## EcoMatters Trust - Auckland Sustainable Development Centre

The Centre is assisting the EcoMatters Environment Trust (EcoMatters formed in 2002) in planning for the development and operation of the Auckland Sustainable Development Centre (ASDC). It is housed in the 'EcoMatters House' and 'Sustainable Living Centre' at Olympic Park New Lynn, to create a centre of excellence fostering the sustainable management of water in the Auckland region.

The Centre is assisting in generating: new technologies; the implementation of demonstration low impact devices; water conservation and sustainability research; education and training materials; ongoing monitoring; and a community uptake monitoring programme. The ASDC will translate statements of principles into action and display LID and environmental improvement projects.

## Asset Management Plan Review

Review of an asset management plan for a major infrastructure service provider, bringing together plans for a number of smaller providers into a regionally integrated overall plan.

Outcome: the client can target process improvement resources into those areas which will have the most impact in the future, improving risk management and optimising investment decisions.

## Investment Prioritisation Tool

Development of an investment prioritisation tool enabling an infrastructure provider to target investment in the assets with the optimal return on investment.

Outcome: the client can make investment decisions with confidence and measure the effectiveness of their investments relative to predicted performance outcomes.

## Social Housing Economic Review

Social Housing faces a rapidly shifting social and demographic environment. By assessing existing tactical plans, measuring housing distribution, and benchmarking both against global best practices, the Centre is exploring more efficient deployment of the Crown's second largest asset, a property portfolio valued at over $14 billion. Offering expertise in capital management, affordable housing development and urban planning for sustainability, recommendations are being produced based in sound academic research, practical application and social responsibility.

The Centre is assisting Housing New Zealand Corporation with a range of projects at the current time.

As New Zealand faces population growth and its attendant challenges, the Centre is positioned to help government leaders and place makers enhance the quality of infrastructure and the built environment.

## Future Focus

Building on success to date in the core strengths of water, wastewater, stormwater and environmental management, focusing on asset management, strategy and planning, investment prioritisation, procurement and contract management approaches, the Centre is actively identifying research-based opportunities that have the potential for implementation.

Looking to the future and drawing on our pool of expertise within the Faculty of Engineering and the University's international networks, the Centre is able to provide research and thought leadership into infrastructure decision-making and masterplanning which furthers New Zealand's quest for economic development, international competitiveness and vibrant outward-facing global cities.

The formation of the new Auckland Council brings together a large area of infrastructure responsibility affecting services to more than 1.3 million New Zealanders. The Centre for Infrastructure Research will be working with the Auckland Council in several areas of infrastructure investment.

Infrastructure project procurement and delivery mechanisms, such as alliancing, are developing in New Zealand. In collaboration with colleagues from the Department of Civil and Environmental Engineering's Transport and research areas of transportation and construction management, the Centre will be studying recently-initiated infrastructure projects using a new approach to alliancing to ensure that clients and service providers learn from recent innovations.

*"As a major asset-based service provider, Watercare is delighted to support this initiative to bring together leaders in the various disciplines required to ensure good infrastructure decisions are made."*

***Raveen Jaduram,*** *Chief Operating Officer, Watercare Services Ltd.*

## Leadership of The Centre

**Professor Bruce Melville**
**BE, PhD, FRSNZ, FIPENZ**

Professor Bruce Melville is Head of the Department of Civil and Environmental Engineering within the Faculty of Engineering at The University of Auckland. His academic career spans 29 years as well as 6 years previously with civil engineering consultants in New Zealand and overseas in most aspects of water resources engineering.

He is Associate-Editor of the *(ASCE) Journal of Hydraulic Engineering*, on local and international research committees, a Fellow of the Institute of Professional Engineers New Zealand, a Fellow of the Royal Society of New Zealand, a Member of the American Society of Civil Engineers and received the 2002 ASCE Hydraulic Structures Medal and the 2007 R.J Scott Medal from RSNZ.

**Jim Bentley, Director**
**BSc, PhD**

Dr Bentley is the inaugural Director of the Centre for Infrastructure Research. Jim is also Chief Executive of Synergine Group Limited and was previously Chief Executive of Metrowater.

Jim has extensive international experience with a successful track record in infrastructure and utility leadership in operational, commercial and strategic management. He has led the development and management of infrastructure as a client, a contractor, a consultant and an operator, from public and private sectors and has particular experience in the use of public private partnerships and alliancing.

Jim is currently leading an alliance of NZTA , Fletcher, Beca, Higgins and Kapiti Coast District Council on the MacKays to Peka Peka (M2PP) Expressway project, under the Government's *'Roads of National Significance'* programme.

THE UNIVERSITY OF AUCKLAND
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THE UNIVERSITY OF AUCKLAND
FACULTY OF ENGINEERING

The University of Auckland Faculty of Engineering

# Centre for Infrastructure Research

# Centre for Infrastructure Research

The Centre for Infrastructure Research sits under the Faculty of Engineering's Infrastructure and Environment Research Theme. The Infrastructure and Environment Theme brings together expertise in topics as diverse as sustainability assessment, smart building design, optimisation of service delivery, project management and earthquake resilient design with a common goal of delivering high performing infrastructure while minimising its impact on the environment.

The Centre will use a multi-disciplinary approach to support government and industry with infrastructure research and evidence-based decision-making.

*"The complexity and skill required to deliver infrastructure has increased with ever growing standards and demands on our society's infrastructure. We are committed to preparing our industry leaders for that challenge."*

***Stuart McCutcheon,*** *Vice-Chancellor, The University of Auckland*

*"Despite its acceptance into common parlance, infrastructure is not always well understood nor easily delivered. The Centre will help practitioners and policy makers make wiser decisions for better infrastructure provision."*

***Professor Michael Davies,*** *Dean, Faculty of Engineering, The University of Auckland*

*"Governments world-wide have understood the importance of infrastructure to create economic development but not everyone understands the dimensions and the range of specialist inputs required for good infrastructure. Best practice is always informed by quality research."*

***Professor Pierre Quenneville,*** *incoming Head of Department, Civil and Environmental Engineering*

## Thought-leadership in infrastructure decision-making

The University is, and should be, the thought leader in areas of infrastructure design, decision-making and delivery of enhanced infrastructure. That is the focus for the Centre for Infrastructure Research.

## Ideas underpinning the Centre

An inclusive multi-disciplinary approach that brings together all areas of expertise, including engineering, planning and economics, to produce innovative infrastructure solutions that can be applied proficiently for robust economic growth.

Thought leadership that ensures that infrastructure decision-making is in line with international best practice, improving our investment in future infrastructure and enhancing its performance.

An integrated approach to the planning, creation and management of infrastructure across New Zealand.

# Bringing together a range of disciplines

The University has a vision to assemble and empower all disciplines involved in the conception, decision-making, delivery and management of cost-effective, efficient infrastructure.

## Inception of the Centre

The Centre for Infrastructure Research at The University of Auckland was initially conceived as a collaboration point for leaders from industry, government and academia, bringing together a range of disciplines including engineering, planning and economics.It grew out of discussions between Professor Michael Davies, Dean of the Faculty of Engineering; Professor Bruce Melville, Head of the Department of Civil and Environmental Engineering; Phil Warbrick, Chair of the Industry Advisory Board of the Department of Civil and Environmental Engineering, and Dr Jim Bentley (then Chief Executive Officer of Metrowater – Auckland City's water and wastewater utility company).The Centre was thus established to improve infrastructure decision making and management through research and executive education, drawing on the expertise in the Faculty of Engineering and the University's international networks to ensure the infrastructure of tomorrow will meet the challenges of tomorrow.

## Functions of the Centre

The University of Auckland's Faculty of Engineering recognises the unique role it can occupy in the Government's plan for infrastructure development within New Zealand, and has created the Centre for Infrastructure Research within the Department of Civil and Environmental Engineering under the umbrella of the Infrastructure and Environment Research Theme.

The functions of the centre are as follows:

### Research

- Thought leadership.
- Innovative research.
- Market-led research.

### Knowledge Creation

- Integrated multi-disciplinary thinking.
- Strengthened connections between government and infrastructure research.
- Aligned academic, private, and public sector thinking.

### Dissemination of Knowledge

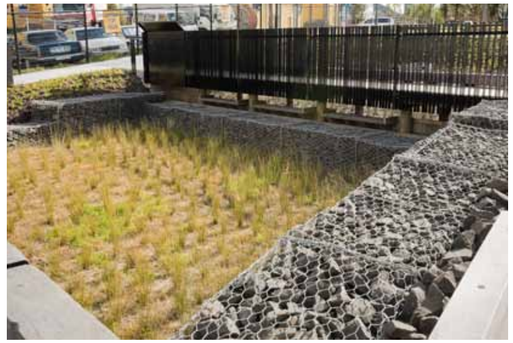
- Publication.
- Conferencing.
- Executive education.
- Policy development.


# Projects

## Low Impact Design (LID) code of practice

A Low Impact Design (LID) code of practice was commissioned by Waitakere City Council to document best practice guidance in LID stormwater management. The Council needed to understand the implications of adopting, or of transforming, international best practice, both in flooding and qualitative water quality terms, for the wider receiving environment within the Waitakere context and potentially greater Auckland.

The outcome was a living document describing watershed management techniques that are completely scalable for other urban/emerging urban centres, in both greenfields and urban retrofit contexts, covering: LID infrastructural solutions; stormwater management; deep water aquifer recharging and sustainable development research and community education; demonstration projects in the Northern Strategic Growth Area (NorSGA) area; future monitoring and research programmes.



## Project Twin Streams – Integrated Catchment Management Plan

Project Twin Streams (PTS) commenced in 2002 with the objective of restoring the riparian margins of over 28 kilometres of streams in the urban reaches of Waitakere City and to manage water quality within the catchment and cumulatively within the receiving environment of the Upper Waitemata Harbour.

The Centre is contributing to practical strategies and intervention techniques for the environmental restoration and enhancement of the PTS and Avondale Stream catchments and studying the potential for re-injecting stormwater into the underground aquifer network (aquifer recharge). This includes identifying suitable locations for aquifer recharge, creating scenarios for various contaminant flows and modeling the effect of flows on river health.

The Centre has provided the lead hydro-geology and LID experts in this project, doing research that will underpin a scientifically robust business case for an Integrated Water Resources Management Plan for the long term management of the PTS catchment.