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Kings Forest

STAGE 1 – MP08_0194 (as modified)

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Address:	Tweed Coast Road, Kings Forest NSW
Local Government:	Tweed Shire Council
Prepared for:	Project 28 Pty Ltd
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CIVIL ENGINEERING TOWN PLANNING PROJECT COORDINATION

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1.0 INTRODUCTION

This Construction Environmental Management Plan (CEMP) has been prepared by Mortons – Urban Solutions (MUS) for Project 28 Ply Ltd; in accordance with Condition 52 of MP08_0194 (as modified). Condition 52 is reproduced as follows;

Condition 52 Construction Environmental Management Plan

1) *Prior to the commencement of construction works for each stage of the project a Construction Environmental Management Plan (CEMP) shall be prepared that covers the area of works. The CEMP shall be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004). The CEMP shall include details sufficient to understand and avoid, mitigate and remedy all potential environmental impacts of the project during construction. The CEMP shall include, but not be limited to:*
   - a) *a description of all relevant activities to be undertaken on the site during construction (including an indicative timeline);*
   - b) *a description of relevant environmental management objectives for the site;*
   - c) *a detailed construction management strategy for each sequence / stage of the bulk earthworks;*
   - d) *details of measures to be installed to separate construction areas from publicly accessible areas;*
   - e) *statutory and other obligations that the Proponent is required to fulfil during construction including all relevant approvals, licences and consultations;*
   - f) *a description of the roles and responsibilities for all relevant employees involved in construction*
   - g) *hours of work (including standard hours of work for the Environmental Officer);*
   - h) *a 24-hour contact telephone number shall be provided to all adjoining owners and occupants. Note: the nominated telephone number may contain provision for a voice message service outside of normal working hours.*
   - i) *Measures to be implemented during bulk earthworks operations to ensure the existing 600mm trunk water main is protected*
   - j) *Details of the Aboriginal Cultural Heritage Program for personnel and contractors (the program should be developed and implemented in collaboration with the local Aboriginal community)*
   - k) *A subset of the following management plans:*
     - i. *traffic and pedestrian management (see condition 55);*
     - ii. *noise and vibration management (see condition 56);*
     - iii. *construction waste management (including the proposed method and location of excess spoil from bulk earthworks) (see condition 57);*
     - iv. *erosion and sediment control for the entire Kings Forest Estate (see condition 54);*
     - v. *dust management to include:*
       - *identification of all dust emission/sources for each stage of the project;*
       - *identification of appropriate air quality goals/management criteria; and*
       - *details of all dust management and/or dust mitigation measures required to achieve the air quality goals/criteria for the construction works.*
   - l) *Note: other conditions in this approval may specify relevant objectives or requirements for or in addition to any of the matters listed directly above.*

2) *Bulk earthworks are limited to one sequence area at a time, with the maximum exposed disturbed area (that has not been permanently vegetated) not exceeding a maximum of 5 hectares unless otherwise approved as part of this approval in Condition 9, at any time to reduce exposed areas.*

3) *The CEMP shall be prepared in consultation with the Council and submitted for the approval by the Secretary no later than one month prior to the commencement of construction works. Notwithstanding, where construction work is to be undertaken in stages, the Proponent may, subject to the agreement of the Secretary, stage the submission of the CEMP consistent with the staging of activities relating to that work. The Proponent shall also forward copy of the CEMP to the Secretary and Council for information. Construction shall not commence until written approval has been received from the certifying authority.*

1.1 Location

The subject site consists of land described as Lot 76, 272, 323 and 326 of DP 755701, Lot 6 DP 875446, Lot 2 DP 819015, Lot 1 DP706497, Lot 40 DP7482, Lot 38A DP 13727, Lot 38B DP 13727, Lot 1 DP 129737, Lot 1 DP 781633, Lot 7 DP 875447, Lot 37A DP 13727, Lot 2 DP 1159231 (closed road) Lot 1 DP 1178256 (closed road) and Lots 1, 2 & 3 DP 11757616 (closed roads).

The 'Kings Forest' development is located on the northern coast of New South Wales, within the Tweed Shire Council. The site is approximately 4km south of Kingscliff and 5km north of Cabarita. The site is bound by Old Bogangar Road to the east and Duranbah Road to the west. The subject property is in total 882.4 ha and was previously agricultural land. The site is planned to ultimately add 4414 residential lots, a school, golf course and 19 hectares of commercial and community precincts.

The site exists in its current state as a large portion of cleared land, which was previously cleared for agricultural purposes (cattle grazing), and scatterings of native vegetation communities.

The location of the project site is shown in ***Figure 1***.

FIGURE 1 – Site Location Plan

1.2 Project Description

The Kings Forest Project is a proposed mixed use residential development of approximately 882.4 hectares of land within the Tweed Shire Council region. The Project is divided in to 14 precincts and will consist of a mix of residential, retail and commercial, educational, community facility and a proposed Golf Course, an associated infrastructure passage and significant open space areas that will include sporting and recreational facilities, open space and neighbourhood parks. In addition, the site will include environmental protection areas including fauna corridors, and Koala habitat area.

This report specifically pertains to the construction of;

- Tweed Coast Road/Kings Forest Parkway intersection(main site entrance),
- Construction of the Trunk water main and Cycleway linking Kings Forest to Casuarina,
- Sequence one of the Bulk earthworks.

Once Bulk earthworks is completed this will allow the Civil Construction to follow for;

- Kings Forest Parkway
- Construction of Sewerage Pump Stations
- Construction of Stages 1 to 9 in two to three stage parcels.

Precinct 1 is located on the eastern side of Tweed Coast Road and a Project approval for a service station and food and drink premises has been granted for the precinct. The construction of the external intersection will also provide access to Precinct 1. During the construction of the intersection it is proposed to utilize Precinct 1 as the site office and site storage compound. This would entail installing the final permanent Koala Fencing around this Precinct.

The proposed development is shown in ***Figure 2***.

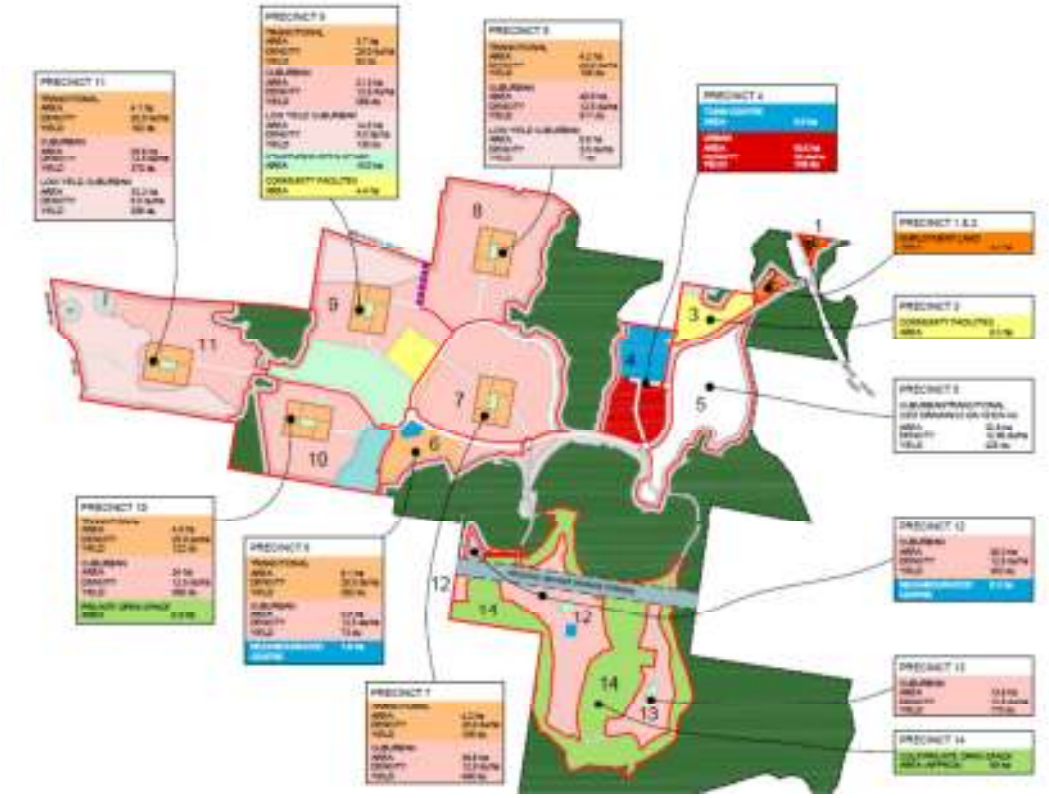

FIGURE 2 – Development Site Plan

2.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

2.1 CEMP Context

This CEMP has been prepared in accordance with Condition 52 of MP08_0194, and is based on the preliminary reporting that accompanied the above Major Project approval and subsequent modifications. It specifically relates to the construction of the works described within the Project description Section 1.2.

Management plans have also been prepared to meet the conditions of approval. Any applicable management plan that is relevant to this first phase of work has either been included or is referenced within the report. All matters addressed by these plans have been summarised within this CEMP which provides a framework of systems and procedures to ensure that controls are established and maintained to manage potential environmental impacts during pre-construction and construction phases of the development

Project 28 Pty Ltd will plan and implement an integrated management system for mitigation of environmental impacts associated with the project with regular monitoring and auditing to assess and ensure their effectiveness

2.2 CEMP Objectives

The key performance objective of this CEMP is to comply with all relevant environmental legislation and regulations, including the conditions of approval (MP08_0194) minimising environmental impacts.

This CEMP defines environmental obligations and other legal and regulatory controls relevant to the construction of the Project Key environmental objectives and targets for the proposed development are shown in ***Table 1***.

Table 1: Key Environmental Objective and Targets for the Kings Forest Development

Aspect	Objective	Target
Erosion and sediment control	To apply soil erosion and sediment control principles to minimise soil erosion and water pollution.	• Soil disturbance shall be avoided and/or minimised wherever possible, with the exposed disturbed area (that has not been permanently vegetated) not exceeding a maximum of 5 hectares at any one time. • All erosion and sediment control measures are to be effectively implemented and maintained in accordance with the Sediment and Erosion Control Plan as required by condition 54. • All erosion and sediment control measures are to be effectively maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works has been stabilised and rehabilitated so that it no longer acts as a source of sediment. • After each storm event a suitably qualified person shall

		assess the adequacy of the erosion control measures and make good any damaged erosion control devices and clean up any sediment that has left the site or is deposited on public land or in waterways.
Acid sulfate soils	To ensure all acid sulfate soils are identified and treated to avoid oxidation and generation of acidic runoff	• An Acid Sulfate investigation has been carried out which advises that the soils are low to negligible. The investigations advises that for this first phase of works a Management plan would not be required and if material is not moved from site and replaced within 48 hours nor treatment would be required. Check testing in some areas was recommended.
Ecology	To protect flora and fauna within and adjacent the construction area.	• No loss or damage to Threatened flora species, retained Endangered Ecological Communities or· significant impact on native vegetation outside of the earthworks boundaries; • Minimal loss or significant impacts to native fauna, with no loss of endangered or threatened fauna; • Minimal loss or significant impacts to identified habitat trees and/or features; • No decrease in the diversity of the local protected fauna species population.
Groundwater	Minimise impacts on existing groundwater quality and hydrological regime.	• Appropriate stewardship of natural resources; • Protection of downstream flora and fauna habitats; • Compliance with statutory requirements; • Preservation of the existing groundwater quality • Minimise disturbance to the existing groundwater Hydrological regime. • Conduct all groundwater related activities in accordance with appropriate licences and permits.
Water Quality & Hydrology	To avoid pollution of the environment and particularly Cudgen Creek, by fuels, oils, chemicals or soil stored or used on the project.	• All practical measures will be taken to prevent contaminated stormwater from adversely affecting the water quality of the receiving environment including Cudgen Creek. • Implement effective materials handling and sediment and erosion control to ensure no spills of fuel, oil, chemicals or soil into the environment. • Waters discharged from the site shall meet the applicable water quality criteria and will not cause sedimentation offsite. • Avoidance of pollution to SEPP 14 Coastal Wetlands and floodplain Endangered Ecological Communities. • No increase in groundwater contamination resulting from construction activities.

		• Negligible change to the existing groundwater regimes in the project area. • Discharged groundwater within all specified water quality criteria.
Air Quality & Climate	To minimise potential air pollution from construction activities.	• Maintain effective dust management practices throughout the project.
Noise & Vibration	To minimise potential impacts of noise and vibration from construction activities.	Maintain effective noise and vibration management practices throughout the project. Working hours onsite to be kept in accordance with regulations and/or bylaws of TSC. Construction works to be programmed to avoid noise generating activities early or late in the day. Plant and equipment to be fitted with exhaust and radiator silencers where appropriate and the use of horns, sirens and reverse signals to be limited to only where required to achieve workplace health and safety standards
Cultural Heritage	To minimise potential heritage impacts during construction activities.	Maintain effective heritage management practices throughout the project in accordance with the site specific CHMP and the conditions of consent (MP08_0194).
Waste	To minimise waste generated by construction activities and ensure it is stored, removed recycled or disposed of in accordance with applicable legislation.	• Keep accurate records for all waste leaving the project. Reduce, re-use and recycle all wastes (where possible). • Ensure all waste generated by the project is stored, reused, recycled, or disposed of in accordance with applicable legislation. • The onsite storage of fuel, oil or other hazardous substance shall be minimised. Where storage is required, these substances shall be kept in appropriate containment structures in accordance with Australian Standards, the relevant MSDS and applicable legislation.
Traffic & Access	To minimise potential impacts on traffic during construction.	• Maintain effective traffic management practices throughout the project.

2.3 Construction Activities

2.3.1 Pre-Construction Activities

The following notifications and inspections shall be carried out prior to construction works commencing:

- Adjoining and affected residents shall be provided with a minimum 72 hours' notice prior to the commencement of works;
- Tweed Shire Council (TSC) and the Certifying Authority shall be given written notice, at least 48 hours prior to the commencement of all works on the site for the project;
- The CA is to be given a minimum of 48 hours' notice prior to any critical stage inspection or any other inspection nominated by the CA via the notice under Section 81A of the *Environmental Planning and Assessment Act 1979;* and
- Prior to the commencement of works for each precinct, all erosion and sediment control measures and temporary exclusion/protective fencing shall be installed and operational to the satisfaction of the Private Certifier or Tweed Shire Council.
- All relevant licences and permits shall be obtained prior to the commencement of works.
- Site Induction of all staff and operatives as per the requirements of the ACMP (Appendix C)

2.3.2 Construction Activities

Construction activities associated with the external intersection include:

- Installation of traffic management for first phase of construction;
- Site establishment including installation of exclusion fencing;

Then the following sequences will be repeated per Construction Phase;

- Temporary and permanent erosion, sediment and water quality control measures
- Temporary and permanent Fauna, exclusion and protective fencing;
- Vegetation clearing;
- Topsoil stripping and management;
- Earthworks;
- Drainage construction;
- Sewer works;
- Road construction;
- Acoustic fence;
- Electrical works;
- Landscaping/Stabilization.

2.4 Work Hours

All construction activities including the delivery of materials to and from the site will be restricted to the hours stated in Condition 74 of MP08_0194 as detailed below;

Hours of Work

74.

1) The hours of construction, including the delivery of materials to and from the site, shall be restricted as follows:

a) between 7:00 am and 6:00 pm, Mondays to Fridays inclusive;

b) between 8:00 am and 5:00 pm, Saturdays;

c) no work on Sundays and public holidays.

2) Works may be undertaken outside these hours where:

a) the delivery of materials is required outside these hours by the Police or other authorities;

b) it is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm;

c) variation is approved in advance in writing by the Secretary or his nominee.

d) Residents likely to be affected by the works are notified in writing of the timing and duration of these works at least 48 hours prior to the commencement of works (with the exception of emergency work).

3) The Proponent is responsible to instruct and control subcontractors regarding hours or work.

2.5 Plant and Equipment

Below is a list of the expected plant and equipment to be used during construction of the project.

The actual type and number of construction plant and equipment items will vary throughout the construction period depending on the timing and nature of construction activities being undertaken. Proposed plant and equipment to be used during construction of the project include:

- tracked excavators
- semi-trailers for delivering materials
- dump trucks/scrapers for the movement of material associated with earthworks
- grader (for road construction and earthworks)
- water truck
- roller/compactors
- backhoe/bobcats
- portable generators
- bulldozers
- mulcher

2.6 Timing and Scheduling

Timing of the commencement and progress of works will be dependent on a range of factors, including approval of Construction Certificates, the tender process, the client's programme for the development and prevailing weather conditions. It is also possible that additional construction certificates will be approved in the near future and may be running concurrently with the already proposed works, thus making detailed scheduling at this time impractical.

Details of proposed timing of the various construction elements will be provided to TSC and the Private Certifier as soon as practical after the decision to proceed with an individual construction element is made.

An indicative programme received from one of the Contractors is included in Appendix A

2.7 Location of Site Facilities

The location of the main site facility/office is proposed to be in Precinct 1 and is shown in ***Figure 3***.

Figure 3.1 – Site Compound Location – External to Site

Figure 3.2 – Site Compound Location – Internal to Site

Access to the site will be made via the entrance off Tweed Coast Road. The Environmental Buffer area surrounding this proposed location shall be protected by the installation of the permanent Koala Fencing.

The site facility/office contains all portable buildings including offices, first aid, undercover parking, portable toilets and showers, storage containers and a workshop. This will be completely secure and will have CCTV monitoring in place.

Lay down/storage areas will be constructed as all-weather access that will be cleared and grubbed; topsoil removed and stockpiled with a 150 mm layer of 20 mm aggregate laid and compacted. The lay down/storage areas will be separated from the site facilities with a appropriate fencing.

2.7.1 Storage of Hazardous Goods

The storage of chemicals, fuels and dangerous goods will be strictly in accordance with relevant legislation, manufacture instructions, the MSDS and Australian Standard 1940. The designated

location for on-site storage of hazardous chemicals will be nominated in the Contractors Health and Safety plan.

Environmental and safety information on hazardous substances (e.g. MSDS) will be available at the main site office and where such substances are stored. These locations will be communicated to all personnel during the induction process.

Adequate quantities of emergency response materials such as oil/hazard spill kits, absorbent materials etc. will be readily available and kept in designated locations.

2.8 Project Management Plans

A number of Management plans have been undertaken as part of the approvals process of this development approval for this proposed development and have been reviewed as part of this CEMP. Some Management plans will not be relevant to this sequence of the works. To avoid confusion the provisions of the management plans listed below prevail to the extent of any inconsistencies with or omissions in this plan.

All studies produced as part of the project approval include;

- Flora and Fauna monitoring report (JWA, 2020);
- Koala Plan of Management (JWA, 2019);
- Wallum Sedge Frog Management Plan (JWA, 2020)
- Groundwater Management Plan (Gilbert & Sutherland);
- Integrated Water Cycle Management Plan (Gilbert & Sutherland)
- Overall Water Management Plan (Gilbert & Sutherland);
- Stormwater Management Plan (Gilbert and Sutherland);
- Construction Management Plan (Mortons, 2018);
- Erosion and Sediment Control Plan, Kings Forest Phase 1 Works (Mortons Urban Solutions);
- Erosion and Sediment Control Plan, Kings Forest, External Intersection, Tweed Coast Road, NSW (Gilbert & Sutherland, August 2019)
- Construction Waste Management Plan (Gilbert & Sutherland, December 2019)
- Drainage Maintenance Management Plan (Gilbert & Sutherland, December 2019);
- Buffer Management Plan - Precincts 1 -5 (JWA, 2020)
- Feral Animal Management Plan (JWA, 2020);
- Threatened Species Management Plan - Precincts 1 - 5 (JWA, 2020);
- Vegetation and Weed Management Plan - Precincts 1 – 5 (JWA, 2020);
- Acid Sulfate Soils Management Plan, Kings Forest Stage 1 Project Application, Kings Forest NSW (Appendix 27, Preferred Project Report) (Gilbert and Sutherland, February 2012);
- Cultural Heritage Environmental Management Plan & Cultural Induction (November 2019);

With respect to sub-plans, ***Table 3*** lists the sub-plans used in compiling this CEMP. Each of these sub-plans has specific management measures, monitoring and reporting requirements that must be implemented as per the various conditions of approval relating to this proposed development.

Table 3: CEMP Sub-Plans

Management Plan No.	Management Plan Title	Prepared By
1	Traffic and Pedestrian Management Plans	Traffic Control Innovations
2	Noise and Vibration Management Plan	CRG Acoustics
3	Construction Waste Management Plan	Gilbert & Sutherland
4	Stormwater Management Plan (whole of site ESC)	Gilbert & Sutherland
5	Erosion and Sediment Control Plan (Precinct 5 Bulk Earthworks)	MUS
6	Erosion and Sediment Control Plan (External – Tweed Coast Road)	Gilbert & Sutherland
7	Acid Sulfate Soils Investigation -Precinct	Gilbert & Sutherland
8	Stormwater Management Plan (whole of site ESC)	Gilbert & Sutherland
9	Construction Waste Management Plan	Gilbert & Sutherland
10	Cultural Heritage Management Plan	Everick Heritage

2.9 Consultation for Preparation of CEMP

The pre-construction and approvals stage required consultation with a number of authorities during the preparation of this CEMP and respective Environmental Management Plans. This consultation has involved a combination of meetings and review of plans during the concept stage to teleconferences during the formation of this CEMP. The outcomes of all consultation have been incorporated into the relevant management plans and this CEMP as a means of demonstrating compliance to the approval authority.

3.0 APPROVALS & LICENCE REQUIREMENTS

3.1 Approval & Licensing Requirements

The legislative requirements, policies, guidelines and standards relevant to each sub-plan for the project are summarised in ***Table 4.*** If changes occur to legislation throughout the duration of the project, any necessary amendments to this CEMP will be communicated to the relevant staff.

In accordance with Condition 73 of the Kings Forest Stage 1 approval (MP08_0194) all approved plans must be kept onsite as described below;

> ***Approved Plans to be On-site***
> *73. A copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification shall be kept on the site at all times and shall be readily available for perusal by any officer of the Department, Council or the CA.*

Table 4: Environmental Legislation Relevant to the Project

Legislation	Details of Approvals/Permits Required	Relevance to the Project
Commonwealth		
Environmental Protection & Biodiversity Act 1999 (EPBC)	The EPBC Act requires that actions that are proposed to be taken which are likely to have a significant impact on matters of national environmental significance (NES) are referred to the minister for a decision on if it will be subject to a rigorous assessment and approval process. The EPBC Act also applies to actions that are likely to have a significant impact on the environment of Commonwealth land and to actions taken by the Commonwealth that will have a significant impact on the environment anywhere.	On the 21st May 2015 the Commonwealth Department of Environment approved (with conditions) the Kings Forest residential development (EPBC 2012/6328). These included the preparation of Koala Plan of Management (KPoM) and Wallum Sedge Frog Management Plan (WSFMP) as well as requirements for the retention of habitat and installation of mitigation devices such as exclusion fencing.
Aboriginal & Torres Strait Islander Heritage Protection Act 1984	The Aboriginal and Torres Strait Islander Heritage Protection Act 1984 is the principal Commonwealth legislation for the protection of areas and objects of particular significance to Indigenous Australians.	The Act applies in addition to any State requirements. Persons who discover anything that they have reasonable grounds to suspect to be Aboriginal remains are required to report their discovery to theMinister (s.20).
Native Title Act 1993	The Native Title Act (1993) was developed by the Federal Government in recognition of the outcomes of the *Mabo versus Queensland* High Court decision in 1992 which found that the common law of Australia could authorise the rights of Aboriginal and Torres Strait Island people to lands and waters according to their laws and customs (refer HCA_{23} 1992). The Act aims to authorise and protect Aboriginal peoples and Torres Strait Islanders common law native title rights and interests with specifically to: Provide for the recognition and protection of native title; Establish ways in which future activities affecting native title	Under the Native Title Act 1993 (Cwlth), the valid grant of a freehold estate on or before 23 December 1996 is known as a 'previous exclusive possession of act' (PEPA). This means that native title has been extinguished over the area in question tenures as freehold. The area over which the Kings Forest development is proposed is tenured as freehold and therefore meets the definition of a PEPA.

	may proceed; Establish a mechanism for determining applications for the recognition of native title; and Provide for, or permit, the validation of certain acts carried out before 1 January 1994 that were made invalid because of the existence of native title. The Act was substantially amended in 1998. The amended *Native Title Act (1993 (Cw/th))* allows for confirmation that native title rights and interests have been extinguished (removed) outright by providing a list of the kinds of acts or activities that extinguish native title rights and interests, and provides for, or permits, the validation of certain acts carried out between 1 January 1994 and 23 December 1996.	
New South Wales		
Environmental Planning & Assessment Act 1979 and Environmental Planning & Assessment Regulations 2000 (EP & AAct)	Development in NSW is regulated principally through the EP&A Act. It establishes a system of identifying development requiring consent, and the applicable assessment and approval processes. The Act makes provision for the development of Environmental Planning Instruments including State Environmental Planning Policies (SEPPs) and Local Plans.	On 1 February 2007, the Director General, as delegate of the Minister of Planning, advised the applicant that the proposal for Kings Forest Estate is a 'major' project to which Part 3A of the EP&A Act applies and requires the Minister's approval, and authorizes the submission of the Concept Plan.
Biodiversity Conservation Act 2016	The Biodiversity Conservation Act 2016 identifies and protects threatened and endangered species, populations and ecological communities.	As several threatened species and endangered ecological communities will be impacted by the proposed development, a number of management plans have been conditioned as part of MP08-0194, DA10/0800 & DA1D/0801 to ensure the long term protection of such species/communities.
Protection of the Environment Operations Act 1997 (POEO)	The POEO Act sets severe penalties for harming the environment, polluting waters operating equipment inefficiently and incorrectly handling waste. The NSW OEH (now BCD) administers Environment Protection Licences.	A dangerous goods licence may be required under POEO Act for the storage of flammable, toxic or corrosive substances on site.
Contaminated Land Management Act 1997	Provides for the investigation and remediation of contaminated land sites in NSW Where contaminated material is identified, or land contamination occurs, a duty to report to the NSW BCD applies.	Management of any identified contamination within the project footprint will be required in accordance with relevant site specific management plans
Heritage Act 1977	The Heritage Act aims to serve as a legislative framework for the protection of heritage items within the State. The Act requires the NSW Heritage Council to maintain the States Heritage Register.	A Search of the NSW Heritage Register found no sites within the alignment of the proposed works and as such referral under this Act is not required.
National Parks & Wildlife Act 1974	The NPW Act provides for the reservation and dedication of national parks, nature reserves, historic sites etc and protection of certain native flora and fauna. It is also the principal legislation for the protection of Aboriginal objects and places of significance ("Aboriginal places"). It is an office to disturb or move any Aboriginal objects	Sections 84 & 90 of the National Parks & Wildlife Act 1974 (NPW Act) provides the primary basis for the legal protection and management of Aboriginal sites and relics within NSW. The Act requires amongst other things: • Consultation with the BCD prior to

	without a permit (s.86). Similarly, it is an office to destroy, deface or damage an Aboriginal place or Aboriginal object without consent from the D-G NPWS (s.90).	development to determine the existence of items of Aboriginal heritage; • Consultation with local Aboriginal groups; and • Consent to disturb Aboriginal heritage sites/items. In the case of a Part 3A Concept Plan, approval under the NPW Act is not required.
Water Act 1912	Approval is required for interception of groundwater.	Approval is required under Part 5 of the Water Act 1912 is required as the proposed works will intercept groundwater during construction.
Biosecuity Act 2015	The Biosecuity Act 2015 defines the roles of government, councils, private landholders and public authorities in the management of noxious weeds, according to their potential to cause harm to the local environment.	A Vegetation and Weed Management Plan (JWA, 2020) has been prepared for the site. Personnel and sub-contractors are to be made aware of correct procedures of removal and treatment of environmental weeds if they are identified in the work area.
Water Management Act 2000	The WMA consolidates the Water Act 1912 and the Rivers and Foreshores Improvement Act. It deals with surface and ground water management. Approval is required to undertake water supply works, drainage works, or floodplain works. The WMA provides a scheme for the transitional recognition of permits granted under the Water Act 1912.	Condition AN2 of the Project Approval requires water licensing.

3.1.1 Approvals, Licences & Permits

Conditions 1 to 51 of the Approval Conditions need to be satisfied prior to the issue of a Construction Certificate by the CA or Tweed Shire Council.

Conditions 52 to 71 have to be completed prior to Construction Commencement.

As the above conditions capture all relevant statutory permits and licenses as part of the Approval Conditions the Construction Certificates applicable to the first Stage / package of works are as follows;

Table 5: Construction Certificate or Permits Required.

Section of Works	Approvals	By	Reference
External Intersection	Section 138 Approval for Roadworks Section 68 Approval for Water & Sewer Construction Certificate	Tweed Shire Council Tweed Shire Council Certifying Authority	Drawings 12301-EXTINT-000 to 850
Tweed Coast Road	Section 138 Approval for Roadworks Section 68 Approval for Water and Sewer	Tweed Shire Council Tweed Shire Council	Drawings 12301-TCR-000 to 741
Bulk Earthworks	Section 68 Approval for Water & Sewer Construction Certificate	Tweed Shire Council Certifying Authority	Drawings 12301-BE1-000 to 681
Kings Forest Parkway	Section 68 Approval for Water & Sewer Construction Certificate	Tweed Shire Council Certifying Authority	Drawings 12301-KFP1-000 to 740
Stages 1 to 9	Section 68 Approval for Water & Sewer Construction Certificate	Tweed Shire Council Certifying Authority	Drawings 12301-P5-1/3-000 to 704 Drawings 12301-P5-4/5-000 to 701 Drawings 12301-P5-6/7-000 to 701 Drawings 12301-P5-8/9-000 to 701
Regional Pump Station SPS 01	Section 68 Approval for Water & Sewer	Tweed Shire Council	Drawings 12301-PS 01-000 to 551
Precinct 5 Pump Station PS 02	Section 68 Approval for Water & Sewer	Tweed Shire Council	Drawings 12301-PS 02-000 to 551

4.0 ENVIRONMENTAL MANAGEMENT

4.1 Environmental Management Structure and Reporting

The Project Manager, Superintendent and Environmental *Officer* will be responsible for ensuring sufficient resources are allocated to install, inspect, maintain and *remove* environmental controls throughout the construction period.

This section provides details on staff responsibilities of all key personnel that have obligations with respect to the development, implementation and monitoring associated with the CEMP.

4.1.1 Project Manager

The Project Manager is responsible for the overall project management and delivery. The project manager is responsible for delegating responsibility to his management team to ensure that the environmental impacts are minimised and obligations met in the areas of their control and that, through an integrated and collaborative approach to management, the responsibilities are passed down through the work force and that no risks or obligations fall through gaps.

Specifically, the Project Manager is responsible for:

- Reviewing and authorising the Construction Environmental Management Plan (CEMP) and other project plans;
- Assigning Environment responsibilities to all project personnel;
- Ensuring all project personnel are suitably trained, and possess the necessary skills, to undertake their designated Environment responsibilities;
- Continually monitoring of Environment performance to ensure compatibility and continued effectiveness with the policy and objectives;
- Communicating environment performance to the Operations/Construction Manager;
- Providing sufficient resources to ensure the CEMP practices are implemented;
- Participating in the *review* of the project Environment system and other relevant environment meetings and programs; and
- Ensuring appropriate training in Environment is provided to all project personnel.

4.1.2 Superintendent / Foreman

The Superintendent/Foreman reports to the Project Manager and will *have* a direct role in the compliance with designated environmental procedures and controls. They will also be responsible for ensuring controls are installed prior to works, checking the site on a regular basis and ensuring that regular maintenance is undertaken to minimise environmental impacts and that personnel are provided with appropriate environmental 'Toolbox' training.

Specifically, the superintendent will be responsible for:

- Ensuring procedures in the CEMP are followed;
- Perform surveillance and monitoring of environmental controls to ensure that they are established and maintained with requirements;

- Ensuring the environmental protection requirements are communicated to all personnel and subcontractors under his/her control;
- Identifying and reporting environmental non-conformance and notifying the EO of the suspected non-conformance;
- Carrying out the agreed rectification works after identification of non-conformance; and
- Competing environmental surveillance activities in the site diary as required.

4.1.3 Environmental Officer

The Environmental Officer is responsible for ensuring the compliance with the CEMP, environmental conditions of approval, legislation and the management plans until conditions have been satisfied. The standard hours of work for the Environmental Officer position will be between 7am to 5pm, and their primary tasks will involve the following:

- Ensure best practice environmental management is undertaken;
- Ensure the relevant environmental management plans are in compliance (refer **Section 2.8 and *Appendix M***);
- Maintain environmental records including monitoring data, complaints (refer ***Appendix E***) and environmental incident reports (refer ***Appendix F***);
- Assist contractors in fulfilling their environmental responsibilities during construction activities;
- Liaison with external agencies where necessary;
- Responsibility for receiving and responding to complaints;
- Ensure that all environmental obligations are identified, implemented and undertaken;
- Deliver environmental component of site inductions;
- Prepare, review and maintain environmental documentation;
- Undertake programmed monitoring;
- Complete programmed environmental inspections and audits;
- Review and maintain the CEMP regularly and implement the necessary changes;
- Determine appropriate corrective actions where required; and
- Submit a Compliance Report to the Secretary within three weeks of the completion of each earthworks stage until completed.

4.1.4 Sub-Contractors

As a minimum, subcontractors and their employees will be required to comply in full with the requirements of the CEMP as it applies to site environmental management and control. Subcontractors' personnel are considered equivalent to project personnel in all aspects of environmental management and control and their responsibilities.

Sub-contractor personnel will be included in the onsite induction process. The Environmental Officer and/or Superintendent/Site Foreman will monitor the work of subcontractors working on site to ensure best practice environmental management is being undertaken.

4.2 Project Team Resources

The resources required to implement the control measures and obligations identified will include:

- General labour to install and maintain controls during construction activities and following storm/wet weather events;
- Specialist input from consultants;
- Heavy plant and equipment such as bulldozers and excavators;
- Hand tools;
- Fencing and flagging tape to secure protected areas or trees;
- Erosion and sediment equipment including sandbags, sediment fence and sediment basin treatment chemicals (e.g. gypsum); and
- Emergency response equipment such as spill kits.

4.3 Environmental Training

Two main forms of environmental training will be provided on site:

- Site induction; and
- Toolbox meetings.

Records of inductions, toolbox meetings and other specific training will be maintained by the Environmental Officer and a copy kept on site for the life of the project. The records shall include the topic of training carried out, dates, and names of people who undertook the training and trainers' details.

4.3.1 Induction

Prior to any staff working on site, all personnel and subcontractors will undertake a site induction. These inductions will address several elements including occupational health and safety, quality and environment.

The environmental component of the site induction shall be prepared by the Environmental Officer, and will address a range of environmental issues including, but not limited to:

- The CEMP (purpose, objectives and key issues);
- Legal requirements including due diligence and duty of care of each person on site;
- Environmental responsibilities;
- Conditions of licences, permits and approvals;
- Significant environmental issues including sensitive areas, site boundaries, designated areas for washing plant and equipment, refuelling and maintenance of vehicles;
- Storage of hazardous chemicals and fuels;
- Location of hazardous chemical/fuels spill kits and contents;
- Environmental management for key issues (protected flora and fauna, feral animals, weeds, acid sulfate soils, erosion and sediment control, salt and freshwater wetlands, flora and fauna, cultural heritage etc.;
- Specific management of Koalas as per the KPoM (JWA, 2019)
- Dogs, cats and other domestic animals are prohibited from entering the site;

- Response process for environmental harm/incidents;
- Protection and maintenance of environmental controls;
- Procedure for identification of cultural heritage items on site;
- Mitigating dust, noise and vibration during construction works; and
- Sediment and erosion control requirements.

All construction staff engaged in undertaking initial soil disturbance will undergo a Cultural Heritage finds induction by the Tweed Byron Local Aboriginal Land Council (TBLALC) as required by the Aboriginal Cultural Heritage Management Plan (ACHMP) prior to working on site. Construction staff shall be trained in the 'stop work requirements' of the ACHMP.

4.3.2 Staff Training

Staff and subcontractors working on site will be provided with environmental training to achieve a level of awareness and competence appropriate to their assigned activities.

Targeted environmental awareness training will be provided to individuals, groups of workers, or those undertaking an activity with a high risk of environmental impact by providing regular toolbox meetings. Toolbox training is provided to ensure that relevant information is communicated on site and to provide an opportunity for feedback on issues of interest or concern. Additionally, toolbox training will be provided when updates and amendments have been made to the CEMP.

Training will generally be prepared and delivered by the Environmental Officer or a nominated delegate such as the ACHMP should have a nominated Aboriginal Stakeholder carry out the training. Training topics may include:

- Content and requirements of the CEMP and Environmental Management sub- plans;
- Key environmental issues such as noise, vibration control, dust control, flora
- and fauna, environmental protection areas;
- Environmental emergency response;
- Erosion and sediment control, installation and maintenance of controls;
- Management of works near no-go zones such as environmental protection areas;
- The efficient use of plant and equipment;
- Waste management, minimisation and recycling;
- Flora and fauna protection including no-go zones;
- Management of acid sulfate soils and contaminated soils;
- Spill response equipment; and
- Protecting waterways and riparian zones.
- Induction and inform all staff and site operatives as to the requirements of the ACHMP.

4.3.3 Training Records

Records of all training would be kept and maintained on site and should include:

- Who was trained;

- When the person was trained;
- The name of trainer; and
- A general description of the training content.

A training register is provided in ***Appendix G***.

4.4 Communications

4.4.1 Communications Process

All communication with internal and external parties regarding the environmental management during construction of the Project would be conducted in accordance with ***Table 6***.

Table 6: Communication

Subject	Responsibility	Action	Frequency
CEMP (Authorisation)	Project Manager	Submit to approval agency	Minimum one month prior to works commencing as per approval.
CEMP (Distribution)	Project Manager	Distribute for implementation	Prior to commencement of site inductions.
Site Inspection Observations and Actions	Environmental Officer	Record in the Environmental Register	Weekly.
Liaison with the BCD, Fisheries and Tweed Shire Council	Project Manager / Environmental Officer	Notify agencies of any staff contacts (Project Manager and Environmental Officer)	Prior to commencement of work.
Pollution Incident	Project Manager / Environmental Officer	Report Incident Maintain incident register	Immediately after personnel safety check. Verbal notification within 2 hours. Written notification within 24 hours.
Public Compliant Management	Project Manager / Environmental Officer	Circulate project information letter with 24 hour contact number to nearby residents. Maintain complaints register.	Prior to commencing work.
Notification of local residents re possible noise / dust impacts	Environmental Officer	Letter mail out.	At least 10 working days prior to the commencement of works.
Extended Working Hours	Project Manager	Letter mail out.	Same Day.
Discovery of Threatened Fauna or Flora	Environmental Officer	Telephone BCD representative.	Same Day.
Discovery of Archaeological material, heritage items.	Project Manager	Telephone Tweed Byron Local Aboriginal Land Council and Biodiversity Conservation Department Archaeologist.	Same Day.
Discovery of Skeletal Materials	Project Manager	Contact NSW Police and Tweed Byron Local Aboriginal Land Council.	Same Day.
CEMP Non-Conformance	Environmental Officer	Issue Report.	As Required.
Environmental Performance	Environmental Officer	Contractor to remedy.	Every month.
Audit	Environmental Officer	Provide report.	Every six months.
Management Review	Project Manager and Environmental Officer	Provide Minutes of Meetings	Six Monthly.

4.4.2 Complaints Management

The Complaints Procedure detailed in Condition 75 of MP08_0194 as reproduced below will be adhered to by the Contractor;

Complaints Procedure

75.

1) At the commencement of construction the Proponent shall ensure that the following are available for community complaints during construction

a) A 24 hour telephone number on which complaints about construction activities at the site may be registered.

b) A postal address to which written complaints may be sent.

c) An email address to which electronic complaints may be transmitted.

d) Name, address, contractor licence number and telephone number of the principal contractor, including a telephone number at which the person may be contacted outside working hours.

e) Name, address and telephone number of the Project Manager and PCA

f) The telephone number, the postal address, email address, the name of the site/project manager and the approved hours of work, shall be displayed on a sign near the entrance to the site, in a position that is clearly visible to the public.

2) The Proponent shall record details of all complaints received through the means listed under this condition of this approval in an up-to-date Complaints Register.

3) The Proponent shall provide an initial response to any complaints made in relation to the project during construction within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in the Complaints Register.

A Complaints Register will be kept electronically as part of the CEMP Complaints Register (refer ***Appendix E***). The Environmental Officer is responsible for recording environmental complaints in this register and will log, track and respond to complaints within a specific timeframe. The following details will be recorded in the register:

- Date;
- Time;
- Type of communication (telephone, mail, email, meeting);
- Name, address and contact number of complainant where provided;
- Nature of complaint;
- Details;
- Action taken in response including whom the complaint was referred to; and
- Details of any monitoring undertaken to confirm the complaint had been satisfactorily resolved.

Verbal notification would be provided to the TSC Project Manager within 24 hours of receiving a complaint regarding any environmental issue, including pollution, arising from the proposed works. A report will be prepared and submitted to the TSC Project Manager with details of the complaint and the action taken to alleviate the problem. In addition, during the construction

phase, weekly written notification of complaints and actions taken to close out the issues will be provided to TSC.

4.5 Environmental Records

The following records will be maintained as part of the project records:

- Details of qualifications for individuals responsible for environmental monitoring;
- The CEMP (all versions) with attached regulatory licences and permits;
- Regulatory authority inspection reports;
- Correspondence with regulatory authorities;
- Monitoring results;
- Induction and training records;
- Inspection checklists (***Appendix J & L***);
- Waste Quantity reports;
- Environmental accidents/incidents/emergency reports;
- Complaint reports;
- Non-conformance reports (refer ***Appendix D***);
- Audit reports (internal and external); and
- Management review minutes and action taken.

4.6 Emergency Incidents

All environmental incidents will be recorded and addressed by the Environmental Officer. Incidents will be classified, categorised and registered in the Project Environmental Incident Register. The following items will generally need to be reported on:

- Contributing factors (e.g. how and why);
- Severely classification;
- Rectification actions; and
- Notification requirements.

All incidents must be investigated as soon as possible after the event. The Project Manager will establish an investigation team to investigate all Class 1 and 2 environmental incidents. When an environmental incident is part of an OH&S incident, the Project Manager shall nominate an OH&S representative as part of the investigation team. The investigation shall address the cause and/or impact of the incident.

Table 7: Definition of Incident Classification

Incident Class	Definition
1	Clean-up / rehabilitation costs greater than $50,000
2	Clean-up / rehabilitation costs greater than $10,000 and less than $50,000
3	Clean-up / rehabilitation costs less than $10,000

4.7 Emergency Contacts & Response

4.7.1 Emergency Contacts

An up-to-date list of emergency response personnel, organisations and contact details will be maintained and posted at the site office and facilities. Table 8 lists the key personnel and emergency services responsible during the environmental emergency.

Environmental emergency contact details are listed below and will be updated as required.

Table 8: Environmental Emergency Contact Details

Organisation / Position	Name	Telephone / Email
24 Hour Project Contact Line	Shall be a person who has the authority to stop or direct works.	0475 911 824
Project Manager / Project 28 Pty Ltd	Michael Geale	07 5570 5500
Construction Manager	TBC	
Community Liaison Officer	Simone Pulefale	0475 911 824; simonepulefale@outlook.com
Environmental Officer	Dr. Michelle Mills	0499 987 467
Superintendent / Mortons – Urban Solutions	Kevin Fox Brad Must	0407 555 551 | kevinf@urbansolutions.net.au 0400 084 100 | bradm@urbansolutions.net.au
NSW Police (Tweed Heads)		07 5536 0999
NSW Fire Brigade (Tweed Heads)		07 5536 2222
NSW Ambulance Service (Tweed Heads Division)		13 12 33
Tweed Heads District Hospital		07 5536 1133
John Flynn Hospital & Medical Centre (Tugun)		07 5598 9000
SES NSW		13 25 00
Poisons Information		13 11 26
Kingscliff Veterinary Hospital		02 6674 1916
Friends of the Koala (24 hr hotline)		02 6622 1233
Biodiversity and Conservation Division	Chris Sayer	02 6640 2500
Fisheries	Pat Dwyer	02 6626 1397 | 1300 550 474
Tweed Shire Council	General Enquiries Mick Denny Valerie Conway	02 6670 2400 02 6670 2602 | mdenny@tweed.nsw.gov.au 02 6670 2605 | vconway@tweed.nsw.gov.au
Cultural Heritage Advisor	Everick Heritage Consultants	0432 816 460 | 07 3368 2660

4.7.2 Response

The Environmental Officer or the Project Manager will notify the relevant authorities (such as TSC, EPA Regional Manager, or EPA Pollution Line for after hours, and DP!) of pollution incidents on or around the site which have occurred as follows:

- If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial (at the discretion of the Environmental Officer); or

- If the actual potential loss or property damage (including clean-up costs) associated with pollution incident exceeds $10,000 in NSW.

All environmental incidents shall be investigated and reported to the Project Manager immediately after the event is discovered. Local Residents affected will be notified immediately.

The Environmental Officer will prepare an incident report which will be recorded, distributed to the appropriate authorities (e.g. TSC, EPA etc) and to the Project Manager, and stored on site. The report shall include the following:

- Contributing factors, e.g. how/ why;
- Severity classification;
- Rectification actions; and
- Notification requirements.

During construction activities, inspections and preventative actions to be performed by the Environmental Officer will include:

- Daily inspections of active work sites;
- Routine environmental checklists;
- Deliver ongoing environmental training; and
- Environmental audits of work sites, subcontractors and compliance issues.

In the event of an environmental incident, all necessary actions shall be taken to minimise the size and any adverse effects from the release.

In the event, that significant environmental harm is caused or likely to be caused as a result of construction activities, the Environmental Officer will advise the Project Manager to stop works.

The Project Manager will then have ultimate responsibility to stop works.

5.0 IMPLEMENTATION

5.1 Risk Assessment

The consideration of environmental risks associated with the proposed development has been assessed on a number of levels.

As part of the preparation of relevant Environmental Management Plans, an analysis was undertaken which:

- identified environmental issues through examination of the Director General's Requirements in MP08_0194. Further examination was undertaken of development approval conditions associated with DWY19/0016 by the Tweed Shire Council.

- reviewed the findings of preliminary environmental assessments documented within the literature of JWA, CRG and Yeats undertaken as part of the various studies included in the Concept, Project and Development Approvals:

    - Fauna survey results;
    - Flora survey results;
    - Geotechnical findings;
    - Surface water quality;
    - Groundwater quality;
    - Noise assessment;
    - Air quality assessment; and
    - Cultural heritage assessment.

- examined potential impacts and proposed mitigation measures in relation to the identified impacts; and

- examined residual risks from impacts after the application of mitigation measures.

Classification of 'likelihood" is shown in ***Table 9***. Classifications for 'consequence' is shown in ***Table 10***.

Table 9: Likelihood Criteria

Likelihood of Occurrence (over duration of project)	
Almost Certain	90 – 100%
Likely	70 – 90%
Possible	30 – 70%
Unlikely	10 – 30%
Rare	< 10%

Table 10: Consequence Scoring

Consequence	Classification						
	Cost	Time	Quality	Quantity	Community	Public & Workforce Safety	Environment
Extreme	>$500k	More than 3 weeks delay to critical path.	Failing to meet spec. Unusable risk to public health.	>50% Shortfall	Extreme negative media coverage / State Government Intervention.	Death or Permanent Incapacitation	Catastrophic site impact / high local impact / moderate external impact / serious long-term cumulative effect.
Major	$100k - $500k	1-3 week delay to critical path.			Significant negative media coverage / Formal Council Intervention	Major injury / illness	High site impact / moderate local impact / minimal external impact / minor long-term cumulative effect.
Moderate	$50k - $100k	2 days – 1 week delay to critical path.	Useable but significant KPI-based cost penalty.	25% Shortfall	Critical media coverage / formal Council Request for Information.	LTI	Moderate site impact / minimal local impact / possible long-term cumulative effect.
Minor	$10k - $50k	1 to 2 days delay to critical path.			No. of community complaints above expected average.	Minor injury / illness	Minimal site impact / easily controlled.
Insignificant	< $10k	< 1 day delay.	Breach of one or two major parameters not in customers' specs.	<5% Shortfall	No. of community complaints above expected average.	No injury / illness	No impact.

Scores for 'likelihood' and 'consequence' will result in an overall Risk Rating Score as shown in ***Table 11*** below.

Table 11: Risk Rating Score

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Extreme
Almost Certain	M	H	H	E	E
Likely	M	M	H	VH	E
Possible	L	M	H	VH	VH
Unlikely	L	M	M	H	VH
Rare	L	L	L	M	H

E = Extreme
VH = Very High
H = High
M = Medium
L = Low

5.1.1 Results of the Environmental Risk Analysis

Table 12: Risk Assessment

No.	Risk Description	Description of Consequence	Likelihood	Consequence	Ranking
1	Breach of Environmental Conditions	Community / Agency concerns raised requiring considerable diversion of resources. Possible delay to construction.	Unlikely	Major	H
2	Delays in Environmental Permits	Delays to project.	Likely	Insignificant	M
3	Noise, Dust and Vibration	Adverse impact on community and ecology.	Possible	Major	VH
4	Threatened Fauna	Loss of EPBC (Environment Protection and Biodiversity Conservation Act) or BCA (Biodiversity Conservation Act) threatened fauna during clearing.	Unlikely	Extreme	VH
5	Threatened Flora	Loss of EPBC or BCA threatened flora during clearing outside of construction footprint.	Unlikely	Extreme	VH
6	Endangered Ecological Community	Clearance of BCA endangered ecological community outside construction footprint.	Unlikely	Extreme	VH
7	Water Quality Kings Forest Cudgen Creek/SEPP 14 Wetlands	Polluted water due to spill.	Possible	Extreme	VH
8	Groundwater Pollution	Polluted groundwater.	Unlikely	Moderate	M
9	PASS / ASS Impacts	Additional costs for treatment / delays to work.	Unlikely	Moderate	M
10	Vegetation removal outside construction footprint	Breach of environmental conditions / penalties.	Unlikely	Moderate	M
11	Air Quality	Community health risk / concern.	Possible	Moderate	H
12	Introduction of Weeds	Threat to ecological integrity.	Possible	Moderate	H
13	Sedimentation and Erosion	Penalties / sediment entering environment.	Possible	Moderate	H
14	Discovery or harm of Aboriginal Cultural Heritage not previously identified.	Harm to Aboriginal objects/ Requirement to implement unexpected find procedure (ACHMP section 11)	Possible	Moderate	H

E = Extreme
VH = Very High
H = High
M = Medium
L = Low

6.0 ENVIRONMENTAL MANAGEMENT ACTIVITES & CONTROL

6.1 Environmental Management Plans

This CEMP is a framework document which is predominantly derived from a number of environmental management plans. Each environmental management plan contains mitigation measures relevant To avoid confusion the provisions of the full reports prevail to the extent of any inconsistencies with or omissions in the summary information provided below.

6.1.1 Flora and Fauna Monitoring Report

As a requirement of Condition 47 and 98 of MP08_0194, a Flora and Fauna Monitoring Report (JWA, 2020) has been prepared.

Objectives:

The main objective of the FFMR is to ensure that the proposed development will have minimal impacts to native fauna and their habitat by:

- Identifying actual and potential impacts to fauna; and
- Recommending and testing practical mitigation measures and monitoring requirements to manage identified impacts to fauna.

Targets:

The following targets have been established for the management of fauna impacts during construction works associated with the Precincts 1 & 5:

- Minimal loss or significant impacts to native fauna, with no loss of endangered or threatened fauna;
- Minimal loss or significant impacts to identified habitat trees and/or features;
- No decrease in the diversity of the local protected fauna species population;
- Adequate control/management of any introduced/invasive pest species, where identified; and
- No infringements of the regulatory requirements relevant to fauna.

Actions:

Table 13 details mitigation measures proposed to ensure that the proposed development will have minimal impacts to native fauna and their habitat.

Table 13: Mitigation Measures for Fauna Monitoring

Mitigation Measure	Responsibility	Construction Phase		
		Prior	During	Post
Parawebbing/fencing around vegetation protection areas, as per ***Appendix I*** – Earthworks Fencing Plan.	Environmental Officer	X		
Installation of temporary and permanent koala fencing on the approved alignment and erection of signage n fencing stating 'No Entry – Environmental Protection Area'.	Construction Manager / Site Superintendent Sign off: Environmental Officer	X		

Installation of sediment and erosion controls to protect drainage lines, retained habitat and compensatory Habitat Areas.	Construction Manager / Site Superintendent Sign off: Environmental Officer	X		
Flagging of any identified habitat features (hollows, nests, etc).	Fauna Spotter Catch (under direction of the Environmental Officer)	X		
Installation of signage at the Kings Forest Parkway site entry and along Kings Forest Parkway to notify staff, particularly plant operators, of the possible occurrence of Koalas.	Construction Manager / Site Superintendent Sign off: Environmental Officer	X		
Visual inspection for koalas in trees to be removed on the day of clearing, prior to any vegetation removal.	Fauna Spotter Catcher (under direction of the Environmental Officer)	X		
Site-specific threatened species inductions for all site staff. Induction will cover issues relating to threatened species, designated and restricted areas of access and waste disposal.	Environmental Officer	X		
Ongoing education of site staff through 'toolbox talks', ensuring important information relating to the protection of fauna are reiterated regularly. To be signed off by all attendees.	Environmental Officer		X	
Two stage clearing ensuring that non-hollow bearing trees are cleared first.	Fauna Spotter Catcher (under direction of the Environmental Officer)		X	
Relocation of Hollows.	Environmental Officer / Fauna Spotter Catcher		X	
Fencing Inspections.	Environmental Officer / Site Superintendent		X	
Two-Stage post-clearing and earthworks report to Tweed Shire Council.	Environmental Officer		X	
Weekly inspection of construction site / works	Environmental Officer		X	
Inspection to ensure that grubbing operations are leaving the site free draining with no ponding of stormwater which may result in breeding habitat for mosquitos and cane toads or cause alterations to the hydrology of wetland habitats.	Environmental Officer		X	
Maintenance of protection fencing and monitoring to ensure that non-permitted activities do not occur within protected areas.	Environmental Officer		X	
Monitoring compliance with the *Companion Animals Act 1998* (that no unrestrained dogs are allowed on-site during construction).	Environmental Officer		X	
Contact details for the ecologist / fauna specialist, Friends of the Koala (24hr hotline) (02 6622 1233) and the Kingscliff Veterinary Hospital (02 6674 1916) must be kept at all times in the site offices and with the on-site Environmental Officer.	Environmental Officer	X	X	
Notification of any additional threatened species identified to DECCW (NPWS).	Environmental Officer	X	X	
Adaptive Pest Management.	Ecologist (under direction of the Environmental Officer)		X	X
Annual Fauna Monitoring.	Ecologist (under direction of the Environmental Officer)		X	X
Removal of Protection Fencing.	Site Superintendent Sign Off: Environmental Officer			X

Reporting:

An annual Monitoring report will be prepared which discusses the results of the monitoring against the Monitoring Performance Criteria identified in the FFMR.

6.1.2 Vegetation and Weed Management Plan

In accordance with Conditions 39, 40 and 42 of MP08-0194, a Vegetation and Weed Management Plan (JWA, 2020) has been prepared for Precincts 1 - 5.

Objectives:

The main objective of the VWMP is to ensure that the proposed development will have minimal impact on local ecosystems, including threatened flora species. Specific objectives include:

- To protect all retained vegetation and threatened flora species from damage;
- To prevent unnecessary clearing or disturbance of native vegetation;
- To prevent degradation of aquatic and terrestrial habitats through threatening processes such as physical removal, weed invasion, water quality decline, soil erosion and compaction;
- To minimise loss and damage to habitat trees and maximise re-use;
- To develop and implement measures aimed at increasing the total amount of habitat available to other biota;
- To ensure disposal of cleared vegetation is undertaken in an environmentally responsible manner; and
- To ensure all personnel understand their role in implementing this management protocols set out in the VMP.

Table 14: Mitigation Measures for Vegetation Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Pre-clearing survey of habitat trees, including flagging and GPS recording.	Fauna Spotter Catcher/Ecologist	X	
Parawebbing / exclusion fencing installation around vegetation protection areas / threatened flora species as per Earthworks Fencing Plan (***Appendix I***).	Construction Manager / Site Superintendent Sign Off: Environmental Officer	X	
Installation of sediment and erosion controls to protect drainage lines, retained habitat and compensatory habitat areas.	Construction Manager / Site Superintendent Sign Off: Environmental Officer	X	
Erosion and sediment control around vegetation protection areas.	Construction Manager / Site Superintendent Sign Off: Environmental Officer	X	X
Fencing Inspections.	Environmental Officer and Site Superintendent	X	X
Notification of additional threatened species to DECCW (NPWS).	Environmental Officer	X	X
Marking of all habitat trees.	Environmental Officer and Fauna Specialist	X	
Pre-clearing fauna trapping	Environmental Officer/Ecologist	X	X
Two stage clearing ensuring non-hollow bearing trees are cleared first.	Environmental Officer / Project Botanist and	X	

	Fauna Specialist		
Relocation of hollows (as detailed in the Vegetation and Weed Management Plan, JWA, 2020).	Fauna Specialist and Environmental Officer	X	
Presence of spotter catcher throughout vegetation clearing.	Environmental Officer	X	
Ongoing education of site staff through 'toolbox talks' ensuring important information relating to vegetation protection are reiterated regularly. To be signed off by all attendees.	Environmental Office and Construction Manager	X	X
Post-clearing report to Tweed Shire Council.	Environmental Officer		X
Hydroseeding of disturbed areas is undertaken.	Environmental Officer		X
Inspection for weed species on a six monthly basis.	Environmental Officer		X
Monitoring of stockpiled materials to ensure weed infested topsoil is stockpiled separately.	Environmental Officer		X

Post-Clearing and Earthworks Report:

The Post-Clearing and Earthworks Report will be completed at the completion of clearing activities, the project ecologist/environmental officer will produce a Draft Stage 1 report providing a summary of the results of pre-clearing surveys, clearing operations and hollow relocations. A follow-up Stage 2 report will then be prepared to follow up on any additional issues that may have resulted from earthworks activities. A separate two-stage report will be prepared for activities within each stage of construction.

Details within each report will include:

- Information on clearing and earthworks operations, dates, procedures, areas;
- Details of habitat trees;
- Information on tree species and tree sizes being used for breeding or roosting by fauna, including location, size, height and girth (i.e. for information base purpose);
- Information on clearing operations, dates, procedures, areas;
- Location and photographs of significant flora identified;
- Detailed information about any incursion into no-go zones;
- Assessment against the performance criteria detailed in Section 8; and
- Recommended remediation measures for any incursions into no-go zones.

Final reports will be submitted to TSC at the completion of earthworks.

6.1.3 Dewatering Management Plan

A Dewatering Management Plan (G&S) has been prepared as a requirement of Conditions 113(C) of MP08-0194.

Objectives:

The main objective of the Dewatering (DMP) Plan is to ensure that the proposed development will have minimal impacts on the sites existing groundwater conditions. Specific objectives include:

- Appropriate stewardship of natural resources;
- Protection of downstream flora and fauna habitats;
- Compliance with statutory requirements;
- Preservation of the existing groundwater quality

- Minimise disturbance to the existing groundwater hydrological regime.
- Conduct all groundwater related activities in accordance with appropriate licences and permits.

Table 16: Mitigation Measures for Dewatering Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Where required dewatering activities shall be appropriately licenced.	Contractors Site Manager/Environmental Consultant	X	
If required, mechanical dewatering of excavations shall be of short duration (hours/days) to minimise any alteration to natural groundwater regime.	Contractors Site Manager/Environmental Consultant		X
Groundwater seepage into excavations shall be monitored for pH and visible oil/grease prior to disposal of these waters. pH monitoring equipment that will be calibrated on a weekly basis (at least).	Contractors Site Manager/Environmental Consultant		X
Monitoring of groundwater levels should be undertaken fortnightly during the construction phase to determine any effect excavation and dewatering activities may have on groundwater levels.	Contractors Site Manager/Environmental Consultant		X
Groundwater samples are to be collected monthly and analysed for the parameters specified in the Overall Water Management Plan.	Contractors Site Manager/Environmental Consultant		X
Dewatered groundwater will undergo appropriate treatment to ensure compliance with specified criteria prior to release into recharge trenches.	Contractors Site Manager/Environmental Consultant		X
Where disposal to surface water bodies is intended monitoring will be undertaken at the controlled discharge points by the environmental consultant monthly and during rainfall events (defined as >25mm in any 24 hour period).	Contractors Site Manager/Environmental Consultant		X
Records of the measured pH, time of monitoring, calibration records and treatment measures employed are to be kept on site for inspection by the environmental consultant and TSC.	Contractors Site Manager/Environmental Consultant		X
If acidic seepage waters are encountered, the batter slopes of the excavation face should be subject to blanket liming as required at a predetermined rate in accordance with the acid sulfate management plan provisions. The addition of liquid lime to acidic seepage waters may also be required. The environmental consultant should be consulted to determine the need for this treatment	Contractors Site Manager/Environmental Consultant		X
Where recharge trenches are required, the base and sides of the trench should also be blanket limed at a predetermined rate prior to the disposal of dewatered groundwater in accordance with the acid sulfate management plan provisions.	Contractors Site Manager/Environmental Consultant		X
Before undertaking any earthworks in drains or watercourses, the drain or watercourse will be bunded and contained in a staged manner, with water tested and treated prior to discharge. Particular attention will be given to watercourses containing high levels of organic matter that may also have the potential to form monosulfidic black oozes (MBOs). Existing MBOs will	Contractors Site Manager/Environmental Consultant	X	X

be managed, with organic material within the drain kept to a minimum and dissolved oxygen concentrations within water-bodies monitored and increased if necessary (in accordance with the recommendations outlined in Tulau (2007). Titratable Actual Acidity (TAA) concentration and water pH levels of water-bodies will also be monitored and adjusted as necessary.			
Any unidentified or accidental potential contamination encountered during construction will be documented, investigated by a specialist and remedial action applied before works continue in that area	Contractors Site Manager/Environmental Consultant		X

Reporting:
The following documents shall be collected, maintained in the project files and made available for review by authorities if requested:

- Groundwater monitoring field sheets containing water level and field parameter data, and sampling, weather and well condition information;
- Water quality meter calibration records;
- Laboratory reports;
- Up to date data tables and figures (survey data, water level tables and contour figures, field parameter and laboratory analysis summary tables, etc.);
- Water and soil treatment records (lime application rates etc.)
- Corrective action notices;
- Approvals/licenses for works, where required;
- External consultants/contractor reports; and
- Contaminated water transport and disposal records

Daily pH monitoring of seepage waters entering excavations during the construction phase prior to disposal into recharge trenches shall be carried out. A monthly report collating and detailing all monitoring results, comparison to performance criteria and management/treatment procedures is to be prepared for TSC and the DPI Water. A copy will be maintained in the project file.

6.1.4 Acid Sulfate Soils Investigation

In accordance with Condition 17 of MP08-0194, Acid Sulfate Soil Management Plans have been prepared for the proposed scope of works. Further to this management plan a specific investigation has taken place testing locations within and around the area of works.

Objectives:
Develop adequate monitoring and management procedures and prevent impacts to the surrounding environment resulting from exposure of ASS to the atmosphere, groundwater and surface runoff.
The investigation has identified that there is negligible acid sulphate soils within the first Stage works area therefore only check testing would be required throughout the works.

Table 17: Mitigation Measures for Acid Sulfate Soils

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Soils excavated below RL5.0 will be sampled at a rate of 1 test per 500m^3 and tested via (SPOCAS or Chromium suite)	Construction Manager / Site Superintendent / Environmental Officer		X
Material requiring neutralisation shall be treated with lime at the calculated rate using appropriate mixing methodologies.	Construction Manager / Site Superintendent / Environmental Officer		X
Following treatment, Phase 3 verification testing (SPOCAS or Chromium suite) will be undertaken at a rate of 1 sample per 1,000m^3 to ensure sufficient lime has been added.	Construction Manager / Site Superintendent / Environmental Officer		X
Subsequent treatment layers will not be placed within the treatment pad until testing results indicate complete neutralisation of the existing layer.	Construction Manager / Site Superintendent / Environmental Officer		X
No impacts to surface water or groundwater quality resulting from the disturbance storage, treatment or re-use of ASS material.	Construction Manager / Site Superintendent / Environmental Officer		X
Seepage collected in the bunded treatment area or within excavations will be tested daily for pH and treated to be consistent with the baseline water quality criteria prior to release. • If seepage waters are to be discharged to recharge trenches pH shall be between 3.59 and 4.47. • Monitoring of additional parameters will be required for discharge to surface water bodies (see Surface Water Monitoring).	Construction Manager / Site Superintendent / Environmental Officer		X

Reporting:

Results sheets to be compiled for monitoring results relating to water quality of ponded water. These results to be kept onsite for inspection by local and state government officers upon request.

Within 24 hours of detecting any incidents during construction that causes (or may cause) significant harm to the environment, the Proponent shall notify the Council and other relevant agencies of the incident and identify the following:

- Describe the date, time, and nature of the incident.
- Identify the cause (or likely case) of the incident.
- Describe what action has been taken to date. Describe any proposed measures to address the incident.

6.1.5 Drain Maintenance Management Plan

A Drain Maintenance Management Plan in accordance with Condition 38 has been prepared for the site.

6.1.6 Drainage Maintenance

Detailed drainage maintenance plans have been prepared for the proposed scope of works in accordance with Condition 38, of Major Project Approval No.MP08_0194.

Objectives:

- The Drainage Management plan is not relevant to this stage of the works
- Separate contracts will deal with this part of the project.

6.1.7 Buffer Management Plan

A Buffer Management Plan (JWA, 2020) has been prepared as a requirement of Condition 41 of MP08-0194.

Objective:

- Protect Threatened flora and fauna species and their habitats, Endangered Ecological Communities, and retained remnant bushland areas;
- Buffer retained vegetation from edge effects and other disturbances related to impacts associated with earthworks;
- Establish effectively dense vegetation buffers comprising species derived from the vegetation communities they are buffering;
- Maintain buffer areas and buffer vegetation through best-practice weed control;
- Appropriately integrate the establishment of buffer vegetation, so as to enhance vegetation restoration works and not impede the function of Asset Protection Zones;
- Maintain the aesthetics of buffer vegetation in areas of high visibility to the public;
- Provide a schedule of works; and
- Provide measurable performance criteria.

Mitigation Measures:

Prior to construction, the outer edge of all buffer areas is to be delineated with high visibility barrier fencing (e.g. 'parawebbing' or other suitable fencing material) as no-go areas (see Appendix I). As detailed within the Buffer Management Plan, long-term functional buffers to environmental areas will be subsequently established through vegetation rehabilitation measures (commencing following the completion of earthworks), creation of Asset Protection Zones or separation through placement of infrastructure (i.e. Kings Forest Parkway). Monitoring will be undertaken in conjunction with the Vegetation Management Plan, Koala Plan of Management, Wallum Sedge Frog Management Plan and other relevant plans.

Reporting:

A brief report will be prepared following each inspection by the qualified ecologist, and a yearly summary report will be prepared and submitted to TSC.

6.1.8 Construction Traffic and Pedestrian Management

In accordance with Condition 55 of MP08-0194, the following provides an overview with respect to the proposed construction traffic management.

Objectives:

Only a certain amount of the proposed works will create a significant impact on Roads and Maritime Services (RMS) as a large portion of the works can be constructed to the west of the existing carriageway. Local traffic from Old Bogangar Road will be minimal and site liaison will ensure residents are kept informed of local disruptions to access. There are no existing formal pedestrian pathways. Consequently, mitigation measures will be phased to minimise disruption to Traffic.

Table 19: Mitigation Measures for Traffic and Pedestrian Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Ingress and egress of all vehicles will be via Tweed Coast Road with appropriate signage.	Construction Manager / Site Superintendent / Environmental Officer		X
Rock shake down or rumble grids will be installed at the exit points to ensure sediment will not be dragged onto the road pavement.	Construction Manager / Site Superintendent	X	X
Work zone speed limit of 40km / hour is to be obeyed at all times.	Construction Manager / Site Superintendent		X
All material will be loaded and unloaded wholly within the site via excavators and truck and dog trailers.	Construction Manager / Site Superintendent	X	X
In order to make others aware of the on-going activity signs such as Entry to Authorised Personnel Only, Personal Protective Equipment and must be worn, etc will be prominently displayed.	Construction Manager / Site Superintendent		X
Under no circumstances shall an employee answer an incoming or make an outgoing phone call whilst operating machinery or a vehicle.	Construction Manager / Site Superintendent		X
Any personnel controlling construction traffic should do so with the aid of portable two-way radios.	Site Superintendent		X
Surrounding road carriageways are to be kept clean of any material carried onto the roadway by construction vehicles.	Construction Manager / Site Superintendent		X
The work site shall be suitably protected and free of hazards which could result in tripping or falling by workers and road users. Hazards which cannot be removed shall be suitably protected to prevent injury to workers and road users, including sight impairment.	Construction Manager / Site Superintendent		X
Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to works and non-motorised road users, appropriate temporary lighting shall be installed.	Construction Manager / Site Superintendent		X
Where level differences are significant, suitable barriers which prevent access shall be used.	Construction Manager / Site Superintendent		X

Reporting:

Complaints received regarding construction traffic will follow the reporting procedures outlined within this CEMP.

6.1.9 Noise and Vibration Management

In accordance with Condition 56 of MP08-0194, the following provides an overview of the proposed noise and vibration.

Objectives:

- To minimise potential impacts of noise and vibration from construction activities;
- Identification and implementation of best practice management techniques for minimisation of noise and vibration emissions.

Table 20: Mitigation Measures for Noise and Vibration Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Hours of Work must be adhered to: • Between 7 am and 6 pm, Mondays to Fridays; • Between 8 am and 5 pm Saturdays; • No work is permitted on Sundays and Public Holidays	Construction Manager / Site Superintendent		X
Unless previously approved / agreed with relevant authorities, rock breaking, rock hammering, sheet piling, pile-driving and any similar activity are only permitted between the hours: • 9 am to 12 pm, Monday to Friday • 2 pm to 5 pm Monday to Friday; • 9 am to 12 pm, Saturday; • No works on Sundays or Public Holidays	Construction Manager / Site Superintendent		X
Ensure that wherever practical, and where sensitive receivers may be affected, piling activities are completed sing bored piles.	Construction Manager / Site Superintendent		X
Ensure that workers are trained to manage the use of noise producing plant or equipment in a way that noise is minimised.	Construction Manager / Site Superintendent		X
Vibration levels must not exceed the criteria presented in the *Environmental Noise Management – Assessing Vibration: A Technical Guide (Dec, 2006)*.	Construction Manager / Site Superintendent		X
All reasonable steps shall be undertaken to muffle and acoustically baffle all plant and equipment.	Construction Manager / Site Superintendent		X
The use of vibratory compaction equipment must not be used closer than 30m from residential buildings unless vibration monitoring confirms compliance with the below requirements.	Construction Manager / Site Superintendent		X
Vibration caused by Construction at any residence or structure outside the subject site shall be limited to; a) For structural damage vibration, the German Standard DIN450 Part 3 Structural Vibrations in Buildings. Effects on Structures and; b) For human exposure to vibration, the evaluation criteria presented in Technical basis for Guidelines to minimise annoyance due to Blasting over pressure and Ground Vibration (ANZEC 1990)	Construction Manager / Site Superintendent / Environmental Officer	X	X
Identify nearby residents and other sensitive land uses and notify of vibration generating activities if required.	Construction Manager / Site Superintendent / Environmental Officer	X	X
In the event of complaints from nearby residents, which Council deem to be reasonable, the noise from the construction site is not to exceed the following: A. Short Term Period (4 weeks) - $L_{Aeq.\ 15\ min}$ noise level	Construction Manager / Site Superintendent		X

measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 20dB(A) at the boundary of the nearest likely affected residence. B. Long Term Period (the duration) - $L_{Aeg.\ 15\ min}$ noise level measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 15dB(A) at the boundary of the nearest likely affected residence.			
Safety inductions prior to the commencement of construction, including awareness of commitments, directives, working hours and managing equipment to minimise vibration impacts.	Site Superintendent / Environmental Officer	X	
Ensure that all site workers have suitable personal protective equipment (PPE), to be worn, at all times, when near or operating plant and equipment making noise.	Site Superintendent		X

Reporting:

- The daily site diary will be used to record auditory observations during site works when necessary;
- Where required, noise and/or vibration monitoring results will be reviewed by the Environmental Officer and kept on file on site;
- Monitoring results will be checked on a regular basis and recorded on the weekly environmental checklist in addition to periodic reporting to Project Managers; and
- In the event of receipt of a noise complaint the following timeframes for response will be provided:
    - The complaints register will be updated within the same workday with timeframe for response/action noted;
    - Responses to resident complaints will be completed within two business days; and
    - Complaints will be submitted to TSC weekly and include details of the complaint and actions carried out to close out the complaint.

6.1.10 Cultural Heritage Management

In accordance with Condition A3 (b) of MP08-0194 (as modified), refers to the Kings Forest Concept Plan Cultural Heritage Management Plan (Everick, 2010) contained in ***Appendix C***.

Objectives:

- Minimise potential heritage impacts during construction activities;
- Maintain effective heritage management practices throughout the project in accordance with the sitespecific CHMP.

Table 21: Mitigation Measures for Cultural Heritage Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
All construction staff engaged in undertaking initial	Construction Manager	X	X

subsurface disturbance will undergo a Cultural Heritage Induction prior to working on site.	/ Site Superintendent / Environmental Officer		
Installation of temporary construction fencing should there be any works in the vicinity of Sites K3 and K4.	Construction Manager / Site Superintendent / Environmental Officer	X	X
Findings of Aboriginal objects or human remains shall follow the outlined procedures within the CHMP (section 11 Unexpected finds).	Construction Manager / Site Superintendent / Environmental Officer	X	X

Reporting:

- A progress report shall be provided to the Registered Aboriginal Stakeholders every six months;
- All correspondence with Registered Aboriginal stakeholders will be included in the ACHMP. See ***Appendix C.***
- A report shall be generated where a find has occurred and been investigated. See ***Appendix C.***

6.1.11 Erosion and Sediment Control

Detailed erosion and sediment control plans have been prepared for the proposed scope of works in accordance with Condition 54, of MP08_0194 (detailed ESC drawings providing a staged approach and installation sequence for ESC measures are included in Appendix B). Surface water quality management procedures will be implemented in accordance with the ESCP and supporting management plans.

Objectives:

The following Sediment and Erosion Control objectives are outlined for the project:

- Ensure that statutory requirements and industry standards are met;
- Manage the activities in a way that minimises erosion and sedimentation impacts to the environment;
- Protect natural and rehabilitated landforms and minimise erosion; and
- Ensure all practicable measures are taken to prevent contaminated stormwater from adversely affecting the water quality at Blacks Creek and Cudgen Creek.
- Ensure that any waters discharged from the site meet the specified water quality objectives.
- Ensure that the water quality in the waterway and wetland system remains at an acceptable level.

Table 22: Mitigation Measures for Sediment and Erosion Control Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Soil disturbance shall be avoided and/or minimised wherever possible, with the exposed disturbed area (that has not been permanently vegetated) not exceeding a maximum of 5 hectares at any one time.	Contractor's Site Manager/Construction Engineer	X	X
Erosion and sediment control devices shall be installed prior to the commencement of work in stage 1 in accordance with the approved engineering plans to the	Contractor's Site Manager/Construction Engineer	X	X

reasonable satisfaction of TSC. No site disturbance shall commence until the appropriate approvals have been obtained.			
Where possible, the construction program shall be scheduled to minimise the potential for soil loss to occur. Where construction activities cannot be altered, additional controls shall be implemented in the areas of high erosion potential.	Contractor's Site Manager/Construction Engineer	X	X
Runoff and erosion controls shall be installed prior to clearing and include: • Diversion of upslope runoff around cleared and/or disturbed areas in a way that minimises erosion, minimises the upslope catchment and diverts waters to a legal point of discharge. • Sediment control fences or other measures at the downslope perimeter of cleared and/or disturbed areas. • Regular maintenance of all erosion control measures at operational capacity until land is effectively rehabilitated.	Contractor's Site Manager/Construction Engineer		X
Temporary erosion measures (e.g. straw bales, straw fences) are to be employed onsite during construction where reasonably deemed necessary by TSC from an assessment of slope and soil type. Such measures shall be maintained at, or above, their design capacity. Such measures should be in accordance with the recommendations in Council's *'Code of Practice for Soil and Water Management on Construction Works – Annexure A of Development Design Specification D7 – Stormwater Quality,' and 'Managing Urban Stormwater: Soils and Construction'* March 2004 by Landcom, Australia.	Contractor's Site Manager/Construction Engineer		X
In areas where more than 1,000m2 are to be disturbed, runoff controls are also to include measures such as, but not limited to: • Sediment basins • The use of barrier fencing, • the use of exclusion zones; and • minimising slope lengths of disturbed, uncontrolled areas.	Contractor's Site Manager/Construction Engineer		X
Stripped topsoil shall be separated from subsoil materials and shall only be stripped from the areas designated on the appropriate plans. Stockpiled soil should be stored taking into account the following considerations: • They are not to be located on public footpaths, nature strips, roads, road shoulders or any other public land. • They are to be located at least 2m away from any hazard areas. • They are to be protected from upslope surface flows. • They are to be provided with sediment filters downslope.	Contractor's Site Manager/Construction Engineer		X

Fill batters shall be located to avoid established trees.	Contractor's Site Manager/Construction Engineer		X
Unless otherwise specified, trenches must be backfilled and compacted to 95% standard compaction and capped with topsoil.	Contractor's Site Manager/Construction Engineer		X
All stockpiles, including preload, should be seeded within a fortnight of final forming with an appropriate mix.	Contractor's Site Manager/Construction Engineer		X
Damaged/blocked silt fence geotextiles are to be replaced. Silt fences will be placed along the downstream extents of all construction.	Contractor's Site Manager/Construction Engineer		X
Level markers shall be installed within all sediment ponds.	Contractor's Site Manager/Construction Engineer		X
Internal waterbodies or waterways shall be dosed with flocculating agents when required to ensure that discharge water quality meets required limits specified in the above performance criteria.	Contractor's Site Manager/Construction Engineer		X
Sediment shall be cleaned out of sediment ponds when accumulated sediment volume reaches 70%. Removed materials must be disposed of in a manner that does not cause pollution.	Contractor's Site Manager/Construction Engineer		X
All weather access tracks shall be constructed to all internal water bodies, trash racks and gross pollutant traps.	Contractor's Site Manager/Construction Engineer		X
Sediment detention basins and clean-water diversion channels shall be constructed prior to earthworks in accordance with the ESCP.	Contractor's Site Manager/Construction Engineer		X
When sediment controls are required outside the construction site, the following shall be adhered to: • Where increased stormwater runoff is likely to accelerate erosion of any downstream watercourse, the necessary remedial work shall be undertaken; • All immediate downstream drainage inlets shall have appropriate controls installed in accordance with the approved engineering drawings; • All disturbed areas on other property are to be reinstated to the original condition.	Contractor's Site Manager/Construction Engineer		X
No soil, sand, gravel, clay or other material shall be disposed of off the site without the prior written approval of Tweed Shire Council General Manager or his delegate.	Contractor's Site Manager/Construction Engineer		X
Vehicle shakedowns shall be used at all site exit points. The surrounding carriageways are to be kept clean of any material carried onto the roadway by construction vehicles.	Contractor's Site Manager/Construction Engineer		X
Additional inspections after each storm event by the Supervising Engineer to ensure the erosion control devices are intact, and no sediment has left the site or is deposited on public land or in waterways. The inspection program will be carried out until the site is fully rehabilitated to Council's satisfaction.	Contractor's Site Manager/Construction Engineer		X

Samples are to be collected monthly and during rainfall events (defined as >25mm in any 24 hour period) at the upstream and downstream sampling locations and water quality control pond discharge point and analysed for the above parameters.	Contractor's Site Manager/Environmental Consultant		X
Where water quality fails to meet the established criteria, corrective measures will be undertaken (e.g. if sediment problems are identified, settling in the sediment detention ponds shall be aided by dosing with flocculation agents) to achieve compliance with the water quality release criteria. Treated water is to be re-tested prior to release to establish the effectiveness of treatment measures.	Contractor's Site Manager/Environmental Consultant		X

Reporting:

The performance of each of the erosion and sediment control measures and testing will be recorded during daily and monthly reporting as part of the overall environmental management of the site. The results of all monitoring will be included in a monthly report to be submitted to Tweed Shire Council (TSC) until the completion of works. These reports will be submitted to TSC within 30 working days upon receipt of the laboratory results.

Results of the monitoring program, the effectiveness of established water management structures, sediment control devices and the particulars of any remedial measures undertaken in instances where uncontrolled erosion or heavy sediment deposition occurred will be reported in annual reports.

6.1.12 Air Management and Dust Control

In accordance with Condition 98 of MP08_00194, air quality and dust must be managed.

Objectives:

- To minimise potential air pollution from construction activities;
- Maintain effective air management practices throughout the project.

Table 23: Mitigation Measures for Air and Dust Control Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Areas disturbed by earthworks: • Disturb only the minimum area necessary for earthworks of the construction footprint; • Remove topsoil and rehabilitate disturbed areas as soon as practicable after the completion of earthworks.	Construction Manager / Site Superintendent / Environmental Officer		X
Haul Roads: • All unsealed roads and frequently trafficked areas will be watered using water carts or sprays to minimise the generation of dust and particulate; • All haul roads will have edges clearly defined with marker posts or equivalent to control their locations; and • Dust suppressant will be used when necessary.	Site Superintendent / Environmental Officer		X
Monitoring: • Daily inspections will be carried out to determine if dust	Site Superintendent / Environmental Officer		X

mitigation measures are being implemented. • Temporary dust mitigation gauges will monitor the movement of dust. • Monitoring will be undertaken in accordance with AS3580.10.1 (2016) or current updates.			
Topsoil Stripping: • Tracks used by topsoil stripping scrapers during their loading and unloading cycle will be watered; • Stripping will occur preferably in damp conditions of practical and during favourable wind conditions.	Site Superintendent / Environmental Officer		X
Topsoils Stockpiling: • Long term stockpiles, not used for over six months, will be sown with cover crops; • Drawings of temporary stockpiles including spoil and topsoil will be marked up as earthworks progress.	Site Superintendent / Environmental Officer		X

Reporting:
Air quality management reporting is designed to comply with the Project Approval and Development Assessment conditions and provide stakeholder access to relevant air quality information and data.

Regular monitoring data will be reported in the Annual Monitoring report for the project. Such reporting will include:

- Air quality monitoring results and comparison to performance criteria;
- Air quality related complaints and management/mitigation measures undertaken;
- Management / mitigation measures undertaken in the event of any confirmed non-compliance with performance criteria; and
- Review of the performance of management measures and the monitoring program.

6.1.13 Contaminated Lands Management

The detailed methodology and approach for contaminated land management and clearance to satisfy Condition 18 of MP08-0194 is outlined in the relevant Remedial Action Plan (RAP) and Construction Soil Management Plan (CSMP).

Management of potentially contaminated land and unexpected finds shall be completed in accordance with the above plans, designed to set objectives and document the remediation process. The RAPs and CSMP detail how any unforeseen contamination will be managed during the construction (bulk earthworks) phase of the development.

Objectives:

- To manage potentially contaminated lands during the bulk earthworks phase in accordance with the precinct/area Remedial Action Plans
- To manage unexpected finds of contamination during the bulk earthworks phase of the project
- Avoid and minimise the environmental and human health risks arising from the disturbance of unexpected contaminated encountered during construction;

- Follow the guidelines set out in the statutory requirements for managing contaminated land and the transport of contaminated goods, including the ASC NEPM (2013), draft *Contaminated Land Guidelines* NSW EPA (2019) and NSW EPA *Waste Classification Guidelines* (2014).

Table 24: Mitigation Measures for Contaminated Lands Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Contaminated lands management shall be undertaken in accordance with the Remedial Action Plan (RAP) and the Construction Soil Management Plan (CSMP) for each precinct/area during the bulk earthworks phase of the project.	Contaminated Land Practitioner / Earthworks Contractor		X
Contaminated lands management for the Roadworks area (External Intersection, Kings Forest Parkway Stage 1 and Tweed Coast Road Water Sewer and Cycleway) shall be undertaken in accordance with the *Remediation Action Plan, Proposed Roadworks, External Intersection, Kings Forest Parkway Stage 1 and Tweed Coast Road Water, Sewer and Cycleway, Kings Forest Development, New South Wales* (G&S 2020).	Contaminated Land Practitioner / Earthworks Contractor		X
Contaminated lands management during bulk earthworks for Precinct 5 and Kings Forest Parkway Stage 1 shall be undertaken in accordance with *Remediation Action Plan, Precinct 5 and Kings Forest Parkway Stage 1, Kings Forest Development, New South Wales* (G&S 2020).	Contaminated Land Practitioner / Earthworks Contractor		X
An inspection of cleared areas shall be undertaken by the nominated suitably qualified and experienced contaminated land practitioner following clearing and grubbing of vegetation within each precinct, with ongoing visual assessment of materials undertaken for possible contaminants by the earthworks contractor during cut and fill operations.	Construction Manager / Environmental Officer / Contaminated Land Practitioner / Earthworks Contractor		X
Any potential contamination encountered will be documented and investigated and remedial action applied before works continue in that area.	Construction Manager / Site Superintendent / Environmental Officer / Contaminated Land Practitioner		X
In the event of an unexpected contamination finding, the following procedures should be undertaken in accordance with the relevant RAP:			
A. Stop work in the potentially contaminated area as soon as it is safe to do so and move to a designated meeting point or safe area. Excavation will cease in the vicinity of the discovery.	Construction Manager / Site Superintendent / Environmental Officer / Contaminated Land Practitioner		X
B. Contact the Construction Manager in control of the workplace and notify them of the situation. Construction manager to then notify the Contaminated Land Practitioner	Construction Manager / Site Superintendent / Environmental Officer / Contaminated Land Practitioner		X
C. Construction Manager to arrange	Construction Manager / Site Superintendent /		X

	inspection by the Contaminated Land Practitioner to assess the unexpected finds and provide advice as follows: ○ Preliminary assessment of the find and need for immediate management controls. Includes possible requirement for an exclusion/quarantine zone around the area using fencing and/or appropriate barriers and signage ○ What testing requirements and/or remediation works are required and how such works are to be undertaken in accordance with the ASC NEPM (2013) and other relevant guidelines (e.g. Workcover NSW (2014) Managing asbestos in or on soil), including the need for specialist management / removal and the development of Data Quality Objects (DQOs) and a Sampling and Analysis Quality Plan (SAQP) ○ Remediation works undertaken where applicable, with design and completion of a validation sampling program following remediation works as required	Environmental Officer / Contaminated Land Practitioner		
D.	For materials requiring offsite disposal, laboratory results will be assessed to determine the appropriate waste classification of the material in accordance with the NSW EPA Waste Classification Guidelines (2014). Depending on the classification, materials will be separated from clean materials for subsequent transport to an appropriate waste facility that is licensed to accept waste of the relevant classification.	Construction Manager / Site Superintendent / Environmental Officer / Contaminated Land Practitioner		X
E.	A waste tracking system recording the volume of material, waste classification, removal documentation and truck and receiving landfill facility details must be recorded to ensure all waste is accounted for and disposed of appropriately in accordance with NSW EPA requirements.	Construction Manager / Site Superintendent / Environmental Officer / Environmental Consultant		X
F.	Following removal of the contaminants, validation sampling shall be undertaken in accordance with an appropriate design, with a validation report prepared and issued to the Site Auditor for review.	Construction Manager/Site Superintendent / Environmental Officer/ Contaminated Land Practitioner /Site Auditor		X
G.	Works are not to recommence in the affected area until appropriate advice has been obtained from the Contaminated Land Practitioner and the Site Auditor has issued an ISAA and provided clearance.	Construction Manager/Site Superintendent / Environmental Officer/ Contaminated Land Practitioner /Site Auditor		X

Reporting:

Permanent records of the following activities will be kept on-site and updated regularly to enable audit/review by means of a simple check list or similar method:

- Locations of contaminated soil;
- Records of field tests and visual assessments;
- Records of sampling locations, chain of custody forms and laboratory reports;
- Records of correspondence with Site Auditor including all reports and feedback
- Records of regulatory correspondence;
- Quantities of material disposed of offsite and waste disposal locations;
- Requests for corrective actions lodged; and
- Any changes to construction or management procedures.

A certificate in the form of a Site Audit Statement completed by NSW EPA Accredited Site Auditor shall be submitted to TSC prior to the dedication to land containing the approved remediation works.

6.1.14 Construction Waste Management

The following outlines management actions with respect to waste management throughout construction in accordance with Conditions 57, 58, 108 and 113B of MP08_0194.

Objectives:

- Implement onsite waste management measures in accordance with best practice to effectively manage waste materials;

- To minimise the production of waste using the most effective and efficient procedures practicable;

- Follow the waste hierarchy:
  - ***Reduce:*** Waste avoidance by reducing the quantity of waste being generated is the simplest and most cost-effective way to minimise waste. It is the most preferred option in the Waste Management Hierarchy and is therefore ranked first.

  - ***Reuse:*** Reuse occurs when a product is used again for the same or similar use with no reprocessing. Reusing a product more than once in its original form reduces the waste generated and the energy consumed, which would have been required to recycle.

  - ***Recycle:*** Recycling involves the processing waste into a similar non-waste product consuming less energy than production from raw materials. Recycling spares the environment from further degradation, saves landfill space and saves resources that were used to make the item in the first place.

  - ***Dispose:*** Removing waste from worksites, compounds and offices and dumping in a licensed landfill site, or other appropriately licensed facility.

Table 25: Mitigation Measures for Waste Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
All waste is to be stored within site boundaries in covered receptacles that meet TSC specifications and consistent with the Erosion and Sediment Control Management Plan.	Proponent/Contractor's Site Manager		X
No waste generated outside of the site is to be received at the site for storage or disposal.	Proponent/Contractor's Site Manager		X
An appropriate number of covered waste receptacles will be located on site with the provision of dedicated areas or additional receptacles for the storage of re-usable and recyclable materials.	Proponent/Contractor's Site Manager		X
Waste containers will be emptied once a week or as required (based on volumes generated) by an appropriately licensed contractor.	Proponent/Contractor's Site Manager		X
All waste is to be removed from site only by an appropriately licensed contractor and taken to a facility with the correct permits for handling and processing the waste form.	Proponent/Contractor's Site Manager		X
The site should be left clean and tidy at the end of each work day with no waste left loose or exposed.	Proponent/Contractor's Site Manager		X
Any spillage is to be collected immediately and disposed of at an appropriately licensed facility.	Proponent/Contractor's Site Manager		X
In respect of excavated materials, the following action will apply: • As far as practicable, cut and fill volumes should be balanced to eliminate the need for offsite disposal of materials or onsite stockpiling. • Where cut and fill volumes cannot be balanced and excess materials result, materials shall either be stockpiled for re-use in future stages of the Kings Forest development or removed offsite and disposed of to a suitably licensed facility.	Proponent/Contractor's Site Manager		X
For green waste, the following actions will apply: • Clearing of onsite vegetation shall be limited to only what is required as shown on the relevant plans. • Green waste produced onsite (including wooden fencing) will be mulched and re-spread across the site following the completion of earthworks, or stockpiled and used to facilitate landscaping works.	Proponent/Contractor's Site Manager		X
Specific putrescible waste management measures are: • There will be clearly labelled bins on site for putrescible waste that will be emptied at least once a week by a licensed contractor or as required based on the volumes generated. • All putrescible waste will be removed by an appropriately licensed contractor and taken to a facility for composting or disposal.	Proponent/Contractor's Site Manager		X
For non-putrescible waste, the following actions will apply: • Clearly labelled bins will be available onsite to segregate waste into recyclable or non-recyclable material. • Reuse any material onsite where possible (e.g. construction materials).	Proponent/Contractor's Site Manager		X

• Minimise volume of waste going to landfill. • Bins will be regularly collected by a suitably licenced contractor to avoid stockpiling or overflow.			
For on-site wastewater, the following actions will apply: • Installation and appropriate servicing of relocatable toilet facilities by a licensed contractor. • Waste will be removed by an appropriately licensed contractor and taken to a facility licensed to handle and process the waste. • No effluent will be disposed of on site.	Proponent/Contractor's Site Manager		X
Special waste will be managed according to the following: • Onsite generation of special waste shall be avoided wherever possible. • Servicing of plant or equipment shall be undertaken offsite. • If onsite repairs to plant or equipment are unavoidable, any generated special wastes will be appropriately stored until collection by an appropriately licensed contractor	Proponent/Contractor's Site Manager		X
Hazardous waste will be managed in accordance with the following: • Where possible, machinery is to be re-fueled and serviced offsite. • Any storage of oils or hazardous liquid/materials shall be in containers that meet Australian standard and stored away from hazard areas and sensitive receiving environments such as waterways. • Compliance with relevant legislation regarding removal, containment and emission control of hazardous waste will be achieved, including the submission of records to PCA prior to removal. • Any spills are to be cleaned up immediately with wastes disposed of to an appropriately licensed facility.	Proponent/Contractor's Site Manager		X

Reporting:

Construction waste management protocols for the site will be subject to review and the performance of such protocols will be described in annual environmental reporting. Refer to Waste register to track onsite and off site waste within Appendix K.

6.1.15 Pollution Control

The following outlines management actions with respect to pollution control throughout construction in accordance with Conditions 108 Storage and handling of waste, 113B Waste and 116C Waste of MP08_0194.

Objectives:

Minimise the incidents of pollution through controlling risks and hazards onsite.

Table 26: Mitigation Measures for pollution control

Mitigation Measure	Responsibility	Prior to Construction	During Construction

Petroleum and other chemical products shall be prevented from containing surface water and soil.	Construction Manager / Environmental Consultant		X
Any onsite fuel storage areas shall comply with Australian Standards.	Construction Manager / Environmental Consultant		X
Adequate trade waste and litter bins shall be provided onsite and serviced regularly in accordance with the provisions in Section 6.1.17 Construction Waste Management.	Construction Manager / Environmental Consultant		X
Concrete wastes and washouts shall not be deposited in any location where the waste or washings can flow, or can be washed into, any areas of retained vegetation or receiving waters.	Construction Manager / Environmental Consultant		X

Reporting:

Pollution control measures for the site will be subject to review and the performance of such protocols will be described in annual environmental reporting. Within the annual reports, registers of waste (refer ***Appendix K***) will be analysed and presented.

6.1.16 Machinery, dangerous and hazardous goods storage

The following outlines management actions with respect to machinery, workshops, dangerous good handling throughout construction.

Objectives:

Ensure that fuel, grease and other hazardous substances present onsite are managed in a safe and environmentally responsible manner;

Table 27: Mitigation Measures for machinery, workshops, dangerous good handling

Mitigation Measure	Responsibility	Prior to Construction	During Construction
All materials shall be stored within the boundaries of an area designated as a storage and containment zone for materials on site. The zone is to be located away from the surrounding SEPP wetlands and environmental protection areas in the central golf course infrastructure development area (outside of buffer zones).	Construction Manager / Site Superintendent		X
Storage facilities shall be constructed prior to hazardous material being brought to the site.	Construction Manager / Site Superintendent	X	
Stockpile and storage areas shall be identified and any contained products shall be clearly marked.	Construction Manager / Site Superintendent		X
Minimum practical quantities of fuels, grease and other hazardous substances shall be located onsite. These materials shall be stored in sheltered, impervious and bunded areas (or as required by the applicable regulations).	Construction Manager / Site Superintendent		X
Containment bund capacity shall be 110% of the volume of the tank stored within it. Where multiple tanks are stored within the one bund, the capacity will be 110% of the largest tank.	Construction Manager / Site Superintendent		X
Material Safety Data Sheets (MSDS) will be available onsite for all hazardous materials used or stored onsite for the	Construction Manager / Site Superintendent		X

duration of the construction works.			
An emergency response plan shall be developed for the site to control risk to the environment from hazardous materials. This shall include spill prevention and pollution control programs and an operating procedure for containing and cleaning up spills.	Construction Manager / Site Superintendent	X	
Suitable quantities of absorbent materials shall be stored onsite to accommodate minor spills.	Construction Manager / Site Superintendent		X
Relevant staff shall be trained in chemical and fuel handling, spill containment and clean up procedures.	Construction Manager / Site Superintendent / all personnel	X	
Personnel protection equipment shall be made available onsite as required for the use of hazardous substances.	Construction Manager / Site Superintendent / all personnel		X
All suppliers shall be informed of procedures and restrictions required, and deliveries supervised during off-loading by appropriately trained personnel.	Construction Manager / Site Superintendent / all personnel		X
Materials shall be adequately secured and loads covered where there is risk of spillage or loss of load.	Construction Manager / Site Superintendent / all personnel		X
Imported materials shall be free of weeds, litter and contaminants.	Construction Manager / Site Superintendent / all personnel		X
All regulated waste shall be removed and disposed of by an appropriately licensed waste contractor at an appropriately licensed waste disposal facility.	Construction Manager / Site Superintendent		X

Reporting:

Machinery, workshops, dangerous good handling protocols for the site will be subject to review and the performance of such protocols will be described in annual environmental reporting. Within the annual reports, registers of waste (refer ***Appendix K***) will be analysed and presented.

6.1.17 Threatened Species Management Plan

As a requirement of Conditions 39 and 43 of MP08_0194, a Threatened Species Management Plan (JWA, 2020) has been prepared for Precincts 1 - 5.

Objectives:

- Threatened species Management plan will not apply to the first stage of Civil works to be constructed.
- devise management strategies to be implemented including:

6.1.18 Feral Animal Management Plan

As a requirement of Condition 39 and 44 of MP08_0194, a Feral Animal Management Plan (JWA, 2020) has been prepared for the development.

Objectives:

- The Feral Animal Management plan does not form part of this first stage of Civil Works.

6.1.19 Koala Plan of Management

As a requirement of Condition 39, 45 and 45A of MP08_0194, a Koala Plan of Management (JWA, 2019) has been prepared for the development.

Objectives:

The following Koala Plan of Management objectives are applicable for the first stage of the civil works:

- Only vegetation identified within the first earthworks sequence will be removed;
- Koala Infrastructure as identified on the first stage of civil works will be constructed to allow the koala movements in accordance with the KPoM;
- To protect individual koalas from injury or other adverse impacts during the development phase;
- To ensure that changes in the local environment resulting from the proposed development (e.g. additional traffic, introduction of dogs) do not significantly impact on the local koala population;
- To raise awareness and promote community ownership of environmental management (including the conservation of the local koala population);
- Compliance with the KPoM.

Table 31: Mitigation Measures for Koala Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Evidence of the implementation of the KPoM to be provided to the Secretary in accordance with **MP08_0194 Condition 72.**	The Proponent	X	
Appointment of Environmental Officer(s)/ Community Liaison Officer in accordance with **MP08_0194 Condition 70.** Signage is to be erected clearly advising the Environmental Officer(s)/Community Liaison Officer details and contact number.	The Proponent	X	
A construction personnel induction program shall be developed and implemented by the Proponent to highlight the potential presence of koalas on the site and ensure the awareness of koala-related issues and of responsibilities and procedures in relation thereto. All contractors to be provided with the contact details for Friends of the Koala (FOK).	Principal contractor/Site supervisor	X	
No domestic dogs are to be brought onto the site during pre-construction activities.	Principal contractor/Site supervisor	X	
Pre-clearance surveys for koala must be completed in accordance with **EPBC_2012/6328 Condition 18.**	Fauna Spotter Catcher	X	
Environmental Audits completed in accordance with **MP08_0194 Condition 49.**	Proponent / Independent Ecological Consultant	X	
In accordance with **MP08_0194 Condition 50, a** bond of 135% of the estimated maintenance and monitoring costs for the implementation of environmental management, with the exception of	Proponent	X	

koala compensatory habitat, is to be lodged with TSC.			
Environmental Officer(s)/ Community Liaison Officer to oversee environmental compliance until all conditions have been satisfied as required by **MP08_0194 Condition 70.** Environmental Officer(s)/ Community Liaison Officer to consult with potentially affected property owners and the department before and during construction works and shall respond to complaints of an environmental impact nature. Environmental Officer(s)/ Community Liaison Officer must submit a report to the Secretary Director-General within 3 weeks of the completion of each earthworks stage detailing the project's compliance with relevant conditions, management plans and progress onsite.	Environmental Officer(s)/Community Liaison Officer		X
In accordance with **MP08_0194 Conditions 46, 64,** and **EPBC_2012/6328 Conditions 2, 3, 4,** koala exclusion fencing, escape mechanisms, underpasses, signage, etc. to be installed and regularly checked, including vegetation in close proximity to the fencing.	Principal contractor/Site supervisor/Environmental Officer		X
In accordance with **MP08_0194 Condition 121, e**xclusion fencing must be constructed along the eastern and northern boundary of the Service Station/Retail facility.	Principal contractor/Site supervisor/Environmental Officer		X
In accordance with **MP08_0194 Condition 148, a**ll relevant Koala infrastructure (exclusion fencing, road grids, traffic calming, underpasses etc.) relevant to Precinct 5 must be constructed and functional.	Principal contractor/Site supervisor/Environmental Officer		X
Grids will be provided where appropriate as required by **EPBC_2012/6328 Condition 3.**	Principal contractor/Site supervisor/Environmental Officer		X
Ensure the protection of retained vegetation/koala habitat from all construction activities.	Principal contractor/Site supervisor/Environmental Officer		X
All areas of vegetation to be cleared within each Precinct of the development will be clearly identified on construction plans and on site.	Principal contractor/Site supervisor/Environmental Officer		X
All vegetation to be inspected by an ecologist/spotter catcher prior to clearing in accordance with **EPBC_2012/6328 Condition 18** to check for the presence of koalas.	Fauna Spotter Catcher		X
A spotter catcher will be present during all vegetation clearing works in accordance with **MP08_0194 Condition 96** to ensure koala safety during clearing.	Principal contractor / Fauna Spotter Catcher		X
Care of injured animals.	Fauna Spotter Catcher		X
Post-mortem examination completed for koalas.	Suitably qualified person		X
Speed restrictions.	All contractors and construction personnel on site		X

Koala exclusion fencing underpasses, signage, etc. to be regularly checked.	Construction/Site Manager/Principal contractor until ownership of land is transferred or independent contractor		X
Suspension of tree clearing and/or earthworks if required.	Fauna Spotter Catcher		X
No domestic dogs are to be brought onto the site during construction activities.	Principal contractor/Site supervisor/Environmental Officer		X
Treatment of injured koalas must occur.	Fauna Spotter Catcher		X
Monitoring of retained and compensatory habitat until the relevant land is dedicated and the terms of **CP Condition B7** are satisfied.	Ecologist		X
All koala observations and/or incidents to be recorded in writing to ensure compliance with **MP08_0194 Condition 76.**	Principal contractor /Environmental Officer		X
Replacement of temporary fencing by permanent fencing where relevant.	Principal contractor/Site supervisor		X
Reduction of fire risk.	The Proponent (until ownership is transferred)		X
In accordance with **MP08_0194 Condition 50, a** bond of 135% of the estimated maintenance and monitoring costs for the implementation of environmental management, with the exception of koala compensatory habitat, is to be lodged with TSC.	Proponent		X
In accordance with Major Projects Condition 45A (8) a), an additional bond or bank guarantee must be provided for the implementation of suitable conservation measures should the compensatory koala habitat not be provided in accordance with the requirements of the KPOM.	Proponent		X
The Environmental Officer will be responsible for the monitoring of relevant construction activities and koala infrastructure during construction.	Principal contractor/Site supervisor/Environmental Officer		X
Construction Phase / Koala Infrastructure	Principal contractor/Site supervisor/Environmental Officer		X

6.1.20 Wallum Sedge Frog Management Plan

As a requirement of Condition 12 of EPBC Act approval 2012/6328, a Wallum Sedge Frog Management Plan (JWA, 2020) has been prepared for the development.

Objectives:

The following Wallum Sedge Frog Management objectives are outlined for the first stage of civil works for the project:

Table 32: Mitigation Measures for Wallum Sedge Frog Management

Mitigation Measure	Responsibility	Prior to Construction	During Construction
Testing for acid sulfate soils	**Contractor**	**X**	**X**

Clearly identify areas to be cleared	Contractor	X	
Restrict access to WSF habitat to be retained (and rehabilitated) by fencing and gates	Contractor	X	
Temporary signage installed along fencing	Contractor	X	
Completion of relevant compensatory habitat creation	Contractor	X	
Registered surveyor to prepare survey plans and permanently mark the boundaries of the PCL and the future BCD land	Site Manager	X	
Inductions and training	Contractor	X	
Install erosion and sediment control measures	Contractor	X	
Construct surface water controls	Contractor	X	
Complete baseline water quality monitoring (minimum 8 rounds)	Contractor	X	
Vehicles speed restrictions in place			X
WSF observation or incident reporting			x
Implement unexpected finds procedures	Contractor		X
Regular inspections of fencing and signage (at 3 monthly intervals)	Contractor / Site Manager		X
Install connectivity structures during relevant road construction	Contractor		X
Management of feral animals/pests	Contractor / Site Manager		X
Maintain erosion and sediment control measures	Contractor		X
Maintain surface water controls	Contractor		X
Install permanent frog exclusion fencing post-construction	Contractor		X
Permanent educational signage shall be provided and maintained along the boundary of the EPZ	Contractor		X
Water quality monitoring (monthly)	Contractor		X
Underpass structure monitoring	Site Manager		X
Monitoring of permanent exclusion fencing	Ecologist		X

Reporting:

- The reporting does not form part of the Civil works.

6.2 Environmental Schedules

Environmental schedules are copies of forms, reports or registers that are used during the projects day to day management. The latest versions of the schedules will be appended to the CEMP for easy access and will be updated as required during the construction period. ***Table 33*** lists the environmental records that will be implemented on the project.

Table 33: Environmental Record List

Record Reference	Record Form Name	Notes
Appendix D (CEMP)	Non-Compliance and Corrective Action	Used on an 'as needs' basis when non-compliance occurs.
Appendix E (CEMP)	Complaints Register	Used to record complaints.
Appendix F	Environmental Incident Register	Used on an 'as needs' basis when an environmental incident

(CEMP)		occurs.
Appendix G (CEMP)	Environmental Training Register	Records all personnel who have undertaken environmental training as required prior to working on-site.
Appendix J (CEMP)	Site Inspection Checklist	Used for weekly environmental inspection construction works and environmental management.
Appendix K (CEMP)	Waste Register	Used monthly to track waste materials on-site.
Appendix L (CEMP)	Monitoring Checklist	Used to verify that required monitoring has been undertaken.

7.0 MONITORING

7.1 Environmental Monitoring

The timing of installation of control measures will be critical to ensuring that environmental obligations are met within the required timeframe and that controls are effective in achieving their purpose. A program of routine monitoring will be conducted on environmental controls.

Inspections of work areas by the Environmental Officer will provide a means for monitoring effectiveness or maintenance requirements before potential environmental impact occurs.

All post-construction monitoring will be undertaken in accordance with the approved specific management plans. Refer to the specified management plan for details.

Environmental monitoring will involve collecting and interpreting data to verify the compliance of the CEMP, and environmental mitigation measures employed for the construction phase of the project. The monitoring program will assist in the auditing of safeguard measures to ensure they achieve their objectives and to facilitate modification where necessary.

Monitoring results will be used to identify existing or potential problems and where practical, the results will be obtained at the time of the assessment. Where monitoring results do not meet the outlined criteria or accepted levels, a corrective action will be raised and followed up accordingly. All monitoring results and checklists will be filed and stored at the site office and recorded on the monitoring register, and where necessary sent to the according authority.

The Site Inspection Checklist is provided in ***Appendix J*** and will address the effectiveness of the environmental protection measures.

The methodology, frequency, timing and responsibilities for the proposed environmental monitoring programs are specified in each respective Management Plan. Where practical a number, of requirements from each Management Plan have been incorporated into the Weekly Site Inspection Checklist. ***Table 34*** below outlines the monitoring frequencies from each Management Plan.

All inspection reports and non-conformances will be recorded in a centralised register (refer ***Appendix D, J and L***) and acted on within two weeks, detailing the action taken or proposed to address the issue.

Table 34: Monitoring

Monitoring Issue	Location	Frequency	Criteria	Person Responsible	Further Detail
Pre-Construction					
Koala					
	Precincts 1 - 5	Prior to the commencement of works	High visibility exclusion netting, fencing, erosion and sediment control and all other construction environment controls installed and remain 100% intact and functional prior to and during clearing and construction for effective protection of trees / vegetation / habitat / buffers to be retained (***Appendix I***).	Site Foreman / Environmental Officer	Civil Works
Vegetation	Precincts 1 - 5/Overall Site	Prior to clearing.	High visibility exclusion netting, fencing. erosion and sediment control and all other construction environment controls remain 100% intact and functional prior to and during clearing and construction for effective protection of trees / vegetation / habitat / buffers to be retained (***Appendix I***).	Environmental Officer / Site Foreman	Civil Works
		Prior to Clearing	Vegetation protection measures included in the Environmental Induction and all workers inducted.	Environmental Officer	Not part of Civil works
		Prior to Clearing	Baseline monitoring of retained vegetation as outlined in the VMP.	Ecologist	Not part of Civil works
Construction					
Koala	Precincts 1 - 5	Monthly	Koala exclusion fencing, escape mechanisms, underpasses, signage, etc. to be installed and regularly checked, including vegetation in close proximity to the fencing.	Environmental Officer / Site Foreman	Civil Works
	Overall site	Six-monthly	Monitoring of retained and compensatory habitat	Ecologist	Not part of Civil works
		Biennial	Koala population monitoring	Ecologist	Not part of Civil works
Wallum Sedge Frog	Precincts 1 - 5	Monthly	Inspections of fencing and signage	Environmental Officer / Site Foreman	Civil Works
		Monthly	Inspection of erosion, sediment and surface water controls	Environmental Officer / Site Foreman	Civil Works
		Monthly	Water quality monitoring	Contractor	Civil Works
		Monthly	Monitoring of underpass structure and permanent exclusion fencing	Environmental Officer / Site Foreman / Ecologist	Civil Works
	Overall site	Annual	Wallum Sedge Frog population monitoring	Ecologist	Not part of Civil works
Vegetation	Precincts 1 - 5	Monthly	Inspections of fencing and signage	Environmental Officer / Site Foreman	Civil Works

		Monthly	• Inspection of erosion, sediment and surface water controls	Environmental Officer / Site Foreman	Civil Works
		Monthly	Inspections of retained vegetation	Environmental Officer	Civil Works
	Overall site	Six monthly	Monitoring of retained and rehabilitated vegetation	Ecologist	Refer to VMP.
Surface Water quality	Allocated locations	Monthly Water Quality Testing and Analysis of Samples	Water quality results are in compliance with the existing baseline conditions.	Environmental Officer	Refer to Section 9.2 of the G&S) GWMP)
Dewatering	At any groundwater seepage into any excavation occurs	Daily Water Quality Testing and Sampling during dewatering activities	Water quality results are in compliance with the existing baseline conditions.	Environmental Officer	Civil Works
Stormwater	Stormwater	Monthly and rainfall event-based (greater than 25mm in a 24 hour period)	Water is of suitable quality that discharging runoff complies with the provisions of Council's Design Specification D7 – Stormwater Quality, before being released.	Environmental Officer	Refer to Erosion and Sediment Control Plan
Contaminated Lands	Where potential for contamination is identified and obvious signs of contamination	As required	Controls implemented and effective.	Environmental Officer	Testing as required
Noise	Nearest possible location to likely affected resident or boundary of	Reactive (Complaint Based)	Short-Term (4 weeks), $L_{Aeq,\ 15\ min}$, over a period of 15 min. When construction is in operation must not exceed the background level by more than 20dB(A) at the boundary of the nearest likely affected residence. Long-Term (the duration), $L_{Aeq,\ 15\ min}$, over a period of 15 min. When construction is in operation must not exceed the background level by more than 15dB(A) at the boundary of the nearest likely affected residence.	Environmental Officer	Refer to Section 6.1.9 of this plan and Appendix M2
Cultural Heritage	Entire Site	As Detected	Detection of Aboriginal objects or Aboriginal human remains reported and addressed.	All project Staff	Refer to Cultural Heritage Management Plan (Everick, 2009)
Erosion and Sediment Control	Work Areas	Daily	Erosion and sediment controls are clean and functioning effectively according to design.	Environmental Officer / Site Foreman	Refer to Erosion and Sediment Control Plans (MUS,

					2020)
Air Quality	Work Areas	Daily	Visual observations and dust deposition gauges for dust assessed, reported and managed. Zero complaints related to air quality. Monitoring shall be in accordance with AS3580.10.1(2016)	Contractor	Refer to Section 6.1.12 of this plan
Waste	Work Areas	Daily inspection of receptables. Monthly volumes of waste streams monitored.	Waste register is accurate and complete with all waste types (generated) identified. Receptacles maintained at >75% capacity. No harm to environmental receptors.	Environmental Officer	Refer to CWMP (G&S)
Acid Sulfate Soils	Soils as identified in AS Site Investigation report	During earthworks and civil works	Check testing as required.	Qualified ASS Person	Refer to Acid Sulfate Soil Investigation D & P
Traffic and Pedestrian Management	Work Areas	Daily Inspection of Washing Facilities, Road Traffic and Public Access Roads	Evidence provided that all statutory responsibilities with regards to road traffic impacts have been complied with. Public Access roads remain clean and free of dirt and debris	Contractor	Civil Works

7.2 Environmental Auditing

Internal environmental audits will be conducted during construction. The first audit will be conducted three months after the commencement of construction and then at six monthly intervals. Areas of the project that may be audited include:

- Compliance with all regulatory requirements such as the conditions of approval;
- Compliance with the CEMP and relevant Management Sub Plans;
- Compliance with licences, permits and approvals;
- Progressive erosion and sediment control plans and implementation of the plans;
- Complaint response and procedures;
- Sub-Contractors activities;
- Training records including inductions;
- Environmental non-conformances, corrective actions and close out procedures;
- Monitoring results;
- System documentation such as checklist completion;
- Major environmental controls used during construction and assess their effectiveness;
- Compliance with the main environmental Management Plans and processes implemented during construction and assess their effectiveness; and
- Identify any innovations in construction methodology used to improve environmental management

The audit findings will be listed in an audit report and discussed with the Project Manager immediately following the audit. A copy of the audit report and findings will be submitted to Council.

Corrective actions and opportunities for improvement identified will be managed by the Environmental Officer and the Project Manager for prompt implementation. Specific training may be required to personnel to close out the identified areas for improvement.

7.3 Corrective Action

Any environmental controls or measures that do not conform to specified requirements shall be actioned for rectification with a corrective action. Corrective Actions will be recorded by the Environmental Officer in the Non-Compliance and Corrective Actions Register (refer ***Appendix D***) which will include the following information:

- Assigned responsibility for the person required to close out the corrective action;
- Date required to be actioned by;
- Photos if possible;
- Description of non-conformance;
- Location of non-conformance; and
- Date the corrective action was closed out.

8.0 REPORTING

8.1 Post Clearing and Earthworks Report

The Post-Clearing and Earthworks Report will be completed including the following information;

Details within each report will include:

- Information on clearing and earthworks operations, dates, procedures, areas;
- Details of habitat trees;
- Information on tree species and tree sizes being used for breeding or roosting by fauna, including location, size, height and girth (i.e. for information base purpose);
- Detailed information about any incursion into no-go zones;
- Assessment against the performance criteria detailed in Section 8; and
- Recommended remediation measures for any incursions into no-go zones.

Final reports will be submitted to TSC at the completion of Earthworks.

8.2 Compliance Report

In accordance with Condition 71 (4) of MP08_0194, the Environmental Officer shall submit a compliance report to the Secretary (Mod 2) and Tweed Shire Council at the completion of each earthworks stage. The compliance report will be submitted within three weeks of the completion of each stage until the works have been completed under the authorised approvals. The compliance report will cover the following:

- How the project complied with relevant conditions, Management Plans and the CEMP; and
- Progress of construction on site.

8.3 Environmental Report

A written environmental report each month will be compiled by the EC and included in the Project Monthly Report containing information obtained during weekly site inspections such as:

- A status of environmental activities such as monitoring and surveillance of controls, inspections and testing and incidents associated with the work during the preceding month;
- Complaints, infringements and penalties incurred;
- A status of environmental implementation and document preparation/approval;
- Status of all non-conformances and corrective actions; and
- The results of environment reviews and audits (Internal and external) undertaking during the preceding month.

8.4 Environmental Incident Notification

Incident reporting shall be undertaken in accordance with Condition 76 of the Kings Forest Approval (MP08_194) refer ***Appendix F for proforma)***) as reproduced below;

Incident Reporting

76. Within 24 hours of detecting any incidents during construction that causes (or may cause) significant harm to the environment, the Proponent shall notify the Council and other relevant agencies of the incident and identify the following:

1) Describe the date, time, and nature of the incident.
2) Identify the cause (or likely case) of the incident.
3) Describe what action has been taken to date.
4) Describe any proposed measures to address the incident.

8.5 Maintenance of Records

The following records will be maintained throughout the project:

- The CEMP (all versions);
- Regulatory Licences and Permits;
- Correspondence with Regulatory Authorities;
- Monitoring Results;
- Lime delivery dockets and application rates
- Employee Induction and Training Records;
- Erosion and Sediment Control Inspection Lists;
- Environmental Accidents / Incidents / Emergency Reports;
- Non-Conformances and Corrective Action Lists;
- Compliance Reports;
- Post Clearing Report;
- Complaints Report;
- Waste Reports;
- Audit Reports / Results;
- Any relevant reports submitted to Regulatory Agencies; and
- Management Review Minutes and action taken.

Records will be held for at least 5 years after the date of Final Completion and made accessible to authorised regulatory agencies.

8.6 Document and Data Control

During construction it is expected that the environmental documents will be stored at the main site office and will be available on request to regulatory authorities. A register and distribution list will be maintained which will identify the current revision of particular documents or data.

9.0 CEMP REVIEW

The CEMP and its operations and implementation will be reviewed every 6 months or otherwise appropriate during the construction phase of the project by the Project Manager and Environmental Officer. Between scheduled reviews, a register of issues will be maintained to ensure that any issued raised by internal and external personnel associated with the project is recorded and not overlooked.

The purpose of the review is to ensure that the system is meeting the requirements of the standards, policies and objectives. The review will consider:

- Comments from Construction Personnel and relevant Government Agencies;
- Inspection, Monitoring and Audit Findings;
- Complaints;
- Details of Corrective and Preventative Actions taken;
- Environmental Non-Conformances and Corrective Actions;
- Incident Reports;
- Changes in Organisational Structures and Responsibilities;
- The Extent of Compliance with Objectives and Targets;
- Changes in Legislation, Regulations and Standards; and
- Coordination of Environmental Management of Sub-Contractors.

Any amendments to the CEMP will be communicated to site personnel by way of training, toolbox or notification by email, dependant on the changes made. A copy of the amended CEMP will be submitted to Tweed Shire Council for approval.

10.0 REFERENCES

All approved plans and Reports are described in Condition A3 of the Project approval (as modified)