#118

`COMPLETE`

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, March 16, 2022 2:18:42 PM
Last Modified:	Wednesday, March 16, 2022 2:23:00 PM
Time Spent:	00:04:18

Page 2: Section 1: submitter contact information

Q1

Name

Kioumars Ghamkhar

Q2

Email address

Privacy - 9(2)(a)

Q3　　　　　　　　　　　　　　　　　　　　　　　　**Yes**

Can MBIE publish your name and contact information
with your submission?Confidentiality notice: Responding
"no" to this question does not guarantee that we will not
release the name and contact information your provided,
if any, as we may be required to do so by law. It does
mean that we will contact you if we are considering
releasing submitter contact information that you have
asked that we keep in confidence, and we will take your
request for confidentiality into account when making a
decision on whether to release it.

Q4　　　　　　　　　　　　　　　　　　　　　　　　**Yes**

Can MBIE contact you in relation to your submission?

Page 3: Section 2: Submitter information

Q5　　　　　　　　　　　　　　　　　　　　　　　　**Individual**

Are you submitting as an individual or on behalf of an
organisation?

Page 4: Section 2: Submitter information - individual

Q6　　　　　　　　　　　　　　　　　　　　　　　　**Yes**

Are you a researcher or scientist?

Q7

Age

Q8

Gender

Q9

In which region do you primarily work?

Q10

Ethnicity

Page 5: Section 2: Submitter information - individual

Q11

What is your iwi affiliation?

Respondent skipped this question

Page 6: Section 2: Submitter information - individual

Q12

If you wish, please specify to which Pacific ethnicity you
identify

Respondent skipped this question

Page 7: Section 2: Submitter information - individual

Q13

What type of organisation do you work for?

Crown Research Institute or Callaghan Innovation

Q14

Is it a Māori-led organisation?

No

Q15

Which disciplines are most relevant to your work?

Agricultural, veterinary and food sciences,

Biological sciences

Q16

What best describes the use of Mātauranga Māori
(Māori knowledge) in your work?

It does not contain Mātauranga Māori

Page 8: Section 2: Submitter information - organisation

Q17

Organisation name

Respondent skipped this question

Q18

Organisation type

Respondent skipped this question

Q19

Is it a Māori-led organisation?

Respondent skipped this question

Q20

Where is the headquarters of the organisation?

Respondent skipped this question

Q21

What best describes the use of Mātauranga Māori (Māori knowledge) in your organisation?

Respondent skipped this question

Page 9: Section 3: Research Priorities

Q22

Priorities design: What principles could be used to determine the scope and focus of research Priorities? (See page 27 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q23

Priority-setting process: What principles should guide a national research Priority-setting process, and how can the process best give effect to Te Tiriti?(See pages 28-29 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q24

Operationalising Priorities: How should the strategy for each national research Priority be set and how do we operationalise them?(See pages 30-33 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 10: Section 4: Te Tiriti, mātauranga Māori, and Māori aspirations

Q25

Engagement: How should we engage with Māori and Treaty Partners?(See page 38 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q26

Mātauranga Māori: What are your thoughts on how to enable and protect mātauranga Māori in the research system?(See pages 38-39 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q27

Regionally based Māori knowledge hubs: What are your thoughts on regionally based Māori knowledge hubs? (See page 39 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 11: Section 5: Funding

Q28

Core Functions: How should we decide what constitutes a core function, and how do we fund them?(See pages 44-46 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q29

Establishing a base grant and base grant design: Do you think a base grant funding model will improve stability and resilience for research organisations?(See pages 46-49 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q30

Establishing a base grant and base grant design: How should we go about designing and implementing such a funding model?(See pages 46-49 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 12: Section 6: Institutions

Q31

Institution design: How do we design collaborative, adaptive and agile research institutions that will serve current and future needs?(See pages 57-58 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q32

Role of institutions in workforce development: How can institutions be designed to better support capability, skill and workforce development?(See page 58 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q33

Better coordinated property and capital investment: How should we make decisions on large property and capital investments under a more coordinated approach?(See pages 58-59 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q34

Institution design and Te Tiriti: How do we design Tiriti-enabled institutions? (See page 59 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q35

Knowledge exchange: How do we better support knowledge exchange and impact generation? What should be the role of research institutions in transferring knowledge into operational environments and technologies?(See pages 60-63 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 13: Section 7: Research workforce

Q36

Workforce and research Priorities: How should we include workforce considerations in the design of national research Priorities?(See pages 69-70 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q37

Base grant and workforce: What impact would a base grant have on the research workforce?(See pages 70-71 of the Green Paper for additional information related to this question)

Respondent skipped this question

Q38

Better designed funding mechanisms: How do we design new funding mechanisms that strongly focus on workforce outcomes? (See page 72 of the Green Paper for additional information related to this question)

Respondent skipped this question

Page 14: Section 8: Research infrastructure

Q39

Funding research infrastructure: How do we support sustainable, efficient and enabling investment in research infrastructure?(See pages 77-78 of the Green Paper for additional information related to this question)

This submission is based on discussions with staff in charge of our collections and associated information systems held in AgResearch and funded as Nationally Significant Collections and Databases through SSIF infrastructure funding.

This submission is not to comment on Te Ara Paerangi as a whole or to address the specific questions that MBIE has posed.

Rather, it is to address the specific question of the biological collections and their associated information systems (including but not limited to databases).

Te Ara Paerangi addresses the collections and associated information systems on pages 44-45.

The 2020 Te Pae Kahurangi report recommended that dedicated funding should be provided for critical research functions, high-priority services, emergency responses and databases and collections. The underpinning concept is that certain functions or services exist that developed countries and small advanced economies, such as New Zealand, expect their governments to perform that deliver a standard of living that distinguishes them from other nations. Where these functions are identified, government should fund them and specifically ensure their viability in the same way as, for example, a tax system or police force. One possible model for this is the way the Government funds the Measurement Standards Laboratory, which is part of Callaghan Innovation, but has its own dedicated, ring-fenced budget and supporting legislation.

We consider at least three categories of activity exist that could meet the test of being a 'core function':

3 Databases, collections and monitoring: data are necessary to understand the status and health of resources, to support research and to serve various other functions. For example, weather data have both commercial and public good value, and type specimen collections support national biosecurity and biodiversity conservation systems.

We believe that Te Ara Paerangi provides an opportunity to consider the role and function of the biological collections and associated information systems funded as NSCDs. There has been significant discussions since 2016, principally regarding the integration of databases and physical collections held by AgResearch, Plant and Food, Manaki Whenua and Massey University to augment national capacity and capability of NSDCs while avoiding competition. This has confounded and hidden the discussion that needs to be had about the infrastructure and retrieval of the associated metadata in information systems.

Collections

Collections have a long history stretching back to the early 1940s:

1.   Initially, or phase one, involved enthusiastic agronomists or breeders making collections as personal or public collections in a professional or amateur capacity.

2.   Phase 2 started in 1980s when the late Margot Forde and her colleagues arranged global journeys for collecting seed material of wild populations for species of interest (forages) in New Zealand. For instance, many collecting trips were completed and seeds were collected in the southern Mediterranean countries in 1980s and early 1990s. In New Zealand many of the collections started as small working collections of research scientists and these became the bases of the MFGC. In this institution phase, phase 2, the collections are still managed and curated mainly by systematists and taxonomists. These collections are also usually managed as an adjunct to a research programme.

3.   In phase 3, which started from early 2000s the collection became very large and needed a full-time collection manager and other staff as technical assistants. From 2014, MFGC also needed the involvement of professional IT specialists to manage and make available the digitised metadata that is associated with the biological material in the collections. The size of these data is large but it is small compared to the amount of data that will be created in the coming years using new omics technologies such as genomics, phenomics and metabolomics. These omics tools are needed to secure future ready food, feed and fibre as well as protecting environment and natural resources.

We believe that Te Ara Paerangi provides an opportunity for the collections of Aotearoa to begin a transition into a fourth phase which is outlined below. This submission is to encourage a discussion as to what a phase four collection might look like and the advantages that it provides in contrast to maintaining the NSDCs at phase three i.e., the status quo. The fundamental difference between phase three and four is the recognition of the collections as Essential Public Infrastructure and Collections (EPICs) and managed and developed as such.

The current structures have not exhausted their potential for the collections or for the associated research. The current situation has resulted in minimal increases in funding that do not account for inflation and escalating CRI overheads. The collection has also seen a continuous decrease in capability resulting from lack of sympathy and/or understanding of the significance of the collection for New Zealand and the rest of the world as the most diverse forage collection in the globe.

Currently the nationally significant collections are independent of each other as they are housed in different CRIs each of which have different visions and relationships with their collections. Infrastructure funding is optional funding compared with research funding. This means that the collections are diluted within CRIs' other activities. In some CRIs there is a pressure to convert the

funding. This means that the collections are diluted within CRIs' other activities. In some CRIs there is a pressure to convert the infrastructure funding to research funding because the collections do not fit in to the vision of a corporate CRI. The nationally significant collections are to be maintained, developed and made available to the nation; however, they have no clearly articulated national purpose beyond being "significant" and labelled "infrastructure".

Strawman for discussion:

Some of the nationally significant collections and databases should be considered one single collection (e.g. AgResearch, P&F and Scion collections – all focused on plants for farming or forestry), albeit housed at different locations around the country (as they are today). They are a vital component of the nation's scientific infrastructure and heritage with international significance and obligations. This national collection of plant materials for farming and forestry should be nationally and internationally significant, publicly funded and owned by the government of New Zealand.

The Essential Public Infrastructure and Collections (EPIC)will provide access and use of the collective knowledge of plants for agriculture and forestry for Aotearoa and the rest of the world.

The main purpose of the EPIC is to collect and characterise plant material and co-create knowledge for the benefit of Aotearoa's faring and forestry sector.

• Collect: The plant material, be it ex situ seed collection, ex situ tissue collection or in situ live material, as living and preserved specimens are collected and conserved and with its associated data and information are protected and accessible to researchers in Aotearoa and globally.

• Characterise: This material must be characterised using omics technologies (genomics, phenomics, metabolomics and proteomics) to produce data for knowledge development and future focused farming and forestry.

• Co-create: The people of Aotearoa working together to turn data and information into knowledge and wisdom for national (and international) benefit and sustainable farming and forestry in the future climate scenarios.

Seed collections and cryopreserved material might need to be centralised because of the capital equipment required.

Decentralisation could be seen to be a disadvantage for researchers having to travel to several locations to examine specimens. The establishment of EPIC bring integration and operation scale which is lacking in the current piecemeal system. Collective wisdom of the current unit managers and staff would be used to solve the common problems that collections have now. A national collection strategy would be developed to ensure that EPIC's purpose is achieved. This strategy would ensure that capability was maintained and not left to the whims of the individual CRI restrictions. It would also ensure that the collection was maintained, developed and made available by professional collections managers and not merely as a small part of a scientist's job description as some collections are currently being managed.

We believe that the coalescence of some of the scattered collections of Aotearoa into 2-3national collections recognised and managed as national and international infrastructure (as MFGC is now by FAO) will benefit Aotearoa.

The EPICs would require having scientists on its staff which would include systematists, taxonomists, and plant physiologists as these would be essential in the scientific curation and characterisation of the collection. However, there is need to other expertise such as agronomy, databasing, IT and programming as well as GIS experts if EPICs are to be used in their full capacity. Current funding levels would not allow the recruitment of these skills.

An integrated national umbrella database would also be needed to house all data from the EPICs and make it all available to the public and researchers. This database can be managed in coordination with an organisation such as New Zealand eScience Infrastructure (NeSI). AgResearch has already initiated joint data hosting and processing with NeSI and this can be expanded to other collections for their EPIC infrastructure.

As the data is seen as the most important content of the current NSCDs, the buildings and infrastructure for actually preserving the material, which is the core asset of these NSCDs has been neglected in many of the units. There is a need to fund and support this infrastructure development whether the consolidation of EPICs is happening or not in the future.

On behalf of MFGC staff

Kioumars Ghamkhar

Director MFGC

16/03/2022