

**HSEF0301.1 – Environmental Impact Assessment (EIA)****Approved by:** Head of Workplace Health and Safety**Revision:** 3**Date:** May 2019**Page** 1 of 7

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ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

PROJECT SITE/LOCATION	Lake Rowallan	ANTICIPATED DURATION OF PROJECT	2 months
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**DESCRIBE THE WORK
ACTIVITY AND WORK
ENVIRONMENT**

As part of the Battery of the Nation initiative Hydro Tasmania is undertaking feasibility assessments of potential pumped hydroelectric schemes (PHES) associated with Lake Rowallan and Lake Cethana. A PHES at either Lake Cethana or Lake Rowallan would include an upper reservoir on land above the lake, an underground power station beneath the upper reservoir, an intake outlet structure on each lake and connecting power, tailrace and access tunnels to allow the transfer of water to and from the lake and upper reservoir via the power station. Further information on the Battery of the Nation and planned Rowallan and Cethana PHES feasibility assessments can be found on Hydro Tasmania's [website](#).

A critical component of the feasibility assessment is geotechnical investigations. Phase 1 Geotechnical investigations will be used to assess the suitability of the potential PHES sites at Cethana and Rowallan for construction of underground infrastructure as well as the upper reservoir.. Geotechnical investigations have commenced at both Lake Cethana and Lake Rowallan and have included test pitting, augering and drilling as well as establishment of drill pads and access tracks. An EIA was prepared for Phase 1 works.

The requirement for an additional drill hole has been identified as part of Phase 1 geotechnical works. A map of the drill hole location is provided in Annex 1. The drill hole location is located on land managed by Sustainable Timber Tasmania (STT). The drill hole location was not included in the Phase 1 EIA. Hence, this EIA has been prepared to cover the construction of an access road and drill pad and drilling at the additional location at Lake Rowallan.

Drilling

A rubber tracked mobile drill rig will be used to drill an approximately 100mm diameter hole to a depth of up to 500m and drill holes. Core recovered from the drill hole will be analysed and removed from site. The drill hole will be either capped or grouted at the completion of drilling.

Water will be required to facilitate drilling. Water will be circulated from an onsite water tank to the drill hole and back to a series of two sumps each approximately 1.5m³. Sumps allow solids such as naturally occurring rock and organic matter (e.g. tree roots) to fall out of suspension. Whenever possible water will be drawn from the second sump and recirculated through the drill hole. However, where insufficient water is returned from the drill hole water will be supplemented from the on-site water tank. Up to a maximum of 15,000L of water per day is anticipated to be required. Water will be taken from nearby sources, nominally Lake Rowallan and transported to site using a water tanker. Overflow from the second sump (e.g. in the event of high rainfall) will be dissipated over land and not directed down existing drainage channels.

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Where required, drilling additives may be used (e.g. to control high hole torque, lubricate drill strings or stabilise the hole). Drilling additives will be used only when required and will be biodegradable (e.g. drill muds such as Mudex or Mudlogic).

Drilling will require the clearance and levelling of a drill pad up to approximately 20m by 30m and sheeted using fine gravel (10-15mm). The size of the drill pad (and area of vegetation cleared) will be the minimum required to meet OH&S requirements. The drill pad will provide an all-weather work area and accommodate the drill rig, water truck as well as various drilling infrastructure including nine meter drill rods, transportable water tanks and light 4WD vehicles. Erosion control measures will be installed at the drill pad.

Access to the drill site will be by an existing access track however, the track will need minor upgrade (vegetation removal and track repair) and will be sheeted with gravel to provide safe and appropriate accessibility for heavy machinery and personnel. The track is planned to be built using either a 13 or 20 tonne excavator. The location of proposed access track is shown in Annex 1.

The drill pad and access track will be removed at the completion of geotechnical works (subject to consultation with STT) and the disturbed sites rehabilitated. Rehabilitation will include the removal of sheeting gravel, reinstatement of natural contours, spreading of removed vegetation and, if required to aid revegetation, planting disturbed areas with local species suitable to the location.

PROJECT MANAGER

Joe Booth

EIA PREPARED BY

David Procter

FINAL COPY APPROVED BY

Ian Jones

SIGNATURE**DATE**

3/12/19

LEGAL ASSESSMENT*Does this activity require a permit or the requirement to notify a regulatory body?**Refer to HSEP0201 – Legal and Other Requirements Procedure for further information***Local Council/State Requirements**

- ☒ Council Development Planning/Building Permits
- ☒ Heritage Permits (Aboriginal/Cultural)
- ☐ Permit to Take Threatened Species
- ☐ Mining Lease or Licence
- ☐ Forest Practices Plan
- ☐ Reserve Activity Assessment (TWWHA and other reserves)
- ☐ Dam Works Permit
- ☐ Crown Land Works Authority
- ☒ Scientific Research Permit
- ☐ Environment Management Pollution Control Act Permit (Level 2 activities or other)

Commonwealth Requirements

- ☐ Referral under *Environmental Protection and Biodiversity Conservation Act 1999* for significant impacts on matters of National Environmental Significance

Further Advice

- ☐ Seek assistance with identifying applicable legal requirements and obligations from Subject Matter Experts including the Environment & Engagement and Legal Teams, if required

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If any of the above are required, please describe requirements and attach a copy of the documents:

The Kentish Council have been consulted and have confirmed that the proposed geotechnical works are exempt from the requirement for a planning permit (Annex 2).

An Aboriginal and historic heritage survey has been completed at the proposed drill hole location and did not identify the requirement to obtain a permit to move or destroy any Aboriginal or historic heritage (Annex 3).

An ecological survey has been completed at the proposed drill hole location and did not identify the requirement to obtain a Permit to Take under the *Threatened Species Protection Act 1995* (Annex 4).

The proposed works are not subject to any other Local Council or State requirements and do not require referral under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

WORKING WITHIN THE TASMANIAN WILDERNESS WORLD HERITAGE AREA (TWWHA) AND OTHER PWS RESERVES*Refer to HSEP0911 - Operations in the TWWHA for further information**Skip this section if the works are not within the TWWHA or other PWS reserves*

- **Maintenance work** in the TWWHA will require notification to Parks & Wildlife Services in the form of a cover letter (see *HSEF0911.1 - WHA Notification of Works*).
- **New work** in the TWWHA and other reserves may require the completion of a Parks & Wildlife Services *Reserve Activity Assessment*. Refer to a Subject Matter Expert within the Environment & Engagement Team for further advice.

What is the zoning of the land under the TWWHA Management Plan?

(See HT Map Viewer – Environment & Heritage – Work in the TWWHA - PWS WHA Management Overlays + PWS WHA Management Zones)

What is the Wilderness Quality Rating of the land?

(See HT Map Viewer – Environment & Heritage – Work in the TWWHA - PWS Wilderness Quality 2005)

What is the Reserve Category of the land?

(See HT Map Viewer – Stakeholders - LIST Public Land Classification)

Is the land vested in Hydro Tasmania?

(See HT Map Viewer – Property - HT Property)

What distance are the works from a public road, designated walking track or other public access route (e.g. Franklin River)?

LIFECYCLE CONSIDERATIONS*As an example - Does this activity have the opportunity to consider and influence more sustainable acquisition of raw materials, end of life treatment and final disposal of waste?***If yes, describe the considerations and how to influence these through proposed actions (please note a lifecycle assessment isn't required):** N/A

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Refer to [IBRM Operation Information](#) for further information regarding operational impacts including probability and impact (consequence).

Probability Table		
Description	Probability Range	Example Probability
7. Almost Certain	91% – 100%	Event is expected
6. Likely	61% – 90%	Event is likely to occur
5. Possible	21% – 60%	Event may occur, but not likely
4. Unlikely	6% – 20%	Event not expected
3. Rare	1% – 5%	Event extremely unlikely
2. Extremely Rare	< 1%	May only occur in extreme and exceptional circumstances

Probability	Impact (Consequence)					
	1.Insignificant	2.Minor	3.Moderate	4.Major	5.Extreme	6.Catastrophic
7. Almost Certain 91% - 100%	7	14	21	28	35	42
6. Likely 61% - 90%	6	12	18	24	30	36
5. Possible 21% - 60%	5	10	15	20	25	30
4. Unlikely 6% - 20%	4	8	12	16	20	24
3. Rare 1% - 5%	3	6	9	12	15	18
2. Extremely Rare <1%	2	4	6	8	10	12

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POTENTIAL HAZARD AND RISK	INHERENT RISK (probability x impact)	CONTROL MEASURES	RESIDUAL RISK (probability x impact)	PERSON WHO IS RESPONSIBLE FOR MANAGING THE CONTROL MEASURE	HOW OFTEN WILL THE CONTROL MEASURE BE CHECKED TO ENSURE IT IS IN PLACE & EFFECTIVE
LAND see <i>HSEP0913 Land Management Procedure</i> <input type="checkbox"/> N/A					
<input checked="" type="checkbox"/> Importation of gravel from a quarry <input checked="" type="checkbox"/> Air and noise quality / pollution <input checked="" type="checkbox"/> Land clearing and contamination <input checked="" type="checkbox"/> Storage of equipment and / or construction of site shed <input checked="" type="checkbox"/> Excavation <input type="checkbox"/> Noise from works of normal business hours					
Land clearing for the access track and drill pad establishment leading to erosion and sedimentation	15 - Moderate	<p>Erosion control measures will be installed to control surface water runoff and prevent the transport of sediments from the drill hole, access track and drill pad. The site will be established in a manner to minimise risk of erosion occurring including:</p> <ul style="list-style-type: none">• All land disturbances will be confined to the minimum practicable area to maintain OH&S requirements to ensure that the minimum land area is exposed to erosion for the shortest possible time;• Surface water will be diverted around the drill pad using structures such as catch drains, silt fences or bunds; and• Any discharge of drilling fluids from above ground sumps shall be to vegetated land or removed from site.• The drill holes will be either capped or grouted at the completion of sampling. <p>Subject to consultation with STT, the drill hole, drill pad and access tracks will be rehabilitation as soon as works are completed. Rehabilitation will include:</p>	8 - minor	Hydro Tasmania site manager Hydro Tasmania environmental representative (six monthly monitoring)	Daily visual inspection of sediment control structures Six monthly monitoring of rehabilitation works.

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		<ul style="list-style-type: none">• Drill hole – full or partial grout as required and cap with appropriate plug.• Access tracks and other cleared areas – (except with prior consent from STT) remove gravel, stabilise and cover cleared areas with vegetation removed during clearing and, where required to facilitate revegetation, local seed or seedlings appropriate to the location.• Where erosion is a particular problem, such as on steep slopes, sediment may be held in place by using geotextile fabric or jute mesh held down with steel pins. <p>Rehabilitated sites will be monitored six monthly and further work carried out, if required, to ensure rehabilitation has been successful.</p>			
Source and transport of gravel for access track impacting environment and amenity.	12 - moderate	Gravel for access tracks will be sourced from existing stockpiles or quarries from the closest available stockpile or quarry.	8 - minor	Hydro Tasmania site manager	Once – inspection of gravel source
Noise emissions from drill rig and machinery impacting amenity of nearby residents and visitors	12 - moderate	<p>Ensure that machinery used on site is fitted with the required exhaust and noise suppression systems and it is in manufacturers recommended operating condition.</p> <p>Vehicles and machinery will not be left running when not in use.</p> <p>Site working hours will typically be from 0730 – 1730 from Monday to Friday. Work outside these times shall only be undertaken with the approval of the Hydro Tasmania Site Supervisor.</p>	8 - minor	Hydro Tasmania site manager	Daily – visual inspection of machinery.

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Generation of excessive dust through project activities impacting amenity of nearby residents and visitors.	5 – insignificant	The drill site and access track will be wetted or stabilised if excessive dust is generated. Vehicles and machinery travelling to the sites will maintain an appropriate speed to prevent excessive dust generation. Earth moving equipment will be cleaned prior to leaving site to prevent the tracking of soil on nearby roads.	3 – insignificant	Hydro Tasmania site manager	Daily visual inspection of dust generation
FLORA – LAND AND AQUATIC <div><input checked="" type="checkbox"/> Vegetation clearing<div><input checked="" type="checkbox"/> Weed and disease spread</div></div> <div><input checked="" type="checkbox"/> Threatened Species, Communities & Habitat nearby</div> <div><input checked="" type="checkbox"/> Disturbance / removal of habitat</div> <div><input type="checkbox"/> N/A</div>					
Clearance/disturbance of listed threatened flora and vegetation communities at auger, test pit and drill hole sites or for the establishment of access track and drill pads.	20 - Major	An ecological survey was completed at the drill hole location and access track (Annex 4). The drill site and access track are located in <i>Eucalyptus delegatensis</i> dry forest and woodland (DDE) which is not listed under the NCAAct. No flora species listed under the <i>Threatened Species Protection Act 1995</i> or <i>Environmental Protection and Biodiversity Conservation Act 1999</i> are expected to be disturbed by the geotechnical works. Clearing of overhanging vegetation may be required to safely operate the drill rig. Any clearing of trees will be conducted to current forestry industry standards, including adequate safety protection for personnel and equipment.	8 - minor	Hydro Tasmania site manager	Once – visual inspection of site clearance

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		<p>Contractors will be made aware of the requirement to confine all disturbance to within the marked area.</p> <p>If it is determined at the time of the works that additional disturbance is required or that the site is not suitable an appropriately qualified ecologist will inspect the additional / alternative site. If threatened species are located the site will be relocated if possible. If not a permit to take application will be completed for the threatened species prior to the commencement of works.</p> <p>Vegetation clearance shall be kept to the minimum required to safely undertake the geotechnical works. Wherever possible vegetation will be trimmed rather than removed.</p>			
Introduction of weeds or diseases via importation of contaminated machinery or material.	10 - minor	<p>Any imported material (e.g. gravel for drill pads and access roads) will be sourced from a location that is certified to be free of Phytophthora.</p> <p>Vehicles and equipment used for the geotechnical investigations will be clean prior to transport to the site and free of mud and dirt that could harbour weeds and diseases prior to commencing work at the site.</p> <p>Vehicles and equipment used for the geotechnical investigations to keep to designated tracks.</p>	8 - minor	Hydro Tasmania site manager	As required – visual inspection of Phytophthora compliance and vehicles and machinery entering site.

FAUNA – LAND AND AQUATIC☐ N/A



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<input checked="" type="checkbox"/> Threatened fauna <input checked="" type="checkbox"/> Injury / death of fauna (stranding, drowning)					
<input checked="" type="checkbox"/> Disturbance to spawning, nesting or breeding seasons <input checked="" type="checkbox"/> Disturbance to sensitive habitats					
<input type="checkbox"/> Pest Fish					
Clearance and/or disturbance of listed threatened fauna habitat at drill hole site or for the establishment of access track and drill pads	20 - major	An ecological survey was completed at the drill hole location and access track (Annex 4). No fauna species (or habitat for fauna species) listed under the <i>Threatened Species Protection Act 1995</i> or <i>Environmental Protection and Biodiversity Conservation Act 1999</i> are expected to be disturbed by the geotechnical works.	8- minor	N/A	N/A
Disturbance of active wedge tailed eagle nests.	20 - major	The nearest known wedge-tailed eagle nest at Cethana is over 1.5km to the northeast and not within the 1km line of site exclusion zone (FPA Fauna Technical Note 1 Eagle nest searching, activity checking and nest management). The habitat within the geotechnical works area is low quality eagle habitat and has a low likelihood of containing nests.	8 - minor	N/A	N/A
WATER QUALITY					
<input checked="" type="checkbox"/> N/A					
<input type="checkbox"/> Changes in water quality for upstream/downstream users					
<input type="checkbox"/> Unnatural, extreme or long term changes to water levels or flows					
<input type="checkbox"/> Changes to recreational uses of water					
<input type="checkbox"/> Disturbance of fish passages / breeding / migration					
<input type="checkbox"/> Rapid drawdowns					

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HERITAGE <i>see HSEP0912 Cultural Heritage Management Procedure</i> <input type="checkbox"/> N/A					
<input type="checkbox"/> Impacts to Hydro Tasmania historic heritage <input type="checkbox"/> High/Very High ranking on the HT Cultural Heritage Inventory <input type="checkbox"/> Site on the Tasmanian Aboriginal Heritage Register (AHR) <input type="checkbox"/> Impacts to non-Hydro historic heritage <input type="checkbox"/> Site listed on the National Heritage List, Tasmanian Heritage Register, Planning Scheme Heritage Code or external heritage database <input checked="" type="checkbox"/> Impacts to artefacts (including concealment by rising water levels following planned maintenance drawdown)					
Disturbance of Aboriginal relics or sites due to access track and drill pad establishment.	16 - major	<p>A survey for Aboriginal and historic heritage was completed by Gondwana Heritage Solutions (Greg Jackman), accompanied by an Aboriginal Heritage Officer (AHO) at the drill hole location. both Rowallan and Cethana (Annex 3). There were no artefacts recorded in the vicinity of the drill hole location.</p> <p>All ground disturbance will be minimised.</p> <p>If it is determined at the time of the works that additional disturbance is required or that the site is not suitable an appropriately qualified heritage expert will inspect the additional / alternative sites prior to the commencement of work.</p> <p>If the site is assessed as medium or high risk an alternative site will be found.</p> <p>Ensure contractors/workers have access to, and understand, Aboriginal Heritage Tasmania's Unanticipated Discovery Plan (Annex 5).</p> <p>Any Aboriginal relics encountered during works will be reported immediately as per UDP</p>	8 - minor	Hydro Tasmania site manager	Inspection of recorded aretefact protection – if required.

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		protocols and Hydro Tasmania's Cultural Heritage Management Procedure (HSEP0912).			
Disturbance of historic heritage sites due to access track and drill pad establishment	15 – moderate	No historic heritage values were identified or anticipated at the drill hole location or access track.	5 - insignificant	N/A	N/A
POTENTIAL HAZARD AND RISK	INHERENT RISK (probability x impact)	CONTROL MEASURES	RESIDUAL RISK (probability x impact)	PERSON WHO IS RESPONSIBLE FOR MANAGING THE CONTROL MEASURE	HOW OFTEN WILL THE CONTROL MEASURE BE CHECKED TO ENSURE IT IS IN PLACE & EFFECTIVE

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WASTE & RECYCLING <i>see HSEP0914 Waste Management Procedure</i> <input type="checkbox"/> N/A					
<input type="checkbox"/> Waste oil / Hydrocarbons <input type="checkbox"/> Concrete slurry <input checked="" type="checkbox"/> Excavation spoil <input type="checkbox"/> Hazardous waste (e.g. PCB) <input type="checkbox"/> Asbestos / Coal Tar Enamel (CTE) waste <input checked="" type="checkbox"/> Construction waste <input type="checkbox"/> Recycling opportunities including steel, paper/cardboard, plastics					
Spoil from drilling and site clearance left on site.	5 - insignificant	If generated, excess spoil will be removed from site and disposed of in an appropriate location. Drill cuttings may be discharged to vegetated areas around the site away from watercourses. Larger volumes of drill cuttings (>2m ²) will be removed from site.	3 - insignificant	Hydro Tasmania site manager	Daily
Site waste from geotechnical works contaminates surrounding environment.	10 - minor	Animal proof general rubbish bins will be available on drilling site for the duration of the works. Portable toilets to be kept on site for duration of works. General waste and sewage will be disposed of at an approved location by the waste management supplier. It is the responsibility of the Drilling Contractor to ensure that all drilling related tools, equipment and rubbish is removed prior to rehabilitation commencing and that all drill hole collars, plugs or caps are clearly marked and communicated.	4 - insignificant	TBC	Daily – inspection of rubbish collection and site for rubbish.

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Contamination of surrounding land from drilling waste water		install an above ground sump to collect and store waste water. Reuse sump water in preference to carting in water.			
HAZARDOUS SUBSTANCES & CHEMICAL MANAGEMENT <i>see HSEP0921 - Hazardous Chemical Management Procedure</i> <input type="checkbox"/> N/A					
<input checked="" type="checkbox"/> Hazardous substances storage <input checked="" type="checkbox"/> Fire risk <input checked="" type="checkbox"/> Oil / fuel spill to land, air and water <input checked="" type="checkbox"/> Land contamination <input type="checkbox"/> Transport of hazardous substances required <input checked="" type="checkbox"/> Waste					
Pollution of nearby land from release of drill slurry containing drilling additives	10 - minor	Drilling additives will only be used when absolutely required. All additives used will be biodegradable Safety Data Sheets (SDS) must be available onsite. Recommendations on the safe handling and storage of these substances must be followed.	5 - insignificant	TBC	
Contamination of nearby land from accidental spills (e.g. fuel or oils).	12 – moderate	Any hazardous materials (including hydrocarbons) stored onsite must be contained in a bund, away from watercourses, and in accordance with any relevant and applicable legislation, regulations or Australian Standard. Staff must be trained in the use of spill kits and associated equipment. Ensure any fuel or oil spills contained immediately.	6 - minor	TBC	

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		Oil and fuel spill kits adequate for the quantity and type of materials on site will be kept at each site. Any waste from oil spill clean ups will be double bagged, removed from site and disposed of at an appropriately licenced facility.			
Spark or heat from operation of machinery starts fire.	12 - major	Regular inspection of vehicles/machinery for defects likely to start a fire. Ensure separation of fuel supplies from machinery by suitable distance. Ensure vehicles/machinery are not left running unattended. Ensure fire extinguishers are kept on machinery and in vehicles.	6 - minor	TBC	Daily - vehicle and machinery check

STAKEHOLDER ENGAGEMENT*see WMS-FRM-060 Stakeholder Advice Checklist (found within the Works Management System)*

Has WMS-FRM-060 been completed?

☒ Yes ☐ No
If No, please complete

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Have any potential issues been identified?

☐ Yes ☒ No

If Yes, then as per the instructions on the form, please consult with the Engagement Team to confirm what, if any, additional stakeholder consultation should be completed prior, during and post the project.

PROJECT LEARNINGS*Lessons from the project to be completed during project and during the final review.*

Issue	Action/Resolution