University of Southern Queensland

Faculty of Health, Engineering and Sciences

Construction Environmental Management in a Council Context

A dissertation submitted by

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Abstract

The Construction Environmental Management Plan (CEMP) is an important document which organisations involved in construction often utilise to ensure that their impact on the surrounding environment is minimised during the works. The Clarence Valley Council is no exception to this. Recently the Clarence Valley Council conducted an internal audit of its environmental controls and procedures. The audit found that the current CEMP being used by Councils Civil Services Team is not fully compliant and should be updated to ensure it is compliant with relevant legislation. The following report outlines the requirements to write a CEMP for the Clarence Valley Councils Civil Services Section. It outlines the relevant legislation and guidelines which govern environmental protection in NSW and more specifically the Clarence Valley Council. It also addresses how the CEMP will be set out and what it will cover as per the suggestion set out in the Managing Urban Stormwater: Soils and Construction - Volume 2D - Main Road Construction. Finally, the risks of the legislation or the CEMP being misinterpreted is addressed with some controls put in place, including requesting that the draft CEMP is reviewed by an ecologist and feedback acted on to ensure there are no oversites.

Contents

List of Acronyms

- CEMP – Construction Environmental Management Plan
- EEP – Environmental Emergency Plan
- ERSED – Erosion and Sediment
- SCE – Senior Capital Engineer
- SFO – Senior Field Operator
- TfNSW – Transport for NSW

1. Introduction

Late in 2022, the Clarence Valley Council employed the services of an external consultant to conduct an audit on the Councils environmental management policies and procedures; the level and effectiveness of environmental controls and if the policies and procedures are being followed. One of the findings from this audit found that the existing Construction Environmental Management Plan has not been updated for a significant amount of time and is not completely being followed by staff on project sites. This can expose either Council or individuals to prosecution if certain policies or procedures are not adhered to, even if the offence is unintentional.

The following report has been written to give background information for the purpose of environmental management with regards to construction, specifically in the Clarence Valley Council.

The project aims to conduct research on the policies and procedures that the Clarence Valley Council needs to implement to ensure it is compliant in environmental protection during construction works, and to rewrite the Construction Environmental Management Plan (CEMP) so that it is up to date and relevant.

The objectives for this project are to:

- Research and determine the policies and procedures that the Clarence Valley Council must adhere to regarding environmental protection during construction works.
- Draft a CEMP which encompasses these policies and procedures.
- Have the draft CEMP reviewed by a professional in this field and corrected if necessary.
- Have the CEMP endorsed by the Manager of Civil Services.
- Audit the performance of the CEMP as staff members use it to ensure that it is functioning as required. Receive feedback and update if necessary.

The following report will contain a literature review and development of a study methodology to compile the relevant data for the CEMP. It will then document the outcomes of updating the CEMP and any further works required

2. Literature Review

2.1 The Increasing Importance of Environmental Management

Today more then ever, there is ever increasing focus on environmental sustainability across the world as the human civilization continues to develop in the modern era. It is well known and well documented that our rapidly changing modern way of living and significant population growth is creating new problems that have not been encountered by humans in history. This is emphasised through global initiatives such as the United Nations Seventeen Goals which have a strong emphasis on sustainable development (United Nations, 2023). Goals seven, eight, nine, eleven, twelve, thirteen, fourteen, fifteen, sixteen and seventeen all contain an element of sustainability (United Nations, 2023). This includes the global pursuit of clean energy, economic development, community and settlement development, material consumption, reducing the impacts of climate change, use of the oceans, use of the land and continuing global partnership (United Nations, 2023). The Paris Agreement, a legally binding international treaty on climate change (United Nations Climate Change, 2023), and other Global events and summits are increasing awareness and brining pressure on the world governments to do more to reduce environmental degradation while they still develop their nations. This pressure filters down to state and local level governments in the form of legislation.

2.2 The History of Environmental Management in Local Government

Australian local governments are an institution with roots stemming from the 1840's (Kelly & Farrier, 1996). The dominate role of Council since then has been and generally continues to be to provide and maintain that of basic infrastructure services and amenities such as roads, water services, sewer, municipal waste collection and handling etc. However, since the early days the role of Councils have increasingly become diverse including greater involvement in the protection of the environment (Kelly & Farrier, 1996). The traditional role of Council is to provide local amenity for the public, particularly the rate payer. Environmental protection therefore also fitted into this category in the form of preserving the natural beauty of an area and conserving character of communities for the sake of the rate payers and their land values (Kelly & Farrier, 1996). However, environmental protection has taken on a much greater focus in the global community particularly since the beginning of the 21st century. In NSW, state-wide legislation, and policy such as the Environmental Planning and Assessment Act 1993 and the relevant State Environment Planning Policies (SEPPs) have placed increasing pressure on local Councils to operate in an increasingly environmentally conscious way to the benefit of the wider community and not just the rate payer (Kelly & Farrier, 1996).

2.3 The Local Government Act 1993

The NSW Local Government Act 1993 is legislation passed by the NSW state government which is designed to (*Local Government Act 1993, Ch. 2)*:

1. Provide the legal framework for the system of local government for NSW.
2. To set out the responsibilities and powers of Councils, Councillors and other persons and bodies that constitute the system of local government.
3. To provide for governing bodies of councils that are democratically elected.
4. To facilitate engagement with the local community by councils, councillors and other

persons and bodies that constitute the system of local government.

5. To provide for a system of local government that is accountable to the community and that is sustainable, flexible, and effective.

This legislation is very broad and governs how Local Government is to operate, however this is also where the Councils Environmental obligations begin. Section 8 (2) (d) it states, "Councils should consider the principles of ecologically sustainable development" (*Local Government Act 1993)*. The act gives reference to the Environmental Planning and Assessment Act 1979 under Section 22 titled "Other Functions" which is in Chapter 5 titled "What are a Councils Functions?" (*Local Government Act 1993).*

2.4 The Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 is a piece of legislation that also has very broad objects but is specific to environmental protection rather than local government. Objects that are specific to construction management in a council context include (Environmental Planning and Assessment Act 1979, Part 1.3):

- To promote the social and economic welfare of the community and a better environment by the proper management, development, and conservation of the state's natural and other resources.
- To facilitate ecologically sustainable development by integrating relevant economic, environmental, and social considerations in decision making about environmental planning and assessment.
- To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities, and their habitats.
- To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).
- To promote good design and amenity of the built environment
- To promote the sharing of the responsibility for environmental planning and assessment between the different level of government in the State.

There are other objects to the Act that have been omitted here as they are not considered relevant to this report.

Section 3.13, under Division 3.2 Environmental Planning Instruments – General, states that an environmental planning instrument may be made in accordance with this part for the purposes of achieving and of the objects of this Act (Environmental Planning and Assessment Act 1979). Environmental planning instruments include State Environment Planning Policies (SEPPs) and Local Environmental Plan (LEP). SEPPs are produced at the State Government Level and LEPs are produced at the local government level but are approved for use at the State Level (Environmental Planning and Assessment Act 1979).

The Environmental Planning and Assessment Act defines the purposes of environmental planning instruments. The first object of planning instruments is to aid in protecting, improving, or utilising to the best advantage, the environment (Environmental Planning and Assessment Act 1979).

2.5 Protection of the Environment Operations Act 1997 (POEO Act)

A similar piece of legislation to The Environmental Planning and Assessment Act 1979 is the POEO act. While the Environmental Planning and Assessment Act is more concerned with protecting the environment through regulation of the planning sector to improve environmental outcomes because of development decisions, the POEO Act is more concerned with protecting the environment through regulating how the environment is considered and protected during the operations of works which are potentially harmful to the environment.

The primary objects of this act that are relevant to the CEMP include (Protection of the Environment Operations Act, 1997, Ch 1., Cl 3):

- To protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development,
- To reduce risks to human health and prevent the degradation of the environment using mechanisms that promote:
    - Pollution prevention and cleaner production,
    - The reduction to harmless levels of the discharge of substances likely to cause harm to the environment,
    - The elimination of harmful wastes,
    - The reduction in the use of materials and re-use, recovery, or recycling of materials,
    - The making of progressive environmental improvements, including the reduction of pollution at the source,
- To rationalise, simplify and strengthen the regulatory framework for environmental protection,
- Improve the efficiency of administration of the environmental protection legislation.

2.6 State Environmental Planning Policies

There are several State Environmental Planning Policies in NSW which address differing categories. For construction in the Transport sector the primary SEPP which is relevant is the Transport and Infrastructure one. This is the SEPP which will be primarily focussed on as the Construction Environmental Management plan is to be written for the Civil Services Department of the Clarence Valley Council. This department is primarily involved in the construction and maintenance of Transport Infrastructure.

The primary aim of the Transport Infrastructure SEPP which is relevant to the Construction Environmental Management Plan is “Identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development)” (State Environmental Planning Policy (Transport and Infrastructure) 2021).

Councils Capital and Operational construction works only take place on land in which the Council is the Public Authority, and so consent is not required to begin development (State Environmental Planning Policy (Transport and Infrastructure) 2021).

2.7 Local Environmental Plan (LEP)

The other Environmental Planning Instrument mentioned in The Environmental Planning and Assessment Act 1979 is the Local Environmental Plan (LEP) (Environmental Planning and Assessment Act 1979). The LEP is prepared at the local government level but is approved at the state level, each local government area has its own LEP. Therefore, in this report the Clarence Valley LEP will be focused on.

As with the other forms of legislation and policies reviewed so far, the LEP has a broad range of aims. The ones which mainly relate to the CEMP include (Clarence Valley Local Environmental Plan, 2011, Ch. 1 Cl 1.2):

- To encourage and enable the sustainable use, development, and management of natural and man-made resources, including agricultural land resources and productive rural lands,
- To protect areas of high ecological, scientific, cultural, or aesthetic value,
- To provide adequate access and services to development carried out in accordance with this plan.
- To maintain the character of villages and towns.
- To conserve items and areas of environmental and cultural heritage.
- To protect key infrastructure and ensure adequate integration of infrastructure and development.
- To maintain or improve the natural conservation and scenic amenity values of the land, including significant habitat areas and wildlife corridors.

2.8 Managing Urban Stormwater: Soils and Construction – Volume 2D – Main Road Construction

There are guidelines published by the NSW Government which are commonly known as the Blue Book. They provide information to Councils on how to reduce the impacts on the local environment from Erosion and Sediment produced from construction activities. There are multiple parts to the Blue Book, with the one applying most to the CEMP is the Main Road Construction Section.

The blue book has a heavy emphasis on preventing erosion in the first place, since retaining sediment is much more difficult.

The primary Management Principles can be summarised as follows (Managing Urban Stormwater: Soils and Construction, 2008, P. 10):

- Assess the soil and water implications of a project at the planning stage.
- Plan for Erosion and Sediment (ERSED) control prior to commencement of earthworks including assessment of site constraints.
- Minimise area of disturbance.
- Conserve topsoil for late site rehabilitation.
- Control Water Flow though the project by diverting up stream clean water away from disturbed areas, keeping flow rates below an erosive level and that sediment be retained from the disturbed areas.
- Rehabilitate disturbed areas as soon as able.
- Maintain ERSED controls during the life of the control.

Appendix A of the Main Roads Construction provides information on what a CEMP should include. This includes (Managing Urban Stormwater: Soils and Construction, 2008, P. 32):

- That the CEMP address all limitations, constraints and opportunities identified in the projects Review of Environmental Factors (REF)
- General contract conditions (this won't apply for Councils self-performed works).
- Statutory requirements and other conditions of approval as required by government agencies.
- Proposed construction activities or operations, particularly relating to high-risk areas.
- Current accepted standards of industry best practice.

A key part of the CEMP is an Erosion and Sediment Control Plan (ESCP) which is a plan which will vary from project to project but will generally contain a register of ERSED controls in place, an inspection schedule for said controls, a register of when controls are implemented and removed, and map dictating the location of the controls (Managing Urban Stormwater: Soils and Construction, 2008).

A diagram of what a typical CEMP should include is provided in Figure 1.

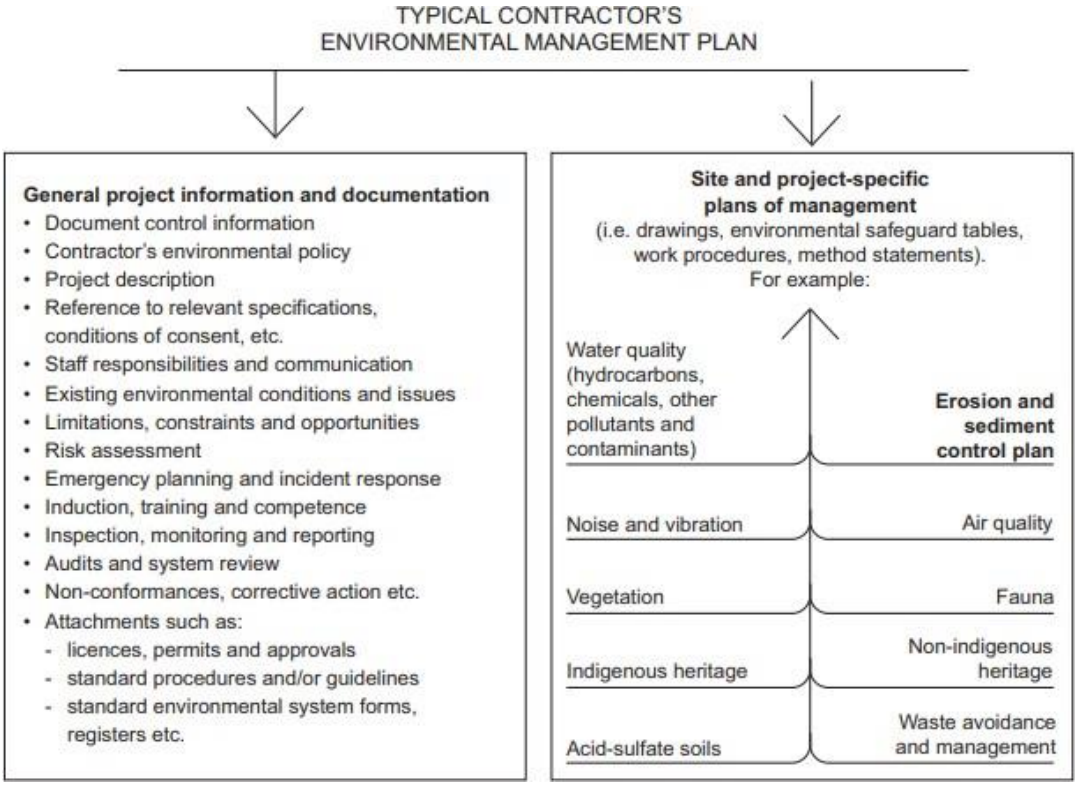

Figure 1. Department of Environment and Climate Change, 2008.

2.9 Review of Environmental Factors

Part 5 of the Environmental Planning and Assessment Act 1979 states that "a determining authority in its consideration of an activity shall examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity". Activity is defined, among other things as "the carrying out of a work". Environmental assessment is not required for exempt development (EP&A Act 1979) which is generally defined in Division 4 of the State Environmental Planning Policy Transport and Infrastructure 2021 and in Part 3 of the Clarence Valley Local Environmental Plan 2011. This typically constitutes minor maintenance works, such as filling potholes.

For non-exempt work, an environmental assessment is normally achieved through the production of a review of environmental factors (REF). An REF typically addresses the following (Local Government NSW, 2019, p. 8):

- The location and existing environmental factors of the proposed activity.
- The potential impacts for the proposed activity on those environmental factors.
- Potential for successful impact mitigation.

- Community and stakeholder expectations.

The CEMP address all limitations, constraints and opportunities identified in the projects REF to make it site specific (Managing Urban Stormwater: Soils and Construction, 2008). During the writing of this report, a template for a CEMP will be drafted, however there will be sections that will change for project to project to keep the document site specific for each project.

3. Methodology

Drafting and issuing the CEMP is an important task and is good practice in the process of writing a professional document for the use of other professionals. This document is designed to inform employees on how to remain compliant with relevant policies and legislation and so there is a responsibility held in ensuring it is accurate and well written.

The CEMP should be site specific. This means that the CEMP is relevant to each individual project and highlights the unique risks and opportunities of each project. Therefore, to complete this project a template CEMP will be created which will be saved on the Clarence Valley Councils Intranet web page for employees to get access to. However, before this occurs the template will be filled for a unique project and used on site to allow for necessary changes before being made available to the rest of the Council.

3.1 Drafting the Construction Environmental Management Plan

Clarence Valley Council has an outdated CEMP which will be the template for the new CEMP. The intention is to rewrite the CEMP to ensure it is compliant with all the relevant legislation reviewed in the Literature Review.

3.1.1 Document Control Information

On the second page of the CEMP, a table will be included to display the current edition/revision number, the date of release, a description of what the updates include and who the issue has been authorised by. This page will also contain a table with a yearly review schedule which will include the date the planned review should be completed by who is to review the plan and the scope of the review. The scope is typically the whole plan but should be a segment of the plan if that is only relevant, such as when a particular piece of legislation changes that does not apply to the rest of the plan.

3.1.2 Project Description

The project description section will be a new addition to the current CEMP and will be updated to suit each individual project. The project description section should include (Construction Environmental Management Plan (CEMP), 2021, P.3):

- Description of the site location, the receiving environment, and the location of sensitive receivers.
- A description of the working hours to be used including construction hours and expected project timelines.
- Identification of project specific environmental impacts.
- Identification of proposed mitigation measures to prevent/reduce environmental impacts.
- Describe and set out appropriate reporting and inspection measures that are site specific.

3.1.3 Reference to relevant Specifications

The Clarence Valley Council works to the Northern Rivers Local Government Development Design and Construction Manual, which is a collaboration of specifications and standard drawings between the Lismore City Council, Ballina Shire Council, Kyogle Shire Council, Richmond Valley Council, Clarence Valley Council and Byron Shire Council (Lismore City Council, 2023). These specifications will be referenced to first when required. If Council is conducting work on an NSW Government asset, then

the relevant Transport for NSW (TfNSW) specifications will be referenced instead. This can occur when Council is conducting work by contract for TfNSW. Government Specifications will apply. The relevant specifications will be listed in alphabetical order in this section.

3.1.4 Staff Responsibilities and Communication

In the Clarence Valley Councils Civil Services Team there is a hierarchy as per the below list. At each level, responsibilities for that role regarding environmental management will be listed in the CEMP as per the following:

1. General Manager
2. Director of Works and Civil
3. Manager of Civil Services: The Manager of Civil Services endorses the CEMP when it is updated.
4. Senior Capital Engineer (SCE): The Senior Capital Engineer reviews the CEMP once a year with the construction Engineers. The SCE will also be occasionally involved in the weekly checklists and may be involved with the initial planning of the ERSED control plan.
    a. X2 Construction Engineers: The construction Engineers should be involved in the initial planning of the ERSED Management Plan. They may be involved in the Weekly Checklists although it is not mandatory. The Engineers also review the CEMP yearly in conjunction with the Senior Capital Engineer.
5. Team Leader for Capital Works: The Team Leader should be involved in the initial planning of the ERSED control plan and may be involved in the weekly checks although it is not mandatory.
6. Foreman, including Forman of Capital Works, Drainage Forman, and Plant Forman: Actively involved with the Senior Field Operators (SFO) in planning the ERSED control plan and conducting weekly checks of the controls.
7. Senior Field Operators: Should be involved in planning and mapping the Erosion and Sediment Control Plan. Completes daily checks of controls to ensure they are working adequately and instructs the crew if changes need to be made.
8. Field Staff (Laborers, plant operators etc.): Should have an understanding on how to install Erosion and Sediment Controls correctly.

These roles have not been endorsed and are subject to change upon review by the manager.

3.1.5 Existing Environmental conditions and issues

This section is project specific, so the project manager will need to fill this section in before beginning the project. The Clarence Valley is an area with a large range of different environments including mountain ranges, rainforests, flood plains, coastal national parks and built environments within Towns (The Clarence Valley – a naturalist's wonderland, 2022). This means that there is also a large variety of environmental considerations that need to be made depending on the location of a project. These considerations and suggested mitigation measures will be addressed in the REF; however, they should still be noted in this section with clear instructions on the mitigation measures so that employees can quickly reference the CEMP for this information.

3.1.6 Limitation, constraints, and opportunities

Again, many limitations and constraints on a project are site specific and will be addressed in the REF but some may not, and local/professional knowledge of a site will need to be known. Examples might include the amount of disturbance that is permissible to roadside vegetation which adjoins to a national park, if vibratory rollers are allowed to be used within a certain vicinity of a trunk water

main etc. All limitations and constraints will need to be listed here as well as potential mitigation measures. Examples of opportunities might include working with other departments to improve efficiency of Councils overall operations during a project. An example of this might be allowing the Water Cycle department to replace an ageing water main under a road being upgraded during excavation activities. Another opportunity might be to install a fauna underpass during a culvert upgrade, recording these here is good practice to ensure there is documentation of these opportunities.

3.1.7 Risk Assessment

Safety Risk assessment is already covered by documentation in relation to Health and Safety. However, an environmental risk assessment should be carried out prior to the commencement of a project. A template environmental risk assessment will be included as part of the CEMP. This risk assessment will be included as part of the induction process for the project. A risk assessment is done by the project managers before the project starts and gives the managers a chance to identify risks to the existing environment and come up with mitigation measures that will form part of the ERSED management plan. Examples of this include determining a site for the project compound, the proximity of this to a body of water, where should site vehicles be parked? Where will refuelling operations occur? Where will chemicals be stored? Location of spill kits.

The existing CEMP mentions the environmental risk assessment but does not have a template for this document, so this template will be created as part of this project.

3.1.8 Emergency planning a roadside response.

The current CEMP has an Environmental Emergency Plan (EEP). This plan specifically regards emergencies in relation to the environment and not emergencies regarding safety which is covered by Occupational Work, Health, and Safety Documentation, however the two overlap.

Generally, the current EEP is satisfactory, but it will be reviewed to ensure that the legislation it refers to is still correct.

3.1.9 Induction, training, and competence

Every project at the commencement will have a site-specific induction with all staff and contractors to ensure that they are aware of the environmental risks and mitigations measures. The current CEMP has an Environmental Training/Induction Plan with a checklist to prompt certain items of discussion. This plan will be reviewed and updated as necessary.

3.1.10 Inspection, monitoring, and reporting

Ongoing monitoring of environmental management and environmental controls is important for preventing potential environmental emergencies and thus potential disciplinary action to the organisation or individuals. The existing CEMP has a weekly checklist, however this will be reviewed and updated if required. Record management for completed checklists will also be reviewed.

3.1.11 Audits and system review

It is intended that the CEMP be reviewed yearly, and when there is a significant change in legislation that warrants an update to the CEMP. This is to ensure that it remains relevant and helps Clarence Valley Council staff remain compliant with their legal obligations regarding environmental management. When a review occurs, the construction Engineers, and SCE will read through the CEMP and update it accordingly.
Then they will send it to the Manager of Civil services with the tracked changed for review and final endorsement.

Occasionally the Council executive may wish to conduct an audit on Council wide process regarding environmental management. It was this kind of audit that prompted this project in the first place. When this occurs, the CEMP will be audited by an external auditor, including the effectiveness of implementation. This will provide an opportunity to further improve both the CEMP and its implementation to ensure that Council remains legally compliant in its environmental management.

3.1.12 Non-conformances

The weekly environmental checklist provided in the existing CEMP will be reviewed and updated if needed. Part of the checklist is to make a note of any environmental controls which are not working adequately or need maintenance. An action is written up along with who is responsible for ensuring the action is closed and a date for it to be closed by. This will be reviewed during the next weekly checklist to ensure that non-conformances are closed in a timely manner.

3.1.13 Licences and Permits

Licences and Permits required will be site specific, but may include the following:

- Fisheries permit – Required when working within a category 3 or above tributary. This is applied for through Fisheries NSW.
- Permit to enter – Required if works need to take place on private land, such as for preconstruction dilapidation inspections.

3.1.14 Standards procedures

Council has several standard procedures relating to construction. Among these is a standard procedure for the installation of coir logs, which are a hessian log placed across a flow place to filter sediment.

A review of the standard procedures will be conducted during this project to identify if there are any missing procedures for common environmental protection practices. These procedures are laminated and attached to the walls of the crib hut for workers to review. Such procedures may include the installation of sediment ponds, sediment fencing, use of topsoil for bunding the perimeter of the work site, and use of rock filtration checks.

3.1.15 Erosion and Sediment (ERSED) Management Plan

The ERSED management plan is a plan which is drawn onsite to be site specific, by the project management staff. It includes a sketch of the work site, depicting the location of different controls. It will also include a table listing each control and the date that it was installed, modified, and removed. The ERSED management plan can be quite simple but is an important record to show Councils compliance in ERSED management in the event of an audit and so needs to be up to date and relevant.

3.2 Reviewing the CEMP

Once the CEMP has been drafted, it will go through a review process which has several steps.

1. The CEMP is sent to the Manager of Environment and Regulatory Services for review by his team. This is to seek feedback with regards to different specialist areas such as waste management, weed control and vegetation management.

2. The CEMP is forwarded to Sai-Global to review all references to legislation throughout the document, to ensure that the legislation being referenced is up to date.

3. The CEMP is forwarded to a Subject Matter Expert or egologist to receive feedback on ways that it could be improved and to ensure that it is fully compliant with relevant legislation. Once the CEMP has been updated with the egologist's advice, it will

be given to the Manager of Civil for Review and endorsement.

3.3 Implementing the CEMP

Once the new CEMP is endorsed, it will begin to be used with the civil services capital works crews on projects. The engineers will seek feedback from the Forman and SFO as it is being used. If updates are still required, then the CEMP will be updated appropriately, then the changes will need to be endorsed by the manager again and the revision updated.

4. Risk Assessment

Writing a CEMP may not seem to carry any inherent risk when compared to other projects. However, the type of risk which must be considered is not concerned with an injury or property damage during the writing of a document. There is a risk during the writing of the document that the legislation is not interpreted correctly, leading to unintentional breaches of legislation and prosecution of individuals or the organisation. Another risk is that the CEMP is not being followed correctly by staff, even if the CEMP was written correctly, it must be understood by the users to ensure legal compliance.

4.1 Hazards and Associated Risks

While writing the CEMP, the Hazards include:

- Eye strain caused by looking at a screen for long periods of time.
- Back strain from sitting down too long to write the document.
- Mental fatigue from the process of writing. This can lead to poor concentration at the end of a day, particularly when the author is driving home and runs the risk of a car accident.
- Misinterpretation of legislation leading to incorrect information being placed in the CEMP. This could lead to unintentional legal breaches by Council Staff.
- The CEMP not being implemented correctly, again leading to unintentional breaches of legislation.

Likelihood		Severity				
		Minor Injuries, Near miss	Injuries or Illness requireing medical treatment, verbal warning	Injury or Illness requireing hospital admission, minor fines	Injury or illness causing permenant impairment, Major Fines	Death, Imprisonment
		Insignificant	Minor	Moderate	Major	Severe
	Almost Certain	Medium	High	Very High	Very High	Very High
	Likely	Medium	High	High	Very High	Very High
	Possible	Low	Medium	High	High	Very High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Low	Medium

Figure 2 Risk Matrix

With the use of the risk matrix above, the risk rating for each hazard is determined as the following:

- Eye Strain: Low
- Back strain: Low
- Mental fatigue: Medium
- Misinterpretation of Legislation: High
- Poor implementation: High

4.2 Risk Controls

For eye strain, back strain and mental fatigue, an effective control for all of these at once is simply to have regular breaks. During a break, the author should get up, leave the desk, walk around, get a drink of water etc. This should be done every hour or so. After these controls are implemented, risk remains low.

For the misinterpretation of legislation, several controls are being implemented. As the CEMP is being revised, the author is first checking through the legislation in the existing CEMP to ensure that legislation is correct and up to date as much as possible as an initial review. Once complete, the document is forwarded to the Manager of Civil Services who then forwards it to the Manager of Organisation Development. The Manager of Organisational Development forwards the document to Sai-Global whom Council has a subscription with to check that the legislation is up to date again. Once feedback is received and legislation is confirmed to be up to date, the CEMP is sent to an ecologist for review to ensure that the referenced legislation is relevant. The CEMP is again updated as necessary then given to the Manager of Civil Services to proofread once more prior to final endorsement. This rigorous process utilising resources available to Council will ensure that only relevant legislation is referenced and that it is not misinterpreted. After these controls are put in place, the risk rating of legal misinterpretation is low to medium.

For poor implementation, upon introducing the document to the work crews, an induction using the CEMP needs to happen at the start of every construction project. An engineer should be onsite during each induction to ensure that all the necessary topics are covered. A paper copy of the CEMP should be always on the project site in an easy to access location. Normally this will be in a site hut if one is available. If not, it will be kept in the Senior Field Operators vehicle. This is so if any of the site staff are unsure of something in relation to environmental management, they can consult the CEMP. During construction works, it is important that the Engineer attends the work site at least once a week. During this time, the Engineer reviews the environmental checklist found in the appendix of the CEMP. The environmental checklist gives the Engineer a comprehensive list of items that must be regularly inspected, such as ensure that ERSED controls are in place and working effectively, or that chemicals are being stored correctly. Regular use of the environmental checklist will help ensure legal compliance. Another appendix of the CEMP is the ERSED Management Plan, which is a live document. The engineer is to ensure that the site staff are updating the ERSED Management Plan to reflect the environmental controls being used onsite and to ensure that a register of changes is being kept. This is to provide evidence that environmental controls have been installed and updated as needed as the project progressed if a legislative body such as the Environmental Protection Agency requests this information. After these controls are put in place, the risk rating of poor implementation is low to medium.

5. Resources

The following resources were utilised to complete the revision of the CEMP:

- Access to relevant legislation. Relevant legislation is freely available through the NSW State Governments website. Australian standards may also be needed. These are accessed either though the Clarence Valley Councils Australian Standard access licence or through the University of Southern Queensland Access licence.
- Access to internal staff, who have expertise in waste management, weeds management and vegetation management.
- Access to Sai-Global to review legislation. The Clarence Valley Council pays a subscription to Sai-Global for this service.
- Ecologist for review of the CEMP. There are several local Ecologists who work in the Clarence Valley. Clarence Valley Council does not require a quotation process for works which cost less then $5000.00. The ecologist that is to review the CEMP will be selected based on availability and on cost only if it is likely that the review will cost more then $5000.00.
- Finances to pay for assistance of the Ecologist. This will be paid from project grant funds. The CEMP is a document to be used mainly for the environmental management of grant funded projects, so this cost is justifiable as a project management expense.

6. Results and Discussion

Work began on drafting the CEMP in early April 2023. To do this, the existing CEMP was taken and used as a template. The CEMP was updated as per each section set out in the methodology; however, the structure of the new CEMP follows a similar structure to the old CEMP, which is different when compared to the structure proposed in the methodology. Despite this the same information is captured as per what is proposed in the methodology. Once the updates had been made, the CEMP was sent on to the Manager of Civil Services for review. The manager provided extensive feedback, and the template was updated further to incorporate his feedback. The CEMP was also forwarded to the Manager of Environment and Regulatory Services as per the methodology, who then forwarded the CEMP to members of his team for additional feedback. Some Examples of this feedback is attached in Appendix A. Feedback from the various professionals at the Clarence Valley Council were incorporated into the CEMP. Table 1 below tabulates how each clause in Chapter 3 has been addressed in the final CEMP template, and what was done differently to what was originally proposed.

Table 1

Methodology Clause	**How was the clause addressed and/or what was done differently?**
3.1.1 Document Control Information	The new CEMP contains a document control section on page 2 of the plan as originally proposed.
3.1.2 Project Description	It was also proposed that a new section be placed in the CEMP to provide an overview of the site-specific project, as per South Australia's EPA's CEMP guide. However, in the final CEMP template, the site-specific information is already included under Chapter 8, titled Environmentally Sensitive Areas. This section is carried over from the original CEMP and provides a space for users to type in any environmentally sensitive areas which the project REF has raised and allows for mitigation measures to protect those sensitive areas to be listed. Site specific working hours are set out in Chapter 28, and reporting checklists are set out in Appendix F. These have carried over from the original template but have been updated as required.
3.1.3 Reference to relevant Specifications	The methodology proposed the inclusion of relevant specifications in clause 3.1.3. There is only one relevant specification relevant to this plan that is also relevant to Clarence Valley Council. This is the Development Design Specification D7, Erosion Control and Stormwater Management which is a part of the NSW Northern Rivers Local Government Development Design and Construction Manual.
3.1.4 Staff Responsibilities and Communication	The final CEMP template was updated to include the roles and responsibilities. This is found in Chapter 4, titled Organisation & Environmental Responsibilities. This section was reviewed by the manager of Civil Services who provided extensive feedback on the appropriate responsibilities of each personnel. For example, it was originally proposed that only foreman and below should be responsible for writing and monitoring the Erosion and Sediment Control Plan. However, after review, it

	was determined that this should be the responsibility of the construction engineer.
3.1.5 Existing Environmental conditions and issues	Clause 3.1.5 proposed the inclusion of existing environmental conditions and issues; however, this is already covered by Chapter 8 as previously discussed in the CEMP Template. It is also sufficiently covered by the REF or CRA which is attached to the CEMP template as an appendix.
3.1.6 Limitation, constraints, and opportunities	Again, to avoid double ups, limitation, constraints, and opportunities are really covered by Chapter, 8. Chapter 8 contains a hold point to ensure that the REF is completed and reviewed before the start of construction, and that the CEMP template is prepared 15 working days in advance.
3.1.7 Risk Assessment	The environmental Risk Assessment has been included in Chapter 2, titled Environmental Risk Assessment. This has been carried over from the original CEMP. A Risk assessment template has been included in Appendix F of the CEMP template with the other checklists.
3.1.8 Emergency planning a roadside response.	Generally, the existing Environmental Emergency Plan found in the original CEMP was adequate. It was updated with the current emergency contacts.
3.1.9 Induction, training, and competence	The site-specific induction which is outlined in Appendix C of the CEMP Template, remained largely unchanged from the original document. However, the responsibility for who presents the induction was updated to include the Senior Capital Engineer, Construction Engineers, Team Leader for Capital Works, and the Forman.
3.1.10 Inspection, monitoring, and reporting	The ongoing weekly checklist is in Appendix F in the CEMP Template. The checklist has been updated, with some checks removed and placed in the pre-construction risk assessment. Other items were removed and placed in the post construction checklist. This was to reduce double ups as some of the items in the original checklist were not relevant to a weekly inspection, such as “Is the site compound placed to minimise impacts on the environment”. This is a check that is not likely to change week from week and should be addressed in the Environmental Risk Assessment.
3.1.11 Audits and system review	This clause is covered by review plan set out on page 2 of the CEMP template, as per Clause 1.1.1.
3.1.12 Non-conformances	Chapter 25 of the CEMP Template discusses how Non-conformances will be addressed. This Chapter was taken from the original CEMP, however, a new Non-conformance Report template has been added to the CEMP Template as Appendix J, to be used to record how NCRs are recorded and addressed.
3.1.13 Licences and Permits	Chapter 5, titled Environmental, Approvals, Licences and Permits in the CEMP Template states that Council will ascertain the required licences and permits as needed. This will be case by case, but if licences and permits are required, they will be attached to the CEMP as Appendix L.

3.1.14 Standards procedures	The standard procedures were briefly reviewed. Only two of them relate to Environmental Management. One which addressed how to install Erosion and Sediments Controls and provides tips on planning this correctly. There is another standard procure that explains how to prepare batters for revegetation. Neither of these procedures need updating.
3.1.15 Erosion and Sediment (ERSED) Management Plan	The ERSED Management Plan is addressed in Chapter 12 of the CEMP template and provides a Hold Point to ensure that the ERSED Management Plan is prepared 15 days prior to the start of a project.

After the updates were made as per Table 1, the CEMP was converted into a word template format, and content controls were added to the template. Content controls are fields that can be added to a template such as date pickers, drop down list, text fields and so on.

The CEMP has been forwarded to the Manager of Civil Services for an additional review after his comments and the comments provided by other professionals within Council have been incorporated into the template.

Unfortunately, due to time constraints, the CEMP has not been forwarded to be reviewed by a subject matter expert as a part of this project. This will take place beyond the scope of this project. The CEMP also needs to be implemented on Councils worksites and effectiveness reviewed.

7. Conclusion

This report has identified the aims and objectives for the research topic Construction Environmental Management in a Council Context. It has also demonstrated the relevant literature that the CEMP must conform to, the methodology for updating Councils CEMP and the results of following this methodology.

There is a large array of legislation that relates to the management of the environment. This legislation includes but is not limited to:

- The Local Government Act 1993
- The Environment Planning and Assessment Act 1979
- Protection of the Environment Operations Act 1997 (POEO Act)
- State Environmental Planning Policies
- Local Environmental Plan (LEP)

This legislation forms the rules and regulations that Council needs to comply with. The CEMP that has been written as part of this project will help Council remain compliant with these requirements. Other documentation that needs to be considered is the Managing Urban Stormwater: Soils and Construction – Volume 2D – Main Road Construction which provides guidelines on correct storm water management on construction sites; and the Review of Environmental Factors which is a site-specific document which highlights the environmental constraints of a certain site.

The Construction Environmental Management Plan has been written in accordance with the guideline as set out in the Managing Urban Stormwater: Soils and Construction – Volume 2D – Main Road Construction. This addresses items such as:

- Document Control
- Environmental Policy
- Project Description
- Reference to the relevant specifications
- Staff Responsibilities and Communication
- Existing Environmental Conditions and Issues
- Limitations, Constraints and Opportunities

This report has proposed a methodology to review and update the CEMP to ensure that it is reviewed by professionals to ensure its compliance. The outcomes of following this methodology have also been documented in the results and discussion section. Unfortunately, due to time constraints, the CEMP was not reviewed by an external Subject Matter Expert as a part of the scope of this project. In Addition to this, the CEMP has still not been implemented on Councils project sites yet. So, the review process for determining the effectiveness of the CEMP will also sit outside of this project scope as a form of further work to be completed.

However, despite this, the CEMP has been greatly improved to remain relevant to the Clarence Valley Council. Even though it hasn't been reviewed by an external professional it has been reviewed by internal professionals within Clarence Valley Council. This has developed a strong document that if used correctly, will help keep Council environmentally compliant while conducting construction works.

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Appendix A – Internal Feedback on CEMP

From:
Sent: Friday, September 1, 2023 8:39:55 AM
To:

Subject: RE: Construction environmental management plan - please review

Great, thanks for the feedback guys!

We will look into where we can include s comments.

Manager Civil Services

www.clarence.nsw.gov.au

clarence VALLEY COUNCIL

We acknowledge the Bundjalung, Gumbaynggirr and Yaegl people as the Traditional Owners of the land on which we live and work. We honour the First Nations peoples culture and connection to land, sea and community. We pay our respects to their Elders past, present and emerging.

From:
Sent: Wednesday, 30 August 2023 11:51 AM
To:
Cc:
Subject: RE: Construction environmental management plan - please review

– Thanks.

- Please refer to the emails below. Please review the CEMP at the link in 's email and offer your thoughts via 'Reply to all'. TIA

- Please note 's comments and liaise as needed. Monitoring (and necessary maintenance) of site rehab and ERSED controls post-roll out of the yellow plant items is a key component that needs to be included. We also need to ensure that assigning responsibilities to staff needs to have sufficient training attached to it so staff are set up for success.

Happy to discuss.

Manager Environment & Regulatory Services

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From: [redacted]
Sent: Tuesday, 29 August 2023 9:14 AM
To: [redacted]
Subject: RE: Construction environmental management plan - please review

Hi [redacted] ,

I've had a look over the CEMP. All ERSED management is proposed to comply with DECC's Managing Urban Stormwater: Soils and Construction, Blue Book 1 and 2.

There is quite a bit of information regarding waste, Veg and Weeds that [redacted] and [redacted] should have a look at.

My only concerns are as follows:

(1) All environmental responsibilities and delegations are assigned to Engineers or Works Foreman. There are no dedicated/qualified Environmental roles.
(2) There doesn't appear to be any ongoing surveillance or maintenance of ERSED controls proposed following completion of the project.

Thanks

[redacted]
Environmental Officer
[redacted]
www.clarence.nsw.gov.au
clarence VALLEY COUNCIL

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From: [redacted]
Sent: Monday, 28 August 2023 8:54 AM
To: [redacted]
Cc: [redacted]
Subject: FW: Construction environmental management plan - please review

Hi [redacted]

Please look over the CEMP that our Civil Services are reviewing (see email below). This will typically apply to on-ground projects/sites as opposed to fixed facilities like depots. I will be seeking to have consideration of this covering all on-ground activity across that Directorate in the interests of raising the bar and consistency.

Happy for you to provide feedback direct to [redacted] and please copy [redacted] and I in as well. Unsure of the timeframe but by end of week would be good so we aren't slowing the wheels of progress.

TIA

[redacted]

[redacted]
Manager Environment & Regulatory Services
[redacted]
www.clarence.nsw.gov.au
clarence VALLEY COUNCIL

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From: [redacted]
Sent: Friday, 25 August 2023 1:45 PM
To: [redacted]
Cc: [redacted]
Subject: Construction environmental management plan

Hey [redacted],

We have commenced a revision of our CEMP and it is Saved HERE If you or any of your team could provide feedback that would be appreciated.

Once we've received your feedback I was planning on engaging a consultant for a final review and to ensure all information and legislation reference is current and up to date.

If you need any other info please let me know.

Thanks

[redacted]
Manager Civil Services
[redacted]
www.clarence.nsw.gov.au

clarence
VALLEY COUNCIL

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We pay our respects to their Elders past, present and emerging.

Appendix B – Sample of CEMP Template (CEMP Appendices and Title Page omitted).

Overview

1. Scope of this Plan

This document defines the environmental protection practices and processes Council will observe during capital works projects.

Council's Environmental Emergency Plan Forms Appendix G of this CEMP.

2. Council's Environmental Objectives

Council's environmental protection objectives are to:

Manage the delivery of the Services so that adverse impact on the environment is limited,
Meet the requirements of:

- All relevant Legislation including that listed in Appendix K and summarised in Section 5 of this Plan and
- Maintain trust, good faith and cooperation between Council, the community, and other regulatory bodies.

Council's objectives will be met through good leadership, commitment, and training.

3. Objectives of Council's Environmental Management Plan

The purposes of Council's Construction Environmental Management Plan ("CEMP") are to:

Define Council's management of environmental protection.
Provide guidance to Council staff on Council's obligations.
Set down the frequency and responsibilities for management review of this Plan.

4. Practice of Environmental Protection

Council will:

- Assess risks and plan work activities to eliminate or control foreseeable impacts or risks and comply with specified environmental protection requirements.
- Comply with relevant environmental, conservation, heritage, pollution, waste management and fire control legislation and regulations.
- Consult with employees and subcontractors and disseminate environmental information.
- Provide appropriate instruction and training for employees and subcontractors.
- Set up response procedures which will initially contain, then remedy, any environmental damage which does arise and
- Improve environmental protection measures and revise this CEMP promptly when deficiencies are identified.
- Provide people, materials, resources, and systems to properly perform environmental protection.

5. Environmental Risk Assessment

Council will:

- Conduct environmental risk assessment, to identify all the environmental constraints associated with the Works,
- Use the environmental risk assessment to develop risk mitigation and management strategies to eliminate or reduce the risk exposure and be consistent with the environmental safeguards and management measures listed in the Environmental Assessment,
- Discuss the Environmental Risk Assessment at the site induction to make the work crew aware of site-specific environmental constraints and environmental protection measures.
- Review the risk assessment regularly to ensure its relevance for the duration of the works.

An environmental risk assessment is attached in Appendix F.

6. Summary of Legislative Requirements

Table 1 summarises the legislative requirements for the Services, excluding specific requirements that may be identified in a projects REF.

Table 1 - Legislative Requirements

Name of legislation	Regulating Authority	Requirement
Environmental Planning and Assessment Act, 1979	EPA, Clarence Valley Council, NPWS, Primary Industry-Fisheries	REF and Site Specific CEMP
Local Government Act 1993 (NSW).	Dept of Local Government, Clarence Valley Council	
Protection of the Environment Operations Act, 1997	EPA	Not cause or have the potential to cause water, air, noise, or land pollution. Dispose of waste at an appropriately licensed landfill. Notify the EPA when a “pollution incident” occurs that causes or threatens “material harm” to the environment. *
Protection of the Environment Administration Act 1991 (NSW)	EPA	

Table 1 - Legislative Requirements		
Name of legislation	**Regulating Authority**	**Requirement**
Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 (NSW)	EPA	
Protection of the Environment Operations (Clean Air) Regulation 2002 (NSW)	EPA	
Pesticides Act 1999 (NSW)	EPA	Read and follow the instructions on the pesticide's registered label. Do not detach the pesticide label. Do not cause risk of injury by a pesticide to a person or to property. Notify the public of its use – see G36 Clause 6.12 and the TfNSW Pesticide Use Notification Plan
Pesticides Regulation 2017 (NSW)		
Waste Avoidance and Resource Recovery Act, 2001 (NSW)	EPA	
Noxious Weeds Act, 1993	Department of Primary Industry Clarence Valley Council	Notify the Department of Agriculture within 3 days of becoming aware of a notifiable weed (W1 weed). *****
Contaminated Land Management Act, 1997	EPA	Report to EPA if aware that land contamination presents a "significant risk of harm." *****
Dangerous Goods (Road and Rail Transport Act), 2008	EPA & Workcover	Ensure that dangerous goods are transported in a safe manner. Drivers of vehicles transporting dangerous goods and the vehicles themselves may need special licenses.
Heritage Act, 1977	Heritage Office of NSW	Notify the Heritage Council if a relic is discovered. *****
Crown Lands Act 1989 (NSW)	EPA	
Environment Protection and Biodiversity Conservation Act 1999		

Table 1 - Legislative Requirements		
Name of legislation	**Regulating Authority**	**Requirement**
Fisheries Management Act 1994 (NSW)	EPA	
National Parks and Wildlife Act 1974 (NSW)	EPA	
Native Vegetation Act 2003 (NSW)	EPA	
Threatened Species Conservation Act 1995 (NSW)	EPA	
Water Act 1912 (NSW)	EPA	
Waste Management Act 2000 (NSW)	EPA	
Rural Fires Act 1997 (NSW)		
Aboriginal and Torres Strait Islanders Heritage Protection Act, 1984	Department of Social Services	Report the discovery of Aboriginal remains to the Federal Minister for Families, Housing, Community Services, and Indigenous Affairs *

7. Organisation & Environmental Responsibilities

Council's Organisation Chart is on the Council's Intranet.

The principal responsibilities and authorities of Council staff with respect to the environment are:

8. General Manager

The General Manager is responsible for ensuring Council's delivery of the Services meets Council's environmental objectives and that its protection of the environment:

Is properly resourced with people, equipment, and systems and

Complies with all environmental legislation.

The General Manager's responsibilities remain with him / her; however, the General Manager has delegated as follows:

9. Manager Civil Services

The Manager Civil Services has delegated authority from, and responsibility to, the General Manager as follows:

Overall responsibility for environmental protection including:

- Approving and regular evaluation of Council's environmental controls and this CEMP and
- Ensuring, for both council staff and subcontractors, documented environmental procedures are followed and records are kept,

Encouraging the active involvement of all staff in the management of the environment,

Coordinating CEMP activities of all personnel involved in the project,

Monitoring subcontractor performance and commitment.

Arrange and ensure environmental protection training of both staff and subcontractors takes place as required by this Plan and the Environmental Emergency Plan

Act on corrective/preventive action notifications concerning environmental protection ensuring they are raised when appropriate and are closed out before the process or equipment is used again.

Ensuring Council's response to environmental emergencies including:

- Ensuring it is appropriately resourced with trained people and with
- the equipment and materials required, and they are deployed,
- Ensuring that processes and control systems needed for the plan are established, implemented, and maintained,
- Arranging and approving training which ensures that all personnel understand what is required of them in emergencies,

Liaison with:

- Regulatory agencies including determining which approvals, licences and permits are required and obtaining them,
- Community Relations including addressing Environmental Impacts and
- Ensuring reporting on environmental issues takes place as required.

10. Senior Capital Works Engineer (Council's Contract Manager)

Council's Senior Capital Works Engineer has delegated authority from, and responsibility to, the Manager Civil Services for:

Identifying training needs with respect to spills and other environmental incidents and arranging for employees and subcontractors to attend the training,

Arranging the supply of appropriate environmental incident and emergency equipment.

Liaison with all relevant authorities on environmental matters,

11. Environmental Site Representative – Construction Engineer

ESR (Environmental Site Representative) - authorised contact person for communications with the EPA regarding site issues,

Advising on environmental matters specified in this CEMP,

Maintaining a register of all environmental management documents for the project,

Ensuring that the CEMP is established, implemented, and maintained in compliance with relevant legislation, including all Sub-Plans, procedures and supplementary EWMS, and upgrades to these documents (as needed) to remain current with the progress of the Works,

Overall responsibility for the establishment, management, monitoring and maintenance of erosion and sediment controls within the site,

Identifying where the implemented environmental measures are not meeting targets set, and identifying areas where improvement can be achieved,

Specific authority to stop work on any activity where the ESR deems it necessary to prevent environmental nonconformities,

Being one of the 24-hour emergency contacts,

12. Senior Projects Engineer/Construction Engineer/ Team Leader Capital Works/ Foreman Capital Works

Ensuring environmental hazards and risks are controlled in construction activities and work areas,

Ensuring the requirements of approvals, licences and permits are met,

Coordinating or conducting environmental site inspections and audits to ensure that environmental safeguards are being followed,

Monitoring of subcontractor behaviour on work sites,

Holding toolbox meetings and team briefings about managing environmental issues, incidents, and emergencies,

Implementing incident and emergency procedures,

13. Delivering Environmental induction Construction Engineer/ Team Leader Capital Works/ Foreman Capital Works

Generally:

The above positions have delegated authority from, and responsibility to, the Senior -Capital Works Engineer for:

Implementing environmental controls during the delivery of Services and in work areas,

Ensuring the requirements of obtaining approvals, licences and permits are met on site,

Ensuring site personnel (including subcontractors) are:

- appropriately inducted and trained in the use of equipment such as spill kits and
- comply with environmental protection procedures,

Advising Senior Capital Works Engineer of any environmental protection training needed,

Site environmental protection inspections and noise checks,

Ensuring environmental emergency equipment such as spill kits is always available and is appropriately located,

Investigating incidents with Construction Engineer and Senior Capital Works Engineer,

Environmental assessment of subcontractors and their plant and equipment,

Advising the Senior Capital Works Engineer of any environmental or heritage issues encountered on site and

Storage arrangements for hazardous substances.

When responding to Environmental Incidents

Safety of Council's staff and subcontractors,

Liaison with on-site Emergency Services Controllers when the Senior Capital Works Engineer is not on site,

Safety of road users and

Quickly preventing/minimising further environmental damage.

14. Nominated Environmental Management Representative

The General Manager has nominated the Senior Capital Works Engineer to be Council's Environmental Management Representative with delegated authority from, and responsibility to, the Manager Civil Services for being fully conversant with Council's Construction Environmental Management Plan and Environmental Emergency Plan and ensuring they are fully implemented for the services.

The Environmental Management Representative is to keep Council management informed of all issues relevant to the plans.

The Environmental Management Representative is a point of contact within Council on these matters and is one of the contacts responsible for communicating with the EPA.

The Environmental Management Representative's other responsibilities are:

Regular evaluation and periodic audits of both staff and subcontractors at worksites,

Coordinating environmental training,

Being conversant with complaints and pollution incidents and their resolution,

Investigating, controlling and closing-out environmental non-conformances,

Maintain the Register of Material Safety Data Sheets ("MSDS") as described in the Environmental Emergency Plan and

Assisting the Manager Civil Services in:

- Determining which environmental, approvals, licences and permits are required and then in obtaining them,
- Reviewing and updating this CEMP,
- Monitoring the environmental performance of subcontractors,

15. Subcontrators

Adopting the CEMP for all Services under Contract.

Implementing the environmental controls at work sites correctly.

Following all environmental procedures or controls put in place at work sites.

16. Environmental, Approvals, Licences and Permits

Council will ascertain from the appropriate authorities which approvals, licences and permits are required for the Services.

17. Environmental Protection and Emergency Response Training

All Council and subcontractors' personnel will attend Council's Environmental Induction Meeting prior to the commencement of a project. Senior Capital Works Engineer or their delegate will arrange and conduct this meeting.

Topics covered at this meeting will be at least the following:

- Council's environmental objectives,
- Scope,
- Organisation and Responsibilities,
- Site specific issues such as boundaries for vegetation clearing, importance of any trees of significant value, location of refuse bins, washing, refuelling and maintenance of vehicles, plant, and equipment,
- Environmental Impacts, Safeguards and Control Measures,
- Sensitive areas, exclusion zones and other precautions to be taken,
- Waste Management and Reduction,
- Conditions of any environmental licences, permits and approvals,
- Reporting process for environmental harm/incidents,
- Lessons learnt from incidents,
- Control of subcontractors and
- Emergency response training including use of personal protective equipment and spill kits.

Any relevant environmental issues which become apparent will be added to this topics list.

All staff on the work site will be obliged to sign the attendance record as proof that they have attended a work site induction briefing (Appendix C).

All Council and subcontractor personnel who commence Services will undergo the same induction training. This will be provided by the Senior Capital Works Engineer or their delegate.

Only people who have been "Environmentally Inducted" will be permitted to work on worksites.

Process Held:	Person working on a worksite.	
Submission:	Environmental Induction of that person and a record of it on Council's Record of Environmental Induction.	**Council Hold Point**
Release:	Senior Capital Works Engineer considers documentation submitted.	

18. Environmental Impacts and Control Measures

Prior to undertaking any activity (including excavation of material to be used for other activities) or any activity in a sensitive area, Council will complete either a Conservation Risk Assessment (CRA) or a Review of Environmental Factors (REF) depending on the requirements under the EP&A Act. Council will complete a Sensitivity of Activity and Sensitivity of Location checklist (Appendix H and I respectively) to determine if professional assistance is required from an Ecologist prior to writing the CRA or REF.

19. Environmentally Sensitive Areas

<Describe any environmentally sensitive areas raised in the CRA or REF in the project area and describe any mitigation measures to be used>.

Process Held:	Delivery of Services which is in a sensitive area.	
Submission:	Conduct REF. Prepare Site Specific CEMP 15 working days before intended start of Services.	**Council Hold Point**
Release:	Senior Capital Works Engineer considers documentation.	

20. Waste management

21. Legislative Requirements

Under the Protection of the Environment Operations Act, 1997 when Council stores or transports Hazardous or Industrial waste it is classified as a non-licensed waste activity. Accordingly, Council will:

- Ensure that waste is stored in an environmentally safe manner,
- Ensure that waste is not stored with and does not contact any incompatible waste,
- Retain information regarding the generation, storage, treatment, or disposal of the waste,
- Obtain a consignment authorisation number for the waste from the person to whom the waste is being delivered, complete and retain an approved waste data form in relation to the consigned waste and give a copy of the form to the person transporting the waste prior to transporting the waste,
- Ensure that the person transporting the waste is licensed if the waste is of such an amount as to require the person transporting the waste to be licensed,
- Ensure that the waste is being transported to a place that may be lawfully used as a waste facility,
- Accurately identify the waste and advise the transporter accordingly and
- Inform the EPA of any suspected breach of the Operations Act in connection with the transportation of waste from the premises.

Waste other than Virgin Excavated Natural Material will be disposed of to a "controlled waste facility" ("Controlled Waste Facility" is defined to mean a waste facility of a class specified in the regulations).

Council, as a non-licensed transporter of wastes, will ensure that:

- Vehicles carrying waste will be kept clean and be constructed and maintained to prevent spillage of waste,
- Loads which may spill or emit odours are covered so that spillage and/or emission is prevented,
- Any container is safely secured,
- Incompatible waste will not be mixed or transported together,
- Any hazardous waste is not mixed with any other type of waste,
- Any waste containing asbestos is wetted and fully covered,
- Material segregated for recycling is not mixed with other wastes,
- Any waste is transported only to controlled waste facilities or other facilities that can lawfully receive the waste and
- The occupier of the waste facility is advised of the type of waste involved before the waste is unloaded.

22. Waste Management Plan

A waste management plan detailing all waste generated by the Services will be developed in accordance with G36 Clause 6.16.1. A copy of the Waste Management Plan is provided in Appendix A.

23. Waste Management Register

A waste management register will be kept detailing the type of waste collected, amounts, date/time, by whom, and the disposal location. A copy of the Waste Management Register is included in Appendix A.

24. Licensed Waste Facilities

There is one licensed waste facility that should be used for industrial waste:

Grafton Regional Landfill – controlled waste facility.

25. Waste Recycling Facilities

Recyclable Waste Materials:	Recycling Facilities:
Glass	Grafton Regional Landfill
Metals: Aluminium, Steel, Iron, and other metals	Grafton Regional Landfill
Recycled Asphalt Pavement	All RAP suitable for reuse will be stockpiled at the nominated stockpile site. RAP will be recycled by the Council.
Plastics	Grafton Regional Landfill
Paper and other office products	Grafton Regional Landfill

27. Stockpile Management

Council staff should observe SWP136 – Stockpiling Material for good practice in stockpile management.

28. Soil and Water Management

29. Erosion and Sedimentation Control

Council will plan and conduct the whole of the Services to comply with EPA's Managing Urban Stormwater: Soils and Construction, Blue Book 1 and 2.

Where required, Council will prepare an Erosion and Sedimentation Control Plan to best practise set out in Landcom's 'Blue Book.'

Erosion and Sediment Controls will be installed as per SWP 038 – Erosion and Sediment Control.

Process Held:	Preparation of Erosion and Sedimentation Control Plan	
Submission:	Prepare site specific ERSED control plan 15 working days before intended start of Services and induct relevant staff immediately prior to start of Services.	**Council Hold Point**
Release:	Senior Capital Works Engineer considers documentation.	

30. Water Quality

Council will provide adequate controls to ensure that any water entering the waterways or stormwater drainage system from areas it disturbs complies with the requirements of the POEO Act and the local water authority.

Appropriately constructed and situated wash out areas will be used when washing out concrete trucks and washing down plant and equipment.

31. Water Extraction

Council has identified water sources it intends to use for dust control, earthworks/pavement compaction, on-site concrete batching, and the like. The identified sites are listed in the table below. Council will obtain any required licences, permits or approvals and comply with any conditions they or legislation impose.

Road:	Extraction Site:
<Name of Road on which the extraction site is accessed>	▪ <Name of Extraction Site>

32. Noise & Vibration Control

Council will make all practical efforts to comply with the requirements of the POEO Act, the EPA Interim Construction Noise Guidelines, NSW Industrial Noise Policy, EPA Environmental Criteria for Road Traffic Noise, and the TfNSW Road Noise Mitigation Guideline.

It will:

Restrict, where possible, noise making activities to normal working hours (see Section 28),

When working near schools, hospitals, residences, and places of worship avoid sensitive times for example those leading up to and during examinations such as the HSC, those during religious services,

Inform and consult with affected residents,

Ensure plant and equipment has efficient noise suppression devices.

If a Work Order requires Council to have a Vibration Management Plan in place Council will prepare a plan before commencing the Ordered Work.

33. Vegetation

34. Protection

Council will:

Consult the REF prior to works commencing to determine if there are any areas of conservation value within the area of impact of the Project. If there are, Council will identify those locations and advise staff and subcontractors as part of the Environmental Induction process.

Preserve existing trees, plants, and other vegetation within the network and use every precaution necessary to prevent damage or injury thereto except as otherwise allowed by council,

Ensure that all site personnel observe the limits of clearing and are made aware of the importance of any trees of significant value.

When required, get approvals under the National Parks and Wildlife Act 1974 (NSW), Native Vegetation Act 2003 (NSW), Environmental Planning and Assessment Act 1979 (NSW), Threatened Species Conservation Act 1995 (NSW), and Environmental Protection and Biodiversity Conservation Act 1999.

35. Weeds

The Services include the eradication or controlling of only those weeds which interfere with safe travel and then only to the extent necessary for road purposes. This does not extend to other areas within road reservations.

Council will employ methods that will minimise the spreading or introduction of weeds by conducting the Services and will employ best practice weed removal methods.

36. Native Wildlife

Council will protect all native fauna from the impact of the Services in accordance with the EAPRMW Standard Safeguards List.

All native wildlife will be protected. No firearms will be allowed on site except for security purposes permitted by law.

37. Fire Precautions

Fire prevention and precautions and the requisite equipment are dealt with in the Site-Specific Safety Management Plan.

It is not anticipated that Council will burn-off because of any of the Services.

If it is required, it will obtain all necessary permits and observe their requirements.

Council will take all necessary precaution with plant in bush-fire prone areas and, when the danger of fire is high, it will restrict or, when prudent, refrain from welding, grinding, using cut-off wheels and other heat or spark generating work.

38. Potential Contaminants

Council will plan and execute the Services to minimise the risk of polluting with chemicals, dangerous goods, and other potential contaminants. Appendix E forms the Spill Prevention and Containment Procedure which should be followed to prevent spills and damage to the environment.

Pesticides will be administered in accordance with SWP 053 Weed Control. The following measures will also be implemented whenever pesticides are used adjacent to or across the road from a Sensitive Place:

- Mechanical means of pest control (such as mowing or slashing) must be used where feasible; or
- Hand-held application of pesticides is required where mechanical means of pest control are not feasible.

39. Aboriginal Heritage Protection

Council will ensure that all personnel performing the Services:

- have received training regarding their responsibilities under the National Parks and Wildlife Act and
- Are made aware of any relevant sites/areas which must be avoided.

If Council encounters any previously unknown Aboriginal object or material (including skeletal remains) suspected of being of Aboriginal origin, it will cease all construction work that might cause damage or disturbance.

If it is obvious that bones are of human remains, the local police are to be contacted.

Otherwise, Council will contact the Environment and Heritage section of the Department of Planning and Environment (02 9995 5000) and a member of the appropriate Local Aboriginal Land Council.

If the item is determined to be Aboriginal Heritage, then work will remain on hold until further assessment and permits under section 90 of the National Parks and Wildlife are obtained.

40. Non-Aboriginal Heritage Protection

Council will ensure that all personnel working on site have received training regarding their responsibilities under the Heritage Act and are made aware of any relevant sites/areas which must be avoided. Such sites/areas will be identified on a site map, to be made available to all relevant personnel during the Services.

Should any previously unknown item be encountered which is suspected to be a relic or heritage item, all Services will stop and measures to protect the item from damage or disturbance will be taken.

41. Materials with Recycled Content Preferred

Materials and products with recycled content will be proposed wherever they are cost and performance competitive and environmentally preferable to the non-recycled alternative.

42. Site Restoration

Council will reinstate any areas disturbed by its delivery of the Services. Restoration will include remediation of any ground contaminated by incidents such as oil or fuel spills (particularly in fuel storage areas) and appropriate revegetation.

Reinstatement of the project site will include topsoiling areas that have been exposed, hydro mulching and/or laying turf where required and can also involve planting of tube stock to offset the removal of trees in other areas of the project footprint.

After project completion and site demobilisation, temporary erosion and sediment controls will remain in place, be inspected weekly using the post completion checklist (Appendix F) and maintained until the permanent erosion and sediment controls have been re-established. Once permanent controls are fully established, temporary controls will be removed. A final inspection using the post completion checklist (Appendix F) will be completed six months after the completion of the project to ensure that permanent erosion and sediment controls are still effective.

43. Control of Subcontractors

44. Subcontractors' CEMPs

Before engaging any subcontractor, Council will:

If the Subcontractor has its own CEMP:

45. Document the duties of that subcontractor,
46. Audit that subcontractor's CEMP and record the results,
47. Induct that subcontractor's personnel in accordance with Section 7,
48. Set down the responsibilities Council will retain for the management of site environmental protection issues,
49. Set down a surveillance program to monitor and document effectiveness of each subcontractor's systems

Process Held:	Presence of any subcontractor on a worksite.	**Council Hold Point**
Submission:	Record of steps 1. to 5. Above.	
Release:	Senior Capital Works Engineer considers documentation submitted.	

If the Subcontractor does not have its own CEMP:

Engage the subcontractor upon the basis that it will adopt this CEMP.

50. Subcontractor Nonconformance

If a subcontractor is found to be not working to the requirements of the CEMP Council will immediately issue an NCR with a Hold Point which stops the noncompliant process until the NCR is closed out.

Process Held:	Subcontractor's noncompliant process, equipment, or plant.	
Submission:	Close out of NCR to Senior Capital Works Engineer.	**Council Hold Point**
Release:	Senior Capital Works Engineer considers documentation submitted.	

51. Environmental Incident and Emergency Management

52. Environmental Emergency Plan

Council has prepared an Environmental Emergency Plan.
It deals with key response personnel, emergency contracts, containment measures, cleaning, collecting and disposal, availability of MSDS, the emergency procedure and communications strategy.
It forms Appendix G.

Spill Prevention and Containment

Council has prepared a Spill Prevention Procedure and a Minor Spill Procedure. They are in Appendix E.

Reporting and Corrective Action

Should an incident occur, an Incident Report will be filled in, along with nominating corrective actions to ensure the incident does not take place again. This is to be submitted to the WHS Team.

An Environmental Incident Classification and Management Procedure is set out in **Error! Reference source not found.**.

Process Held:	Any process for which an NCR has been issued as the result of an incident or spill.	**Council Hold Point**
Submission:	NCR close out to Senior Capital Works Engineer	
Release:	Senior Capital Works Engineer considers documentation submitted.	

53. Environmental Audits

Council's environmental audits will follow Council's Quality Management Plan.

54. Non-Compliance and Corrective Action

Environmental Protection non conformances, for example those arising from:

Audit and Surveillance conducted by Council,
Incidents,
Application of the Risk Management process,
Environmental issues being encountered on site,

will be dealt with:

According to the responsibilities set down in Section 4 of this CEMP,
Observing Hold Points set down in Appendix B.
Filling in the Non-Conformance Report set down in Appendix J.

55. Environmental Performance Evaluation

Using the Environmental Inspection Checklist (Appendix F), the Senior Capital works Engineer will conduct monthly checks to ensure the Service delivery is complying with the CEMP.

56. Records Management

Council will hold the following for at least 5 years after the completion of a project. They will be accessible to authorised EPA officers:

- Details of qualifications held by individuals primarily responsible for environmental monitoring,
- Monitoring/inspection reports,
- Internal audit reports,
- External audit reports,
- Reports of pollution incidents, other environmental nonconformances, complaints and follow-up action,
- Minutes of CEMP management review meetings,
- Evidence of action taken because of such meetings/events,
- Induction and training records,
- Records of monitoring by subcontractors against compliance limits,
- Waste Management Register, and
- Environmental Complaints Register.

57. Community Relations

58. Working Hours

Council's working hours are:

Monday to Friday	6:00 am to 6:00 pm
Saturday	7:00 am to 1:00 pm
Sunday and Public Holidays	No works

59. Complaints Procedure

Council will handle complaints regarding any environmental issue in accordance with Councils Complaint Management Policy.

60. Reviewing this Construction Environmental Management Plan

The Manager Civil Services and Senior Capital Works Engineer will review this Construction Environmental Management Plan to ensure it is appropriate and is being implemented effectively.

Changes may arise from a change of scope, Council internal audits or from opportunities for improvement.

The Plan will then be updated to reflect any changes which have occurred.

Controlled copies of this Plan will be updated.

Updated plans shall be forwarded to the personnel detailed in Appendix G.2.

The planned target dates (or frequencies) at which the Construction Environmental Management Plan will be subject to formal review and the personnel who will participate in the review are identified in the table at ***Error! Reference source not found.*** on page **Error! Bookmark not defined.** of this plan. Council's Administration Officer will maintain records of any review.