

## Troy Brockbank



**Position:** Design Manager / Civil Engineer

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**Nationality:** New Zealand / Māori

**Iwi:** Te Rarawa, Ngāti Hine, Ngāpuhi

**Qualifications:** Bachelor of Engineering (Civil), University of Auckland

**Experience Overview:** Troy has over 10 years professional experience in the stormwater industry across engineering consultancies, civil contractors & suppliers. He has developed specialist skills in investigation, design, manufacture, construction, and project management of stormwater management devices for public and private developments. Recently he has provided technical advice to Te Rarawa Iwi for environmental & 3-water matters.

**Technical skills:** Stormwater management (quality & quantity)  
Water sensitive urban design  
Hydrological & hydraulic design  
Project management  
Construction management & contract administration  
Site supervision (civil infrastructure & 3 water utilities)  
Technical review & certification  
Mātauranga Māori

**Membership:** Engineering New Zealand (EngNZ)  
South Pacific Professional Engineering Excellence (SPPEEx)  
Nga Aho – Māori Urban Design Panel  
Water New Zealand – Full Member  
Water New Zealand – Stormwater Group Committee  
Papa Pounamu – NZPI Māori and Pacific SIG

**Awards:** 2003 University of Auckland Chancellor's Award for Top Maori Scholar  
Recognise and reward the academic achievement, cultural participation, all-round ability and leadership potential of Maori and Pacific students from New Zealand secondary schools

2008 Arthur Mead environmental award  
Recognition of engineering work that demonstrates exemplary care for and consideration of environmental values to an engineering project for "Northern busway & SH1 Esmonde Rd interchange"

2017 Arthur Mead environmental award (merit - small project category)  
Recognition of engineering work that demonstrates exemplary care for and consideration of environmental values to an engineering project for "Innovative Conversion of a Sandfilter to a StormFilter at State Highway 1".

**Work history:**

Sept 2011 – Present:

Stormwater360 New Zealand, Auckland, NZ

*Design manager / Stormwater engineer*

Manager of the design & engineering team for a specialist stormwater management company providing grey and green infrastructure solutions. This includes provision of design for traditional & proprietary stormwater management devices, construction supervision and quality assurance of stormwater management devices, maintenance inspections and audits of stormwater management devices, and research & product development.

Oct 2010 – Apr 2011:

Willmott dixon construction, Cardiff, Wales, UK

*Site engineer*

Member of a small site engineer team for a building construction firm, assisting project manager with; set out of construction works (including buildings, earthworks, drainage, services and water supply), health and safety representative, Measurement of earthworks, quality assurance of works to project specifications and drawings and liaison between contractor/client/consultants.

Aug 2010 – Oct 2010:

Self-employed

*Civil engineer*

Freelance site engineer for several small drainage & civil construction companies throughout the south Wales valleys. Providing project management, set out of drainage lines and sustainable urban design systems, and construction supervision.

June 2010 – Aug 2010:

Aberdare construction ltd, Aberdare, Wales, UK

*Site engineer*

Onsite site engineer for a small civil construction and drainlaying sub-contractor. Providing set out of construction works (including buildings, earthworks, drainage, services and water supply), measurement of earthworks, quality assurance of works to project specifications and drawings and technical contractor liaison between client and consultants.

Oct 2009 – June 2010:

Flowline civil engineering ltd, Merthyr Tydfil, Wales, UK

*Groundworker / Drainlayer*

Active member of a small drain laying company in the south Wales valleys. Providing set out of drainage lines, installation/construction of drainage components (including pipes, manholes and catchpits) and sustainable urban design systems.

Jan 2007 – July 2009:

Opus international consultants ltd, Auckland, New Zealand

*Civil engineer*

Design, contract administration and, construction management, supervision & quality assurance (MSQA) of stormwater management devices (including wetlands, ponds, swales, raingardens and filters) and drainage systems (including pipeline reticulations and coastal outfalls) for local council and roading authorities in the Auckland region.

## Key Projects:

### Drinking water in Te Hiku o Te Ika – Deep South Science Project Challenge, Northland, NZ

In this project, we're exploring the quality and sustainability of water supply in Te Hiku o te Ika (Northland), to contribute to the well-being and viability of these communities into the future. Climate variations within Te Hiku and differences in water supply mean it's important to gather local data. Our communities are recording daily rainfall and temperature, testing for E.Coli and providing data for national climate and rainfall models. We're surveying households about existing infrastructure and interviewing kaumātua to uncover important historical perspectives. The knowledge built collaboratively during this research will be shared through iwi networks such as rūnanga, trust boards, marae, schools and kura. Troy was the technical lead on this project.

### Tāngonge wetland restoration, Kaitiāia, NZ

This is a long term (100 year) iwi project to restore and rejuvenate the mauri of Tāngonge, a wetland in Kaitiāia with a 7000ha catchment. The collective vision of iwi is to restore our taonga as a wetland that will rekindle engagement with, and usage of, Tāngonge by manawhenua and the local community. Troy has been inspirational as part of the wider project team working towards this shared vision as a technical adviser for Te Rarawa iwi.

### Richardson Terrace pump station, Woolston, Christchurch, NZ

This projects involves the construction of a new pump station to direct stormwater flow from Bells creek into the Heathcote river during a large storm event and reduce flooding in the area. A large stormwater treatment device (570x69cm ZPG cartridge StormFilter) is to be constructed as part of this project to improve water quality in the Heathcote river by treating stormwater runoff from a large residential/commercial catchment (approx. 160Ha). Troy has been involved in the design of this large StormFilter, which will become the largest filtration stormwater treatment device in New Zealand and the southern hemisphere.

### SH1 Luke St sandfilter retrofit, Ōtāhuhu, Auckland, NZ

This project is an NZTA "Think outside the Box" award winning, and winner of 2017 IPENZ Arthur Mead Award (Merit), innovation project. The project involved the conversion of an unsafe and inefficient stormwater treatment device, from a sandfilter into a StormFilter, as well as health & safety, hydraulic and operation improvements. Troy was involved in the design and construction MSQA of the retrofit works.

### McLaughlin Road subdivision, Wiri, Auckland, NZ

The project site is a commercial subdivision on the old McLaughlin's quarry at McLaughlins Rd, Wiri, Auckland. Troy provided design to installation services for large proprietary stormwater treatment device, a 300x69cm Perlite cartridge StormFilter, to treat runoff from a 27ha catchment (including roads and individual lots). To-date this is the largest StormFilter in New Zealand.

### Mt Difficulty Wine Barrel Store, Bannockburn, NZ

New Zealand's largest extensive living roof, covering an expansive 900m<sup>2</sup>, was installed at Mt Difficulty Wines in March 2012. Troy provided the MSQA of the living roof installation works.

### Church Village bypass project, South Wales, UK

This project involved construction of a new 7km dual carriageway project in south Wales. At the time, the project was the largest single highways project undertaken by any local authority in the UK. Troy was involved in the hands on construction of the stormwater drainage reticulation and several sustainable urban design systems (SUDS).

### Northern busway & SH1 Esmonde Rd interchange, Auckland, NZ

This project was a winner of the 2008 IPENZ Arthur Mead Environmental Award. This environmentally sustainable project provided a dedicated two-lane busway alongside the northern motorway linking with five busway stations. It included interchange upgrades and associated local road and pedestrian improvements. Troy was involved in the MSQA and redesign of seven new stormwater management ponds and various swales constructed during this project.

Referees:

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Publications:

1. Cheah, J., Brockbank, T., Simcock, R., & Hannah, M. (2018). New Zealand plant growth trials in rapid bio-filtration media. *Water Practice and Technology*, 13(1), 229-236.
2. Brockbank, T., 2017. Just Add Mauri: Water-sensitive Design Meets Tikanga Māori. *New Zealand Local Government Magazine*, 55, 30-31.
3. Cheah, J., Brockbank, T., Simcock, R. & Hannah, M., (2017). New Zealand plant growth trials in rapid biofiltration media. Presented at the 14<sup>th</sup> International Conference on Urban Drainage, Prague.
4. Brockbank, T., Mitchell, P. & Hannaby, R., (2017). Innovative Stormwater Treatment Asset Conversion at Auckland Motorways. Presented at Water New Zealand's 2017 Stormwater Conference, Auckland.
5. Cheah, J., Brockbank, T., Hannah, M. & Christhilf, S., (2017). Are Quality Control/Assurance Procedures Needed For Bioretention Treatment Devices? Presented at Water New Zealand's 2017 Stormwater Conference, Auckland.
6. Brockbank, T. & Jonathan, K., (2017). When Grey Meets Green - A Hybrid Story. Presented at Water New Zealand's 2017 Stormwater Conference, Auckland.
7. Brockbank, T. (2017). Tech Talk: Driving Head vs Elevation Head. [Blog] Stormwater360. Available at: <http://www.stormwater360.co.nz/news-and-events/post/tech-talk-driving-head-vs-elevation-head> [Accessed 09 Aug. 2017]
8. Henwood, W., Barnes, H. M., Brockbank, T., Gregory, W., Hooper, K., & McCreanor, T. (2016). Ko Tāngonge Te Wai: Indigenous and Technical Data Come Together in Restoration Efforts. *EcoHealth*, 13(4), 623-632.
9. Brockbank, T. & Jonathan, K., (2016). Designing Stormwater Treatment Devices – Hydraulic Considerations And Implications. Presented at IPWEA NZ's 2016 Conference, Auckland.
10. Brockbank, T., Henwood, W., Gregory, W., Moewaka-Barnes, H. & McCreanor, T., (2014) Ko Tāngonge Te Wai: Challenges of Restoration And Management Of A Flood Plain Lake. Presented at Water New Zealand's 2014 Stormwater Conference, Christchurch.
11. Henwood, W., Brockbank, T. & Gregory, R., (2014) Ko Tāngonge Te Wai: making a start. Presented at National Wetland Restoration Symposium, Auckland.