



Structural and civil engineering design, project planning and management

- **hands-on structural design, primarily for commercial and residential buildings, including seismic strengthening**
- **leadership of infrastructural management teams in the water and electricity supply industries**
- **contractor experience in the construction of medium- and large-scale projects.**

Nigel Harwood is the director and principal consultant of Nigel Harwood Engineering Consultant Limited (NHECL).

Nigel has over 40 years of diverse experience in a range of engineering-related activities, including structural and civil design, contractor experience in the construction of medium and large-scale projects, and leadership of infrastructural management teams in the water and electricity supply industries.

Since 2011 Nigel's work direction has been mainly structural and civil design works of a range of small-scale structures. Prior to this, he spent twenty years as a leader of asset management teams in Dunedin and Central Otago.

Nigel's substantial experience includes the production of strategic plans and major capital works programmes. The largest of these was the now-completed \$110 million Dunedin water upgrade strategy, involving all aspects of the water supply from catchments to customers' boundaries. It resulted in the water treatment grade improving from Grade 'E' to Grade 'A'.

His experience in considering water and electrical supply issues allows Nigel to determine whether capital works or

enhanced maintenance programmes are economically justified.

The start of any project is where the least 'solid' information exists and risks (safety, commercial, RMA, construction, time, cost and quality) are greatest. Nigel has extensive experience in working with RMA planners and lawyers to gain designations and resource consents in an effective manner.

After the Christchurch earthquakes in September 2010 and February 2011, Nigel conducted building assessments and barricade positioning as a volunteer chartered engineer.

Nigel maintains current knowledge in his fields of expertise and belongs to the following professional bodies:

ENZ	Engineering New Zealand (formerly IPENZ, Institution of Professional Engineers New Zealand)
ESR	Engineers for Social Responsibility
NZSEE	NZ Society for Earthquake Engineering
NZTDS	New Zealand Timber Design Society
Sesoc	NZ Structural Engineering Society
HERA	Heavy Engineering Research Association.



Assisting in the aftermath of the 4th of September, 2010 Christchurch earthquake. Pictured above third from the left, Nigel Harwood with Police and Civil Defence representatives.

Structural and civil design

- the provision of prompt small scale structural and civil designs, including peer reviews using modern techniques.

Communication with stakeholders

- advertising campaigns and interpretative panels for heritage sites
- facilitating meetings for public buy-in of new projects.

Planning – operational and strategic

- production of strategic plans and major capital works programmes.

Project feasibility analysis

- completing engineering risk analysis to enable economic evaluation of a project (or competing projects).

Project management (including project planning, capital project planning and RMA project management)

- provision of advice from the inception stage, where the project risks are greatest and most critical information is unknown or unreliable
- acting as the client representative at all project stages, with a preference for the earliest possible engagement for optimum benefit to the client
- planning clearly and thoughtfully to gain appropriate Resource Management Act (RMA) consents or designations, which pays dividends later on in terms of project timeliness and cost.

Risk analysis

- assessing project feasibility through risk assessment using probabilistic techniques.

Papers and presentations by Nigel Harwood

SO YOU WANT TO BE A VOLUNTEER AFTER AN EARTHQUAKE? – THE UNCUT VERSION

By Nigel Harwood, www.ipenz.org.nz

VOLUNTEERING AFTER AN EARTHQUAKE

Engineering Insight, Vol 12/4, July/August 2011.

BOIL WATER NOTICES – A CASE STUDY OF A MICROBIOLOGICAL CONTAMINATION INCIDENT IN A WATER SUPPLY

Presented at the 1997 New Zealand Water and Wastes Association Annual Conference.

ESTIMATING PIPE RETICULATION LOSSES IN A MUNICIPAL WATER SUPPLY SYSTEM

Paper No. 9508, *Department of Finance and Qualitative Analysis*, presented in 1995 at the Department of Finance and Qualitative Analysis.

CAUSTIC SODA CONTAMINATION OF A WATER SUPPLY

Presented at the Water 2000 conference.

ESTIMATING PIPE RETICULATION LOSSES IN A MUNICIPAL WATER SUPPLY SYSTEM

Published in the *Journal of the Chartered Institution of Water and Environmental Management*, UK, Volume 14, Number 4, August 2000.

LEAK DETENTION – THEORY AND PRACTICE A COMPARISON BETWEEN ANGLIAN WATER AND THE DUNEDIN CITY COUNCIL WATER DEPARTMENT

Presented at the 2000 New Zealand Water and Wastes Association Annual Conference.

BACKFLOW PREVENTION – A CASE STUDY OF A BACKFLOW INCIDENT IN A WATER SUPPLY

Presented at the 2000 New Zealand Water and Wastes Association Annual Conference.