

Terrestrial and Freshwater Biodiversity Information System (TFBIS) Programme

Application for Funding

Application Form 1 – Projects under \$80,000

PART 1: APPLICANT DETAILS	
Project Leader <i>Please enclose a current C.V.</i>	CV attached (Appendix 1)
Full Name	Aaron Wilton – on behalf of the New Zealand National Herbarium Network
Designation	Herbarium Information System Committee (HISCOM) Chair of the Council of Heads of Australasian Herbaria (CHAH); representative of the New Zealand National Herbarium Network (NZNHN) on HISCOM
Agency/Organisation	Landcare Research
Postal Address	PO BOX 69040
Physical Address	Gerald St, Lincoln
Phone- DDI	(03) 321 9838
Phone – Cell	(021) 689 315
Email	WiltonA@LandcareResearch.co.nz
Manager of Project Leader	
Full Name	Ilse Breitwieser
Designation	<ul style="list-style-type: none"> • Science Portfolio Leader, Defining Land Biota • Executive member of CHAH; representative of the New Zealand National Herbarium Network (NZNHN) on CHAH
Phone	(03) 321 9621
Email	BreitwieserI@LandcareResearch.co.nz
Organisation website	www.landcareresearch.co.nz

PART 2: SUMMARY OF PROJECT DETAILS	
Project Title	Incorporation of the New Zealand Virtual Herbarium into the Australian Virtual Herbarium
Synopsis of Project (max 100 words)	<p>The New Zealand Virtual Herbarium (NZVH) is a flagship project that uses federated information infrastructure to present specimen data from NZ's herbaria.</p> <p>The NZVH uses Virtual Herbarium software (VH) originally developed for Australia's Virtual Herbarium (AVH). However, AVH is now delivered through greatly improved infrastructure developed by the Atlas of Living Australia (ALA), and the VH software has been discontinued.</p> <p>This project will undertake the work necessary to incorporate NZVH into AVH and create a combined "Australasian" portal</p>

	(ANZVH) using the ALA infrastructure. These improvements will support national biodiversity monitoring and reporting, leveraging the existing multi-million dollar investment in ALA.
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Total Amount Requested (GST excl)	\$77,000 ex gst
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Anticipated Start and Completion Dates	
<i>Start Date</i>	1 July 2013
<i>Completion Date</i>	30 May 2013

PART 3: TFBIS STRATEGY GOAL AND ACTION AREA		
Please indicate which Action Areas in the TFBIS Strategy ¹ this project contributes to and explain how the project will contribute to these.		
<i>Goal</i>	<i>Action Area</i>	<i>Describe how the project will contribute to each Action Area</i>
1	1.1 Plan and develop tools and infrastructure components to increase interoperability between sources of national biodiversity data and information. 1.3 Develop and propagate standards for data storage, curation and exchange	<ul style="list-style-type: none"> The NZVH is already a multi-agency project involving 11 herbaria belonging to the New Zealand National Herbarium Network (NZNHN). This project will expand collaboration to connect members of the NZNHN to Australian herbaria, which also contain significant specimen records of the NZ flora. The NZVH and AVH use the Access to Biological Collections Data (ABCD) and Darwin Core (DwC) standards for data exchange. This project will improve the structure of the NZVH cache to provide data to ALA. These improvements will also allow data services for other NZ biodiversity projects.
2		
3	3.1 Expose existing data and information sources for improved access 3.2 Develop tools to allow better interpretation of primary data 3.3 Provide national level topic-specific repositories and portals	<ul style="list-style-type: none"> Exposing data through the ANZVH portal will provide a richer and easier experience for users to find, visualise, analyse and download data. Improvement in the structure of the NZVH cache will assist with making information available via services accessing this cache, notably national biodiversity and monitoring and reporting, and the Species occupancy project. This project will ensure access to c. 800, 000 electronic records of NZ specimens currently held at Australian and NZ herbaria via a single

¹The TFBIS Strategy document is available [here](#). The Goals and Action Areas are listed on Page 26.

		<p>portal.</p> <ul style="list-style-type: none"> Integration with AVH will permit analysis of NZ specimen data using the range of tools currently only available in the AVH and ALA (e.g., Spatial Portal).
4		
5	5.2 Support the implementation of processes and technologies to improve interagency dialogue	<ul style="list-style-type: none"> The NZVH provides a focus for the NZNHN to continue discussing and improving data standards and specimen information. Amalgamation of NZVH and AVH will ensure that New Zealand herbaria are not isolated but part of an international community, thus leading to improved data quality and curation standards within NZ herbaria.

<i>Of the TFBIS Strategy Goals (1-5), which goal do you feel is the most significant/relevant for your project?</i>	A robust infrastructure exists to support the interoperability, interconnection and sharing of biodiversity data and information.
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PART 4A: PROJECT OUTPUT²	
<i>What is the end product of this project? Including</i> (a) <i>what is the format?</i> (b) <i>what organisation will host the output?</i>	<ul style="list-style-type: none"> A web portal presenting specimen data from New Zealand and Australian herbaria. It is likely this portal will be branded “Australasia’s Virtual Herbarium” Hosted by: <ul style="list-style-type: none"> Portal - Atlas of Living Australia – CSIRO NZVH harvester and NZ provider cache – Landcare Research
<i>How does the product or service of this project link with other data systems and how complimentary are they?</i>	<ul style="list-style-type: none"> The ANZVH will use the New Zealand Organism Register (NZOR) to apply consistent nomenclature and taxonomy to NZ records. Improvements of the NZVH cache will permit implementation of a data provider to GBIF and the ability for other data services to access a potentially wider NZ biodiversity information infrastructure.
<i>If possible describe the way the project fits in with other sector priority setting processes and reflects those priorities.</i>	<p>NZ Biodiversity Strategy Objective 9.5 Share Information and best practice a) Develop resources and systems that promote the consolidation and sharing of information about indigenous biodiversity and hands-on biodiversity management.</p> <p>Objective 1.1 Protecting indigenous habitats and ecosystems g) Develop and strengthen information systems to increase access by local authorities, iwi and hapu, sector groups, communities and landowners to indigenous biodiversity survey</p>

² **All TFBIS Programme projects are required to be publicly and freely available**, except where reasons preclude this as specified in Government policies and legislation. Any proposal that does not provide for open access to data and information/products should be discussed with the Programme Manager prior to submitting an application.

	<p>and ecosystem data and information about indigenous biodiversity management priorities and protection mechanisms.</p> <p>Objective 4.1 Conservation of New Zealand's genetic resources</p> <p>a) Develop a collaborative strategy to manage New Zealand's genetic resources (from both introduced and indigenous species)</p> <p>iii) managing information about collections of genetic resources.</p> <p>Objective 8.1 Community awareness and involvement</p> <p>a) Make information about biodiversity available to people and communities, relevant to their local environments (that is, on the extent and management needs of ecosystems, habitats and native species), to enable them to make decisions and take action to support the conservation and sustainable use of biodiversity.</p> <p>This project will strengthen the co-ordinated approach that started with the development of the NZVH to improve access to herbarium specimen data through implementation of a common informatics platform to deliver data to users via the internet.</p>
<p><i>Which data collection, storage and/or exchange standards will be used?</i></p>	<p>Data standards: ABCD, HISPID 5; Darwin Core</p> <p>Publication Protocols: TAPIR, DarwinCore Archive, IPT?</p>

PART 4B: BENEFITS OF PROJECT

<p><i>Describe what user groups will use the output of your project (include the approx. size of the group)</i></p>	<p>The ANZVH will address the needs of a wide user group of biodiversity and biosecurity managers and scientists and generally everybody who needs information from herbaria. We are expecting that the improved functionality provided by the ALA infrastructure plus the incorporation of NZOR will increase the utility and usage of the VH. It will improve access to the data through the enhanced abilities to search, filter and download the records, as well as providing access to a wider set of data fields for each record. The online analytical tools will permit users to explore the data more fully without having to download them.</p> <p>From April 2012 to April 2013, the current NZVH site was visited by nearly 1800 unique visitors and received nearly 26,000 pages views, with c. 72% of visits from NZ users.</p>
<p><i>Group 1 biodiversity and biosecurity managers and scientists.</i></p>	<p>Primary beneficiaries will be those needing to access specimen based data for research, biodiversity and biosecurity management. This system will allow them to search across all the available herbaria for records matching their criteria, and map the resulting data points.</p> <p>Examples of the benefits would include:-</p> <ul style="list-style-type: none"> • scientists investigating the taxonomy or biosystematics of a particular group with the aim of publishing a description, new name or distribution for a taxon, a Flora treatment or a checklist • biodiversity and biosecurity advisers wanting an additional, verifiable, source of information on New Zealand's biodiversity

	<ul style="list-style-type: none"> • biosecurity agencies seeking information on the time and place of arrival and subsequent spread of exotic species. • scientists studying changes in biodiversity over time, researching the historical biota of an area, assessing regional patterns of biodiversity, mapping and predicting distribution of species (e.g., Pest Spread). • planners requiring basic information on taxon distributions, and their changes in time, in order to set management priorities, • managers who need to undertake surveys of the biodiversity of specific regions (e.g. of a conservancy, an Ecological Region, an Ecological District, an island or a reserve). Being able to rapidly access already-collected data means that scarce field time can be spent focussing on areas and taxa that are under-collected. <p>An additional benefit of this project is that it will provide an efficient mechanism for data exchange between NZ herbaria. This has the potential to reduce the amount of duplication in data entry time and in the exchange of re-determination data for duplicate specimens.</p>
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Note: You are required to identify two potential users who should complete and forward the “Independent Supporters Form” direct to TFBIS@doc.govt.nz.

PART 4C: USER NEEDS AND PUBLICITY

<i>What consultation/ preparatory work has already been completed?</i>	<p>ALA has done extensive user needs analysis of a wide user community for specimen and observation data.</p> <p>In addition, during the development of the AVH demonstrator versions of the portal were released to the Australian community. Feedback from these users was incorporated into the functionality and design of the AVH Portal that will be used for the ANZVH.</p>
<i>How will you consult with and ensure involvement with end users throughout the project?</i>	N/A - this project fits within proceeding and existing projects.
<i>How will you ensure people know about the project output on completion of the project including communications, marketing, promotion and awareness-raising for new systems?</i>	<p>On completion of the project:</p> <ol style="list-style-type: none"> 1. Press release regarding improved, and continued, access to important biodiversity information. 2. Announcements to online user groups (e.g., NZNHN, DataVersity) 3. Re-direction of the current NZVH url. 4. Notification to general users via the Te Papa blog site and popular publications
<i>Will your user groups need training? How will you provide this?</i>	No – online help is already available in the AVH Portal.

PART 4D: RISKS

<p><i>Identify the range of potential risks to the success of the project including Outcome, Operational, Adverse effects, Socio-political and Legal (specifically mention if there are any Intellectual Property issues that the project will need to address)</i></p>	<p>NZ and ALA team members have considerable experience of delivering this type of output and the delivery of this project is not dependent upon a single individual.</p> <p>However, there is a greater risk if the project is not funded, as the maintenance and further development of the NZVH as an independent system is not viable in the long term. The NZVH was implemented on the understanding of collaborative development with the Australian herbaria to reduce development and maintenance costs. Given that the AVH has moved to the ALA infrastructure, joint Trans-Tasman development and maintenance of the current NZVH infrastructure is not possible. This will only be possible if the NZVH also gets moved to the ALA infrastructure. Therefore the Council of Heads of Australasian Herbaria (CHAH) and NZNHN unanimously agreed at their AGMs in 2012 that the only way forward is to integrate the AVH and NZVH.</p>
<p><i>Outcome Risk</i></p>	<p>Nil</p>

PART 4E: PROJECT MEASUREMENT

<p><i>How will you measure the success of your project upon completion?</i></p>	<p>The NZVH will be amalgamated with the AVH, providing users with access to all NZ specimen records from Australasian herbaria. The project will be regarded as successful once the NZVH specimen data are available through the ALA infrastructure.</p>
<p><i>What will be the output/outcome 'new environment' that will illustrate that your project has achieved its aims?</i></p>	<ul style="list-style-type: none"> • New Zealand herbarium data users will continue to have access to herbarium specimen information through a single portal. • Australian and NZ herbaria are able to collaborate with each other and the ALA to maintain and develop the ANZVH.

PART 4F: LONG TERM SUSTAINABILITY/ONGOING MAINTENANCE

<p><i>What are the expected ongoing maintenance costs for the project?</i></p>	<p>The maintenance of the ALA infrastructure is currently funded by Australian Government grants to the CSIRO. In addition, the ALA dedicates time specifically to the maintenance of the AVH portal. Maintenance costs for NZ herbaria will therefore be minimal, only covering the cost of data provision that will be met by individual herbaria.</p>
<p><i>What organisation will be responsible for the ongoing maintenance costs and how will these be met?</i></p>	<p>See above</p>
<p><i>Who is responsible for the governance once the TFBIS project is completed? Who will be the custodian of the end product?</i></p>	<p>CHAH (which includes NZ membership) will be responsible for the Governance of the ANZVH. Responsibility for data from the NZ herbaria rests with the NZNHN. The ALA infrastructure is overseen by governance and technical architecture groups.</p>
<p><i>How will the issue of data storage, safe-keeping,</i></p>	<p>NA – this is an aggregation of data maintained by participating institutions.</p>

<i>backup and security be addressed?</i>	
<i>How will you obtain and respond to ongoing feedback and input from the targeted user groups?</i>	Feedback mechanisms are already in place in the ALA infrastructure. These include both an email feedback process as well a record annotation system that allows users to directly comment on single records. The email feedback is monitored by members of HISCOM and ALA staff, whilst individual herbaria subscribe to receive annotation feedback on records they contribute.

PART 5: PROJECT IMPLEMENTATION

<i>Briefly describe how this project will be carried out.</i>	<ul style="list-style-type: none"> • The NZVH cache and harvesting protocol will be updated. • A process to deliver the NZVH data to the ALA will be implemented on an on-going basis. • Spatial layers relevant for NZ will be provided to ALA. • Technical changes to ALA infrastructure will be made to incorporate NZOR data and spatial layers. • The web portal text and images will be updated to reflect the combined Australian and New Zealand content. • Metadata for NZ herbaria will be included in ALA Collectory. • Prior to release these changes will be tested by NZ and Australian project members and wider herbarium community. 		
<i>Who are the key team members, their organisation and position, their role in the project and a brief description of their relevant qualifications and experience?</i>	<p>Aaron Wilton, Landcare Research, Biodiversity Informatics scientist: Project leader. Aaron Wilton has developed the NZVH, was coordinator for the AVH implementation, is chair of HISCOM, contributed significantly to the development of NZOR, and has developed in the last 15 years a wide range of other biodiversity informatics projects (e.g., eFlora, internal LCR Collection Information System).</p> <p>Developer at LCR, TBA: technical changes to NZVH cache and harvesting protocol.</p> <p>Ilse Breitwieser, Landcare Research, Portfolio Leader Defining Land Biota, member of CHAH executive and NZNHN governance group: Project Sponsor. Ilse Breitwieser has led LCR plant systematics and Defining Land Biota OBI (now Defining Land Biota portfolio) since 1995.</p> <p>ALA staff, CSIRO Australia: technical changes to the ALA to accommodate combined NZ / AUS VH requirements.</p> <p>Niels Klazenga and Alison Vaughan, Melbourne Botanic Gardens, HISCOM members, Information scientists: in kind contributions of technical advice.</p>		
<i>Please identify the main milestones in implementing this project.</i>	Milestone³	Expected time from	Suggested payment

³ These milestones and payments will be used to guide the preparation of the contract in the case of successful applications. However, they can be changed in contract negotiations and it is not guaranteed that payments can/will be made as requested. Payments are made on completion of the relevant milestones and submissions of a progress report.

<i>You should identify at least one milestone per payment and give the expected timing for these.</i>		start in months	
	Milestone 1: Signing of contract	0	30
	<i>Milestone 2: set-up of NZ cache</i>	3	20
	<i>Milestone 3: release of test version for ANZVH</i>	8	15
	Milestone 4: Completion of project and submission of Final Report	Max 11 months	12

PART 6: SUMMARY OF FUNDING REQUESTED AND OTHER CONTRIBUTIONS				
	TFBIS Programme Funding Requested (\$000 GST excl.)			
	YEAR 1	YEAR 2	YEAR 3	TOTAL
Personnel (wages/salaries)	27			27
Rental and Leasing of Equipment and Space				
Consultants and Contractors	50			50
Purchase of Equipment (including hardware and software)				
Travel and Accommodation				
Financial/Legal Expenses				
Training, such as production of system manuals and documentation to workshops and in person training sessions				
Promotion and Awareness				
Feedback				
Dissemination Costs				
Other 1 (specify)				
Other 2 (specify)				
TOTAL TFBIS funding	77			77

<i>Comment on any potential for competitive tendering on any of the items listed above.</i>	<i>Nil</i>
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	Other Contributions Pledged (\$000 GST excl.)			
	YEAR 1	YEAR 2	YEAR 3	TOTAL
Cash Contributions (list both organisation and amount)				

In Kind Contributions (list both organisation and amount)	<ul style="list-style-type: none"> • \$50K – Atlas of Living Australia • Approx.. \$15K - Atlas of Living Australia, CSIRO • Approx. \$3K – Royal Botanic Gardens, Melbourne 			68
TOTAL Other Contributions				68

<i>Note any conditions made to be able to access these other contributions</i>	<p>The ALA will match or exceed in-kind the funding received through this project.</p> <p>In addition, the ALA provides 2 weeks of time each year for enhancement of the AVH portal. This is dedicated time for AVH development and does not include the on-going support and development for the ALA infrastructure as a whole.</p> <p>The NZVH will be directly benefiting from c.\$AUS39M investment that has been made to develop the ALA infrastructure, at least \$AUS500,000 directly towards the development of the AVH.</p> <p>The NZVH will also benefit from the \$AUS1.8M/yr funding that is provided by the Australian Department of Science to maintain and develop the ALA infrastructure.</p>
<i>What other funding opportunities have been investigated – comment on why your organisation cannot fund the project.</i>	<p>The NZNHN is in the process of becoming an incorporated society in order that it can prepare grant applications and access other funding. It is not possible to access funding from member organisations for this work.</p>

PART 7: INDEPENDENT SUPPORTERS

Provide the details of two independent supporters of your project. They are to complete the "Independent Supporters Form" available on our website and at the end of this application form.

Independent Supporter 1	
Full Name	Dr Tim Martin
Designation	Senior Ecologist
Agency/Organisation	Wildland Consultants Ltd
Postal Address	PO Box 46 299, Herne Bay, Auckland 1011, New Zealand
Phone	0508 945369 Extn 321; Mobile: 021 443336
Email	tim.martin@wildlands.co.nz
Involvement in the project i.e end user, collaborator, will be/is part of the user group	End user

Independent Supporter 2	
Full Name	Carol West
Designation	Manager Terrestrial Ecosystems
Agency/Organisation	Department of Conservation
Postal Address	PO Box 10 420, Wellington 6143
Phone	+64 4 471 3258
Email	cwest@doc.govt.nz
Involvement in the project i.e end user, collaborator, will be/is part of the user group	End user

Independent Supporter 3	
Full Name	Geoff Ridley
Designation	Principal Scientist / Biology
Agency/Organisation	Environmental Protection Authority
Postal Address	Private Bag 63002, Wellington 6140
Phone	Tel +64 4 916 2426; DDI +64 4 474 5457
Email	Geoff.Ridley@epa.govt.nz
Involvement in the project i.e end user, collaborator, will be/is part of the user group	End user