# CURRICULUM VITAE

***Jeremy Eldridge***



For two decades Jeremy Eldridge has provided technical direction and leadership for a series of complex capital projects, both large and small. These projects have been primarily in the fields of solid waste management and dams. With more than 30 years of civil engineering experience he has worked in five countries including; the United Kingdom, Honduras, Pakistan, Hong Kong and New Zealand. In addition, he has worked for four international consultants (Halcrow, Ove Arup, Binnie Consultants Ltd, 1981-1996 and Tonkin + Taylor between 2005-2008), nine years for an international solid waste management companies in Hong Kong (Swire BFI/SITA 1996-2005, Swire Waste Management ltd 2015-2016), and for four years with Genesis Energy (2011 – 2015).

Jeremy Eldridge was the Engineering Manager for Swire BFI/SITA in Hong Kong between 1996 and 2005. In this role he was responsible for the development of tender designs, design and the implementation of these designs for large solid waste management contracts for the Government of Hong Kong. In addition, he participated in many detailed technical due diligence assessments for various projects in China, Malaysia and Australia as well as participating in the design of landfills in New Zealand. In 2015 he joined Swire Waste Management ltd as Design Manager for developing solid waste management contracts in Hong Kong.

**Qualification**

MSC, DIC Soil Mechanics and Engineering Seismology, 1989
BSc (Hons), Civil Engineering, 1981

**Professional Affiliations**

Member, Institution of Civil Engineers, 1985
Member, Chartered Institution of Water and Environmental Management, 1991 to 2014
Member, Hong Kong Institution of Engineers, 1991 –present
Fellow, Institution of Civil Engineers, 2002 – present
Member, Institution of Professional Engineers New Zealand (IPENZ), 2010
Fellow, Institution of Professional Engineers New Zealand (IPENZ), 2015.

ICE NZ committee member since 2005
UCQC Board member since 2012 – 2015 Establishment Board, Interim Board, Transition Board and permanent Board.
NZSOLD Management committee since 2011 - 2015. In 2013 he was a member of the subcommittee managing the successful ANCOLD / NZSOLD conference in Rotorua and he led the assessment and organisation of the technical programme for the conference.

## *Employment Record*

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| **Swire Waste Management ltd**<br>**2015-2016** | *Design Manager*<br>Developing outline concepts and designs for landfill developments in Hong Kong as well as participating in Transfer Station Follow-On Contract tender submissions. |
| **Genesis Energy**<br>**2011 To 2015** | *Principal Civil Engineer and initially Hydro development specialist*<br>Responsibilities across many of the company's significant civil structures. The projects included providing the technical direction for the NZ$140 million rehabilitation of the Tekapo Hydroelectric canal. |
| **Tonkin + Taylor Ltd**<br>**2005 To 2011** | *Senior Water Resources Consultant*<br>Project Director and project manager for many hydroelectric and dam projects in New Zealand including from initial scoping studies, feasibility, detailed design, construction, annual safety assessments, comprehensive safety reviews and re-consenting of existing schemes. |
| **Swire BFI/SITA Waste Services**<br>**1996 To 2005** | *Engineering Manager*<br>Directing the design of works for Swire SITA's landfill developments, including both undertaking design aspects and managing the designs being undertaken by consultants. |
| **Binnie Consultants Ltd**<br>**1990 To 1996** | *Chief Engineer*<br>Undertook a number of large and small consultancy projects across the fields of bulk raw water supply from china, airport reclamation, large solid waste landfills and other geotechnical projects. |
| **Ove Arup & Partners**<br>**1989 To 1990** | *Engineer*<br>Participated in a number of water related projects for small dams and flood protection. |
| **Sir William Halcrow & Partners**<br>**1981 To 1988** | *Engineer*<br>Contributed to a wide range of projects including; mathematical modelling of coastal regimes, catchment drainage and development in Honduras, construction of motorways around London, large surface water pumping stations for Docklands in London and irrigation projects in Pakistan. |
| **Binnie & Partners**<br>**1979 To 1981** | *Undergraduate*<br>Involved with the preparation of data for the two dimensional finite element model of the Lima Aquifer water resource/extraction model. Also worked on the UK Severn River barrage study |
| **Weirs Pumps Limited, UK**<br>**1978 To 1979** | *Trainee*<br>Trained in fitting, turning and fabrication. Spent two months with the field services department, fitting on naval ships, power stations, Raivens Craig Steel Works, Research and Development. |
| **Binnie & Partners, UK**<br>**1976 To 1977** | *Trainee, Computer Department*<br>Wrote a computer program for one dimensional model of the conduction of heat through concrete, based on Newton's theory. Wrote a computer program for the rate of solution of gypsum when it occurs in the fill material of an embankment. |

## *Project Descriptions*

### *Solid Waste Management*

**NENT Landfills Extension**
**6/2015 – 4/2016**
**9 Month**

*Design Manager Swire Waste Management Ltd*
Providing the technical direction for the Prequalification for the NENT Landfill Extension contract. This was followed by investigations for the tender design.

**Macau Fly ash landfill remediation, Macau**
**12/2010 – 12/2010**
**0.5 Month**

*Consultant Tonkin + Taylor*
Provided advice to Swire SITA for the potential remediation of an incinerator ash landfill in Macau, owned and operated by the Macau Government.

**TKO Landfill - Baffle channel review, Hong Kong**
**7/2008 – 10/2008**
**0.5 Months**

*Technical advisor Tonkin + Taylor*
Review for Swire SITA of the performance of baffle channels on a 100m high landfill following 10years of continuous performance and 10years of ongoing landfill settlement.

**Matata Lagoon Restoration New Zealand**
**7/2008 – 10/2008**
**2 Month**

*Consultant Tonkin + Taylor*
Presentation for Whakatane District Council to the Environment Court regarding the state and possible future behaviour of a small, now disused, waste dump in dune sand close to the foreshore.

**WENT Landfill – Phase 6 & 7 design, Hong Kong**
**4/2008 – 7/2008**
**1 Month**

*Engineer Tonkin +Taylor*
Responsible for the formation design and HDPE liner design for a further two phases of the WENT strategic landfill for Swire SITA.

**Kate Valley Landfill sludge disposal, New Zealand**
**9/2007 – 9/2007**
**1 Month**

*Engineer Tonkin + Taylor*
Advice on the disposal of sewerage sludge at the Kate Valley municipal solid waste landfill.

**WENT Landfill Void Enhancement Options Hong Kong**
**3/2006 – 12/2007**
**1.5 Month**

*Design engineer Tonkin + Taylor*
Investigation of marine reclamation and global stability followed by Outline Design of options for Swire SITA to increase the void space by raising the toe bund and building ridge bunds for the WENT strategic landfill.

**OSCAR Landfill, Australia**
**10/2007 – 1/2008**
**1 Month**

*Consultant Tonkin + Taylor*
Technical assessment of a landfill opportunity in Australia

**Silverstream Landfill New Zealand**
**9/2006 – 9/2007**
**0.5 Month**

*Engineer Tonkin + Taylor*
Expert technical advice on the design of liner systems for the extension on the existing landfill.

**Bukit Tagar Landfill,Malaysia**
**4/2006 – 5/2006**
**1 Month**

*Consultant Tonkin + Taylor*
Advice to KBE on leachate generation rates and its management at a landfill in Malaysia.

**WENT Landfill, Sludge study Hong Kong, Swire SITA**
**2/2006 – 3/2006**
**1 Month**

*Consultant Tonkin + Taylor*
Completion of studies for EPD on the international perspective and context of geotechnical aspects and consequences of sludge disposal at solid waste landfills. The study included reporting on large scale trials on the geotechnical stability of waste at WENT landfill.

**Pillar Point Landfill Groundwater Study**
**3/2005 – 9/2005**
**7 Month**

*Consultant Tonkin + Taylor*
A detailed hydrogeological assessment for Swire SITA of the groundwater regime in the steep 220ha catchment surrounding the landfill and the coupled effects on the leachate regime within the landfill. The results provided a quantitative assessment of the potential leachate generation response to daily and seasonal rainfall. The assessment included surficial hydrology in the vadose zone, fractured rock hydrogeology and the leachate regime in waste.

**PPVLR - Restoration Detailed Design, Hong Kong**
**8/2004 – 3/2005**
**6 Month**

*Engineering Manager Swire SITA*
Swire SITA Design manager for the restoration of the Pillar Point Valley Landfill. The landfill covers approximately 34ha and holds approximately 11 million tones of waste. Operations were completed in 1996. The assessments included fractured rock hydrogeology, and stability of the waste mass. The designs included landfill gas generation and gas management, leachate generation and management, surface water management and the design of the platform for the facility infrastructure at the toe of the landfill.

**Foshan landfill due diligence China**
**7/2004 – 7/2004**
**1 Month**

*Engineering Manager Swire SITA*
The review of a 35 million $m^3$ landfill in China for a potential due diligence and purchase of the landfill for operation and maintenance.

**WENT Landfill - Biosolids disposal, Hong Kong**
**5/2004 – 6/2004**
**1 Month**

*Engineer Manager Swire SITA*
Feasibility study for the anaerobic digestion of primary sewage sludge biosolids; including gas recovery, energy generation and leachate treatment.

**Construction waste disposal Hong Kong**
**3/2004 – 8/2004**
**4 Month**

*Engineering Manager Swire SITA*
The preparation of outline designs for seawalls and formations for two construction waste landfills on two islands offshore from Hong Kong.

**Hangzhou Landfill, China**
**1/2004 – 3/2004**
**2 Month**

*Engineering Manager Swire SITA*
The review for Swire SITA of the operation and design of a landfill in China for potential due diligence and purchase of the landfill for operation and maintenance.

**PPVLR - Restoration tender Hong Kong**
**6/2003 – 12/2003**
**6 Month**

*Engineering Manager Swire SITA*
The development of Swire SITA tender designs for the restoration of the closed Pillar Point Valley Landfill in Hong Kong. These included an assessment of fractured rock hydrogeology, stability of the waste mass, landfill gas generation and gas management as well as leachate generation and management.

**Laogang Landfill, China**
**3/2003 – 6/2003**
**3 Month**

*Engineering Manager Swire SITA*
The development of Swire SITA design proposals for the construction of a shallow landfill over marine mud flats with a seawall revetment, near Shanghai. The assessments included an outline of the seismic response of the waste mass.

**GDB LAR Review of railway viaduct movement, Hong Kong**
**10/2002 – 10/2003**
**1 Month**

*Engineering Manager Swire SITA*
The review of lateral and vertical movements of a piled railway viaduct through the closed Gin Drinkers landfill in Hong Kong

**WENT Landfill - Biosolids co-disposal study, Hong Kong**
**2/2003 – 3/2005**
**5 Month**

*Engineering Manager Swire SITA*
Investigation for Swire SITA into the feasibility and consequences of biosolids disposal at a landfill. This included a literature review, and large scale trials of disposal methods. Factors under consideration were changes in geotechnical stability, landfill gas production, effects on leachate generation and operational practices as a result of different proportions of biosolids and MSW.

**Pudong Landfill, China**
**10/2002 – 12/2003**
**2 Month**

*Engineering Manager Swire SITA*
Review for Swire SITA of the design of a landfill in China for due diligence of the landfill design operation and maintenance.

**NENT Landfill - Waste settlement, Hong Kong**
**12/2002 – 12/2002**
**1 Month**

*Engineering Manager Swire SITA*
The assessment for Swire SITA of municipal solid waste settlement in a deep landfill accounting for progressive filling and long-term degradation.

**Sai Tso Wan Landfill Recreation Ground, Hong Kong**
**5/2002 – 6/2002**
**2 Month**

*Engineering Manager*
The management of Swire SITA design proposals for the construction and operation of a recreation ground over a restored landfill. The proposals included an enhanced natural grass pitch for football and baseball, as well as facilities of reception areas, changing rooms, and grounds-keeping workshops.

**NENT landfill works**
**Hong Kong**
**11/2001- 7/2002**
**5 Month**

*Engineering Manager Swire SITA*
Designs developed of details exploring ways of achieving the project objectives. These include large formation works and major slope stabilisation works. The works require coordination with a viable waste filling sequence over the remaining 15 years of operation.

**Macau Ash Landfill proposal**
**Macau**
**10/2001 – 3/2002**
**3 Month**

*Engineering Manager Swire SITA*
Macau incinerates its municipal waste, and the fly ash from the incinerator is disposed in a reclamation site between Taipa and Coloane. The Government wished to remove the existing fly ash to a new landfill site and dispose of future ash at the new landfill as well. The requirement for the new landfill is that it should be contained and monitored in an environmentally acceptable manner, in line with modern standards.

**NENT Landfill - Permanent leachate lagoon, Hong Kong**
**5/2001 – 11/2001**
**3 Month**

*Engineering Manager Swire SITA*
The landfill requires sufficient lagoon storage to buffer the leachate flows from the landfill prior to the treatment of the leachate in the treatment works. This buffer storage is provided in a 48,000 $m^3$ lagoon raised above the general ground level in a limited area. Various alternative forms were explored to provide the maximum volume possible. The option adopted is a 7.5m high reinforced earth embankment, which provides the additional benefit of a slope for planting, thus providing a visual screen for the neighbouring areas. To achieve this, various works had to be re-provisioned; a major surface water channel, a bridge and an irrigation pipeline.

**NENT landfill - Temporary leachate lagoons, Hong Kong**
**6/2001 – 8/2001**
**1 Month**

*Engineering Manager Swire SITA*
The design of temporary leachate storage lagoons, constructed over municipal solid waste and lined with HDPE geosynthetic membrane.

**Kang Ding Incinerator Settlement, Taiwan**
**7/2001 – 7/2001**
**0.5 Month**

*Engineering Manager Swire SITA*
Technical assessment, for due diligence, of progressive total and differential settlement of the main plant and ancillary plant for a large solid waste incinerator.

**WENT Landfill – Leachate lagoons, Hong Kong**
**3/2001 – 6/2001**
**1 Month**

*Engineering Manager Swire SITA*
Responsible for the design of three raised leachate treatment and storage lagoons lined with HDPE. The three lagoons have capacities of 3,500m$^3$; 4,500m$^3$; and 12,000m$^3$. These included internal concrete plinths to support treatment equipment and access stair cases as well as pipe interface details.

**TKO Stage II Deep Wells, Hong Kong,**
**1/2001 – 3/2001**
**2 Month**

*Engineering Manager* Swire SITA
Groundwater hydrology assessment of the steep volcanic hillside above the landfill and its interaction with the landfill's leachate regime. The assessment included geological mapping, exploring geophysical investigations and studies of steep rock fracture hydrogeology. This lead to the construction of 100m deep groundwater extraction wells in fractured rock zones surrounding the landfill to reduce the ingress of groundwater to the waste mass and thereby reduce leachate generation in the restored landfill.

**NENT Landfill - Phase 4 design Hong Kong**
**10/2000 – 12/2000**
**2 Month**

*Engineering Manager Swire SITA*
Project manager for the design of a large part of the landfill formation; this included the management of the consultant High Point Rendel. The design adopted principles of compatibility with the liner system behaviour; incorporating the requirements for groundwater and leachate management. The most intricate task was the design of a 25m high toe bund where all surface water discharges from the landfill, all leachate is collected and the groundwater systems converge.

**NENT Landfill - Liner failure Hong Kong**
**2/2000 – 12/2000**
**2 Month**

*Engineering Manager Swire SITA*
The investigation of a landfill liner failure constructed over rock slopes. This involved analysis of waste and liner interaction across varied formation profiles. 60,000m$^3$ of waste was exhumed to expose the failed liner and the condition of the liner recorded. The mode of failure was a combination of effects, but dominated cause by the differential stresses across the liner face, causing differential strains. The liner was reinstated over a modified formation.

**NENT Landfill - Phase 2, Hong Kong**
**4/2000 – 10/2000**
**4 Month**

*Engineering Manager Swire SITA*
Responsible for the investigation and remediation of an HDPE liner and pipe penetration interface in an active phase of the landfill.

**Gin Drinkers Bay LAR Viaducts Hong Kong**
**2/2000 – 6/2000**
**2 Month**

*Engineering Manager Swire SITA*
The Airport Railway is on an elevated viaduct through a cutting in the landfill. Historically the landfill has undergone lateral as well as vertical movements. The investigation analysed the possible interaction between a moving waste mass and the railway viaduct supported on 40 m deep piles. Finite element models were used to determine the effects on the structure of leachate draw down across the landfill.

**NWNT Landfills - Restoration Detailed Design Hong Kong**
**3/1999 – 3/2000**
**10 Month**

*Engineering Manager Swire SITA*
The detailed design of four landfill restorations. Despite closure for more than 15years, they still provide an environmental risk within urban areas. The works were designed to reduce the environmental impact of the sites to acceptable levels, provide monitoring of the environmental performance and provide areas for recreation. The works included membrane caps, landfill gas estimation and control, leachate control and treatment, and surface water management.

**Air Hitym Landfill Malaysia, SITA**
**2/1999 – 2/1999**
**0.5 Month**

*Engineering Manager Swire SITA*
The appraisal of the long-term technical viability of a municipal landfill in Malaysia, covering; geotechnical stability, liner integrity, void space requirements, surface water control and landfill gas control. The market environment for waste disposal makes the operation of a high integrity landfill incorporating international standards challenging.

**WENT Landfill - Liner review**
**Hong Kong**
**6/1998 – 12/1999**
**4 Month**

*Engineering Manager Swire SITA*
Design and implementation of improvements to the liner system at the landfill. The design improves its performance over a range of circumstances throughout its life. This adaptation was based upon considerable research into the published data on waste and liner behaviour, extensive testing on the various components of the liner and analysis using conventional static approaches as well as finite element approaches.

**NENT landfill - Due diligence**
**Hong Kong**
**8/1998 – 1/1999**
**4 Month**

*Engineering Manager Swire SITA*
Review of the technical risks of the operating NENT landfill (35 million $m^3$) for procurement by Swire SITA. The review assessed the works carried out to date, potential future works, and how they might be phased. These incorporated considerations of what would be required for the operation of the landfill and how it would most advantageously be programmed to suit financial payment for the works and operation.

**NWNT Landfills - Restoration tender, Hong Kong**
**4/1998 – 7/1998**
**3 Month**

*Engineering Manager Swire SITA*
The tender design for the restoration of four landfills, all of which closed at least 15 years ago. The tender strategy included the approach to each of leachate management, (control and treatment), structures, landfill gas management and utilisation, surface water control.

**TKO Landfills - Restoration**
**Hong Kong**
**7/1997 – 4/1998**
**4 Month**

*Design Leader Swire BFI*
Detailed design of the restoration of the two large closed Tseung Kwan O landfills. This included the stabilisation of the western side of one of the Stage I landfill, which was constructed over soft marine mud, and the design of a capping system for a slope 120m high and gradient of 1:3 on the Stage II landfill.

**Outlying Islands Transfer Facilities, Hong Kong**
**12/1996 – 5/1997**
**4 Month**

*Project Manager Swire BFI*
Swire BFI Initial design stages and construction of four small waste transfer facilities on the outlying islands. Container ships transfer the waste in sealed ISO 20ft containers from the stations to the WENT strategic landfills.

**TKO Landfills - Restoration tender, Hong Kong**
**7/1996 – 11/1996**
**4 Month**

*Design Leader Swire BFI*
Swire BFI Tender design of the restoration of two large closed landfills at Tsueng Kwan O, Hong Kong.

**Urban Landfills Restoration Tender, Hong Kong**
**4/1996 – 7/1996**
**3 Month**

*Project Manager Binnie Consultants Ltd*
Tender design for Swire BFI of the restoration of closed landfills in the urban areas of Hong Kong.

**Shuen Wan Landfill Restoration Tender, Hong Kong**
**11/1995 – 3/1996**
**3 Month**

*Project Manager Binnie Consultants Ltd*
Technical advice to Swire BFI for the preparation of tender designs for the restoration of the closed 50 ha landfill, including aspects of site stability, the capping system, surface water designs, and the groundwater regime.

**Landfill Gas Hazard Vetting Assessments, Hong Kong**
**3/1995 – 6/1995**
**2 Month**

*Project Manager Binnie Consultants Ltd*
Development of a database to hold the historical and future landfill gas records for Government landfill sites in Hong Kong.

**IWMPT, Hong Kong**
**5/1994 – 5/1996**
**3 Month**

*Project Manager Binnie Consultants Ltd*
Development of a computer model simulating generation, optimal collection, transportation and disposal of municipal solid waste in Hong Kong. The planning tool is used by EPD in the planning strategy for waste management in Hong Kong. The optimisation of facilities considers cost and constraints, such as legislative instruments, road pricing policies and environmental factors. The system based around a GIS, databases and user interactive packages.

**Restoration of Urban Landfills Study, Hong Kong**
**11/1993 – 10/1995**
**3 Month**

*Project Manager Binnie Consultants Ltd*
Management of the supplementary agreement to the Restoration of Urban Landfills project for EPD. The project included the development of plans for the Restoration and Aftercare of the urban landfills in Hong Kong, and a programme for leachate treatment trials

**NENT Landfill - Tender Design Hong Kong**
**6/1993 – 9/1993**
**4 Month**

*Project Manager Binnie Consultants Ltd*
Technical advice to Swire BFI for the tender design for the 35 $Mm^3$ landfill project on the north-eastern boarder of the New Territories. The work included studies of the geology and proposed cut slopes, the groundwater regime using a three dimensional model of the area, surface water drainage and impact on the area downstream. Designs included those for the groundwater management and collection systems, the surface water management systems, and the analysis of waste slopes.

**WENT Landfill – Detailed Design, Phase 1**
**12/1992 – 3/1993**
**3 Month**

*Project Manager Binnie Consultants Ltd*
Detailed design for Phase 1 of the WENT Strategic Landfill in Hong Kong for Swire BFI.

## *Publications*

**Installation of a PVC geomembrane liner for the Tekapo canal remediation** with M Campbell, J Cowland, J Wilkes, A Scuero & G. Vaschetti, Hydro Asia 2014 ,Colombo March 2014

**Advance Planning for the Installation of the Geomembrane Liner for the Tekapo Canal Remediation Works** with A Scuero, G Vaschetti, J Cowland - NZSOLD / ANCOLD conference 2013 New Zealand

**Installation of the PVC Geomembrane Liner for the Tekapo Canal Remediation Works** with M Campbell, A Scuero, G Vaschetti, J Wilkes, J Cowland - NZSOLD / ANCOLD conference 2013 New Zealand

**Hydropower canal geomembrane liner analytical techniques** with J.P. Giroud, N Jacka, C Dann - NZSOLD / ANCOLD conference 2013 New Zealand

**Remediation of the Tekapo canal**. With N Jacka, C Dann - NZSOLD / ANCOLD conference 2013 New Zealand

**Kourarau Dams Enhancement - New Zealand** with Mark Taylor
*Hydro Power Engineering Exchange*; Jindabyne, Australia, 18, October, 201

**Leachate management strategies at large tropical landfills : A case study** with K Knox, E. Chock, S. Eldridge, A Kortegast *Sardinia 2007 Eleventh International Waste Management and Landfill Symposium*; Sardinia, 2007

**Hydrogeology and leachate generation in two of Hong Kong's closed landfills**
*Hong Kong Waste Management Association*; Hong Kong, May, 2003

**Leachate generation in two of Hong Kong's closed landfills**
*Regional conference on waste management technologies for environmental management in Pearl River Delta*; Hong Kong, March, 2003

**The prediction and experience of leachate generation for closed but unlined valley landfills in Hong Kong**
*POLMET 2003*; Hong Kong, November, 2003

**Factors influencing the choice of cores in embankment dams.**
Imperial College, 1989