



# ENVIRONMENTAL WORK METHOD STATEMENT

## Clearing , Grubbing and Mulching (Inc. Tannin Management)

### Project: Coffs Harbour Bypass

#### 1. Summary/Description of Activity

Clear, grub, and mulch involves the felling of trees, grubbing (digging out) roots and stumps and mulching of organic matter from topsoil. Clearing and grubbing will occur throughout the CHB alignment in all areas containing woody vegetation. Clearing in previously cleared habitat will be limited to mulching of saplings, topsoil stripping partly decomposed and fresh mulch mixed with topsoil. Equipment involved in the activity will include: harvester, excavator, bulldozer and tub grinder. All equipment will be appropriately sized to efficiently handle the vegetation present.

The purpose of clear, grub, and mulch is to prepare topsoil for stripping prior to bulk earthworks.

The typical sequence of the works is as follows:

- Obtain required approvals to commence activity.
- Undertake required community/landowner consultation.
- Provide training to personnel and Contractors involved (Ongoing).
- Delineate sensitive areas.
- Undertake pre-clearing assessments.
- Undertake phase 1 clear, grub and mulch to install erosion and sediment controls.

#### 2. Objective of this EWMS

The clear, grub and mulch EWMS is intended as a supplement to the Early Works Construction Environmental Management Plan. The objectives of this EWMS include:

Detail the exact work method, processes and activities required to undertake clear, grub, and mulch.

Provide specific control measures to manage the potential environmental risk associated with clear, grub, and mulch and satisfy the requirements of project specifications and approval conditions.

Communicate the process, environmental risks and appropriate mitigation measures to all personnel undertaking the activity and to ensure all mitigation measures are implemented for the relevant duration of the works.

#### 3. Area/Location of Activity/Site:

Work will occur within the Coffs Harbour Bypass project alignment. All work will occur within the clearing limits set out and agreed by TfNSW and the Project Ecologist.

#### 4. Timing of works

The expected commencement of the clearing and grubbing works is August 2021.

#### 5. Approvals Required

Release of Hold Point G40 2.4 by TfNSW. Having considered the submitted documents (i.e. management plans, method statements, pre-clearing assessment report), inspected the clearing limits, exclusion fencing, marked trees (including habitat trees, frog habitat, threatened flora) and verified vegetation community boundaries.

Release of Hold Point G38 3.1.1 by TfNSW. Having considered the submitted Erosion and Sediment Control Plan.

Early Works Permit - completed by the team proposing to undertake the works. The Environmental Manager (EM) will assess and sign-off on the Early Works Permit (including all required vehicle movement and access plans) prior to works commencing.

#### 6. Consultation Requirements:

The TfNSW Community Manager must be informed of all properties proposed to be accessed, and out of hours work to ensure that required consultation is undertaken and any required property

access is approved. Consultation will occur in accordance with the Community Consultation Strategy.

#### 7. Incident Response

In the event of an incident, such as unauthorised access to, or impacts to, threatened vegetation/sensitive areas, the Foreman will give directions to stop work and will contact the Environmental Manager immediately. The Environmental Manager or their delegate will then implement the Environmental Incident Classification and Reporting Procedure. TfNSW will notify relevant agencies (e.g. DP&I, EPA, OEH etc) in the event of a reportable incident, as required.

#### 8. Monitoring and Compliance

The Environment Officer will undertake weekly environmental inspections of the works. Non-conformances with the EWMS and environmental risks identified during the inspection that cannot be addressed at the time will be prioritised in an environmental action list issued to the supervisor. The Environment Officer will monitor timely close out of actions through ongoing inspections.

In addition, regular monitoring, inspections and auditing against compliance with the EWMS will be undertaken by project management, quality, and environmental personnel to ensure that all controls are being followed and that any non-conformances are recorded and corrective actions implemented. Where non-conformances are found, the EWMS will be reviewed to ensure that any improvements are incorporated as required.

#### 9. Typical Construction Sequence

- i. Planning (ERSED, ecological requirements etc.).
- ii. Clearing of approved areas (inc. temp ERSED controls).
- iii. Grub and mulch timber
- iv. Transport mulch to stockpile, where it cannot be placed as a primary erosion and sediment control measure.
- v. Stick rake topsoil (

#### 10. Related documents:

- Early Works CEMP.
- Early Works Permit, including vehicle access.
- Panama Disease Management Procedure.
- Sensitive Area Plans
- Toolbox signoff sheet.
- Plant wash-down and weed inspection checklist.
- Roads and Maritime Services Environmental Direction: Management of Tannins from Vegetation Mulch.
- Erosion and Sediment Control Plan (ESCP).
- G40 2.4 and G38 3.1.1 Hold Point Releases
- Pre-clearing assessment report.
- Threatened species management plan
- TfNSW Biodiversity Guidelines: protecting and managing biodiversity on TfNSW projects.

#### 11. Change Management

Should a change to the construction methodology, design, disturbance footprint or otherwise be required; Construction, Supervisory and Environmental personnel from TfNSW must be consulted prior to works occurring

Risk Analysis Risk Classification = Consequence x Likelihood		LIKELIHOOD				
		5 Very high*	4 High*	3 Medium*	2 Low*	1 Very low*
		Almost certain to happen i.e. could occur daily or more frequently	Strong anecdotal evidence that it is likely to occur in the identified circumstances without any controls in place;	May occur in the identified circumstances without any controls in place	Could occur at some time in the identified circumstances without any controls in place but not expected;	Highly unlikely to occur in the identified circumstances without any controls in place
CONSEQUENCE	5 Very large Major irreversible environmental harm on-site and/or off-site damage.	25 Critical	20 Significant	15 Significant	10 Moderate	5 Minor
	4 Large Major on-site and/or off-site impacts with clean up or remedy requires significant effort.	20 Significant	16 Significant	12 Moderate	8 Minor	4 Minor
	3 Medium Moderate on-site and/or off-site impacts (but no significant irreversible damage) with clean up or remedy work incurring a moderate level of effort	15 Significant	12 Moderate	9 Moderate	6 Minor	3 Minor
	2 Small Treatable on-site impact with clean up or remedy work incurring a small level of effort.	10 Moderate	8 Minor	6 Minor	4 Minor	2 Negligible
	1 Very small Reversible and insignificant environmental impact.	5 Minor	4 Minor	3 Minor	2 Negligible	1 Negligible



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#	Sequence of work activities (How will the work be done)	Potential Hazards (What harm can occur?)	Risk	Safeguards/controls (How can the risk be minimised?)	Residual Risk	Responsibility (Who will direct works to ensure compliance?)
Prior to commencement of works						
1	Ensure all necessary approvals are obtained including G40 Hold Points	Approval or contract conditions not met	Critical	Early Works Permit to be completed and reviewed by Project Manager and Environmental Manager. Mulch stockpile locations are to be identified and approved as per the ERSED Plan prior to commencing clearing.	Minor	Environmental Manager / Senior Project Engineer
2	Community Consultation	Community unaware of clearing	Moderate	Ensure Community Manager is aware and up to date with clear, grub, and mulch operations and that required notifications have been undertaken to affected residents as per requirements of the CHB Community Consultation Strategy.	Minor	Community Manager / Senior Project Engineer
3	Plan erosion and sediment controls (ESC)	Unnecessary environmental risks / water pollution.	Significant	Develop Erosion and Sediment Control Plan (ESCP) for all areas, ensuring both temporary and long-term control measures are considered and implemented in accordance with the required G38 Specification and industry standards (Blue Book, DEC2008 Guidance etc) prior to vegetation clearing. ESCP to be approved by the Project Environmental Manager. TfNSW to sign-off G38 Hold Point on ESCP. Clearing to not proceed in riparian areas with 10m of waterways until just before work commences in that area (i.e. 48 hours prior to work commencing) in accordance with the requirements of G40 Specification. Cut stump process to be implemented where appropriate to reduce erosion potential.	Moderate	Environmental Manager / Senior Project Engineer
4	Staff and sub-Contractor training	Breach of Management Plans and Approvals	Significant	Ensure all personnel undergo the Project induction. Ensure that site-specific induction clearly presents the environmental controls and restrictions that all personnel must follow. Ensure all personnel are familiar with who the Environmental Team are, and how to make contact regarding access in to areas, commencement of works and the mitigation measures required to be installed before works commence. Daily toolbox talks that may include: <ul style="list-style-type: none"> <li>Requirements of G40 Specification with regard to two-phase clearing (non-habitat vegetation removal, then 48hrs after habitat tree removal);</li> </ul> Encourage reporting of identified fauna, and provide workforce with Project Ecologist contact details. <ul style="list-style-type: none"> <li>Encouraging LoC delineation checks amongst the entire workforce</li> <li>Daily clearing prestart briefing sign-off.</li> </ul>	Minor	Environmental Manager / Safety Manager / Senior Project Engineer
5	Mapping of vegetation communities	Uncertainty regarding the type and area of vegetation communities to be cleared.	Moderate	A plan (SAPs) showing the location and extent of each vegetation community within the LoC boundary, works and temporary works and working area is to be prepared for each clearing location. Sensitive Area Plans are to be updated to reflect any amendments to native vegetation clearing areas.	Negligible	Environmental Manager / Survey Manager
6	Monthly reports on clearing progress	Inaccurate records of area cleared	Significant	Monthly reports (as per G36) provided to Principal detailing: <ul style="list-style-type: none"> <li>Revised forecasts of vegetation clearing.</li> <li>Areas cleared to date for each vegetation community.</li> </ul>	Minor	Environmental Manager
Install Clearing Limits, exclusion zones and inspect						
7	Install and verify clearing limit (exclusion) fencing	Unapproved work outside of clearing limit	Significant	Clearing limit (exclusion) fence to be install at least 5 working days prior to commencement of clearing. All clearing limit (exclusion) boundary to be clearly pegged by survey. Each peg consecutively numbered. LoC boundary to be delineated using star pickets (at approx. 25m intervals and each change of direction, or closer depending on terrain and environmental sensitivity) and highly visible flagging (i.e. orange bunting). Install "Environmental Protection Area" signage in prominent positions at 200m intervals along each section of LoC fence. Brief LoC set-out team on protocols as per this EWMS. Fence to be picked up and verified by survey team independent of survey set-out team and Hold Points as per G71 Specification to be adhered to.	Moderate	Foreman / Survey Manager and Environmental Manager/ Ecologist
		Obstacle in the way of fence line	Moderate	Survey to mark immediately either side of obstacle. Fence line to be agreed during pre-clearing joint inspection with TfNSW, Project Ecologist and Project Environmental Manager/Representative.	Minor	Survey Team / Foreman

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Rev: B  
Date: 20 July, 2021  
EWMS No. 01

Project: Coffs Harbour Bypass

#	Sequence of work activities (How will the work be done)	Potential Hazards (What harm can occur?)	Risk	Safeguards/controls (How can the risk be minimised?)	Residual Risk	Responsibility (Who will direct works to ensure compliance?)
8	Pre-clearing assessment	Requirements of Threatened Species Management Plan and are not met.	Significant	<p>Appropriately experienced Ecologists and arborists will undertake pre-clearing assessment.</p> <p>The assessment will address: habitat tree mark-up, identification of trees with native beehives, targeted survey for additional threatened species and EEC, marking of threatened flora within 5m of the LoC boundary, identify and mark unsound trees, identify and locate grass trees, verify vegetation community boundaries, survey and map noxious and horticultural weeds as per Specification G40.</p> <p>European beehives are to be identified and subsequently destroyed during the two stage clearing procedure as detailed in G36</p> <p>Prepare a Pre-clearing Assessment Report for review by TfNSW as/ when requested, and implement necessary actions e.g. weed control. Pre-clearing assessment report will include results and relevant actions for weed surveys and management, threatened flora survey, habitat tree identification, threatened species habitat assessment, vegetation community boundary verification, area of TEC/EEC clearing, unsound tree assessment, habitat tree mark-up.</p>	Minor	Environmental Manager / Ecologist
9	Identify, survey and mark habitat trees	Impact on Fauna due to habitat tree not marked	Significant	<p>Ecologist to survey and mark habitat trees. Habitat Trees are to clearly marked with an "x" in red spray paint and red and white flagging.</p> <p>Trees containing native bee-hives will be marked prior to clearing.</p>	Minor	Ecologist / Environmental Manager / Engineer
10	Update SAP's	Inaccurate SAP's	Moderate	Update SAP's with data collected during the pre-clearing assessment.	Negligible	Survey manager / Environmental manager.
11	Delineation of sensitive areas	Damage to sensitive areas or work outside of project boundary	Significant	<p>Heritage areas, threatened flora and EEC within 5m of the LoC boundary clearly marked during pre-clearing assessment.</p> <p>Also refer to marking of clearing limits as per point 9 above.</p> <p>Implementation of Survey Protocol that specifies measures to ensure survey set out and corresponding pegging and flagging is accurate (for example sequential numbering of pegs).</p>	Moderate	Ecologist / Foreman / Engineer/ Environmental Manager
12.	Control of Noxious weeds	Noxious weeds not controlled in accordance with legislation and management plan	Moderate	Ensure weed management and actions identified in Pre-clearing Assessment Report are implemented by treating any required high priority noxious weeds prior to clearing operations.	Minor	Environmental Manager / Senior Project Engineer
13	Management of Panama Disease	Potential spread of pathogen off site	Moderate	Ensure all activities are undertaken in accordance with the Panama Disease Management Protocol, records of actions undertaken are be provided to TfNSW on request	Minor	All site team members and Contractors
14	Ecologist / TfNSW pre-clearing joint inspection (G40 walk).	Catchment cleared prior to approvals and control measures in place.	Moderate	<p>5 days prior to clearing the Project Engineer, Surveyor, Project Ecologist and TfNSW Environmental staff will undertake a joint pre-clearing inspection/walk. The inspection will involve a foot-based traverse of the clearing limits.</p> <p>Complete verification check lists for each lot (including project Engineer, and project Ecologist sign off)</p>	Minor	Engineer / Environmental Manager / Foreman
<b>Ecologist pre clearing checks</b>						
15	Delineation of daily clearing areas	Ecologists inspect the wrong area	Significant	<p>Each afternoon, the areas requiring ecological inspection for the following days clearing area will be delineated, by the Project Environmental Manager or delegated representative in consultation with the Project Ecologist, using highly visible red and white tape.</p> <p>The area identified for clearing shall be an accurate and reasonable prediction of the area that can be feasibly cleared in a day. The daily clearing extent will be progressively modified in response to clearing extents achieved, based on density of vegetation, quality of fauna habitat and other influencing features.</p>	Minor	Environmental Manager / Ecologist
16	Undertake pre-clearing spotlight survey	Threatened species not detected	Critical	A team of two Ecologists will undertake a spotlight survey of each daily clearing area within the two hours prior to first light. This will maximize the opportunity to observe and capture nocturnal fauna.	Moderate	Approved Ecologists
17	Undertake pre-clearing diurnal survey	Other threatened species not detected	Critical	<p>The daily clearing extent will be clearly delineated with red and white tape installed across (perpendicular to) the alignment previous evening. (Refer to point 15).</p> <p>Clearing shall not commence until the clearing area has been adequately by the Ecologist. Pre-clearing surveys to be in accordance with TFNSW Biodiversity Guidelines and G40.</p>	Minor	Approved Ecologist
18	Clearing commences prior to pre-clearing inspection	Threatened species killed or injured.	Critical	<p>Notify the Ecologist and TfNSW of any sick / Injured Fauna immediately.</p> <p>In the case of a breach of clearing procedures: An investigation will be undertaken to determine if/why clearing protocols were breached. The Environmental Incident Classification and Reporting Guideline will be implemented. Disciplinary action may follow dependent on the severity of the breach and outcome of injury/ damage to protected species/ habitat. Clearing Contractor required to be re-inducted and re-briefed on clearing protocols.</p>	Moderate	Environmental Manager / Ecologist



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19	Koala identified in clearing area	Threatened species killed or injured	Significant	<p>Where a Koala is identified within the demarcated clearing area the following will occur:</p> <ul style="list-style-type: none"> <li>Suspension of clearing works must occur for a minimum of 48 hrs,</li> <li>A clearing/work exclusion zone will be established around the koala. The exclusion zone will be determined by the Ecologist in consultation with Principal and will be delineated using orange bunting.</li> <li>All clearing of koala habitat trees shall be undertaken in the presence of a koala spotter (Project Ecologist).</li> <li>No machinery will enter the exclusion zone.</li> <li>Any koala found will be given 48hrs to move out of the construction site on its own volition.</li> <li>Clearing will continue outside the designated exclusion zone if deemed to not cause any potential harm to the koala in question at the discretion of the Ecologist and supported by TFNSW.</li> <li>Each tree identified by the Ecologist as being a risk to a Koala if felled, will not be felled, damaged or interfered with until the Koala has moved from the clearing site.</li> </ul>	Minor	Environmental Manager / Approved Ecologist
20	Clearing planning – process / toolbox / Prestart / maps	Clearing permit contains inaccurate material	Significant	<p>Daily pre-start briefings are to be signed off by Environmental Manager / Representative / Ecologist / Clearing Contractor prior to commencement of clearing.</p> <p>During the daily Prestart/ toolbox meeting the clearing Contractor, site environmental representative must walk the entire boundary of that days clearing area.</p> <p>Pre- start briefing content is to be cross-referenced with on-ground boundaries &amp; observations and must include a clear description of daily clearing extent and a map that clearly shows the daily clearing extent.</p> <p>Checklist is discussed with Ecologist, Clearing Contractor, Environmental Manager/Representative before clearing commences and shall be retained on file.</p>	Minor	Environmental Manager
21	Capture and release of fauna	Inappropriate methods used resulting in breach of conditions and harm to fauna	Significant	Capture and handling of all fauna will be undertaken by experienced and TfNSW approved Ecologist.	Minor	Ecologist
<b>Carrying out clear, grub, mulch works</b>						
22	Mobilise plant to site & move plant around site	Spread of weeds and Panama Disease	Significant	<p>Contractors to comply with the requirements of the Panama Disease Control Procedure and confirming all machinery, equipment or apparatus is clean and visually free for mud, seeds, organic material, oil and grease before mobilisation to site.</p> <p>Plant arriving onsite to be inspected by an Environmental Representative/Foreman.</p>	Minor	Contractor / Foreman / Environmental Coordinator
23	Provide training to all personnel and Contractors involved in works	Non-compliance with EWMS / licensing requirements.	Significant	<p>Ensure all personnel undertaking the works have signed onto this EWMS, ESCP and understand the risk and mitigation controls required and that no clearing can commence unless there is a signed and dated Clearing Permit.</p> <p>Ensure all personnel working on-site have been inducted and understand environmental risks.</p>	Moderate	Engineer / Foreman
24	Install ESC prior to clearing	Uncontrolled discharge offsite	Significant	<p>Install any temporary erosion and sediment controls required for clearing as per approved ESCP.</p> <p>Ongoing audits and inspections of control measures and their effectiveness to be undertaken. Continual improvement / upgrades to control measures will be undertaken where identified.</p>	Minor	Foreman / Environmental Coordinator
25	Review upcoming weather forecast	Working in low lying areas during rain event	Significant	<p>Continually review upcoming weather forecast. If there is a probability of 90% or greater that &gt;10mm of rainfall is likely, rescheduling of clearing works be considered.</p> <p>Consider weather conditions prior to commencing work. The commencement of the works will be determined by the Superintendent/Foreman and Environmental Manager by the monitoring of online radar services.</p> <p>Prepare the work area for upcoming major rain event (audit controls, status of work area etc).</p>	Minor	Contractor / Foreman / Engineer
26	Clear non-habitat trees (Stage 1 clearing)	Injury to fauna and/or damage to flora	Significant	<p>Ensure above pre-clearing searches have been completed (see points 15-20).</p> <p>No felling of habitat trees during this phase, ensure habitat trees have been marked and are clearly visible in the field.</p> <p>Project Ecologist to be present at all times during clearing works to relocate affected fauna to nominated release points.</p> <p>If fauna is present during clearing the Ecologist will advise clearers to stop work until the individual has left the work area or it has been relocated.</p> <p>Fauna will be given the opportunity to leave the area unassisted. If not feasible, Ecologist will relocate fauna.</p> <p>Injured or killed fauna will be recorded in the clearing register.</p> <p>Injured fauna would be initially assessed by Ecologist before being transported to an appropriate vet or licensed wildlife carer for treatment. Treatment will be as per the NSW Code of Practice for Injured, Sick and Orphaned Protected Fauna (EPA 2011).</p> <p>All felling to be done within clearing limit (exclusion) fence.</p> <p>Mulch vegetation as soon as possible to minimise likelihood that fauna will occupy stockpiles.</p>	Minor	Project Ecologist / Contractor / Engineer

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		Clearing adjacent to threatened flora and EEC	Moderate	Mark all threatened flora within 5m of the LoC boundary during the pre-clearing assessment. Plot threatened flora locations on SAP's and ensure that the relevant section of SAP is included in the daily clearing permit. Ensure all personnel are aware that threatened flora occurs nearby and how it is delineated during the daily pre-clearing walk/toolbox. Ensure LoC boundary is in place and clearing does not occur outside that boundary.	Minor	Contractor / Foreman / Engineer
		Unexpected threatened fauna or flora find	Moderate	Stop all work in the vicinity of the find. Immediately notify the Project Environmental Manager. Implement the TfNSW Unexpected Finds Procedure.	Negligible	Foreman / Environmental Manager
		Damage to vegetation outside of clearing limits	Moderate	Trees shall be felled inwards from the LoC boundary only. Ensure there is a clear area to fell the vegetation towards. Logs that cross the LoC will be cut flush with the boundary.	Minor	Contractor / Foreman
		Minimise impact to Threatened Frog Habitat	Moderate	Where possible, review opportunities to hand clear or use other low impact methods near any potential threatened frog habitat and leave grass cover, roots, etc.	Negligible	Contractor / Foreman / Engineer
		Erosion and sedimentation within waterways	Moderate	TfNSW to sign-off G38 Hold Point on ESCP. Grubbing to not proceed in riparian areas with 10m of waterways until just before work commences in that area (i.e. 48 hours prior to work commencing) in accordance with the requirements of G40 Specification. Cut stump process to be implemented where appropriate to reduce erosion potential. At bridge locations, trees within 5m of the bank of any stream or other waterway are to be cleanly cut off between 300-600mm above the adjacent ground level so that stable vegetation is retained on the banks. No vehicles to access through waterways unless on established temporary crossings. Should disturbed areas remain, erosion and sediment controls will be installed to ensure degradation of the drainage line is minimised. PESCP will be updated as required.	Negligible	Contractor / Foreman
		Uncontrolled discharge of water (turbid / tannins) from site	Significant	Temporary ESC measures (e.g. timber, mulch windrows, topsoil windrows, lined drains / waterways etc) to be installed progressively each day and prior to the completion of each days work. Cleared vegetation to be moved out of low-lying areas prior to rain. Unprotected mulch sediment controls should not be placed in concentrated flow lines where there is a risk that mulch may be washed away Any temporary sediment traps constructed from mulch must have a stable outlet point to minimise the potential for mulch to wash away during high rainfall events, and the possibility of control measure failure. Management of tannins shall be in accordance with RMS Environmental Direction: Management of Tannins from Vegetation Mulch. Minimise impacts to access tracks and maintain as required.	Minor	Contractor / Engineer
		Excessive dust	Significant	Trucks entering and exiting the project to be covered (excluding log trucks). Use water carts to dampen haul roads, stockpiles and cleared catchments, as required. Entry and exit via approved and stable access points.	Minor	Foreman
		Onsite refueling	Significant	Spill kit to be onsite at strategic locations and in locations where refueling is undertaken. Project Environmental Manager to be notified if a spill occurs. All refueling to be done 50m away from water course, creek, drainage line or boggy area and were possible offsite and to use a drip tray at all times. Plant and equipment to be regularly serviced and maintained.	Minor	Contractor / Engineer / Plant Manager
		Discovery of contaminated land/material (including asbestos)	Moderate	Stop work and report find to supervisor and environmental manager. Implement Unexpected Contaminated Land and Asbestos Find Procedure.	Minor	All
		Noise impact on community and/or stakeholders	Critical	Ensure works are undertaken between 7am and 6pm Monday to Friday and 8am to 1pm Saturday only. No work is to occur on Sunday or on public holidays. Ensure plant/equipment to be fitted with appropriate silencers and maintained. Minimise radio noise, yelling, and rowdy behaviour when near potentially affected receivers. Plan works to minimise reversing beepers. Do not undertake excessive reversing. All community complaints are to be referred to Community Team, recorded and actioned.	Minor	Community Relations Manager / Foreman / Engineer

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	Stage 1 clearing does not isolate habitat trees	Equipment unsuitable for removing habitat trees	Significant	Equipment must be appropriately sized to handle the majority of trees on-site and the operator skilled in removing habitat trees.	Minor	Project engineer / Environmental Manager
Carrying out Stage 2 clearing						
27	Clear habitat trees (Stage 2)	Fauna in habitat trees during felling	Significant	<p>Ensure above pre-clearing searches have been completed.</p> <p>Habitat trees to be felled a minimum of two nights after stage 1 clearing.</p> <p>Project Ecologist to supervise felling of all habitat trees and discuss method of felling with operator.</p> <p>Habitat trees must be felled using appropriately sized machinery and experienced staff.</p> <p>Habitat trees must not be cut and pushed or felled using hand-held chainsaws.</p> <p>Where possible, retain and relocate hollow bearing tree sections in areas adjacent to the construction footprint or reuse in fauna underpass structures.</p> <p>Where possible, clear hollow bearing trees during the cooler parts of the day. Ecologist to provide advice during clearing of such trees.</p> <p>Ecologists to check hollows once tree has been placed safely on the ground and relocate fauna in accordance with the Fauna Handling and Rescue Procedure.</p> <p>Habitat tree inspections undertaken in accordance with TFNSW Biodiversity Guidelines.</p>	Minor	Ecologist / Environmental Manager / Contractor / Foreman
		Inappropriate housing or release of fauna	Significant	<p>Ensure that fauna are housed in accordance with ethics approval.</p> <p>Fauna will be released into adjoining areas of suitable habitat at an appropriate time of day that is consistent with the behaviour of the animal.</p> <p>Release locations will be recorded in the Post Clearing Reports.</p>	Minor	Ecologist
		Fauna move into stockpiles	Significant	<p>Stockpiled vegetation must be immediately crushed so there are no protruding branches.</p> <p>Ideally material shall be mulched in the same shift that it was felled.</p> <p>If stockpiled material remains undisturbed for more than 12 hours an Ecologist must inspect it before it is sheared or mulched.</p>	Minor	Ecologist / Environmental Manager / Contractor / Foreman
28	Data collection	Data not collected in accordance with G36 and G40/reporting deficient	Significant	<p>Prepare specific data sheets for clearing procedures, including: spotlighting, diurnal pre-clearing surveys (incl daily clearing observations), habitat tree removal, structures removal, register of fauna killed during clearing, weather conditions, and road kill.</p> <p>Each datasheet will record date, start and end time, and personnel.</p> <p>Pre-clearing and spotlighting datasheet will include: species and number, sex &amp; age of individuals sighted, captured, or injured; location recorded and location released (GPS).</p> <p>Habitat tree &amp; structure removal datasheet will include: species and number, sex &amp; age of individuals sighted, captured, or injured, tree species present, size, height and depth of hollows, tree/feature location (GPS), and release location (GPS) and method (i.e. onto trunk, into logs).</p> <p>Mortality register data sheet will include: species (age &amp; sex), location (GPS) and likely cause.</p> <p>Data collected on threatened frogs would include: species, age class, sex, breeding condition and snout-vent length. Larger individuals would be PIT tagged.</p> <p>All records to be stored for review by TFNSW at any stage.</p>	Minor	Project Ecologist / Environmental Manager
29	Maintain clearing limit / exclusion fence	Clearing limit (exclusion) fence damaged during clearing	Significant	<p>Maintain exclusion fence until the completion date of works.</p> <p>Immediately repair any fencing and/or signs damaged during clearing, as required.</p> <p>Make all staff and subcontractors involved in construction activities aware of the clearing limits as part of the project induction and aware that they are prohibited to encroach on areas beyond the boundaries of the identified clearing limits.</p> <p>Encourage staff to report degraded or damaged sections of LoC fence immediately.</p> <p>Ensure that the LoC boundary fence is inspected during the daily pre-clearing walk/toolbox.</p> <p>During the daily pre-clearing walk ensure that any damaged sections of the LoC fence are immediately repaired/replaced.</p> <p>Clearing will not commence until LoC boundary has been repaired.</p>	Minor	Foreman / Environmental officer/ Coordinators



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30	Final stick rake	Spread of weeds	Significant	Brush/wash off excessive soil and plant material from boots/clothing/plant/equipment prior to moving from high-risk weed infested areas to minimise potential for the spread of seeds. Carry out wash down procedure for plant before leaving weed area and at least 50m from waterway.	Minor	Contractor / Foreman / Engineer
31	Management of topsoil	Prevent future cultural salvage of material contained in the topsoil	Significant	Topsoil is not be removed from site. Topsoil is to be placed immediately adjacent to the utility relocation trench and kept separate to excavated subsoil. Utility trenches are to be progressively backfilled with sub soil placed first and topsoil placed last.	Minor	Contractor / Foreman / Engineer
32	Moving between locations	Damage to flora, fauna, threatened species, EEC, spread of Panama Disease	Moderate	Clearing works are not to commence without the approval of the Project Engineer and Environmental Manager. Early Works Permits will cover a specified area (chainage and location detailed on permit) where works can be carried out. Panama Disease controls to be implemented as pre procedure.	Negligible	Contractor / Foreman / Engineer
33	Tidy-up / Demobilise from site	Area left untidy	Minor	Classify all waste using the 'Waste Classification Guidelines 2008'. Ensure all materials are reused or recycled where possible. If reuse or recycling is not possible, then materials shall be disposed off-site, in accordance with above guidelines. Conduct regular inspections of the works areas by Foreman, Engineer, Environment Team.	Negligible	Foreman / All
		Re-growth of noxious weeds	Significant	Following clearing, grubbing or mulch, assess the edges of the work area for any noxious weed regrowth and treat as required in accordance with the Pre-clearing Survey Report.	Minor	Foreman /All
<b>Reporting</b>						
33	Post clearing report	Report not prepared	Moderate	<p>At the completion of clearing activities, a post-clearing report must be provided to the Principal. This report must be provided within 28 days from the completion of substantial clearing as determined by the Principal as required by G36 and G40 Specifications.</p> <p>The post clearing report prepared, in consultation with the Project Ecologist, will include:</p> <ul style="list-style-type: none"> <li>an assessment of habitat trees and the handling of the fauna affected by the clearing activities undertaken in accordance with the requirements of this clause;</li> <li>the clearing and structures removal operations, including procedures, dates, times, weather, areas and information on the fauna specialist(s) present during the clearing and structures removal operations;</li> <li>any live animals that were sighted, captured, released, injured or shocked including the location of fauna within clearing footprint (recorded with GPS) and release locations;</li> <li>dead animals that were found as a result of clearing and structures removal operations and fauna rescue;</li> <li>trees being used for breeding or roosting by fauna, including their species, locations, sizes, heights and depths of hollows in trees;</li> <li>structures (e.g. bridges, culverts) being used for breeding or roosting by fauna, including their species, locations, sizes, gap heights and depths;</li> <li>a register of hollow-bearing trees, and comparison of this data to the Nest Box Plan.</li> <li>photo images of rescued fauna.</li> </ul>	Negligible	Project Ecologist / Environmental Manager

### WMS Approval

Revision Number	Approved By	Name	Signature	Date
A	Environmental Manager			



## Toolbox (Attendees to sign attendance record below)

- Pre-clearing assessments completed prior to commencement of clearing. Pre-clearing assessment will include: habitat tree survey, native bee survey, noxious weed survey, grass tree survey, EEC verification, threatened flora survey, unsound tree assessment.
- Early Works Permit to be completed and approved by Project Manager / Environmental Manager / Survey manager / Project Ecologist for each clearing area.
- Daily clearing Pre-start checklist must have plan of daily work area attached and be signed by Ecologist / Environmental Managers representative / Clearing Contractor prior to clearing commencing.
- Each day prior to clearing the clearing Contractor, Environmental Managers representative and Principals representative must walk the entire days clearing boundary.
- Clearing limits, exclusion zones, heritage areas, threatened flora within 5m of boundary, and EEC vegetation adjoining boundary are to be marked/flagged prior to commencement of works to prevent impacts. Star pickets, highly visible bunting (fluorescent orange) and signage will delineate these areas. Ensure regular maintenance of flagging.
- Ensure all activities are undertaken in accordance with the Panama Disease Management Protocol, records of actions undertaken are to be provided to TfNSW on request
- Check attached Sensitive Area Plans (SAPs) to identify sensitive area locations. Relevant section of SAP attached to each daily clearing checklist.
- No clearing permitted outside clearing limits. Ensure everyone is aware of the clearing limits and sensitive areas prior to commencing each day.
- Immediately report sections of damaged or broken LoC fence to Foreman, or environmental staff, or survey manager.
- Immediately report all koala and other fauna sightings to Foreman or Environmental Manager or Ecologist.
- Ensure pre-clearing inspections completed in timeframes nominated above in points 15-20.
- Ensure appropriately experienced Ecologist / wildlife carer is present during all clearing. Ecologist required to inspect habitat trees immediately after being felled. Appropriately sized machinery and experienced operators must be used to assist in the lowering of habitat trees.
- If fauna is present during felling, stop all work in the vicinity and notify Ecologist. Ecologist will capture and relocate fauna, as required.
- Trees shall be felled towards the project corridor and not away from. Ensure there is a clear area to fall vegetation into.
- If an injured animal is found, advise the Ecologist immediately.
- Consider weather conditions prior to commencing work. Continually review upcoming weather forecast. If there is a probability of 90% or greater that >10mm of rainfall is likely, rescheduling of clearing works be considered
- Ensure ESCPs are developed and implemented prior to commencing works.
- Minimise ground disturbance and install ERSED controls at the end of each day as required. Ensure ongoing maintenance and improvements as required.
- At bridge locations, trees within 5m of the bank of any stream or other waterway are to be cleanly cut-off between 300-600mm above the adjacent ground level so that stable vegetation is retained on the banks. Also where possible, hand clear/minimise disturbance to threatened frog habitats.
- No vehicle access into or through waterways unless on designated crossings (excluding dry waterways).
  - 7:00am to 6:00pm Monday to Friday;
  - 8:00am to 1:00pm Saturday; and
  - At no time on Sundays and Public Holidays.
- Works outside the hours specified above will not be conducted unless approval in writing has been granted by the Environmental Manager.
- The following noise mitigation measures should be implemented at all times:
  - Turn vehicle / plant and equipment off when not in use;
  - Minimise radio noise, yelling, no rowdy behaviour etc when near potentially affected receivers;
  - Plan works and design vehicle accesses to minimise reversing beepers;
  - Ensure plant/equipment is maintained in an efficient condition; and
- Prevent pollution of waterways due to spills/leaks. All refuelling to be done 50m away from water course, creek, drainage line or boggy area and where possible offsite. Report and clean up all spills. Spills must be reported to the Environmental Manager.
- Ensure spill kits are available during works and at refuelling locations.
- Report any complaints from neighbours to Community Team.
- Separate cleared vegetation containing noxious weeds and treat in accordance with pre-clearing assessment report.
- Plant arriving onsite to be inspected by an Environmental Coordinator/Foreman to be clean. Inspect and clean machinery after working in areas containing high priority noxious weeds to prevent further spread.
- All washdowns must be done away from waterways and ensure no risk of pollution waterways.  
Upstream and downstream controls are required around mulch stockpiles. Leachate from stockpiles to be collected in a bund/sump and used for dust suppression away from waterways.
- Mulch stockpiles to be lower than 2.0 m in height to prevent risk of combustion
- Trucks with loads to use dust covers on all local roads/highways (excluding log trucks).
- Ensure fire extinguishers are available at all times during tub grinding.
- In the event that human remains, unexpected heritage items are discovered or threatened flora/fauna observed or contaminated material such as asbestos, stop work immediately and contact the Environmental Manager.
- Minimise waste where possible. Ensure all materials are taken off site and reused, recycled. If reuse or recycling is not possible, then materials shall be disposed off-site. Ensure waste materials are collected and disposed of at licensed landfills or in project rubbish bins.
- In the event of an unexpected find, or an environmental incident the Environmental Incident Classification and Reporting Procedure is to be implemented.
- Contact project Environmental Team for advice on environmental matters.







## ATTACHMENT A – Sensitive Area Plans