

SUCCESS BY COLLABORATION: THE AUCKLAND REGIONAL COUNCIL'S EROSION AND SEDIMENT CONTROL TRAINING PROGRAMME

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ABSTRACT

For twenty years the Auckland Regional Council (ARC) has run an integrated program to control erosion and sediment runoff from big construction sites, including research, policy, regulation, enforcement, training and communication. Based on a partnership with the industry, this successful and enduring model has attracted international interest.

Elements contributing to the program's success include a collaborative rather than confrontational approach that ensures that both regulator and industry stay aware of each other's needs, together with proactive on-site compliance monitoring that provides a further opportunity for dialogue and mutual learning. Over time the progressive development of the program as a whole has fostered a growing self-awareness and collegiality in the industry, with free movement of good staff amongst the consulting, contracting and government agencies.

The paper concludes with some of the visions and challenges ahead, including evaluation, accreditation, industry self-regulation and a broader focus within the wider context of coastal and catchment management and sustainable urban design.

Key words: Training, regulation, compliance, construction, evaluation, erosion and sediment control, earthworks.

1. Introduction and background to the ARC's erosion and sediment control program

The Auckland Regional Council (ARC) is one of the 14 agencies with regional environmental (among other) responsibilities in New Zealand. Straddling three of the northern North Island's biggest estuaries and any number of smaller ones, it is home to more than 1.3 million people, over 30% of the country's population on about 2% of New Zealand's land area.

A phase of rapid population growth in the late 1970s highlighted the environmental risks posed by development because of the extent of development, the Region's low energy depositional estuaries, dense drainage pattern of small contributing streams, predominantly clay soils, comparatively steep slopes in rapidly urbanizing watersheds and intense cyclonic storms in the summer construction season.

International and local research and guidelines influenced the early days of the program and by March 1992, following the passage of the Resource Management

Act (New Zealand's main piece of environmental legislation) in 1991, the region's second technical publication on erosion and sediment controls for earthworks was produced (Auckland Regional Council, 1992). At this stage, elements of the program included good research to define the nature and scale of the problem, a policy and regulatory framework and a technical guideline. Following on from this, other supporting elements of the program progressively evolved over time, including the education program which is the topic of this paper.

2. Erosion and sediment control training

2.1 Setting up the training

In June 1995, the ARC set up a formal industry registration and training program. In keeping with its philosophy that good environmental management is a responsibility shared between the Council and the community, industry engagement was seen as crucial to the success of the training, and so a focus group was set up to help assess the options for upskilling the industry. Its members comprised representatives from Tangata Whenua (the indigenous Māori people of New Zealand), consultants, contractors, developers, environmental interest groups and territorial authorities (the seven local councils within the Auckland Region).

On the basis of the focus group's advice and with their input, an introductory breakfast seminar and two training workshops on erosion and sediment control were developed for the ARC by two external consultants. In June 1996 these consultants, together with key staff from the ARC and the focus group, trialled the workshop content and delivery and visited a site to be used as a hypothetical development site for the 2-day workshop. This greatly improved content and delivery before the first workshops began in July 1996. These two workshops continue to be delivered:

- a 2-day erosion and sediment control workshop for plan preparers, the project design consultants, who prepare erosion and sediment control plans, apply for resource consents for the works instruct contractors on behalf of the client
- a 1-day erosion and sediment control workshop for plan implementers, the contractors who do the work and install, maintain and decommission the erosion and sediment controls.

In March 1999, the ARC released TP90, a more comprehensive erosion and sediment control guideline. To support its uptake, the following additional elements were added to the ARC's erosion and sediment control programme:

- external independent consultants to support the larger specialist team at the ARC by carrying out **on-site inspections** of erosion and sediment controls
- a stronger focus on **enforcement** in cases of non-compliance with resource consent requirements.

The new TP90 guideline was a significant step change for the industry and gave an added boost to the training workshops. During the preparation of TP90, the industry was widely consulted and given notice that the ARC had made a significant

investment in helping the industry meet the new standards by preparing the new guideline, delivering training and providing ongoing annual workshops and newsletters – and that it would be up to the industry to perform or appropriate enforcement would follow. Over the following years, a number of prosecutions and lesser means of enforcement taken by the ARC sent a clear signal to the industry about the desired performance standard.

2.2 Current erosion and sediment control and stormwater training

Recent attendance figures for consultants and contractors are 390 in 2006; 410 in 2007 and 310 in 2008, in addition to two or three thousand over the preceding years.

A number of accompanying workshops have been developed and these are summarized below, showing the growing sophistication required of the land development sector as practitioners keep up with scientific research findings:

- day workshop on *'Integrated planning for the land development sector'* builds on the 2-day plan preparers' workshop. It focuses on assessments of environmental effects and how these can be reflected in project design and erosion and sediment control plans. It covers case law on resource consents and the ARC's expectations of consent applications
- a half-day workshop provides training for people using chemical treatment, in particular PAC (polyaluminium chloride), to settle fine suspended clays out of runoff held in sediment retention ponds before discharge into receiving environments
- a number of related workshops focus on hydrological modeling, stormwater management design, low impact design (LID) approaches to stormwater management, the preparation of integrated catchment [watershed] management plans in a way that facilitates the monitoring of their implementation and outcomes, stream ecological values, a 2-day workshop that enables people to score the ecological performance of Auckland streams and quantify environmental mitigation and compensation requirements for consent applications that affect permanently flowing watercourses; and riparian restoration in rural settings (which may soon also be adapted for urban greenfield brownfield developments).

The ARC continues to hold an Annual stormwater and sediment field day and a separate Annual forestry field day on erosion and sediment control.

3 Erosion and sediment control training in the context of the wider erosion and sediment control program

The workshops fits into an overall framework of strategic research, policy and regulation:

- **research** tools include investigations such as trialing the efficiency of various erosion and sediment control measures and revegetation measures, cumulative effects of sedimentation and assessing the ecological value of streams.

- **policy** tools include joint regional environmental planning with central and local government and regional stakeholders and promoting low impact urban designs and development methods as well as integrated catchment and coastal management plans
- **regulatory** tools include the Auckland Regional Plan: Sediment Control, as well as resource consent (environmental permitting) and enforcement procedures
- other **training and capacity-building** tools include e-newsletters, annual workshops, information leaflets and posters and ongoing dialogue with stakeholders as required via the Focus Group.

All these tools complement each other, with the results of technical investigations being promoted through educational initiatives so as to help consultants and contractors meet statutory requirements more easily.

4. Evaluation of training effectiveness

As with any other tool, the cost-effectiveness of training needs to be monitored and evaluated. The success of a training program can be evaluated in several ways:

- the effectiveness of the workshops and related initiatives in changing behaviors
- measured improvement in the environmental outcomes of concern
- the cost-effectiveness of other measures, such as enforcement alone.

A key principle of evaluation is that people whose performance is to be assessed need to know exactly what performance benchmarks they will be evaluated against. This links directly back to how clearly the training needs and outcomes are defined. It can readily be seen that clear definition of training objectives is essential for evaluation of training effectiveness – and that a long term commitment is essential to avoid cultivating cynicism and foster genuine commitment to environmental performance improvement amongst all parties.

To date, evaluation of the effectiveness of the ARC's erosion and sediment control training program has included:

- the 'smile sheets' handed in at the end of each workshop, which almost universally rate the workshops very highly (4 and 5 on a 1-5 scale)
- surveys of industry views of the program overall at the annual field days.
- desk-based, on-site and research-based assessments of the effectiveness of the overall program in terms of the quality of consent applications, results of weekly on-site inspections and ongoing research into effectiveness of improved erosion and sediment controls
- tracking improvements in legal compliance as indicated by simple scores that indicate the quality of the erosion and sediment controls on site (see below)

A more formal evaluation of policy effectiveness and the effectiveness of the current training is under way, but at this stage only anecdotal comparisons are available of

the relative effectiveness of the different elements of the erosion and sediment control program (e.g. training compared with site inspections compared with research or enforcement).

5. Elements of success

Over time the progressive development of the ARC's erosion and sediment control program has fostered a growing self-awareness and collegiality in the industry, with free movement of good staff amongst the consulting, contracting and government agencies. The success of the program is indicated in a number of other ways, including:

- improved working relationships between the industry and the ARC, with more open communication and better mutual understanding (remarkably, this is despite the ARC's at times vigorous use of enforcement mechanisms)
- ongoing survival of the program despite some significant restructurings of the ARC (the Region now faces more far-reaching reform into to a "super-city" and it is not known how this will affect the program)
- ongoing demand for training workshops
- adoption of similar training programs and industry engagement by other Regional Councils in New Zealand
- interest from overseas agencies in the program.

Over the life of the ARC's erosion and sediment control program, a number of factors have been identified as contributing to its success, including:

- a collaborative rather than confrontational approach that ensures that both regulator and industry stay aware of each other's needs
- an integrated approach that is robust and relevant, encompassing research, policy, regulation, enforcement and training
- sponsorship by environmental managers with excellent technical understanding of and commitment to erosion and sediment controls
- employment of staff and consultants who are leading New Zealand experts in erosion and sediment control
- clear specification and communication of the ARC's expectations, which makes it easy for the industry to get a grip on exactly what the ARC expects them to do
- sustained commitment to the training itself and the entire program by both the regulators and the industry
- proactive on-site compliance monitoring that provides ongoing opportunities for dialogue and mutual learning
- quick turnaround of changes to erosion and sediment control plans
- attendance of ARC staff at workshops: many trainees comment on how good it is to put a name to a face and to get to know Council staff in an informal context
- regular review of the training program and workshop content and delivery to ensure it remains fresh, up to date and relevant to ARC and industry needs

- ongoing professional development of the trainers both as industry practitioners and as professional trainers
- an applied ‘learning by doing’ training model, with practical field work in the workshops wherever possible, and pitched for the audience – an academic approach suits very few people (even academics!).

6. Where to from here?

No successful program can stand still. Developments that are under way and other potential training-related opportunities include:

- a major focus on erosion and sediment control on small sites, working with builders and territorial authority building inspectors
- as the industry becomes progressively more skilled, development of more specialized training
- setting up of national forums (formal and informal) of public and private sector agencies involved in erosion and sediment control
- a broader focus on erosion and sediment control within a wider context of coastal and catchment management, sustainable urban design, urban amenity and so on
- improved links to job descriptions, performance evaluation and staff management within organizations sending staff to workshops
- benchmarking with similar training programs within and beyond New Zealand
- computer-based and distance learning delivery to complement the “classroom” based and onsite training
- creating a formal qualification for site supervisors and workers through the New Zealand Qualifications Framework
- addressing literacy, language and cultural issues
- revisiting an early objective to set up an industry registration/accreditation system that could eventually lead to industry self-regulation.

Wider technical challenges remain, including the need for more research into catchment sediment budgets, the assimilative capacity of freshwater and saline receiving environments for sediment and the implications for the location, nature and rate of urbanization of vulnerable catchments. Other challenges include determining appropriate levels of environmental compensation, the use of GIS tools to help with compliance, the investigation of innovative new technologies and the design adaptations needed to accommodate changes in storm size and frequency resulting from climate change. The relationship of best practicable erosion and sediment control options to targets or standards for receiving environment quality is also a topic of discussion in the Region as key strategic policy, planning and regulatory documents come up for review.

7. Summary and conclusions

To sum up, the progressive development over many years of the ARC's erosion and sediment control program means the core elements now comprise:

1. **scientific research** to define the nature and scale of the problem
2. **policy development** that sets out how the ARC, the environmental regulator, will manage the problem
3. **regulation** was put in place to require land developers to apply for resource consents, which enabled the ARC to impose legal requirements for developers and their agents to install erosion and sediment controls
4. **technical guidelines** in the form of a technical publication (TP90) were prepared to help land developers build the necessary measures to control erosion and sediment runoff
5. **an education programme** was set up to address the lack of industry awareness of technical standards for erosion and sediment control. Although informal, it consisted of one or two practical workshops and several newsletters every year, and these were well received by the industry.
6. the provision of regular **training** on erosion and sediment control at a range of levels, from boardroom through design office to on-the-ground
7. external independent consultants to support the larger specialist team at the ARC by carrying out **on-site inspections** of erosion and sediment controls
8. a strong focus on **enforcement**
9. a constructive and **collaborative partnership** between regulator and industry that enables them to stay focused on what both partners need, thereby avoiding the need for unduly prescriptive and burdensome regulation; this requires formal and informal mechanisms for **ongoing communication** – communication that involves listening as well as talking
10. a sense of **professional collegiality** and cohesion throughout all levels and all sectors (public and private) of the development industry and a shared ethos of continual improvement.

Regulators considering setting up a training program must realize they are making a serious commitment to building an ongoing constructive and collaborative relationship with their trainees and their sector. This relationship must be actively fostered over the long term – and the resources provided in order to achieve this – in order to derive the types of benefits described above.

Training (as distinct from education or awareness) is a comparatively new tool for environmental regulators, who have traditionally used varying mixes of information and enforcement tools to encourage their target audiences to adopt desired behaviors. While it can achieve excellent outcomes, like any other tool its success is maximized by careful development of a comprehensive program in which training is supported by other tools. Good training builds relationships - and better environmental outcomes. It is an invaluable – and cost-effective – element of a balanced

environmental management program. As well as demonstrably achieving improved environmental outcomes, an added benefit is the greatly improved working relationships between regulators and industry, even where enforcement has been stepped up at the same time.

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