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Cleary Amanda

From: Cleary Amanda
Sent: Thursday, 19 September 2013 9:04 AM
To: David Hooke
Subject: Clarrification

Good morning David

I am confused about the leak detection drains in the product salt and waste salt area.

In the information response on page 16 it states that there will be drains in the waste salt cells because of their proximity to the creek, but not for the waste salt because it is located much further away from the creek.

However in the next paragraph it state there will be no leachate drainage system for either the product or waste salt areas (see below).

I am confused as to the difference between leakage of the liner and the production of leachate.
Does it mean that the leak detection is purely to identify if the liner has leaked? and is leachate production in the bottom of the cells unlikely due to the homogeneity of the material?

Can you please provide comment/clarification on this matter.

Thank you

Page 16: Response to Information Request

"leak detection drains are included in the product salt storage area due to the proximity of Stockyard Creek in the unlikely event of leakage from the storage area. Leak detection drains are provided to indicate the presence of leakage from the storage and would enable management of this leakage prior to reaching the creekline as the nearest receiving environment. It is also indicated that justification for exclusion of leak detection could be made if located further away from the creekline, on the basis that the risk of reaching this environment is low, contributed by the very low permeability of natural sequences.

Based on the above, leak detection drainage is not considered necessary for the waste salt disposal for the reason that Stockyard Creek is located at a distance from the area (some 1,300m). Considering the geology of the site and the low permeability of the underlying soil/rock, the likelihood of a leak from the waste salt disposal area reaching Stockyard Creek is extremely low. Further justification is that the disposal area is considerably smaller and of less capacity than the product salt area.

It is noted that neither the waste salt disposal or product salt storage facilities incorporate leachate drainage systems. This is because the salt material in both instances is relatively homogeneous, and due to the coarse particle size, provide a level of permeability that would contribute to drainage of leachate, if required. Under effective operating conditions, the potential for take up of moisture into the salt profile would be minimal, therefore the recovery of leachate would not be required. The principles of mono-cell development, given the homogeneity of the material have been applied in relation to this aspect."

Page 24 of application report

Following excavation, leak detection drains would be constructed across the finished floor at 50 m nominal centres. Drains would be some 300 mm deep and 600 mm wide, and backfilled using aggregate or shredded tyres. The drains would report to a temporary concrete sump located to the northern corner of the cell.

Kind Regards,
Dr Amanda Cleary | Principal Environmental Officer
Department of Environment and Heritage Protection (EHP)

Environmental Services & Regulation Division (ESR) Southern Region

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Please note I only work Tuesdays, Wednesdays and Thursdays.

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Cleary Amanda

From: Cleary Amanda
Sent: Wednesday, 11 September 2013 1:07 PM
To: Spalding Rob; Mackenzie James
Subject: We Kando regulated waste EA application
Attachments: 201309xx draft permit conditions.docx

Hi James and Rob

As previously discussed, please find attached a copy of the proposed draft conditions for We Kando's regulated waste EA application.

I have colour coded the conditions so you can see where they have been taken from and which ones I have proposed. I have also made comments of my own about some of the conditions that I would appreciate your input on, for example placing a couple of conditions on the development permit so they will always exist regardless if the EA is cancelled for some reason in the future.

If you could please provide me with feedback by next Tuesday it would be appreciated.

Kind Regards,
Dr Amanda Cleary | Principal Environmental Officer
Department of Environment and Heritage Protection (EHP)

Environmental Services & Regulation Division (ESR) Southern Region
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Please note I only work Tuesdays, Wednesdays and Thursdays.

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Cleary Amanda

From: Foster Fiona on behalf of ESR - Toowoomba
Sent: Wednesday, 28 August 2013 3:00 PM
To: Mackenzie James; Cleary Amanda
Subject: FW: Final response for ERA 60 for We Kando
Attachments: R04c.pdf

IR response for WeKando. I'll update the tracking spreadsheet and ecotrack timeframes.

Thanks
Fiona

From: David Hooke [mailto:davedump@netxp.com.au]
Sent: Wednesday, 28 August 2013 9:33 AM
To: ESR - Toowoomba
Subject: Final response for ERA 60 for We Kando

Hello
Please find attached our final response and we wish the application to proceed.
Thanks
David Hooke
We kando Pty Ltd
--

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WE KANDO PTY LTD

Engine Road Waste Management Facility

Engine Road, Chinchilla

Response to Information Request

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May 2013

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David Hooke - We Kando Pty Ltd		☑

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Copy __1____ of __1____

PAT NAVIN
Author

ALLAN WATSON
Reviewer

IMPORTANT NOTICE

Please refer to our Conditions of Report

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APPENDICES

Appendix A DEHP Information Request Notice
Appendix B GPS Coordinate Figures A1 & A2
Appendix C Conceptual Closure and Rehabilitation Plan

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1 INTRODUCTION

1.1 Background

We Kando Pty Ltd (We Kando) proposes to expand its resource extraction and waste management facility located at 27150 Warrego Highway, Baking Board (west of Chinchilla), in southern Queensland. The scope of the proposed expansion includes the following elements:

(i) Temporary land-based storage for product salt, with this product derived from locally sited reverse osmosis (RO) plant brine treatment facilities.
(ii) Landfill for secure storage of the waste fraction from the RO plant brine treatment facility (with this material referred to as waste salt.
(iii) Landfill for containment of general waste (putrescible and non-putrescible).

A development application for approval of the proposed product waste storage and landfill disposal of waste salt and general waste was submitted to Department of Environment and Resource Management (DEHP). A key component of the application was an engineering assessment report prepared on behalf of We Kando by ATC Williams Pty Ltd (ATCW). The purpose of this report (ATCW, 2013) was to present details of the proposed expansion, providing engineering details for development of each element, outlining operating methodologies, and addressing stormwater and groundwater protection aspects.

The development application was received by DEHP on the 9 April 2013, and following assessment of this application, issued an Information Request notice, Ref SPDE05423513 (256798). This notice is reproduced in **Appendix A**. Further to the engineering assessment, We Kando has commissioned ATCW to address the DEHP information request, with this report prepared to present the response.

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1.2 Structure of Response

The information request notice (refer **Appendix A**) is broken down into the following parts:

- Part A Product Salt Area
- Part B Waste Salt Area
- Part C Solid Waste Landfill
- Part D Stormwater Management Plan
- Part E Groundwater Management Plan
- Part F Financial Assurance

A response to each of these parts has been prepared and is included herewith, based on the following structure:

Section 2	Responses to Product Salt Information Requests
Section 3	Responses to Waste Salt Information Requests
Section 4	Responses to Solid Waste Information Requests
Section 5	Responses to Stormwater Management Plan Information Requests
Section 6	Responses to Groundwater Management Plan Information Requests
Section 7	Responses to Financial Assurance Information Requests

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All responses have been presented in table form, which reproduces the information request items, with corresponding responses provided. Where necessary, cross referencing to appendices has been included where further information has been prepared.

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2 RESPONSES TO PRODUCT SALT INFORMATION REQUESTS

Table 1
Part A: Product Salt

DEHP Information Request Item	Response
GPS details of the intended disposal area (identified as Stages 1 and 2).	ATCW Report Reference: **Section 6.1**and **Figure 12** The product salt storage area has been designed to accommodate a total capacity of 12 million m^3 over 20 years, although the initial commitment for product salt acceptance is limited to 1.5 million m^3 over 5 years, equivalent to a disposal rate of 300,000m^3/year. This storage air-space will be developed as Stage 1, which is located within Lot 170, near to the other waste management activities. The longer term storage capacity is captured within Stage 2, which is located on Lot 137. Strategically, the layout for Stage 2 will be confirmed during the Stage 1 operation and subject to robust commitments for acceptance of product salt material. To this end, the set out for Stage 1 is currently considered to be definitive, with the set out for Stage 2 considered to be a "maximum likely extent". GPS coordinates (Eastings and Northings) for the proposed footprint area for Stage 1 and for the allocated development area for Stage 2 are provided on **Figure A1** in **Appendix B.**

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?	ATCW Report Reference: **Section 6.3**, with key aspects of the product salt storage area relative to this aspect as follows: • *Product salt will be delivered in loose form by trucks, placed onto the working face, then compacted.* • *Product will be paddock stockpiled at the leading edge of the working face, then pushed down the face to progress the lift.* • *Cover layers would be used in the event that the operation is suspended or rainfall is expected. Intermediate and final cover layers would also be applied as required to isolate completed platform surfaces.* Further to these requirements, to prevent the release of contaminants to land and receiving waters, the following provisions will be made: • Initially salt product will be unloaded within the excavated portion of the product salt cell (i.e. below surrounding natural ground level). Trucks delivering product salt would enter the excavation to unload at the active working face. Any rainfall runoff from the fill platform would therefore be captured within the excavation (refer Stormwater Management Plan, **Appendix E** of ATCW Report). The excavation will be protected from stormwater inflow using stormwater diversion bunds. • At all times, and particularly as the fill platform rises above the natural ground level surrounding the storage area: o the surface of the fill platform will be graded away from the active/working face, and with the use of diversion bunds as required to direct stormwater runoff from the platform into a dedicated containment area either within the cell excavation or within a stormwater control pond (sedimentation pond) formed outside the cell footprint. o trucks delivering product salt would unload within the active working face area, which would be located within stormwater diversion bunds. o placement of daily capping as required, and progressive construction of intermediate and final capping over completed salt product lift surfaces would isolate the product salt material, therefore preventing contact with stormwater other than within the active face area. Stormwater from capped surfaces would be directed off-site, and would be subject to release stormwater monitoring to demonstrate appropriate water quality (refer Stormwater Management Plan, **Appendix E** of the ATCW Report). • Any salt impacted stormwater, captured within the bunded active face area, would be transferred by pumping for storage and evaporation within Pond 1 or tankered offsite for RO treatment. An alternative is to absorb the water into the salt storage, although this would be adopted only as a short term measure.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
	It is emphasised that the above practices are critical to the operation of the storage facility to limit the exposure of product salt surfaces, thereby limiting the quantities of contact stormwater to be handled and treated, and to minimise long term leachate generation potential. It is also emphasised that the principles adopted for operation of the product salt area are based on solid waste landfill operations.
What is the life of the Geomembrane used to line the area to store the product salt?	Estimation of the service life or longevity of geomembrane liners in solid waste landfills, and other applications, is addressed in numerous technical papers, journals and texts. The most up-to-date technical advice is that the service life of geomembrane depends on key factors including temperature, chemical constituents of leachate, UV exposure and stresses in the landfill caused by construction, operational activities and settlement/movement of the contained medium. Lifespans of greater than 400 years are expected in a solid waste landfill environment, being controlled principally by leachate quality and damage experienced during operational periods. In a salt product storage application, greater lifespans can be expected given that the material is homogenous and the leachate or liquor comprises basically saline water, which has no known effects on geomembrane integrity. In summary, due to the nature of the product salt, the nature of the underlying general fill layer the lifespan of geomembrane placed as part of the liner system would be in excess of 400 years and may never degrade to the point of failure (or at least to loss of integrity).
Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?	As mentioned above, the literature provides an indication of the longevity of geomembranes. To maintain this lifespan, carbon black is used as an additive to geomembrane manufacture to minimise the impact on UV, with degradation only expected after significant periods of exposure (i.e. multiple years). Testing has shown that even for periods of exposure of up to 10 years, the strength and performance of geomembrane is not likely to decrease significantly. The product salt storage area will be developed in stages, with the objective being to cover the floor of each cell as quickly as possible to form a platform surface that can be covered, with stormwater runoff to be diverted off-site. As a result, geomembrane to be placed in each cell of the salt product area will be covered promptly to limit UV exposure periods. The maximum expected period will be 3 months. For this exposure period, it is expected that no degradation of geomembrane would occur. As detailed above, the literature indicates that there are no known effects of salt or saline water on the integrity of geomembrane.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
What constitutes a leak/failure of the Cell? How is this measured and how often is it measured?	Liner System A leak through the cell can be defined as a condition whereby a wetting front develops beyond the limits of the liner to an extent that a rise in moisture content and/or contaminant increase is detected. Typically, such detection would occur visually through visible seepage, wetting or salt-staining, through the leak detection system or through groundwater monitoring. A failure of a cell associated with leakage would be deemed to occur when the leakage causes or threatens to cause a detrimental impact on the receiving environment. To this end, expression of saline leachate from the containment area into a leak detection system would not necessarily constitute a failure, where recovery of leachate from the detection system could be maintained without the threat of migration away from the cell extents into the receiving environment. The leak detection system comprising leak detection drains traversing the floor of the containment area will be installed to capture any moisture loss through leakage. The layout of this system is such that migration of leachate from the containment area would preferentially flow to leakage drains across the subgrade - liner interface. This would be encouraged by the very low permeability of natural sequences. Any liquids captured within the drains would drain to a leak detection sump. This sump would be monitored in conjunction with the groundwater monitoring program, and if present, would be sampled and analysed for salt impact. Monitoring would be undertaken six-monthly. External Landform Surfaces A leak or failure to the external surfaces of the product salt landform would be identified during normal operations and inspections, being indicated by a seepage expression or a wetting front (supported by surface water sampling and analysis). An action plan would be developed immediately to manage the seepage area and for repair. As a minimum, bunds would be constructed to capture any leakage flow and to transfer this liquor to the contact water containment area or Pond 1.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 22 states "leak detection drains are deemed to be necessary due to the proximity of Stockyard Creek and given that no provision for internal drainage has been made, relying on the integrity of the liner for containment." What contingency plans are in place if the leak detection drains indicate that there is a leak or failure?	The context of the comment with respect to proximity of Stockyard Creek is that in the unlikely event of leakage from the storage area, leak detection drains would indicate the presence of leakage from the storage and would enable management of this leakage prior to reaching the creekline as the nearest receiving environment. Such detection would prompt the need for further action such as monitoring, management or remedial works. It is noted that justification for exclusion of leak detection could be made if located further away from the creekline, on the basis that the risk of reaching this environment is low, contributed by the very low permeability of natural sequences. The action/contingency plan to be implemented in the event of leak detection would include the following, in general order of priority, based on severity of impact: • Equip the leak detection sump with pumps to remove liquor. • Install vadose zone monitoring around potentially affected areas of the area to detect (if any) unsaturated zone migration, attempting to isolate the leak location. • Install groundwater monitoring bores in closer proximity to the affected areas to assess any deeper migration. • Undertake remote sensing or install shallow wells within the salt profile to measure the leachate level, identifying any drawdown to indicate leakage location. • Undertake remedial works as required, which may include removal of sections of salt (being limited in total depth) or apply grout to affected areas, or other techniques as deemed necessary. Note that such actions would only be pursued if gross failure of the containment system, with associated material harm to the environment, is encountered.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 23 states that contact stormwater will either be recirculated through the product stockpile or transferred for storage and evaporation in the brine pond (Pond 1) located in Lot 83 LY566. Furthermore, Figure 12 shows stage 1 and 2 product storage area as having no connection to the existing Pond 1. Therefore what is the estimated amount of contaminated stormwater anticipated from the area? If it is taken to Pond 1 demonstrate that Pond 1 will be adequate to contain this water. Furthermore would the inclusion of this source of water result in Pond 1 being reclassified as a high hazard dam (see attached guideline Manual for assessing hazard categories and hydraulic performance for dams.)?	ATCW Report Reference: **Appendix E, Section 3.3,** with key aspects of contact stormwater management as follows: • *Contact water will be managed by bunding above the active working face to divert stormwater from flowing onto the active filling area, and by bunding at the toe of the active working face to capture contact water running off the face.* • *Management of contact water will be by recirculation through the product stockpile, transferred for storage within and evaporation from Pond 1, or transferred for storage within separate tanks and then tankered offsite for RO treatment* The primary strategy with respect to contact stormwater management will be to reduce the quantity of liquor generated. This will require bunding as described above, as well as the use of daily, intermediate and final capping to isolate the product salt platform from stormwater contact. Under effective operating conditions, contact water management would be enhanced by: • Keeping the active working face to a minimum area. Typically the face will measure some 30m wide x 30m deep, an area of some 900m^2; • Application of daily cover across the working face (rather than just recently formed platform surfaces) when rainfall is imminent; • Maintaining systems to ensure that any accumulated contact water within this area can be transferred rapidly, ensuring the availability of access to the face; and • Controlling the acceptance of salt product during wet weather periods, thus limiting the exposure of product salt surfaces (in conjunction with daily cover as described above). Under these conditions, it is not feasible to definitely estimate the quantity of contact water that is likely be generated. Optimum operating conditions will limit the quantity, while poor quality operations may result in substantial quantities of contact water. Nonetheless, the effective use of cover and capping layers will be the key, in conjunction with stormwater bunding around the working face.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
	Quantities of contact water that are generated will be managed as follows: • Small incidental quantities will remain within the bunded area, and will likely infiltrate directly into the salt mass, or can be absorbed into future loads of product salt. • Moderate quantities of contact stormwater (indicated by a shallow depth of inundation at the toe of the active face) would be pumped to a series of tanks located adjacent to the cell. A total tank capacity of 100kL would be maintained, equivalent to total rainfall in excess of 100mm over the active face. • Larger quantities of contact stormwater (likely occurring where the face remains exposed subject to a prolonged rainfall period), would be transferred to Pond 1. A prolonged rainfall event under these circumstances would be equivalent to a 10 year ARI, 24 hour duration event, being equivalent to 4.95mm/hour (118.8mm). A maximum available storage capacity within Pond 1 of 0.106 ML would be necessary under these conditions, which represents some 0.53 % of the available 20ML capacity of the pond (or an equivalent depth of approximately 17.5mm). To facilitate this transfer, connection between the storage area to Pond 1 will be by pump and pipe connections that would be permanently in place, and would be periodically augmented as the phases of filling of product salt advances. As a contingency to the above contact water management approach, Site Stormwater from the developing landform will report to the unfilled portions of the storage area excavation or sedimentation ponds (refer refer Stormwater Management Plan, **Appendix E** of the ATCW Report). The containment criteria for site stormwater containment is a 10 year ARI, 24 hour duration event, effective for the total (effective) footprint of the product salt storage area. This includes the active working face, therefore failure to contain the face area will result in discharge of contact stormwater to the Site Stormwater storage area. This provides for containment of this water, with an opportunity for assessment of water quality at this location, with treatment and/or release to be initiated, as required. Based on the above, there is no necessity to review the status of the Pond 1 in relation to the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (DEHP, 2012), on the basis that: (i) The accepted current use for containment of brine (although recognising that this use has discontinued) (ii) The capacity of the pond is less than 25ML, being the trigger level for saline (salinity based) liquor.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 26 states that stormwater runoff from the exposed product salt and "bleed" liquor from the stockpile will be stored in containment areas and therefore in conflict with page 23. Please provide clarification, and further details including and not limited to this area, for example is the containment area lined, what is the storage capacity of this area is, and what is the response once the area is at capacity.	As clarification: • Page 23 refers to how the contact stormwater (as well as "bleed" liquor) will be managed once captured • Page 26 refers to how the contact stormwater will be captured within the cell area. • Page 27 outlines containment criteria for contact stormwater within the cell area. These aspects are consistent with the discussion related to the above items. Further clarification, with reference to **Section 6.3** of the ATCW report and the associated **Figure 11**, is as follows: • Conceptually contact water containment areas on **Figure 11** for the product salt disposal area have been shown at the toe of the landfill batter within the excavation. This does not necessarily reflect the actual location, merely indicating that a containment area is required. Typically, the containment area would be formed around the active face as described under previous items. • The potential for "bleed" liquor expressing from the product salt landform has been identified, with this stream being captured and managed as contact stormwater. This bleed will essentially be leachate that has accumulated within the salt profile, and will only occur where a sufficient head of leachate exists around exposed salt surfaces (e.g. around the working face). Under normal circumstances, exposed surfaces will be capped (daily, intermediate or final), therefore the likelihood of bleed water expression is low. Nonetheless, where this occurs, local sumps will be formed for pumped extraction, or drains established to discharge to the contact water containment area. • Re-emphasising that subject to effective stormwater management, the quantities of contact stormwater and the potential for bleed water expression (by minimising stormwater infiltration) should remain low. Any contact stormwater/bleed water that is captured will be managed as described in previous items, by absorbing into the salt profile, by transferring to onsite tanks then off site for RO treatment, or by storage for evaporation within Pond 1.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Stage 1 and Stage 2 both have a 50 m buffer from Stockyard Creek (Figure 12: final landform plan). However page 8 states that a flood buffer of 100m has been adopted for the length of the Creek and therefore a constraint of the project. Please provide clarification as to why the buffer should not be 100m as proposed, and confirmation that there is no potential for the Creek to inundate the stockpiles and subsequently impact the Creek in times of flood. Furthermore hydraulic modelling for various flood scenarios including 1 in 10, 1 in 20, 1 in 50, and 1 in 100 years, as the Creek flows into Charleys Creek, through the township of Chinchilla and then into the Condamine River.	The flood buffer referred to in the ATCW report is referring to the total buffer width along the length of Stockyard Creek, i.e. 50m either side of the creek centreline. To this end, a 100m buffer has been provided. With reference to **Section 3.3** of the ATCW report: • It has been estimated that an inundation depth along the creekline subject to a 1 in 100 (Q_{100}) flood event would likely result; • A peak flood level of RL327m at the western boundary of the site and RL325m at the southern boundary has also been estimated. (This represents a flood height of some 0.5 to 1.0m above the creek banks.) The length of Stockyard Creek within the site, over which these flood levels exist is some 2.2km, with natural topography falling over this creek length around 2m. • As shown on **Figure 15**, a perimeter bund around the product salt storage area is proposed, with a minimum height of 1.5 m, and will be constructed a minimum of 50m from the creekline. The crest of the perimeter bund scales to a level of around RL328.5m, providing a flood freeboard at the location of the storage area of around 1.0m. The prompt for additional flood analysis for Stockyard Creek is acknowledged, presumably with a view to demonstrate a non-worsening condition as a result of the product salt storage development. It is emphasised however that the intent of the siting and design layout development for the storage area was to "ensure that development did not encroach within the expected Q_{100} flooding extent". The analyses as described above and outlined in **Section 3.3** of the ATCW report are consistent with this approach, with the development footprint being restricted with site areas existing above a natural surface level of RL327m. Accordingly, any flood modelling for the Q_{100} event and any smaller events will indicate that no impact will be generated as a result of the development. There is therefore no basis for undertaking additional modelling, other than to improve the definition or accuracy of the current analyses.
How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?	A PE geomembrane is proposed for lining the final product salt landform (refer **Figure 15** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?	A PE geomembrane is proposed for lining the final product salt landform (refer **Figure 15** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension.
Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment?	Reference is made to the Conceptual Closure and Rehabilitation Plan for the storage/disposal facilities included as **Appendix C** to this response. A summary of proposed monitoring is provided as follows: • Surface water monitoring as outlined in the Stormwater Management Plan (**Appendix E** of the ATCW report), comprising: o Receiving environment monitoring, within Stockyard Creek, at upstream and downstream locations, demonstrating that no deterioration in water quality as a result of the development is occurring. Monitoring at these sites would be taken quarterly. o Release water monitoring of discharge from the cell excavation or the sedimentation/stormwater control pond (reporting to the environment), demonstrating that defined short term and long term water quality objectives (trigger levels) are being achieved. Monitoring at the current release site would be undertaken at release events, with a minimum frequency of once per quarter during which release occurs. • Groundwater monitoring, as outlined in the Groundwater Monitoring Plan (**Appendix F** of the ATCW report), comprising: o Monitoring from groundwater monitoring bores located both upgradient and downsgradient from the product salt storage area. o Monitoring to be undertaken six-monthly, with analysis of monitoring data undertaken to demonstrate that statistically significant adverse changes at detection sites over background sites does not occur. Surface water and groundwater monitoring carried out in accordance with the above would continue for a period of 4 years following decommissioning and closure of the facility, after which time the environmental performance of the facility would be reviewed, with a view to reducing the monitoring scope and frequency.

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Table 1
Part A: Product Salt (Cont'd)

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DEHP Information Request Item	Response
Page 24 states that the design of the landform and capping configuration is temporary with product salt to be recovered. What is the estimated time that this material would be stored? And if it is not recovered, what is the estimated life of containment and temporary capping.	The receipt of product salt is not expected to commence for approximately 2 years from receipt of development approvals (nominally after 2015). Ownership of the product once received will remain with We Kando, with the intention to identify a viable use/market for the product. Preliminary investigations into possible uses and markets have already commenced. The principle constraint at present is transport, with potential uses in a regional sense currently being available. It is emphasised that the final capping profile is not intended for short term/temporary use, and as such design has assumed conservatively that the capping will be in place for the long term. To complement this design approach, a geomembrane has been incorporated into the capping profile, and as described above, possesses an effective operational life in excess of 400 years.
Demonstrate than an adequate contingency plan is in place if the proposed development plan, that is to reclaim the salt, does not deliver the expected outcomes.	Contingency has been built into the design of the product salt storage facility. This contingency includes the following: • Use of PE geomembrane, possessing an extended life, in the liner and capping systems. • Application of effective operating methods (consistent with a solid waste landfill operation) as a means of reducing water/leachate management issues, as a particular concern. • Adoption of a landform that will maintain geotechnical stability in the long term (comprising batter slopes not steeper than 4[H] to 1[V]). • Placement of a significant thickness of growth medium to establish and maintain an effective vegetation growth, which will be limited to grasses. Ultimately, the landform developed will be consistent with the other waste disposal landforms developed within the site. Given the homogeneity of the salt product, the expected stability of the salt profile (not being subject to settlement or displacement) and the ability to establish a robust capping profile, the current product salt storage is considered to possess sufficient design redundancy to maintain long term integrity.

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3 RESPONSES TO WASTE SALT INFORMATION REQUESTS

Table 2
Part B: Waste Salt

Information Request	Response
GPS details of the intended disposal area.	GPS coordinates (Eastings and Northings) for the proposed footprint area for Waste Salt disposal facility are provided on **Figure A1** in **Appendix B.**
Page 28 states that the estimated footprint of the waste salt disposal area is 20ha, however, Figure 12: final landform plan, shows that the waste salt disposal area considerably smaller in size compared to the proposed 14.6ha product salt storage area. Please review disposal and storage area and confirm each area size.	The footprint of the proposed waste salt disposal area is 6.13ha. This area is shown on **Figure A1** in **Appendix A,** with GPS coordinates (Eastings and Northings) reflecting the disposal area extent also being provided.

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Table 2
Part B: Waste Salt (Cont')

Information Request	Response
etails on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?	Similar to the product area description as outlined in **Section 2.0**, the key aspects of the waste salt storage area relative to potential contamination to land and water (refer **Section 7.3** of ATCW report) are as follows: • *Waste salt will be delivered in loose form by trucks, placed onto the working face, then compacted.* • *Waste salt will be paddock stockpiled at the leading edge of the working face, then pushed down the face to progress the lift.* • *Cover layers would be used in the event that the operation is suspended or rainfall is expected. Intermediate and final cover layers would also be applied as required to isolate completed platform surfaces.* Further to these requirements, to prevent the release of contaminants to land and receiving waters, the following provisions will be made: • Initially waste salt will be unloaded within the excavated portion of the disposal cell (i.e. below surrounding natural ground level). Trucks delivering waste salt would enter the excavation to unload at the active working face. Any rainfall runoff from the fill platform would therefore be captured within the excavation (refer Stormwater Management Plan, **Appendix E** of ATCW Report). The excavation will be protected from stormwater inflow using stormwater diversion bunds. • At all times, and particularly as the waste salt platform rises above the natural ground level surrounding the disposal area: o the surface of the waste salt platform will be graded away from the active/working face, and with the use of diversion bunds as required to direct stormwater runoff from the platform into a dedicated containment area either within the cell excavation or within a stormwater control pond (sedimentation pond) formed outside the cell footprint. o trucks delivering waste salt would unload within the active working face area, which would be located within stormwater diversion bunds. o placement of daily capping as required, and progressive construction of intermediate and final capping over completed waste salt lift surfaces would isolate the product salt material, therefore preventing contact with stormwater, other than within the active face area. Stormwater from capped surfaces would be directed off-site, and would be subject to release stormwater monitoring to demonstrate appropriate water quality (refer **Appendix E**) • Any salt impacted stormwater, captured within the bunded active face area, would be transferred by pumping for storage and evaporation within Pond 1 or tankered offsite for RO treatment. An alternative is to absorb the water into the salt storage, although this would be adopted only as a short term measure.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
	It is emphasised that the above practices are critical to the operation of the disposal facility to limit the exposure of waste salt surfaces, thereby limiting the quantities of contact stormwater to be handled and treated and to minimise long term leachate generation potential. It is also emphasised that the principles adopted for operation of the product salt area are based on solid waste landfill operations.
Why is the design of the salt disposal area different to the product salt area? That is why is there no provision for leak detection drains, drainage aggregate etc?	As outlined in **Section 2.0**, leak detection drains are included in the product salt storage area due to the proximity of Stockyard Creek in the unlikely event of leakage from the storage area. Leak detection drains are provided to indicate the presence of leakage from the storage and would enable management of this leakage prior to reaching the creekline as the nearest receiving environment. It is also indicated that justification for exclusion of leak detection could be made if located further away from the creekline, on the basis that the risk of reaching this environment is low, contributed by the very low permeability of natural sequences. Based on the above, leak detection drainage is not considered necessary for the waste salt disposal for the reason that Stockyard Creek is located at a distance from the area (some 1,300m). Considering the geology of the site and the low permeability of the underlying soil/rock, the likelihood of a leak from the waste salt disposal area reaching Stockyard Creek is extremely low. Further justification is that the disposal area is considerably smaller and of less capacity than the product salt area. It is noted that neither the waste salt disposal or product salt storage facilities incorporate leachate drainage systems. This is because the salt material in both instances is relatively homogeneous, and due to the coarse particle size, provide a level of permeability that would contribute to drainage of leachate, if required. Under effective operating conditions, the potential for take up of moisture into the salt profile would be minimal, therefore the recovery of leachate would not be required. The principles of mono-cell development, given the homogeneity of the material have been applied in relation to this aspect.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
What is the life of the geomembrane?	Refer **Section 2.0** under product salt storage development
Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?	Refer **Section 2.0** under product salt storage development
What constitutes a leak/failure of the Cell? How is this measured and how often is it measured?	Liner System A leak through the cell can be defined as a condition whereby a wetting front develops beyond the limits of the liner to an extent that a rise in moisture content and/or contaminant increase is detected. Typically, such detection would occur visually through visible seepage, wetting or salt-staining or through groundwater monitoring. Conversely, a failure of a cell associated with leakage would be deemed to occur when the leakage causes or threatens to cause a detrimental impact on the receiving environment. The primary mechanism for measuring the potential for a leak/failure of the liner system will be by groundwater monitoring, for assessment of salt impact of the uppermost groundwater aquifer, through sampling and monitoring on a six-monthly basis. External Landform Surfaces A leak or failure to the external surfaces of the product salt landform would be identified during normal operations and inspections, being indicated by a seepage expression or a wetting front (supported by surface water sampling and analysis). An action plan would be developed immediately to manage the seepage area and for repair. As a minimum, bunds would be constructed to capture any leakage flow and to transfer this liquor to the contact water containment area or Pond 1.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
Where the contact stormwater is stored, is this area lined? What is the estimated amount of contaminated stormwater anticipated and demonstrate that Pond 1 will be adequate to contain this water if it is pumped to this location. Furthermore would the inclusion of this source of water result in Pond 1 (Lot 83 LY566) being classes as high hazard (see attached guideline Manual for assessing hazard categories and hydraulic performance for dams.)?	ATCW Report Reference: **Appendix E, Section 3.3,** with key aspects of contact stormwater management as follows: • *Contact water will be managed by bunding above the active working face to divert stormwater from flowing onto the active filling area, and by bunding at the toe of the active working face to capture contact water running off the face.* • *Management of contact water will be by recirculation through the waste salt profile, transferred for storage within and evaporation from Pond 1, or transferred for storage within separate tanks and then tankered offsite for RO treatment* The primary strategy with respect to contact stormwater management will be to reduce the quantity of liquor generated. This will require bunding as described above, as well as the use of daily, intermediate and final capping to isolate the waste salt platform from stormwater contact. Under effective operating conditions, contact water management would be enhanced by: • Keeping the active working face to a minimum area. Typically the face will measure some 30m wide x 30m deep, an area of some 900m^2; • Application of daily cover across the working face (rather than just recently formed platform surfaces) when rainfall is imminent; • Maintaining systems to ensure that any accumulated contact water within this area can be transferred rapidly, ensuring the availability of access to the face; and • Controlling the acceptance of waste salt during wet weather periods, thus limiting the exposure of waste salt surfaces (in conjunction with daily capping as described above). Under these conditions, it is not feasible to definitely estimate the quantity of contact water that is likely be generated. Optimum operating conditions will limit the quantity, while poor quality operations may result in substantial quantities of contact water. Nonetheless, the effective use of capping layers will be the key, in conjunction with stormwater bunding around the working face.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
	Quantities of contact water that are generated will be managed as follows: • Small incidental quantities will remain within the bunded area, and will likely infiltrate directly into the waste salt mass, or can be absorbed into future loads of waste salt. • Moderate quantities of contact stormwater (indicated by a shallow depth of inundation at the toe of the active face) would be pumped to a series of tanks located adjacent to the cell. A total tank capacity of 100kL would be maintained, equivalent to total rainfall in excess of 100mm over the active face. • Larger quantities of contact stormwater (likely occurring where the face remains exposed subject to a prolonged rainfall period), would be transferred to Pond 1. A prolonged rainfall event under these circumstances would be equivalent to a 10 year ARI, 24 hour duration event, being equivalent to 4.95mm/hour (118.8mm). A maximum available storage capacity within Pond 1 of 0.106 ML would be necessary under these conditions, which represents some 0.53 % of the available 20ML capacity of the pond (or an equivalent depth of approximately 17.5mm. (Coupled with the product salt area, contact water storage would constitute some 1.6% of the total pond storage, with the remaining storage within the pond allocated for site stormwater storage - refer **Appendix E** of ATCW report.) To facilitate this transfer, connection between the storage area to Pond 1 will be by pump and pipe connections that would be permanently in place, and would be periodically augmented as the phases of filling of product salt advances. It is noted that, conceptually, contact water containment areas on **Figure 9** for the waste salt disposal area have been shown at the toe of the landfill batter within the excavation. This does not necessarily reflect the actual location, merely indicating that a containment area is required. Typically, the containment area would be formed around the active face as described under previous items. As a contingency to the above contact water management approach, Site Stormwater from the developing landform will report to the unfilled portions of the storage area excavation or Pond 1 (refer **Appendix E**). The containment criteria for site stormwater containment is a 10 year ARI, 24 hour duration event, effective for the total (effective) footprint of the waste salt storage area. This includes the active working face, therefore failure to contain the face area will result in discharge of contact stormwater to the site stormwater storage area. This provides for containment of this water, with an opportunity for assessment of water quality at this location, with treatment and/or release to be initiated, as required. Based on the above, there is no necessity to review the status of the Pond 1 in relation to the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (DEHP, 2012), on the basis that: • The accepted current use for containment of brine (although recognising that this use has discontinued) • The capacity of the pond is less than 25ML, being the trigger level for saline (salinity based) liquor.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
How will salt levels as a result of capillary rise in the capping be managed and what impact would it have on revegetation and stormwater runoff.	A PE geomembrane is proposed for lining the final waste salt landform (refer **Figure 13** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension. IN addition to the use of a geomembrane, it is proposed that shredded tyres be placed over the geomembrane surface to provide a drainage layer beneath the soil growth medium profile. Even in the event that the geomembrane failed and capillary rise from the salt profile into the capping layer occurred, this shredded tyre layer would prevent the upward rise into the growth medium.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment as a result of this activity?	Reference is made to the Conceptual Closure and Rehabilitation Plan for the storage/disposal facilities included as **Appendix A** to this response. A summary of proposed monitoring is provided as follows: • Surface water monitoring as outlined in the Stormwater Management Plan (**Appendix E** of the ATCW report), comprising: o Receiving environment monitoring, within Stockyard Creek, at upstream and downstream locations, demonstrating that no deterioration in water quality as a result of any part of the development (including the waste salt disposal area, solid waste landfill and product salt storage area) is occurring. Monitoring at these sites would be taken quarterly o Release water monitoring of discharge from the cell excavation of from Pond 1 (reporting to the environment), demonstrating that defined short term and long term water quality objectives (trigger levels) are being achieved. Monitoring at the current release site would be undertaken at release events, with a minimum frequency of once per quarter during which release occurs. • Groundwater monitoring, as outlined in the Groundwater Monitoring Plan (**Appendix F** of the ATCW report), comprising: o Monitoring from groundwater monitoring bores located both upgradient and downsgradient from the waste salt disposal area. o Monitoring to be undertaken six-monthly, with analysis of monitoring data undertaken to demonstrate that statistically significant adverse changes at detection sites over background sites do not occur Surface water and groundwater monitoring carried out in accordance with the above would continue for a period of 4 years following decommissioning and closure of the facility, after which time the environmental performance of the facility would be reviewed, with a view to reducing the monitoring scope and frequency.

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4 RESPONSES TO SOLID WASTE INFORMATION REQUESTS

Table 3
Part C: Solid Waste

Information Request	Response
GPS details of the intended disposal area. Total area size should also be provided.	The footprint of the proposed Solid Waste Landfill is 9.4ha. This area is shown on **Figure A1** in **Appendix B**, with GPS coordinates (Eastings and Northings) reflecting the disposal area extent also being provided.
When leachate is detected, how often will it be analysed and what measures will be taken if the leachate does not meet the allowable leaching contaminant levels listed in Appendix D: waste acceptance criteria	A small quantity of leachate is expected to be generated within the landfill. Leachate generation would be inhibited given the relatively dry climate of the site (compared to coastal Queensland), as well as the landfill operations approach. The key aspects of landfill operation will be waste placement and compaction and stormwater management, to reduce the opportunity for stormwater to be absorbed into the waste profile. Sampling of leachate (if available) will occur from the leachate well on a six-monthly basis. Monitoring will occur in relation to the groundwater monitoring suite (refer Appendix F of the ATCW report). It is noted that this monitoring has been omitted from the monitoring descriptions for the solid waste landfill, but will be included under operational conditions. Leachate analysis will not be assessed against the allowable leaching contaminant levels list in Appendix D of the ATCW report. These contaminant levels relate to the acceptance of waste into the landfill and not levels contained within leachate recovered from the landfill, to the extent that if the source or type of waste is unknown, the waste material will be tested and assessed in accordance with the contaminants listed in Appendix D (in accordance with DEHP (2012), *Guideline - Landfill Siting, Design, Operation and Rehabilitation - ERA 60 - Waste Disposal*). The purpose of leachate monitoring will be to routinely assess any differences from event to event, as an indicator of the stage of waste degradation, and as a basis to benchmark any anomalies in either surface water or groundwater monitoring results (as a means of excluding landfill impact as a cause of these anomalies). Furthermore, the leachate quality results will be used to assess suitability for storage in Ponds 2 and 3 on Lot 170, for disposal through evaporation.

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Table 3
Part C: Solid Waste (Cont'd)

Information Request	Response
Is Pond 2 and 3 located on lot 170 LY481 authorised to accept landfill leachate? If not what measures will be taken to ensure that leachate is suitably managed?	The small amount of leachate that is expected to be generated and recovered from the solid waste landfill will likely be high in organics, salts and particularly ammonia. These constituents are also likely to be dominant in raw and primary treated effluent that is currently contained within Ponds 2 and 3 located on Lot 170. As outlined in Section 8.3.4.1 of the ATCW report, additional sources for leachate disposal exist, including feed for the on-site composting/soil conditioning process or tankering off-site for licenced disposal. Although not indicated in the ATCW report, recirculation of leachate into the waste mass also exists as an option. This method of disposal benefits the microbial processes within the landfill and aids in the breakdown and ultimate stabilisation of the waste within the landfill. The moisture addition can also benefit the compaction process, particularly for dry waste. The capacity for recirculation is however limited, being controlled by the field capacity of the waste material. Recirculation would only occur to the extent that capacity for take-up exists, without generating further leachate quantities. The adopted approach for leachate management will vary over time, subject to availability of each of the above options. The primary fall-back position will be off-site tankering to a licenced disposal facility.

RTI DL RELEASE - END

5 RESPONSES TO STORMWATER MANAGEMENT PLAN INFORMATION REQUESTS

Table 4
Part D: Stormwater Management Plan (SWMP) - Appendix E

Information Request	Response
Pages 2 and 3 states all site stormwater would report to the control pond prior to discharge through a site discharge location at Stockyard Creek, and that it would be undertaken subject to achieving appropriate release water quality conditions. *Please provide the following information:*	
Details under what conditions stormwater would be released, for example in times of low? If so what would this rate be?	Site stormwater management (refer Stormwater Management Plan, **Appendix E** of ATCW report) indicates the following in relation to site stormwater management: (i) Site Stormwater comprises stormwater runoff derived from all unstabilised/bare earth surfaces within each of the activity areas. Site stormwater is typically characterised by elevated suspended solids, with management by sediment removal practices. (ii) Cell excavations and sedimentation /stormwater control ponds would be used for treatment of site stormwater prior to release. (iii) The management plan dictates that release of site stormwater to Stockyard Creek would only occur once appropriate release water quality conditions are met. The general rationale adopted for stormwater releases would be to batch, treat and discharge, ensuring appropriate water quality conditions at the receiving environment. It would also be necessary to ensure that there is sufficient capacity to capture site stormwater from the following storm event. The volumes and rate of discharge of release would therefore be based upon a number of factors, including the storm intensity and duration, volume of site stormwater runoff captured in each of the site stormwater containment areas and the stormwater quality at the point of capture. The minimum criteria to be maintained for site stormwater management is to provide storages equivalent to a 1 in 10 year ARI, 24 hour duration event, effective over the bare earth or erodible exposure. There is no expectation that release would occur during any or a defined flow event in Stockyard Creek. The only restriction to releases would be the quality of the release water (being subject to release conditions) and the quality of receiving waters (demonstrating that the release has not impacted on receiving water quality). Monitoring requirements are outlined in the Stormwater Management Plan. Regardless of the above, release will be controlled to the extent that none of the following is caused: I. Re-suspension of particles; or II. Erosion of the banks or bed of Stockyard Creek; or III. Landscape damage; or IV. Vegetation damage.

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Table 4
Part D: Stormwater Management Plan (SWMP) - Appendix E (Cont'd)

Information Request	Response
GPS locations of discharge and monitoring points	GPS coordinates (Eastings and Northings) for the proposed sedimentation/stormwater control ponds associated with the Product Salt Storage, Waste Salt Disposal and Solid Waste Landfill are provided on **Figure A2** in **Appendix B**. It is noted however that specific release locations cannot be defined at this time, subject to detailed design of ponds. Also, defined release locations from cell excavations, prior to construction of ponds have not yet been confirmed.
Whilst the SWMP lists the long and short term water quality objectives, it does not provide details on what the maximum stormwater quality should be to achieve these objectives.	
What is the water quality limits proposed in order to achieve the long and short term water quality objectives stated on page 12 of the SWMP?	The long term and short term water quality objectives (WQOs) listed in **Section 5.3.1** of the Stormwater Management Plan (**Appendix E** of the ATCW report) are intended to exist as limits for release from site stormwater containment areas. The application of these WQO's will be as follows: • short term WQO's must be achieved to enable release from the containment area (with the key parameter being suspended solids), with stormwater to be held and treated until compliance with these WQO's is achieved; and • long term WQO's are to be adopted as performance objectives for release water, and where not achieved, corrective actions related to site operations and stormwater management are to be carried out, with a view to achieving these objectives in the long term. From a regulatory perspective, short term WQO's would be applied immediately, whilst long term WQO's would be applied over an extended period.
What measure will be taken if these release limits or water quality objectives are breached?	Refer above

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6 RESPONSES TO GROUNDWATER MANAGEMENT PLAN INFORMATION REQUESTS

Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F

Information Request	Response
Location of the proposed bore monitoring wells and 3 existing bores are located on site are provided in Figure F01. Please provide the following information:	
Existing data that has been collected pertaining to boreholes labelled BH1, BH2 and BH3 on Figure F01	BH1, BH2 and BH3 were installed in 2011. The nominal depths of these bores was some 12m, intersecting weathered basement. No groundwater was intersected the time of construction, and no recovery of groundwater into the bores has occurred since. As a result, no groundwater samples have been recovered.
Identify if there are any nearby bore wells off site that could be utilised to obtain background water quality data for the site.	No registered groundwater bores are located proximal (within a distance of 5km) from the subject site.
GPS locations of the monitoring points	GPS coordinates (Eastings and Northings) for proposed groundwater monitoring bores as nominated in **Appendix F** of the ATCW report are provided on **Figure A2** in **Appendix B.**

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Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F (Cont'd)

Information Request	Response
Page 11 states that the administering authority will be notified when potential environmental harm exists, but only when there has been a sequence of contaminant of potential concern. Please provide information on what trigger values you will consider as being a potential concern.	Analysis of groundwater quality data would be maintained as a minimum, to fulfil DA requirements by undertaking data analysis and reporting in accordance with DEHP expectations, providing a reporting system that identifies potential parameters of concern as well as groundwater quality exceedances. To fulfil these requirements, an approach comprising robust analysis to ensure all potential landfill impacts are identified with any unrelated impacts excluded/isolated. As a basis for analysis, the DEHP Guideline for *Recording, Interpretation and Analysis of Monitoring Results ERA 60* and Geoscience Australia - *Groundwater Sampling and Analysis Field Guide (2009)* would be applied. An example of an appropriate method of groundwater quality data analysis, developed between ATCW (formerly Allan Watson Associates) and DEHP for the former Marodchy Shire landfills is provided below: • *Early Warning Indicators* Comparison between median groundwater quality measured in all bores located hydraulically downgradient from the facility, against the 80th percentile groundwater quality measured in bores at nominated background sites. 80th percentile (background) values are referred to as *trigger levels.* • *Groundwater Quality Limits* Comparison between median groundwater quality measured in bores nominated as "bores of compliance" for the facility against the following *Groundwater Quality Limits* (determined as indicator parameters for that landfill facility) determined from groundwater quality measured in bores at nominated background sites, as follows: Ammonia: 120% of highest value Manganese: 120% of highest value pH: 0.5 pH units more than the highest value; and 0.5 pH units less than the lowest value Sulphate: 120% of highest value TOC: 120% of highest value Zinc: 120% of highest value

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Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F (Cont'd)

Information Request	Response
	Note that a compliance bore is nominated at a site located hydraulically downgradient from the site beyond the edge of an effective "attenuation zone". The attenuation zone means the area around a release of contaminants in which the concentration of each contaminant in the release is reduced to ambient levels through physio-chemical and microbiological processes The following actions are required in response to breaches in relation to either *Early Warning Indicator (trigger level)* or *Groundwater Quality Limit* exceedances. *(i) Early Warning Indicators* Exceedance of a trigger level at a downgradient site for a corresponding groundwater quality parameter provides an "Early Warning Indicator" of potential hydrological connection with the adjacent facility. No specific reporting requirements would exist in response to a trigger level exceedance. Rather, a general review of site operations by the holder of the DA would be necessary to isolate and facilitate remediation of any identifiable contribution to the trigger level exceedance. The "Early Warning Indicator" would also be used to forecast the potential for a "Groundwater Quality Limit" exceedance. *(ii) Groundwater Quality Limit* Exceedance of a "Groundwater Quality Limit" would trigger the following response: • Report the breach to the administering authority (as a Notification); and • Initiate an investigation of each breach and provide a report to present the results of the investigation.

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7 RESPONSES TO FINANCIAL ASSURANCE INFORMATION REQUESTS

Information Request	Response
Under Section 292 of the Environmental Protection Act 1994 (the Act) the Department, acting as the administering authority may require the holder of the Environmental Authority (EA) to give the administering authority financial assurance.	
Due to the scale and nature of the activity it is requested that the applicant provide a Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure. This plan should quantify the cost and include soil and water validation.	Please find attached, in Appendix C, a Conceptual Closure and Rehabilitation Plan, as requested including details on the ongoing environmental monitoring and the maintenance of the capping layers and associated vegetation to ensure the ongoing integrity of the capping. This Closure and Rehabilitation Plan will be reviewed and updated on an annual basis to take into account any changes to legislation, site operations, construction of progressive capping and any other relevant details.

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APPENDICES

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APPENDIX A

Notice

Information request

This notice is issued by the assessment manager, pursuant to section 276 of the Sustainable Planning Act 2009.

We Kando Pty Ltd
39 Lagoon Road
MORAYFIELD QLD 4506

Our reference: SPDE05423513 (256798)

Attention Mr David Hooke

Re: Application for development approval

1. The assessment manager requests the applicant give further information needed to assess the application. That further information is stated in the attached information request(s) as follows:

   Attachment 1: Information to be provided

2. **Application details**

   Applicant: We Kando Pty Ltd

   Assessment manager ref: SPDE05423513 (256798)

   Date application made or referred to the assessment manager: 9 April 2013

   Aspects of development:

Assessable development		Assessment manager reference
Development Approval for a MCU involving an ERA.	Sustainable Planning Regulation 2009 – Schedule 3, Part 1, Table 2, item 1	SPDE05423513

   Property/Location description(s):

   Street address - Lot 83 Warrego Highway CHINCHILLA QLD 4413
   Lot/Plan - Lot 83 Plan LY566, Lot 170 Plan LY481, Lot 137 Plan LY204

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3. The application will lapse unless the applicant gives the assessment manager a response to the information request under section 278 of the *Sustainable Planning Act 2009* which requires such response to include a written notice to the requesting authority **within 6 months** stating:

   a. all of the information requested is provided; or

   b. part of the information requested is provided, and to proceed with assessment of the application; or

   c. the applicant does not intend to supply any of the information requested, and to proceed with assessment of the application.

4. A response to the information request must be given to Amanda Cleary, the Project Manager, at the address stated below.

Please note that if the information requested is required for the administering authority to assess the application against the regulatory requirements in the *Environmental Protection Regulation 2008* and the information is not provided, your application may be refused.

sch4p4(6) Personal information	23/4/13
Signature	Date

Delegate
James Mackenzie
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Amanda Cleary
Department of Environment and Heritage Protection
PO Box 731
TOOWOOMBA QLD 4350
Phone: (07) 46994371
Fax: (07) 46994399

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Attachment 1 – Information to be provided.

Part A: Product salt

300,000 – 600,000 t/a
5yr development life
Footprint Stage 1 and 2 total 14.6ha

Please provide the following information:

- GPS details of the intended disposal area (identified as Stage 1 and 2).
- Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?
- What is the life of the geo membrane used line the area to store the product salt?
- Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?
- What constitutes a leak/failure of the cell? How is this measured and how often is it measured?
- Page 22 states *"leak detection drains are deemed to be necessary due to the proximity of Stockyard Creek and given that no provision for internal drainage has been made, relying on the integrity of the liner for the containment."* What contingency plans are in place if the leak detection drains indicate that there is a leak and/or failure?
- Page 23 states that contact stormwater will be either recirculated through the product stockpile or transferred for storage and evaporation in the brine pond (Pond 1) located on lot 83 LY566. Furthermore, Figure 12 shows stage 1 and 2 product storage area as having no connection to the existing Pond 1. Therefore what is the estimated amount of contaminated stormwater anticipated from the area? If it is taken to Pond 1 demonstrate that Pond 1 will be adequate to contain this water. Furthermore would the inclusion of this source of water result in Pond 1 being reclassified as a high hazard dam (see attached guideline *Manual for assessing hazard categories and hydraulic performance for dams*)?
- Page 26 states that stormwater runoff from the exposed product salt and "bleed" liquor from the stockpile will be stored in containment areas and therefore in conflict with page 23. Please provide clarification, and further details including and not limited to this area, for example is the "containment area" lined, what is the storage capacity of this area is, and what is the response once the area is at capacity.
- Stage 1 and 2 both have a 50 m buffer from the Stockyard Creek (Figure 12: final landform plan). However page 8 states that a flood buffer of 100m has been adopted for the length of the Creek and therefore a constraint of the project. Please provide clarification as to why the buffer should not be 100m as proposed, and confirmation that there is no potential for the Creek to inundate the stockpiles and subsequently impact the Creek in times of flood. Furthermore hydraulic modelling for various flood scenarios including 1 in 10, 1 in 20, 1 in 50 and 1 in 100 years, as the Creek flows into Charleys Creek, through the township of Chinchilla and then into the Condamine River.
- How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?

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- Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment?
- Page 24 states that the design of the landform and capping configuration is temporary with the product salt to be recovered. What is the estimated time that this material would be stored? and if it is not recovered, what is the estimated life of containment and temporary capping?
- Demonstrate that an adequate contingency plan is in place if the proposed development plan, that is to reclaim the salt, does not deliver the expected outcomes.

Part B: Waste salt

30,000 t/a
20 year development life
Footprint ~ 20ha

Please provide the following information:

- GPS details of the intended disposal area.
- Page 28 states that the estimated footprint of the waste salt disposal area is 20ha, however Figure 12: final landform plan, shows the waste salt disposal area considerably smaller in size compared to the proposed 14.6ha product salt storage area. Please review disposal and storage area and confirm each area size.
- Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?
- Why is the design of the salt disposal area different to the product salt area? That is why is there no provision for leak detection drains, drainage aggregate etc?
- What is the life of the geo membrane?
- Will exposure to UV and salt increase the deterioration of the membrane, if not why not?
- What constitutes a leak/failure of the cell? How is this measured and how often is it measured?
- Where the contact stormwater is stored, is this area lined? What is the estimated amount of contaminated stormwater anticipated and demonstrate that Pond 1 will be adequate to contain this water if it is pumped to this location. Furthermore would the inclusion of this source of water result in Pond 1 (lot 83 LY566) being classed as high hazard (see attached guideline *Manual for assessing hazard categories and hydraulic performance for dams*)?
- How will salt levels as a result of capillary rise in the final capping be managed and what impact would it have on revegetation and stormwater runoff?
- Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment as a result of this activity?

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Part C: Solid waste

20,000 t/a
Size of area unknown

Please provide the following information:

- GPS details of the intended disposal area. Total area size should also be provided.
- When leachate is detected, how often will it be analysed and what measures will be taken if the leachate does not meet the allowable leaching contaminant levels listed in Appendix D: waste acceptance criteria?
- Is Pond 2 and 3 located on Lot 170 LY481 authorised to accept landfill leachate? If not what measures will be taken to ensure that leachate is suitably managed?

Part D: Stormwater Management Plan (SWMP) – Appendix E

Page 2 and 3 states all site stormwater would report to the control pond prior to discharge through a site discharge location at Stockyard Creek, and that it would be undertaken subject to achieving appropriate release water quality conditions.

Please provide the following information:

- Details under what conditions stormwater would be released, for example in times of flow? if so what would this flow rate be?
- GPS locations of discharge and monitoring points.

Whilst the SWMP lists the long and short term water quality objectives, it does not provide details on what the maximum stormwater quality should be to achieve these objectives.

- What is the water quality limits proposed in order to achieve the long and short term water quality objectives stated on page 12 of the SWMP?
- What measure will be taken if these release limits or water quality objectives are breached?

Part E: Groundwater Management Plan (GWMP) - Appendix F

Locations of the proposed bore monitoring wells and 3 existing bores located on site are provided in Figure F01.

Please provide the following information:

- Existing data that has been collected pertaining to boreholes labelled BH1, BH2 and BH3 on Figure F01.
- Identify if there are any nearby bore wells off site that could be utilised to obtain background water quality data for the site.
- GPS locations of monitoring points.

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Page 11 states that the administering authority will be notified when potential environmental harm exists, but only when there has been a sequence of contaminants of potential concern. Please provide information on what trigger values you will consider as being a potential concern.

Part F: Financial Assurance

Under section 292 of the *Environmental Protection Act 1994* (the Act) the Department, acting as the administering authority may require the holder of the Environmental Authority (EA) to give the administering authority financial assurance.

> ***292 Requirement to give financial assurance for environmental authority***
> *(1) The administering authority may, by condition of an environmental authority, require the holder of the environmental authority to give the administering authority financial assurance—*
> *(a) before the relevant activity is carried out under the environmental authority; and*
> *(b) as security for—*
> *(i) compliance with the environmental authority; and*
> *(ii) costs or expenses, or likely costs or expenses, mentioned in section 298.*

> ***298 Application of sub division 3***
> *This subdivision applies if the administering authority incurs, or might reasonably incur, costs or expenses in taking action to—*
> *(a) prevent or minimise environmental harm or rehabilitate or restore the environment, in relation to the carrying out of an activity for which financial assurance has been given; or*
> *(b) secure compliance with an environmental authority or small scale mining tenure for which financial assurance has been given.*

Due to the scale and nature of the activity it is requested that the applicant provide a Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure. This Plan should quantify the cost and include soil and water validation testing.

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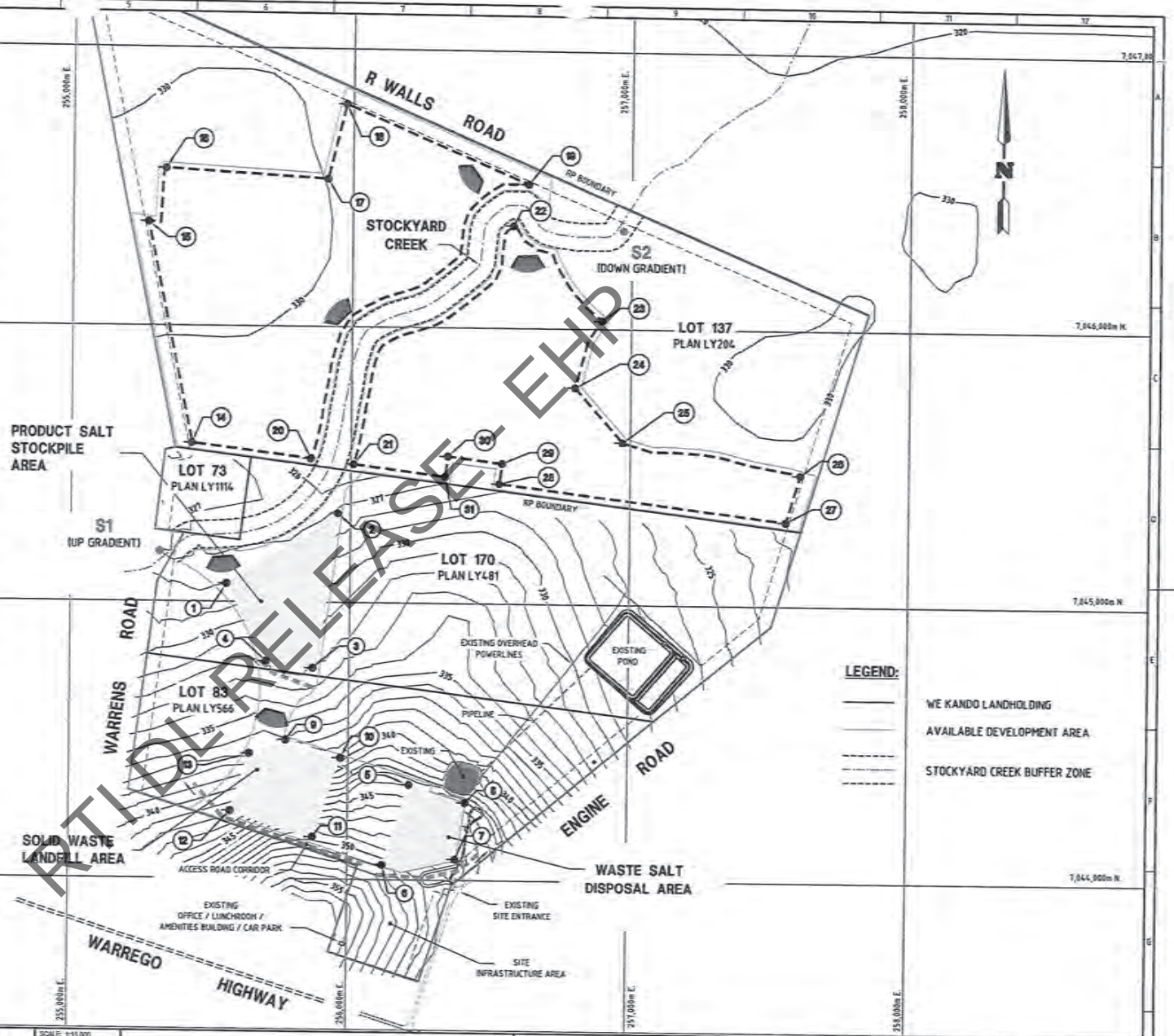
APPENDIX B

POINT TABLE

POINT #	EASTINGS	NORTHINGS	DESCRIPTION
1	255559.40	7045066.48	PRODUCT SALT STORAGE AREA
2	255955.65	7045322.64	PRODUCT SALT STORAGE AREA
3	255870.34	7044761.37	PRODUCT SALT STORAGE AREA
4	255703.14	7044784.34	PRODUCT SALT STORAGE AREA
5	256218.98	7044343.02	WASTE SALT STORAGE AREA
6	256124.89	7044054.02	WASTE SALT STORAGE AREA
7	256386.79	7044075.81	WASTE SALT STORAGE AREA
8	256420.49	7044279.49	WASTE SALT STORAGE AREA
9	255776.02	7044500.15	SOLID WASTE LANDFILL
10	255972.83	7044437.93	SOLID WASTE LANDFILL
11	255874.76	7044152.43	SOLID WASTE LANDFILL
12	255579.26	7044245.06	SOLID WASTE LANDFILL
13	255645.91	7044451.89	SOLID WASTE LANDFILL
14	255430.99	7045574.80	STAGE 2 PRODUCT SALT STORAGE
15	255268.99	7046374.21	STAGE 2 PRODUCT SALT STORAGE
16	255330.44	7046566.90	STAGE 2 PRODUCT SALT STORAGE
17	255910.75	7046534.06	STAGE 2 PRODUCT SALT STORAGE
18	255975.91	7046802.69	STAGE 2 PRODUCT SALT STORAGE
19	256629.04	7046522.02	STAGE 2 PRODUCT SALT STORAGE
20	255856.35	7045521.03	STAGE 2 PRODUCT SALT STORAGE
21	256009.96	7045501.60	STAGE 2 PRODUCT SALT STORAGE
22	256576.19	7046371.42	STAGE 2 PRODUCT SALT STORAGE
23	256895.61	7046031.26	STAGE 2 PRODUCT SALT STORAGE
24	256800.05	7045785.99	STAGE 2 PRODUCT SALT STORAGE
25	256972.48	7045589.38	STAGE 2 PRODUCT SALT STORAGE
26	257610.74	7045476.15	STAGE 2 PRODUCT SALT STORAGE
27	257559.56	7045305.58	STAGE 2 PRODUCT SALT STORAGE
28	256531.91	7045435.57	STAGE 2 PRODUCT SALT STORAGE
29	256541.22	7045509.16	STAGE 2 PRODUCT SALT STORAGE
30	256347.12	7045533.72	STAGE 2 PRODUCT SALT STORAGE
31	256337.82	7045460.12	STAGE 2 PRODUCT SALT STORAGE



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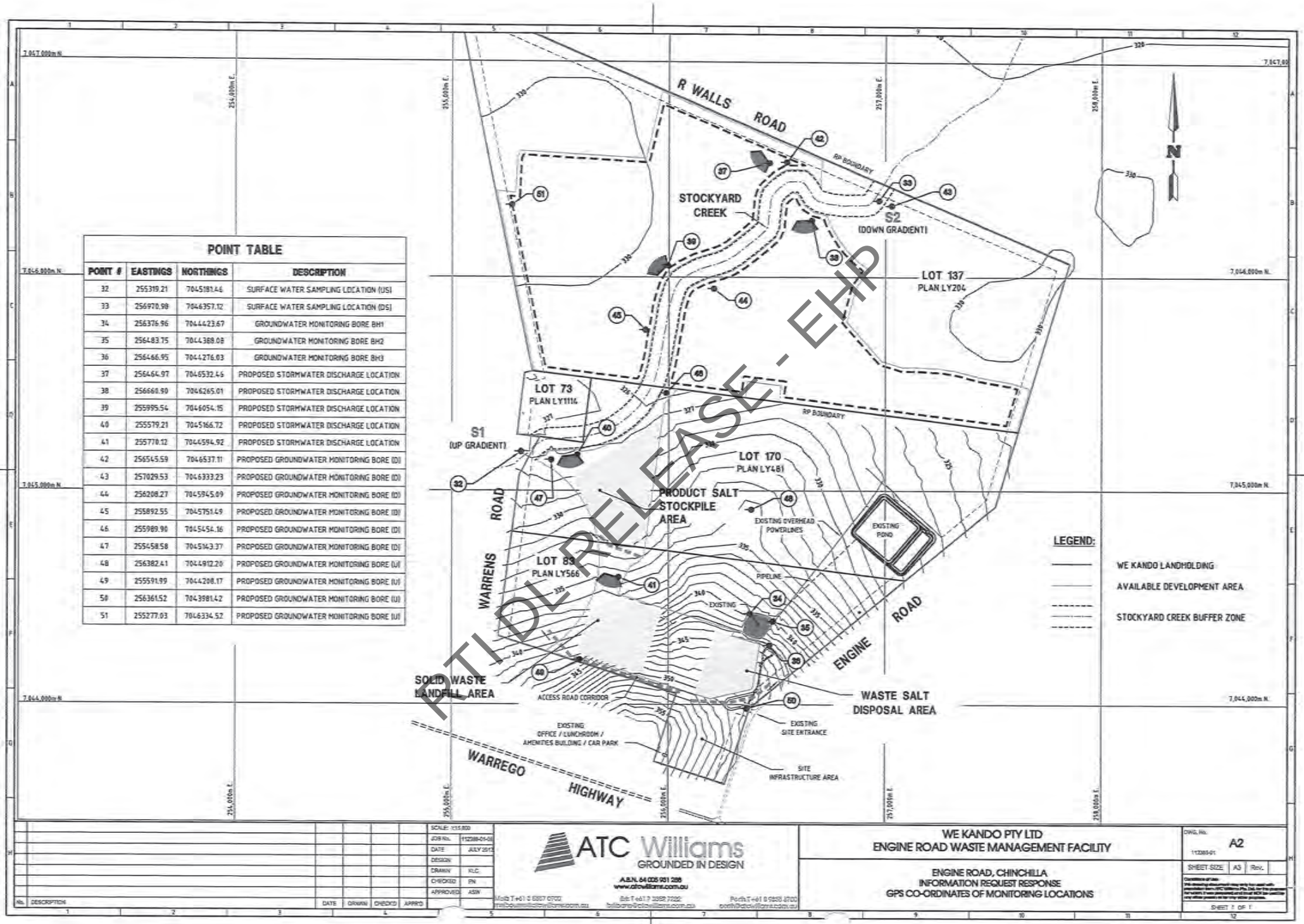
ENGINE ROAD WASTE MANAGEMENT FACILITY

ENGINE ROAD, CHINCHILLA
INFORMATION REQUEST RESPONSE
GPS CO-ORDINATES OF FACILITY AREA

DWG. No. A1
112388-01
SHEET SIZE A3 Rev.
SHEET 1 OF 1



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POINT TABLE

POINT #	EASTINGS	NORTHINGS	DESCRIPTION
32	255319.21	7045191.46	SURFACE WATER SAMPLING LOCATION (US)
33	256970.98	7046357.12	SURFACE WATER SAMPLING LOCATION (DS)
34	256376.96	7044423.67	GROUNDWATER MONITORING BORE BH1
35	256483.75	7044388.08	GROUNDWATER MONITORING BORE BH2
36	256466.95	7044276.03	GROUNDWATER MONITORING BORE BH3
37	256464.97	7046532.46	PROPOSED STORMWATER DISCHARGE LOCATION
38	256668.90	7046265.01	PROPOSED STORMWATER DISCHARGE LOCATION
39	255995.54	7046054.15	PROPOSED STORMWATER DISCHARGE LOCATION
40	255579.21	7045166.72	PROPOSED STORMWATER DISCHARGE LOCATION
41	255778.12	7044594.92	PROPOSED STORMWATER DISCHARGE LOCATION
42	256545.59	7046537.11	PROPOSED GROUNDWATER MONITORING BORE (D)
43	257029.53	7046333.23	PROPOSED GROUNDWATER MONITORING BORE (D)
44	256208.27	7045945.69	PROPOSED GROUNDWATER MONITORING BORE (D)
45	255892.55	7045751.49	PROPOSED GROUNDWATER MONITORING BORE (D)
46	255989.98	7045454.16	PROPOSED GROUNDWATER MONITORING BORE (D)
47	255458.58	7045143.37	PROPOSED GROUNDWATER MONITORING BORE (D)
48	256382.41	7044912.20	PROPOSED GROUNDWATER MONITORING BORE (U)
49	255591.99	7044208.17	PROPOSED GROUNDWATER MONITORING BORE (U)
50	256361.52	7043981.42	PROPOSED GROUNDWATER MONITORING BORE (U)
51	255277.03	7046334.52	PROPOSED GROUNDWATER MONITORING BORE (U)

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INFORMATION REQUEST RESPONSE
GPS CO-ORDINATES OF MONITORING LOCATIONS

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APPENDIX C

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Engine Road Waste Management Facility

Engine Road Chinchilla

Conceptual Closure and Rehabilitation Plan

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July 2013

11238801R05a

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IMPORTANT NOTICE

Please refer to our Conditions Report

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FIGURES

Figure 1 Locality and Existing Site Layout
Figure 2 Final Landform Concepts

APPENDICES

Appendix A Characteristics of Product/Waste Types

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1 INTRODUCTION

1.1 Background

We Kando Pty Ltd (We Kando) operates a resource extraction and waste management facility at 27150 Warrego Highway, Baking Board (west of Chinchilla), in southern Queensland. The facility is subject to an expansion which includes the following elements:

(i) Temporary land-based storage for product salt, with this product derived from locally sited reverse osmosis (RO) plant brine treatment facilities.
(ii) Landfill for secure storage of the waste fraction from the RO plant brine treatment facility (with this material referred to as waste salt.
(iii) Landfill for containment of general waste (putrescible and non-putrescible).

An engineering assessment report prepared on behalf of We Kando by ATC Williams Pty Ltd (ATCW, 2013) was included in support of a development application for the expansion of the facility. In response to this application (Information Request Notice dated 23 April 2013 Reference SPDE05423513 [256798]), Department of Environment and Heritage Protection (DEHP) requested the submission of a "*Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure.*".

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1.2 Purpose of the Report

The purpose of this report is to provide a Conceptual Closure and Rehabilitation Plan for the Engine Road Waste Management Facility. The report addresses concepts for landform capping for the Product Salt Storage Area, the Waste Salt Landfill Area and the Solid Waste Landfill. Post closure monitoring and maintenance necessary to ensure the integrity of the capping layers over time are also outlined. The structure of this report, addressing the above requirements, is as follows:

- **Section 2 -** Outline of the Proposed Project
- **Section 3 -** Overview of the Closure and Rehabilitation Plan
- **Section 4 -** Topsoil Management
- **Section 5 -** Capping Profiles
- **Section 6 -** Final Landforms
- **Section 7 -** Erosion and Sediment Control
- **Section 8 -** Vegetation Establishment
- **Section 9 -** Ongoing Maintenance Requirements
- **Section 10 -** Ongoing Monitoring Requirements

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1.3 Context of the Report

Context for the closure and rehabilitation plan is prompted in relation to the Product Salt Storage area. This storage area will exist as a temporary impoundment for salt product, with opportunities being sought for marketing of the product, for sale, processing or otherwise reuse. Notwithstanding the approach to capping of the product salt landform is consistent with closure standards adopted for the permanent waste disposal (waste salt and solid waste) facilities, therefore providing secure containment in the long term in the event that an appropriate market is delayed or is not found. Further context is that closure and rehabilitation for the product salt area focusses on the Stage 1 landform as described in ATCW (2013).

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2 OUTLINE OF PROPOSED PROJECT

2.1 General

As outlined in ATCW (2013), the existing site activities include:

(i) Quarry operation for extraction and production of road construction materials (pavement sub-base, base and top course products).
(ii) Acceptance of brine from reverse osmosis (RO) treatment facility operating within the region, for storage and evaporation within engineered ponds.
(iii) Acceptance of untreated and treated effluent from package sewage treatment plants operating within the region, for storage in engineered ponds, treatment by aeration and/or direct land application (subject to suitable effluent quality[1]).
(iv) Acceptance of green waste and inert soils (including inert drilling muds), for stockpiling, separation and blending, and moisture conditioning (using untreated and treated effluent where available and appropriate) to produce compost or soil conditioner.
(v) Acceptance of waste tyres for use in site activities, either intact or shredded.

Proposed future activities, subject to the current development application, include:

(i) Storage facility for product salt;
(ii) Landfill facility for waste salt; and
(iii) Landfill facility for general (solid) waste, including contaminated soil and treated sludges/slurries.

2.2 Site Locality and Zoning

The subject site is located at 27150 Warrego Highway, Bakers Board, some 8 km west of the Chinchilla Township in southern Queensland. The site is accessed via Engine Road, forming the eastern boundary of the property. The location and general layout of the site is shown on **Figure 1**.

The We Kando landholding comprises 5 allotments, with Real Property (RP) descriptions as follows:

Lot 73 on Plan LY1114
Lot 0 on Plan RES224
Lot 170 on Plan LY481
Lot 83 on Plan LY566
Lot 137 on Plan LY204

These lots are also indicated on **Figure 1**.

Current waste management operations are located on Lot 83 on Plan LY566 (plan area of 105 ha) and Lot 170 on Plan LY481 (plan area of 150ha). These lots, in addition to Lot 137 on Plan LY204 will support the expanded operations.

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[1] Subject to the *Queensland Water Recycling Guidelines*, December 2005, related to irrigating non-food crops, including trees, turf and plant nurseries, stating that '*where the risk assessment undertaken as part of the Recycled Water Management Plan has indicated that public access can be controlled, and off-site impacts prevented, Class D recycled water can be used to irrigate these crops*'.

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It is understood that the allotments forming the land holding are zoned Noxious Industrial under the Western Downs Regional Council Planning scheme.

2.3 Environmentally Relevant Activities (ERAs)

2.3.1 Existing ERAs

We Kando currently hold the following ERA approvals for the subject site as described in **Section 2.1**, under Registration Certificate ENRE01418210:

Lot 170 Plan LY481

- ERA56, Regulated waste storage, threshold 2 - operating a facility for receiving and storing regulated waste other than tyres

Lot 83 Plan LY566

- ERA 16 Extractive and screening activities, threshold 2(b) extracting, other than by dredging, in a year, 5,000 tonnes to 100,000 tonnes of material
- ERA 16 Extractive and screening activities, threshold 3(a) screening, in a year, 5,000 tonnes to 100,000 tonnes of material
- ERA 33 Crushing, milling and grinding or screening activities , crushing, grinding, milling or screening more than 5,000 tonnes of material in a year
- ERA 53 Composting and soil conditioner manufacturing, manufacturing, from organic material or organic waste, 200 tonnes or more of compost or soil conditioners in a year
- ERA 56 Regulated waste storage, threshold 1, operating a facility for receiving and storing 5 tonne or more or 500 or more equivalent passenger units, of tyres or parts of tyres
- ERA 56 Regulated waste storage, threshold 2, operating a facility for receiving and storing regulated waste other than tyres
- ERA 8 Chemical waste storage, threshold 3(a) storing 10m3 to 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3

2.3.2 Proposed ERAs

The application being made by We Kando is based on the following ERAs for Lot 83 on Plan LY566, Lot 170 on Plan LY481 and Lot 137 on Plan LY204:

> *ERA 60(1)(a) Threshold(d) Waste disposal, operating a facility for disposing of greater than 200,000 tonnes of regulated waste and any, or any combination, of general waste, limited regulated waste, and if the facility is in a scheduled area, no more than 5 tonnes of untreated clinical waste in a year.*

It is noted that acceptance and site treatment of an increased range of soils and sludges/slurry, as described in **Section 2.1**, is covered under existing ERA approvals.

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3 OVERVIEW OF THE CLOSURE AND REHABILITATION PLAN

This conceptual Closure and Rehabilitation Plan addresses the following:

- Topsoil management
- Capping profiles
- Final Landforms
- Revegetation strategies
- Erosion and sediment control
- Rehabilitation of other site infrastructure
- Ongoing monitoring and maintenance

The objectives of the closure and rehabilitation plan are to:

- Provide an acceptable post-disturbance land use capability and suitability;
- Provide acceptable post-disturbance landforms;
- Ensure that surface water and groundwater that reach receiving environments from the site achieved appropriate water quality standards, consistent with the characteristics of the environment; and
- Ensure that no other potential long term impacts on human health and the environment is threatened as a result of the closed facility.

To achieve these objectives, sustainable vegetative cover coupled with a suitable capping profile is necessary for all final landforms. The approach adopted for closure and rehabilitation of the site is based primarily on:

(i) the currently inferred characteristics of the products/wastes to be contained within the site; and
(ii) the proposed final land use for the site.

The characteristics of product/waste is reproduced from ATCW (2013) in **Appendix A**. The end land use adopted for the purpose of closure and rehabilitation planning comprises low intensity grazing.

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4 TOPSOIL MANAGEMENT

Topsoil suitable for rehabilitation purposes will be stripped and stockpiled from all areas to be disturbed. The depth of suitable topsoil will be determined through a test pitting investigation prior to stripping. An assessment of top soil quantities will be made at each stage/phase of the development.

Where possible, topsoil will be stripped during optimal moisture conditions to reduce the potential for soil compaction and structure degradation. Soil will be stockpiled in mounds no higher than 4 metres for long term storage and vegetated to minimise textural degradation, loss through erosion and to maintain the viability of the soil. A soil rejuvenation program including the addition of organic matter and aeration will be undertaken prior to its use in topsoiling rehabilitation areas. Short term stockpiles will be one to two metres in height. All stockpile batters will be contoured with maximum batter slopes of 1(V):3(H). Areas set aside for stockpiling will be suitably prepared with diversion systems and sediment control features below topsoil stockpiles. The proposed stockpile strategy includes:

- Utilisation as visual screens/aesthetic purposes;
- Proximity to stripped landforms and future rehabilitation works; and
- Located on areas already subject to clearing to minimise the clearance of existing vegetation.

Application of topsoil to the final graded surface will provide the most suitable seed bed for the establishment of vegetation. Topsoil compaction will be minimised during spreading by utilising tracked machinery (e.g. dozer), and subsequent light tyning if necessary.

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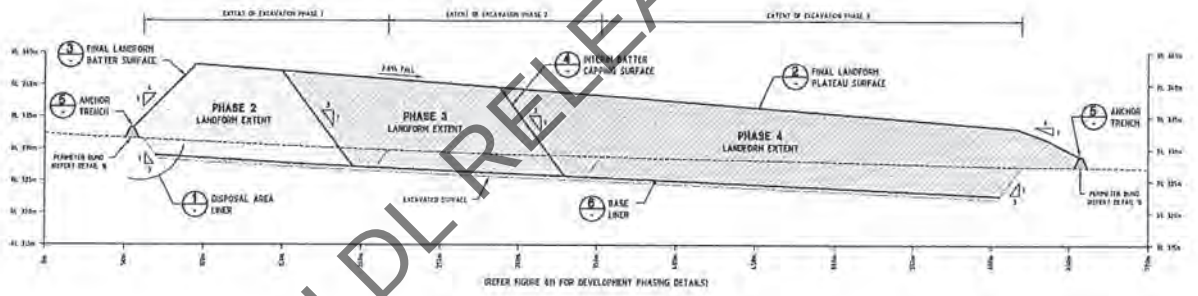
5 FINAL LANDFORMS

The proposed final landform characteristics for the Product Salt storage area, Waste Salt Landfill and Solid Waste Landfill are described in ATCW (2013), with final landform concepts for each area shown on **Figure 2.** Landform development has been sought to substantially achieved benchmark conditions outlined in the *Landfill Siting, Design, Operation and Rehabilitation Guideline,* DEHP (2012). External batter slopes have been designed to allow access for ease of maintenance and control of stormwater flow to minimise erosion and exposure of the underlying capping layers. Maximum external batter slopes of 1(V) to 4(H) have been adopted as a nominal criterion, with slopes for the plateau areas of each landform ranging between 1% and 2%. Each landform also includes a perimeter bund for stormwater control and liner/capping anchoring purposes. A more detailed description of proposed landforms for each area is provided in the following sections.

5.1 Product Salt Area Final Landform

The final landform of the Product Salt area will be gradually developed through the filling of the product salt in a staged manner to allow progressive capping to be applied to the product salt profile. The final proposed final landform is shown on **Figure 2**, with typical sections provided in **Plate 1.** It is noted that if further stages of product salt storage are required, these basic conditions for closure will be applied to future stages.

Plate 1
Typical Section through Final Product Salt Area Landform



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5.2 Waste Salt Disposal Area Final Landform

The final landform of the Waste Salt Disposal Area will be gradually developed through the filling of the waste salt in a staged manner to allow progressive capping to be applied to the waste salt profile. **Figure 2** shows the proposed final landform for the Waste Salt Disposal Area along with the staging. **Plate 2** provides a typical cross section for this landform.

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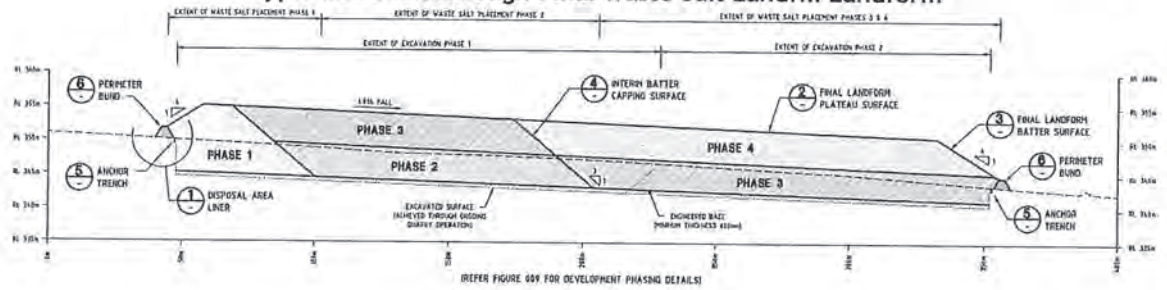
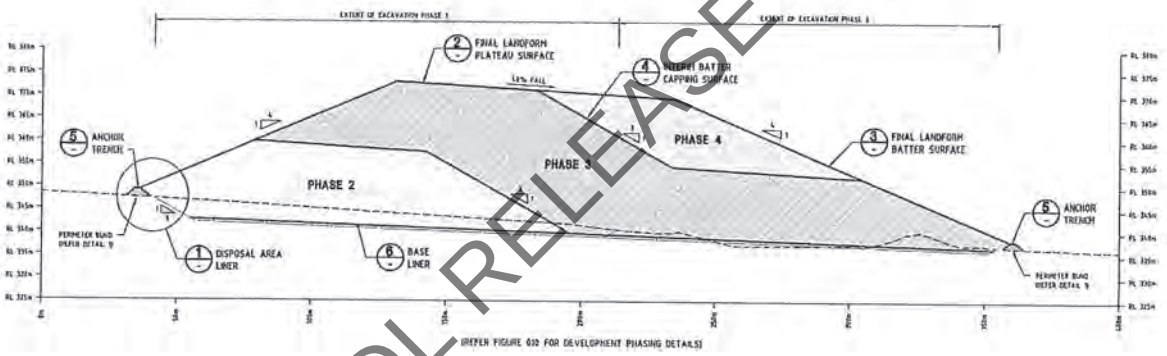
Plate 2
Typical Section through Final Waste Salt Landfill Landform



5.3 Solid Waste Landfill Final Landform

The final landform of the Solid Waste Landfill will be gradually developed through solid waste filling in a staged manner to allow progressive capping to be applied to the developed landfill profile. **Figure 2** shows the proposed completed final landform for the Solid Waste Landfill. **Plate 3** provides a typical cross section for closure of the solid waste landfill.

Plate 3
Typical Section through Final Solid Waste Landfill Landform



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6 CAPPING PROFILES

All capping profiles for each development area utilises (polyethylene, PE) geomembrane liner, which acts as a primary barrier membrane used to minimise moisture infiltration into the product/waste profile, and to provide long term containment for stockpile/fill products, once capping has been constructed. Ongoing protection of the geomembrane liner, with the use of bedding layers, and overlying earthen protection and growth medium layers, will act ensure that the ongoing integrity of the capping profile is maintained.

A further feature of each capping profile is a shredded tyre drainage layer placed to minimise ponding of water directly above the geomembrane liner. To this end, any moisture that infiltrates the growth medium and earthen protection layers would be captured by the drainage layer, then drained and collected at designated points around the base of external batters and directed to specific discharge locations. Furthermore, by placement of the shredded tyres over the geomembrane, this layer acts as a cushioning layer to separate the geomembrane from the soil filling as part of capping construction.

It is noted that the use of geomembrane as a primary barrier, and shredded tyres as a drainage layer exceeds the benchmark conditions as described in DEHP (2012).

Specific details with respect to proposed capping for each development area are provided in the following sections.

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6.1 Product Salt Storage Capping Profile

The development footprint for an initial stage (Stage 1) of the Product Salt Storage will incorporate the cleared area available within area Lot 170, located within the western portion of the land parcel. This area is constrained by buffer to the existing residence to the west, Stockyard Creek to the north and existing vegetation to the east, and encompasses a total footprint of some 14.6ha.

Where additional capacity for product salt is required, development will occur within Lot 137, with the area to the western side of Stockyard Creek accessed initially, then to the eastern side. The final extent of Product Salt Storage area development will depend on the quantity of product ultimately received and the development of future reuse options.

As outlined in ATCW (2013), the proposed capping profile for the Product Salt area comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of engineered earth fill (similar to earth fill liner material);
- overlain by 400mm of topsoil/subsoil for revegetation purposes.

A typical representation of this capping profile is shown below in **Plate 4**, and will be progressively constructed on completed external batters and plateau areas and maintained to ensure stability of the completed surfaces.

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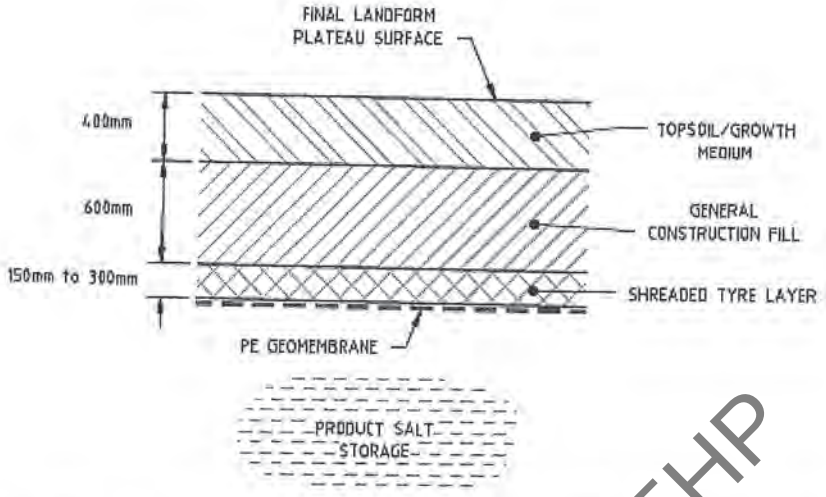
Plate 4
Capping Profile For Product Salt Areas



This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the product salt profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

6.2 Waste Salt Disposal Area Capping Profile

The Waste Salt Disposal area will comprise a footprint of some 6.1ha on the eastern end of the treatment and landfill area, located adjacent to the site entrance and weighbridge. This area is constrained by the compost pad to the west, Pond 1 to the north, and weighbridge, gatehouse and site access road to the east. The disposal area is fully contained within the existing Lot 83 quarry.

A capping profile as shown below in **Plate 5** is proposed, which will be progressively constructed on completed external batters and plateau areas. As outlined in ATCW (2013), this capping profile comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of topsoil/subsoil for revegetation purposes.

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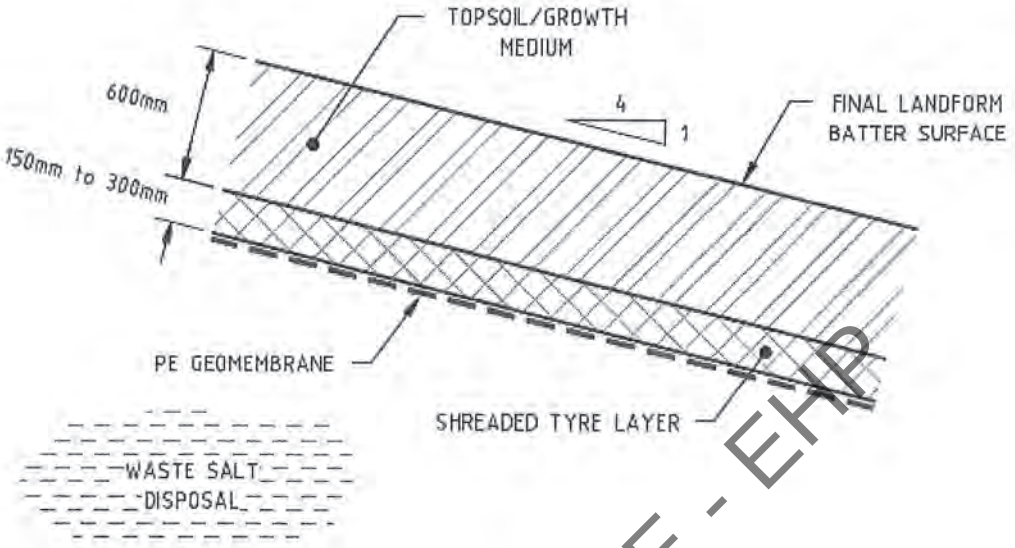
Plate 5
Capping Profile for the Waste Salt Disposal Area



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This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the waste salt profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

6.3 Solid Waste Landfill Capping Profile

The development footprint for the Solid Waste Landfill will incorporate the area to the west of the compost pad, within the footprint of the existing treated effluent pond, and extending to the south. This area is constrained by buffer to the existing residence to the west.

Capping would be placed progressively across completed sections of the developing landform. Final capping layers would be placed on completed external batters, with intermediate capping to intermediate/internal batters. Typical capping details are provided on **plate 6**. As outlined in ATCW (2013), this capping profile comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of topsoil/subsoil for revegetation purposes.

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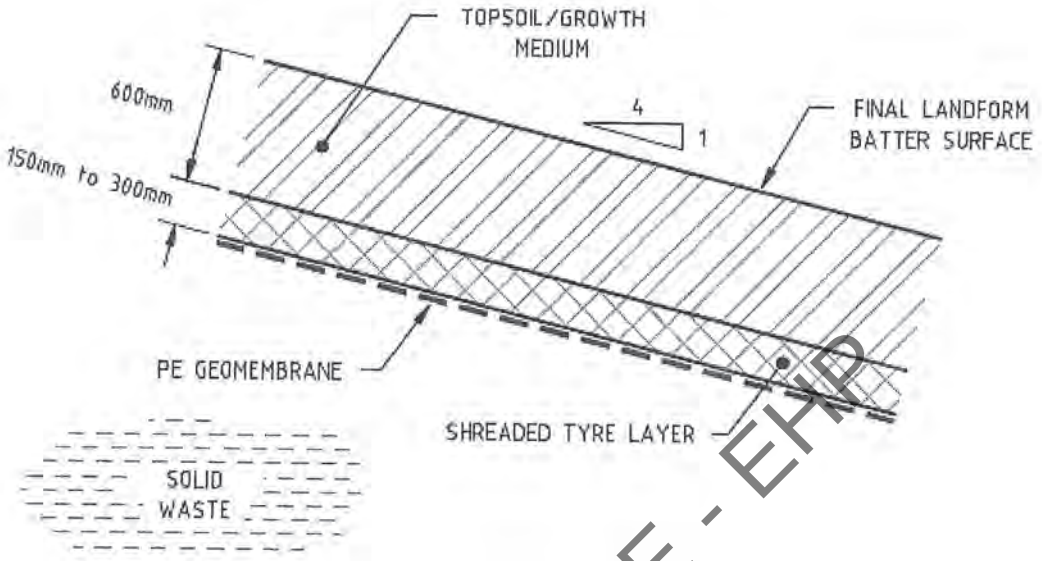
Plate 6
Capping Profile for the Solid Waste Landfill



This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the solid waste profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

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7 EROSION AND SEDIMENT CONTROL

Erosion problems on rehabilitated landforms exist largely because of surface crusting and overly long or steep slopes. These factors can cause high volume runoff at high velocities, which leads to sheet and rill erosion. Compounding this effect, under these conditions, is the lack of provision for the conveyance of runoff through a drainage system at velocities which will not result in either excessive scouring or siltation. If excessive scouring was to occur, this could lead to the exposure of the geomembrane and degradation of the geomembrane through exposure to ultraviolet radiation. Vegetation helps to minimise erosion by protecting the surface from raindrop impact, reducing velocity of overland flow and improving the structure of the soil.

Based on the above conditions, minimum requirements for landforms for all development areas will include drainage provision and revegetation; with a description of these provisions as follows:

(i). Prior to topsoil spreading and planting of vegetation on the completed landforms, the surface will be scarified where necessary (e.g. overly compacted areas) on the contour with intermittent breaks along each scarification to prevent channelling of water. Scarifying will also increase depression storage and allow a significant quantity of water to infiltrate before runoff commences.

(ii). To control overland flow and channelled flow on final landform surfaces, a series of permanent and temporary structural works will be undertaken where necessary. These would consist of waterways, graded banks, detention banks, rock armouring, sediment traps, drop structures, sediment fences and hay bale fences. During and following vegetation establishment these drainage structures will be maintained to ensure that they continue to operate as designed.

Additional measures to control erosion relate to access roads and tracks, with the following provisions to be made:

- Location;
- Effective surface drainage such as crowning, infall and outfall grades;
- Use of table drains;
- Use of culverts;
- Use of mitre drains; and
- Construction of crossbanks or spoon drains where necessary.

A basic erosion and sediment control plan would need to be prepared for each area as part of closure works planning.

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8 VEGETATION ESTABLISHMENT

The purpose of establishing vegetation on the site following closure and rehabilitation is to:

- Minimise erosion of capping soils, thereby providing protection to the geomembrane liner;
- Provide extensions of wildlife corridors and habitat (where relevant);
- Provide shade and shelter to grazing animals; and
- Maintain endemic species diversity.

Establishment of vegetation on the various areas of the site are described below.

8.1 Product and Waste Salt and Solid Waste Landfill Areas

Vegetation establishment on completed landforms will be restricted to grasses and shrubs. This is to minimise the potential damage to the geomembrane from larger tree root systems, although geomembranes are commonly used as root barriers in capping systems. The thickness of the proposed soil profile(s) of the capping layer is also not suited to larger tree species.

Initially, following topsoil spreading, the completed capping/final profile will be seeded or hydro-mulched to stabilise the soil surface until a vegetation cover can be established. The application of mulch (shredded green waste) to the topsoil layer will also be utilised where necessary to minimise erosion, prevent surface crusting and maintain moisture levels in the soil. Consideration of establishing grasses initially to quickly stabilise the topsoil prior to undertaking further planting of other grasses and shrubs would need to be investigated.

Along designated low flow drainage paths, such as diversion banks, the use of turf strips would be considered to stabilise these areas quicker and provide protection to the underlying soil during rainfall events that occur during the initial period of closure and rehabilitation.

8.2 Other Site Infrastructure Areas

For other site infrastructure areas on the site, structures would be demolished where necessary, or in the case of storage ponds, these would be cleaned out with residual material disposed of to a licensed landfill. Vegetation would then be established comprising of trees, shrubs and grasses, and species would be based upon endemic species of the site/area where possible.

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9 ONGOING MAINTENANCE REQUIREMENTS

9.1 General Capping Maintenance

General capping maintenance would be carried out to ensure that any soil erosion is repaired, any subsidence (expected to be restricted to the Solid Waste Landfill only) is filled, to reduce ponding, and the re-establishment of vegetation. Where possible, soil for any cap repairs will be sourced from site. Periodic inspections of the site will be undertaken as outlined in **Section 10** below which will identify and capping maintenance requirements.

9.2 Vegetation Maintenance

After initial establishment of vegetation on the capped surfaces and other decommissioned areas of the site, the vegetation would be monitored to ensure that it remains viable and capable of stabilising the topsoil and assist in reducing erosion.

In areas where vegetation dieback has occurred, an investigation as to why the vegetation has died back would be undertaken. Any issues identified by the investigation would be dealt with and vegetation would be re-established. Vegetation dieback may be caused by a number of reasons including, but not limited to:

- The vegetation reaching the end of its natural life;
- Impacts from emissions from the stored/landfilled materials (e.g. landfill gas and leachate);
- Erosion;
- Lack of water during extended periods of no rainfall;
- Poor quality of vegetation initially used in the rehabilitation;
- Pest impacts.

Periodic inspections of the vegetation will be undertaken as outlined in **Section 10** below to identify any vegetation maintenance requirements.

9.3 Soil and Erosion Control Maintenance

By establishing and maintaining vegetation on the capped surfaces, erosion of the capping soils would be kept to a minimum. However, the maintenance of soil and erosion controls would include, however not be limited to:

- Removal of sediment from drainage flow paths including diversion banks and drains to ensure free flow along drainage paths where flow velocities and erosion can be minimised;
- Repair and replacement of drainage and sediment control structures where necessary;
- Review of environmental monitoring data to determine if there are any other impacts that may not be identified through the visual inspections.
- Any other maintenance identified during periodic inspections undertaken as outlined in **Section 10** below.

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9.4 Other Maintenance

9.4.1 Pest control

Evidence of pests will be identified during periodic inspections of the site, as outlined in **Section 10** below. Pests may cause vegetation issues (dieback) or soil erosion issues (from burrowing animals). If evidence of pests is identified, appropriate advice will be sought to develop a site specific pest management plan.

9.4.2 Weed Control

Weed control will be undertaken to minimise the occurrence of weeds species on the site. Weeds will be identified during periodic inspections of the site, as outlined in **Section 10** below. The control of weeds on the site is important from a regional perspective to ensure that weeds are not permitted to be spread by inaction on the site. If weeds are identified during the periodic site inspections, appropriate advice will be sought to develop a site specific weed management plan.

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10 ONGOING MONITORING REQUIREMENTS

10.1 Inspections

Periodic inspections of the rehabilitated areas of the site would be commenced following the initial capping and closure of any part of the site. The inspections would be undertaken to identify any issue that needs to be rectified to ensure the on-going integrity of the capping layers. An outcome of these inspections would be maintenance recommendations to rectify any identified issues.

Inspections would continue on a regular basis following closure and rehabilitation of the site as a whole. Detailed inspection checklists and schedules will be developed prior to the commencement of the first lot of progressive capping however would include, but not be limited to, the following:

- Stormwater and drainage structures
- Capping layers and evidence of erosion
- Vegetation
- Identification of pest and weed species, using the Western Downs Regional Council's Pest Management Plan 2011-2015 (or subsequent versions) as a reference and guide.

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10.2 Water Quality Monitoring

During operations and following the closure of all operations at the site, surface water and groundwater monitoring would continue in accordance with the Stormwater Management Plan and the Groundwater Monitoring Plan, contained in ATCW (2013). The scope of the monitoring would also include the leak detection sump constructed as part of the Product Salt Storage Area(s).

The frequency of monitoring for the first 4 years following the ultimate closure of the site operations would remain as it was during the operational period. After this time the frequency of monitoring would be reviewed on an annual basis and, depending on the results of the monitoring and whether there was any cause for concern, the frequency may be decreased.

10.3 Landfill Gas Monitoring

Landfill gas (LFG) monitoring is only required for the Solid Waste Landfill. Initially, during the operation of the Solid Waste Landfill, LFG monitoring would be undertaken on a quarterly basis. For a period of 4 years following the closure and capping of the Solid Waste Landfill, LFG monitoring would continue at this frequency. After this time, this requirement would be reviewed, with the intention to reduce the frequency to six monthly. Reduction in the frequency would be based upon the results of the quarterly monitoring and whether there had been any exceedance of emissions targets during the 4 year period. The frequency of monitoring would then be reviewed on an annual basis and may be further reduced if there was no evidence to suggest that the landfill is posing any LFG risks.

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10.4 Leachate Monitoring

During the operational phase of the Solid Waste Landfill, leachate monitoring would be undertaken in line with the groundwater monitoring frequency. The result of leachate monitoring provides information as to the extent of waste degradation within the landfill. Based upon the results of the leachate monitoring, the frequency of sampling and testing may be reduced with time.

10.5 Settlement Monitoring

Settlement is only expected to be an issue for the Solid Waste Landfill. The Salt Product Storage Area and Waste Salt Disposal area is not expected to settle as there is no on-going degradation of materials and close to maximum compaction is expected to be achieved during filling operations.

Settlement monitoring would be achieved through regular capping inspections and the periodic use of surveying to identify differences between site levels over time. Any settlement areas identified would be filled with suitable soils, re-vegetated and re-stabilised to achieve on-going performance of the capping layers.

Although it is not expected, if significant settlement has occurred, a detailed investigation will be undertaken, including excavation of capping layer to inspect the geomembrane. This would be undertaken to ensure that the geomembrane has not been damaged by the settlement of the waste mass. Following inspection and rectification works, if necessary, the capping will be reconstructed in accordance with this closure and rehabilitation plan, as updated from time to time.

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REFERENCES

[1] ATC Williams, 2013, *Engine Road Waste Management Facility, Engineering Assessment Report*, prepared in support of a Development Application for a Material Change In Use for We Kando Pty Ltd.

[2] Department of Environment and Heritage Protection (2012), *Guideline ERA61 - Waste Disposal - Landfill Siting, Design, Operation and Rehabilitation*

[3] Western Downs Regional Council, 2010, *Pest Management Plan 2011-2015.*

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FIGURES

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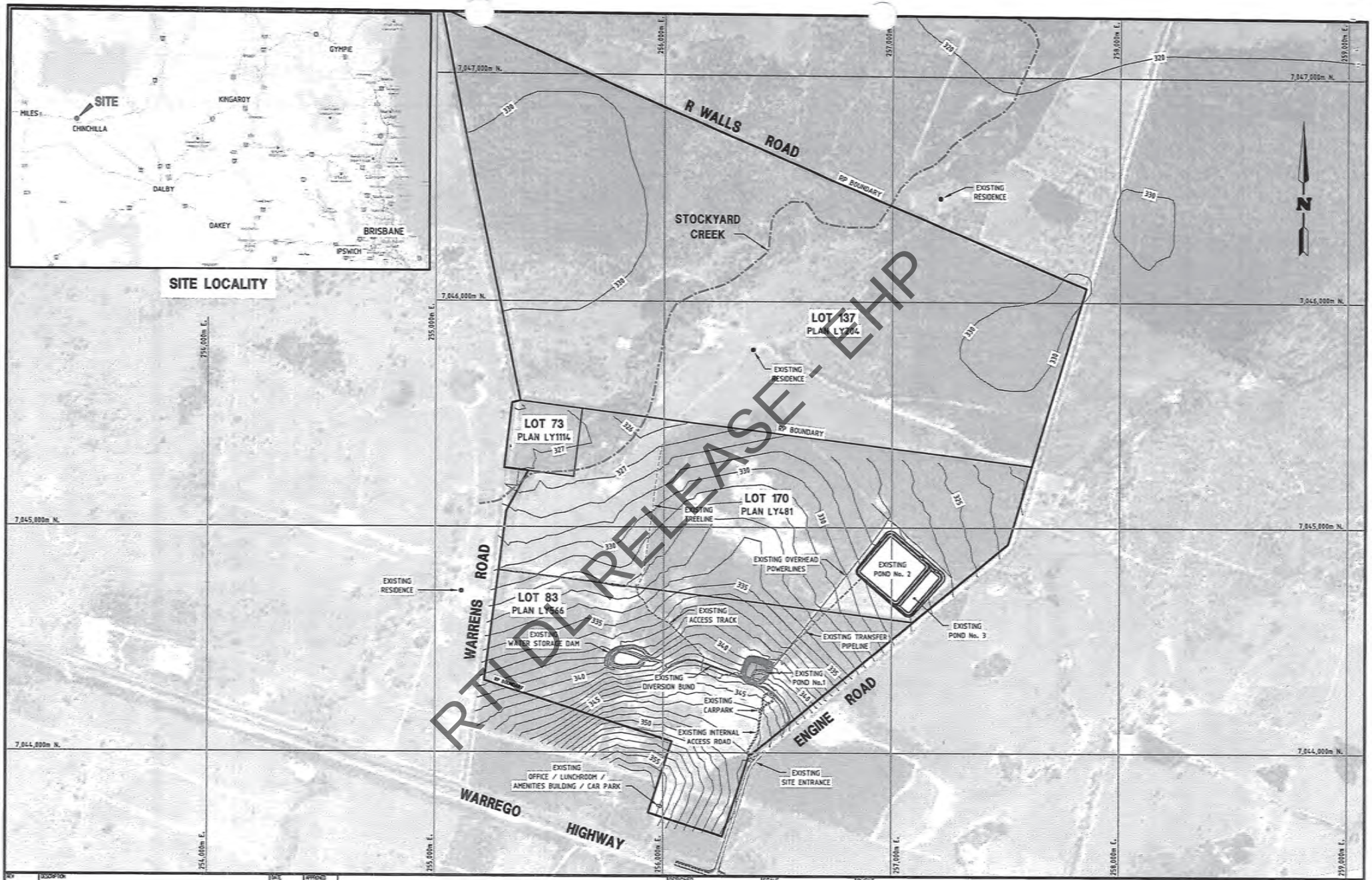

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REV	DESCRIPTION	DATE	APPROVED

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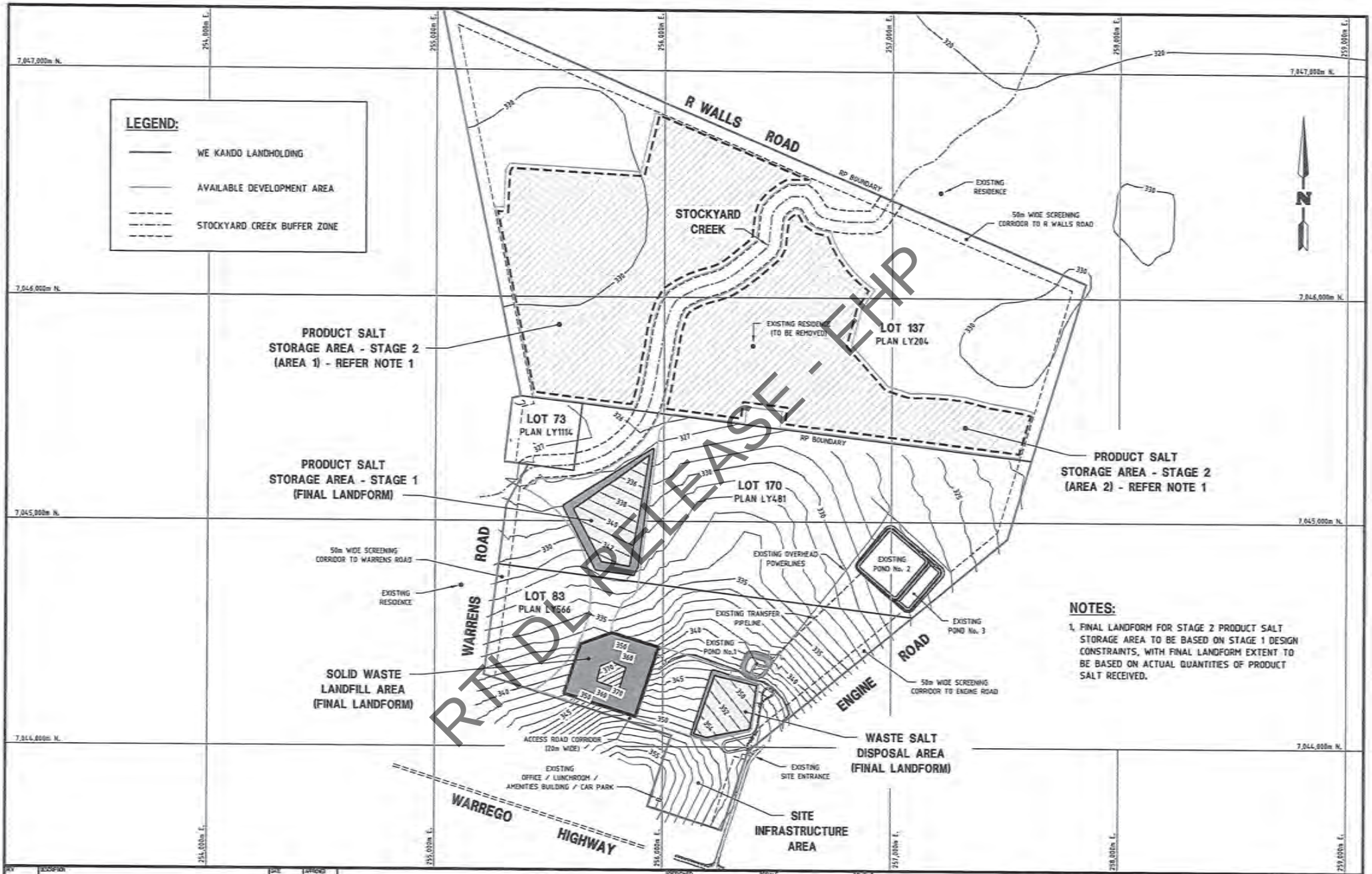
DESIGNED		SCALE	1:15,000
DRAWN	MJC	LEVEL DATUM	
CHECKED	ASW	SHEET SIZE	A3
APPROVED		CAD FILE	112388-01-034
DATE	AUG. 2013	ISSUE	REVIEW

CLIENT	WE KANDO PTY LTD
PROJECT	ENGINE ROAD WASTE MANAGEMENT FACILITY ENGINE ROAD, CHINCHILLA
TITLE	CLOSURE AND REHABILITATION PLAN LOCALITY AND EXISTING SITE LAYOUT
JOB NUMBER	112388-01
DRAWING	001
REV	

Release



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NOTES:

1. FINAL LANDFORM FOR STAGE 2 PRODUCT SALT STORAGE AREA TO BE BASED ON STAGE 1 DESIGN CONSTRAINTS, WITH FINAL LANDFORM EXTENT TO BE BASED ON ACTUAL QUANTITIES OF PRODUCT SALT RECEIVED.

REV	DESCRIPTION	DATE	APPROVED

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DESIGNED		SCALE 1:15,000	CLIENT WE KANDO PTY LTD
DRAWN MJC		LEVEL DATUM	PROJECT ENGINE ROAD WASTE MANAGEMENT FACILITY ENGINE ROAD, CHINCHILLA
CHECKED ASW		SHEET SIZE A3	
APPROVED		CAD FILE 112388-01-035	TITLE CLOSURE AND REHABILITATION PLAN FINAL LANDFORM CONCEPTS
DATE AUG. 2013		ISSUE REVIEW	

JOB NUMBER 112388-01
DRAWING 002
REV

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APPENDICES

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APPENDIX A

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CHARACTERISTICS OF PRODUCT/WASTE TYPES

Salt Product and Waste

Salt precipitate is a by-product of RO plant pre-treatment. RO treatment is carried out on groundwater recovered from coal seam gas extraction within the region. The precipitate is understood to comprise generally a crystalline solid, possessing a specific gravity of between 1.6 and 1.9t/m^3 and moisture content ex-treatment plant of around 5% (wt/wt). The material is expected to be "spadable", with an angle of response on stockpiling being of the order of 40% (2[H] to 1[V]).

The precipitate will be subject to a refining process for separation into product and waste streams. A general description of the constituents of each stream is as follows:

Product Salt

It has been advised that the product salt will comprise characteristics consistent with Soda Ash. Based on available material data sheets for Soda Ash, the chemical composition of product salt as listed in **Table 2** can be inferred:

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Table A1
Typical Composition of Waste Salt

Chemical Property	Unit	Typical Value
Na_2O	wt %	58.4
Na_2CO_3	wt %	99.8
Na_2SO_4	wt %	0.05
NaCl	wt %	0.06
Fe_2O_3	ppm	4
Water Insolubles	wt %	0.01
Ignition Loss	wt %	0.1
Lead	ppm	<10
Arsenic	ppm	0.1
Calcium	ppm	60
Magnesium	ppm	15
SiO_2	ppm	100

Further to these characteristics, advice has been provided that:

- Compacted dry densities for product salt in stockpile of 1.0 to 1.2t/m^3 are achievable; and
- A maximum stockpile height across a 50m wide front of 8m is achievable.

The material would likely be geotechnically benign, although may be marginally dissolvable under certain conditions in contact with moisture/infiltration. The worst case condition anticipated is a highly saline leachate from any product salt stockpile when subject to direct rainfall.

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Waste Salt

The chemical composition of the waste salt is currently not definitive, although is expected to comprise inorganic precipitates (including metals of minor proportions), grit and fines (from groundwater host sequences and bore screens) and minor organics from the treatment process. The material would likely be geotechnically benign, although may be marginally dissolvable under certain conditions in contact with moisture/infiltration. The worst case condition anticipated is a highly saline leachate from any waste salt stockpile when subject to direct rainfall.

Similar conditions with respect to compacted densities and maximum stockpile heights, as described for product salts, are expected to exist.

Solid Waste

A solid waste stream is currently generated from local industry, with waste types including general (non-putrescible and putrescible) waste and a range of contaminated or impacted soils. A description of anticipated waste characteristics is provided below:

General Waste

A general overview of general waste rates has been undertaken by We Kando through communications with nearby CSG operators and support industries. The feedback provided is that:

(i) A general (putrescible) waste stream is likely to be generated consistently over the life of the CSG industry, based on projected work force. This waste stream would likely be dominated by food scraps, office waste and general waste from workshops or process areas. It is understood that all waste oils and greases would be disposed separately, as well as waste or residue processing reagents.

(ii) Non-putrescible waste would likely be associated with construction or demolition activities onsite, or particular workshop or process areas where large or bulky non-regulated items are generated (e.g. packing crates, refurbishments etc.). This waste stream would typically comprise timbers, plastics, textiles, concrete/masonry, with a sizeable proportion of inert fines/earth. It is understood that all ferrous and non-ferrous materials would be separated at source, therefore would be excluded from the waste stream.

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It is anticipated that the only regulated waste that may be co-mingled with the waste stream would be tyres (for which a current ERA approval exists) or trace quantities of asbestos. Bulk asbestos would be separated from the general waste stream for disposal at a separate facility.

Contaminated/Impacted Soils

A provision for landfilling of a range of soils as solid waste has been made. Potential sources of such materials are:

- Contaminated soils from site or clean-up works at any operation, accepted for direct landfilling
- Residual soils from landfarm treatment of contaminated or impacted soils
- Dewatered and stabilised sludges and slurries, not otherwise suitable for landfarming or used in composting/soil conditioner manufacture

- Reject product or unsuitable feedstock for the compost/soil conditioner manufacturing operation.

The key criteria for acceptance or diversion to landfill of these soil types would be compliance with the *Guideline ERA 60 - Waste Disposal, Landfill Siting, Design, Operation and Rehabilitation* (DEHP, 2012).

In addition, a requirement will be for any soils reporting to the landfill to be "solid", defined by being "spadable".

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Cleary Amanda

From: Cleary Amanda
Sent: Wednesday, 28 August 2013 8:36 AM
To: David Hooke
Subject: Information request response

Morning David

As discussed, I have reviewed your draft Information request response and are satisfied that you have addressed the questions adequately. If you wish to proceed could you please email a copy of the document to southwest.es@ehp.qld.gov.au as state that this is your final response and you wish the application to proceed.

Also could you please email me your management plans at your earliest convinence.

Kind Regards,
Dr Amanda Cleary | Principal Environmental Officer
Department of Environment and Heritage Protection (EHP)

Environmental Services & Regulation Division (ESR) Southern Region
173 Hume Street Toowoomba
PO Box 731, Toowoomba QLD 4350

T: 07 4699 4371 F: 07 4699 4399
E: Amanda.Cleary@ehp.qld.gov.au
W: www.ehp.qld.gov.au

Please note I only work Tuesdays, Wednesdays and Thursdays.

RTI DL RELEASE - EHP

Cleary Amanda

From: David Hooke <davedump@netxp.com.au>
Sent: Wednesday, 21 August 2013 12:40 PM
To: Cleary Amanda
Subject: Fwd: RE: ERA 60 Assessment Manager

Hi Amanda
Here is the letter from council
Thanks
dave

-------- Original Message --------
Subject:RE: ERA 55 & ERA 58 Assessment Manager
Date: Wed, 3 Oct 2012 01:22:09 +0000
From: Elizabeth Franklin <Elizabeth.Franklin@wdrc.qld.gov.au>
To: David Hooke <davedump@netxp.com.au>

Hi David,

After checking with Candice Bonar it has been concluded that for the additional ERA 60 Department of Environment and Heritage Protection are the administering authority for the proposed waste treatment at the property described as Lot 83 on LY566 and Lot 170 on LY481 and located at 27150 Warrego Highway, Chinchilla.

Regards
Elizabeth Franklin
Planning Officer Development Assessment

Chinchilla Customer Service Centre
PO Box 551, Dalby, Qld 4405

Phone 07 4679 4318 Fax 07 4679 4099
elizabeth.franklin@wdrc.qld.gov.au

www.wdrc.qld.gov.au

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Cleary Amanda

From: Cleary Amanda
Sent: Wednesday, 21 August 2013 9:07 AM
To: David Hooke
Subject: Ackowlegement notice from Council

Hi David

I was looking through your application and noticed that there is no information from Council about the application.

Basically what I am looking for is a letter and/or an acknowledgement notice stating that they have no role to play (eg assessment manager) and are fine with EHP being the assessment manager.

Could you please let me know ASAP.

Thank you

Kind Regards,
Dr Amanda Cleary | Principal Environmental Officer
Department of Environment and Heritage Protection (EHP)

Environmental Services & Regulation Division (ESR) Southern Region
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W: www.ehp.qld.gov.au

Please note I only work Tuesdays, Wednesdays and Thursdays.

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Cleary Amanda

From: David Hooke <davedump@netxp.com.au>
Sent: Sunday, 18 August 2013 6:21 PM
To: Cleary Amanda
Subject: Re:
Attachments: R04c.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks for that Amanda.

sch4p4(6) Personal information

I have the response for you, i think we talked about putting it in as a draft.
I will give yu a call on Tuesday
Thanks
Dave

On 8/08/2013 2:11 PM, Cleary Amanda wrote:

> Hi David
>
> sch4p4(6) Personal information
>
> Kind Regards
>
> Amanda
>
> ---
>
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WE KANDO PTY LTD

Engine Road Waste Management Facility

Engine Road, Chinchilla

Response to Information Request

RTI DL RELEASE EHP

May 2013

11238801R04c

Document History and Status

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David Hooke - We Kando Pty Ltd		☑

Copy __1____ of __1____

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PAT NAVIN
Author

ALLAN WATSON
Reviewer

IMPORTANT NOTICE

Please refer to our Conditions of Report

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APPENDICES

Appendix A DEHP Information Request Notice
Appendix B GPS Coordinate Figures A1 & A2
Appendix C Conceptual Closure and Rehabilitation Plan

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1 INTRODUCTION

1.1 Background

We Kando Pty Ltd (We Kando) proposes to expand its resource extraction and waste management facility located at 27150 Warrego Highway, Baking Board (west of Chinchilla), in southern Queensland. The scope of the proposed expansion includes the following elements:

(i) Temporary land-based storage for product salt, with this product derived from locally sited reverse osmosis (RO) plant brine treatment facilities.
(ii) Landfill for secure storage of the waste fraction from the RO plant brine treatment facility (with this material referred to as waste salt.
(iii) Landfill for containment of general waste (putrescible and non-putrescible).

A development application for approval of the proposed product waste storage and landfill disposal of waste salt and general waste was submitted to Department of Environment and Resource Management (DEHP). A key component of the application was an engineering assessment report prepared on behalf of We Kando by ATC Williams Pty Ltd (ATCW). The purpose of this report (ATCW, 2013) was to present details of the proposed expansion, providing engineering details for development of each element, outlining operating methodologies, and addressing stormwater and groundwater protection aspects.

The development application was received by DEHP on the 9 April 2013, and following assessment of this application, issued an Information Request notice, Ref SPDE05423513 (256798). This notice is reproduced in **Appendix A**. Further to the engineering assessment, We Kando has commissioned ATCW to address the DEHP information request, with this report prepared to present the response.

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1.2 Structure of Response

The information request notice (refer **Appendix A**) is broken down into the following parts:

- Part A Product Salt Area
- Part B Waste Salt Area
- Part C Solid Waste Landfill
- Part D Stormwater Management Plan
- Part E Groundwater Management Plan
- Part F Financial Assurance

A response to each of these parts has been prepared and is included herewith, based on the following structure:

Section 2	Responses to Product Salt Information Requests
Section 3	Responses to Waste Salt Information Requests
Section 4	Responses to Solid Waste Information Requests
Section 5	Responses to Stormwater Management Plan Information Requests
Section 6	Responses to Groundwater Management Plan Information Requests
Section 7	Responses to Financial Assurance Information Requests

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All responses have been presented in table form, which reproduces the information request items, with corresponding responses provided. Where necessary, cross referencing to appendices has been included where further information has been prepared.

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2 RESPONSES TO PRODUCT SALT INFORMATION REQUESTS

Table 1
Part A: Product Salt

DEHP Information Request Item	Response
GPS details of the intended disposal area (identified as Stages 1 and 2).	ATCW Report Reference: **Section 6.1**and **Figure 12** The product salt storage area has been designed to accommodate a total capacity of 12 million m^3 over 20 years, although the initial commitment for product salt acceptance is limited to 1.5 million m^3 over 5 years, equivalent to a disposal rate of 300,000m^3/year. This storage air-space will be developed as Stage 1, which is located within Lot 170, near to the other waste management activities. The longer term storage capacity is captured within Stage 2, which is located on Lot 137. Strategically, the layout for Stage 2 will be confirmed during the Stage 1 operation and subject to robust commitments for acceptance of product salt material. To this end, the set out for Stage 1 is currently considered to be definitive, with the set out for Stage 2 considered to be a "maximum likely extent". GPS coordinates (Eastings and Northings) for the proposed footprint area for Stage 1 and for the allocated development area for Stage 2 are provided on **Figure A1** in **Appendix B.**

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?	ATCW Report Reference: **Section 6.3**, with key aspects of the product salt storage area relative to this aspect as follows: • *Product salt will be delivered in loose form by trucks, placed onto the working face, then compacted.* • *Product will be paddock stockpiled at the leading edge of the working face, then pushed down the face to progress the lift.* • *Cover layers would be used in the event that the operation is suspended or rainfall is expected. Intermediate and final cover layers would also be applied as required to isolate completed platform surfaces.* Further to these requirements, to prevent the release of contaminants to land and receiving waters, the following provisions will be made: • Initially salt product will be unloaded within the excavated portion of the product salt cell (i.e. below surrounding natural ground level). Trucks delivering product salt would enter the excavation to unload at the active working face. Any rainfall runoff from the fill platform would therefore be captured within the excavation (refer Stormwater Management Plan, **Appendix E** of ATCW Report). The excavation will be protected from stormwater inflow using stormwater diversion bunds. • At all times, and particularly as the fill platform rises above the natural ground level surrounding the storage area: o the surface of the fill platform will be graded away from the active/working face, and with the use of diversion bunds as required to direct stormwater runoff from the platform into a dedicated containment area either within the cell excavation or within a stormwater control pond (sedimentation pond) formed outside the cell footprint. o trucks delivering product salt would unload within the active working face area, which would be located within stormwater diversion bunds. o placement of daily capping as required, and progressive construction of intermediate and final capping over completed salt product lift surfaces would isolate the product salt material, therefore preventing contact with stormwater other than within the active face area. Stormwater from capped surfaces would be directed off-site, and would be subject to release stormwater monitoring to demonstrate appropriate water quality (refer Stormwater Management Plan, **Appendix E** of the ATCW Report). • Any salt impacted stormwater, captured within the bunded active face area, would be transferred by pumping for storage and evaporation within Pond 1 or tankered offsite for RO treatment. An alternative is to absorb the water into the salt storage, although this would be adopted only as a short term measure.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
	It is emphasised that the above practices are critical to the operation of the storage facility to limit the exposure of product salt surfaces, thereby limiting the quantities of contact stormwater to be handled and treated, and to minimise long term leachate generation potential. It is also emphasised that the principles adopted for operation of the product salt area are based on solid waste landfill operations.
What is the life of the Geomembrane used to line the area to store the product salt?	Estimation of the service life or longevity of geomembrane liners in solid waste landfills, and other applications, is addressed in numerous technical papers, journals and texts. The most up-to-date technical advice is that the service life of geomembrane depends on key factors including temperature, chemical constituents of leachate, UV exposure and stresses in the landfill caused by construction, operational activities and settlement/movement of the contained medium. Lifespans of greater than 400 years are expected in a solid waste landfill environment, being controlled principally by leachate quality and damage experienced during operational periods. In a salt product storage application, greater lifespans can be expected given that the material is homogenous and the leachate or liquor comprises basically saline water, which has no known effects on geomembrane integrity. In summary, due to the nature of the product salt, the nature of the underlying general fill layer the lifespan of geomembrane placed as part of the liner system would be in excess of 400 years and may never degrade to the point of failure (or at least to loss of integrity).
Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?	As mentioned above, the literature provides an indication of the longevity of geomembranes. To maintain this lifespan, carbon black is used as an additive to geomembrane manufacture to minimise the impact on UV, with degradation only expected after significant periods of exposure (i.e. multiple years). Testing has shown that even for periods of exposure of up to 10 years, the strength and performance of geomembrane is not likely to decrease significantly. The product salt storage area will be developed in stages, with the objective being to cover the floor of each cell as quickly as possible to form a platform surface that can be covered, with stormwater runoff to be diverted off-site. As a result, geomembrane to be placed in each cell of the salt product area will be covered promptly to limit UV exposure periods. The maximum expected period will be 3 months. For this exposure period, it is expected that no degradation of geomembrane would occur. As detailed above, the literature indicates that there are no known effects of salt or saline water on the integrity of geomembrane.

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- Hornsey et al (2010) The impact of mining solutions/liquors on geosynthetics (191-198)

Rowe, R & Sangam, H (2002) Durability of HDPE geomembranes. Geotextiles & geomembranes 20(77-95)

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
What constitutes a leak/failure of the Cell? How is this measured and how often is it measured?	Liner System A leak through the cell can be defined as a condition whereby a wetting front develops beyond the limits of the liner to an extent that a rise in moisture content and/or contaminant increase is detected. Typically, such detection would occur visually through visible seepage, wetting or salt-staining, through the leak detection system or through groundwater monitoring. A failure of a cell associated with leakage would be deemed to occur when the leakage causes or threatens to cause a detrimental impact on the receiving environment. To this end, expression of saline leachate from the containment area into a leak detection system would not necessarily constitute a failure, where recovery of leachate from the detection system could be maintained without the threat of migration away from the cell extents into the receiving environment. The leak detection system comprising leak detection drains traversing the floor of the containment area will be installed to capture any moisture loss through leakage. The layout of this system is such that migration of leachate from the containment area would preferentially flow to leakage drains across the subgrade - liner interface. This would be encouraged by the very low permeability of natural sequences. Any liquids captured within the drains would drain to a leak detection sump. This sump would be monitored in conjunction with the groundwater monitoring program, and if present, would be sampled and analysed for salt impact. Monitoring would be undertaken six-monthly. External Landform Surfaces A leak or failure to the external surfaces of the product salt landform would be identified during normal operations and inspections, being indicated by a seepage expression or a wetting front (supported by surface water sampling and analysis). An action plan would be developed immediately to manage the seepage area and for repair. As a minimum, bunds would be constructed to capture any leakage flow and to transfer this liquor to the contact water containment area or Pond 1.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 22 states "leak detection drains are deemed to be necessary due to the proximity of Stockyard Creek and given that no provision for internal drainage has been made, relying on the integrity of the liner for containment." What contingency plans are in place if the leak detection drains indicate that there is a leak or failure?	The context of the comment with respect to proximity of Stockyard Creek is that in the unlikely event of leakage from the storage area, leak detection drains would indicate the presence of leakage from the storage and would enable management of this leakage prior to reaching the creekline as the nearest receiving environment. Such detection would prompt the need for further action such as monitoring, management or remedial works. It is noted that justification for exclusion of leak detection could be made if located further away from the creekline, on the basis that the risk of reaching this environment is low, contributed by the very low permeability of natural sequences. The action/contingency plan to be implemented in the event of leak detection would include the following, in general order of priority, based on severity of impact: • Equip the leak detection sump with pumps to remove liquor. • Install vadose zone monitoring around potentially affected areas of the area to detect (if any) unsaturated zone migration, attempting to isolate the leak location. • Install groundwater monitoring bores in closer proximity to the affected areas to assess any deeper migration. • Undertake remote sensing or install shallow wells within the salt profile to measure the leachate level, identifying any drawdown to indicate leakage location. • Undertake remedial works as required, which may include removal of sections of salt (being limited in total depth) or apply grout to affected areas, or other techniques as deemed necessary. Note that such actions would only be pursued if gross failure of the containment system, with associated material harm to the environment, is encountered.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 23 states that contact stormwater will either be recirculated through the product stockpile or transferred for storage and evaporation in the brine pond (Pond 1) located in Lot 83 LY566. Furthermore, Figure 12 shows stage 1 and 2 product storage area as having no connection to the existing Pond 1. Therefore what is the estimated amount of contaminated stormwater anticipated from the area? If it is taken to Pond 1 demonstrate that Pond 1 will be adequate to contain this water. Furthermore would the inclusion of this source of water result in Pond 1 being reclassified as a high hazard dam (see attached guideline Manual for assessing hazard categories and hydraulic performance for dams.)?	ATCW Report Reference: **Appendix E, Section 3.3,** with key aspects of contact stormwater management as follows: • *Contact water will be managed by bunding above the active working face to divert stormwater from flowing onto the active filling area, and by bunding at the toe of the active working face to capture contact water running off the face.* • *Management of contact water will be by recirculation through the product stockpile, transferred for storage within and evaporation from Pond 1, or transferred for storage within separate tanks and then tankered offsite for RO treatment* The primary strategy with respect to contact stormwater management will be to reduce the quantity of liquor generated. This will require bunding as described above, as well as the use of daily, intermediate and final capping to isolate the product salt platform from stormwater contact. Under effective operating conditions, contact water management would be enhanced by: • Keeping the active working face to a minimum area. Typically the face will measure some 30m wide x 30m deep, an area of some 900m^2; • Application of daily cover across the working face (rather than just recently formed platform surfaces) when rainfall is imminent; • Maintaining systems to ensure that any accumulated contact water within this area can be transferred rapidly, ensuring the availability of access to the face; and • Controlling the acceptance of salt product during wet weather periods, thus limiting the exposure of product salt surfaces (in conjunction with daily cover as described above). Under these conditions, it is not feasible to definitely estimate the quantity of contact water that is likely be generated. Optimum operating conditions will limit the quantity, while poor quality operations may result in substantial quantities of contact water. Nonetheless, the effective use of cover and capping layers will be the key, in conjunction with stormwater bunding around the working face.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
	Quantities of contact water that are generated will be managed as follows: • Small incidental quantities will remain within the bunded area, and will likely infiltrate directly into the salt mass, or can be absorbed into future loads of product salt. • Moderate quantities of contact stormwater (indicated by a shallow depth of inundation at the toe of the active face) would be pumped to a series of tanks located adjacent to the cell. A total tank capacity of 100kL would be maintained, equivalent to total rainfall in excess of 100mm over the active face. • Larger quantities of contact stormwater (likely occurring where the face remains exposed subject to a prolonged rainfall period), would be transferred to Pond 1. A prolonged rainfall event under these circumstances would be equivalent to a 10 year ARI, 24 hour duration event, being equivalent to 4.95mm/hour (118.8mm). A maximum available storage capacity within Pond 1 of 0.106 ML would be necessary under these conditions, which represents some 0.53 % of the available 20ML capacity of the pond (or an equivalent depth of approximately 17.5mm). To facilitate this transfer, connection between the storage area to Pond 1 will be by pump and pipe connections that would be permanently in place, and would be periodically augmented as the phases of filling of product salt advances. As a contingency to the above contact water management approach, Site Stormwater from the developing landform will report to the unfilled portions of the storage area excavation or sedimentation ponds (refer refer Stormwater Management Plan, **Appendix E** of the ATCW Report). The containment criteria for site stormwater containment is a 10 year ARI, 24 hour duration event, effective for the total (effective) footprint of the product salt storage area. This includes the active working face, therefore failure to contain the face area will result in discharge of contact stormwater to the Site Stormwater storage area. This provides for containment of this water, with an opportunity for assessment of water quality at this location, with treatment and/or release to be initiated, as required. Based on the above, there is no necessity to review the status of the Pond 1 in relation to the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (DEHP, 2012), on the basis that: (i) The accepted current use for containment of brine (although recognising that this use has discontinued) (ii) The capacity of the pond is less than 25ML, being the trigger level for saline (salinity based) liquor.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Page 26 states that stormwater runoff from the exposed product salt and "bleed" liquor from the stockpile will be stored in containment areas and therefore in conflict with page 23. Please provide clarification, and further details including and not limited to this area, for example is the containment area lined, what is the storage capacity of this area is, and what is the response once the area is at capacity.	As clarification: • Page 23 refers to how the contact stormwater (as well as "bleed" liquor) will be managed once captured • Page 26 refers to how the contact stormwater will be captured within the cell area. • Page 27 outlines containment criteria for contact stormwater within the cell area. These aspects are consistent with the discussion related to the above items. Further clarification, with reference to **Section 6.3** of the ATCW report and the associated **Figure 11**, is as follows: • Conceptually contact water containment areas on **Figure 11** for the product salt disposal area have been shown at the toe of the landfill batter within the excavation. This does not necessarily reflect the actual location, merely indicating that a containment area is required. Typically, the containment area would be formed around the active face as described under previous items. • The potential for "bleed" liquor expressing from the product salt landform has been identified, with this stream being captured and managed as contact stormwater. This bleed will essentially be leachate that has accumulated within the salt profile, and will only occur where a sufficient head of leachate exists around exposed salt surfaces (e.g. around the working face). Under normal circumstances, exposed surfaces will be capped (daily, intermediate or final), therefore the likelihood of bleed water expression is low. Nonetheless, where this occurs, local sumps will be formed for pumped extraction, or drains established to discharge to the contact water containment area. • Re-emphasising that subject to effective stormwater management, the quantities of contact stormwater and the potential for bleed water expression (by minimising stormwater infiltration) should remain low. Any contact stormwater/bleed water that is captured will be managed as described in previous items, by absorbing into the salt profile, by transferring to onsite tanks then off site for RO treatment, or by storage for evaporation within Pond 1.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
Stage 1 and Stage 2 both have a 50 m buffer from Stockyard Creek (Figure 12: final landform plan). However page 8 states that a flood buffer of 100m has been adopted for the length of the Creek and therefore a constraint of the project. Please provide clarification as to why the buffer should not be 100m as proposed, and confirmation that there is no potential for the Creek to inundate the stockpiles and subsequently impact the Creek in times of flood. Furthermore hydraulic modelling for various flood scenarios including 1 in 10, 1 in 20, 1 in 50, and 1 in 100 years, as the Creek flows into Charleys Creek, through the township of Chinchilla and then into the Condamine River.	The flood buffer referred to in the ATCW report is referring to the total buffer width along the length of Stockyard Creek, i.e. 50m either side of the creek centreline. To this end, a 100m buffer has been provided. With reference to **Section 3.3** of the ATCW report: • It has been estimated that an inundation depth along the creekline subject to a 1 in 100 (Q_{100}) flood event would likely result; • A peak flood level of RL327m at the western boundary of the site and RL325m at the southern boundary has also been estimated. (This represents a flood height of some 0.5 to 1.0m above the creek banks.) The length of Stockyard Creek within the site, over which these flood levels exist is some 2.2km, with natural topography falling over this creek length around 2m. • As shown on **Figure 15**, a perimeter bund around the product salt storage area is proposed, with a minimum height of 1.5 m, and will be constructed a minimum of 50m from the creekline. The crest of the perimeter bund scales to a level of around RL328.5m, providing a flood freeboard at the location of the storage area of around 1.0m. The prompt for additional flood analysis for Stockyard Creek is acknowledged, presumably with a view to demonstrate a non-worsening condition as a result of the product salt storage development. It is emphasised however that the intent of the siting and design layout development for the storage area was to "ensure that development did not encroach within the expected Q_{100} flooding extent". The analyses as described above and outlined in **Section 3.3** of the ATCW report are consistent with this approach, with the development footprint being restricted with site areas existing above a natural surface level of RL327m. Accordingly, any flood modelling for the Q_{100} event and any smaller events will indicate that no impact will be generated as a result of the development. There is therefore no basis for undertaking additional modelling, other than to improve the definition or accuracy of the current analyses.
How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?	A PE geomembrane is proposed for lining the final product salt landform (refer **Figure 15** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension.

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Table 1
Part A: Product Salt (Cont'd)

DEHP Information Request Item	Response
How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?	A PE geomembrane is proposed for lining the final product salt landform (refer **Figure 15** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension.
Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment?	Reference is made to the Conceptual Closure and Rehabilitation Plan for the storage/disposal facilities included as **Appendix C** to this response. A summary of proposed monitoring is provided as follows: • Surface water monitoring as outlined in the Stormwater Management Plan (**Appendix E** of the ATCW report), comprising: o Receiving environment monitoring, within Stockyard Creek, at upstream and downstream locations, demonstrating that no deterioration in water quality as a result of the development is occurring. Monitoring at these sites would be taken quarterly. o Release water monitoring of discharge from the cell excavation or the sedimentation/stormwater control pond (reporting to the environment), demonstrating that defined short term and long term water quality objectives (trigger levels) are being achieved. Monitoring at the current release site would be undertaken at release events, with a minimum frequency of once per quarter during which release occurs. • Groundwater monitoring, as outlined in the Groundwater Monitoring Plan (**Appendix F** of the ATCW report), comprising: o Monitoring from groundwater monitoring bores located both upgradient and downsgradient from the product salt storage area. o Monitoring to be undertaken six-monthly, with analysis of monitoring data undertaken to demonstrate that statistically significant adverse changes at detection sites over background sites does not occur. Surface water and groundwater monitoring carried out in accordance with the above would continue for a period of 4 years following decommissioning and closure of the facility, after which time the environmental performance of the facility would be reviewed, with a view to reducing the monitoring scope and frequency.

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Table 1
Part A: Product Salt (Cont'd)

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DEHP Information Request Item	Response
Page 24 states that the design of the landform and capping configuration is temporary with product salt to be recovered. What is the estimated time that this material would be stored? And if it is not recovered, what is the estimated life of containment and temporary capping.	The receipt of product salt is not expected to commence for approximately 2 years from receipt of development approvals (nominally after 2015). Ownership of the product once received will remain with We Kando, with the intention to identify a viable use/market for the product. Preliminary investigations into possible uses and markets have already commenced. The principle constraint at present is transport, with potential uses in a regional sense currently being available. It is emphasised that the final capping profile is not intended for short term/temporary use, and as such design has assumed conservatively that the capping will be in place for the long term. To complement this design approach, a geomembrane has been incorporated into the capping profile, and as described above, possesses an effective operational life in excess of 400 years.
Demonstrate than an adequate contingency plan is in place if the proposed development plan, that is to reclaim the salt, does not deliver the expected outcomes.	Contingency has been built into the design of the product salt storage facility. This contingency includes the following: • Use of PE geomembrane, possessing an extended life, in the liner and capping systems. • Application of effective operating methods (consistent with a solid waste landfill operation) as a means of reducing water/leachate management issues, as a particular concern. • Adoption of a landform that will maintain geotechnical stability in the long term (comprising batter slopes not steeper than 4[H] to 1[V]). • Placement of a significant thickness of growth medium to establish and maintain an effective vegetation growth, which will be limited to grasses. Ultimately, the landform developed will be consistent with the other waste disposal landforms developed within the site. Given the homogeneity of the salt product, the expected stability of the salt profile (not being subject to settlement or displacement) and the ability to establish a robust capping profile, the current product salt storage is considered to possess sufficient design redundancy to maintain long term integrity.

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3 RESPONSES TO WASTE SALT INFORMATION REQUESTS

Table 2
Part B: Waste Salt

Information Request	Response
GPS details of the intended disposal area.	GPS coordinates (Eastings and Northings) for the proposed footprint area for Waste Salt disposal facility are provided on **Figure A1** in **Appendix B.**
Page 28 states that the estimated footprint of the waste salt disposal area is 20ha, however, Figure 12: final landform plan, shows that the waste salt disposal area considerably smaller in size compared to the proposed 14.6ha product salt storage area. Please review disposal and storage area and confirm each area size.	The footprint of the proposed waste salt disposal area is 6.13ha. This area is shown on **Figure A1** in **Appendix A**, with GPS coordinates (Eastings and Northings) reflecting the disposal area extent also being provided.

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Table 2
Part B: Waste Salt (Cont')

Information Request	Response
etails on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?	Similar to the product area description as outlined in **Section 2.0**, the key aspects of the waste salt storage area relative to potential contamination to land and water (refer **Section 7.3** of ATCW report) are as follows: • *Waste salt will be delivered in loose form by trucks, placed onto the working face, then compacted.* • *Waste salt will be paddock stockpiled at the leading edge of the working face, then pushed down the face to progress the lift.* • *Cover layers would be used in the event that the operation is suspended or rainfall is expected. Intermediate and final cover layers would also be applied as required to isolate completed platform surfaces.* Further to these requirements, to prevent the release of contaminants to land and receiving waters, the following provisions will be made: • Initially waste salt will be unloaded within the excavated portion of the disposal cell (i.e. below surrounding natural ground level). Trucks delivering waste salt would enter the excavation to unload at the active working face. Any rainfall runoff from the fill platform would therefore be captured within the excavation (refer Stormwater Management Plan, **Appendix E** of ATCW Report). The excavation will be protected from stormwater inflow using stormwater diversion bunds. • At all times, and particularly as the waste salt platform rises above the natural ground level surrounding the disposal area: o the surface of the waste salt platform will be graded away from the active/working face, and with the use of diversion bunds as required to direct stormwater runoff from the platform into a dedicated containment area either within the cell excavation or within a stormwater control pond (sedimentation pond) formed outside the cell footprint. o trucks delivering waste salt would unload within the active working face area, which would be located within stormwater diversion bunds. o placement of daily capping as required, and progressive construction of intermediate and final capping over completed waste salt lift surfaces would isolate the product salt material, therefore preventing contact with stormwater, other than within the active face area. Stormwater from capped surfaces would be directed off-site, and would be subject to release stormwater monitoring to demonstrate appropriate water quality (refer **Appendix E**) • Any salt impacted stormwater, captured within the bunded active face area, would be transferred by pumping for storage and evaporation within Pond 1 or tankered offsite for RO treatment. An alternative is to absorb the water into the salt storage, although this would be adopted only as a short term measure.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
	It is emphasised that the above practices are critical to the operation of the disposal facility to limit the exposure of waste salt surfaces, thereby limiting the quantities of contact stormwater to be handled and treated and to minimise long term leachate generation potential. It is also emphasised that the principles adopted for operation of the product salt area are based on solid waste landfill operations.
Why is the design of the salt disposal area different to the product salt area? That is why is there no provision for leak detection drains, drainage aggregate etc?	As outlined in **Section 2.0**, leak detection drains are included in the product salt storage area due to the proximity of Stockyard Creek in the unlikely event of leakage from the storage area. Leak detection drains are provided to indicate the presence of leakage from the storage and would enable management of this leakage prior to reaching the creekline as the nearest receiving environment. It is also indicated that justification for exclusion of leak detection could be made if located further away from the creekline, on the basis that the risk of reaching this environment is low, contributed by the very low permeability of natural sequences. Based on the above, leak detection drainage is not considered necessary for the waste salt disposal for the reason that Stockyard Creek is located at a distance from the area (some 1,300m). Considering the geology of the site and the low permeability of the underlying soil/rock, the likelihood of a leak from the waste salt disposal area reaching Stockyard Creek is extremely low. Further justification is that the disposal area is considerably smaller and of less capacity than the product salt area. It is noted that neither the waste salt disposal or product salt storage facilities incorporate leachate drainage systems. This is because the salt material in both instances is relatively homogeneous, and due to the coarse particle size, provide a level of permeability that would contribute to drainage of leachate, if required. Under effective operating conditions, the potential for take up of moisture into the salt profile would be minimal, therefore the recovery of leachate would not be required. The principles of mono-cell development, given the homogeneity of the material have been applied in relation to this aspect.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
What is the life of the geomembrane?	Refer **Section 2.0** under product salt storage development
Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?	Refer **Section 2.0** under product salt storage development
What constitutes a leak/failure of the Cell? How is this measured and how often is it measured?	Liner System A leak through the cell can be defined as a condition whereby a wetting front develops beyond the limits of the liner to an extent that a rise in moisture content and/or contaminant increase is detected. Typically, such detection would occur visually through visible seepage, wetting or salt-staining or through groundwater monitoring. Conversely, a failure of a cell associated with leakage would be deemed to occur when the leakage causes or threatens to cause a detrimental impact on the receiving environment. The primary mechanism for measuring the potential for a leak/failure of the liner system will be by groundwater monitoring, for assessment of salt impact of the uppermost groundwater aquifer, through sampling and monitoring on a six-monthly basis. External Landform Surfaces A leak or failure to the external surfaces of the product salt landform would be identified during normal operations and inspections, being indicated by a seepage expression or a wetting front (supported by surface water sampling and analysis). An action plan would be developed immediately to manage the seepage area and for repair. As a minimum, bunds would be constructed to capture any leakage flow and to transfer this liquor to the contact water containment area or Pond 1.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
Where the contact stormwater is stored, is this area lined? What is the estimated amount of contaminated stormwater anticipated and demonstrate that Pond 1 will be adequate to contain this water if it is pumped to this location. Furthermore would the inclusion of this source of water result in Pond 1 (Lot 83 LY566) being classes as high hazard (see attached guideline Manual for assessing hazard categories and hydraulic performance for dams.)?	ATCW Report Reference: **Appendix E, Section 3.3,** with key aspects of contact stormwater management as follows: • *Contact water will be managed by bunding above the active working face to divert stormwater from flowing onto the active filling area, and by bunding at the toe of the active working face to capture contact water running off the face.* • *Management of contact water will be by recirculation through the waste salt profile, transferred for storage within and evaporation from Pond 1, or transferred for storage within separate tanks and then tankered offsite for RO treatment* The primary strategy with respect to contact stormwater management will be to reduce the quantity of liquor generated. This will require bunding as described above, as well as the use of daily, intermediate and final capping to isolate the waste salt platform from stormwater contact. Under effective operating conditions, contact water management would be enhanced by: • Keeping the active working face to a minimum area. Typically the face will measure some 30m wide x 30m deep, an area of some 900m^2; • Application of daily cover across the working face (rather than just recently formed platform surfaces) when rainfall is imminent; • Maintaining systems to ensure that any accumulated contact water within this area can be transferred rapidly, ensuring the availability of access to the face; and • Controlling the acceptance of waste salt during wet weather periods, thus limiting the exposure of waste salt surfaces (in conjunction with daily capping as described above). Under these conditions, it is not feasible to definitely estimate the quantity of contact water that is likely be generated. Optimum operating conditions will limit the quantity, while poor quality operations may result in substantial quantities of contact water. Nonetheless, the effective use of capping layers will be the key, in conjunction with stormwater bunding around the working face.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
	Quantities of contact water that are generated will be managed as follows: • Small incidental quantities will remain within the bunded area, and will likely infiltrate directly into the waste salt mass, or can be absorbed into future loads of waste salt. • Moderate quantities of contact stormwater (indicated by a shallow depth of inundation at the toe of the active face) would be pumped to a series of tanks located adjacent to the cell. A total tank capacity of 100kL would be maintained, equivalent to total rainfall in excess of 100mm over the active face. • Larger quantities of contact stormwater (likely occurring where the face remains exposed subject to a prolonged rainfall period), would be transferred to Pond 1. A prolonged rainfall event under these circumstances would be equivalent to a 10 year ARI, 24 hour duration event, being equivalent to 4.95mm/hour (118.8mm). A maximum available storage capacity within Pond 1 of 0.106 ML would be necessary under these conditions, which represents some 0.53 % of the available 20ML capacity of the pond (or an equivalent depth of approximately 17.5mm. (Coupled with the product salt area, contact water storage would constitute some 1.6% of the total pond storage, with the remaining storage within the pond allocated for site stormwater storage - refer **Appendix E** of ATCW report.) To facilitate this transfer, connection between the storage area to Pond 1 will be by pump and pipe connections that would be permanently in place, and would be periodically augmented as the phases of filling of product salt advances. It is noted that, conceptually, contact water containment areas on **Figure 9** for the waste salt disposal area have been shown at the toe of the landfill batter within the excavation. This does not necessarily reflect the actual location, merely indicating that a containment area is required. Typically, the containment area would be formed around the active face as described under previous items. As a contingency to the above contact water management approach, Site Stormwater from the developing landform will report to the unfilled portions of the storage area excavation or Pond 1 (refer **Appendix E**). The containment criteria for site stormwater containment is a 10 year ARI, 24 hour duration event, effective for the total (effective) footprint of the waste salt storage area. This includes the active working face, therefore failure to contain the face area will result in discharge of contact stormwater to the site stormwater storage area. This provides for containment of this water, with an opportunity for assessment of water quality at this location, with treatment and/or release to be initiated, as required. Based on the above, there is no necessity to review the status of the Pond 1 in relation to the Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (DEHP, 2012), on the basis that: • The accepted current use for containment of brine (although recognising that this use has discontinued) • The capacity of the pond is less than 25ML, being the trigger level for saline (salinity based) liquor.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
How will salt levels as a result of capillary rise in the capping be managed and what impact would it have on revegetation and stormwater runoff.	A PE geomembrane is proposed for lining the final waste salt landform (refer **Figure 13** from ATCW report). The nature of the salt will allow an effective subgrade for placement of the geomembrane. The geomembrane has been included to provide a moisture barrier, both vertically downwards through the final soil capping profile into the salt mound, as well as vertically upwards as a result of capillary rise from the salt mound into the capping layer. Regardless of these provisions, the potential for capillary rise within the product salt profile is considered to be low given the (geotechnically) coarse grading of the product salt, therefore limiting the potential for development of surface tension. IN addition to the use of a geomembrane, it is proposed that shredded tyres be placed over the geomembrane surface to provide a drainage layer beneath the soil growth medium profile. Even in the event that the geomembrane failed and capillary rise from the salt profile into the capping layer occurred, this shredded tyre layer would prevent the upward rise into the growth medium.

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Table 2
Part B: Waste Salt (Cont'd)

Information Request	Response
Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment as a result of this activity?	Reference is made to the Conceptual Closure and Rehabilitation Plan for the storage/disposal facilities included as **Appendix A** to this response. A summary of proposed monitoring is provided as follows: • Surface water monitoring as outlined in the Stormwater Management Plan (**Appendix E** of the ATCW report), comprising: o Receiving environment monitoring, within Stockyard Creek, at upstream and downstream locations, demonstrating that no deterioration in water quality as a result of any part of the development (including the waste salt disposal area, solid waste landfill and product salt storage area) is occurring. Monitoring at these sites would be taken quarterly o Release water monitoring of discharge from the cell excavation of from Pond 1 (reporting to the environment), demonstrating that defined short term and long term water quality objectives (trigger levels) are being achieved. Monitoring at the current release site would be undertaken at release events, with a minimum frequency of once per quarter during which release occurs. • Groundwater monitoring, as outlined in the Groundwater Monitoring Plan (**Appendix F** of the ATCW report), comprising: o Monitoring from groundwater monitoring bores located both upgradient and downsgradient from the waste salt disposal area. o Monitoring to be undertaken six-monthly, with analysis of monitoring data undertaken to demonstrate that statistically significant adverse changes at detection sites over background sites do not occur Surface water and groundwater monitoring carried out in accordance with the above would continue for a period of 4 years following decommissioning and closure of the facility, after which time the environmental performance of the facility would be reviewed, with a view to reducing the monitoring scope and frequency.

RTI DISCLOSURE - EHP

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4 RESPONSES TO SOLID WASTE INFORMATION REQUESTS

Table 3
Part C: Solid Waste

Information Request	Response
GPS details of the intended disposal area. Total area size should also be provided.	The footprint of the proposed Solid Waste Landfill is 9.4ha. This area is shown on **Figure A1** in **Appendix B**, with GPS coordinates (Eastings and Northings) reflecting the disposal area extent also being provided.
When leachate is detected, how often will it be analysed and what measures will be taken if the leachate does not meet the allowable leaching contaminant levels listed in Appendix D: waste acceptance criteria	A small quantity of leachate is expected to be generated within the landfill. Leachate generation would be inhibited given the relatively dry climate of the site (compared to coastal Queensland), as well as the landfill operations approach. The key aspects of landfill operation will be waste placement and compaction and stormwater management, to reduce the opportunity for stormwater to be absorbed into the waste profile. Sampling of leachate (if available) will occur from the leachate well on a six-monthly basis. Monitoring will occur in relation to the groundwater monitoring suite (refer Appendix F of the ATCW report). It is noted that this monitoring has been omitted from the monitoring descriptions for the solid waste landfill, but will be included under operational conditions. Leachate analysis will not be assessed against the allowable leaching contaminant levels list in Appendix D of the ATCW report. These contaminant levels relate to the acceptance of waste into the landfill and not levels contained within leachate recovered from the landfill, to the extent that if the source or type of waste is unknown, the waste material will be tested and assessed in accordance with the contaminants listed in Appendix D (in accordance with DEHP (2012), *Guideline - Landfill Siting, Design, Operation and Rehabilitation - ERA 60 - Waste Disposal*). The purpose of leachate monitoring will be to routinely assess any differences from event to event, as an indicator of the stage of waste degradation, and as a basis to benchmark any anomalies in either surface water or groundwater monitoring results (as a means of excluding landfill impact as a cause of these anomalies). Furthermore, the leachate quality results will be used to assess suitability for storage in Ponds 2 and 3 on Lot 170, for disposal through evaporation.

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Table 3
Part C: Solid Waste (Cont'd)

Information Request	Response
Is Pond 2 and 3 located on lot 170 LY481 authorised to accept landfill leachate? If not what measures will be taken to ensure that leachate is suitably managed? What about metals?	The small amount of leachate that is expected to be generated and recovered from the solid waste landfill will likely be high in organics, salts and particularly ammonia. These constituents are also likely to be dominant in raw and primary treated effluent that is currently contained within Ponds 2 and 3 located on Lot 170. As outlined in Section 8.3.4.1 of the ATCW report, additional sources for leachate disposal exist, including feed for the on-site composting/soil conditioning process or tankering off-site for licenced disposal. Although not indicated in the ATCW report, recirculation of leachate into the waste mass also exists as an option. This method of disposal benefits the microbial processes within the landfill and aids in the breakdown and ultimate stabilisation of the waste within the landfill. The moisture addition can also benefit the compaction process, particularly for dry waste. The capacity for recirculation is however limited, being controlled by the field capacity of the waste material. Recirculation would only occur to the extent that capacity for take-up exists, without generating further leachate quantities. The adopted approach for leachate management will vary over time, subject to availability of each of the above options. The primary fall-back position will be off-site tankering to a licenced disposal facility.

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5 RESPONSES TO STORMWATER MANAGEMENT PLAN INFORMATION REQUESTS

Table 4
Part D: Stormwater Management Plan (SWMP) - Appendix E

Information Request	Response
Pages 2 and 3 states all site stormwater would report to the control pond prior to discharge through a site discharge location at Stockyard Creek, and that it would be undertaken subject to achieving appropriate release water quality conditions. *Please provide the following information:*	
Details under what conditions stormwater would be released, for example in times of low? If so what would this rate be?	Site stormwater management (refer Stormwater Management Plan, **Appendix E** of ATCW report) indicates the following in relation to site stormwater management: (i) Site Stormwater comprises stormwater runoff derived from all unstabilised/bare earth surfaces within each of the activity areas. Site stormwater is typically characterised by elevated suspended solids, with management by sediment removal practices. (ii) Cell excavations and sedimentation /stormwater control ponds would be used for treatment of site stormwater prior to release. (iii) The management plan dictates that release of site stormwater to Stockyard Creek would only occur once appropriate release water quality conditions are met. The general rationale adopted for stormwater releases would be to batch, treat and discharge, ensuring appropriate water quality conditions at the receiving environment. It would also be necessary to ensure that there is sufficient capacity to capture site stormwater from the following storm event. The volumes and rate of discharge of release would therefore be based upon a number of factors, including the storm intensity and duration, volume of site stormwater runoff captured in each of the site stormwater containment areas and the stormwater quality at the point of capture. The minimum criteria to be maintained for site stormwater management is to provide storages equivalent to a 1 in 10 year ARI, 24 hour duration event, effective over the bare earth or erodible exposure. There is no expectation that release would occur during any or a defined flow event in Stockyard Creek. The only restriction to releases would be the quality of the release water (being subject to release conditions) and the quality of receiving waters (demonstrating that the release has not impacted on receiving water quality). Monitoring requirements are outlined in the Stormwater Management Plan. Regardless of the above, release will be controlled to the extent that none of the following is caused: I. Re-suspension of particles; or II. Erosion of the banks or bed of Stockyard Creek; or III. Landscape damage; or IV. Vegetation damage.

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Table 4
Part D: Stormwater Management Plan (SWMP) - Appendix E (Cont'd)

Information Request	Response
GPS locations of discharge and monitoring points	GPS coordinates (Eastings and Northings) for the proposed sedimentation/stormwater control ponds associated with the Product Salt Storage, Waste Salt Disposal and Solid Waste Landfill are provided on **Figure A2** in **Appendix B.** It is noted however that specific release locations cannot be defined at this time, subject to detailed design of ponds. Also, defined release locations from cell excavations, prior to construction of ponds have not yet been confirmed.
Whilst the SWMP lists the long and short term water quality objectives, it does not provide details on what the maximum stormwater quality should be to achieve these objectives.	
What is the water quality limits proposed in order to achieve the long and short term water quality objectives stated on page 12 of the SWMP?	The long term and short term water quality objectives (WQOs) listed in **Section 5.3.1** of the Stormwater Management Plan (**Appendix E** of the ATCW report) are intended to exist as limits for release from site stormwater containment areas. The application of these WQO's will be as follows: • short term WQO's must be achieved to enable release from the containment area (with the key parameter being suspended solids), with stormwater to be held and treated until compliance with these WQO's is achieved; and • long term WQO's are to be adopted as performance objectives for release water, and where not achieved, corrective actions related to site operations and stormwater management are to be carried out, with a view to achieving these objectives in the long term. From a regulatory perspective, short term WQO's would be applied immediately, whilst long term WQO's would be applied over an extended period.
What measure will be taken if these release limits or water quality objectives are breached?	Refer above

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6 RESPONSES TO GROUNDWATER MANAGEMENT PLAN INFORMATION REQUESTS

Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F

Information Request	Response
Location of the proposed bore monitoring wells and 3 existing bores are located on site are provided in Figure F01. Please provide the following information:	
Existing data that has been collected pertaining to boreholes labelled BH1, BH2 and BH3 on Figure F01	BH1, BH2 and BH3 were installed in 2011. The nominal depths of these bores was some 12m, intersecting weathered basement. No groundwater was intersected the time of construction, and no recovery of groundwater into the bores has occurred since. As a result, no groundwater samples have been recovered.
Identify if there are any nearby bore wells off site that could be utilised to obtain background water quality data for the site.	No registered groundwater bores are located proximal (within a distance of 5km) from the subject site.
GPS locations of the monitoring points	GPS coordinates (Eastings and Northings) for proposed groundwater monitoring bores as nominated in **Appendix F** of the ATCW report are provided on **Figure A2** in **Appendix B**.

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Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F (Cont'd)

Information Request	Response
Page 11 states that the administering authority will be notified when potential environmental harm exists, but only when there has been a sequence of contaminant of potential concern. Please provide information on what trigger values you will consider as being a potential concern.	Analysis of groundwater quality data would be maintained as a minimum, to fulfil DA requirements by undertaking data analysis and reporting in accordance with DEHP expectations, providing a reporting system that identifies potential parameters of concern as well as groundwater quality exceedances. To fulfil these requirements, an approach comprising robust analysis to ensure all potential landfill impacts are identified with any unrelated impacts excluded/isolated. As a basis for analysis, the DEHP Guideline for *Recording, Interpretation and Analysis of Monitoring Results ERA 60* and Geoscience Australia - *Groundwater Sampling and Analysis Field Guide (2009)* would be applied. An example of an appropriate method of groundwater quality data analysis, developed between ATCW (formerly Allan Watson Associates) and DEHP for the former Maroochy Shire landfills is provided below: • *Early Warning Indicators* Comparison between median groundwater quality measured in all bores located hydraulically downgradient from the facility, against the 80th percentile groundwater quality measured in bores at nominated background sites. 80th percentile (background) values are referred to as *trigger levels*. • *Groundwater Quality Limits* Comparison between median groundwater quality measured in bores nominated as "bores of compliance" for the facility against the following *Groundwater Quality Limits* (determined as indicator parameters for that landfill facility) determined from groundwater quality measured in bores at nominated background sites, as follows: Ammonia: 120% of highest value Manganese: 120% of highest value pH: 0.5 pH units more than the highest value; and 0.5 pH units less than the lowest value Sulphate: 120% of highest value TOC: 120% of highest value Zinc: 120% of highest value

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Table 5
Part E: Groundwater Monitoring Plan (GWMP) - Appendix F (Cont'd)

Information Request	Response
	Note that a compliance bore is nominated at a site located hydraulically downgradient from the site beyond the edge of an effective "attenuation zone". The attenuation zone means the area around a release of contaminants in which the concentration of each contaminant in the release is reduced to ambient levels through physio-chemical and microbiological processes The following actions are required in response to breaches in relation to either *Early Warning Indicator (trigger level)* or *Groundwater Quality Limit* exceedances. *(i) Early Warning Indicators* Exceedance of a trigger level at a downgradient site for a corresponding groundwater quality parameter provides an "Early Warning Indicator" of potential hydrological connection with the adjacent facility. No specific reporting requirements would exist in response to a trigger level exceedance. Rather, a general review of site operations by the holder of the DA would be necessary to isolate and facilitate remediation of any identifiable contribution to the trigger level exceedance. The "Early Warning Indicator" would also be used to forecast the potential for a "Groundwater Quality Limit" exceedance. *(ii) Groundwater Quality Limit* Exceedance of a "Groundwater Quality Limit" would trigger the following response: • Report the breach to the administering authority (as a Notification); and • Initiate an investigation of each breach and provide a report to present the results of the investigation.

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7 RESPONSES TO FINANCIAL ASSURANCE INFORMATION REQUESTS

Information Request	Response
Under Section 292 of the Environmental Protection Act 1994 (the Act) the Department, acting as the administering authority may require the holder of the Environmental Authority (EA) to give the administering authority financial assurance.	
Due to the scale and nature of the activity it is requested that the applicant provide a Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure. This plan should quantify the cost and include soil and water validation.	Please find attached, in Appendix C, a Conceptual Closure and Rehabilitation Plan, as requested including details on the ongoing environmental monitoring and the maintenance of the capping layers and associated vegetation to ensure the ongoing integrity of the capping. This Closure and Rehabilitation Plan will be reviewed and updated on an annual basis to take into account any changes to legislation, site operations, construction of progressive capping and any other relevant details.

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APPENDICES

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APPENDIX A

Notice

Information request

This notice is issued by the assessment manager, pursuant to section 276 of the Sustainable Planning Act 2009.

We Kando Pty Ltd
39 Lagoon Road
MORAYFIELD QLD 4506

Our reference: SPDE05423513 (256798)

Attention Mr David Hooke

Re: Application for development approval

1. The assessment manager requests the applicant give further information needed to assess the application. That further information is stated in the attached information request(s) as follows:

   Attachment 1: Information to be provided

2. **Application details**

   Applicant: We Kando Pty Ltd

   Assessment manager ref: SPDE05423513 (256798)

   Date application made or referred to the assessment manager: 9 April 2013

   Aspects of development:

Assessable development		Assessment manager reference
Development Approval for a MCU involving an ERA	Sustainable Planning Regulation 2009 – Schedule 3, Part 1, Table 2, item 1	SPDE05423513

   Property/Location description(s):

   Street address - Lot 83 Warrego Highway CHINCHILLA QLD 4413
   Lot/Plan - Lot 83 Plan LY566, Lot 170 Plan LY481, Lot 137 Plan LY204

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3. The application will lapse unless the applicant gives the assessment manager a response to the information request under section 278 of the *Sustainable Planning Act 2009* which requires such response to include a written notice to the requesting authority **within 6 months** stating:
   a. all of the information requested is provided; or
   b. part of the information requested is provided, and to proceed with assessment of the application; or
   c. the applicant does not intend to supply any of the information requested, and to proceed with assessment of the application.

4. A response to the information request must be given to Amanda Cleary, the Project Manager, at the address stated below.

Please note that if the information requested is required for the administering authority to assess the application against the regulatory requirements in the *Environmental Protection Regulation 2008* and the information is not provided, your application may be refused.

sch4p4(6) Personal information

Signature

23/4/13

Date

Delegate
James Mackenzie
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Amanda Cleary
Department of Environment and Heritage Protection
PO Box 731
TOOWOOMBA QLD 4350
Phone: (07) 46994371
Fax: (07) 46994399

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Attachment 1 – Information to be provided.

Part A: Product salt

300,000 – 600,000 t/a
5yr development life
Footprint Stage 1 and 2 total 14.6ha

Please provide the following information:

- GPS details of the intended disposal area (identified as Stage 1 and 2).
- Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?
- What is the life of the geo membrane used line the area to store the product salt?
- Will exposure to Ultra Violet (UV) light and salt increase the deterioration of the membrane? If not why not?
- What constitutes a leak/failure of the cell? How is this measured and how often is it measured?
- Page 22 states *"leak detection drains are deemed to be necessary due to the proximity of Stockyard Creek and given that no provision for internal drainage has been made, relying on the integrity of the liner for the containment."* What contingency plans are in place if the leak detection drains indicate that there is a leak and/or failure?
- Page 23 states that contact stormwater will be either recirculated through the product stockpile or transferred for storage and evaporation in the brine pond (Pond 1) located on lot 83 LY566. Furthermore, Figure 12 shows stage 1 and 2 product storage area as having no connection to the existing Pond 1. Therefore what is the estimated amount of contaminated stormwater anticipated from the area? If it is taken to Pond 1 demonstrate that Pond 1 will be adequate to contain this water. Furthermore would the inclusion of this source of water result in Pond 1 being reclassified as a high hazard dam (see attached guideline *Manual for assessing hazard categories and hydraulic performance for dams*)?
- Page 26 states that stormwater runoff from the exposed product salt and "bleed" liquor from the stockpile will be stored in containment areas and therefore in conflict with page 23. Please provide clarification, and further details including and not limited to this area, for example is the "containment area" lined, what is the storage capacity of this area is, and what is the response once the area is at capacity.
- Stage 1 and 2 both have a 50 m buffer from the Stockyard Creek (Figure 12: final landform plan). However page 8 states that a flood buffer of 100m has been adopted for the length of the Creek and therefore a constraint of the project. Please provide clarification as to why the buffer should not be 100m as proposed, and confirmation that there is no potential for the Creek to inundate the stockpiles and subsequently impact the Creek in times of flood. Furthermore hydraulic modelling for various flood scenarios including 1 in 10, 1 in 20, 1 in 50 and 1 in 100 years, as the Creek flows into Charleys Creek, through the township of Chinchilla and then into the Condamine River.
- How will rising salt levels within the capping as a result of capillary rise and contact stormwater be managed and what impact would it have on revegetation?

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- Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment?
- Page 24 states that the design of the landform and capping configuration is temporary with the product salt to be recovered. What is the estimated time that this material would be stored? and if it is not recovered, what is the estimated life of containment and temporary capping?
- Demonstrate that an adequate contingency plan is in place if the proposed development plan, that is to reclaim the salt, does not deliver the expected outcomes.

Part B: Waste salt

30,000 t/a
20 year development life
Footprint ~ 20ha

Please provide the following information:

- GPS details of the intended disposal area.
- Page 28 states that the estimated footprint of the waste salt disposal area is 20ha, however Figure 12: final landform plan, shows the waste salt disposal area considerably smaller in size compared to the proposed 14.6ha product salt storage area. Please review disposal and storage area and confirm each area size.
- Details on the design of the unloading area that demonstrates that there will be no release of contaminants to land and waters from this area?
- Why is the design of the salt disposal area different to the product salt area? That is why is there no provision for leak detection drains, drainage aggregate etc?
- What is the life of the geo membrane?
- Will exposure to UV and salt increase the deterioration of the membrane, if not why not?
- What constitutes a leak/failure of the cell? How is this measured and how often is it measured?
- Where the contact stormwater is stored, is this area lined? What is the estimated amount of contaminated stormwater anticipated and demonstrate that Pond 1 will be adequate to contain this water if it is pumped to this location. Furthermore would the inclusion of this source of water result in Pond 1 (lot 83 LY566) being classed as high hazard (see attached guideline *Manual for assessing hazard categories and hydraulic performance for dams*)?
- How will salt levels as a result of capillary rise in the final capping be managed and what impact would it have on revegetation and stormwater runoff?
- Post closure of each cell, what monitoring will be undertaken and for how long to ensure that there is no impact to the environment as a result of this activity?

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Part C: Solid waste

20,000 t/a
Size of area unknown

Please provide the following information:

- GPS details of the intended disposal area. Total area size should also be provided.
- When leachate is detected, how often will it be analysed and what measures will be taken if the leachate does not meet the allowable leaching contaminant levels listed in Appendix D: waste acceptance criteria?
- Is Pond 2 and 3 located on Lot 170 LY481 authorised to accept landfill leachate? If not what measures will be taken to ensure that leachate is suitably managed?

Part D: Stormwater Management Plan (SWMP) – Appendix E

Page 2 and 3 states all site stormwater would report to the control pond prior to discharge through a site discharge location at Stockyard Creek, and that it would be undertaken subject to achieving appropriate release water quality conditions.

Please provide the following information:

- Details under what conditions stormwater would be released, for example in times of flow? if so what would this flow rate be?
- GPS locations of discharge and monitoring points.

Whilst the SWMP lists the long and short term water quality objectives, it does not provide details on what the maximum stormwater quality should be to achieve these objectives.

- What is the water quality limits proposed in order to achieve the long and short term water quality objectives stated on page 12 of the SWMP?
- What measure will be taken if these release limits or water quality objectives are breached?

Part E: Groundwater Management Plan (GWMP) - Appendix F

Locations of the proposed bore monitoring wells and 3 existing bores located on site are provided in Figure F01.

Please provide the following information:

- Existing data that has been collected pertaining to boreholes labelled BH1, BH2 and BH3 on Figure F01.
- Identify if there are any nearby bore wells off site that could be utilised to obtain background water quality data for the site.
- GPS locations of monitoring points.

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Page 11 states that the administering authority will be notified when potential environmental harm exists, but only when there has been a sequence of contaminants of potential concern. Please provide information on what trigger values you will consider as being a potential concern.

Part F: Financial Assurance

Under section 292 of the *Environmental Protection Act 1994* (the Act) the Department, acting as the administering authority may require the holder of the Environmental Authority (EA) to give the administering authority financial assurance.

> ***292 Requirement to give financial assurance for environmental authority***
> *(1) The administering authority may, by condition of an environmental authority, require the holder of the environmental authority to give the administering authority financial assurance—*
> *(a) before the relevant activity is carried out under the environmental authority; and*
> *(b) as security for—*
> *(i) compliance with the environmental authority; and*
> *(ii) costs or expenses, or likely costs or expenses, mentioned in section 298.*

> ***298 Application of sub division 3***
> *This subdivision applies if the administering authority incurs, or might reasonably incur, costs or expenses in taking action to—*
> *(a) prevent or minimise environmental harm or rehabilitate or restore the environment, in relation to the carrying out of an activity for which financial assurance has been given; or*
> *(b) secure compliance with an environmental authority or small scale mining tenure for which financial assurance has been given.*

Due to the scale and nature of the activity it is requested that the applicant provide a Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure. This Plan should quantify the cost and include soil and water validation testing.

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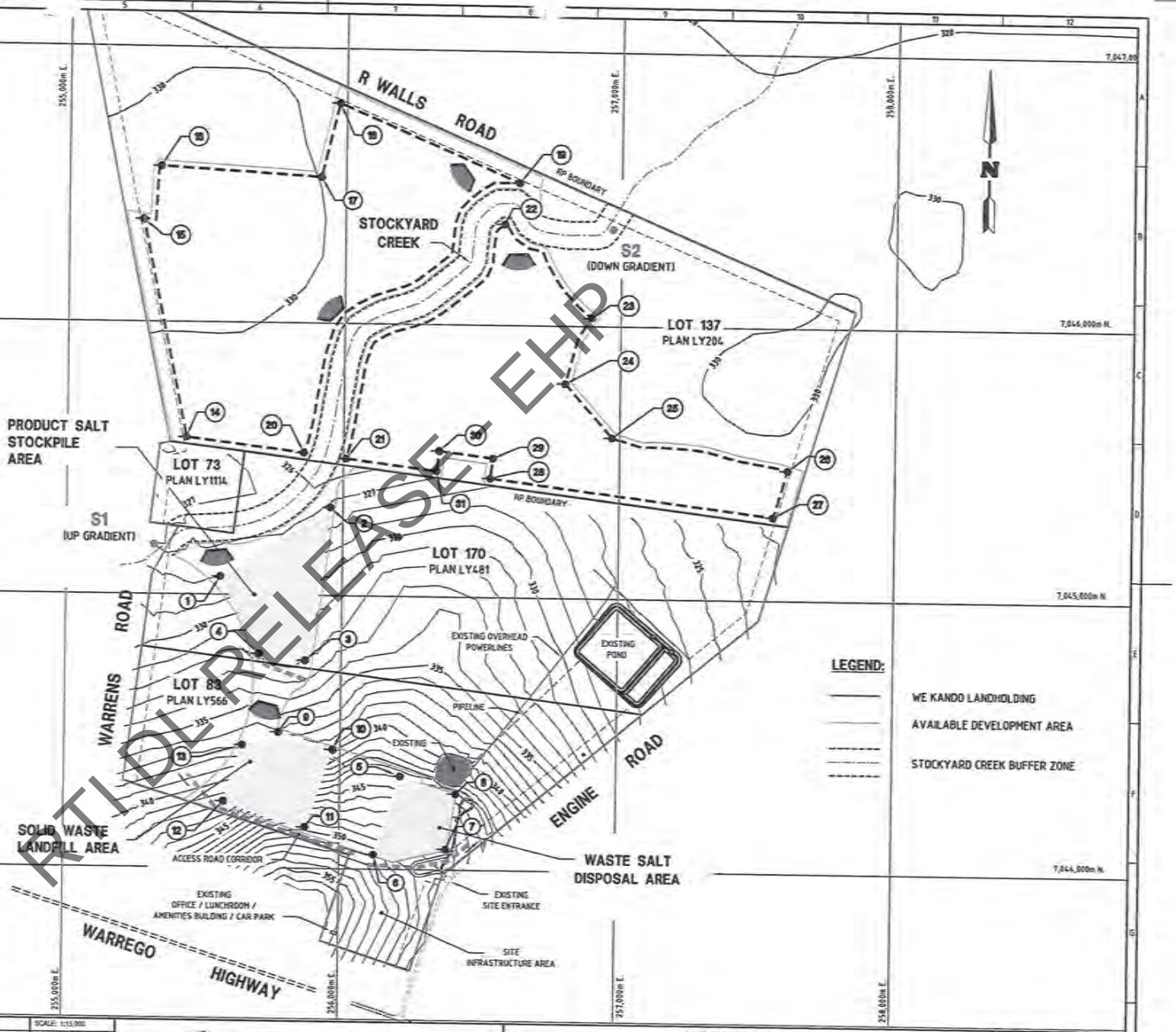
APPENDIX B

POINT TABLE

POINT #	EASTINGS	NORTHINGS	DESCRIPTION
1	255559.40	7045066.48	PRODUCT SALT STORAGE AREA
2	255955.65	7045322.64	PRODUCT SALT STORAGE AREA
3	255870.34	7044761.37	PRODUCT SALT STORAGE AREA
4	255703.14	7044784.34	PRODUCT SALT STORAGE AREA
5	256218.98	7044343.02	WASTE SALT STORAGE AREA
6	256124.89	7044054.02	WASTE SALT STORAGE AREA
7	256386.79	7044075.81	WASTE SALT STORAGE AREA
8	256420.49	7044279.49	WASTE SALT STORAGE AREA
9	255776.02	7044500.15	SOLID WASTE LANDFILL
10	255972.83	7044437.93	SOLID WASTE LANDFILL
11	255874.76	7044152.43	SOLID WASTE LANDFILL
12	255579.26	7044245.06	SOLID WASTE LANDFILL
13	255645.91	7044451.89	SOLID WASTE LANDFILL
14	255430.99	7045574.80	STAGE 2 PRODUCT SALT STORAGE
15	255268.99	7046374.21	STAGE 2 PRODUCT SALT STORAGE
16	255330.44	7046566.90	STAGE 2 PRODUCT SALT STORAGE
17	255910.75	7046534.06	STAGE 2 PRODUCT SALT STORAGE
18	255975.91	7046802.69	STAGE 2 PRODUCT SALT STORAGE
19	256629.04	7046522.02	STAGE 2 PRODUCT SALT STORAGE
20	255856.35	7045521.03	STAGE 2 PRODUCT SALT STORAGE
21	256009.96	7045501.60	STAGE 2 PRODUCT SALT STORAGE
22	256576.19	7046371.42	STAGE 2 PRODUCT SALT STORAGE
23	256895.61	7046031.26	STAGE 2 PRODUCT SALT STORAGE
24	256800.05	7045785.99	STAGE 2 PRODUCT SALT STORAGE
25	256972.48	7045589.38	STAGE 2 PRODUCT SALT STORAGE
26	257610.74	7045476.15	STAGE 2 PRODUCT SALT STORAGE
27	257559.56	7045305.58	STAGE 2 PRODUCT SALT STORAGE
28	256531.91	7045435.57	STAGE 2 PRODUCT SALT STORAGE
29	256541.22	7045509.16	STAGE 2 PRODUCT SALT STORAGE
30	256347.12	7045533.72	STAGE 2 PRODUCT SALT STORAGE
31	256337.82	7045460.12	STAGE 2 PRODUCT SALT STORAGE



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ENGINE ROAD, CHINCHILLA
INFORMATION REQUEST RESPONSE
GPS CO-ORDINATES OF FACILITY AREA

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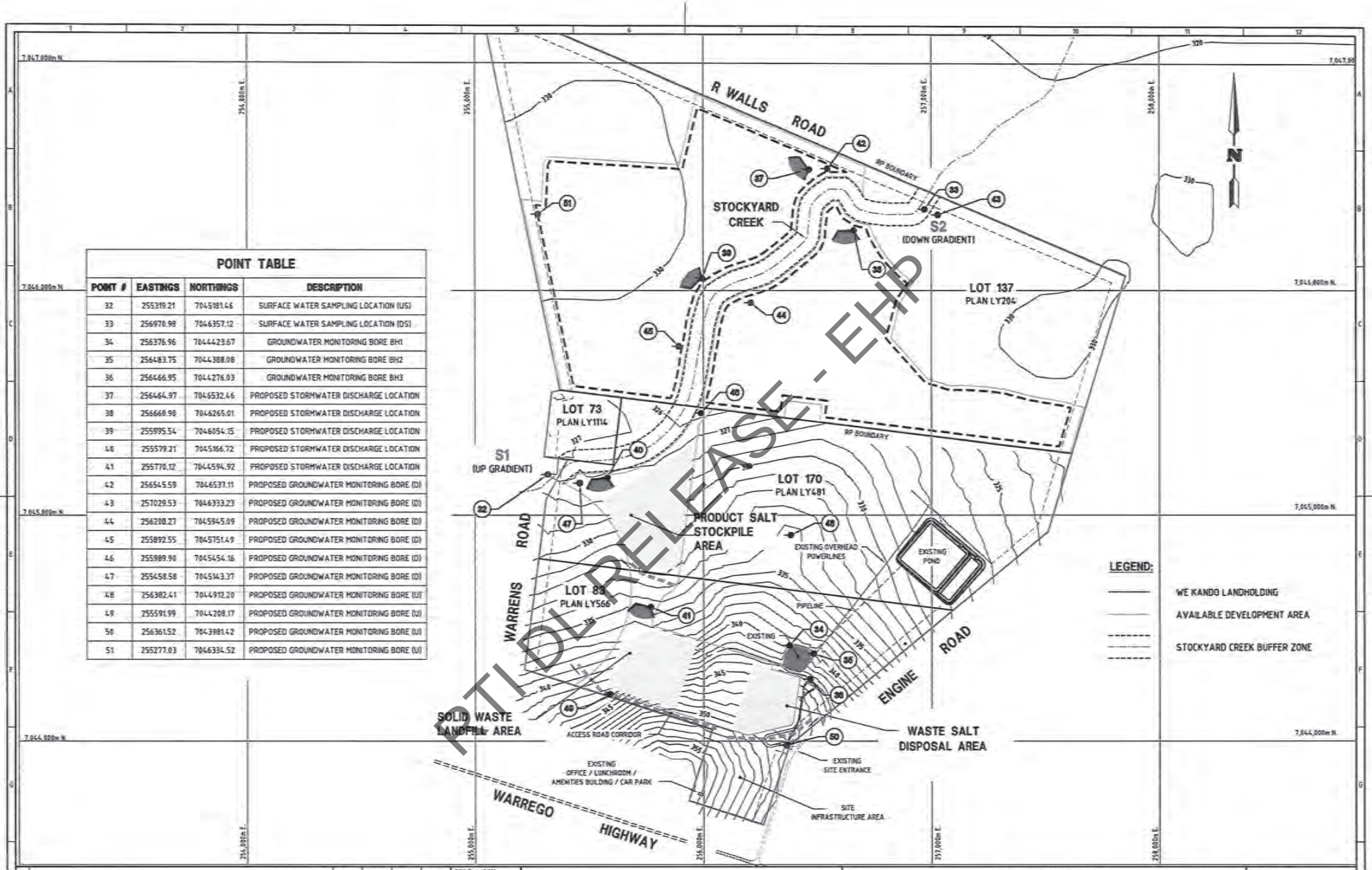

POINT TABLE

POINT #	EASTINGS	NORTHINGS	DESCRIPTION
32	255319.21	7045181.46	SURFACE WATER SAMPLING LOCATION (US)
33	256970.98	7046357.12	SURFACE WATER SAMPLING LOCATION (DS)
34	256376.96	7044423.67	GROUNDWATER MONITORING BORE BH1
35	256483.75	7044388.08	GROUNDWATER MONITORING BORE BH2
36	256466.95	7044276.93	GROUNDWATER MONITORING BORE BH3
37	256464.97	7046532.46	PROPOSED STORMWATER DISCHARGE LOCATION
38	256668.98	7046265.01	PROPOSED STORMWATER DISCHARGE LOCATION
39	255995.54	7046054.15	PROPOSED STORMWATER DISCHARGE LOCATION
40	255579.21	7045866.72	PROPOSED STORMWATER DISCHARGE LOCATION
41	255770.12	7044594.92	PROPOSED STORMWATER DISCHARGE LOCATION
42	256545.59	7046537.11	PROPOSED GROUNDWATER MONITORING BORE (D)
43	257029.53	7046333.23	PROPOSED GROUNDWATER MONITORING BORE (D)
44	256208.27	7045945.09	PROPOSED GROUNDWATER MONITORING BORE (D)
45	255892.55	7045751.49	PROPOSED GROUNDWATER MONITORING BORE (D)
46	255989.90	7045454.16	PROPOSED GROUNDWATER MONITORING BORE (D)
47	255458.58	7045143.37	PROPOSED GROUNDWATER MONITORING BORE (D)
48	256382.41	7044912.20	PROPOSED GROUNDWATER MONITORING BORE (U)
49	255591.99	7044208.17	PROPOSED GROUNDWATER MONITORING BORE (U)
50	256361.52	7043981.42	PROPOSED GROUNDWATER MONITORING BORE (U)
51	255277.03	7046334.52	PROPOSED GROUNDWATER MONITORING BORE (U)

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Engine Road Waste Management Facility

Engine Road Chinchilla

Conceptual Closure and Rehabilitation Plan

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July 2013

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IMPORTANT NOTICE
Please refer to our Conditions Report

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2. This report is based in part on information which was provided to us by the client and/or others and which is not under our control. We do not warrant or guarantee the accuracy of this information.

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FIGURES

Figure 1 Locality and Existing Site Layout
Figure 2 Final Landform Concepts

APPENDICES

Appendix A Characteristics of Product/Waste Types

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1 INTRODUCTION

1.1 Background

We Kando Pty Ltd (We Kando) operates a resource extraction and waste management facility at 27150 Warrego Highway, Baking Board (west of Chinchilla), in southern Queensland. The facility is subject to an expansion which includes the following elements:

(i) Temporary land-based storage for product salt, with this product derived from locally sited reverse osmosis (RO) plant brine treatment facilities.
(ii) Landfill for secure storage of the waste fraction from the RO plant brine treatment facility (with this material referred to as waste salt.
(iii) Landfill for containment of general waste (putrescible and non-putrescible).

An engineering assessment report prepared on behalf of We Kando by ATC Williams Pty Ltd (ATCW, 2013) was included in support of a development application for the expansion of the facility. In response to this application (Information Request Notice dated 23 April 2013 Reference SPDE05423513 [256798]), Department of Environment and Heritage Protection (DEHP) requested the submission of a "*Closure and Rehabilitation Plan that addresses the closure of the facility and, where relevant, the rehabilitation of all process and treatment areas and other areas affected by structures or support infrastructure.*".

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1.2 Purpose of the Report

The purpose of this report is to provide a Conceptual Closure and Rehabilitation Plan for the Engine Road Waste Management Facility. The report addresses concepts for landform capping for the Product Salt Storage Area, the Waste Salt Landfill Area and the Solid Waste Landfill. Post closure monitoring and maintenance necessary to ensure the integrity of the capping layers over time are also outlined. The structure of this report, addressing the above requirements, is as follows:

- **Section 2 -** Outline of the Proposed Project
- **Section 3 -** Overview of the Closure and Rehabilitation Plan
- **Section 4 -** Topsoil Management
- **Section 5 -** Capping Profiles
- **Section 6 -** Final Landforms
- **Section 7 -** Erosion and Sediment Control
- **Section 8 -** Vegetation Establishment
- **Section 9 -** Ongoing Maintenance Requirements
- **Section 10 -** Ongoing Monitoring Requirements

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1.3 Context of the Report

Context for the closure and rehabilitation plan is prompted in relation to the Product Salt Storage area. This storage area will exist as a temporary impoundment for salt product, with opportunities being sought for marketing of the product, for sale, processing or otherwise reuse. Notwithstanding the approach to capping of the product salt landform is consistent with closure standards adopted for the permanent waste disposal (waste salt and solid waste) facilities, therefore providing secure containment in the long term in the event that an appropriate market is delayed or is not found. Further context is that closure and rehabilitation for the product salt area focusses on the Stage 1 landform as described in ATCW (2013).

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2 OUTLINE OF PROPOSED PROJECT

2.1 General

As outlined in ATCW (2013), the existing site activities include:

(i) Quarry operation for extraction and production of road construction materials (pavement sub-base, base and top course products).
(ii) Acceptance of brine from reverse osmosis (RO) treatment facility operating within the region, for storage and evaporation within engineered ponds.
(iii) Acceptance of untreated and treated effluent from package sewage treatment plants operating within the region, for storage in engineered ponds, treatment by aeration and/or direct land application (subject to suitable effluent quality[1]).
(iv) Acceptance of green waste and inert soils (including inert drilling muds), for stockpiling, separation and blending, and moisture conditioning (using untreated and treated effluent where available and appropriate) to produce compost or soil conditioner.
(v) Acceptance of waste tyres for use in site activities, either intact or shredded.

Proposed future activities, subject to the current development application, include:

(i) Storage facility for product salt;
(ii) Landfill facility for waste salt; and
(iii) Landfill facility for general (solid) waste, including contaminated soil and treated sludges/slurries.

2.2 Site Locality and Zoning

The subject site is located at 27150 Warrego Highway, Bakers Board, some 8 km west of the Chinchilla Township in southern Queensland. The site is accessed via Engine Road, forming the eastern boundary of the property. The location and general layout of the site is shown on **Figure 1.**

The We Kando landholding comprises 5 allotments, with Real Property (RP) descriptions as follows:

Lot 73 on Plan LY1114
Lot 0 on Plan RES224
Lot 170 on Plan LY481
Lot 83 on Plan LY566
Lot 137 on Plan LY204

These lots are also indicated on **Figure 1.**

Current waste management operations are located on Lot 83 on Plan LY566 (plan area of 105 ha) and Lot 170 on Plan LY481 (plan area of 150ha). These lots, in addition to Lot 137 on Plan LY204 will support the expanded operations.

[1] Subject to the *Queensland Water Recycling Guidelines*, December 2005, related to irrigating non-food crops, including trees, turf and plant nurseries, stating that '*where the risk assessment undertaken as part of the Recycled Water Management Plan has indicated that public access can be controlled, and off-site impacts prevented, Class D recycled water can be used to irrigate these crops*'.

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It is understood that the allotments forming the land holding are zoned Noxious Industrial under the Western Downs Regional Council Planning scheme.

2.3 Environmentally Relevant Activities (ERAs)

2.3.1 Existing ERAs

We Kando currently hold the following ERA approvals for the subject site as described in **Section 2.1**, under Registration Certificate ENRE01418210:

Lot 170 Plan LY481

- ERA56, Regulated waste storage, threshold 2 - operating a facility for receiving and storing regulated waste other than tyres

Lot 83 Plan LY566

- ERA 16 Extractive and screening activities, threshold 2(b) extracting, other than by dredging, in a year, 5,000 tonnes to 100,000 tonnes of material
- ERA 16 Extractive and screening activities, threshold 3(a) screening, in a year, 5,000 tonnes to 100,000 tonnes of material
- ERA 33 Crushing, milling and grinding or screening activities , crushing, grinding, milling or screening more than 5,000 tonnes of material in a year
- ERA 53 Composting and soil conditioner manufacturing, manufacturing, from organic material or organic waste, 200 tonnes or more of compost or soil conditioners in a year
- ERA 56 Regulated waste storage, threshold 1, operating a facility for receiving and storing 5 tonne or more or 500 or more equivalent passenger units, of tyres or parts of tyres
- ERA 56 Regulated waste storage, threshold 2, operating a facility for receiving and storing regulated waste other than tyres
- ERA 8 Chemical waste storage, threshold 3(a) storing 10m3 to 500m3 of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3

2.3.2 Proposed ERAs

The application being made by We Kando is based on the following ERAs for Lot 83 on Plan LY566, Lot 170 on Plan LY481 and Lot 137 on Plan LY204:

> *ERA 60(1)(a) Threshold(d) Waste disposal, operating a facility for disposing of greater than 200,000 tonnes of regulated waste and any, or any combination, of general waste, limited regulated waste, and if the facility is in a scheduled area, no more than 5 tonnes of untreated clinical waste in a year.*

It is noted that acceptance and site treatment of an increased range of soils and sludges/slurry, as described in **Section 2.1**, is covered under existing ERA approvals.

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3 OVERVIEW OF THE CLOSURE AND REHABILITATION PLAN

This conceptual Closure and Rehabilitation Plan addresses the following:

- Topsoil management
- Capping profiles
- Final Landforms
- Revegetation strategies
- Erosion and sediment control
- Rehabilitation of other site infrastructure
- Ongoing monitoring and maintenance

The objectives of the closure and rehabilitation plan are to:

- Provide an acceptable post-disturbance land use capability and suitability;
- Provide acceptable post-disturbance landforms;
- Ensure that surface water and groundwater that reach receiving environments from the site achieved appropriate water quality standards, consistent with the characteristics of the environment; and
- Ensure that no other potential long term impacts on human health and the environment is threatened as a result of the closed facility.

To achieve these objectives, sustainable vegetative cover coupled with a suitable capping profile is necessary for all final landforms. The approach adopted for closure and rehabilitation of the site is based primarily on:

(i) the currently inferred characteristics of the products/wastes to be contained within the site; and
(ii) the proposed final land use for the site.

The characteristics of product/waste is reproduced from ATCW (2013) in **Appendix A.** The end land use adopted for the purpose of closure and rehabilitation planning comprises low intensity grazing.

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4 TOPSOIL MANAGEMENT

Topsoil suitable for rehabilitation purposes will be stripped and stockpiled from all areas to be disturbed. The depth of suitable topsoil will be determined through a test pitting investigation prior to stripping. An assessment of top soil quantities will be made at each stage/phase of the development.

Where possible, topsoil will be stripped during optimal moisture conditions to reduce the potential for soil compaction and structure degradation. Soil will be stockpiled in mounds no higher than 4 metres for long term storage and vegetated to minimise textural degradation, loss through erosion and to maintain the viability of the soil. A soil rejuvenation program including the addition of organic matter and aeration will be undertaken prior to its use in topsoiling rehabilitation areas. Short term stockpiles will be one to two metres in height. All stockpile batters will be contoured with maximum batter slopes of 1(V):3(H). Areas set aside for stockpiling will be suitably prepared with diversion systems and sediment control features below topsoil stockpiles. The proposed stockpile strategy includes:

- Utilisation as visual screens/aesthetic purposes;
- Proximity to stripped landforms and future rehabilitation works; and
- Located on areas already subject to clearing to minimise the clearance of existing vegetation.

Application of topsoil to the final graded surface will provide the most suitable seed bed for the establishment of vegetation. Topsoil compaction will be minimised during spreading by utilising tracked machinery (e.g. dozer), and subsequent light tyning if necessary.

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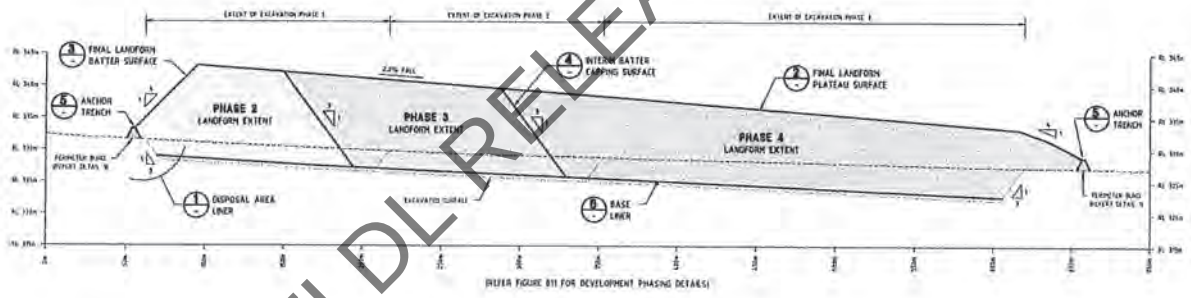
5 FINAL LANDFORMS

The proposed final landform characteristics for the Product Salt storage area, Waste Salt Landfill and Solid Waste Landfill are described in ATCW (2013), with final landform concepts for each area shown on **Figure 2.** Landform development has been sought to substantially achieved benchmark conditions outlined in the *Landfill Siting, Design, Operation and Rehabilitation Guideline,* DEHP (2012). External batter slopes have been designed to allow access for ease of maintenance and control of stormwater flow to minimise erosion and exposure of the underlying capping layers. Maximum external batter slopes of 1(V) to 4(H) have been adopted as a nominal criterion, with slopes for the plateau areas of each landform ranging between 1% and 2%. Each landform also includes a perimeter bund for stormwater control and liner/capping anchoring purposes. A more detailed description of proposed landforms for each area is provided in the following sections.

5.1 Product Salt Area Final Landform

The final landform of the Product Salt area will be gradually developed through the filling of the product salt in a staged manner to allow progressive capping to be applied to the product salt profile. The final proposed final landform is shown on **Figure 2**, with typical sections provided in **Plate 1.** It is noted that if further stages of product salt storage are required, these basic conditions for closure will be applied to future stages.

Plate 1
Typical Section through Final Product Salt Area Landform



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5.2 Waste Salt Disposal Area Final Landform

The final landform of the Waste Salt Disposal Area will be gradually developed through the filling of the waste salt in a staged manner to allow progressive capping to be applied to the waste salt profile. **Figure 2** shows the proposed final landform for the Waste Salt Disposal Area along with the staging. **Plate 2** provides a typical cross section for this landform.

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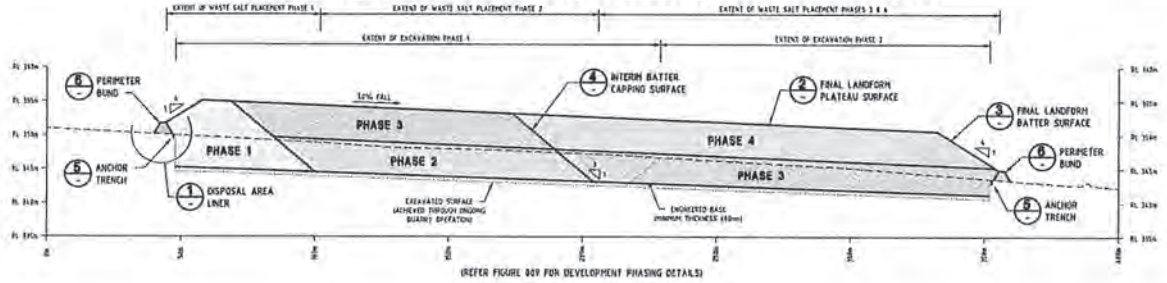
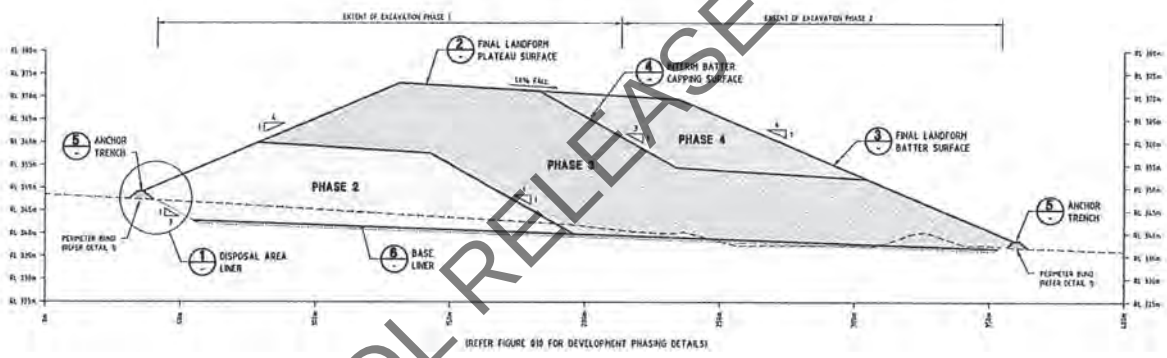
Plate 2
Typical Section through Final Waste Salt Landfill Landform



5.3 Solid Waste Landfill Final Landform

The final landform of the Solid Waste Landfill will be gradually developed through solid waste filling in a staged manner to allow progressive capping to be applied to the developed landfill profile. **Figure 2** shows the proposed completed final landform for the Solid Waste Landfill. **Plate 3** provides a typical cross section for closure of the solid waste landfill.

Plate 3
Typical Section through Final Solid Waste Landfill Landform



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6 CAPPING PROFILES

All capping profiles for each development area utilises (polyethylene, PE) geomembrane liner, which acts as a primary barrier membrane used to minimise moisture infiltration into the product/waste profile, and to provide long term containment for stockpile/fill products, once capping has been constructed. Ongoing protection of the geomembrane liner, with the use of bedding layers, and overlying earthen protection and growth medium layers, will act ensure that the ongoing integrity of the capping profile is maintained.

A further feature of each capping profile is a shredded tyre drainage layer placed to minimise ponding of water directly above the geomembrane liner. To this end, any moisture that infiltrates the growth medium and earthen protection layers would be captured by the drainage layer, then drained and collected at designated points around the base of external batters and directed to specific discharge locations. Furthermore, by placement of the shredded tyres over the geomembrane, this layer acts as a cushioning layer to separate the geomembrane from the soil filling as part of capping construction.

It is noted that the use of geomembrane as a primary barrier, and shredded tyres as a drainage layer exceeds the benchmark conditions as described in DEHP (2012).

Specific details with respect to proposed capping for each development area are provided in the following sections.

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6.1 Product Salt Storage Capping Profile

The development footprint for an initial stage (Stage 1) of the Product Salt Storage will incorporate the cleared area available within area Lot 170, located within the western portion of the land parcel. This area is constrained by buffer to the existing residence to the west, Stockyard Creek to the north and existing vegetation to the east, and encompasses a total footprint of some 14.6ha.

Where additional capacity for product salt is required, development will occur within Lot 137, with the area to the western side of Stockyard Creek accessed initially, then to the eastern side. The final extent of Product Salt Storage area development will depend on the quantity of product ultimately received and the development of future reuse options.

As outlined in ATCW (2013), the proposed capping profile for the Product Salt area comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of engineered earth fill (similar to earth fill liner material);
- overlain by 400mm of topsoil/subsoil for revegetation purposes.

A typical representation of this capping profile is shown below in **Plate 4**, and will be progressively constructed on completed external batters and plateau areas and maintained to ensure stability of the completed surfaces.

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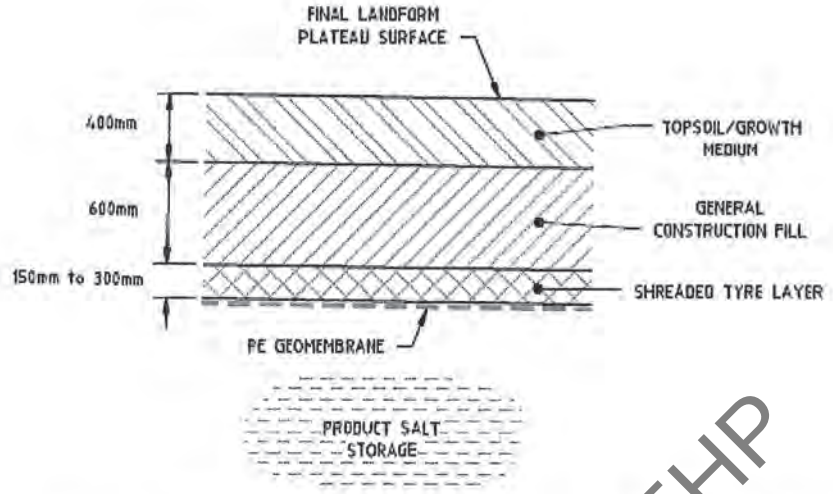
Plate 4
Capping Profile For Product Salt Areas



This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the product salt profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

6.2 Waste Salt Disposal Area Capping Profile

The Waste Salt Disposal area will comprise a footprint of some 6.1ha on the eastern end of the treatment and landfill area, located adjacent to the site entrance and weighbridge. This area is constrained by the compost pad to the west, Pond 1 to the north, and weighbridge, gatehouse and site access road to the east. The disposal area is fully contained within the existing Lot 83 quarry.

A capping profile as shown below in **Plate 5** is proposed, which will be progressively constructed on completed external batters and plateau areas. As outlined in ATCW (2013), this capping profile comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of topsoil/subsoil for revegetation purposes.

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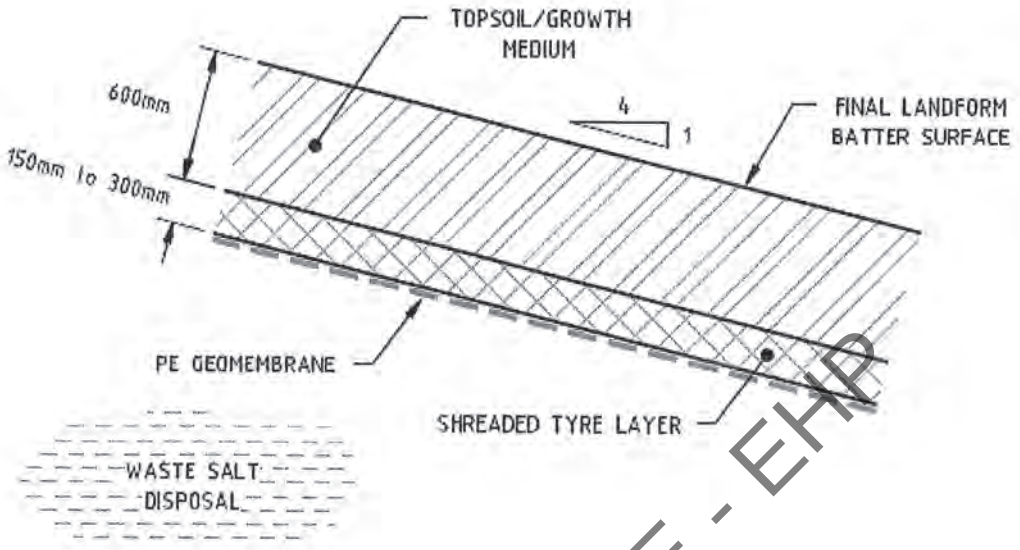
Plate 5
Capping Profile for the Waste Salt Disposal Area



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This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the waste salt profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

6.3 Solid Waste Landfill Capping Profile

The development footprint for the Solid Waste Landfill will incorporate the area to the west of the compost pad, within the footprint of the existing treated effluent pond, and extending to the south. This area is constrained by buffer to the existing residence to the west.

Capping would be placed progressively across completed sections of the developing landform. Final capping layers would be placed on completed external batters, with intermediate capping to intermediate/internal batters. Typical capping details are provided on **plate 6**. As outlined in ATCW (2013), this capping profile comprises:

- a geomembrane;
- overlain by 150 to 300mm shredded tyre layer for subsurface drainage;
- overlain with 600mm of topsoil/subsoil for revegetation purposes.

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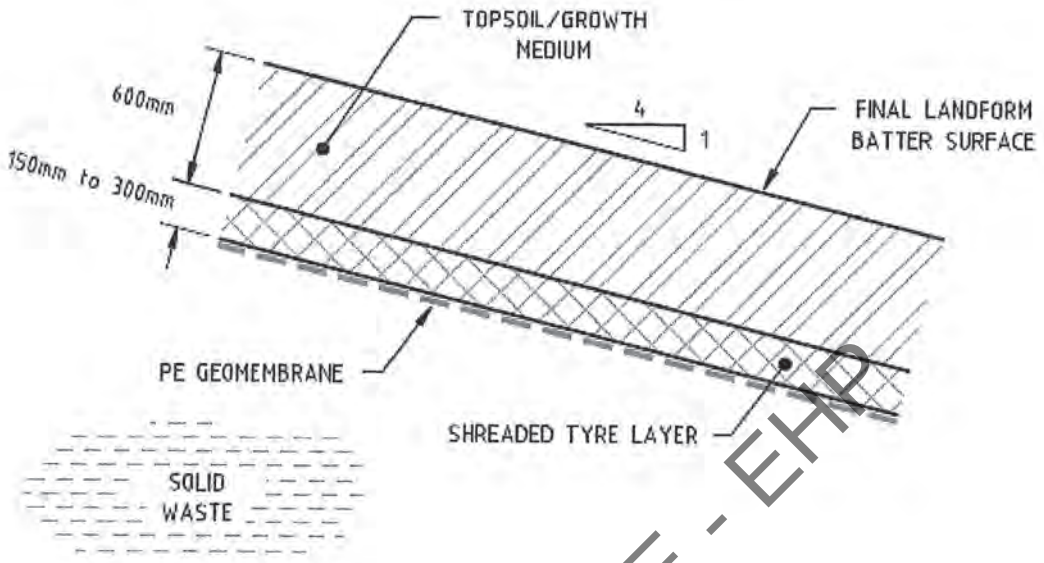
Plate 6
Capping Profile for the Solid Waste Landfill



This capping profile comprises a 1.15m to 1.3m thickness, with key features being to minimise the potential infiltration of moisture into the solid waste profile and to provide protection for the geomembrane. Ongoing maintenance of the completed surfaces would be required to maintain the integrity of the geomembrane.

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7 EROSION AND SEDIMENT CONTROL

Erosion problems on rehabilitated landforms exist largely because of surface crusting and overly long or steep slopes. These factors can cause high volume runoff at high velocities, which leads to sheet and rill erosion. Compounding this effect, under these conditions, is the lack of provision for the conveyance of runoff through a drainage system at velocities which will not result in either excessive scouring or siltation. If excessive scouring was to occur, this could lead to the exposure of the geomembrane and degradation of the geomembrane through exposure to ultraviolet radiation. Vegetation helps to minimise erosion by protecting the surface from raindrop impact, reducing velocity of overland flow and improving the structure of the soil.

Based on the above conditions, minimum requirements for landforms for all development areas will include drainage provision and revegetation; with a description of these provisions as follows:

(i). Prior to topsoil spreading and planting of vegetation on the completed landforms, the surface will be scarified where necessary (e.g. overly compacted areas) on the contour with intermittent breaks along each scarification to prevent channelling of water. Scarifying will also increase depression storage and allow a significant quantity of water to infiltrate before runoff commences.

(ii). To control overland flow and channelled flow on final landform surfaces, a series of permanent and temporary structural works will be undertaken where necessary. These would consist of waterways, graded banks, detention banks, rock armouring, sediment traps, drop structures, sediment fences and hay bale fences. During and following vegetation establishment these drainage structures will be maintained to ensure that they continue to operate as designed.

Additional measures to control erosion relate to access roads and tracks, with the following provisions to be made:

- Location;
- Effective surface drainage such as crowning, infall and outfall grades;
- Use of table drains;
- Use of culverts;
- Use of mitre drains; and
- Construction of crossbanks or spoon drains where necessary.

A basic erosion and sediment control plan would need to be prepared for each area as part of closure works planning.

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8 VEGETATION ESTABLISHMENT

The purpose of establishing vegetation on the site following closure and rehabilitation is to:

- Minimise erosion of capping soils, thereby providing protection to the geomembrane liner;
- Provide extensions of wildlife corridors and habitat (where relevant);
- Provide shade and shelter to grazing animals; and
- Maintain endemic species diversity.

Establishment of vegetation on the various areas of the site are described below.

8.1 Product and Waste Salt and Solid Waste Landfill Areas

Vegetation establishment on completed landforms will be restricted to grasses and shrubs. This is to minimise the potential damage to the geomembrane from larger tree root systems, although geomembranes are commonly used as root barriers in capping systems. The thickness of the proposed soil profile(s) of the capping layer is also not suited to larger tree species.

Initially, following topsoil spreading, the completed capping/final profile will be seeded or hydro-mulched to stabilise the soil surface until a vegetation cover can be established. The application of mulch (shredded green waste) to the topsoil layer will also be utilised where necessary to minimise erosion, prevent surface crusting and maintain moisture levels in the soil. Consideration of establishing grasses initially to quickly stabilise the topsoil prior to undertaking further planting of other grasses and shrubs would need to be investigated.

Along designated low flow drainage paths, such as diversion banks, the use of turf strips would be considered to stabilise these areas quicker and provide protection to the underlying soil during rainfall events that occur during the initial period of closure and rehabilitation.

8.2 Other Site Infrastructure Areas

For other site infrastructure areas on the site, structures would be demolished where necessary, or in the case of storage ponds, these would be cleaned out with residual material disposed of to a licensed landfill. Vegetation would then be established comprising of trees, shrubs and grasses, and species would be based upon endemic species of the site/area where possible.

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9 ONGOING MAINTENANCE REQUIREMENTS

9.1 General Capping Maintenance

General capping maintenance would be carried out to ensure that any soil erosion is repaired, any subsidence (expected to be restricted to the Solid Waste Landfill only) is filled, to reduce ponding, and the re-establishment of vegetation. Where possible, soil for any cap repairs will be sourced from site. Periodic inspections of the site will be undertaken as outlined in **Section 10** below which will identify and capping maintenance requirements.

9.2 Vegetation Maintenance

After initial establishment of vegetation on the capped surfaces and other decommissioned areas of the site, the vegetation would be monitored to ensure that it remains viable and capable of stabilising the topsoil and assist in reducing erosion.

In areas where vegetation dieback has occurred, an investigation as to why the vegetation has died back would be undertaken. Any issues identified by the investigation would be dealt with and vegetation would be re-established. Vegetation dieback may be caused by a number of reasons including, but not limited to:

- The vegetation reaching the end of its natural life;
- Impacts from emissions from the stored/landfilled materials (e.g. landfill gas and leachate);
- Erosion;
- Lack of water during extended periods of no rainfall;
- Poor quality of vegetation initially used in the rehabilitation;
- Pest impacts.

Periodic inspections of the vegetation will be undertaken as outlined in **Section 10** below to identify any vegetation maintenance requirements.

9.3 Soil and Erosion Control Maintenance

By establishing and maintaining vegetation on the capped surfaces, erosion of the capping soils would be kept to a minimum. However, the maintenance of soil and erosion controls would include, however not be limited to:

- Removal of sediment from drainage flow paths including diversion banks and drains to ensure free flow along drainage paths where flow velocities and erosion can be minimised;
- Repair and replacement of drainage and sediment control structures where necessary;
- Review of environmental monitoring data to determine if there are any other impacts that may not be identified through the visual inspections.
- Any other maintenance identified during periodic inspections undertaken as outlined in **Section 10** below.

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9.4 Other Maintenance

9.4.1 Pest control

Evidence of pests will be identified during periodic inspections of the site, as outlined in **Section 10** below. Pests may cause vegetation issues (dieback) or soil erosion issues (from burrowing animals). If evidence of pests is identified, appropriate advice will be sought to develop a site specific pest management plan.

9.4.2 Weed Control

Weed control will be undertaken to minimise the occurrence of weeds species on the site. Weeds will be identified during periodic inspections of the site, as outlined in **Section 10** below. The control of weeds on the site is important from a regional perspective to ensure that weeds are not permitted to be spread by inaction on the site. If weeds are identified during the periodic site inspections, appropriate advice will be sought to develop a site specific weed management plan.

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10 ONGOING MONITORING REQUIREMENTS

10.1 Inspections

Periodic inspections of the rehabilitated areas of the site would be commenced following the initial capping and closure of any part of the site. The inspections would be undertaken to identify any issue that needs to be rectified to ensure the on-going integrity of the capping layers. An outcome of these inspections would be maintenance recommendations to rectify any identified issues.

Inspections would continue on a regular basis following closure and rehabilitation of the site as a whole. Detailed inspection checklists and schedules will be developed prior to the commencement of the first lot of progressive capping however would include, but not be limited to, the following:

- Stormwater and drainage structures
- Capping layers and evidence of erosion
- Vegetation
- Identification of pest and weed species, using the Western Downs Regional Council's Pest Management Plan 2011-2015 (or subsequent versions) as a reference and guide.

10.2 Water Quality Monitoring

During operations and following the closure of all operations at the site, surface water and groundwater monitoring would continue in accordance with the Stormwater Management Plan and the Groundwater Monitoring Plan, contained in ATCW (2013). The scope of the monitoring would also include the leak detection sump constructed as part of the Product Salt Storage Area(s).

The frequency of monitoring for the first 4 years following the ultimate closure of the site operations would remain as it was during the operational period. After this time the frequency of monitoring would be reviewed on an annual basis and, depending on the results of the monitoring and whether there was any cause for concern, the frequency may be decreased.

10.3 Landfill Gas Monitoring

Landfill gas (LFG) monitoring is only required for the Solid Waste Landfill. Initially, during the operation of the Solid Waste Landfill, LFG monitoring would be undertaken on a quarterly basis. For a period of 4 years following the closure and capping of the Solid Waste Landfill, LFG monitoring would continue at this frequency. After this time, this requirement would be reviewed, with the intention to reduce the frequency to six monthly. Reduction in the frequency would be based upon the results of the quarterly monitoring and whether there had been any exceedance of emissions targets during the 4 year period. The frequency of monitoring would then be reviewed on an annual basis and may be further reduced if there was no evidence to suggest that the landfill is posing any LFG risks.

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10.4 Leachate Monitoring

During the operational phase of the Solid Waste Landfill, leachate monitoring would be undertaken in line with the groundwater monitoring frequency. The result of leachate monitoring provides information as to the extent of waste degradation within the landfill. Based upon the results of the leachate monitoring, the frequency of sampling and testing may be reduced with time.

10.5 Settlement Monitoring

Settlement is only expected to be an issue for the Solid Waste Landfill. The Salt Product Storage Area and Waste Salt Disposal area is not expected to settle as there is no on-going degradation of materials and close to maximum compaction is expected to be achieved during filling operations.

Settlement monitoring would be achieved through regular capping inspections and the periodic use of surveying to identify differences between site levels over time. Any settlement areas identified would be filled with suitable soils, re-vegetated and re-stabilised to achieve on-going performance of the capping layers.

Although it is not expected, if significant settlement has occurred, a detailed investigation will be undertaken, including excavation of capping layer to inspect the geomembrane. This would be undertaken to ensure that the geomembrane has not been damaged by the settlement of the waste mass. Following inspection and rectification works, if necessary, the capping will be reconstructed in accordance with this closure and rehabilitation plan, as updated from time to time.

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REFERENCES

[1] ATC Williams, 2013, *Engine Road Waste Management Facility, Engineering Assessment Report*, prepared in support of a Development Application for a Material Change In Use for We Kando Pty Ltd.

[2] Department of Environment and Heritage Protection (2012), *Guideline ERA61 - Waste Disposal - Landfill Siting, Design, Operation and Rehabilitation*

[3] Western Downs Regional Council, 2010, *Pest Management Plan 2011-2015.*

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FIGURES

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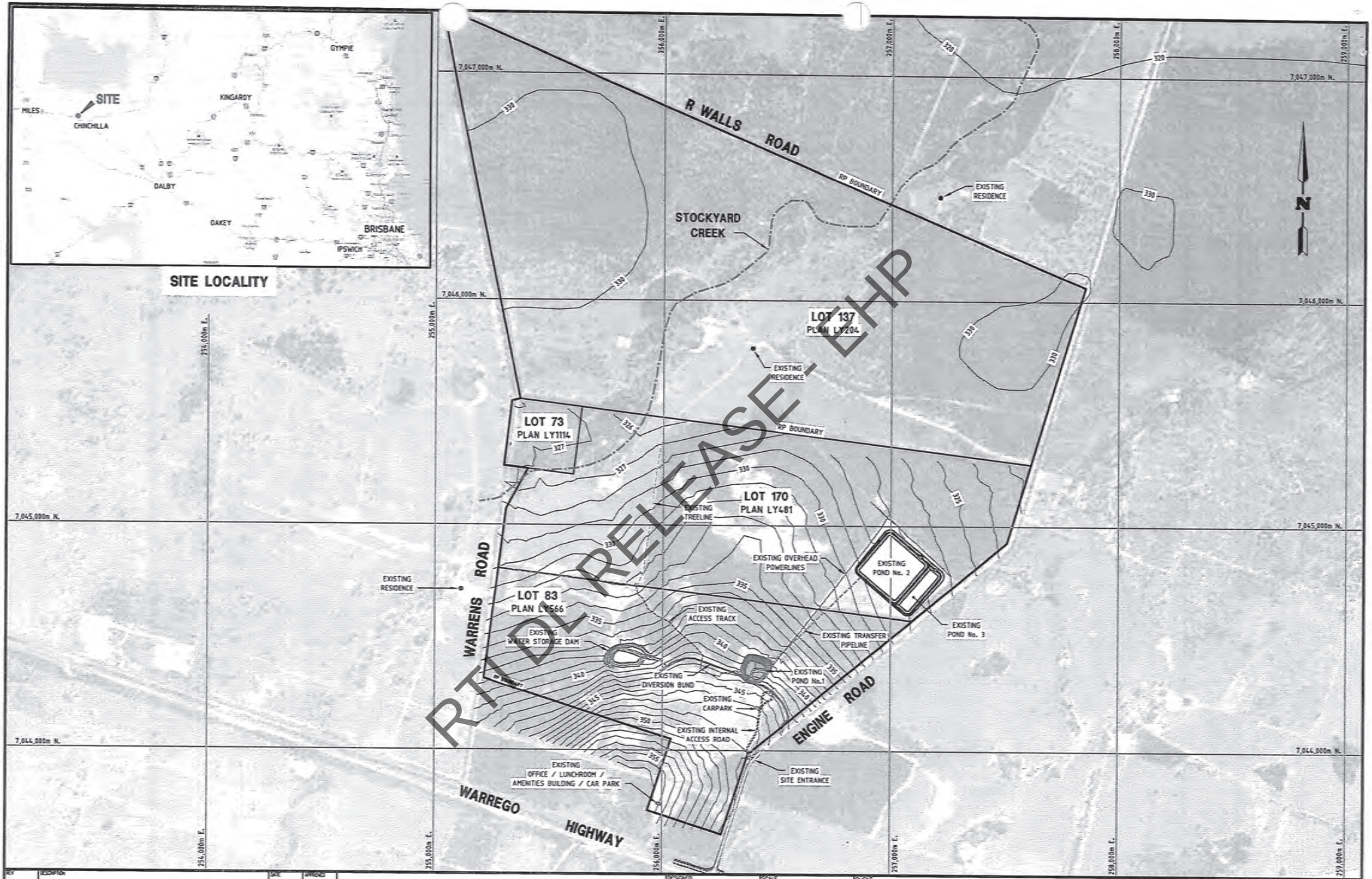

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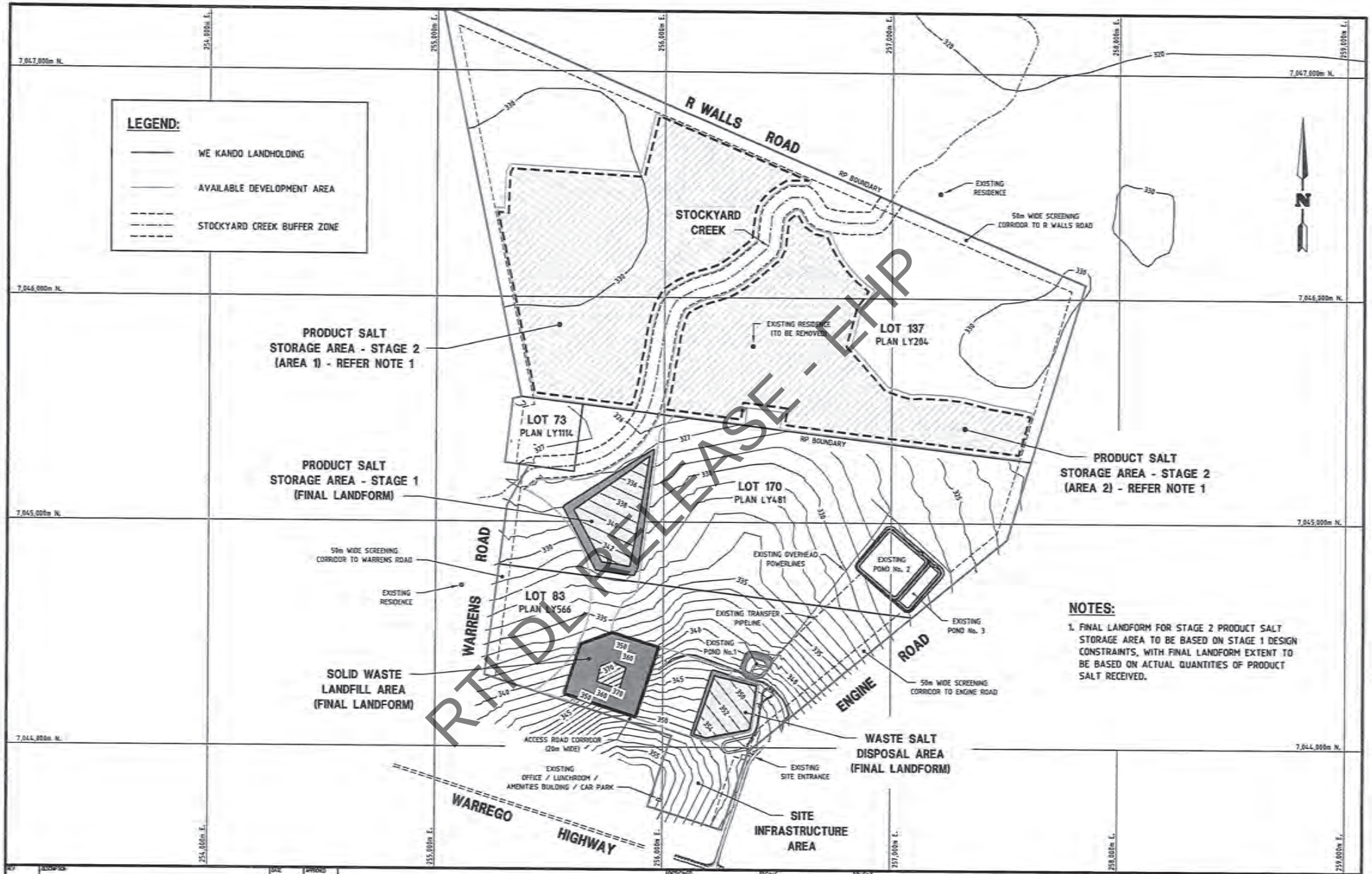
REV	DESCRIPTION	DATE	APPROVED

ATC Williams Pty Ltd
ABN 64 005 931 288
PO Box 43
Alderley QLD 4051
PH (07) 3352 7222
FAX (07) 3856 3557

DESIGNED	
DRAWN	MJC
CHECKED	ASW
APPROVED	
DATE	AUG. 2013
SCALE	1:15,000
LEVEL DATUM	
SHEET SIZE	A3
CAD FILE	112388-01-034
ISSUE	REVIEW
CLIENT	WE KANDO PTY LTD
PROJECT	ENGINE ROAD WASTE MANAGEMENT FACILITY ENGINE ROAD, CHINCHILLA
TITLE	CLOSURE AND REHABILITATION PLAN LOCALITY AND EXISTING SITE LAYOUT
JOB NUMBER	112388-01
DRAWING	001
REV	



ATC Williams Pty Ltd	ABN 64 005 931 286
	PO Box 43 Alderley QLD 4051
	PH (07) 3352 7222 FAX (07) 3856 3557
DESIGNED	
DRAWN	MJC
CHECKED	ASW
APPROVED	
DATE	AUG. 2013
SCALE	1:15,000
LEVEL DATUM	
SHEET SIZE	A3
CAD FILE	112388-01-035
ISSUE	REVIEW
CLIENT	WE KANDO PTY LTD
PROJECT	ENGINE ROAD WASTE MANAGEMENT FACILITY ENGINE ROAD, CHINCHILLA
TITLE	CLOSURE AND REHABILITATION PLAN FINAL LANDFORM CONCEPTS
JOB NUMBER	112388-01
DRAWING	002
REV	-

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APPENDICES

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APPENDIX A

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CHARACTERISTICS OF PRODUCT/WASTE TYPES

Salt Product and Waste

Salt precipitate is a by-product of RO plant pre-treatment. RO treatment is carried out on groundwater recovered from coal seam gas extraction within the region. The precipitate is understood to comprise generally a crystalline solid, possessing a specific gravity of between 1.6 and 1.9t/m^3 and moisture content ex-treatment plant of around 5% (wt/wt). The material is expected to be "spadable", with an angle of response on stockpiling being of the order of 40% (2[H] to 1[V]).

The precipitate will be subject to a refining process for separation into product and waste streams. A general description of the constituents of each stream is as follows:

Product Salt

It has been advised that the product salt will comprise characteristics consistent with Soda Ash. Based on available material data sheets for Soda Ash, the chemical composition of product salt as listed in **Table 2** can be inferred:

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Table A1
Typical Composition of Waste Salt

Chemical Property	Unit	Typical Value
Na_2O	wt %	58.4
Na_2CO_3	wt %	99.8
Na_2SO_4	wt %	0.05
NaCl	wt %	0.06
Fe_2O_3	ppm	4
Water Insolubles	wt %	0.01
Ignition Loss	wt %	0.1
Lead	ppm	<10
Arsenic	ppm	0.1
Calcium	ppm	60
Magnesium	ppm	15
SiO_2	ppm	100

Further to these characteristics, advice has been provided that:

- Compacted dry densities for product salt in stockpile of 1.0 to 1.2t/m^3 are achievable; and
- A maximum stockpile height across a 50m wide front of 8m is achievable.

The material would likely be geotechnically benign, although may be marginally dissolvable under certain conditions in contact with moisture/infiltration. The worst case condition anticipated is a highly saline leachate from any product salt stockpile when subject to direct rainfall.

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Waste Salt

The chemical composition of the waste salt is currently not definitive, although is expected to comprise inorganic precipitates (including metals of minor proportions), grit and fines (from groundwater host sequences and bore screens) and minor organics from the treatment process. The material would likely be geotechnically benign, although may be marginally dissolvable under certain conditions in contact with moisture/infiltration. The worst case condition anticipated is a highly saline leachate from any waste salt stockpile when subject to direct rainfall.

Similar conditions with respect to compacted densities and maximum stockpile heights, as described for product salts, are expected to exist.

Solid Waste

A solid waste stream is currently generated from local industry, with waste types including general (non-putrescible and putrescible) waste and a range of contaminated or impacted soils. A description of anticipated waste characteristics is provided below:

General Waste

A general overview of general waste rates has been undertaken by We Kando through communications with nearby CSG operators and support industries. The feedback provided is that:

(i) A general (putrescible) waste stream is likely to be generated consistently over the life of the CSG industry, based on projected work force. This waste stream would likely be dominated by food scraps, office waste and general waste from workshops or process areas. It is understood that all waste oils and greases would be disposed separately, as well as waste or residue processing reagents.

(ii) Non-putrescible waste would likely be associated with construction or demolition activities onsite, or particular workshop or process areas where large or bulky non-regulated items are generated (e.g. packing crates, refurbishments etc.). This waste stream would typically comprise timbers, plastics, textiles, concrete/masonry, with a sizeable proportion of inert fines/earth. It is understood that all ferrous and non-ferrous materials would be separated at source, therefore would be excluded from the waste stream.

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It is anticipated that the only regulated waste that may be co-mingled with the waste stream would be tyres (for which a current ERA approval exists) or trace quantities of asbestos. Bulk asbestos would be separated from the general waste stream for disposal at a separate facility.

Contaminated/Impacted Soils

A provision for landfilling of a range of soils as solid waste has been made. Potential sources of such materials are:

- Contaminated soils from site or clean-up works at any operation, accepted for direct landfilling
- Residual soils from landfarm treatment of contaminated or impacted soils
- Dewatered and stabilised sludges and slurries, not otherwise suitable for landfarming or used in composting/soil conditioner manufacture

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- Reject product or unsuitable feedstock for the compost/soil conditioner manufacturing operation.

The key criteria for acceptance or diversion to landfill of these soil types would be compliance with the *Guideline ERA 60 - Waste Disposal, Landfill Siting, Design, Operation and Rehabilitation* (DEHP, 2012).

In addition, a requirement will be for any soils reporting to the landfill to be "solid", defined by being "spadable".

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SWR1090927 Pt 3

sch4p4(6) Personal information 16/7/13

Notice

Referral Agency Response

This notice is issued by the Department of Natural Resources and Mines (DNRM) pursuant to section 287 (concurrence agency response) of the Sustainable Planning Act 2009 *("the Act").*

Environment and Heritage Protection
C/- Permit and Licence Management
GPO Box 2454
Brisbane Qld 4001

cc. We Kando Pty Ltd
39 Lagoon Road
Morayfield Qld 4506

Our reference: 2013/003395; 532427

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1. Application Details

Applicant:	We Kando Pty Ltd
Assessment Manager reference:	SDPE05423513 (256798)
Date application referred to DNRM:	12 June 2013
Development approval applied for:	Development permit
DNRM Jurisdiction:	Material change of use – Clearing vegetation under the *Sustainable Planning Regulation 2009* - Schedule 7, table 3, item 10
Development descriptions:	Solid Waste Landfill Development
Property/Location description:	Lots 137 LY204, 170 LY48 and 83 LY566 Western Downs Regional Council

2. The Chief Executive, Department of Natural Resources and Mines (DNRM), as a referral agency for the application, has imposed conditions on this development. Conditions are attached to this notice.

3. Approved Plans/ specifications

Document No.	Document Name	Date
RARP 2013/003395	Referral Agency Response (Vegetation) Plan	17 July 2013

Department of Natural Resources and Mines
www.dnrm.qld.gov.au ABN 59 020 847 551

4. General advice to assessment manager

Pursuant to sections 334 and 363 of the Act, a copy of a decision notice or negotiated decision notice issued by the assessment manager must be forwarded to DNRM as a referral agency for the relevant application at PO Box 318, Toowoomba, Qld 4350.

The State's Native Title Work Procedures provide that responsibility for assessment of native title issues for an IDAS application rests with the assessment manager. Therefore, DNRM as a referral agency for the relevant application has not provided notification to native title parties.

sch4p4(6) Personal information

Delegate
Amy MacCartie
Delegate, Chief Executive Department of Natural Resources and Mines
Administering the *Vegetation Management Act 1999*

19 July 2013

Enquiries:
Rachel Waddell
Natural Resource Management Officer
Department of Natural Resources and Mines
PO Box 318, Toowoomba Qld 4350
Phone: 07 4529 1392
Fax: 07 4529 1562
Email: rachel.waddell@dnrm.qld.gov.au

Attachments

DNRM Permit Number 2013/003395

Referral Agency Response (Vegetation) Plan 2013/003395

RTI DL RELEASE - EHP

Releas

Sustainable Planning Act 2009

DNRM Permit [1] number: 2013/003395

Assessment manager reference:	SDPE05423513 (256798)
DNRM references:	eLVAS: 2013/003395 EcoTrack application number: 532427
Date application received:	12 June 2013
Permit type:	Development Permit
Date of decision:	19 July 2013
Relevant laws and policies:	*Sustainable Planning Act 2009* *Vegetation Management Act 1999* *Concurrence Agency Policy for Material Change of Use, version 2 – 21 October 2009* *Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions, version 2.1 – 30 November 2012*
Jurisdiction(s):	DNRM referral agency jurisdictions: Material change of use - Clearing vegetation under the *Sustainable Planning Regulation 2009* - Schedule 7, table 3, item 10

RTI DL RELEASE - EHP

Development Description:

Property/Location		Development
27150 Warrego Highway Chinchilla Qld 4413	Lots 137 LY204, 170 LY48 and 83 LY566	Material Change of Use (Solid Waste Landfill Development)

Reason for inclusion of conditions:

In accordance with section 289 of the *Sustainable Planning Act 2009*, the reason for inclusion of conditions stated in this permit required by the concurrence agency response for the application are as follows:

Conditions have been implemented to ensure the development complies with the *Vegetation Management Act 1999* and *Sustainable Planning Act 2009*.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Natural Resources and Mines.

Department of Natural Resources and Mines
www.dnrm.qld.gov.au ABN 59 020 847 551

Queensland Government

CONDITIONS

- Clearing of remnant vegetation for new infrastructure associated with the Material Change of Use—other than fences, roads and vehicular tracks—**must only** occur within 'Area A' as identified on the Referral Agency Response (Vegetation) Plan 2013/003395, dated 17 July 2013.
- Clearing of remnant vegetation within 'Area B' as identified on the Referral Agency Response (Vegetation) Plan 2013/003395, dated 17 July 2013, **must only** occur for new fences, roads and vehicular tracks associated with the Material Change of Use.
- Clearing of remnant vegetation associated with the Material Change of Use **must not** occur outside 'Area A' and 'Area B' as identified on the Referral Agency Response (Vegetation) Plan 2013/003395, dated 17 July 2013.

END OF CONDITIONS

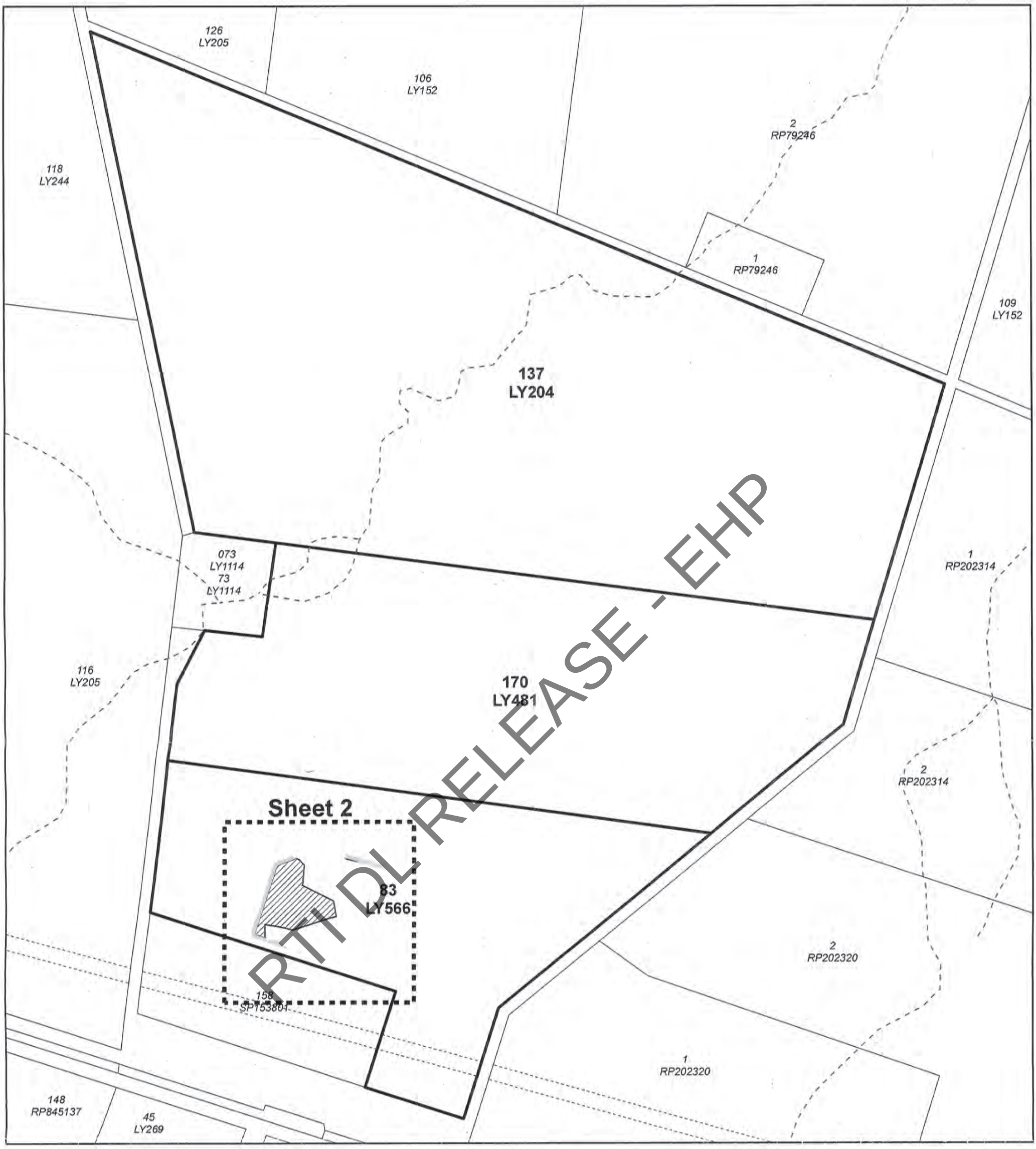
RTI DL RELEASE - EHP

sch4p4(6) Personal information

Delegate
Amy MacCartie
Delegate, Chief Executive Department of Natural Resources and Mines
Administering the *Vegetation Management Act 1999*.

19 July 2013

Release



RTI DL RELEASE - EHP

1:12500 @ A3 size

0 100 200 400 600 800 1,000 m

Projection: UTM (MGA Zone 56) **Datum: GDA94**

Note: Derived Reference Points are provided to assist in the location of the Referral Agency Response boundaries. Responsibility for locating these boundaries lies solely with the landholder and delegated contractor(s).

The property boundaries shown on this plan are APPROXIMATE ONLY. They are NOT an accurate representation of the legal boundaries.

Note: This plan must be read in conjunction with Referral Agency Response 2013/003395

LEGEND

- Derived Reference Points for GPS
- Subject Lot(s)
- QLD DCDB
- Area A
- Area B
- Watercourse (Geoscience Australia)

Referral Agency Response (Vegetation) Plan

Plan of Areas A & B in Lot 137 on LY204, Lot 170 on LY481 and Lot 83 on LY566

s78B(2) - Personal Information 14/07/13

Ecotrack No. 532427

N

Queensland Government

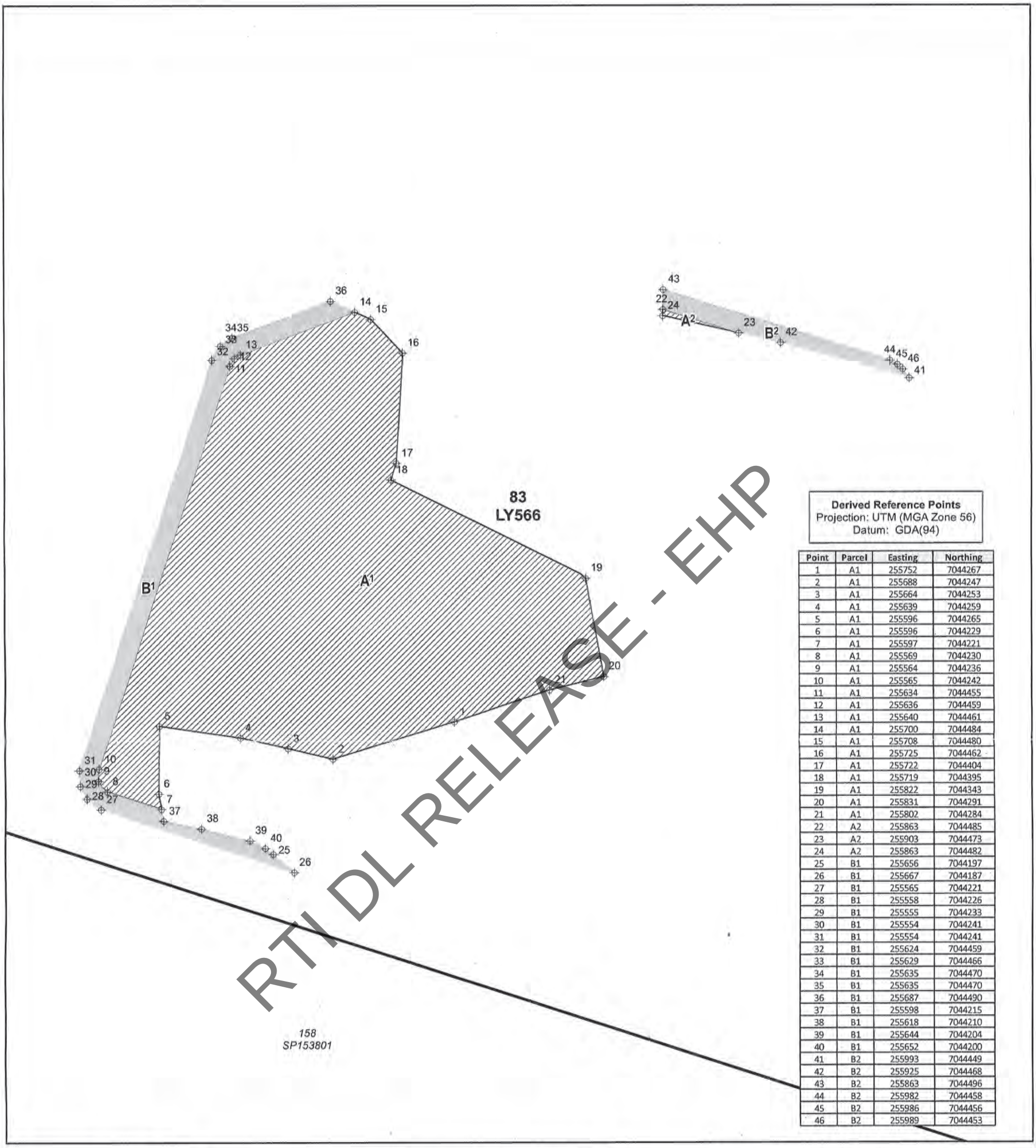
CENTRE: TOOWOOMBA **REGION: SOUTH**
LOCALITY OF BAKING BOARD **LOCAL GOVT: WESTERN DOWNS**

Map Reference: 9044 | Compiled from: DCDB, PVMP & NRMO Notes

File Reference: T13/003395 | Prepared by: JDC | Date: 17 July 2013

RARP 2013/003395
Sheet 1 of 2

Releas



Derived Reference Points
Projection: UTM (MGA Zone 56)
Datum: GDA(94)

Point	Parcel	Easting	Northing
1	A1	255752	7044267
2	A1	255688	7044247
3	A1	255664	7044253
4	A1	255639	7044259
5	A1	255596	7044265
6	A1	255596	7044229
7	A1	255597	7044221
8	A1	255569	7044230
9	A1	255564	7044236
10	A1	255565	7044242
11	A1	255634	7044455
12	A1	255636	7044459
13	A1	255640	7044461
14	A1	255700	7044484
15	A1	255708	7044480
16	A1	255725	7044462
17	A1	255722	7044404
18	A1	255719	7044395
19	A1	255822	7044343
20	A1	255831	7044291
21	A1	255802	7044284
22	A2	255863	7044485
23	A2	255903	7044473
24	A2	255863	7044482
25	B1	255656	7044197
26	B1	255667	7044187
27	B1	255565	7044221
28	B1	255558	7044226
29	B1	255555	7044233
30	B1	255554	7044241
31	B1	255554	7044241
32	B1	255624	7044459
33	B1	255629	7044466
34	B1	255635	7044470
35	B1	255635	7044470
36	B1	255687	7044490
37	B1	255598	7044215
38	B1	255618	7044210
39	B1	255644	7044204
40	B1	255652	7044200
41	B2	255993	7044449
42	B2	255925	7044468
43	B2	255863	7044496
44	B2	255982	7044458
45	B2	255986	7044456
46	B2	255989	7044453

RTI DL RELEASE - EHP

1:2000 @ A3 size
0 25 50 100 150 200 m
Projection: UTM (MGA Zone 56) **Datum: GDA94**

Note: Derived Reference Points are provided to assist in the location of the Referral Agency Response boundaries. Responsibility for locating these boundaries lies solely with the landholder and delegated contractor(s).

The property boundaries shown on this plan are APPROXIMATE ONLY. They are NOT an accurate representation of the legal boundaries.

Note: This plan must be read in conjunction with Referral Agency Response 2013/003395

LEGEND
- Derived Reference Points for GPS
- Subject Lot(s)
- QLD DCDB
- Area A (Area A1 - A2)
- Area B (Area B1 - B2)
- Watercourse (Geoscience Australia)

Referral Agency Response (Vegetation) Plan

Plan of Areas A & B in Lot 137 on LY204, Lot 170 on LY481 and Lot 83 on LY566

s78B(2) - Personal Information 16/07/13

Ecotrack No. 532427

N

Queensland Government

CENTRE: TOOWOOMBA **REGION: SOUTH**
LOCALITY OF BAKING BOARD **LOCAL GOVT: WESTERN DOWNS**

Map Reference: 9044 | Compiled from: DCDB, PVMP & NRMO Notes

File Reference: T13/003395 | Prepared by: JDC Date: 17 July 2013

RARP 2013/003395
Sheet 2 of 2

Release

Cleary Amanda

From: Mackenzie James
Sent: Friday, 21 June 2013 11:09 AM
To: Cleary Amanda
Subject: telephone conversation with Pat Navin - ATC Williams Re We Kando

Hi Amanda,

Just a had a conversation with Pat Navin regarding calculating the FA for We Kando's salt proposal.

I explained that we have two main concerns;

- Short term capping / rehabilitation of the site
- Long term maintenance and management of the salt cells, particularly preventing leachate entering waters

and that the intent of the FA was to ensure that we had a bucket of money to allow us to take over the site if We Kando ceased to exist or failed to operate the site correctly.

We also discussed progressive rehabilitation and progressive FA. I reiterated that the FA could be staged, but the FA would need to be representative of the rehab / ongoing maintenance and management costs at any point in time.

I also advised that FA could be reviewed and adjusted at any point in time – subject to justification.

Finally, I stated that if they put something on the table their information request response – we would be happy to meet to discuss further if required.

Regards,

James

RTI DL RELEASE - EHP

Notice

Extension of information request period

This notice is issued by the Department of Natural Resources and Mines pursuant to section 277 (information request period) of the Sustainable Planning Act 2009 ("the Act").

We Kando Pty. Ltd
C/- DAvid Hooke
39 Lagoon Rd
Morayfield Qld 4506
davedump@netxp.com.au

cc. Dept of Environment Heritage and Protection
Att/- Amanda Cleary
PO Box 731
Toowoomba Qld 4350
Amanda.Cleary@ehp.qld.gov.au

Our reference: 2013/003395:1049480

RTI DL RELEASE - EHP

Re: Application for development approval –extension of information request period

1. The Chief Executive, Department of Natural Resources and Mines (DNRM) as concurrence agency has extended the information request period by10 business days to10 July 2013 for the following application.

2. **Application Details**

Date application made or referred to DNRM:	12/06/2013
Development approval applied for:	development permit
Aspect(s) of development:	Material change of use - Clearing vegetation under the *Sustainable Planning Regulation 2009* - Schedule 7, table 3, item 10.
Property/Location description:	137 LY204 & 170 LY481 & 83 LY566 - Western Downs Regional Council

sch4p4(6) Personal information

Belinda Lahey
Delegate
Department of Natural Resources and Mines
20 June 2013

Enquiries:
Belinda Lahey
Department of Natural Resources and Mines
PO Box 1167
Bundaberg Qld 4670
Phone: (07)4131 2305
Fax: (07)4131 2308
Email: vegsouthregion@dnrm.qld.gov.au

Cleary Amanda

From: PALM
Sent: Monday, 17 June 2013 1:38 PM
To: vegsouthregion
Cc: Hinz Dave; Cleary Amanda
Subject: Application Number 532427 (PLEASE READ NOTE BELOW)

A development application has been uploaded to SharePoint and requires assessment. Please save a copy of the application as this file will be removed from SharePoint within 10 business days.

History: An application for an ERA 60 (1)(d) was received and sent to EHP as assessment manager. Due to discussions between EHP and DNRM it was determined that vegetation was missed and should be have been triggered. However, because we missed our timeframes to issue an acknowledgment notice with DNRM as a concurrence agency, we utilised s357 of SPA and sent a 'Notice of Missed Referral' for vegetation. On the 12 June, PaLM received the mandatory supporting information and prescribed fee for the DNRM component. Whilst s357 does not stop the IDAS timeframes, the decision making time does not commence until the missed referral is completed by the proponent, and in this instance it is the 12 June 2013.

A development application has been received and validated by Permit and Licence Management (PALM). A review has been undertaken for the potential impacts of the proposed development on the State Interests administered by the following departments including jurisdictional matters under the *Sustainable Planning Act 2009*.

- Department of Environment and Heritage Protection (EHP)
- Department of Natural Resources and Mines (DNRM)
- Department of Energy and Water Supply (DEWS)
- Department of National Parks, Recreation, Sports and Racing (NPRSR)

The results of this review are illustrated in the following tables. The application can be accessed using the following link:

http://sharepoint/sites/DevelopmentApplications/Shared%20Documents/Forms/AllItems.aspx

Please note:
Single jurisdiction applications are made available to the relevant contact for assessment to begin.
Multi jurisdictional applications are made available to all relevant individual assessment contacts as well as the contact responsible for coordinating the departmental response.

DTI DL RELEASE - EHP

	General Application Details
Client Name:	We Kando Pty Ltd C/- David Hooke
Lot/Plan:	83 on LY566, 170 on LY418 & 137 on LY204
Project reference:	256798
Address:	27150 Warrego Highway, CHINCHILLA QLD 4413
Application Type	Material change of use
PaLM Contact:	Ben Willey
Hardcopy sent to:	Contact Name: Alison Dennison Department: NRM Business Unit Name: LV - Land – Veg - Management - Toowoomba Postal Address: PO Box 589, Dalby Q 4405
	Department of Natural Resources and Mines (DNRM)
Role:	Concurrence
Jurisdictions:	Vegetation

Releas

Ecotrack Application No:	527882
Date Properly made/referred:	12 June 2013
Project Director:	Alison Dennison
Sharepoint Folder:	**South West**

RTI DL RELEASE - EHP

If you have any questions or concerns regarding the above please contact the relevant PaLM officer noted in the General Application Details table.
Regards,

Permit & Licence Management.

RTI DL RELEASE - EHP

Cleary Amanda

From: Cleary Amanda
Sent: Wednesday, 12 June 2013 1:08 PM
To: 'David Hooke'
Cc: Mackenzie James
Subject: Financial assurance, information request etc

Hi David

As discussed on the phone today, the information request for your ERA 60 application requires you to provide details on Financial Assurance (FA) required for the activity. The recent guideline I provided to you should be considered but in summary what the department is looking for is what it would cost under a worst case scenario, that is the cost of closing and rehabilitating the maximum area exposed at the landfill.

In regards to your question about staging the FA, I believe we could do this with conditioning in the Environmental Authority (EA). For example, prior to stage 1 commencing (putrecible waste) "$x" FA must be submitted, and prior to stage 2 commencing (salt storage) "$x" FA must be submitted.

As you mentioned, FA that is currently held for the storage of tyres, and this is no longer considered and Environmentally Relevant Activity (ERA). If you wish to have this money released you could write to the department requesting this money released and make an amendment application requesting that the condition in the EA requiring FA be removed. To achieve this you would also need to demonstrate that the FA was purely for tyre storage and not associated with any other ERA being conducted on site. You mentioned that you may wish to use the money which is currently held by the department as FA be used as a replacement for the new FA required in the new EA application. Whilst it is unclear on how this process could be undertaken, it could be investigated once you have made a decision how you wish to proceed.

During our conversation we also spoke about the construction of the dam that we observed during our compliance inspection on the 7 May 2013. As discussed I have not had the opportunity to write a post inspection letter, however as mentioned the Department requires details on its design, exact location, contents etc. You should also ensure that your Site Based Management Plan is updated accordingly.

If you have any questions please don't hesitate to contact me.

Kind Regards,
Amanda Cleary | Principal Environmental Officer
Department of Environment and Heritage Protection (EHP)

Environmental Services & Regulation Division (ESR) Southern Region
173 Hume Street Toowoomba
PO Box 731, Toowoomba QLD 4350

T: 07 4699 4371 F: 07 4699 4399
E: Amanda.Cleary@ehp.qld.gov.au
W: www.ehp.qld.gov.au

Please note I only work Tuesdays, Wednesdays and Thursdays.

RTI DL RELEASE EHP

Willey, Ben

From: on behalf of PALM

To: ESR - Ipowoom

Cc: Cleary Amanda

Subject: Major Change to ... mber: 533393 - EPPR00496413

A development a... requires assessment. Pleas... cation as this file will be removed ... business days.

A development application ... by Permit and Licence Management (PALM). A review has been unde... of the proposed development on the State Interests administered by ... d jurisdictional matters under the *Sustainable Planning Act 2009*.

- Department of Envi...
- Department of Natu...
- Department of Ener...
- Department of Natio...

The results of this review a... ssed using the following link:

http://sharepoint/sites/DevelopmentApplications/Shared%20Documents/Forms/AllItems.aspx

Please note:
Single jurisdiction applications are made available to the relevant contact for assessment to begin.
Multi jurisdictional applications are made available to all relevant individual assessment contacts as well as the contact responsible for coordinating the departmental response.

	General Application Details
Client Name:	We Kando Pty Ltd
Lot/Plan:	N/A
Project reference:	25[illegible]
Address:	Wallaroo Hwy, Chinchilla
Application Type:	Change to an Environmental Authority
	This application is a Major Change to an EA
	Re... st pad changes
PaLM Contact:	Be...
Hardcopy sent to:	C...
	D...
	B...
	P...

	D... P)
Role:	Decision M...
Jurisdictions:	F...
Ecotrack Application No.:	5...
Application Complete Date:	2...
Project Director:	C...

RTI DL RELEASE - EHP

Release

Sharepoint West

If you have any questions or concerns regarding the above please contact the relevant PaLM officer noted in the General Application Details.

Regards,

Permit & Licence Management

RTI DL RELEASE - EHP

☐ Regional Information and Filing ☑ Regional - Action Required ☐ PALM to File

AR #: 044666 Admin. Office: Toowoomba
Project #: 256798 Posted to: Judy Mackenzie
EA Application #: 533393 Permit #: EPPR00496413
Development Permit Ref # (if applicable):
PaLM Coordinator: Ben W PaLM Processor: Ben W

3016 - Validation Checklist - EA Amendment Application for a Prescribed ERA

Application Details	Indicate by Yes ☑ No ☒ or N/A ☐	
Amendment Processing:	☐ Existing EA has standard conditions only AND ☐ is a minor amendment indicated by Question 2 response AND ☐ applicant can comply with standard conditions (Question 4) (all 3 boxes must be ticked for PaLM to issue amended EA)	☑ Oth (ES to assess) Amendment type for initial data entry: Minor / Major (please circle)
Existing ERA No/s:	ERA 56	
Proposed ERA No/s (if applicable): Version of Code (for ERA 57 or 16):	N/A	
ERA No/s to be removed (if applicable):	N/A	
☐ ERA is mobile and temporary	☑ ERA is not mobile and temporary	
Applicant Name:	We Kando Pty Ltd	
ACN/ABN:		ASIC Check ☐ Yes ☐ No ☑ N/A

Application Dates	Indicate by Yes ☑ No ☒ or N/A ☐
Application Received: 24/6/2013	Application requirements requested date: ..../..../20....
Response Due Date: ..../..../20....	☐ Application invalid (tick which applies below) ☐ Application requirements not met within timeframe ☐ Application is unable to be made Invalid date: ..../..../20....
Application Complete Date: 27/6/2013	ALD Due Date: 11/7/2013
Fill for minor amendment applications only where PaLM are processing end to end	A D E

Validity Check	Indicate by Yes ☑ No ☒ or N/A ☐
For all amendm applications	☑ Proposed amendment does not require a development application OR a development Notice of Invalid Appli

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Application Checks	Indicate by Yes ☑ No ☒ or N/A ⊟
For all amendment applications	**Admin:** ☑ Form completed, signed and dated ☐ All attachments present ☑ Correct fee paid ☐ Receipt sent to client ☑ Annual returns and fees up to date If ☒ outstanding amount is $..... Outstanding periods..... Amount Paid $..276.00 Receipt No:..4192746.. Date Paid...27/6/13.....
For all amendment applications	**"Environmental Impact assessment " on application form** - *Administrative check* to determine applicant has submitted: ☐ a description of the environmental values likely to be affected by each relevant activity; and ☐ details of any emissions or releases likely to be generated by each relevant activity; and ☐ a description of the risk and likely magnitude of impacts on the environmental values; and ☐ details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and ☐ details of how the land the subject of the application will be rehabilitated after each relevant activity ceases **"Waste management" on application form** *Administrative check* to determine: ☐ Applicant has indicated not applicable on application form ☐ Applicant has given description of the proposed measures for minimising and managing waste generated by the ERA activities **"Site Management Plan or Environmental Protection Order"** *Administrative check* to determine: ☐ Applicant has indicated there is no site management plan or environmental protection order on the application form ☐ Applicant has given details of the site management plan ☐ Applicant has given details of the environmental protection order

RTI DL RELEASE - EHP

ORIGINAL

EHP-LAIS

Queensland Government

ABN: 46 640 294 485

Dept of Environment & Heritage Protection

RECEIPT

Received from: David Hooke
ABN/Address:

No.: 4192746

Description	Qty	Unit Val	Extended	Discount	Ext Value	GST	Total Price
AMENDMENT APPLICATION-EA-CHSA ACTIVITY	1	276.00	276.00	0.00	276.00		276.00

RTI DL RELEASE - EHP

Date: 27/06/13	Time: 13:58	DVISA	276.00	Tot Value:	276.00
				GST:	0.00
Brch: dnrbris	SPer: dll			Tot Price:	276.00
				Tendered:	
CYC: 177526	Reg: 92			Change:	0.00

Cheques or other negotiable instruments accepted subject to clearance.

Release

Application form

Environmental Protection Act 1994

Application to amend an environmental authority

This approved form is to be used when applying to amend an environmental authority under sections 222 to 227 of the Environmental Protection Act 1994 *(EP Act) for an environmentally relevant activity (ERA).*

An application to amend an environmental authority is not appropriate in all circumstances. If you answer yes to any of the questions in the checklist below, you cannot use this application form. If you answer no to all of the questions in the checklist, you may continue to use this application form.

This form also contains questions relating the *Strategic Cropping Land Act 2011*. If you are proposing to undertake resource activities on strategic cropping land (SCL) or potential SCL, you may need to apply for a SCL compliance certificate (under section 117 of the *Strategic Cropping Land Act 2011*) or a SCL protection decision under sections 96 and 97 of the *Strategic Cropping Land Act 2011*).

If you would like to have a pre-lodgement meeting:

- For prescribed ERAs 2, 3 and 4—contact the Department of Agriculture, Fisheries and Forestry by email at **livestockregulator@daff.qld.gov.au**.
- For any other ERA—please fill out and lodge the form Application for a Pre-Design/Pre-Lodgement Meeting (EM1125[1]), prior to lodging this application form.

RTI DL RELEASE EHP

Checklist for making an amendment application

You must complete this checklist before you continue with the application form.

If your application is for:

☒ a prescribed ERA → fill in Section 1 and Section 2 of the checklist below

☐ a resource activity → fill in Section 1 and Section 3 of the checklist below

☐ both a prescribed ERA and a resource activity → fill in sections 1, 2 and 3 of the checklist below

If you have answered yes to any of the below questions, you cannot use this application form. If you have answered no to all of the below questions, you may continue to use this application form.

Checklist questions		Guidance
Section 1		
Is the amendment to correct a clerical or formal error?	☐ YES ☒ NO	If yes, you cannot use this form. This request should be made in writing directly to the administering authority (no fees apply).
Is the amendment to amalgamate 2 or more environmental authorities?	☐ YES ☒ NO	If yes, you cannot use this form. This request should be made through an application to amalgamate an environmental authority using

[1] This is the publication number. The publication number can be used as a search term to find the latest version of a publication at **www.qld.gov.au**.

		either the form Application to Amalgamate 2 or More Environmental Authorities Into an Amalgamated Corporate Authority (EM789), or Application to Amalgamate 2 or More Environmental Authorities Into an Amalgamated Project or Local Government Authority (EM879).
Is the amendment to amend financial assurance only?	☐ YES ☒ NO	If yes, you cannot use this form. Please use the form Application to Amend or Discharge Financial Assurance (EM875).
Are there any outstanding annual fees or annual returns associated with the environmental authority?	☐ YES ☒ NO	If yes, you cannot use this form unless: • all outstanding annual fees have been paid. Payment can be made at the same time as this application. Please attach evidence of payment. • all outstanding annual returns have been lodged. Lodgement can be included with this application.
Section 2		
Is the amendment for the holder of the environmental authority to transfer all or part of the environmental authority to a person?	☐ YES ☒ NO	If yes, you cannot use this form. Please use the form Request to Transfer All or Part of an Environmental Authority for a Prescribed Environmentally Relevant Activity (EM794).
Does the proposed amendment involve changes that require either an existing development application to be amended or a new development application to be lodged under the *Sustainable Planning Act 2009* and the application for the amendment has not been lodged.	☐ YES ☒ NO	The development application must be lodged for the proposed amendment before an environmental authority amendment application can be made.
Section 3		
Is the amendment for a partial surrender of an environmental authority for a mining, geothermal or petroleum resource activity?	☐ YES ☒ NO	If yes, you cannot use this form. Please use the form Application for Surrender or Partial Surrender of an Environmental Authority (EM796).

RTI DL RELEASE - EHP

Definitions of terms used in this form

Where there is inconsistency between the definitio ... *EP Act or the SCL Act, the terms in the EP Act and the SCL Act* ...

Environmentally relevant activity (ERA)	A resource activity ...
ERA project	A prescribed ERA ...
Management area	The management a ... combined area of all zones, after taking from the ... areas. The protection and management area ... available on the Department of Natural Resources and Mines (DNRM) websi ...
Mobile and temporary ERA	A prescribed ERA, other ... ing material, extracting rock or other material, or ...
	(a) carried out at variou ... rtable plant or equipment, including a vehicle ...
	(b) that does not result ... manent structures or any physical change of ... ens (other than minor alterations solely ... etup including, for example, access ways, ... e areas ...
	(c) carried out at an ...
	(i) for less than a ... r, or ...
	... only if the activity is ... ctusively used in the ...
Prescribed ERA	...
Prescribed ERA proje	... ite
Protection are	... area on the ... the DNRM website
Registered suitable operator	... the EP Act has ... as been listed on ...
Registry recor	... SCL. A

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Releas

Resource activity	An activity that is any of the following: (a) a geothermal activity (b) a greenhouse gas (GHG) storage activity (c) a mining activity (d) a petroleum activity.
Resource project	Resource activities carried out, or proposed to be carried out, under 1 or more resource tenures, in any combination, as a single integrated operation.
SCL compliance certificate	The certificate given by the chief executive (Department of Agriculture, Fisheries and Forestry (DAFF)) to applicants who comply with the application requirements for a SCL compliance certificate. Recipients of a compliance certificate must comply with the relevant part of the SCL standard conditions code for resource activities. The conditions under the standard conditions code are taken to be conditions of the environmental authority or resource authority.
SCL protection decision	The decision made by the chief executive (DAFF) in relation to a SCL protection decision application. It provides for the chief executive (DAFF) to decide the impact of the resource activity on the land; and whether or not to impose conditions on either or both of the environmental authority or resource authority for the resource activity.
Significant project	A project declared under section 26 of the *State Development and Public Works Act 1971* to be a significant project.
Single integrated operation	Occurs when all the below criteria is met: (a) the activities are carried out under the day-to-day management of a single responsible individual, for example, a site or operations manager (b) the activities are operationally interrelated (c) the activities are, or will be, carried out at 1 or more places (d) the places where the activities are carried out are separated by distances short enough to make feasible the integrated day-to-day management of the activities.
Standard conditions code	The code made by regulation about how resource activities may be carried out on SCL or potential SCL.
Validation information notice	An information notice for SCL provided to an applicant for a validation decision or any other eligible person for the land about the validation decision (cropping history and/or zonal criteria applications).

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Application form

Application to amend an environmental authority

GUIDE

If you require assistance in answering any part of this form, or have any questions about your application please contact the relevant department. Contact details are at the end of this form.

The environmental authority number and details may be found on the existing environmental authority or quoted in other correspondence received from the administering authority.

If more space is required for any responses, please attach additional information as a separate page.

If there is an agent acting on behalf of the environmental authority holder, provide details in this section. An agent could be a consultant or a contact for the environmental authority holder.

As statutory documents need to be sent to all applicants, this section can also be used when there are multiple environmental authority holders to nominate an address for statutory documentation to be sent 'care of' to.

Application details

1. Environmental authority number

ENVIRONMENTAL AUTHORITY HOLDER NAMES

Agent details / address for service

The address supplied here will also be used as a service address for sending statutory documents. If blank, statutory documents will be sent to the address previously supplied for the holder or principal applicant for the environmental authority.

INDIVIDUAL OR BUSINESS NAME (INCLUDE TRADING NAME IF RELEVANT)

RESIDENTIAL ADDRESS OR REGISTERED BUSINESS ADDRESS (NOT A POST OFFICE BOX ADDRESS)

341 Wallace Rd Ning

CONTACT PERSON

David Klooke

PHONE	FACSIMILE
0412380215	

EMAIL

davedump@netxp.co.au

Prior to a decision being made on this application a decision must be made about whether this is a major or a minor amendment. This section will help the administering authority to decide this.

In general, minor amendments are likely to include single changes which are generally administrative in nature. Major amendments can include (but are not limited to) requests to add new activities or varying the allowable impacts to environmental values. These amendments will require more

...pply and describe in ...ested and the reason an ... amendme...

Resource activities—

Prescribed ERAs—f...

Section 1—Both prescribed ERAs and/or resource activities
☒ The amendment changes a standard condition.
☐ The amendment increases environmental harm.

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detailed assessment and the provision of more detailed support material.

If you are requesting to increase the surface area of the activity, please provide details of the existing area, proposed area and the percentage increase.

If you are requesting to extend a pipeline, please provide details of the existing length, proposed length and the percentage increase.

If you are requesting to add a new tenure, please provide full details of tenement type and number.

Regardless of the checkbox ticked, you must provide as much detail about the proposed amendment as possible e.g. the extent of environmental harm caused by the amendment, the extent to which the scale or intensity of the original activity is to change or if this application is seeking to change a condition of approval, state which condition is the subject of this application and a justification of why the condition should be amended. Also include any proposed amendments to the condition (if applicable) or details of any new tenures or ERAs being

☐	The amendment changes rehabilitation objectives.
☐	The amendment increases the intensity or scale of the activity.
☐	The amendment adds to the surface area of the activity.
☒	Other—provide details (1) We have used the ponds that were originally intended for Ro waste for K130 storage. We now have a new smaller pond for Ro Waste, the volumes we are current receiving are falling and we will stop receiving Ro waste totally in about 3 months so After this the new pond will be used to aid in evaporation so as the lined pond may be used for other purposes in the future (2) Change of use of existing area from compost production to drill mud storage
Section 2—Resource activities	
☐	The amendment is for a new pipeline that will be over 150 km in length.
☐	The amendment is for the extension of an existing pipeline by more than 10%.
☐	The amendment is for the addition of a new resource tenure to the environmental authority for a: ☐ mining lease ☐ petroleum lease ☐ geothermal lease under the *Geothermal Energy Act 2010* ☐ greenhouse gas injection and storage lease under the *Greenhouse Gas Storage Act 2009*. ☐ Other ☐ exploration permit ☐ mineral development licence ☐ mining claim. The tenement number is
☐	Other—provide details
Section 3—Details	

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added.

Note: If you hold an environmental authority for ERA 57 (Regulated waste transport) and are applying to add or remove vehicles within the ERA threshold, then use form Details of Regulated Waste Vehicles (EM869) instead available at www.qld.gov.au.

PROVIDE FULL DETAILS OF THE PROPOSED AMENDMENT INCLUDING A JUSTIFICATION

Please see attached "SECTION 3 Details of Proposed Amendments"

3. Describe the land where the proposed amended activities will be carried out

☒ The activity will be carried out within the existing approved footprint of the environmental authority.

☐ The activity is mobile and temporary and will be carried out in a new area:

AREA OF OPERATION E.G. PARTICULAR LOCAL GOVERNMENTS OR ACROSS THE STATE OF QUEENSLAND

27150 WARREGO HIGHWAY CHINCHILLA

☐ The activity will be carried out at a new fixed location as follows:

STREET NUMBER	STREET NAME	SUBURB/TOWN
POSTCODE	LOT/PLAN	
PORT (IF APPLICABLE)		
TENURE DETAILS (IF APPLICABLE)		

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4. Does the environmental authority involve activities which are subject to eligibility criteria and standard conditions?

☒ Yes →

☒ In making the proposed amendment, I can comply with all the relevant eligibility criteria and the standard conditions for all relevant activities.

☐ In making the proposed amendment, I can comply with all of the relevant eligibility criteria but cannot comply with all of the standard conditions for all relevant activities. Further detail is provided below in relation to the standard conditions which cannot be met and any requested variations.

☐ In making the proposed amendment, I cannot comply with the relevant eligibility criteria or the standard conditions for all relevant activities and further detail has been provided below.

DETAILS IF ELIGIBILITY CRITERIA OR STANDARD CONDITIONS CANNOT BE MET DUE TO THE PROPOSED AMENDMENT

☐ No → go to question 5

If you currently have a Plan of Operations in place and would like to change the amount of financial assurance held, please contact Permit and Licence Management. Details are provided at the end of this form.

5. Do you currently have financial assurance held as part of the approved environmental authority

☒ Yes →

☒ I will not need to change the financial assurance in relation to this amendment.

☐ I will be changing the financial assurance and have attached the form Application to Amend or Discharge Financial Assurance for an Environmental Authority (EM875)

☐ I will be changing the financial assurance and will be amending or replacing my Plan of Operations.

☐ No

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For information on the type of ERAs, please refer to the business and industry website: **www.business.qld.gov.au**

6. **What is the ERA type you are applying to amend?**

☒ Prescribed ERA—this application involves only prescribed ERA activities → go to question 7

☐ Resource activity—this application involves resource activities → go to question 11

Prescribed ERA information

This question is only relevant to prescribed ERAs as resource activities will not trigger assessable development under the *Sustainable Planning Act 2009*.

7. **Are there any development permits in effect or have any development applications been made under the *Sustainable Planning Act 2009* to carry out the proposed amendment?**

permits or

DEVELOPMENT PERMIT/ APPLICATION NUMBER	DEVELOPMENT PERMIT/APPLICATION NAME	ASSESSMENT MANAGER	DATE OF APPLICATION OR APPROVAL	EXPIRY DATE
DA030.2009.1023.001	REGULATED WASTE STORAGE FACILITY	WESTERN DOWNS REGIONAL REGIONAL COUNCIL	Approval: 13/4/2010	n/a

Provide a list of all the ERAs that are to be removed from the environmental authority and identify whether the ERA has commenced.

8. **ur environmental**

ND	THRESHOLD	COMMENCED (YES/NO)	LOCATION (INCLUDING ALL LOT ON PLAN/TENURE DETAILS)

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If you have identified above that any of the ERAs have not commenced, please complete the below:

☐ I declare that where identified, the ERAs above have not commenced.

The final rehabilitation report must be completed in the correct template and contain all the information specified in the template. The final rehabilitation report template is available at **www.qld.gov.au** using the publication number (EM872) as a search term.

9. Does your environmental authority contain any rehabilitation conditions that are applicable to the ERAs that you are requesting be removed from the environmental authority?

☐ Yes → you must attach a final rehabilitation report

☐ No

Only a person with appropriate environmental expertise and/or experience in planning and executing site operations should sign this compliance statement. This person may be the environmental authority holder, a full time employee of the environmental authority holder or a consultant to the environmental authority holder.

Methods to verify compliance may include a desktop assessment of documentation, an interview with the landowner/holder or a field operator or a site inspection. Evidence used may include photographs, statements and other documentation (maps, plans, approvals, monitoring results etc.).

10. Compliance statement

This compliance statement must be completed by, or on behalf of the environmental authority holder. Once completed, go to question 17

Attach a separate document to this application form which states the extent to which:

- the ERAs being removed from the environmental authority have complied with each relevant condition of approval
- the final rehabilitation report is accurate (include the date of the final rehabilitation report). Note: The compliance statement only needs to be made for the final rehabilitation report if the answer to question 9 is 'Yes'

Describe the qualifications and experience of the person signing the compliance statement.

Provide details of the date, method and evidence used to verify compliance and accuracy.

Provide the contact number of the person signing the compliance statement

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I _____ _____

(insert name and position of person making the compliance statement)

- make the compliance statement by or for the holder of the environmental authority
- confirm that, to the best of my knowledge, all information provided as part of this compliance statement, including attachments, is true, correct and complete. I am aware that it is an offence under section 480 of the *Environmental Protection Act 1994*, to give the administering authority information that I know is false, misleading or incomplete
- confirm that, to the best of my knowledge, this compliance statement, including attachments, does not include false, misleading or incomplete information
- confirm that, to the best of my knowledge, I have not knowingly failed to reveal any relevant information or document to the administering authority
- confirm that, to the best of my knowledge, all information provided in this compliance statement, including attachments, address the relevant matters and are factually correct
- confirm that the opinions expressed in this compliance statement, including attachments, are honestly and reasonably held
- understand that all information supplied as part of this compliance statement, including attachments, can be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

SIGN

DATE

Resource activity information

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The SCL trigger map is a statutory map under the *Strategic Cropping Land Act 2011* that identifies the location and extent of SCL and potential SCL. It can be found of the Department of Natural Resources and Mines website at **www.dnrm.qld.gov.au**. The Interactive Resource Tenure Mapping software also includes and SCL map layer.

11. Is there strategic cropping land (SCL) or potential SCL anywhere within the project area covered by the proposed amendment to the environmental authority?

☐ Yes → go to question 12

☐ No → you do not need to consider SCL any further and can go to question 14

Resource activities include entry on land that is SCL or potential SCL.

If you declare that you will not locate resource activities on SCL or potential SCL and fail to comply with this declaration, compliance action under the *Strategic Cropping Land Act 2011* may result.

Any future applications to amend the environmental authority that results in resource activities being located on SCL or potential SCL will need to meet the requirements of the *Strategic Cropping Land Act 2011*. This may include the need to make an application under the *Strategic Cropping Land Act 2011* for a SCL assessment.

12. Will any activities proposed under this environmental amendment application, be located on SCL or potential SCL?

☐ Yes→ go to question 13

☐ No→ by ticking this box I declare that:

(i) this application does not include any resource activities proposed to be conducted directly on SCL or potential SCL, and

(ii) I will not allow the conduct of any resource activities, proposed under this application, directly on SCL or potential SCL.

You do not need to consider SCL any further.

Go to question 14

Application forms for a SCL compliance certificate and SCL protection decision are available on the Department of Natural Resources and Mines website at **www.dnrm.qld.gov.au**.

You may only apply for a SCL compliance certificate if you can comply with the SCL standard conditions for resource activities (SCL code). The SCL code is available on the Department of Natural Resources and Mines website at **www.dnrm.qld.gov.au**. If you cannot comply with the SCL code, you must apply for a SCL protection decision.

You are required to make a SCL application (compliance certificate or protection decision) for each environmental authority (or amendment to an environmental authority) application that proposes to locate resource activities on SCL or potential SCL. This is the case even where a compliance certificate or protection decision already exists as a result of a previous environmental authority (or

13. Which SCL assessment process do you choose to undertake?

☐ SCL compliance certificate application→ complete the relevant application form, or provide the application reference if a relevant application has already been lodged.

Application reference:

☐ SCL protection decision application→ complete the relevant application form, or provide the application reference if a relevant application has already been lodged

Application reference:

☐ No SCL application→ I am eligible for exclusion from all of the *Strategic Cropping Land Act 2011* under Chapter 9, Division 2. Supporting evidence has been attached.

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amendment to an environmental authority) application.

If you are not required to make an SCL application because you are eligible for exclusion from the *Strategic Cropping Land Act 2011*, you must attach evidence to your application that demonstrates your eligibility. Refer to sections 283 and 284 of the *Strategic Cropping Land Act 2011* for full details.

A biodiversity offset is required where an applicant has demonstrated they have made all practical and reasonable efforts to avoid and minimise impacts on State significant biodiversity values, but there is a residual development impact on 1 or more of these values.

The Queensland Biodiversity Offsets Policy can be accessed at **www.ehp.qld.gov.au**.

14. Biodiversity offsets

Will the proposed amendment cause a negative impact to a state significant biodiversity value?

- ☐ Yes — attach supporting information that:
  - ☐ demonstrates that all practical and reasonable efforts to avoid and minimise impacts on State significant biodiversity values has been undertaken.
  - ☐ describes how the requirements of the Queensland Biodiversity Offsets Policy will be met.
- ☐ No
- ☐ Don't know/uncertain

This question applies if the current activity is a resource activity or the application is to add a resource activity to an existing operation.

Both the administering authority and the applicant have responsibilities to make the application notice and application documents available on a website during the public notification period. If the applicant has a website the administering authority will link to the location where the applicant will store these documents. A word searchable electronic PDF copy of the application documents must also be included.

'Resource activities' include mining, geothermal, greenhouse gas storage, petroleum or coal seam gas activities.

The administering authority will only link to the applicant's site or post the application documents if it is determined that the amendment represents a 'major amendment'.

15. Does the application relate to a resource activity for which public notice requirements will apply?

- ☐ I have included details of the website where copies of the application notice and application documents will be made available during public notification stage. If the administering authority will require permission to link to this website, also provide contact details of the person who will be a [illegible] inistering authority in this process.

  [illegible] make this information available on a website. All [illegible] pplication information has been provided to the [illegible] terior authority in an electronic format.

- ☐ No — go to question 16

WEBSITE ADDRESS	
CONTACT NAME	
TELEPHONE	
EMAIL	

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An ineligible ERA is an activity that either does not comply with the eligibility criteria or does not have any eligibility criteria in place.

16. Does the proposed amendment relate to coal seam gas (CSG) activities that are ineligible ERAs?

☐ Yes → ☐ I have determined that the amendment will not change the way that CSG water is managed

☐ I have determined that the amendment will change the way that CSG water is managed and have provided the mandatory information set out below

☐ No → go to question 17

	MANDATORY INFORMATION
☐	The quantity of CSG water the applicant reasonably expects will be generated in connection with carrying out each relevant CSG activity.
☐	The flow rate at which the applicant reasonably expects the water will be generated.
☐	The quality of the water, including changes in the water quality the applicant reasonably expects will happen while each relevant CSG activity is carried out.
☐	The proposed management of water including, for example, the use, treatment, storage or disposal of the water.
☐	The measurable criteria ("management criteria") against which the applicant will monitor and assess the effectiveness of the management of the water including, for example, criteria for each of the following: (i) the quantity and quality of the water used, treated, stored or disposed (ii) protection of the environmental values affected by each relevant CSG activity (iii) the disposal of waste, including, for example, salt, generated for the management of the water.
☐	The action proposed to be taken if any of the management criteria are not complied with, to ensure that the criteria will be able to be complied with in the future.
☐	If the application includes a CSG evaporation dam, an evaluation of the following must be provided: (i) best practice environmental management for managing CSG water (ii) alternative ways for managing CSG water (iii) whether there is a feasible alternative to a CSG evaporation dam to manage the water. Note: If the evaluation shows that there is a feasible alternative option, the CSG evaporation dam cannot form part of the water management for this amendment application.

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General ERA information

Completion of an EIS process is defined in section 60 of the EP Act.

The information provided here will assist the administering authority in deciding whether an EIS is required.

For further information refer to the guideline, Triggers for Environmental Impact Statements under the *Environmental Protection Act 1994* for mining, petroleum and gas activities. This guideline is available at **www.qld.gov.au**

17. Has an environmental impact statement (EIS) process that includes the proposed amendment been completed?

☐ Yes → ☒ I have assessed the environmental risks of the proposed amendment and consider them to be the same as was assessed in the EIS. Go to question 20

☐ I have assessed the environmental risks of the proposed amendment and consider them to be the different to what was assessed in the EIS. Go to question 18

☐ No → go to question 18

18. EIS triggers

Tick the relevant boxes below. If yes is ticked you must describe or attach details of how the criterion is triggered including details of the impact.

Only answer this question if the current ERA project is for an existing mine extracting between 2–10 million tonnes per year of mine ROM product. Is the proposed ERA amendment for an increase in the annual extraction of more than 10% or 1 million tonnes per year (whichever is the less)?	☐ Yes	☐ No
Only answer this question if the current ERA project is for an existing mine extracting over 10 million tonnes per year of ROM coal. Is the proposed ERA amendment for an increase in annual extraction of more than 10% or 10 million tonnes per year (whichever is the less)?	☐ Yes	☐ No
Only answer this question if the current ERA project is for an existing mine extracting over 10 million tonnes per year of ROM coal. Is the proposed ERA amendment for an increase in annual extraction of more than 10% or 10 million tonnes per year (whichever is the less)?	☐ Yes	☐ No
Only answer this question if the current ERA project is for an existing mine extracting over 10 million tonnes per year of ROM coal. Is the proposed ERA amendment for an increase in annual extraction of more than 10% or 10 million tonnes per year (whichever is the less)?	☐ Yes	☐ N/A

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for an increase in annual extraction of greater than 25%?		
Is the proposed ERA amendment for a mining activity that will extend into a Category A or B environmentally sensitive area, unless previously authorised by the state?	☐ YES ☐ NO ☐ N/A	
Is the proposed ERA amendment for a mining activity that would involve a substantial change in mining operations? For example: from underground to open cut, or (for underground mining) a change in operations that currently causes little subsidence but with the proposed ERA amendment, is likely to cause substantial subsidence?	☐ YES ☐ NO ☐ N/A	
Is the proposed ERA amendment for a mining activity and a novel or unproven resource extraction process, technology or activity, is being proposed?	☐ YES ☐ NO ☐ N/A	
Is the proposed ERA amendment for a petroleum and gas activity that is likely to have a total disturbance area of greater than 2000 hectares at any 1 time during the life of the proposed project? This includes areas occupied by well pads (single or multi-directional), access tracks and roads, water storages, and process plants	☐ YES ☐ NO ☐ N/A	
Is the proposed ERA amendment for a petroleum and gas activity that is likely to involve the construction of a high pressure pipeline over a distance of 300 kilometres or greater	☐ YES ☐ NO ☐ N/A	

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Is the proposed ERA amendment for a petroleum and gas activity that is likely to involve the construction of a liquefied natural gas plant	☐ YES ☐ NO ☐ N/A	

The administering authority may decide that an EIS is required for the amendment application (refer to section 142 of the EP Act).

Public notification may also be applicable to the amendment if the application is for a resource activity and the proposed amendment is considered to be a 'major amendment' (as defined in section 223 of the EP Act).

19. Assessment of the environmental impact and provision of specific supporting information

You must provide an assessment of the likely impact of the proposed amendment on the environmental values, including the following mandatory information in the table below, unless the not applicable check box is ticked.

Only tick the 'Not Applicable' check box if the proposed amendment does not cause a change to the environmental values, aspects and impacts as approved under the current environmental authority.

	MANDATORY INFORMATION	NOT APPLICABLE
•	A description of the environmental values likely to be affected by the proposed amendment	☒
•	Details of any emissions or releases likely to be generated by the proposed amendment	☒
•	A description of the risk and likely magnitude of impacts on the environmental values	☒
•	Details of the management practices proposed to be implemented to prevent or minimise adverse impacts	☒
•	Details of how the land the subject of the application will be rehabilitated after each relevant activity ceases.	☒

To provide a response to the mandatory information, specific supporting information must be provided to the administering authority, the type and detail of which will depend on your particular ERA project. Support material for technical information requirements, is located on the business and industry website **www.business.qld.gov.au.**

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You must include a description of the proposed measures for minimising and managing waste generated by the proposed amendments.

For further information on technical information to provide with your application, please refer to the business and industry website **www.business.qld.gov.au**.

20. Will waste generation or management be changed as a result of the amendment?

☐ Yes→ provide details of how the waste will be minimised or managed below.

☒ No → go to question 21

WASTE MANAGEMENT DETAILS

21. Is this land currently subject to an environmental protection order or a site management plan?

☐ Yes → ☐ I have an environmental protection order in place and the details are provided below.

☐ I have a site management plan in place and the details are provided below.

☒ No → go to question 22

PROVIDE THE REFERENCE NUMBER AND BRIEF DETAILS

22. Is any part of the land currently recorded in, or previously been recorded in, the environmental management register?

☐ Yes → complete the below table and provide the additional details requested

☒ No → go to question 23

PLEASE TICK RELEVANT BOXES	YES	NO	ADDITIONAL DETAILS
Has the land been removed from the environmental management register?	☐	☐	If yes is ticked, you must attach evidence (e.g. a notice) advising that details have been removed from the environmental management register

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The first step towards payment is to calculate the fees payable. Information on these fees can be located in the information sheets Fees for Permits for Environmentally Relevant Activities (ERAs) (EM635) and Summary of Annual Fees for Environmentally Relevant Activities (ERAs) (EM639), available at www.qld.gov.au.

The highest annual fee of any activity associated with the ERA project will be the annual fee for this application. If the annual fee increases because of the amendment, a supplementary annual fee is payable.

Any outstanding annual fees for this environmental authority must be paid before this application will be processed.

If the application involves SCL, the applicable SCL fee can be found at www.dnrm.qld.gov.au or in the Strategic Cropping Land Regulation 2011.

To pay by credit card you will need to provide contact details so you can be contacted for your credit card payment to be made over the phone.

Where there is more than 1 holder of the environmental authority, this declaration is to be signed by all holders, unless there is an agreement between all holders that 1 can sign on behalf of the other.

Note: If only 1 holder is signing this application form, they are committing all holders to the content of the application and the declaration.

Where the environmental authority holder is a company, this form must be signed by an authorised person for that company.

Privacy statement

The Departments of Environment and Heritage Protection (EHP) and Agriculture, Fisheries and Forestry (DAFF) are collecting the information on this form to process your amendment application for an environmental authority. This collection is authorised under sections 222 to 227 of the *Environmental Protection Act 1994*. Some information may be given to the Department of Natural Resources

23. Payment of fees

Application fee	$ 276.60

If your application is [illegible] supplementary annual fee within [illegible] invoice will be issued. An [illegible] fees.

Operation of the amen[illegible] do until the supplementary annual fee is paid.

You may pay your fe[illegible] credit card.

Select the payment [illegible]

☐ Paym[illegible] payable to the Depar[illegible] Protection (attached)

☐ Paym[illegible] made payable to the Depar[illegible] and Forestry (attached).

☒ Please [illegible]

Phone number [illegible]

[illegible] may be prosecuted.

[illegible] environmental [illegible] holders, please tick the [illegible]

[illegible] s of the [illegible]

[illegible] for the [illegible]

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and Mines (DNRM) for the purposes of processing this application and/or the administration of the *Strategic Cropping Land Act 2011*. Your personal information will only be accessed by authorised employees within these departments and will not be disclosed to any other parties unless authorised or required by law. For queries about privacy matters please email privacy@ehp.qld.gov.au or telephone: (07) 3330 5436.

application being re

I understand that all information supplied on or with this application form may be disclosed publicl n accordance with the *Right to Information Act 2009* and the *Evidence A 1977*.

I understand that I a responsible for managing the environmental impacts of these activities, a that approval of this application is not an endorsement by the administering uthority of the effectiveness of management practices proposed or implem ted.

I give permission for e administering authority to provide a link to public notification documen on a website, the location and access requirements of which were provided question.

I understand that if offence the *Strategic Cropping Land Act 2011* to gi an auth ument containing information that is fa or misle particular, I consent to and acknowledge th e inform ed this form will be given to authorised persons nder the *and Act 2011* in appropriate circumstances in stration of that Act.

I understand that an incomp ing applications that do not include the fee) may be tions will be returned without processing ap submitted with all invalidating issues addressed

ME

CNATURE

sch4p4(6) Personal information

GNATORY

4 9 8

OINT HOLDER'S NAME (IF APPLICABLE)

e for an

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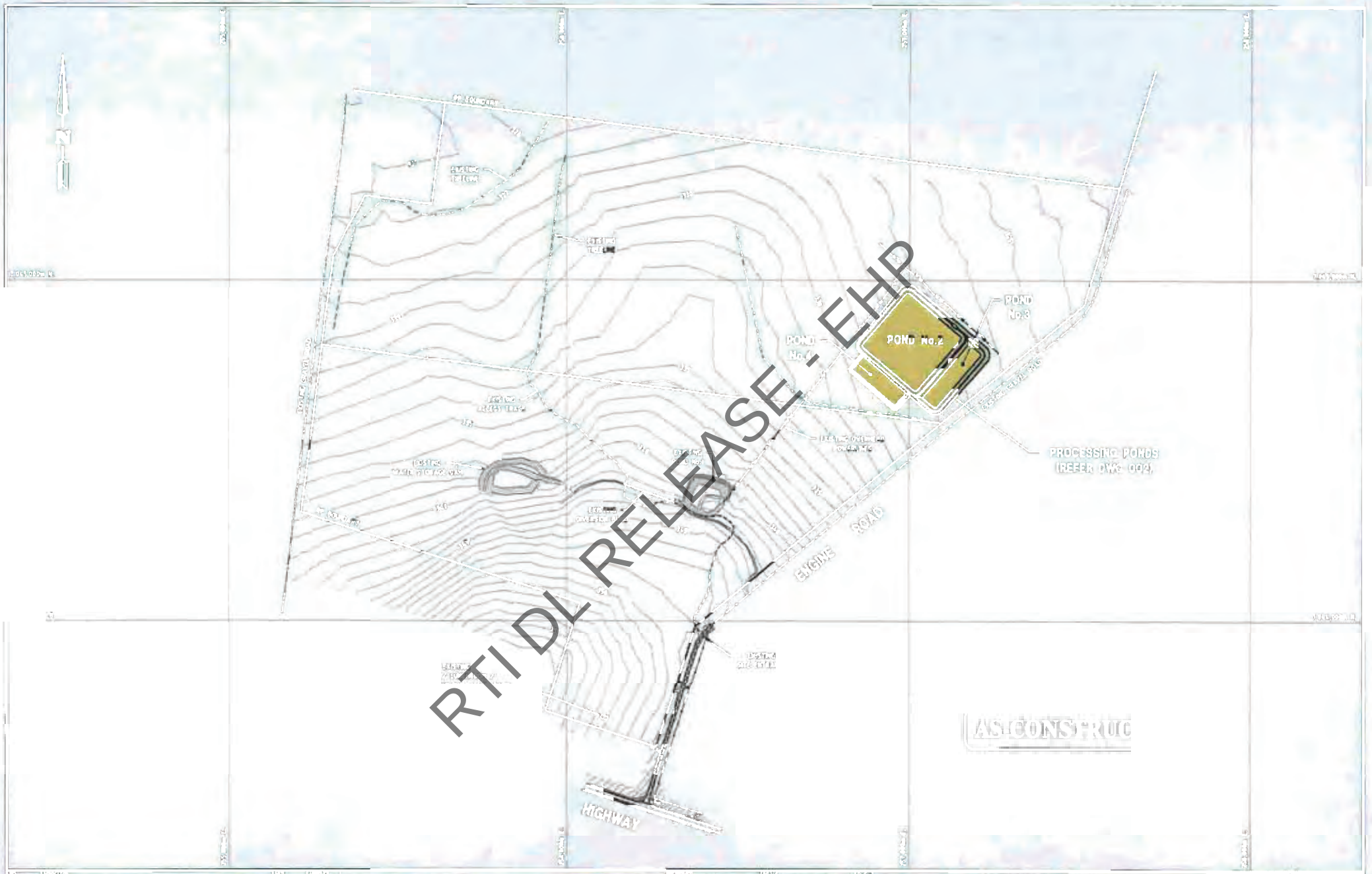
Release



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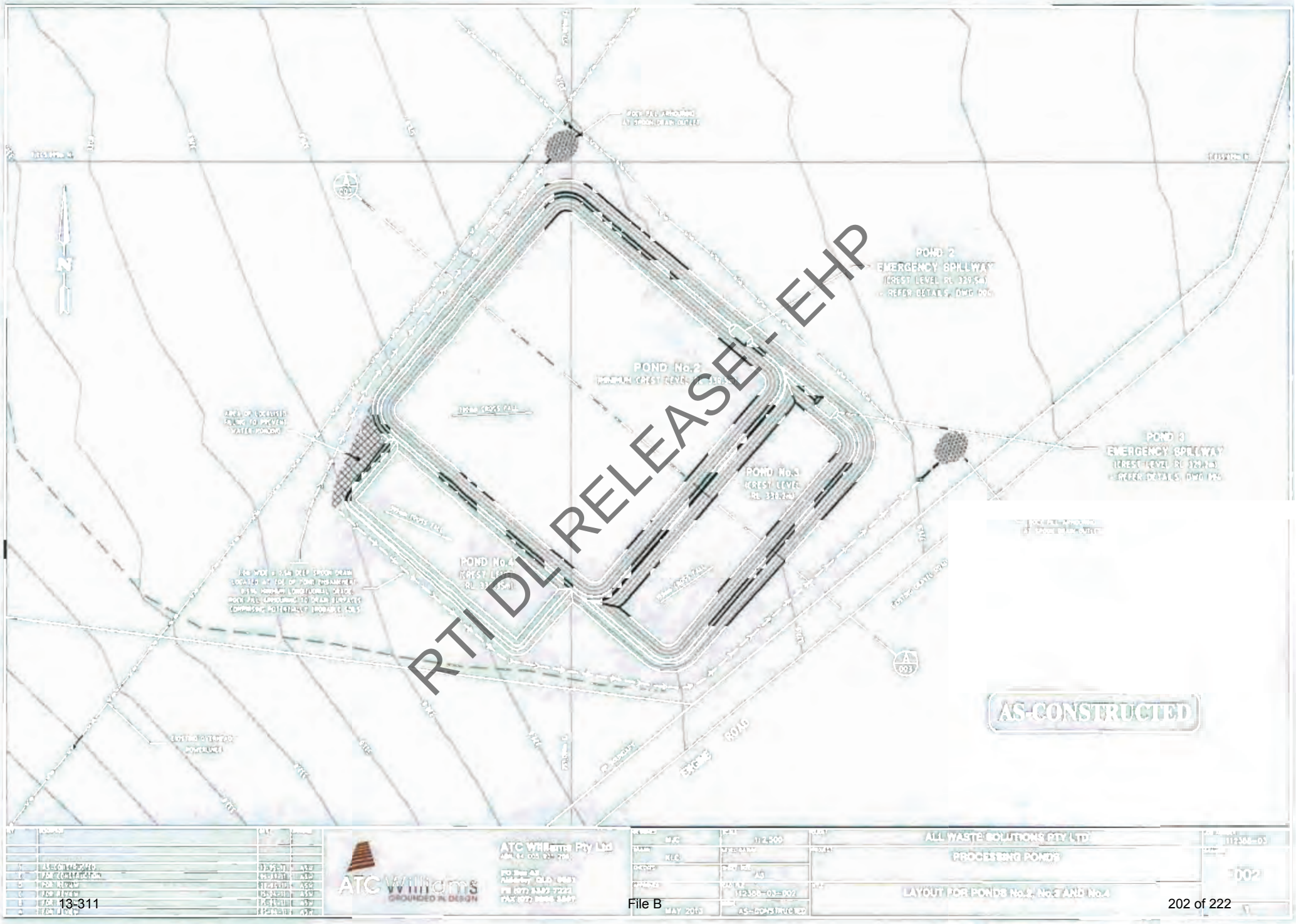

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Release

SECTION A PROCESSING POND No.2 AND No.3

DETAIL 2 GEOMEMBRANE ANCHOR TRENCH WITHIN POND EMBANKMENT

DETAIL 1 POND EMBANKMENT (TYPICAL)

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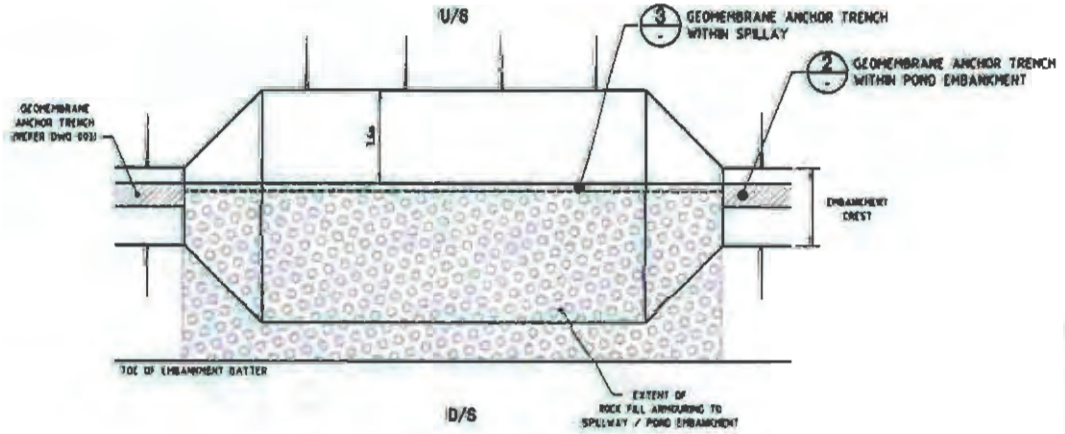
ATC Williams Pty Ltd
ACN 131 945 540
PO Box 41
Aitkenvale QLD 4814
PH (07) 4725 7222
FAX (07) 4725 7227

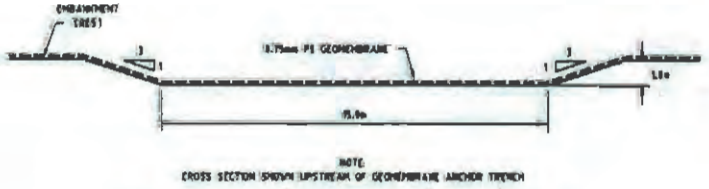
ATC Williams
GROUNDED IN DESIGN

DESIGN MJC	SCALE AS SHOWN	CLIENT ALL WASTE SOLUTIONS PTY LTD	JOB NO. 112365-01
DRAWN MJC	VERT. DATUM	PROJECT PROCESSING PONDS	DRAWING NO. 003
CHECKED	HORIZ. DATUM	TITLE EMBANKMENT - SECTIONS AND DETAILS	REVISION 1
APPROVED	DATE (C) 112365-01-003		
DATE MAY 2015	STATUS AS-CONSTRUCTED		



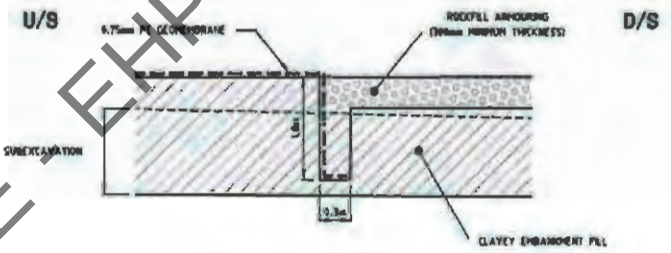
TYPICAL EMERGENCY SPILLWAY PLAN

SCALE 1:200



TYPICAL EMERGENCY SPILLWAY CROSS SECTION

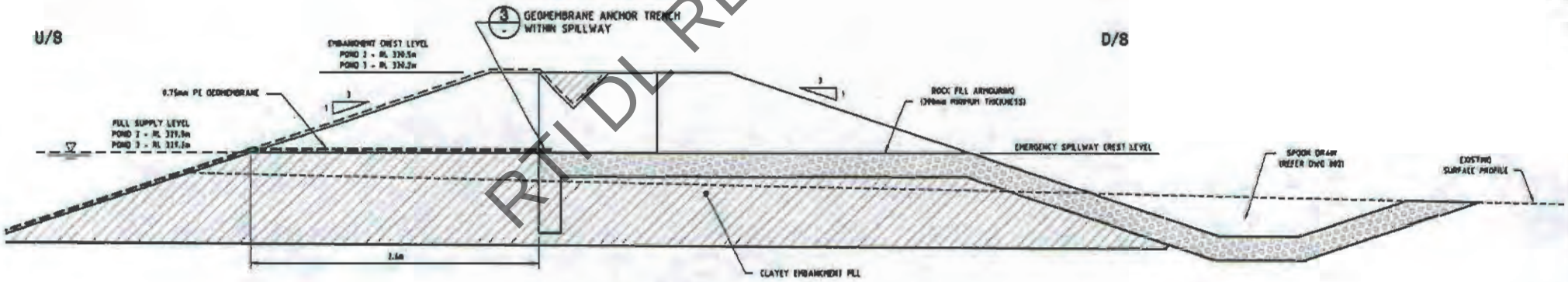
SCALE 1:200



DETAIL 3 GEOMEMBRANE ANCHOR TRENCH WITHIN SPILLWAY

SCALE. 1:50

AS-CONSTRUCTED



TYPICAL EMERGENCY SPILLWAY LONGITUDINAL SECTION

SCALE 1:50

NO	DESCRIPTION	DATE	APPROVED
1	AS-CONSTRUCTED	13-05-13	ASW
D	FOR CONSTRUCTION	26-09-11	ASW
C	FOR REVIEW	28-04-11	ASW
B	FOR REVIEW	15-04-11	ASW
A	FOR REVIEW	11-04-11	ASW

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DESIGNED	MJC	SCALE	AS SHOWN
DRAWN	XLC	LEVEL DATUM	
CHECKED		SHEET SIZE	A3
APPROVED		CAD FILE	112388-03-004
DATE	MAY 2013	STATUS	AS-CONSTRUCTED

CLIENT: ALL WASTE SOLUTIONS PTY LTD

PROJECT: PROCESSING PONDS

JOB NUMBER: 112388-03

DRAWING NO: 004

TITLE: EMERGENCY SPILLWAY - SECTIONS AND DETAILS

REV: 1

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1.0 Introduction

Part B below details Workplace Procedures for various day-to-day activities that will be proposed ERA 56- regulated waste storage and ERA 55 – regulated waste reprocessing facility (the facility). Stated measures contained within the respective p information for site personnel to use as a guide when conducting various activities the potential to cause environmental harm (including environmental nuisance).

Emergency Procedures are highlighted in section 2 of this document for responding to incidents These procedures will assist site personnel in responding to incidents in an environmentally responsible manner.

The following Workplace and Emergency Procedures are intended as a guide for all WeKando E and employees when carrying out specific tasks whilst having due regard for the receiv environment. For the purpose of accessibility to site personnel, Workplace & Emergency Procedu will be laminated & positioned in various locations throughout the facility, including inside vehicl & the regulated waste storage facility.

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2.0 Workplace Procedures

Workplace Procedure # 1 Receival of Liquid Waste:	
Environmental Commitment: • The receival of liquid waste must not cause environmental harm or nuisance. • That the functioning of the evaporation ponds does not result in the release of offensive and noxious odour that creates environmental nuisance at an odour sensitive place. • That the ponds do not release to the receiving environment (particularly waters, including ground water).	
Identification of Issues:	**Possible Impacts:**
• Acceptance of waste that has not been approved by the technical manager.	• Contamination of ponds with toxic or hazardous substances. • Contamination of ponds with oil/ hydrocarbons resulting in reduced evaporation rates • Contamination of ponds with high BOD substances resulting in anaerobic conditions producing offensive odour. • Breach of development approval with possible enforcement action taken by the DERM leading to fines or prosecution. • Remedial action required e.g.aeration, pH adjustment.
• Allowing odorous waste to be received at the facility.	• Nuisance complaints regarding offensive or noxious odours at odour sensitive places.
• Unloading of liquid waste into evaporation ponds at receival area which is not adequately bunded and a spill occurs.	• Breach of development approval with possible enforcement action taken by the DERM leading to fines or prosecution. • Soil contamination of surrounding land with clean up being required.
• Receival toxic and hazardous liquid wastes to the evaporation ponds such as acid or alkaline solutions.	• Enforcement action taken by the DERM. • Remedial action required e.g. pH adjustment.
Control Measures: • Site Manager assures that only regulated waste approved by the Technical Manager and that complies with the Waste Acceptance Criteria- Table 1 is accepted. • Do not receive liquid waste if there is not enough storage volume within evaporation ponds. Note	

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that a 1.0 metre freeboard is required in all evaporation ponds.

- Do not unload liquid wastes if the receival area is not bunded effectively.
- The following wastes are only to be received at the facility:
  - Saline solutions and concentrates; Waste Code D300- Non Toxic Salts
- On arrival at the facility, prior to unloading, all loads are to be sampled and tested for:
  1. pH (4.0 – 9.0)
  2. TDS
  3. Visible oil sheen
  4. Turbidity
  5. Odour
- All samples are to be numbered, with the respective DERM waste tracking certificate number and the sample kept for a minimum one (1) month period.
- Review of the analyses and acceptance criteria by the Technical Supervisor, determines whether the waste is to be accepted.
- The Site Manager ensures that only wastes approved by the Technical supervisor are accepted at the facility.
- If saline concentrates are found to be odorous/ offensive, contain a visible oil sheen, display different turbidity properties to previous samples or be outside the pH range of 4.0-9.0 the load is not to be accepted.
- Do not allow toxic or hazardous substances to enter the evaporation pond(s).
- Maintain the regulated waste storage facility perimeter bund and or diversion drains (if required). Note: Ponds are constructed in 'Turkey Nest' design to prevent overland flow entering the ponds.

Record Keeping:

- All liquid waste accepted at the facility is to be recorded
- All spills must be recorded on **Form 2 – Daily running sheet.**

Responsibility and Communication:

- All facility employees that are engaged in the above mentioned activities are responsible for ensuring control measures are met.
- All incidents should be reported to the Site Manager for action (if necessary), recording and reporting to the DERM if required. DERM Pollution Hotline (1300 130 372)
- If a transport company is found to be in non compliance with directions given by site personnel or has been found to have deposited prohibited wastes at the facility, it is the responsibility of the site personnel to inform the Site Manager to take further action.
- If high strength solid or liquid wastes or toxic or hazardous wastes are released to the evaporation pond(s), immediate notification to the Site Manager is to occur.
- Site personnel are to promptly report any variance from the control measures that result in environmental harm or nuisance to the Site Manager.

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Waste Management) Regulation 2000.

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Workplace Procedure 2

Dust & Particulate Management:

Environmental Commitment:

- To ensure that activities at the facility do not cause environmental harm or nuisance.

Identification of Issues:	Possible Impact:
• Dust liberation from moving traffic on haulage roads.	• Releases that cause environmental nuisance. • On site impact to facility employees such as to their eyes and lungs.
• Complaint received regarding nuisance at a dust sensitive place.	• If serious enough, enforcement action may be taken by the DERM. • DERM may request that monitoring be performed at a dust sensitive place. Parameters to consider: o Dust deposition = 120 mg/m^2 /day –AS 3580.10 of 1991; o PM10 = 50 ug/m^3 - 24 hour (5 days each year).

Control Measures:

- Ensure that haulage roads are regularly wet down with water to suppress dust. This can be achieved by utilising the on site water cart.
- Dust suppressants utilised to reduce amount of water required to suppress the dust.
- Limit traffic to designated internal road ways. This will lessen the amount of dust that is created.
- Consideration to wind conditions should be given when performing significant earth works.

Record Keeping:

- Record when the water cart is being utilised. Note the water volume used and area applied **Refer to Appendix 1 – Records – Form 5 –** Water Usage- Dust Suppression
- Record daily weather conditions. **Refer to Appendix 1 – Records – Form 3**
- Record when significant earthworks are occurring.

Responsibility and Communication:

- It is the responsibility of all facility employees engaged in the above activities to ensure that the above controls are carried out.
- It is the responsibility of the Site Manager to allocate tasks and to ensure that activities on the site do not result in the release of particulate or dust that causes environmental nuisance.
- Site personnel must promptly inform the Site Manager of any incident that is likely to cause environmental harm or nuisance.

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Air) Policy 2008

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Workplace Procedure 3

Odour Management:

Environmental Commitment:

- To ensue that the activities undertaken at the facility do not cause environmental nuisance by the release of offensive odour.

Identification of Issues:	Possible Impact:
• Receival of prohibited waste to an evaporation pond resulting in the overloading of the pond.	• The release of offensive odours resulting in a nuisance complaint being lodged by a sensitive receptor. • The onset of anaerobic activity and the release of offensive and noxious odour. • Breach of development approval conditions and enforcement action taken by the DERM.
• Receival of landfill leachate into the evaporation pond(s) that is highly odourous.	• The release of volatile organic compounds, sulphides, ammonia and amines which results in the release of offensive and noxious odour that can cause odour nuisance. • Breach of development approval conditions and enforcement action taken by the DERM.
• The receival of highly odorous saline solutions or concentrates into the evaporation pond(s).	• The release of offensive and noxious odour that results in environmental nuisance at an odour sensitive place.
• The receival of acid or alkaline solutions to one of the evaporation ponds.	• The killing off of aerobic bacteria resulting in the release of offensive and noxious odour that results in environmental nuisance at an odour sensitive place. • Breach of development approval conditions and enforcement action taken by the DERM.

Control Measures:

- **Ensure all loads are sampled and tested in accordance with the SBMP**
- **Ensure high BOD/ odorous wastes are not accepted at the storage facility**
- Ensure landfill leachate s not received for storage.
- Ensure that ponds are kept in ether an aerobic or facultative state.
- Prohibited waste should not be accepted at the facility. Transporters found disposing of prohibited waste are to be made to take waste away. The DERM to be notified. DERM Pollution Hotline (1300 130 372)
- If offensive odours are emanating from evaporation pond(s) that is creating environmental nuisance at an odour sensitive place, aeration or oxidation via the use of hydrogen peroxide/ ozone is to occur to reduce odour.
- Regularly conduct odour monitoring downwind of the regulated waste storage facility.

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Record Keeping:

- Record all odour monitoring performed.
- Record all events that may or do lead to odour nuisance occurring. For example if a highly odourous load is received, record the details of the waste type received. Go down wind and determine the extent of movement from the facility. Detail the characteristic of the odour and how it makes you feel.
- If offensive odour is emanating from an evaporation pond(s), record DO and pH in the pond(s)

Responsibility and Communication:

- The Site Manager is responsible for ensuring that records are collected and maintained.
- All site employees are responsible for the prompt notification to the Site Manager when release of offensive odour occurs.
- The Site Manager is responsible for ensuring that all control measures are carried out.
- It is the responsibility of the Site Manager to investigate any complaints received regarding odour nuisance and report all findings to the DERM when required.
- The Operations Manager must inform the DERM of any findings when the Site Manager is unable to do so.
- All site personnel are responsible for carrying out allocated tasks.

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Air) Policy 2008

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Workplace Procedure 4

Noise Management:

Environmental Commitment:

- To ensure that activities conducted at the site do not create environmental nuis ensitive place.

Identification of Issues:	Possible Impacts:
• On-site equipment is being used with ineffective muffler systems.	• Noise complaint from noise sensitive place. • Enforcement action from the DERM.
• Tonal noise is occurring from the operation of faulty equipment.	• Dependant on frequency, noise nuisance could occur, which could result in noise [illegible]
• Trucks delivering liquid waste have defective mufflers/silencers. • Trucks delivering liquid waste to the facility are unnecessarily using air brakes.	• Noise complaint from a noise sensitive place. • Enforcement action from the DERM.
• Impact noise is occurring from works performed on site, especially after hours.	• Could result in noise levels being emitted greater than background for the area. • Breach of development approval conditions. • Enforcement action from the DERM.
• Construction of new buildings/facilities or processes.	• Could result in noise levels being emitted greater than background for the area.

Control Measures:

- If noise not ordinarily present is experienced to be emanating from any machinery or equipment that is likely to cause environmental nuisance at any time, prompt attention should be given to rectifying the noise. The noise should cease until rectification has occurred.
- The Daily Machinery Start up Checklist should be filled in. (Refer to Appendix 1 – Records – Form 1 - Daily Equipment/Machinery Start up Checklist).
- Unnecessary impact noise should not occur.
- Unnecessary noise outside of normal operating hours should not occur.
- Defective plant and equipment should not be used until repaired.
- Delivery trucks should not use air brakes unnecessarily.

Record Keeping:

- Daily start up records must be taken. (Refer to Appendix 1 – Records – Form 1 - Daily Equipment/Machinery Start up Checklist).
- Record all noise data that is requested by the administering authority (DERM).

Responsibility and Communication:

- Site personnel are responsible for the prompt notification to the Site Manager if noise is released that is likely to cause environmental nuisance.

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- It is the responsibility of the Site Manager to investigate any complaints received regarding noise nuisance and report all findings to the DERM when required.
- The Site Manager is responsible for ensuring that the Daily Machinery Start up Checklist is filled in.

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental protection (Noise) Policy 2008.

Workplace Procedure 5

Stormwater Management:

Environmental Commitment:

- To ensure that releases of contaminated stormwater to the receiving environment do not occur.
- To minimise any environmental impact that does occur from any release from the Facility.
- To effectively manage stormwater generated on site so as not to cause environmental harm or nuisance.

Identification of Issues:	Possible Impact:
• Diversion drains have not been maintained.	• The blocking or obstruction of diversion channels allows overland flow to erode pond embankments and possible structural failure • Ponding and Pooling of stormwater around the base of perimeter bund wall.
• Prohibited wastes are received and there is a spill at the receival area resulting in a release of contaminants to land.	• Enforcement action from the DERM for acceptance of prohibited waste and placing a contaminant in a position where environmental harm could possibly occur. • Clean up required.
• Evaporation ponds contain more liquid waste than allowed (i.e. water height is higher than the freeboard limit of 1.0 metre) and incidental rainfall causes an overtopping event.	• Release of contaminated water to land and or surface water. • Breach of development approval conditions. • Enforcement action taken by the DERM.
• The HDPE lining of the evaporation pond has been pierced and before repair has occurred liquid waste has been discharged into it.	• Release of contaminants to unsaturated groundwater zone and or groundwater. • Enforcement action from the DERM.
• External stormwater sources allowed entry into the evaporation pond(s).	• Increase in volume of contaminated water to manage.

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○ The hardstand area that is being utilised to finalise drying of salt crystal is non integral and stormwater generated in the area has been released to the receiving environment.	○ Release of contaminated water to land and or surface water. ○ Breach of development approval conditions. ○ Enforcement action taken by the DERM.
○ No quality assurance has been attained for the construction of the HDPE lining (ie. jointing works) and the evaporation ponds) have received saline water.	○ No demonstration that HDPE lining is integral ○ DERM may require ponds to be emptied until quality assurance can be given.

Control Measures:

Maintain evaporation pond(s) perimeter bund in an integral state.
Ensure Evaporation Pond(s) are maintained in an aerobic state.
Ensure that a 1.0 metre freeboard is maintained in the evaporation pond(s) at all times.
Prohibited waste must not be received at the regulated waste storage facility.
The following wastes are only to be received at the regulated waste storage facility:

- non-toxic salts, environmental Waste Code D200- Specifically saline wastewaters.
- Schedule 7 of the Environmental Protection Regulation 2008 specifies the waste type as: Number 36. "Non-toxic salts including, for example, saline effluent".

Direct all external stormwater away from the perimeter bund of the evaporation ponds.
Check internal drains after every rainfall event that induces stormwater runoff and clean out where necessary. (Refer to Appendix I – Records – Form 3 – Stormwater Performance Checklist).
Ensure internal drains, hardstand pads and the HDPE liner integral to ensure that movement and storage of contaminated water does not result in release to the receiving environment.
Ensure that the hardstand area utilised to dry out salt crystal is integral.
Ensure that all stormwater generated in the salt drying area is returned to an evaporation pond.
Ensure quality assurance is attained on the construction of the HDPE liner.

Record Keeping:

- Record any repairs conducted on the evaporation ponds' perimeter bund wall, internal drains and evaporation Pond(s) HDPE lining.
- Record quality assurance of HDPE lining construction.
- Record all observations on the performance of the stormwater containment system after rainfall events that induce stormwater runoff.
- Record any releases to the receiving environment.

Responsibility and Communications:

All facility employees must report any release to the receiving environment immediately to the Site Manager for attention and any necessary action.

- The Site Manager is responsible for ensuring any repairs to the bund wall, internal drainage, evaporation pond(s) and HDPE lining occurs.
- The Site Manager is responsible for the collection and recording of any observations made as the performance of the stormwater containment system.
- The Site Manager is responsible for advising the Operations Manager about a release to the receiving environment or the DERM when required.
- The Operations Manager is responsible for notifying the DERM about a release to the receiving environment. DERM Pollution Hotline (1300 130 372)

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Water) Policy 2009

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Release

3.0 Emerg

Environmental Commun

- To ensure that in th
to minimise or pre

Identification

- A truck delivering
regulated waste sto
spilling the contem
- The driver was fou

- The haulage road
maintained and e
truck to turn over
the tanker.

effluent or
ates the land.
waters
by the DERM.

- A truck delivering
waste storage facility has
maintained efficiently an
fallen off, causing the ta
[illegible]

effluent or

Control Measures:

- Ensure that the haulage ro
- Inspect the haulage road r
- Ensure that haulage road s
- Ensure that transporters are aware that defective trucks, trailers and containers will not be allowed entry onto the site. [illegible] her is found to be defective, the Site Manager is to make the transport [illegible] defect has been rec
- Ensure that speed s
- In the event of a spill, identify th of contaminants. Dispose of co
- After clean up has occurred. Th contaminants has occurred effic

Record Keeping:

- All releases to land from a truck telephone after becoming aware harm occurring or nuisance or a
- All releases to waters, including water courses must be sampled. A sample must be taken

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upstream of the event, the release point and at a downstream location. If no water/contaminated water is present to sample then a soil sample is to be acquired.

- All releases, including spills are to be recorded.
- All releases to waters are to be recorded.

Responsibility and Communication:

- All facility staff members that are engaged in the above mentioned activities are responsible for ensuring control measures are met.
- The Site Manager is responsible for advising the DERM if the Operations Manager is not able to do so. DERM Pollution Hotline (1300 130 372)
- The Site Manager is responsible for controlling the incident unless an administering authority, such as the Queensland Fire and Rescue or the DERM for example take command of an incident.
- The Site Manager is responsible for ensuring that all employees carry out appropriate measures as assigned.
- All facility staff members are responsible for carrying out any necessary action as discussed with the Site Manager.
- The Site Manager is responsible for providing the DERM a written report surrounding the incident, what measures were taken to minimise or prevent environmental harm and what measure are to be taken to minimise or prevent a recurrence of an event.

Relevant Legislation:

- Environmental Protection (Water) Policy 2009
- Environmental Protection Act 1994

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Emergency Procedure #2

Receival of Prohibited Waste:

Environmental Commitment:

- To ensure that the receival of prohibited waste does not occur at the regulated waste storage facility.

Identification of Issues:	Possible Impact:
• A new waste stream is not sampled and analysed to ensure compliance with the waste acceptance criteria- table 1 e.g. A delivery of landfill leachate to the facility contains waste oil with high BOD and has been transferred to the evaporation ponds for storage.	• Contamination of evaporation pond(s). • Breach of development approval conditions. • Enforcement action by the DERM. • Clean up costs associated with decontamination of the pond(s).

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- Complete DERM waste tracking certificates.
- Complete receival docket which includes compliance of 'washed out' tanker by transporter.
- Numbered samples kept for one month
- Record all prohibited waste that has been delivered to the facility.

Responsibility and Communication:

- All facility staff members that are engaged in the above mentioned activities are responsible for ensuring control measures are met.
- All deliveries of prohibited waste must be brought to the attention of the DERM via the telephone, DERM Pollution Hotline (1300 130 372), as soon as practicable after becoming aware that prohibited waste has been delivered to the facility.
- The Site Manager is responsible for notifying the Operations Manager immediately upon becoming aware that prohibited waste has been delivered to the facility.
- The Operations Manager is responsible for notifying the DERM in the first instance. The Site Manager will take responsibility if the Operations Manager is unable to do so.
- Further notification may be required by conditions contained within the development approval.

Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Waste Management) Regulation 2000.

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Emergency Procedure # 3

Release to Groundwater:

Environmental Commitment:

- To ensure that any release to groundwater is minimised or prevented from causing environmental harm.

Identification of Issues:	Possible Impact:
• The HDPE lining of the evaporation pond(s) has not been quality assured as being impermeable.	• Release of contaminated waters from the facility to the unsaturated groundwater or groundwater zone that may cause environmental harm.
• The HDPE lining of the evaporation pond has been damaged with the removal of crystalline or solidified waste and has not been repaired prior to the filling of more contaminated waste water.	• Release of contaminated water to groundwater that may cause environmental harm. • Enforcement action by the DERM. • Cost to remove contaminants.

- Observations made
evaporation pond is
greater rate than the
allows for.

Control Measures:

- Ensure that a quality as ... ce ... s
information to be docu ... d and
- Ensure that if damage ... to the
contaminants are being ... ed th
qualified person must b ... aged t
- Groundwater monitorin ...
contaminants:

Parameter	Units
pH	
Dissolved Oxygen	mg/l
Electrical Conductivity	ns/cm
Total Dissolved Solids	mg/l

- If an evaporation pond
daily evaporation, the c
Back up pond.
- If remai

Record Keepin

- Record all volume
- Record all data tha
intervals.

Responsibility and Comm

- All facility staff membe
ensuring control measu
- All releases of contami
telephone DEPWI Exc
that th
- The Site Manager
becomin aware th
- The Operations M
Manage will take
- Further ...

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Relevant Legislation:

- Environmental Protection Act 1994
- Environmental Protection (Water) Policy 2009

Emergency Procedure # 4

Release to Waters:

Environmental Commitment:

- To ensure that any release to surface waters is minimised or prevented from causing environmental harm.

Identification of Issues:	Possible Impact:
• Failure to maintain a 1.0 metre freeboard within the evaporation pond(s) has resulted in a release from the facility. Contaminants have joined overland stormwater flow.	• Release of contaminated waters from the facility that may cause environmental harm. • Enforcement action by the DERM.
• The perimeter diversion channels and bund wall of the evaporation pond(s) has failed due to lack of maintenance and has allowed stormwater that is external to the facility entry into an evaporation pond, thus increasing the volume of contaminated water.	• Increase in height of contaminated water is such that a release to the environment through the initial breach has occurred. • Breach of development approval condition. • Enforcement action taken by the DERM.

Control Measures:

- Ensure that a minimum freeboard of 1.0 metres is maintained in the evaporation pond(s) at all times except in emergencies.
- Ensure perimeter diversion channels and bund are integral and that no cracks, gaps or erosion occurs so as to prevent overland stormwater flow from eroding the pond embankment and potentially causing an overtopping event.
- If the perimeter diversion channel is damaged, immediately try repairing the perimeter diversion channel safely.
- If a release is occurring from one of the evaporation ponds, then transfer to another evaporation pond must occur.
- If all evaporation ponds are at capacity then transfer to an offsite facility must occur to ensure containment.

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Record Keeping:

- Record all volume
- Obtain DO, EC, a ... point on the perimeter (Ch
- If saline solutions ... allowing

Parameter
pH
Dissolved Oxygen
Electrical Conductivity
Total Dissolved Salts

Table 2:

- Go upstream of the release point and ... ed contaminants from a water course that the release ... adjacent to the site but may in fact meander acr
- Go down stream of the release point ... If you follow the release and it does ... release at a point where ponding and ... will help determin ... Note any observed ... contaminant(s)

Responsibility and Communication:

- All facility staff members that are ... es are responsible for ensuring control measures are met.
- All releases of contaminants to wa ... the DERM via the telephone as soon as practicable ... a release or there is likely to be a release.
- The Site Manager is responsible fo ... mediately upon becoming aware that a release has ... or a release is likely.
- The Operations Manager is respons ... notifying the DERM in th ... instance. The Site Manager will take responsibility if ... rations Manager is unable ... so.
- Further notification may be require ... nditions contained within th ... velopment approval.

Relevant Legislation:

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SECTION

Amendme

We have used the p
smaller pond for Re
receiving Ro waste
evaporation so the i

Amendment 2

We have an existing ... ge of drilling
mud only. The pad i ... rhud and to
prevent contaminatio

As originally designe ... eachate and
rainwater flowing to ... e necessary
transferred to the Br

The drilling mud will ... to separate
bunded areas within ... w deliveries
of low viscosity drill ... isposal to a
licenced landfill site.

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