

Building staff capacity: the key to erosion and sediment control

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Introduction

For sensitive receiving waters across NSW, Erosion and Sediment Control is a key consideration. Identified in Estuary Plans with simple statements like 'continue to enforce Erosion and Sediment Control Policy' or 'education or enforcement of erosion and sediment control plans', these are the type of actions that are often the poor cousins to the larger scale projects identified in the plans.

When attempting to implement seemingly simple actions like these you face a number of key challenges - Is there an erosion and sediment control policy? Are staff aware of the policy? How can you effectively engage with staff to improve erosion and sediment control practices? How do you improve practices in catchments that cross Local Government Area boundaries? How do you demonstrate results? How do you make sure that these results are long lasting? This paper presents a case study on how Great Lakes Council and Greater Taree City Council have worked to effectively address these challenges and raise the profile of erosion and sediment control.

This paper demonstrates that when working with staff involved in erosion and sediment control a familiar 'corporately owned' process was the key to achieving results. The Great Lakes Improvement Program's seven step process review was used to identify areas for improvement in erosion and sediment control practices and this in itself was an effective tool for engaging with senior management and outdoor staff. As the actions from the review were implemented there was a focus on working with outdoor staff and tracking performance through regular internal audits. This simple yet effective tool had a multiple purpose of maintaining the high profile of best practice erosion and sediment control, assisting staff with new policies and procedures and tracking improvements in performance. To embed the improvements, Great Lakes Council have developed an Environmental Management System. The approach described in this case study could be effectively applied across councils who are facing the challenging task of raising the bar in the area of erosion and sediment control.

Setting the Scene

Great Lakes Council is located north of Newcastle on the lower Mid North Coast of NSW and there are three coastal lakes within its Local Government Area (LGA). The catchment of the largest lake, Wallis Lake, contains most of the LGA's built up areas including Forster and Tuncurry and extends into Greater Taree City Council to the North. Greater Taree City Council (GTCC) and Great Lakes Council (GLC) have developed a working partnership to improve water quality and manage catchment activities, through joint planning and delivery of a

range of programs. This project, funded by the Environmental Trust Urban Sustainability Program, was an opportunity for Councils to find ways to improve their erosion and sediment control practices and demonstrate their commitment to water quality.

The far reaching impacts of erosion and sedimentation on water quality and ecology of our waterways is well understood. The Protection of the Environment Operations Act (1997) clearly states that it is an offence to pollute water and for Great Lakes Council the Estuary Plans, and Water Quality Improvement Plan highlight the need to enforce erosion and sediment control and improve practices in this area. If the identification of the issue is simple and the legislation is relatively straight forward it poses the question - what are the key barriers to successfully implementing erosion and sediment control actions?

The perceived simplicity of the problem is potentially one of the barriers. For example, the solution could be as simple as training staff and directing them to change their approach. In the past, this has been shown at Great Lakes Council to have only achieved short term improvements. The fact that the staff responsible for improving erosion and sediment control practices are generally not involved in developing the actions in the plans is likely to be part of the problem. If this is the case, there is very little chance that the actions will be 'picked up' by those responsible when staff are stretched for resources daily.

To address the identified barriers and achieve long term systemic change, there is a need to not only instigate erosion and sediment control projects but, even more importantly, engage with staff involved in erosion and sediment control to determine the nature of the problem and identify solutions.

Methodology

The objective of the project - 'review and improve water quality management policies, procedures and compliance' and the intent to reduce sedimentation of our waterways were clear but the scope was not necessarily well defined. To initiate the project, a scoping interview covering topics such as current knowledge, current practice and suggestions for improvement was completed with engineering and planning managers. This scoping stage resulted in a number of recommendations for improvement which whilst valid, would have had little traction with the outdoor staff who had not been involved in identifying the solutions.

Recognising this barrier, the project design was refined, aiming for the 'collaborate' end of the public participation spectrum where staff are responsible for providing direct advice and innovation in identifying solutions (IAP2 Public participation spectrum). Participatory Action Learning (PAL) was identified as an approach that could help achieve this level of engagement. PAL involves a group of people coming together to critically reflect upon professional knowledge and help each other to learn from their experiences.

To achieve a greater level of engagement with outdoor staff, the Great Lakes Improvement Program (GLIP) (a program which is endorsed and supported by Council's executive), provided a strong platform for ongoing improvement. The program is strongly aligned with participatory action learning principles and is well known among staff. A facilitator from Great Lakes Council's Human Resources was allocated to guide staff through the program's steps and the recommendations were presented to senior management for endorsement.

GLIP is a seven step process:

1. Selecting the Team
2. Describe the current process
3. Analyse current performance
4. Identify improvement opportunities and
5. Develop solutions.
6. Implementing process improvements
7. Standardising the process

The team selected in Step 1 comprised of outdoor and indoor staff and included an Operations Team Leader and Member, Designer, the Manager of Operations and a Natural Systems Project Co-ordinator.

The second step in the process review was to describe the current process. This involved developing a work flow diagram for both road construction and maintenance and reviewing this with outdoor staff in one on one discussions.

Analysing current performance was the third step. This involved a combination of field assessments by the GLIP team as well as surveying all staff involved in erosion and sediment control. The survey involved Operations Engineers, Operations Co-ordinators, Team Leaders, Team Members, Designers and relevant managers. Questions in the survey covered topics such as performance, practices, training and knowledge, barriers and constraints and ideas for improvement.

The information collected in the survey, one on one discussions, field assessments and the original scoping survey were used to complete steps three to five -

3. Analyse current performance
4. Identify improvement opportunities and
5. Develop solutions.

The outcomes from steps six and seven: Implementing process improvements and Standardising the process. The outcomes from these steps are outlined in the results section and embedding improvements sections below.

To assess the success of the project, after 15 months of implementing the actions outlined in the GLIP action plan all staff involved in the initial GLIP survey were re-surveyed. Key questions from the original survey were re visited and additional questions on implementing the new erosion and sediment control procedures were included.

Using GLC facilitators, GTCC also successfully undertook a review of their erosion and sediment control practices using the GLIP methodology. Similar recommendations were identified highlighting the suitability of this approach across councils.

Implementing Recommendations

Senior management endorsed a number of recommendations made by the GLIP Team. These recommendations were all designed to achieve the aim 'to facilitate cultural change to improve performance of Great Lakes Council staff in the area of erosion and sediment control'. In order to achieve this aim the recommendations focussed on staff engagement and developing enabling systems to support behavioural change in erosion and sediment control. Recommendations covered policy review, developing work procedures, defining positional responsibilities linked to performance reviews, establishing standard drawings and check sheets, allowing adequate resources and undertaking regular audits and field based training (further details on recommendations are contained in Appendix 1).

With staff engagement as the centrepiece of the GLIP Action Plan, GLIP team members presented the recommendations to all outdoor staff at their depots providing them with feedback on how their ideas for improvement had been incorporated. This was an opportunity to outline the types of changes they were likely to observe over the coming months and receive further feedback from staff.

Developing the work procedures, positional responsibilities, standard drawings and check sheets was an iterative process involving the GLIP team members drafting documentation and approaching all Team Leaders individually to discuss the content. This commitment to incorporating their feedback assisted in the smooth transition to use.

In the GLIP survey, all staff indicated that they were interested in training with the majority of staff having a preference for demonstration sites, on-the-job, and in-house training. A three part training program was developed to meet their recommendations. Part one involved a 3 hour office based session covering the basics of erosion and sediment control and outlining Council's new procedures and check sheets. The second training session was a tailor made demonstration site where best practice and poorly constructed controls were set up ahead of time to facilitate critical analysis of the devices against the new standard drawings provided as part of the training. The final training involved one to one meetings where a GLIP team member met with the trainer and individual teams

to provide specific feedback on their controls on site and assist with using the new check sheets and standards. Staff evaluation surveys indicated that the training was well presented and pitched at an appropriate level to build staff capacity with 82 % of staff agreeing or strongly agreeing that they felt more confident in erosion and sediment control as a result of the training undertaken. The results from GTCC were similar with 90% of staff trained agreeing or strongly agreeing that they felt more confident.

One of the key recommendations for raising and maintaining the profile of erosion and sediment control was to introduce an internal audit of erosion and sediment control practices. The auditing system was developed with key outdoor staff from GLC, GTCC and MCW, and the system was then used by an internal audit team by Great Lakes Council. The audit check sheet involved working through a number of questions under the categories of 'design' and 'site works' with the Team Leader on site.

Questions in the audit were designed to determine if best practice approaches were being used in the field. Of the 22 questions asked of staff, five were identified as key indicators which were used to score and monitor performance in the areas of Design and Site works. The audit template is included in Appendix 2. In the design stage, key questions were:

- Was an erosion and sediment control plan developed for the project?
- Did the person preparing the plan undertake a thorough site assessment?
- Does the plan comply with current erosion and sediment control policy?
- Has the plan been reviewed by a supervisor / manager?

In the Site Works section, there was one key question ranking the controls at the site into one of four categories:

- 0 - no controls or virtually none
- 1 - some controls and / or poorly installed
- 2 - controls in place some not to specification or inappropriate
- 3 - controls in place well constructed, minor faults
- 4 - everything satisfactory.

To determine if the site visited fit into one of the four categories the controls at the site were compared to Great Lakes Councils standard drawings for what was considered to be 'satisfactory' erosion and sediment control. Photographs of good, average and bad practice for similar types of road work were also used to demonstrate to the field staff the kind of standards that are required.

Following each audit, Team Leaders and Co-ordinators were given an easy to understand report which included photographs of their worksite identifying areas for improvement which listed specific actions required as well as points for future consideration. The audits were approached with the dual purpose of monitoring performance and building the capacity of staff in the field. Monthly audits were conducted across Great Lakes Council by the internal audit team involving two GLIP members (Operations Manager and Natural Systems Officer) and an

Engineer from Transport Assets. Audits were undertaken approximately monthly with one to three audits completed per month.

Results

Field Audits

Results from the field audits and staff surveys have been analysed to develop a picture of how successful the GLIP has been at achieving its aim 'to facilitate cultural change to improve performance of Great Lakes Council staff in the area of erosion and sediment control'.

The audit results presented summarise the results from the key questions in the design and site works sections of the audit. The audits score the 'design stage' out of eight and 'site works' out of four. The audits results can be divided into four key sections:

1. June to December 2010, data collected during step 3 of GLIP - analysing current performance and when the new systems and procedures were being developed
2. January to April 2011, no data was collected, training undertaken
3. May to September 2011, after training and introduction to new systems, procedures and standards. These sections are indicated on the graphs.

Figure 1 presents the average scores for questions that relate to the design of erosion and sediment control. The graph shows an overall improvement after the new procedures and training were introduced. Scores were below four out of eight for design works between June 2010 and December 2011 increasing to well above four between May 2011 and September 2011¹.

¹ In August there was a notable decrease in the score, this was due to one of the two sites receiving zero which brought down the maximum scores recorded at the other site. In this particular situation, field staff were implementing a plan that that complied with Council's standards and had been established for a similar stretch of road on the same project. If the staff had indicated that they were using this plan in their paperwork they would have also scored very highly.

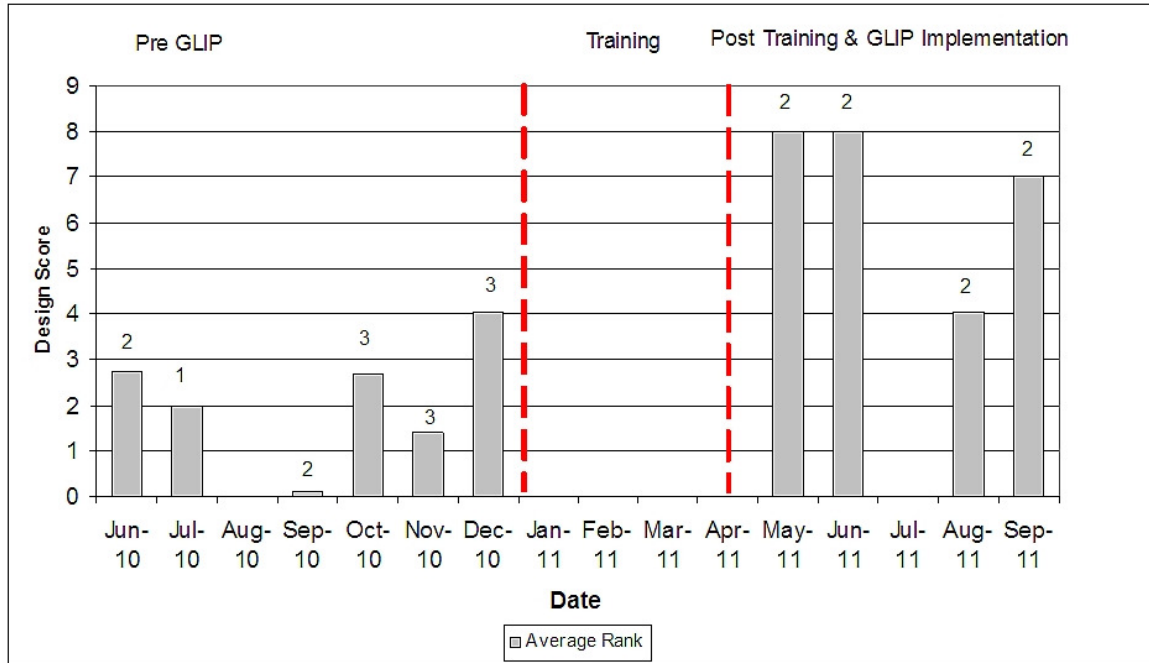


Figure 1: Average scores from field audits for the design phase

The marked improvement in scores shown in Figure 1 were largely because staff had begun sketching erosion and sediment control plans on the back of the check sheets provided with the new work procedures. The plans the Audit team reviewed were appropriate for the works being undertaken and complied with Council’s standards referring to the standard drawings provided in the training. On road rehabilitation and construction projects the designs provided are often prepared by external consultants. This was the case for one site visited in September 2011. At this site, the plan contained reasonable erosion and sediment controls but the controls proposed did not align with Councils new standards. In the field, the staff had altered the controls to meet the standards and if they had adapted the plan to reflect this they would have received a maximum score in the area of design. To address the issue of consultants plans not meeting Council Standards, in the future consultants will be provided with copies of the standard drawings to incorporate into their plans and an example of an erosion and sediment control plan which will highlight the level of detail and information required. Council have also arranged erosion and sediment control training for local builders and consultants which will also assist with improving the standard of plans provided.

It was evident during the audits that teams were discussing erosion and sediment control at their site induction as all staff were aware of the controls required on site and were able to explain the nature of the controls that would be in place by the end of the day. It was also promising to see members from across the team (not just the Team Leader) taking on the role of sketching the erosion and sediment control plans which showed that the responsibility for the new erosion and sediment control documentation was being shared.

Figure 2 shows the average ranking of the erosion and sediment controls observed during the audits. The maximum score possible was 4 indicating that everything was satisfactory. As with the design score, the graph shows an improvement in erosion and sediment controls after the training and new work procedures were introduced.

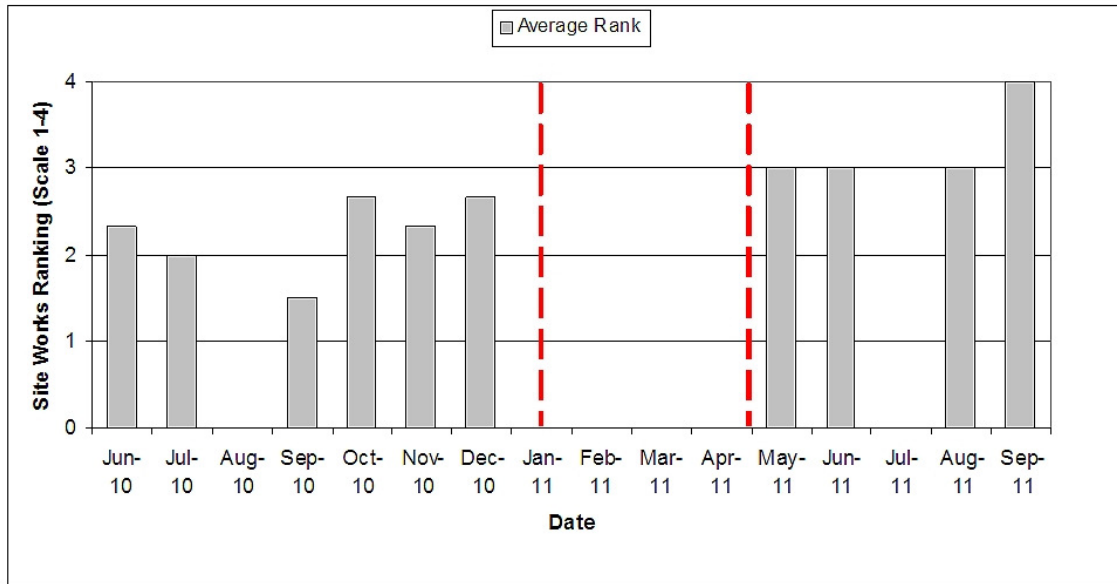


Figure 2: Average ranking for erosion and sediment controls from field audit

Between June 2010 and December 2010 the 15 sites were visited and scores were recorded with over half of the sites falling into categories 1 and 2 ('some controls and or poorly installed' and 'controls in place, some not to specification or inappropriate') (Table 1). During this time, the scores were highly variable, highlighting the inconsistencies that were observed in the application of erosion and sediment controls in the field. After the new systems and training was complete, eight sites were audited (May – September 2011). Of these eight sites, all sites were classified into categories 3 and 4 (75% in category - 'controls in place well constructed with minor faults' and 25% in category - 'everything satisfactory') further demonstrating a marked improvement in erosion and sediment control on the ground.

Table 1: Percentage of sites scoring 1-4 for erosion and sediment controls on site.

Site Works Score	Pre new systems and training (15 sites) Jun – Dec 2010	Post new systems and training (8 sites) May – Sep 2011
1. Some controls and / or	20%	0%

poorly installed		
2. Controls in place some not to specification or inappropriate	40%	0%
3. Controls in place well constructed, minor faults	26%	75%
4. Everything satisfactory	13%	25%

Overall, the results demonstrate an improvement in performance in both the design of erosion and sediment controls and their installation and maintenance. All of the staff that were visited after the training and new systems were introduced were using the new check sheets and standards. This in itself was a major achievement given the absence of erosion and sediment control documentation prior to the project commencing.

Internal audits were an effective way to raise the profile of erosion and sediment control in a very short space of time. Once field staff were aware that the audit team would be visiting their work sites on a regular and random basis, the erosion and sediment control practices began to improve (even prior to the new systems and training). Audits were approached in an open and non threatening way and having indoor staff meet with outdoor staff on their turf was a fantastic way to build relationships, the visits were really well received. Involving the Operations Manager in the audits was invaluable; this senior management commitment to erosion and sediment control highlighted its importance and would have helped to achieve the results presented here. Additional, (unintentional) benefits of involving the Operations Manager was the ability for him to provide outdoor staff with direct feedback on road construction issues resulting in improved outcomes in the area of road construction.

Staff Survey

In October 2011, 15 months after the actions in the GLIP Action Plan commenced, staff involved in the original GLIP survey were re-surveyed.

In the 2010 survey, 63 staff completed the survey compared with 43 staff in 2011. While the total number of staff involved in the survey differed, the overall proportion of staff surveyed in each category was similar. The highest percentage of staff being Team Members followed by Team Leaders with a much smaller percentage of Co-ordinators, Designers, Engineers and Managers represented (Figure 3).

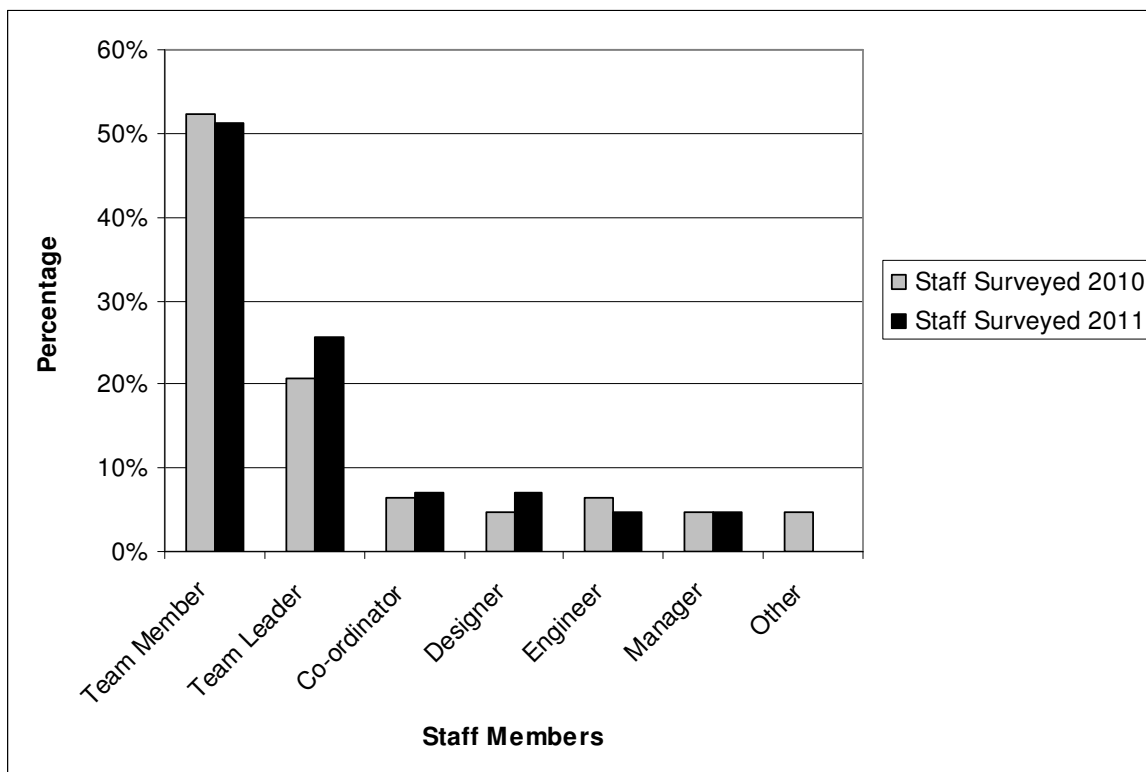


Figure 3: Proportion of respondents in the pre and post GLIP survey 2010 - 2011

In 2011, the survey results showed that 65 percent of the staff felt that Great Lakes Council's erosion and sediment control practices were excellent to above average (Figure 4). The survey showed that staff felt that performance in the area of erosion and sediment control had improved with the proportion of staff indicating they felt that practices were 'excellent' to 'above average' increasing in 2011. These observations are supported by the audit results presented above.

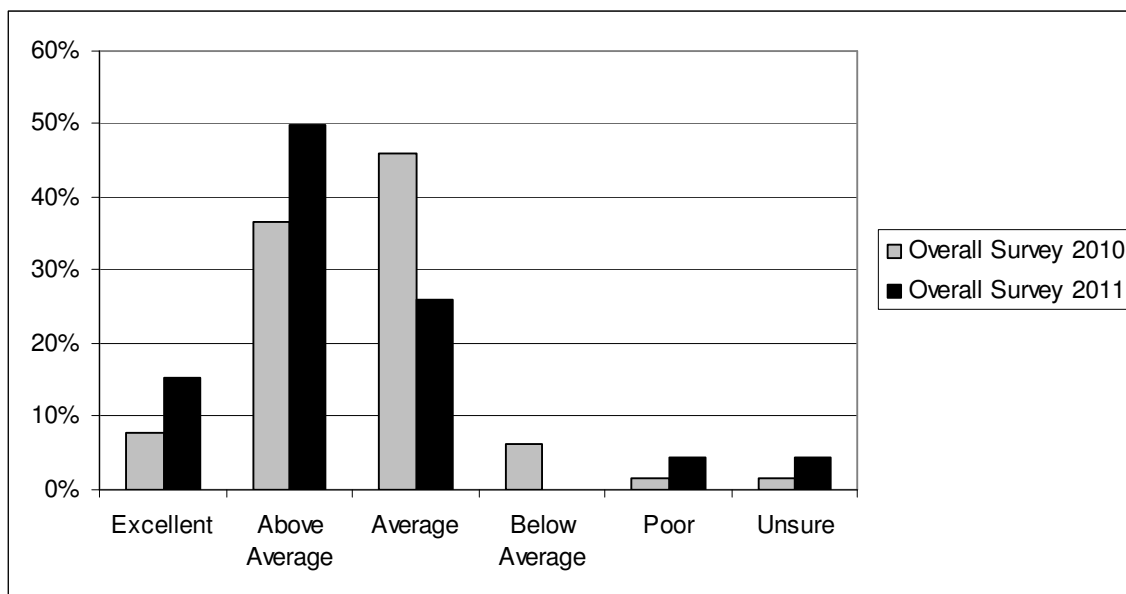


Figure 4: Perception of Great Lakes Council's performance in erosion and sediment control

Staff were asked who they believe is responsible for different parts of the erosion and sediment control process and were given options which were allocated to key positions, these options included installation, design / planning, maintenance, removal and auditing. Results in 2011 were similar to the 2010 survey which showed a strong delineation between roles with Project Managers / Engineers and Designers primarily responsible for 'design', Co-ordinators for 'auditing', Team Leaders for 'installation' and Team Members for 'maintenance' and 'installation'. In 2011 the survey results suggested that more staff felt that Team Leaders and Team Members had a role in the design / planning stage. This is likely to be a reflection of the introduction of new procedures including check sheets for erosion and sediment control which prompt teams to sketch an erosion and sediment control plan in accordance with Council's new procedures.

Team Member and Team Leaders were asked to rank their knowledge of erosion and sediment control into one of five categories. When comparing the Team Member results from 2010 and 2011 there was a shift from the largest percentage of staff ranking themselves as 'good' in 2010 to 'average' in 2011 (Figure 5). For Team Leaders the percentage of staff ranking themselves as 'good' increased in 2011 with a decrease in 'average' and slight decrease in 'excellent' (Figure 6). Given that the results from the audits show an improvement in performance, it is possible that training has raised the level of understanding among staff which resulted in greater scrutiny of their knowledge. They may also indicate that further work is needed in providing feedback to staff on their improving performance to assist with their confidence in their knowledge.

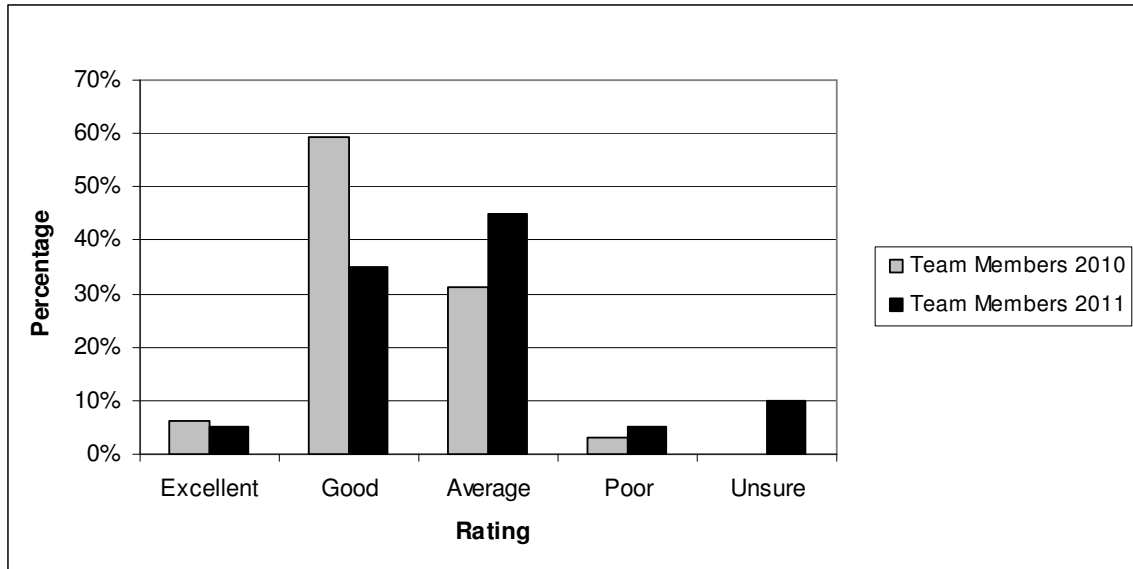


Figure 5: Team Members rank their knowledge of erosion and sediment control

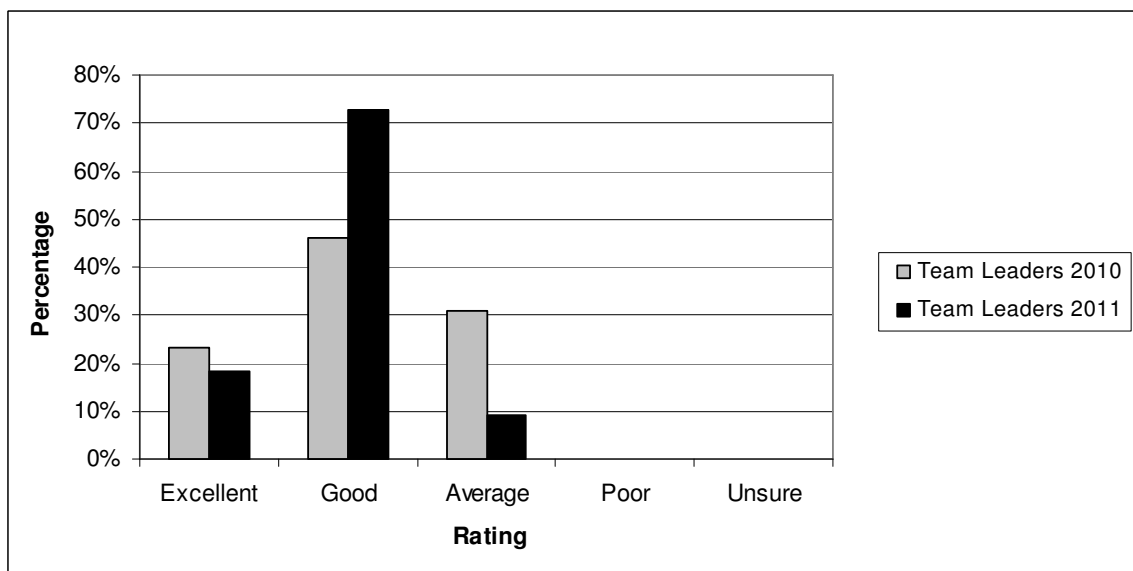


Figure 6: Team Leaders rank of their knowledge of erosion and sediment control

Between the 2010 and 2011 survey there was an increase in the percentage of staff who knew it was a legal requirement to prevent sediment entering the waterways from 86 percent to 98 percent. This increase is likely a result of the training undertaken with staff which highlighted the legal requirements for erosion and sediment control in relation to the Protection of Environment and Operations Act.

The remaining questions were designed to gain an appreciation for the level of understanding of the new procedures and standards and receive feedback on the GLIP process. Staff were asked if they were aware of the new erosion and sediment control work procedures - 90% of the Team Leaders and 100% of the Team Leaders and Co-ordinators responding yes. They also categorised their level of confidence in the new procedures. Overall, results showed a high level of confidence in the new procedures particularly among Team Leaders (Figure 7). The response from the Team Members largely fell between confident and moderately confident whereas for the three Co-ordinators surveyed there was a very mixed response ranging from extremely confident to moderately confident. These results suggest that although the level of awareness of the new procedures there is a need for ongoing support to increase confidence in the field.

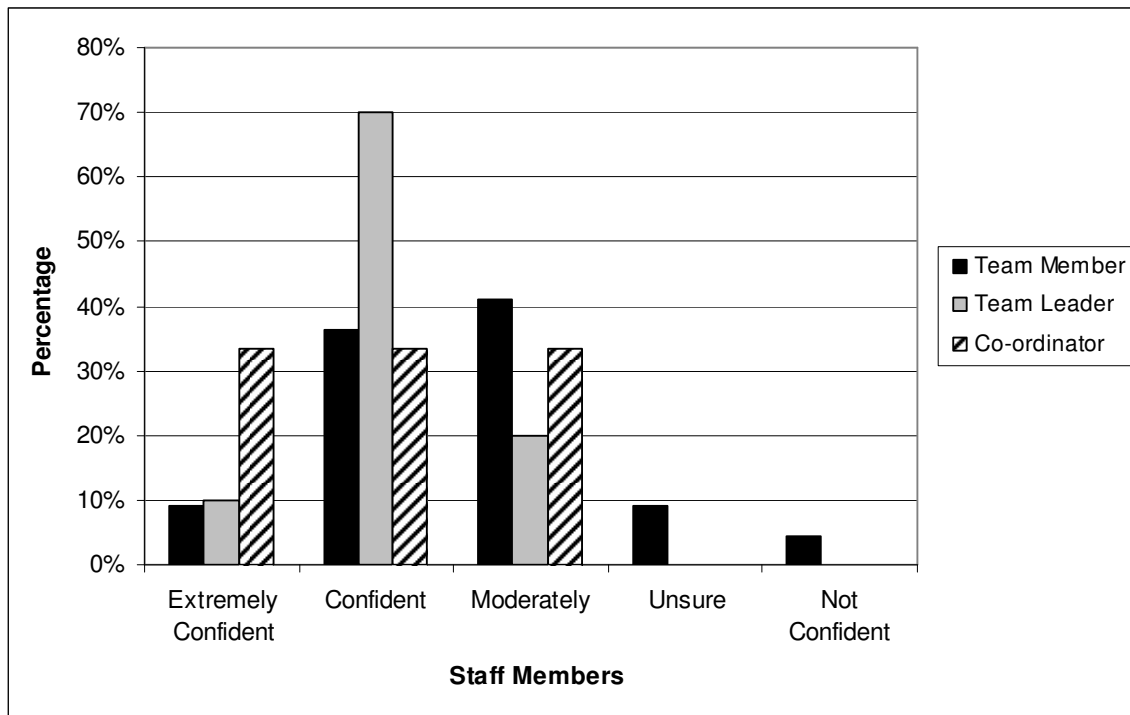


Figure 7: Co-ordinator, Team Leader and Team Member level of confidence in new procedures

Overall, the majority of the staff surveyed viewed the review of erosion and sediment control practices with GLIP as extremely effective (31%), very well (33%) and average (27%) with less than 10% of those surveyed suggesting that the approach was ineffective (Figure 8). This positive response suggests that GLIP is an effective tool for engaging with staff in this kind of process review.

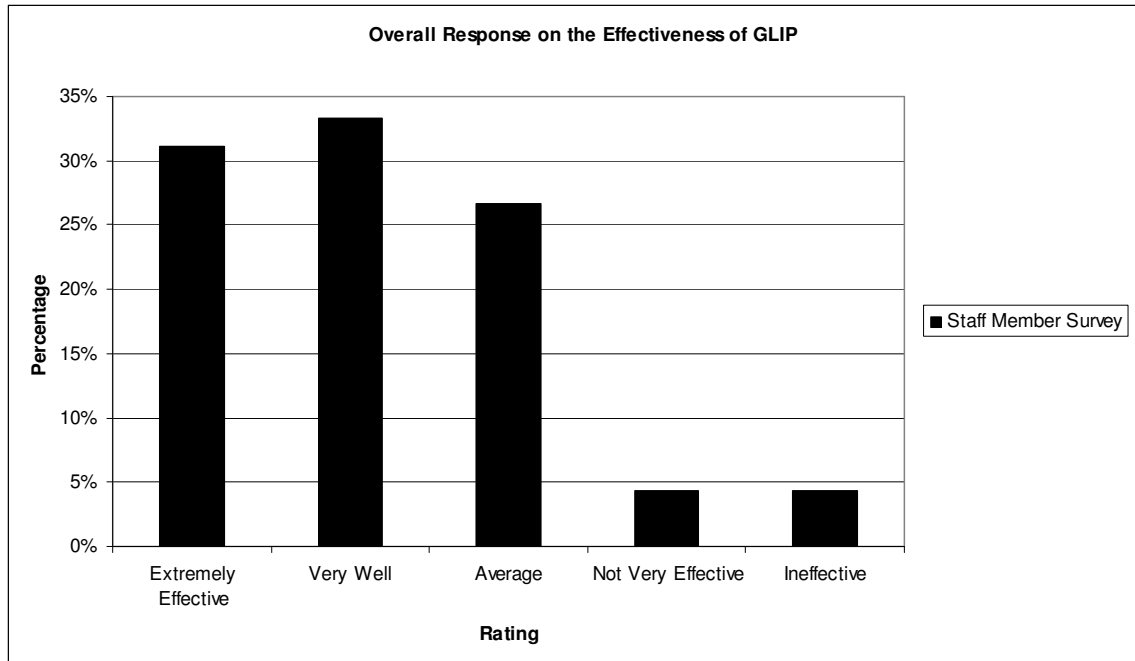


Figure 8: Overall response on the effectiveness of GLIP

Embedding improvements in erosion and sediment control

While the results from the field audits suggest that erosion and sediment control practices are improving, the survey showed a mixed response. Overall, the results highlight how important it is to embed the improvements in erosion and sediment control in order to work towards long term behavioural change and long term improvements in practice.

Great Lakes Council have developed an Environmental Management System (EMS) for erosion and sediment control practices as a way of documenting the controls that have been put in place and outline how these improvements will be maintained in the long term. The EMS is divided in to sections on training, communication, operational controls, checking and management review. The actions outlined in the EMS were developed with the people responsible for the activities for example, Human Resources provided input to the section on training. This collaborative approach to developing the EMS will ensure that the system developed is consistent with Council's existing systems and therefore there being more chance of the EMS being implemented.

The EMS establishes targets which will be monitored and used as indicators of its success. The targets include:

- 0 infringements against the *Protection of Environment and Operations Act* for pollution of waters due to erosion and sedimentation
- 80% of projects audited achieve a score of 3 - Controls in place, well constructed, minor faults; or 4 - Everything satisfactory.

Additional targets specifically focusing on the implementation of the operational controls are:

- 80% of the road construction and maintenance projects receive an internal audit.
- 100% of the road construction and maintenance projects utilise daily check sheets.
- 100% of the road construction and maintenance projects have an erosion and sediment control plan in place.

The key actions identified in each section of the EMS are summarised below.

Training

- For new employee involved in activities surrounding erosion and sediment control the 'desirable' selection criteria will include the need for experience in erosion and sediment control
- Staff induction days will include a short section on the local environment and Council's commitment to protecting water quality.
- The induction checklist for outdoor staff will remind supervisors to introduce all new road construction and maintenance staff to the erosion and sediment control procedures and will prompt supervisors to show the new team members a short 5 minute DVD to raise awareness of the internal auditing of erosion and sediment control practices
- A copy of the erosion and sediment control training slides covering types of erosion and examples of good and bad erosion and sediment controls can be shown to staff as a refresher during wet weather days.
- Council's training plan highlights the need for future training in this area

Communication

- Manager Operations will report to the Sustainability Team on EMS targets every six months, summarising EMS implementation and outlining recommendations for improvement. The Sustainability Team will also receive a briefing on the bi annual management review.
- The S-Team representative on the Risk Management Committee will report to the Committee on EMS implementation as erosion and sediment control was identified as one of Councils key risks for the Operations Branch.
- If major changes to work procedures are required the EMS highlights the need to collaborate with the staff to maintain a high level of ownership of the systems.

Operational controls

- Operation controls are essentially the enabling tools for achieving behavioural change and these include the work procedures, standard drawings, standard plans, check sheets developed as during GLIP

Checking

- To ensure the systems established during the GLIP process review are implemented and embedded as documented in this EMS, erosion and sediment control practices on road maintenance and construction are being monitored at two levels - daily checks and through an internal audit
- Daily checks involve field staff completing check sheets covering topics of planning, implementation and site stabilisation. These check sheets were introduced during the training that occurred in early 2011.
- The internal audit established during GLIP has been handed over to the Operations Engineers to become part of their work program. Continuing the audits will assist in maintaining the profile for erosion and sediment control whilst providing a high level of support to field staff. The audit is a simple one page check sheet covering questions on planning and implementation. As with the GLIP audit, the key question ranks the controls at the site from 0-4. The audits are completed once during each road construction and rehabilitation job and randomly on road maintenance projects. The results from the audits will be checked by the Operations Manager and reported to the S Team against the EMS targets bi annually.

Management review

- The management review will take place once every two years, co-ordinated by Natural Systems Staff.
- The review will assess the effectiveness of the EMS for achieving its objectives as well as checking the relevance of policies and procedures in relation to current legislation.

Conclusions

The drivers to improve council practices in relation to water quality may be different for each council. Drivers may include community perception, compliance with legislation or a consolidated response to a negative incident from the past. Whatever the drivers, the challenges of improving internal council practices are likely to be common to many councils. Rising to the challenge of collaboratively developing solutions across departments and embed changes is the key to achieving behavioural change.

Change and improvement are more easily implemented and embedded within the organisation when using an existing and familiar process. Corporate ownership of the process review provided the GLIP team with an effective methodology and framework to work within which included experienced facilitators, and a schedule for Senior Management reporting. GLIP was a really engaging approach to process review - a great tool to use when wanting to review complex processes that involve people from across the organisation. Using this familiar process is helpful but it is not critical. With assistance from Great Lakes Council, Greater Taree City Council have used the same seven step

process to achieve high levels of engagement and compatible outcomes for our shared catchments.

The benefits of working in partnership with neighbouring councils on projects such as this one are immeasurable. Many of the documents produced such as standard drawings and work procedures were developed in house and shared across the two organisations. Apart from the direct financial benefits, there was the additional benefit of staff knowing that other organisations are also working towards improving their practices, assisting to normalise the process showing that is somewhat 'normal practice' to undertake such projects.

Developing the solutions and new systems with staff and spending time with them explaining the reason they needed to be developed was fundamental to their easy adoption. There was very little to no negative feedback about the new daily check sheets and all sites visited were using the systems once introduced.

Demonstrating leadership from management is central to the success of this project. The involvement of the Operations Manager in the process review, field audits and future implementation of the EMS sets a clear message to staff at an operational and corporate level on the importance of erosion and sediment control to the organisation and community.

As the results in this paper demonstrate, behavioural change does not happen quickly however, noticeable improvements can be achieved in a relatively short time frame if process improvement is approached in a collaborative way between staff and management.

Hunter Councils are developing a case study available to member councils outlining the methodology and new systems referred to in this paper.

Acknowledgements:

This project has been undertaken in partnership with Greater Taree City Council and MidCoast Water, funded by the NSW Environmental Trust Urban Sustainability Program and made possible by Great Lakes Council's Environmental Special Rate.

Appendices:

Appendix 1: Table 1 – Action Plan and Recommendations Improving Sediment and Erosion Control Practices

Appendix 2: Audit Check Sheet

Appendix 1: Table 1 – Action Plan and Recommendations Improving Sediment and Erosion Control Practices

TABLE 1 - ACTION PLAN AND RECOMMENDATIONS IMPROVING SEDIMENT AND EROSION CONTROL PRACTICES

The overall aim of this Action Plan is: To facilitate cultural change to improve performance of GLC staff to meet statutory requirements in Sediment and Erosion Control practices

Recommendation	Action	Responsibility	Date
1.0 Raise awareness and understanding of Statutory Requirements and Council Sediment Erosion Control policy through training and education	1.1 Provide feedback to staff on the actions recommended by GLIP that will be undertaken to improve sediment and erosion control practices – Yard presentation to outdoor staff. Relevant staff to be invited to GLIP Presentation.	SED Team	Jun - Jul 2010
	1.2 Develop an education program to raise awareness of the expectations on staff in relation to Sediment and Erosion Control this will include education on Council's Sediment and Erosion Control Policy and procedures.	Natural Systems coordinate, with assistance from Human Resources and consultant to conduct training. (Utilise available funding to roll out training)	Sep - Dec 2010
	1.3 Raise the profile of Sediment and Erosion Control so that it is considered as important as occupational health and safety and traffic control through regular communication from management, auditing, feedback to outdoor staff, site discussions, training and performance reviews.	Human Resources, Co-ordinators, Managers, Audit Team	Jun 2010 - ongoing
	1.4 Inclusion of Sediment and Erosion Control and environmental performance in position performance review process for supervisory staff after procedures are developed, documented and training is complete. Include a prompt in the 2010 performance reviews to	Operations Manager to consult with Human Resources for inclusion	Sep 2010 - Jul 2011

	indicate that future reviews will include these assessments.		
2.0 Document procedures and positional responsibilities for Sediment and Erosion Control for road construction / reconstruction and maintenance from design to completion of works	<p>2.1 Refine and adopt proposed Sediment and Erosion Control process flowchart for construction / reconstruction and maintenance projects (Annexure G and H).</p> <p>2.2 Develop written procedures based on GLIP Team's revised process. Develop appropriate documentation. Seek input and feedback from key users.</p> <p>See Table 2 for a summary of recommendations relating to process and procedural improvements (Annexure G and H).</p> <p>2.3 Document positional responsibilities based on SED Team recommendations and procedures developed.</p> <p>2.4 Include training on responsibilities per position during field based training.</p>	<p>SED Team to be endorsed by MANEX</p> <p>Engineering staff with assistance from Natural Systems.</p> <p>Operations Manager to co-ordinate with assistance from Natural Systems and HR.</p> <p>Natural Systems to co-ordinate and consultant to incorporate into training (Utilise available funding to roll out training)</p>	<p>Jun 2010</p> <p>Aug - Oct 2010</p> <p>Sep - Dec 2010</p> <p>Sep 2010 - Feb 2011</p>
3.0 Develop an auditing strategy to review Sediment and Erosion Control practices to enable ongoing assessment of performance	<p>3.1 Develop a strategy (including a formal auditing system) with three levels of auditing consisting of:-</p> <ul style="list-style-type: none"> • twice daily (review of practices in the field within team) • short term / ad hoc (review of practices from SEC design to completion with co-ordinator, engineer, internal audit team, ordinance staff and consider utilising Operations Safety Officer) • long term (review of systems, procedures, overall practices against statutory requirements) <p>This auditing system should include a review of Sediment and</p>	Sediment and Erosion Control Audit Team	Oct 2010

	Erosion Control in relation to designs, Sediment and Erosion Control practices against the policy and the Review of Environmental Factors Environmental Controls. It will provide ongoing feedback to staff in the field.		
	3.2 Establish a short term internal audit system and undertake audits to assist in developing the auditing strategy and hand over to Co-ordinators and Operational Engineers for ongoing audits.	Sediment and Erosion Control Audit Team	Jun 2010 - Jun 2011
	3.3 Consider resource sharing (co-auditing) with other Council's and relevant bodies.	Sediment and Erosion Control Audit Team	Opportunistically
4.0 Provide training to ensure adequate knowledge and skills in design, installation, maintenance and auditing of Sediment and Erosion Control	4.1 Assess current staff skill levels in relation to erosion and sediment control (including Designers, Team Leaders, Members, Co-ordinators, Engineers and Ordinance). 4.2 Develop and implement training on Sediment and Erosion Control policy, statutory requirements and practices including: <ul style="list-style-type: none"> • Field based training in high risk sites including training on responsibilities per position • Establish field based demonstration sites on what 'good' sediment and erosion control looks like including collection of water quality data • Incorporate new Sediment and Erosion Control procedure into training 	Human Resources, Co-ordinators, Manager Operations Natural Systems to coordinate, with assistance from Human Resources (Utilise available funding to roll out training). Engineering, Natural Systems & Soil Conservation Services to develop demonstration sites	Sep 2010 Sep 2010 - Feb 2011
5.0	5.1 The Depot Stores shall purchase sediment fence of a	Operations Manager to advise	Jun 2010

<p>Ensure the provision of adequate time and resources to design and implement Sediment and Erosion Control</p>	<p>higher quality than that currently purchased and this fence will have marking to assist with installation using correct techniques.</p>	<p>Stores</p>	
	<p>5.2 Develop resourcing procedures which include the following:-</p> <ul style="list-style-type: none"> • In project planning and estimates appropriate time and resources should be allowed for the installation and maintenance of erosion and sediment controls, ensure planned resources are in place for field works. • Operational Engineers, cost clerk & Co-ordinators to report to Manager of Operations. Ongoing review to be included in auditing strategy. • • On all capital works a specific activity should be used with a budget allocation for the installation and maintenance of Sediment and Erosion Controls. 	<p>Operations Manager to facilitate into process for operational staff to address</p>	<p>Dec 2010 - Ongoing</p>
<p>6.0 Implement a review of Council's Sediment and Erosion Control Policy to ensure compliance with statutory requirements and establish an ongoing review of overall Sediment and Erosion Control</p>	<p>6.1 Engage consultant to review Council Sediment & Erosion Policy utilising available funding, seek feedback from relevant users.</p>	<p>Natural Systems, with input from Engineering & Planning staff, to co-ordinate, consultant to review (Utilise available funding)</p>	<p>Jul - Sep 2010</p>

process			
7.0 Establish standard drawings and onsite documentation (including checklists) to assist with implementation and documentation of Sediment and Erosion Control	7.1 Develop checklists for Sediment and Erosion control covering - design, pre-start, implementation, auditing and an overview of SEC to be included in the site specific management plan 7.2 Establish standard Sediment and Erosion diagrams for short and long term works to be linked to checklists	Operations Engineers, with feedback from Audit Team and relevant users Design Section with feedback from Audit Team and relevant users	Sep - Dec 2010 Aug - Sep 2010

Appendix 2: Audit Check Sheet (Page 1)

EROSION & SEDIMENT CONTROL CHECKLIST			Vers 5/2 02.02.11	Data Entry Date >>			
Job Name:-		Site :-	Assessing Officer(s)				
Progress:-		Chainage:-	>>				
STAGE	No.	ITEM	Assessment Date	OBSERVATION			COMMENTS - NB : All shaded box's require explanation << Mark the N/A box where project can't be assessed
			_/ / ____	Yes	No	N/A	
D e s i g n	1	Does the project require an ESC Plan				If No, proceed to 12 & mark N/A for 2-11	
	2	If yes, was an ESC Plan prepared for the project ?				If No, proceed to 12 & mark N/A for 3-11	
	3	Who prepared the ESC Plan, either.....	Council, <u>OR</u>			Note if the Plan was prepared on site or in the office	
			Other			If Yes, Consultants Name:-	
	4	Did the ESC Plan preparer visit & thoroughly study the entire site					
	5	Has the ESC Plan been signed off / approved				If Yes, by who?	
	6	Does the ESC Plan comply with current ESC Policy & CoP					
	7	Is the ESC Plan	Site Specific			If No, what is the issue ?	
			Understandable				
			Adequate				
	8	If not, why not	Unaware of ESC Policy & CoP			If Other, why ?	
			Insufficient training / skills				
Other							
9	Has the ESC Plan been reviewed by a supervisor / project manager				If No, why ?		
10	Does the ESC Plan reflect the scale of works, sensitivity of the site				If No, what is required ?		
11	Can the ESC Plan be improved to better match the site				How ?		
12	Have there been any changes to the project or surrounding environment since project design that may impact on the ESC Plan				If Yes, how ?		
Total (A) >>			0	0			

Appendix 2: Audit Check Sheet (Page 2)

STAGE	No.	ITEM	Assessment Date	OBSERVATION			COMMENTS - NB : All shaded box's require explanation << Mark the N/A box where project can't be assessed	
				YES	NO	N/A		
S i t e	13	Has works supervisor had training to implement the ESC						
	14	Are ESC measures implemented as per the ESC Plan				Mark N/A if there was no plan		
	15	Are works teams aware of the site specific ESC Plan				Mark No if there was no plan		
	16	Is ESC Plan & measures being reviewed & modified as works proceed						
	17	Can the ESC Plan be improved to better match the site				If Yes, how ?		
	18	Has ESC been adequately resourced (funds, equipment, time)						
	19	Are ESC measures installed & likely to control erosion & trap sediment [Enter only ONE of the following rating scores]						
		RANK SITE BASED ON OBSERVATIONS		RATING SCORE 0 - 4		COMMENTS		
		0. No Controls, or virtually none	Rating =	0				
		1. Some controls and/or poorly installed						
	2. Controls in place, some not to specifications or inappropriate							
	3. Controls in place, well constructed, minor faults							
	4. Everything satisfactory							
			YES	NO	N/A	COMMENTS - NB : All shaded box's require explanation		
	20	Are all ESC measures regularly maintained						
	21	Have ESC measures been removed after site stabilisation						
	22	Has this project been previously audited against the ESC Plan or Policy				If Yes, how ?		
	Total (B) >>			0	0			
	Overall Total (A+B) >>			0	0			