

PARTNERING WITH THE PRIVATE SECTOR TO IMPLEMENT COST EFFECTIVE GREEN INFRASTRUCTURE SOLUTIONS

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ABSTRACT

There is a growing awareness, at a community and political level, of the value of green solutions for stormwater management. While some forms of green infrastructure have easily demonstrated cost vs benefit outcomes, identifying the value that stream restoration contributes to stormwater management is more problematic. While the ecological benefits of rehabilitating degraded streams is not universally acknowledged the reality is that natural streams, some supporting measurable biodiversity, are being lost as a consequence of development.

Resource consents for development resulting in stream loss typically set conditions for offset mitigation and are an opportunity to redress the loss of stream habitat and improve the natural environment for urban communities. The Auckland Council's Regulatory Unit sought assistance from the Stormwater Unit to identify sites that could be offered to developers seeking to discharge mitigation offset obligations. Fruitvale School was one of the sites identified and was taken up by a developer. Council assisted by providing technical assistance and facilitating an arrangement with the Ministry of Education. The stream "daylighting" project completed at Fruitvale Primary School is an example of how a partnership between a private developer, Council and the landowner can offset a mitigation obligation to create a high value community and ecological outcome. The final result is the realisation of a school's long held aspiration to bring back a lost stream and make it the focus of their sustainability curriculum. From a stormwater perspective the substantial volume of stream channel created will provide peak flow detention to mitigate known downstream flooding issues.

This paper will provide insights into how the process succeeded in achieving this result at comparatively low cost.

KEYWORDS

Public Private Partnerships, Green Infrastructure, cost effective

PRESENTER PROFILE

Richard Challis is a stormwater specialist engineer in Auckland Council Stormwater unit.

Since graduating in 1973 Richard has seen enormous change in the approach to stormwater engineering.

1 INTRODUCTION

Prior to 2010 Legacy Councils in the Auckland Region were, in line with a worldwide trend, developing policies for a water sensitive approach to stormwater management.

The formation of the amalgamated Auckland Council in 2010 gave additional momentum to the formulation of a region wide policy and, more recently, the development and publication of a guideline document "Water Sensitive Design for Stormwater"

Even before publication the new Council had posted some notable successes in the implementation of "Green" solutions for stormwater management.

In some cases these were outcomes of projects commenced by legacy councils while others reflected a response from Auckland Council stormwater unit to clear imperatives contained in the 2011 Auckland Plan to improve the region's natural and urban environment.

Notable amongst the latter was the "daylighting" of 200 metres of the Avondale Stream in La Rosa Gardens.

Alongside Auckland Council's own initiatives, considerable effort is being put into working with businesses and individuals undertaking development to promote the need for, and benefits of, a water sensitive design approach to stormwater management.

There are two inescapable realities that constrain Auckland Council Stormwater Unit from fully meeting the expectations of a growing number of residents, and local boards, who would like to see more done to protect, and enhance the quality of, the region's urban streams.

- The need to prioritise the available funding across all stormwater works.
- The understandable objective of developers to optimise the yield from the property they are developing.

Auckland Council Stormwater sets aside a modest budget each year for projects that have a purely environmental benefit however the focus is on optimising the opportunities for incorporating green infrastructure and water sensitive design into its core functions of renewals and growth.

At the same time it is difficult to prevent stream loss from occurring as a result of development.

2 OPPORTUNITIES FROM CHANGE

Prior to 1 November 2010, in circumstances where loss of natural stream length occurred as a consequence of development, the responsibility for defining the extent of required offset mitigation, and for ensuring the discharge of the obligation to mitigate, rested with the Auckland Regional Council.

In general the mitigation was in the form of riparian planting to existing streams.

The most challenging aspect of offset mitigation for developers, and for the regional authority, has been finding a suitable site for planting. Most streams in the region are in

private ownership and the availability of stream margins in public ownership where riparian planting will achieve sufficient offset with meaningful benefit is limited.

Attempts by private developers to come to an arrangement with the property owner to plant a stream through their property frequently foundered.

The overall result has been that the balance of stream length adversely impacted or lost versus mitigation fulfilment and result has been far from ideal.

The amalgamation of a Regional, four City and three District Councils in 2010 provided the opportunity for a closer working relationship between Auckland Council regulatory and the Infrastructure and Environmental Services departments and a more collegial approach to this issue with the objective being to achieve better outcomes.

Discussions took place involving representatives from both departments resulting in agreement that Stormwater unit would facilitate a trial project for a developer to "daylight" a stream through Fruitvale primary school as mitigation for piping of a similar length of stream through a commercial development.

3 THE FRUITVALE PRIMARY SCHOOL PROJECT



Figure 1: The concept plan showing the stream meander and the residual level field area which is to be raised 1.6 metres using material excavated to form the stream.

3.1 THE PARTIES

Fruitvale Primary School

The Principal and Board of Trustees of Fruitvale Primary School had expressed keenness to see a 100 metre section of pipe removed and the natural stream above the school extended through the grounds. The restored stream was intended to become the focus for a sustainability component of the curriculum. The school did not have the financial resources to undertake such a project and, as a result of the publicity about the La Rosa Project, contacted Council with regard to their aspirations.

Ritchies Coachlines

Resource Consent to develop a new bus depot on a 2 hectare site in West Auckland was granted in September 2012. To enable full development of the site Ritchies sought, and were granted, consent to pipe 70 metres of stream but almost a year later a suitable site for the required mitigation had still not been found. In September 2013 Ritchies were shown a concept plan of the project at Fruitvale Primary School and after some negotiation advised that they would like to undertake the work as mitigation offset.

Auckland Council Stormwater Unit

In considering an appropriate involvement in this project with its predominantly environmental and amenity benefits the stormwater unit determined that a facilitation role would provide the most value at the least cost to ratepayers. In negotiations with Ritchies Coachlines the Stormwater unit undertook to meet the cost of resource consenting requirements and to liaise with the School Board of Trustees and with the Ministry of Education. This reduced the level of uncertainty that had been identified by Regulatory as having been an impediment to historical mitigation proposals on private property. Once a more detailed scoping of the project had been completed it became apparent that there was also a flooding attenuation benefit from the works and a commensurate amount of direct funding was committed from the stormwater capital works programme.

Ministry of Education

As owners of the school property approval for the works needed to be obtained from the Ministry of Education.

3.2 FORGING AN AGREEMENT

With the start of construction season not far away it was imperative that an agreement be put in place to allow at least bulk earthworks to be completed before April. Meetings were held with representatives from Ritchies Coachlines to ensure they understood the extent and detail requirements of the works. Fortunately the natural stream channel was designed to be constructed alongside the pipe which would remain functional for the most part of the project thus reducing the extent of "works in a stream" to a small section at the upstream end. All excavated material would be placed on the site.

Overall the project was assessed as having a low risk which meant it could be packaged in a form that enabled the directors of Ritchies Coachlines to sign an agreement before detailed plans had been prepared.

The agreement provided that.

Ritchies Coachlines would be responsible for:

- Establishment on site including security fences, set out, environmental protection and Health and Safety requirements.
- Earthworks to form the stream channel and placing of excavated material on site.
- Stripping and stockpiling of topsoil and the spreading and sowing over the completed earthworks.
- Riparian planting and forming of in-stream habitat features.
- Compliance with anticipated and identified conditions of the resource consent for the works.
- Maintenance of the planting for a period of 24 months after completion.
- Compliance with Health and Safety regulations throughout the duration of the works.

Auckland Council would be responsible for:

- Preparation of application for resource consent and meeting of all processing costs.
- Liaison with the school Board of Trustees and Ministry of Education.
- Consultation with potentially affected residential property owners
- Detailed design and preparation of working drawings for the works.
- Construction of an inlet structure and fish passage at the downstream end of the new stream.
- Compliance cost for any consent conditions not identified in the agreement.

A separate agreement between Ritchies Coachlines and the School Board of trustees was drafted by Stormwater unit and signed by both parties

3.3 PROJECT IMPLEMENTATION

A delay in obtaining resource consent meant that work did not commence until March however the bulk earthworks (2800m³) and riparian planting were completed before site conditions dictated a cessation of the works and re-establishment in the spring.

An arrangement was made with the contractor for pupils of the school to be involved with planting on a safe area. At the time of writing this report the works have been substantially completed and planting well established. It is proposed to divert flows through the new stream and have a ceremonial opening day in autumn however the pipe will remain in use to take severe flows over at least the first winter to enable the stream channel to become fully established.

3.4 THE COST

Auckland Council costs for the project including costs associated with the resource consent and the winter works consent are likely to be less than \$140,000.

Ritchies Coachlines have provided details of their costs which amount to \$152,000.

3.5 LEARNINGS FROM THE TRIAL

A total cost of less than \$300,000 to construct and plant 100 metres of stream represents very good value in comparison with historical costs for this type of work and the school is very pleased with the result.

The cost to Ritchies Coachlines for the works is slightly more than they had anticipated and substantially more than the costs that would have been incurred had they been able to find a site to discharge their mitigation obligations by the usual method of riparian planting only. While the cost represents a small component of the \$15,000,000 cost for the development works under the resource consent which contained the condition for offset mitigation it does highlight an issue with the "compensation ratio" used to determine offset mitigation.

The relationship with the contractor remained good throughout the project assisted by the "no responsibility for unforeseeable costs" clause in the agreement.

Ritchies Coachlines engaged their own construction supervisor with the stormwater unit having an advisory role during construction. This worked well however this was largely due to a cooperative attitude from both Ritchies Coachlines and their contractor. Were this method of mitigation to be used again a more formal arrangement for this aspect would be used.

From the outset this project adopted a collaborative approach with other units and departments within Council. Involvement from Biodiversity and Community Environmental Programmes teams, Regulatory specialist input team, and the Geotechnical team contributed significantly to smooth running of the project and to achieving optimal outcomes.

4 CONCLUSION

The Fruitvale Primary School project, which demonstrated the benefits of a collaborative, multi stakeholder, achieved excellent outcomes on many fronts but the model is unlikely to be used on a regular basis unless changes to the way the compensation ratio are agreed to.

There is general acknowledgment that developer led mitigation is not achieving optimal results for the natural stream components of the stormwater network and the Fruitvale School project demonstrates what can be achieved when developers and the stormwater unit work in a collaborative partnership.

Stormwater Unit is working with regulatory to develop an arrangement that will enable offset mitigation to be targeted in a way that will achieve better outcomes than are currently occurring.

The fact that constructive dialogue is occurring is progress in itself and along with the promotion of Water Sensitive Design will assist in achieving the core objective defined in the Stormwater Asset Management Plan 2015 – 2045 for

"Healthy and Connected Waterways"

as a commitment from Stormwater towards creating the world's most liveable city.

5 PHOTOGRAPHS



Photograph 1: The playing field which was underutilised by pupils and unuseable during the winter due to poor drainage



Photograph 2: Construction underway



Photograph 3: The main channel excavated and sculpted to a natural contour. The fish passage feature yet to be constructed will be in the in foreground



Photograph 4: Riparian planting and construction of habitat features for main channel completed. Levelling and sowing of grass on raised field complete.



Photograph 5: Stream habitat (not completed) with trial diversion of flow through channel

REFERENCES

Auckland Council Stormwater Asset Management Plan 2015 – 2045 (draft)

Auckland Council Water Sensitive Design Guidance Document 2015