

## The Mahinga Kai Exemplar Project Specification & Project Plan

*As specified in our funding application to the Tod Foundation of November 2014*

### Main goal of project

Develop and run a programme to deliver a package of educational resources in the context of outdoor classrooms constructed within naturally restored environments that acknowledge cultural heritage for the use of schools, universities and the general public.

Plan, design, implement and maintain planting and infrastructure (natural classroom areas, signage); organise events to promote the amenity and support and educate the community.

To educate children and young people about the importance of mahinga kai values for the health and well-being of the environment and community.

Key to this is allowing children and young people to play a central role in the creation of accessible educational resources that tell the stories of the land and the water; and to restore natural environment, improve water quality in the waterways, enhance biodiversity, and reinstate mahinga kai.

The aim is to increase awareness of the environmental, cultural and conservation values, and to bring whānau and community together to strengthen families and communities by taking responsibility and reconnecting with the land.

Initially the project will focus on the Mahinga Kai Exemplar site (Anzac Drive Reserve) with twelve outdoor classroom sites within the Reserve. It will then expand into other council reserve land that is adjacent to or within the Avon River-Ōtākaro red zone to create a city to sea amenity e.g., South New Brighton Reserves, Horseshoe Lake, and Avon Park.

### Expected Project Outcomes

1. Exceptional, well-used learning resources and outdoor classrooms
  - Researched, designed and created by young people
  - A legacy of understanding of mahinga kai ,cultural, environmental and social wellbeing values
2. Restored natural environments that tell the stories of the land and water
  - Surveyed, planted and maintained by young people
  - A legacy of turangawaewae and kaitiakitanga (responsibility and guardianship) for the land and water

3. Extension of the exemplar into other reserves and communities
  - Planned, promoted and engaged by young ambassadors
  - A legacy of outreach and interconnectedness with a growing number of schools and communities.

### **Project Action Plan: Key Steps**

1. Avon Ōtākaro Network (AvON) will build on its existing , positive collaborative partnerships with the local and regional councils, Te Rūnanga o Ngāi Tahu (TRoNT), Department of Conservation (DOC), Waterways Centre for Freshwater Management (WCFM), CRIs, community organisations, and local pre-schools, schools, youth groups and tertiary education institutions. We intend using a multi-party partnership agreement to build on the current Memorandum of Understanding between AvON, TRoNT and WCFM.
2. Develop an agreed Programme Plan with all parties to define the key actions, timelines, budgets and responsibilities to deliver the programme goals.
3. Survey Anzac Drive site to confirm existing assets, further information requirements (eg for hydrodynamic modelling of the waterways), and potential outdoor classroom sites and lessons.
4. Finalise and agree a site development plan including environmental restoration initiatives and location of outdoor classrooms.
5. Agree a programme of educational resource development with local schools and educational institutions including student research, resource acquisition, writing and design, peer review, alignment with curriculum requirements, and links with Ministry of Education, Christchurch City Council (CCC) environmental education programmes for schools, DOC education programmes and EnviroSchools.
6. Implement ongoing environmental restoration and maintenance including landscaping of outdoor classroom areas, signage set up, seating, pathways and Wi-Fi access points.
7. Creation of educational resources including classroom resources, signage, web development and interactive technology such as QR codes and augmented reality (AR) apps . NB: this will be an iterative process with the potential for resources to be developed and updated over time.
8. Implementation of outdoor classrooms including supporting infrastructure.
9. Agree consent for other appropriate CCC reserve sites for development in 2016.

10. Undertake a monitoring programme to learn from the Anzac Drive Reserve experience and implement a refined model at other appropriate CCC reserve sites in 2016.

A detailed plan is provided in the Appendix

### Start

Immediate upon acknowledgement of the success of the application: Initial planning began in November 2013 and the first planting days were undertaken in June 2014 and November 2014. To date, three projects by Geography 300 and 400 level students have been undertaken initiating survey work on Lake Kate Sheppard and work with Waitākiri School and Freeville School students on development of educational resources. A school community garden and orchard have been established at Anzac Drive off Chimera Crescent (“Matariki Gardens”).

The Partnership Agreement is currently being progressed and meetings with partners and planning for the 2015 school year are underway. If we are successful with our Todd Foundation funding application we would take the opportunity to give the project a much boosted impetus and very significantly ramp up these initiatives.

### Consents

CCC Consent to develop Anzac Drive Reserve in this way: in-principle consent was granted in June 2014 with CCC Park Ranger staff assisting with site preparation, planting and maintenance with the subsequent planting days. A licence to use and maintain a small part of the land for the school community garden plot for an interim 2 year period was also signed. A formal detailed consent for the development of Anzac Drive Reserve is currently being negotiated.

CCC Consent to develop other CCC reserves alongside or within the residential red zone lands will be negotiated in 2015.

CCC has indicated that it is keen to explore these proposals.

Resource Management Consent: If data modelling of the hydrodynamics of Lake Kate Sheppard indicates the need to dredge or re-profile the lake to restore its ecological value (eg as an inanga spawning site), consents under the Resource Management Act may be needed. Once the results of the data modelling are available we will discuss the implications with the consenting agencies (Environment Canterbury and CCC).

New Zealand Transport Agency (NZTA) Approval: would be required for any environmental restoration work that may be impacted by the regulations relating to state highways. We are in consultation with NZTA regarding our plans to ensure that there are no issues.

Canterbury Earthquake Recovery Authority (CERA) and Government as adjacent residential red zone land owners kept informed. We meet regularly with CERA red zone operations and policy teams to keep them informed of developments to ensure they have no issues with our plans.

### How Young People will be engaged

Children and young people will be engaged in designing, implementing and maintaining the programme resources, environments and sites, particularly through their school and university curricula, family activities, and youth club activities, as well as being involved in planting days, events and general recreation.

Our initial planning has suggested eleven outdoor classrooms ideas (see below more detail) which are intended to be adaptable to accommodate as many curriculum areas as possible - science, technology, arts, numeracy, literacy, Enviroschools, IT, Te Reo and tikanga, social science, health and physical education.

By designing interactive interpretation boards which incorporate QR codes and sensor/augmented reality apps, the aim is that every time anyone does a project they use and add to the resources at that particular outdoor classroom site's sensor, or to their own individual school or class module which can be used for successive years learning. Additionally, we envision them being involved in hands-on, exploratory learning activities such as harakeke (flax) weaving, water quality testing, animal and plant monitoring, as well as engaging with national experts and celebrities. These programmes will develop over time as teachers become more familiar with the subject matter and the area.

The outdoor classrooms we have proposed as a starting point are:

1. Mahinga kai: Ōruapaeroa – a classroom dedicated to local Māori history and the meaning of mahinga kai – Ōruapaeroa was known as the place where strong east winds blew in from the sea, and is thought to have been an important mahinga kai nohoanga (seasonal settlement)
2. Food: gardens and orchards – community food resources and learning about aspects of food/plant growing, especially in terms of mahinga kai values
3. Fibre: Harakeke (flax) - weaving and natural dying techniques and cultural history
4. Women's Suffrage: Kate Sheppard – history of women's suffrage/women's rights/temperance
5. Fish: inanga, tuna and others – migration and passage, spawning sites, species identification, ecology, as well as their value to mahinga kai as customary harvest
6. Waterways: water quantity and quality, tides, flows, salinity, surface water/groundwater interaction, hydrological cycle, drainage, water testing.
7. Birds: of bush, garden, waterways – an opportunity to create environments and habitats to encourage birds back to the area, learn about native birds, migratory birds, pest species and their value to mahinga kai

8. Plants: indigenous wet plain vegetation – learn about what can be planted here, what would encourage fish, birds, lizards and insects back to the area, what used to be here historically – such as dune ecosystems, harakeke and raupo wetlands, manuka stands, kahikatea forests, and also how riparian vegetation can help filter and clean waterways
9. Earthquakes – when Rūamoko awakens – obviously a significant topic in terms of Christchurch, particularly in the east – many opportunities for learning applications here.
10. Anzac: the birth of nationhood – a large part of New Zealand history and identity, which can be viewed from many cultural perspectives
11. Wetlands: the kidneys of the city – an excellent opportunity for everyone to learn how important wetlands are to ecosystems and water quality as they function to cleanse contaminants out of waterways.

By having them so centrally involved we will engender within the young a sense of awareness, ownership and pride in the sites and resources which will reach out to their families and their communities beyond. There is enormous legacy value in this that will permeate inter-generationally.

### Similar Projects

The AvON vision is to extend the restoration of natural habitat into the Avon River-Ōtākaro residential red zone (RRZ) as much as central government decisions permit. Within this, many project proposals overlap - ie Waitākiri Sanctuary, Eden NZ, stormwater to wetlands, eastern cycle and walkway network, natural playground network - all have an element of natural restoration or education as their main focus. However these have been developed as distinct concepts and have been designed to complement, not duplicate the goals of the Mahinga Kai Exemplar project. Moreover these are based in the RRZ and require approval of central government to proceed whereas CCC consent for use of adjacent reserves for this purpose can be negotiated immediately

### Monitoring & Measurement

- a. Number of outdoor classrooms and resources designed, implemented, used and monitored at Anzac Drive reserve;
- b. Numbers of children, young people and schools involved;
- c. Teacher assessment of children's and young people's improved understanding of mahinga kai values;
- d. New plants in ground and sustainably maintained;
- e. Enhancement of water quality as indicated by monitoring;
- f. Increased biodiversity as indicated by surveys of flora and fauna within the site;
- g. Numbers of visitors to site and attendance at events/workshops;
- h. Numbers of other CCC reserve sites extended into;
- i. Numbers of additional children, young people, schools and groups participating at other sites and assessment of measures (a) to (f) above for each of the additional sites

## Collaboration

Te Rūnanga o Ngāi Tahu and Waterways Centre for Freshwater Management with whom we have a formal agreement to work with in regard to a catchment wide mahinga kai project. In addition we are working closely with local schools - Waitākiri School, Freeville School, Linwood College, Shirley Boys High School and we are intending to expand this to other schools in the area. University students from University of Canterbury and Lincoln University are also involved in our projects. Other partners include: CCC, Environment Canterbury (Natural Environment Recovery Programme), DOC, Landcare Research Manaaki Whenua, Food Resilience Network, Scion, Working Waters Trust, Travis Wetland Trust and Dallington Scout Group. We intend creating a multi-party Partnership Agreement with all of the above for this project.

Kathryn Bates & Evan Smith  
November 2014

## Mahinga Kai Exemplar Project – Outdoor classrooms for story lessons of the land and water

Action		Component	Timeline	Budget	Lead Responsibility	Incl Student*
1. Establish Partnership Team	Partnership Agreement	1.1 Identify key partners	Nearly complete	AvON Stakeholder	AvON	-
		1.2 Create Partnership Agreement	By 31 March 2015	Engagement and MKE		
		1.3 Secure signatures to Partnership Agreement	By 31 March 2015	project contracts		
2. Agree Programme Plan		2.1 Develop and agree plan with partners	By 14 February 2015	AvON MKE project budget	AvON	-
3. Survey Anzac Drive Reserve Site	3.1 Lesson/Classroom Sites	3.1.1 Finalise identification of story lessons and outdoor classroom sites	By End Term 1	MKE Coordination	MKE Coordination contractors with schools	✓ 1° - 3°
		3.2 Cultural and Heritage	By End Term 1	In Kind	Ngāi Tahu	✓ 1° - 3°
	3.2.1 Undertake cultural assessment	To Be Identified				
	3.3 Hydrodynamics and hydrology	3.3.1 Lake Kate Sheppard: Bathymetric Survey	Complete	In kind	UC (GEOG, CFM, ENG)	✓ 3° only
		3.3.2 Lake Kate Sheppard: Flow analysis	Summer Scholarship 2014/15	AvON 2014 projects + UC + in kind	UC (CFM, ENG)	✓ 3° only
		3.3.3 Lake Kate Sheppard: Culvert and gate operation			By 31 March 2015	In kind
		3.3.4 Lake Kate Sheppard: Hydrodynamic modelling	By 31 Aug 2015	In kind	CFM, EwB	✓ 3° only
		3.3.5 Extend Hydrodynamic work to adjacent waterways	By 31 March 2015	In kind	UC (GEOG, CFM, ENG)	✓ 3° only
		3.3.6 Identify any stormwater discharge points	On-going	In kind	UC (GEOG, CFM, BIOL), WWT, NIWA, EOS	✓ 1° - 3°
		3.3.7 Undertake water quality monitoring	Underway, interim results by 30 Jun 2015	In kind, MKE Coordination	UC (CFM, BIOL), WWT, EOS, AEL	✓ 1° - 3°
	3.4 Inanga Spawning					
	3.4.1 Survey Inanga populations					
	3.4.2 Assess passage through waterways					
	3.4.3 Assess likely spawning sites					
	3.5 Other Fish	3.5.1 Survey other fish populations	By 30 Jun 2015	In kind, MKE Coordination	UC (CFM, BIOL), WWT, EOS, AEL	✓ 1° - 3°
		3.5.2 Assess passage through waterways				
		3.5.3 Assess food and habitat				
		3.5.4 Assess predation, competition				
	3.6 Birds	3.6.1 Survey bird populations	By 31 May 2015	In kind, MKE Coordination	UC (BIOL), CCC Park Rangers	✓ 1° - 3°
		3.6.2 Assess food and habitat				
		3.6.3 Assess predation, competition				
	3.7 Other Fauna	3.7.1 Survey invertberate populations	By 30 Jun 2015	In kind, MKE Coordination	UC (BIOL), Landcare Research	✓ 1° - 3°
		3.7.2 Survey other fauna populations				
3.7.3 Assess food and habitat						
3.7.4 Assess predation, competition						
3.8 Vegetation	3.8.1 Survey aquatic vegetation	By 30 April 2015	In kind, MKE Coordination	UC (BIOL, FOR), SCION	✓ 1° - 3°	
	3.8.2 Survey water margin (intertidal) vegetation					
	3.8.3 Survey wetland vegetation					
	3.8.4 Survey dry land vegetation					
4. Finalise agreed Site Development and Management Plans	4.1 Environmental Restoration strategies	4.1.1 SW Site (planting, integration with lake)	Interim by end Term 1; Final by end Term 2	In kind, MKE Coordination	DOC, CCC	✓ 1° - 3°
		4.1.2 NW Site (clearance, transitional, planting)				
		4.1.3 SE Site (planting)	By end Term 3	In kind, MKE Coordination	DOC, CCC	✓ 1° - 3°
		4.1.4 Lake Kate Sheppard (edge profiling and planting, dredging, boundary controls)	By end Term 3	In kind, MKE Coordination	DOC, CCC, LU	✓ 3° only
		4.1.5 Matariki and NE Site (planting)	By end Term 2	In kind, MKE Coordination	DOC, CCC, LU	✓ 1° - 3°
	4.2 Outdoor classroom locations and landscaping	4.2.1 Finalise classroom locations	By end Term 1	In kind, MKE Coordination and Consultation (LA)	LU Landscape Architecture, Align	✓ 1° - 3°
4.2.2 Classroom landscape plans including signage and seating		By end Term 2				
4.3 Supporting Infrastructure	4.3.1 Car Parking (incl. NZTA approval)					

		4.3.2 Pathways	By end Term 3	in kind, MKE Coordination and Consultation (LA)	LU Landscape Architecture, Align	✓ 3° only		
		4.3.3 Bridges and jetties				✓ 1° - 3°		
		4.3.4 BBQ/Picnic area (SE site)						
		4.3.5 Sculpture and art work						
		4.3.6 Natural playground						
	4.4 Secure Full CCC approval	4.4.1 Development Plan approval	Progressive, complete by end 2015	AvON MKE project budget	AvON	-		
		4.4.2 Management Plan approval						
5. Agree Programme of Educational Resource Development	5.1 Development Sequence	5.1.1 Agree priorities for story lesson development	By end of Term 1, 1st priorities by 1 March	In kind, MKE Coordination	MKE Coordination	-		
	5.2 Resource Framework	5.2.1 Agree multilayered framework that accommodates all academic levels from pre-school to primary, secondary, tertiary and general public.		By 31 May 2015	In kind, MKE Coordination and Consultation (IT)	MKE Coordination	-	
		5.2.2 Identify and specify resource platforms that allow for multi-layering; augmented-reality, web-based and real-world interactivity; cumulative inquiry-based resource development over time; and sustainable, low-maintenance vandal-proof physical resources.						
	5.3 Alignment with existing curricula and programmes	5.3.1 Identify alignment with 1° - 3° curricula for each story lesson		By end Term 2	In kind, MKE Coordination	MKE Coordination	-	
		5.3.2 Explore and identify alignment with Environmental LEOTC, DOC and EnviroSchool programmes						
		5.3.3 Identify lead schools for each story lesson						
		5.3.4 Identify resource validation methods						
	5.4 Resource development	5.4.1 Identify access to research resources required including to expertise within the partnership		By end Term 2	In kind, MKE Coordination	MKE Coordination	-	
5.4.2 Identify any resource assets that need to be acquired								
6. Implement Environmental Restoration and Ongoing Maintenance	6.1 Site Clearance	6.1.1 NW Site - retaining some shelter/roosting trees		By 30/06/2015	MKE (or CCC) Clearance	CCC Park Rangers	✓ 2° - 3°	
		6.1.2 SE Site		By 30/06/2015	MKE Infrastructure	CCC Park Rangers	-	
	6.2 Landscaping	6.2.1 SE Site - for picnic and area		By 30/06/2015	MKE Infrastructure	CCC Park Rangers	-	
	6.3 Earthworks	6.3.1 Lake Kate Sheppard edge profile and dredging		By 30/09/2015	MKE Infrastructure	CCC Park Rangers	-	
	6.4 Infrastructure	6.4.1 Bridge Matariki Tributary		By 30/06/2015	MKE Infrastructure	CCC Park Rangers	-	
		6.4 Planting and Maintenance	6.4.1 SW Site		By 30/09/2015	MKE Planting	CCC Park Rangers / DOC	✓ 1° - 3°
			6.4.2 Matariki and NE Site		By 30/09/2015			
			6.4.3 NW Site - must follow 6.1.1		By 30/11/2015			
6.4.4 SE Site - must follow 6.1.2, 6.2.1 and 6.3.1			By 30/06/2016					
6.5 Constructed Wetlands	6.5.1 Intercept any stormwater discharges with constructed wetland where possible		By 30/11/2015	MKE Planting and Infrastructure	CCC Park Rangers / CFM	✓ 1° - 3°		
7. Creation and Implementation of Educational Resources	7.1 Research	7.1-7.3 Over multiple layers from pre-school to primary, secondary, tertiary and general public.	Progressively by 30/06/2016	In kind, MKE Coordination	MKE Coordination	✓ 1° - 3°		
	7.2 Writing							
	7.3 Design							
	7.4 Implementation	7.4.1 On-line Platform development		Progressively by 30/09/2016	MKE Consultation (IT)	MKE Coordination	✓ 2° - 3°	
		7.4.2 On-line Resources			In kind, MKE Coordination			
7.4.3 Physical signage and interactive resources		MKE Assets						
7.4.4 Augmented Reality App development		MKE Consultation (IT)						
8. Implement Outdoor Classrooms	8.1 Physical set up	8.1.1 Landscaping works to support classrooms		Progressively by				
		8.1.2 Infrastructure to support classrooms: pathways,						

		jetties, seating, etc	Progressively by 30/09/2016	MKE Infrastructure	CCC Park Rangers	-
		8.1.3 Installation of physical resources including signage, wifi points				
9. Negotiate CCC Consent for other sites		9.1 Identify other appropriate sites / part-sites and partner schools	By 30/09/2015	AvON Stakeholder Engagement and MKE project contracts	AvON	-
		9.2 Negotiate consent				
		9.3 Secure formal consent				
10. Monitor Anzac Drive Programme and Implement refined model (Steps 1-10 above) for Other Sites	9.1 Monitor Anzac Drive site	9.1.1 Review what works well to repeat	From January 2015	In kind, MKE Coordination	AvON	-
		9.1.2 Review what doesn't work well to improve				
		9.1.3 Monitor participation by numbers of children, young people, schools.				
		9.1.4 Monitor utilisation of classroom sites				
		9.1.5 Evaluate programme through student assessment and teacher feedback				
9.2 Implement Step 2 above	9.2.1 Agree Programme Plan for second identified site based on the results of monitoring	By 30/11/2015	In kind, MKE Coordination	AvON	-	

**Notes:**

\* "Incl Student" = ✓ including student participation at 1° (primary), 2° (secondary), and/or 3° (tertiary) level

AvON = Avon- Ōtākaro Network

MKE = Mahinga Kai Exemplar

UC = University of Canterbury

CFM = Waterways Centre for Freshwater Management

GEOG = Geography Dept

BIOL = Biology Dept

ENG = School of Engineering

EwB = Engineers without Borders

WWT = Working Waters Trust

EOS = EOS Ecology Ltd

AEL = Aquatic Ecology Ltd

CCC = Christchurch City Council

DOC = Dept of Conservation

LU = Lincoln University

LA = Landscape Architecture

IT = Information Technology

NIWA = National Institute of Water and Atmospheric Research