of social media and emerging media (e.g. podcasts).

Section 2: Incentivising Investment

Essential activities

GOAL 1: We know what and how to measure

The first 2024 goal of the BHS initiative is to develop absolute clarity regarding what the scorecard will measure and how it will measure it. This is a complicated exercise given there are already many existing approaches and schemes across government and industry for ascertaining the current status and trends of our BH. The range of purposes for measuring an aspect of biodiversity includes, for example: satisfying rules and regulations, market consumer demand, policy press on climate warming emissions, erosion and sediment reduction, flood protection, government obligations to report state and trend regionally and internationally. Our process will not interfere with these activities but will draw on them, where sector led co-design identifies relevance to biodiversity mitigation and enhances activities associated with their own sphere of influence (many of them likely to be activities under the brief of SO's 3-7).

The number of approaches and systems for understanding and measuring BH, or aspects of it, means that 'knowing what and how to measure' is not straight forward. We have therefore designed a creative process and governance-support structure to do this robustly. This is where our proposal meets the BHNSC strategic goal of innovation, where we take existing bicultural knowledge systems, identify gaps, creatively fill gaps through novel science, and establish a comprehensive national indicator suite.

First step: An essential activity is to undertake a full scan of existing governmental, NGO, and industry reporting systems and initiatives. Furthermore, the assessment should include an exploration of how they apply in different ways based upon need and viewpoint, and the quantity, quality and types of data that are available through these systems.

Science investment may be needed to support the development of new indicators, and the collection of data in areas where there are current gaps. Agreed priorities within a ST–investment-beneficiary co-design will be further researched. The development of new indicators will be operated as a 'subproject' and, similar to the overall programme, will require: willing co-investors/partners within the seven investment beneficiary sectors; the detailed costing of resource needs; identification of relevant iwi co-designers (if not already represented in the beneficiary sector); and establishment of a multi-disciplinary team to support indicator development. It is anticipated that the GoS steering group would provide governance to such 'sub-projects'. New indicators would then be incorporated into the BHS at a national level, tailored at an applied sector scale, and trialled to determine their ability to identify trends and level of beneficiary sector uptake.

Establishing the vision

Fundamental to 'knowing what and how to measure' is the establishment of the 100-year national BH restoration vision. Without such a vision it will not be clear what NZ's BH status is relative to a desired future state. The steering group, made up of SLs, and supported by a R&D group will develop this goal. The vision will be informed by a bicultural synthesis of existing iwi and Crown policies and strategies to assist the steering group in making its decisions (informed by SO7).

GOAL 2: Scorecard(s) are co-designed to be catalysts for action by key influencers (KIs)

The second 2024 goal involves engaging in a co-design process with KIs to catalyse BH restoration initiatives. Fundamental to this process is the appointment of SCs. All the KIs identified have dedicated staff with directives to monitor and report on ESG impacts. We consider that identifying and appointing key staff across sectors such as SCs onto the R&D team, at perhaps 0.2FTE, is likely to be successful given that such a role is likely to align with their employment roles. As an incentive the Challenge would anticipate meeting some of the costs of their time on the BHS initiative, but would also recommend direct in-kind contributions. In addition to SCs from industry we would also anticipate purchasing time from individual(s) with experience in environmental monitoring from an iwi or hapū perspective, to act as a SC on the R&D team. The roles of SCs are fundamental to ensuring that national level bicultural BH indicators identified and co-developed by the R&D team are adjusted and tailored to respective sector contexts.

The appointment of SLs to the steering group is fundamental to co-design and ensuring that the BHS is a catalyst for reversing decline. It is anticipated that SLs will be senior leaders within KI sectors with the **time and ability** to make the BHS initiative visible and prominent within participating KIs. Together the SLs and SCs will work in synergy, with SLs working from the top-down within KIs, while SCs work from the bottom-up. Fundamentally goal 3 meets the BHNSC innovation pathway of translation, whereby the science is tailored and applied for a variety of community, iwi, and industry contexts.

GOAL 3: We measure scorecard influence and adapt the scorecard(s) for enduring impact and whakamanatanga (empowerment)

Beyond reporting on biodiversity, the scorecard should influence behavioural change to improve NZ's BH status. We consider it important to measure scorecard influence across KIs. One method for this will be measurement of uptake within KIs and the emergence of on-ground objectives and action. Consistent monitoring of uptake will inform the Scorecard Steering Group whether current strategies for developing and delivering a national scorecard are effective. Furthermore, if uptake is poor, qualitative evaluations with SC and participating KIs will enable identification of roadblocks; this is a critical role for the M&E champion to play. 'Stop', 'adapt', or 'go' decisions can then be made regarding continued investment in the BH initiative. Openness to adapt and adjust after feedback is crucial to refining and developing to ensure the approach is 'fit for purpose'.

We realise scorecards and bio-indicators are normally standardised and expected to be comparable over time and space. The adaptation process seems counter-intuitive for this and yet the absence of feedback and adjustment is a failing of many existing indicators. Scientifically, the adaptation must eventually stabilise to provide consistent metrics in order to be ecologically meaningful.

Within our third research goal is the vision to whakamana or empower. We view empowerment as maintaining and building the mana and health of our fundamental beneficiaries: landscapes and waterways, ourselves, and future generations. Maintaining the health of NZs BioHeritage is ultimately tied to increasing our own wellbeing defined by: oranga, hauora, whai rawa, social and economic well beings. The attribute of whakamana makes the BHS different to existing, conventional BH reporting systems. It reaches beyond a generic research provider by encompassing a two- or three-way relationship for information flow and empowerment.

Translation & adoption

Stated throughout this scoping panel report is the power of co-development through buy-in (social processes) in the designing and adoption of scorecards. Participants, including scientists, must find the BHS compelling, and this will likely need to be facilitated by engagement specialists, once the BHS is ready to be scaled up and scaled-out.

Essential partnerships and relationships

Success of the BHS hinges on extensive, genuine partnerships. Building partnerships has not been part of the workshop phase of developing this scoping panel report. Instead, the first phase of the programme should involve further mapping of relationships and partnership development. However, there were strong signals from multiple KIs that they would be willing to partner with the BHS initiative, and institutionalise a scorecard approach within their operations.

As outlined in the development pathway section, the programme would first tailor and pilot scorecards at a local scale with willing groups, communities, and single institutions, before scaling to apply scorecards across KIs. It needs to be noted that all scorecards will align with and report against the BH indicator suite developed in the early stages of the programme. Consequently, the programme requires partnerships at both local/single institution scale and national scales. In terms of local scale partnerships, interest was signalled by the following:

- The North Otago Sustainable Land Management Group – The North Otago Sustainable Land Management Group and North Otago Federated Farmers outlined their strong interest in being involved.
- **Te Rūnanga o Ngāi Tahu (TRONT)** – TRONT represents the interests of the Ngāi Tahu Whānui, whose takiwā (tribal area) extends to 75% of the Te Waipounamu/South Island. TRONT, via their environment team, outlined interest in participating in the BHS initiative. There are multiple BH

restoration initiatives underway across the Ngāi Tahu takiwā that would provide for possible 'on-ground' partnerships.

- Waikato Raupatu Lands Trust (WRLT) - Represents the interests of Waikato iwi. Haukāinga (the people at home/place) are supported and encouraged to identify and lead their restoration/enhancement projects. A number of hapū/marae/whānau activities are taking place throughout the Waikato rohe. Some may be interested in partnering for mutual outcomes or would find benefit in participating in networks developed as an outcome of this process. The WRLT are at the very beginning of a scoping exercise to develop a Cultural Scorecard for the iwi.
- Urban Community – Restoration initiatives like Waiwhakareke Natural Heritage Advisory Group (Hamilton), have expressed interest in working with the BHS. They work with the broader community and local government to restore from scratch 65 hectares of contiguous forest within an urban setting. A member within the SO1 scoping group has extensive networks nationwide across other urban restoration initiatives that would also be interested in partnering.
- Price Waterhouse Coopers (PWC) – PWC is currently developing its ESG auditing criteria and would be very interested in partnering with the programme to develop BH auditing criteria.

The willing participation of these groups indicates the programme would successfully institutionalise the BHS at local/single institution scales. The spread of groups/institutions across farming, iwi, ESG auditing areas and urban centres also demonstrates widespread applicability of a BHS across KI sectors.

At a second scale the BHS initiative requires partnerships at an industry level that will allow scorecards to be scaled across KI sectors. National scale interest in the programme, and partnership potential, was expressed by the following groups and institutions:

- **NZX**- A senior staff member at NZX outlined their enthusiasm for the project. Currently they are leading the development of ESG investment criteria for the NZX and considered that the development of BH criteria as part of this mix would be helpful.
- **Banks** – Feedback from the team's empathy mapping process, that involved conversations with banks, demonstrated a strong interest and willingness to be involved. In terms of risk, banks currently feel overexposed to environmental risks and are looking to introduce criteria by which they may assess their lending to land-based industries.
- **Beef and Lamb NZ** – A staff member indicated interest and outlined alignment to their farm provenance and marketing programme. However, a key staff vacancy in their on-farm sustainability assessment team meant that involvement could not be confirmed.

In addition, a number of organisations would also need to be engaged to support a national roll-out of a BHS. These organisations include:

- **Dairy NZ –** A representative indicated a strong need to understand the policy and regulatory changes currently being considered for implementation with the dairy sector, and their potential influence on the BHS development and effectiveness to inspire change. They indicated a willingness to assist with this and acknowledged the strong need for a BHS.
- **Forest Owners Association** – No contact with the organisation was made and would need to occur in the first phase of the programme.
- **Key forestry sector leaders** - Representatives from Timberlands NZ and Hancock Forest Management together manage around 35% of New Zealand's certified forest area. They acknowledged a strong need for a BHS and the value this would bring for the forestry sector, and indicated strong enthusiasm to assist with the BHS.
- **Iwi Leaders Forum** - No contact with the organisation was made and would need to occur in the first phase of the programme.

The selection of partner case studies and organisations at both local and national scales will be based on their level of impact in transforming NZ's BH. Particular focus will be given to industries that have the ability to transform NZ's landscape at scale. Consequently, priority will be given to the farming and forestry industries that make up 60% of NZs landmass. Furthermore, the banks and investors that capitalize and therefore support particular land use management approaches will be targeted.

SO1 also engaged a variety of additional stakeholder groups to assess support of the draft 2024 goals and potential interest in co-investment and/or co-involvement in the development of a BHS. These engagements are summarised in social network analysis diagrams, in Figures 4 and 5 below. Figure 4 indicates the extent to which the stakeholders which were engaged with expressed acceptance of the proposed 2024 goals to achieve the BHS. This suggests that 48.8% agree with the proposed goals, while 46.3% agree while suggesting minor revisions. Only 2.4% (one party) disagreed with the proposed goals to achieve the BHS.

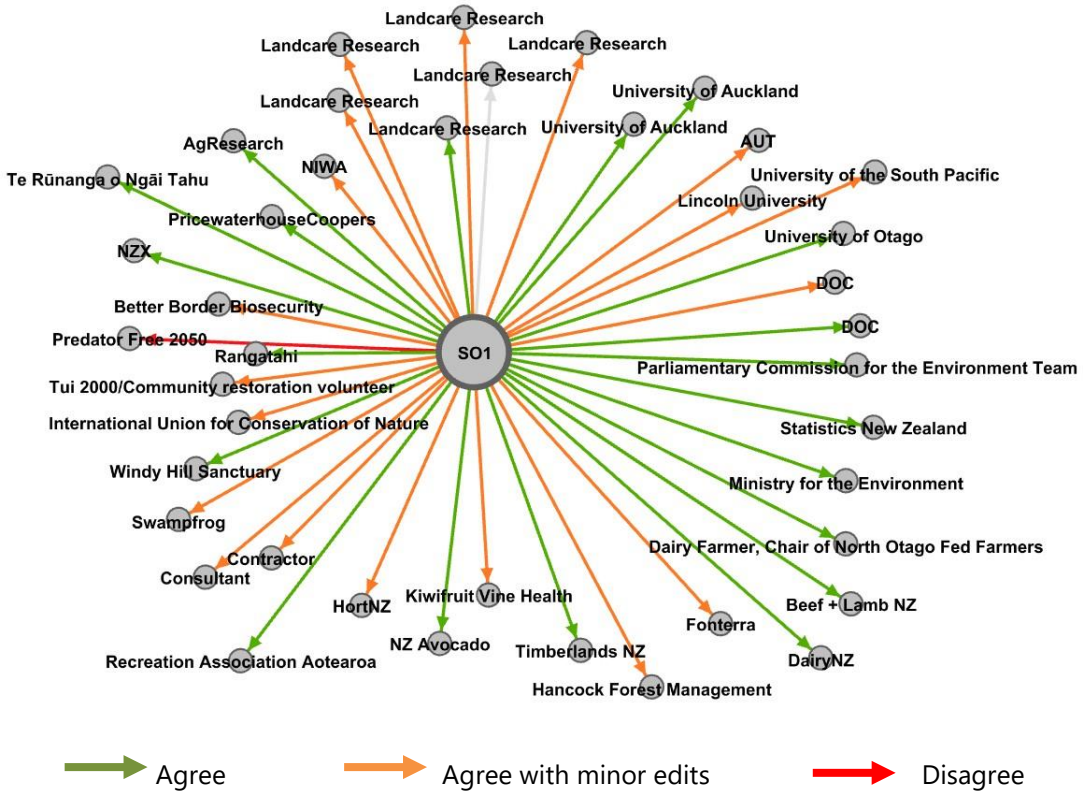

Figure 4. Key stakeholders' attitudes toward proposed 2024 goals regarding development of a BHS.

Figure 5 indicates the potential interest of these parties in co-investment or co-involvement regarding development of a BHS, based on initial engagements. The thicker and darker the line, the greater the interest in co-investment or co-involvement. Responses were scored on a scale of 1 to 5, where 1 = Not interested, 2 = Too soon to tell, 3 = Conditional interest, 4 = Interested and 5 = Very interested. A minority of parties indicated a very low level of interest (7.3%), while 34.2% suggested it was too soon to tell. One party indicated conditional interest (should the BHS meet certain conditions), while more than half (56.1%) indicated interest or high interest in co-investment and/or co-involvement. This map

also displays which type of organisation these stakeholders belong to, with the largest proportion belonging to industry and 'other' organisations, such as environmental initiatives.

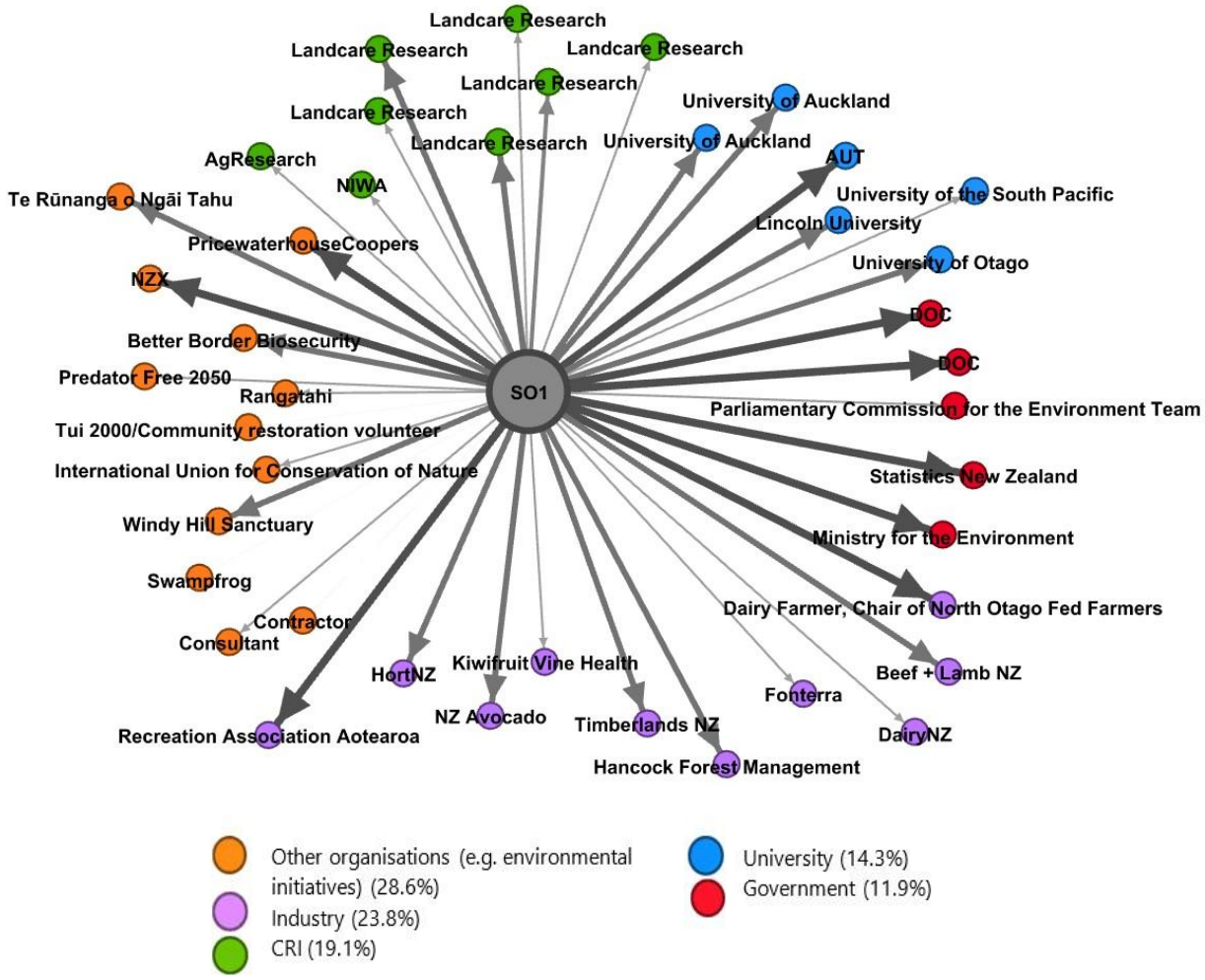

Figure 5. Key stakeholders' potential level of interest in co-investment and/or co-involvement regarding the development of a BHS, and the type of organisation these stakeholders affiliate with.

Overall, feedback from SO1 members suggested that most key stakeholders engaged with expressed agreeance that there was a need for a BHS which fit the description outlined in this prospectus, and were interested in supporting the development. This varied from assisting with identification of KI's and appropriate indicators by sector, to offering to share data or support the BHS with in-kind or direct co-investment. For those stakeholders who indicated it was 'too soon to tell', this was often associated with a desire for a more concrete description of which exact sectors and KIs the BHS would target, and which indicators would be selected. It was made clear to these stakeholders that these decisions would be made following co-development with the selected groups. Most of these stakeholders expressed interest in being re-engaged once these decisions had been made, to provide their refined input.

The process of institutionalising and operationalising BHS reporting across the above groups and institutions will ensure that the status of NZ's BH is raised across NZ's production landscapes. In particular it should see significant shifts in land use practice based upon incremental and compounding investments over decades. These efforts in the production landscape should complement efforts across conservation landscapes leading to a 'mountains to the sea' approach where natural ecosystems become ecologically connected.

The proposed KI partners in the programme will not be heavily engaged in research activity. Our SC will know and understand the needs of KIs and how the national BH indicator set can be adapted and tailored to fit their different circumstances to supporting reporting against a 100-year BH vision. It will be the role of the ST to develop the national BH indicator set and in turn develop granular and tailored indicators for each KI that report back against the national BHS. The identification of the right team will be crucial for the success of the initiative. It will require both an in-depth understanding of what current national indicator sets exist, and what type of indicators need to be developed and contextualised to meet the needs of industries, banks, investors, iwi, and urban communities.

The second key set of relationships are the existing institutions that have their own indicator sets and collect data against these sets. These institutions include regional councils and ministries. It is anticipated that the ST, and SC, will have members that know this BH monitoring landscape and are able to integrate this existing work into the BHS.

Hosting of the BHS and ongoing investment are issues that need to be considered. Feedback from our business scan indicates that industry would seek to have the BHS hosted by a trusted and independent third party. The location of the BHS would need to be a priority discussion amongst the steering group. Furthermore, it would need to be an institution willing to commit resources to maintaining the BHS long-term through accessing external funding and maintaining cross-institutional networks among KIs and scientists. Potentially an iwi, or pan-iwi group, could provide the hosting role as a neutral player given their diverse stakeholder interests across industry, conservation, government, and investment spheres.

Essential resources

Personnel

The most essential resources in the proposed initiative are personnel. First, we require personnel to make-up the GoS steering group, which will consist of key leaders within KI sectors. Second, we need an influential chair of SG, with experience and trust across iwi, governmental, conservation, industry, and community sectors. Furthermore, the GoS will need to possess the capacity to engage in science discussion concerning BH and factors related to a scorecard including indicators and data [gathering, sorting, storage, aggregating etc.]. Third, key individuals to fulfil the SC roles and provide a conduit between the ST and KIs are required. As outlined above, these individuals will need to be embedded within their KI sector and already be in a role that involves environmental monitoring, reporting, and auditing. Fourth, a competent ST with a diverse set of skills, connections and relationships. As outlined previously the team needs skills in the following: indicator development and environmental auditing; ecosystems processes; complex systems; population ecology; data science; social science; and engagement experts. They also require: experience across key stakeholder groups; a mixture of early, mid, and late career researchers; and experience in the development of indicators and scorecards with Māori. It is anticipated that the ST will be supported by postdocs and students that may be embedded across the programme. Fifth, a process coach and monitoring and evaluation champion will be required. These are specialist skillsets and will need to be carefully recruited to ensure they can work effectively across all of the aforementioned groups, if their roles are to be maximally effective. Finally, the initiative will require management and administrative support.

Co-design processes

Engaging in co-design processes will also require significant resourcing. First, the ST will need to develop an indicator set that draws upon existing national frameworks and approaches. This will demand engagement with government and non-governmental stakeholders and a science review process to arrive at a final suite. Furthermore, the indicators will need to be co-developed with the GoS steering group to ensure they are fit for purpose. Second, the ST and SCs will need to tailor and co-design

indicators for use at local and national scales among KIs, and reporting systems that will permit data gathered at local and national scales to be aggregated into national scale reporting. These co-development processes will require significant time investments and effective participation utilising a number of tools (choice modelling and prioritisation tools) to develop fit for purpose scorecards and reporting systems.

Travel

Getting together teams of SCs, the ST, and GoS, will require a significant investment in travel, accommodation, and host meeting fees. Co-location will be an advantage in some cases.

Data infrastructure

As outlined above, the programme will develop tailored scorecards at local scales with KIs that report back against national scale goals. The development of reporting systems that allows data from local scorecard reporting to be gathered and aggregated into national scale report is required. Our view is that the development of IT infrastructure to support this process should not be attempted during early or mid- phase of this programme. Each KI will have their own systems of data-gathering and reporting that scorecards should become embedded within. However, a common set of national indicators should permit reporting from the diverse scorecards to a national scale. Once a system is developed based on existing structures then an IT system could be potentially developed that is agile enough to fit across different KIs. Currently such systems may already exist – such as the New Zealand Sustainability Dashboard's Kohuratia reporting system.

Despite recommending against the development of IT infrastructure at this stage, resources need to be invested in refining and developing the reporting systems within KIs. This will need to be funded by a mixture of resources from the KIs themselves and the Challenge.

Host

As outlined previously an institution will need to be funded to initially host the BHS with a goal that the BHS will become self-funded by a mixture of stakeholders once it has established proven efficacy.

Regional and national reporting mechanisms

Currently there is a significant investment across NZ in data gathering and reporting cycles supported by Crown research agencies and allied research providers concerning different aspects of BH. This provides a significant resource to draw upon in the development of a BHS; however, there is also considerable duplication and fragmentation. In part this is because there is no one institution for 'bioheritage'. Reporting the state and trend–legacy and future of bio-heritage is at least part of the mandate of:

- Statistics New Zealand
- Ministry for the Environment
- Ministry of Primary Industry (MPI) & subsidiary arm, Biosecurity New Zealand
- Te Puni Kōkiri
- Department of Conservation
- Land Information New Zealand
- Ministry of Foreign Affairs and Trade
- Regional councils
- District & city councils

The BHS can provide a single platform for BH reporting that links directly to on-ground action in production landscapes to reverse negative BH trends.

International reporting

At an overarching level international reporting includes international policies to which NZ is a signatory or considering joining (E.g. components of the Nagoya Protocol of relevance to Māori). The CBD Convention on Biological Diversity, the IBPES Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and the IUCN International Union for the Conservation of Nature are of direct relevance and some aspects of international policy for climate change action will also be relevant.

National reporting

At the national level there are multiple and diverse reporting mechanisms, policies, and bodies relevant to BH. These are outlined below:

- The policy and bio-indicator and reporting systems under the Ministry for the Environment are relevant, rich and diverse. The Draft National Policy Statement for Indigenous Biodiversity and Draft National Policy Statement for Freshwater Management may be key. Also, climate change adaptation policy is likely relevant.
- The Department of Conservation is consulting to refresh the national Biodiversity Strategy. This may attempt to set milestone targets for biodiversity.
- The Waitangi Tribunal is supporting the vast WAI262 Claim – in short, the indigenous flora and fauna and cultural intellectual property Claim. This continues to provide important relevant cultural context for biodiversity.
- The Resource Management Act administered territorially at a relevant scale for many of the beneficiary sectors is therefore highly relevant to future 'strategic outcomes' for biodiversity.
- The Crown Pastoral Land Act/Crown property is administered over eight percent of the entire NZ land area (two million hectares) and includes a biased high proportion of NZ's unique threatened ecosystems and species. It has recently been reviewed with new policy approaches to include new state and trend reporting.
- Biosecurity New Zealand as an arm of MPI are responsible for an enormous border and post border surveillance and monitoring programme mitigating pest and disease impacts on our BH. At times this is done with significant society sector and general public interest. The range of monitoring and surveillance includes plant and livestock disease, container-born exotic organisms and a bee pathogen programme.

Regional reporting

Regional and District councils bring a regional perspective to indicators which may be done differently in different areas. The state and trend of freshwaters and of pests are two focus areas. Regional changes in land-cover or ecosystem condition are reported in different ways in different council jurisdictions.

Industry and NGO reporting

Several industry and NGO led environmental reporting mechanisms exist that are relevant to BH. In terms of our forestry sector KIs these include the Montreal Process and the Forest Stewardship Council certification. Both schemes require forest owners in New Zealand to maintain natural ecosystem integrity through their forest management practices. Currently 7% of NZ's land area is in exotic forest of which 55% is FSC certified. Beef and lamb farming covers 31% of NZ's land area. This industry recently committed to an environmental strategy that it claims will lead to 'thriving biodiversity' and 'cleaner water.' Further an assurance scheme is under development to report on the environmental strategy and provide a basis for an environmental brand. Dairy farming covers 9% of NZ's land areas and is primarily concentrated in lowland areas. Fonterra, NZs primary dairy farmer cooperative, has an environmental policy (1.1) that commits its farms 'to promoting the protection and enhancement of NZ's natural resources and ecosystems' and are making increasing efforts to identify and measure progress toward such policies. Within these industries Māori are now significant players with Chapman Tripp estimating

that Māori control 50% of the exotic forestry sector, 30% of the beef and lamb sector, and 10% of the dairy sector. Many Māori farm and forest owners have made efforts to build kaitiaki-centred environmental reporting systems as part of their operations. Finally, environmental NGOs, such as the World Wide Fund (WWF) for nature, and the Global Reporting
Initiative (GRI), also offer environmental assessment and reporting initiatives that cover aspects of BH.

Section 3: Quantifying Cost Elements

Budget details and cost narrative

Outlined in Table 2. below is the annual budget to implement the BHS programme. The primary cost of the programme is in relation to personnel. It is shown that an annual budget of $56,000 per annum should be put aside to support the operations of the GoS steering group. In the first year this will support a quarterly day-meeting and workshop that will allow the co-development of the 100-year BHS and evaluation of the national BH indicator set. In subsequent years the steering group will primarily meet to monitor the implementation of the scorecard and determine strategies for SLs to improve uptake and scaling of the BHS across KIs.

A budget of $550,000 per annum is set aside to support the science team. A full 1 FTE is allocated to support the role of a full-time science leader, or two co-leaders on 0.5FTE each. The science leader/s will be individual/s with experience in scorecard development primarily in industry, but also with experience in government, and communities. The science leader/s will drive scorecard development and will be supported by a multidisciplinary team that will work to identify and tailor indicators to context and support the co-development and embedding of reporting systems within KIs. Team members will have 0.2FTE of their time dedicated to the programme.

A team of SCs will also be supported and a budget of $300,000 per annum is allocated to support this function. However, in-kind support from KIs is sought of approximately $75,000 per annum. It is anticipated that this investment into the KIs sectors will motivate participation and provide some accountability regarding embedding and uptake of scorecards. However, it is expected that a pathway toward self-funding will emerge during the programme. Key to increasing investment in the programme is to demonstrate its usefulness to business and industry partners. BH reporting may be seen as a compliance cost, and potentially as an activity that could highlight environmental problems to the detriment of business viability. Engagement in the programme must produce trust, and in particular provide an avenue for partners to positively communicate to the public and markets the step-by-step actions they are taking to improve NZs BH for future generations.

A budget of $470,000 is allocated to ensure strong management, communications, administrative, and facilitation support is available. First, a management role at 0.6FTE is allocated to ensure that the team is coordinated, has clear goals and objectives, and good reporting processes against objectives. Second, an administration role is also included to support travel, the arrangement of workshops, fieldwork, and connections between team members. Third, time is allocated for a process coach at 0.5FTE. The facilitator will be available to facilitate co-development workshops between the GoS and the R&D team, and between the RT and the SCs. Fourth, a monitoring and evaluation champion is required at 0.3FTE. A role of 0.3 FTE is also allocated for a communications expert to support extension of the programme across KIs, and ensure consistent messaging. It is anticipated that the KIs will also have their own communications team that will also be able to provide direct in-kind contributions to supporting communications.

Finally, a pool of resource is set aside for supporting travel and other sundry costs that may arise during the programme. It is anticipated for example that there will be subscription software costs associated with co-development processes (e.g. use of decision-support software).

GoS Steering Group				Cost per annum
	Members	Cost per day	Meetings per year	
Sector Leaders + Chair	7	$2,000.00	4	$56,000.00
Science Team				
	Members	FTE per annum	Av. Cost FTE	
Science Leader / Co-leaders	1	1	$300,000.00	$300,000.00
Science Team Members	5	0.2	$250,000.00	$250,000.00
Postdocs				
Sector Champions				
	Members	FTE per annum	Av. Cost FTE	
Sector Champions	6	0.15	$250,000.00	$225,000.00
In-kind from SCs	6	0.05	$250,000.00	$75,000.00
Management Team				
	Members	FTE per annum	Av. Cost FTE	
Manager	1	0.6	$200,000.00	$120,000.00
Administrator	1	1	$100,000.00	$100,000.00
Process Coach	1	0.5	$250,000.00	$125,000.00
Monitoring & Evaluation Champion	1	0.3	$250,000.00	$75,000.00
Communications	1	0.3	$250,000.00	$75,000.00
In-kind comms from KIs	1	0.3	$250,000.00	$75,000.00

Travel, Meeting Costs, Software etc.,				$100,000.00
Total Cost of Programme				$1,576,000.00
Co-investment from KIs				$150,000.00
Total Cost of Programme to BSC				$1,426,000.00

Section 4: Evaluating Success

2024 Goal Metrics

1	The BSC senior management appoints the Science Leader/s (SL/s)	Jan 2020
2	The SL/s identify and appoint Manager and Administrator	Feb 2020
2	The BSC senior management and SL/s identify, approach, and appoint GoS steering group	Mar 2020
3	The SL/s with GoS steering group identify and appoint Science Team and SCs	Apr 2020
4	100-year BioHeritage restoration vision established ▯ The restoration vision will be established by the GoS with support from the R&D team. This will require facilitation support from the process coach.	June 2020
5	National Bicultural BH Indicator Set developed. ▯ The development of the indicator set is crucial to the programme. As outlined, it will synthesise existing bicultural BH policy, strategy, and reporting systems while creatively introducing novel insights that will ensure that indicators are adapted to KI contexts.	Sep 2020
Stop-Go Point – can a national bicultural indicator set be developed that has broad buy-in across KIs, GoS steering group, and ST?		
6	Case studies are established of willing groups, communities, and single institutions to pilot scorecards at a local scale.	Dec 2020
7	Preliminary/draft scorecards with case studies beginning to emerge	Sep 2021
8	Final scorecards with case studies developed	Jun 2022
Stop-Go Point – Pilot scorecard development successful/unsuccessful at local scales following evaluation.		
9	Evaluation indicates the pilot scorecards are being scaled and integrated across KIs through SCs and SLs.	Jun 2023

Stop-Go Point – Scaling and integration of scorecards occurring successfully/unsuccessfully.		
10	Systems in place for data gathering and reporting across KIs	June 2024
11	Scorecards across KIs developed reporting against national BH indicator set.	Dec 2024

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