Performance Review Report

June 2011 to June 2013

Iluka Resources Limited

Tutunup South

ILUKA

Document Control

Revision	Details of review or changes	Date created	Document Reference
A	Report submitted to DEC	September 2013	

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Figures

1. Introduction

This Performance Review Report (PRR) has been prepared by Iluka Resources to satisfy Condition 5 in Ministerial Statement 799. This Ministerial Statement requires that the proponent submit a PRR every second year from the commencement of operations. This report is the first PRR required for the *Tutunup South Mineral Sands Project* and covers the period 2011 to 2013.

The report is structured to review the environmental performance of the project in relation to the major environmental factors as noted in EPA Bulletin 1308. These being:

- flora and vegetation;
- ground water and surface water;
- closure and rehabilitation, and
- noise.

The PRR is being submitted to the Department of Environment and Conservation to meet requirements contained below.

Ministerial Statement 799 Condition 5-1:

The proponent shall submit to the CEO of the Department of Environment and Conservation Performance Review Reports at the conclusion of the second, fourth, sixth and eighth years after the commencement of mining and then, at such intervals as the CEO of the Department of Environment and Conservation may regard as reasonable, which address:

1 the major environmental risks and impacts; the performance objectives, standards and criteria related to these; the success of risk reduction/impact mitigation measures and results of monitoring related to the management of the major risks and impacts;

2 the level of progress in the achievement of best practice environmental performance, including industry benchmarking, and the use of best available technology where practicable; and

3 improvements gained in environmental management which could be applied to this and other similar projects.

2. Background

2.1 Proponent

Iluka Resources Limited (Iluka)

Perth Corporate Office	North Capel Office
Level 23 140 St Georges Terrace Perth WA 6000 Phone: (08) 9360 4700 Fax: (08) 9360 4777	Yeardy Road CAPEL WA 6271 Phone: (08) 9780 3543 Fax: (08) 9727 2098

Iluka is involved in mineral sands exploration, project development, operations and marketing. The company is the major producer of zircon globally and largest producer of the high-grade titanium dioxide products of rutile and synthetic rutile, with operations in Australia and the Unites States.

2.2 Project Background

Iluka operates the Tutunup South Mine located approximately 195 kilometres south of Perth and 15 km southeast of the township of Busselton (Figure 1). The project area includes mining tenements, M70/611, M70/612 and M70/1261 (Figure 2).

The operation is an open cut, dry mine that produces heavy mineral concentrate (HMC) as feed for the North Capel Separation Mill. The ore body occurs between 0 and 15m from the surface in a number of layers across the site. The deepest is to the west with most of the pits being around 10m deep.

Active mining commenced June 2011, and has operated continuously until July 2013 when the site went into an idle period. The life of the operation is likely to be another 2 to 3 years.

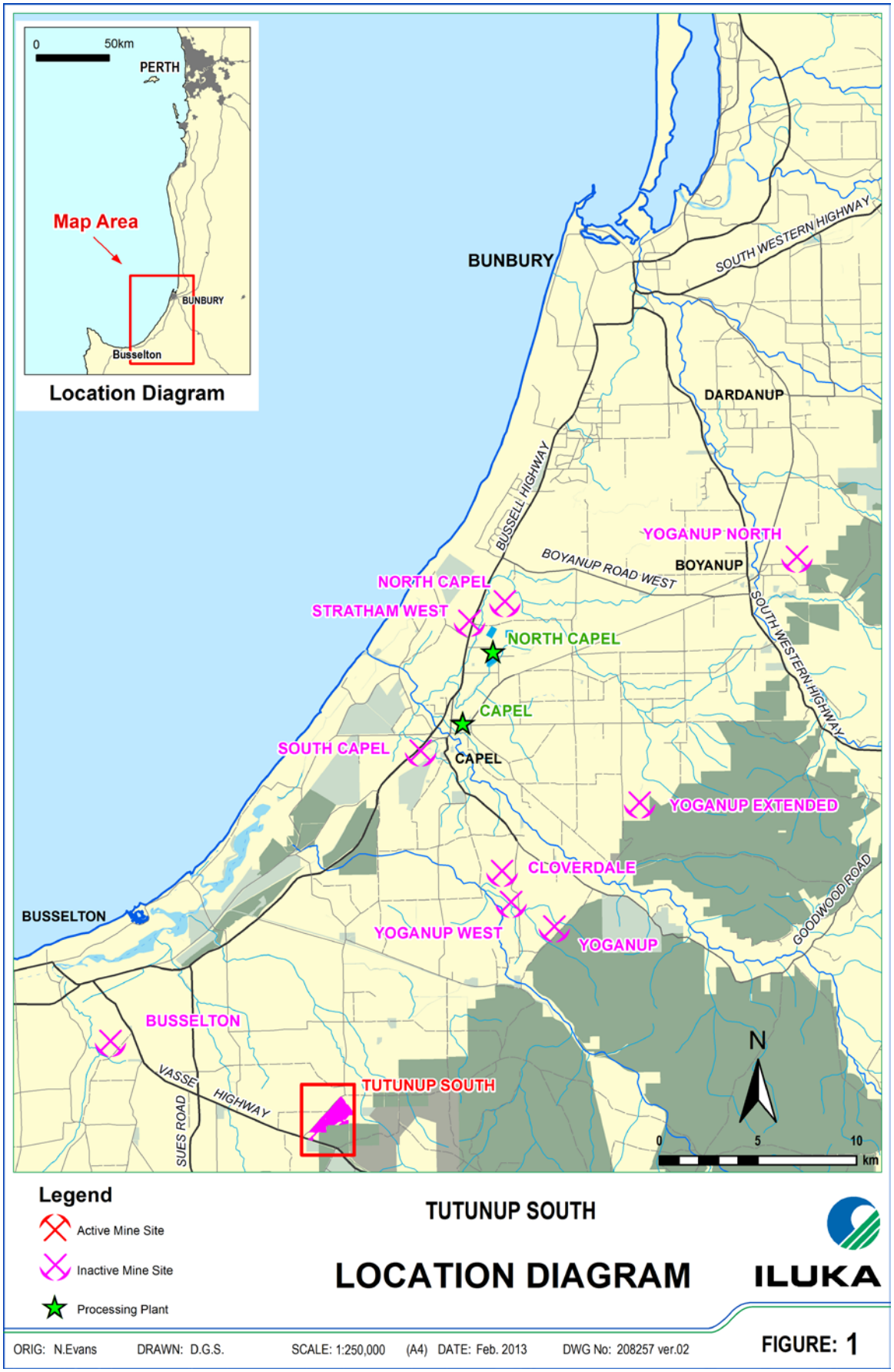

Figure 1. Tutunup South Location Map

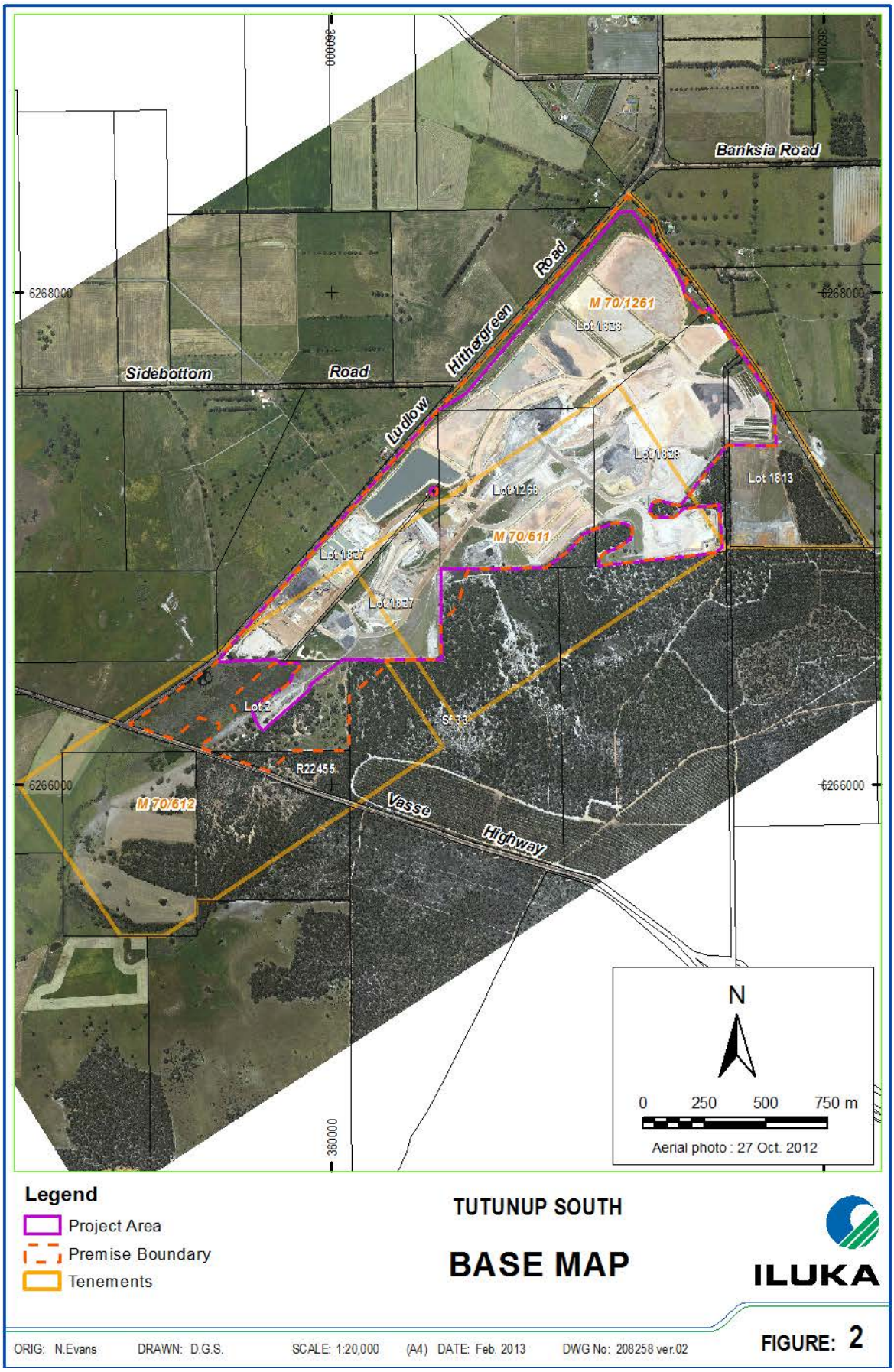

Figure 2. Tutunup South Site Plan

3. Performance Review

3.1 Environmental Risk Management

Risk management forms a key part of Iluka's Environmental, Health and Safety Management System. This system requires regular review of Tutunup South's Mineral Sands project risk register and assessment of the effectiveness of control measures.

The major environmental risks and impacts of the Tutunup South Mine project; the performance objectives, standards and criteria related to these; the success of risk reduction/impact mitigation measures and results of monitoring related to management of the major risks and impacts are presented in Table 1.

Internal audits, routine site inspections and routine monitoring are used to assess the impact of Iluka operations on the environment and aid in maintaining compliance with Ministerial Statement 799.

Table 1: Environmental Risk Management Review

Environmental Factors	Potential Impact	Performance Objective/Standard/Criteria	Risk reduction/mitigation success	Monitoring Results
Surface Water Discharge	Contaminated groundwater impacts on the health of the creek/river ecosystem and down gradient beneficial use of surface water streams	All discharged process/contaminated water from the site meets EP Act licence limits.	Daily analysis is made of key parameters to determine the quality of process water prior to discharge.	Two minor exceedence of license limits, both reported in the AER.
Groundwater	Dewatering causing the oxidisation of PASS which then contaminates local groundwater.	No significant change in ground water chemistry associated with PASS.	Monthly monitoring of piezometers for changes in water chemistry parameters relating to PASS.	The majority of piezometers show no change in water quality. One bore in the immediate vicinity of the active pit showed a changed in water chemistry maybe due to PASS. Monitoring increased to weekly as per DoW trigger levels.
Groundwater	Dewatering causing loss of water supply in nearby landholder bores	Have minimal impacts on landholder bore water levels and not causing loss or reduced supply	Landholder and local monitoring bores are sampled for quality and measured for depth quarterly.	No indications of changes to quality or quantity of water relating to mining activity
Flora and Vegetation	Dewatering impact to extend beyond disturbance area causing loss or damage to groundwater dependant ecosystems.	To minimise impacts of dewatering on Groundwater Dependent Ecosystems (GDE).	Monitor impacts of dewatering by: - Soil moisture gauges in GDE; - Fortnightly photographs of GDE, and State Forest adjacent to mine site, and - Groundwater levels in nearby piezometers.	To date the impact of dewatering appears to be less than predicted based on groundwater levels to the east of the pit and soil moisture probes in the GDE areas in the northern creek line. Some impact on shrubs in northern creek line visible in photographs. Summer water was applied to GDE twice weekly by water tanker for the last two summer seasons.

Environmental Factors	Potential Impact	Performance Objective/Standard/Criteria	Risk reduction/mitigation success	Monitoring Results
Flora and Vegetation	Dewatering causing loss of ecosystem function in the Abba river and Woddidup creek.	To minimise impacts on surface water pools in the Abba river and Woddidup creek.	Investigations into the seasonality of water flows and pools in the Abba river and Woddidup creek.	Study showed both system dried out prior to end of December. No impact of dewatering has been noticed in the photographs of the Abba river and Woddidup creek.
Closure and Rehabilitation	Loss of native vegetation and reduced ecosystem functionality.	Rehabilitation of ecosystem by completing the Northern Wetland relocation project	A significant amount of vegetative material complete with soil was relocated to a nursery area on the mine site where it will be kept alive until the site is rehabilitated and the material used to recreate a wetland.	Regular surveys of relocated vegetative material to assess health and diversity. Presentation to CME of this project (Appendix 1)
Closure and Rehabilitation	Loss of native vegetation and reduced ecosystem functionality.	Maintain ecosystem of Southern Wetland by the Southern Wetland Reticulation Project.	Fixed sprinklers to be in place in the summer of 2013/14 to maintain southern wetland during mining.	The pit has yet to reach this wetland. Soil moisture data from this area included in the AER for Tutunup South submitted in March each year.
Closure and Rehabilitation	Excavation of PASS material and exposure to air causing the oxidisation of PASS which then contaminates local groundwater.	All non-ore PASS material to be returned to pit immediately and not stockpiled.	Use mining block model to determine location of PASS material on a daily basis. Testing of material as per Acid Sulfate Soil Management Plan to determine status of material. All non-ore PASS material is returned immediately to the pit. All non-ore PASS material, not directly returned to the pit, is treated with lime sand to neutralise any acid produced by pyrite oxidisation.	2700 samples tested since start of operations. Report on PASS management and monitoring completed by RPS (2013).

Environmental Factors	Potential Impact	Performance Objective/Standard/Criteria	Risk reduction/mitigation success	Monitoring Results
Closure and Rehabilitation	Dewatering causing the oxidisation of PASS which then contaminates local groundwater.	To not expose PASS, below the ore body, to the air.	Dewatering of operating pit kept to minimum to allow for effective mining.	Inspections of the pit floor show that it is typically saturated.
Noise	Loss of neighbours amenity.	No noise complaints from the local community regarding Tutunup South Operation.	Active noise management by operations staff part of initial training and inductions. Directional Noise Level Meters online to site controllers. Noise model designed for site situation and ability to use predictively.	Operations keep a record of self-managed shutdowns regarding noise. There has been one public complaint since operations commenced.

3.1 Environmental Performance

The level of progress in the achievement of best practice environmental performance, including industry benchmarking, and the use of best available technology where practicable is presented below. Consideration of improvements gained in environmental management which could be applied to this or other similar projects is also detailed. This information is presented in the context of the project's major environmental factors.

3.2.1 Flora and Vegetation

Impact on the surrounding vegetation and ephemeral aquatic ecosystems is a key environmental factor for the Tutunup South operations.

Two monitoring systems are used to assess environmental performance. These include:

- Vegetation photographic points, and
- Soil Moisture Tubes (neutron soil moisture probe to take fortnightly recordings of soil moisture).

The locations of the vegetation photographic points and the soil moisture tubes are shown in Figure 3.

Iluka photographic points recorded an impact at one site with a number of a number of shrubs and small trees dying.

To improve environmental management in this location, supplemental water was applied via a water truck to the edges of the area throughout summer to mitigate the impact. This resulted in the reshooting of plants. This mitigation measure is intended to continue from the spring season.

Another major risk to the project is the loss of the Groundwater Dependent Ecosystems (GDE). Due to its location in the mine path, the northern wetland area has been subject to a comprehensive relocation project. A presentation to the Chamber of Minerals and Energy is presented in Appendix 1 which photographically demonstrates the progress of the project. The concept of the initiative is to maintain the vegetative stock in a nursery situation until such time as the mine rehabilitation has reached a stage to enable its return to a suitable location. Results to date indicate that key species have responded well to this treatment and prospects for successful relocation and rehabilitation are very positive. This novel technique if successful could prove to be a suitable management technique for other operations.

The southern wetland exists outside the existing mine path. As such it will not be disturbed, however the area immediately to the east will be an active pit in the near future. As such changes in the water table could have an impact on this wetland. To remediate this impact, an automated irrigation system will be installed and trialled this summer in preparation for future mining activities in the immediate area.

Current mining, prior to the idle period, was adjacent to the state forest. If this pit was left open the dewatering effect could have affected this section of state forest. In order to minimise this impact this pit was campaign mined and was immediately backfilled to above the groundwater level. The rest of the pit was flooded during winter which also reduced the dewatering impact. Iluka has installed additional photographic monitoring points in this area to monitor any impacts on this section of state forest.

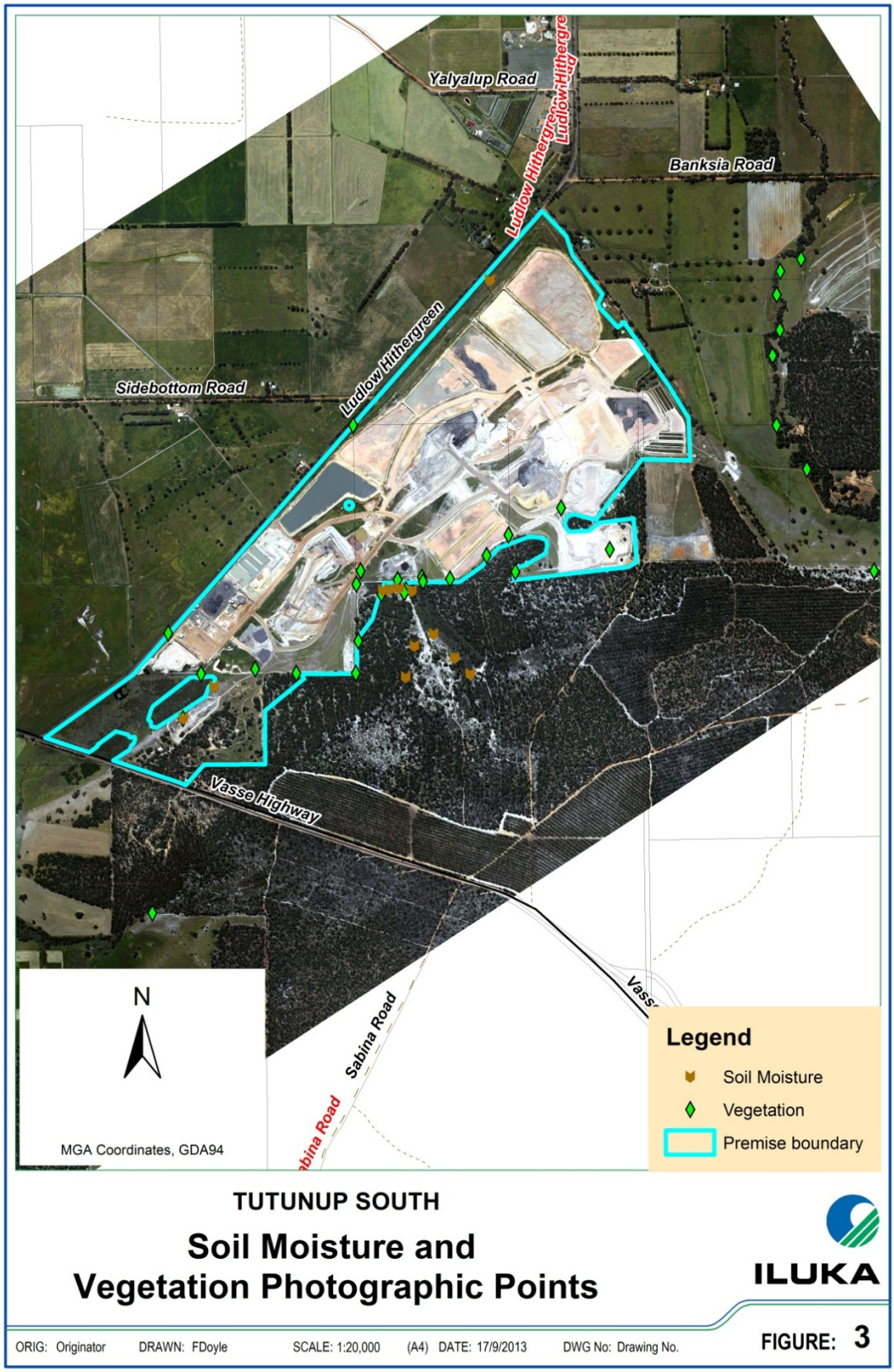

Figure 3. Location of Soil Moisture Tubes and Vegetation Photographic points.

3.2.2 Groundwater and Surface Water Management

To monitor environmental performance, a comprehensive groundwater and surface water monitoring program is in place at the mine site. The aim of the program, is to detect changes in the water quality that might indicate the oxidisation of potential acid sulphate soil (PASS) material.

3.2.2.1 Surface Water Discharge

Surface water discharged from Tutunup South Mine Site is through the licensed discharge point TSDP. The discharge point receives water only from the mine site process water dam (PWD). The water in the PWD is tested week days for all parameters specified in the EP Act Licence, except iron and aluminium which are tested weekly. The parameters and associated trigger levels were developed by the WA Department of Environmental Regulation and based on background data collected from the site prior to mining. During this reporting period there have been two minor exceedence to these conditions and the incident reports have been included in the Annual Environmental Reviews for 2011 and 2012.

3.2.2.2 Surface Water Quality Monitoring

Dewatering effluent from the mine pit sumps and the in-pit hopper sump is tested weekdays for key quality parameters and assessed against triggers set in the Department of Water (DoW) licence.

During this reporting period two instances have occurred that have led to actions to treat small amounts of exposed oxidised backfill PASS. Extra lime was added to the backfill material and additional cover soil was added as per the Tutunup South Acid Sulphate Soil Management Plan. As a further precaution the pit water level was raised in areas of PASS in the ore layer to ensure the floor remains saturated. Both of these instances were detected very early and no impact was found in the process water system or in any water discharged from site.

3.2.2.3 Groundwater Monitoring

Groundwater monitoring bores were sampled as required in licence GWL167315(1) on a monthly or quarterly basis. Water quality in several of the groundwater monitoring bores has shown significant changes which have been reported to the DoW as required.

The water quality in only one of these bores (TS001) shows indications of impact from the oxidisation of PASS. This bore is adjacent to the first mine pit, therefore has been impacted the most by mining activity. TS001 is currently being monitored weekly, as per DoW trigger levels requirements and the trends are that the water quality is improving. All water monitoring data was included in the Annual Environmental Reviews for 2011 and 2012.

3.2.2.4 Environmental Data Management System

To improve the field data collection process, software has been developed internally for application on a field tablet. Previously, written work sheets were taken into the field and the information was transcribed to a database upon returning to the office. The Environmental Technicians use the field tablet as a tool to log and review information about the monitoring point in the field. The configuration of the Standard Comments or the calculation box varies depending whether a piezometer (Figure 4), surface sample (Figure 5) or alternate sample type is selected.

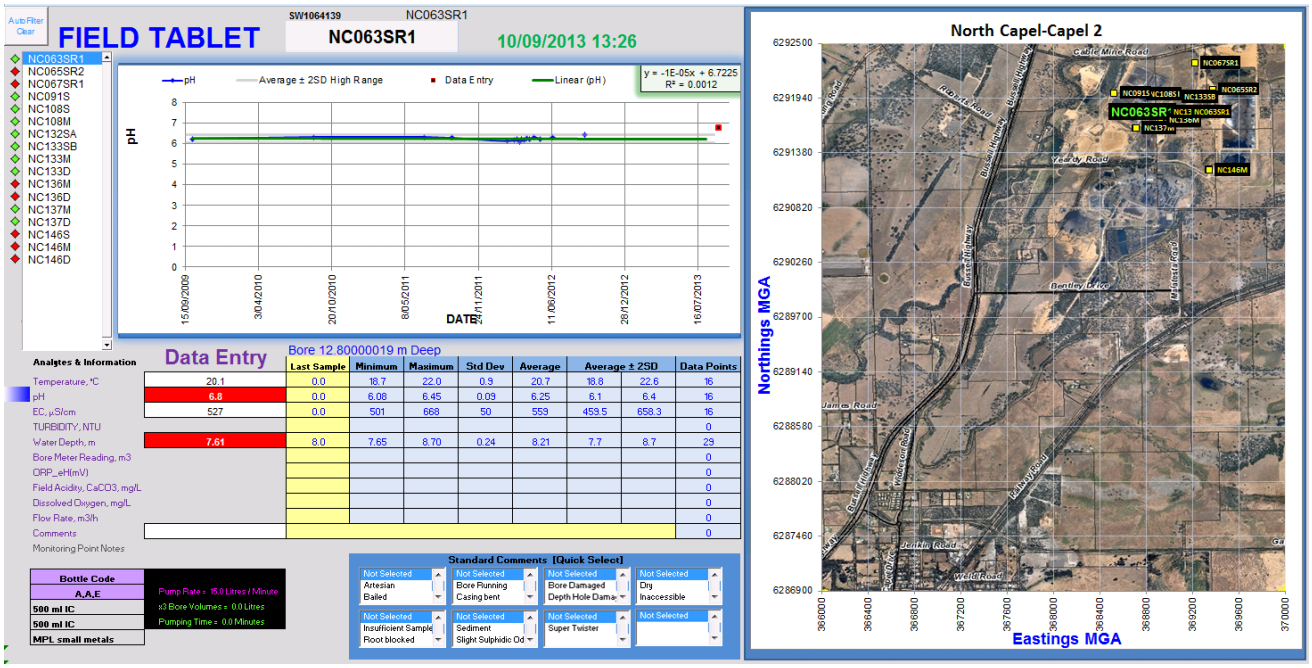

Figure 4. Field Tablet software, piezometer.

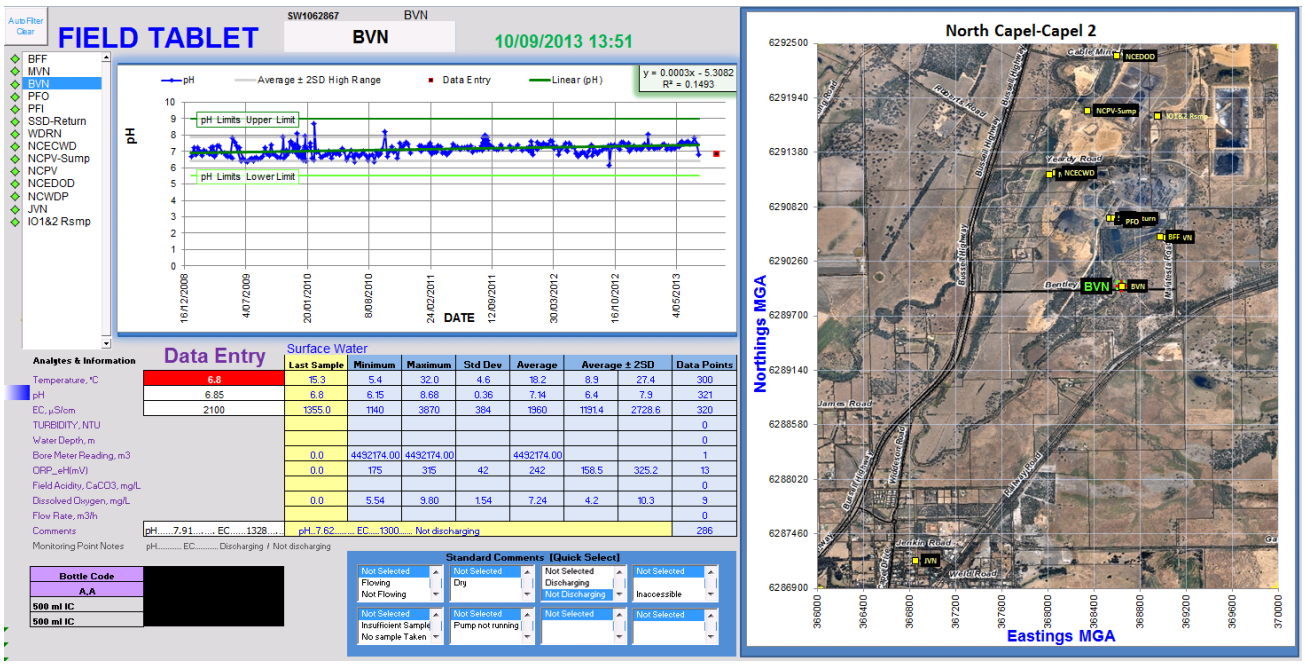

Figure 5. Field Tablet software, surface sample.

Other features of the software include:

- A chart of historical monitoring results, showing error bars, as well as any required compliance limits.
- Statistic tables for the results, as well as the results and comments when last sampled.
- Conditional formatting and message boxes draw attention to outlying new values.
- The location of the site is highlighted on a map [Useful for novice technicians].
- A table of required sample bottles.
- Calculating pumping times to achieved prescribed bore volumes.
- Providing standard field comments which can be selected allowing better data filtering capabilities and automating compliance checks.

The tool allows any issue identified by the results to be escalated to management while still in the field. The tool also removes the previous risk of transcription errors and enables any reading errors to be checked in the field.

To further improve environmental data management and subsequent early detection of water quality changes, Iluka is implementing the software package Monitor Pro 5. Developed by EHS Data, MP-5 is the most widely used environmental monitoring data management software across mining companies globally.

The system will provide automated quality, compliance and integrity checks on data with e-mail alerts. The software also supports multiple user-defined compliance levels per location and parameter to track compliance.

Full implementation at Tutunup South is scheduled to be completed by the end of 2013.

3.2.3 Closure and Rehabilitation (Acid Sulphate Soils)

Acid Sulphate Soils present the greatest potential risk to the Tutunup South Mine and the successful rehabilitation of the site afterwards. Management of the potential acid sulphate soil (PASS), which is soil that contains iron pyrite with the potential to oxidise to form sulphuric acid, is one of the main environmental objectives of the operation.

The primary objective is for all non-ore PASS material to be returned to the pit immediately or treated prior to stockpiling and covering.

To achieve this objective Iluka developed an Acid Sulphate Soil Management Plan (ASSMP) using government guidelines and onsite scientific assessments of the project area A model of the project area was created using drilling results to give a prediction of the location of the PASS material. The ASSMP has since been peer reviewed in 2008 (Sullivan, L. 2008) and 2010 (RPS). A further independent review of the ASSMP has been commissioned for 2013 (RPS).

Iluka has a staff member and associated resources dedicated to the implementation of the ASSMP at Tutunup South Mine. An onsite soil testing facility has been made available to ensure rapid testing and recommendations can be made to the operations in a timely manner. To date 2700 samples have been analysed in accordance with the ASSMP and reported in the AER. Figure 5 shows a simplified version of the block model used to guide daily mining operations, which details location of PASS, overburden and the ore body.

Investigations are underway to determine the suitability of a new device (Reduced Inorganic Sulphur Analyser) currently considered best practise for management of PASS material. This field based device may dramatically reduce the lead time required for conventional sulphur (pyrite) analysis which can be up to two weeks. The improvement in PASS material identification and handling will be significant as will be the ability to determine treatment requirements on site within one hour.

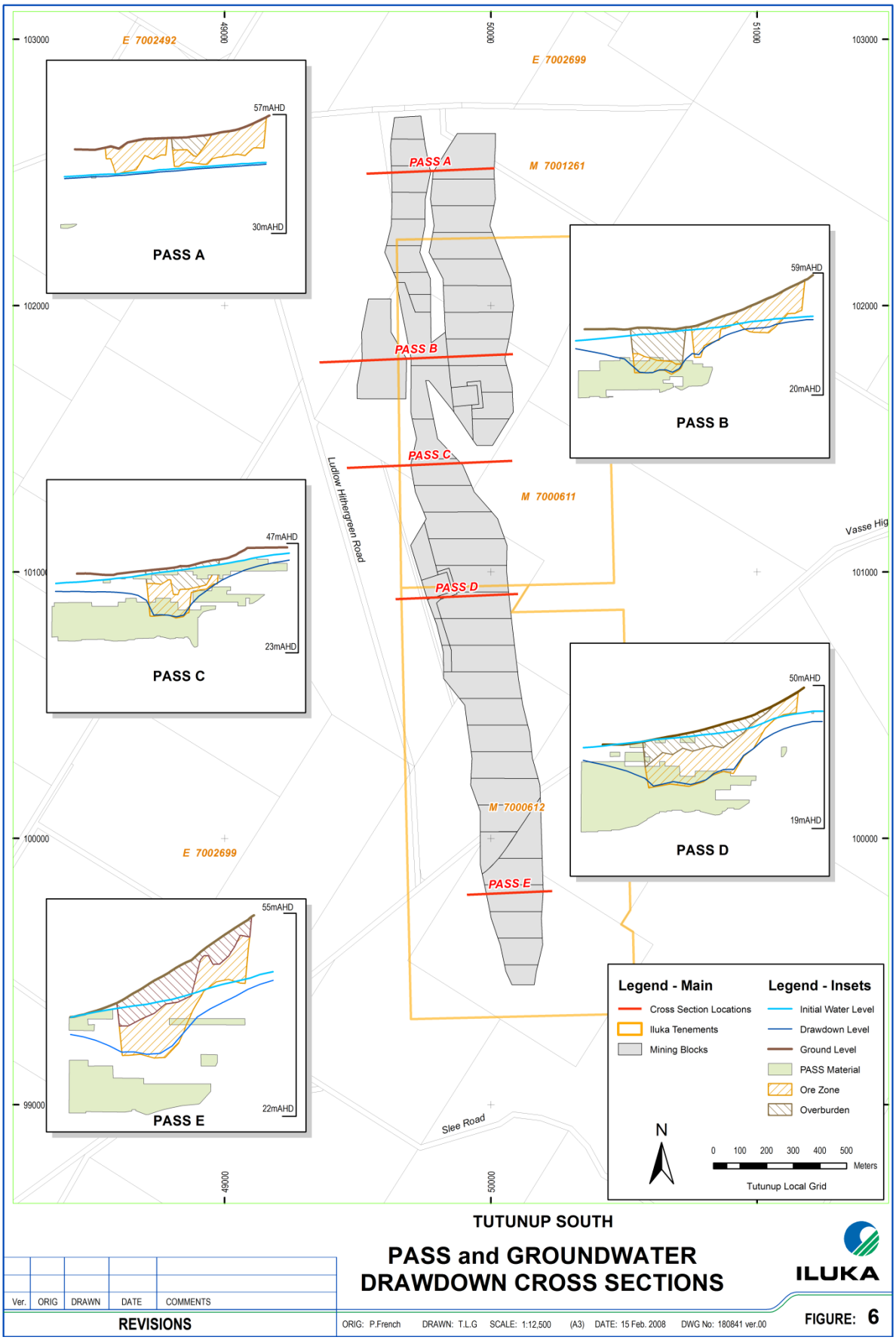

Figure 6. PASS and Groundwater Drawdown Sections.

3.2.4 Noise Management

In addition to remaining within noise regulation guidelines, Iluka has the performance objective of receiving zero complaints from the local community. To achieve this, a noise model was developed for the mine. This allowed for the noise types, level, number and location of machinery to be manipulated to show the impact that the various activities have on sensitive receptors in the area (Figure 7). An example of this model is included in this report. This model was used at the commencement of operations to give site management an idea of what noise levels might be generated by particular activities given certain weather conditions.

To improve on this environmental management technique, Iluka installed an active live noise monitoring system that is available continuously to site controllers and operators. The main system components are directional sound level meters (DSLM) and wireless network communications. This provides live feed to the control room and operators can determine the noise level and direction of the noise source at any given point in time. The system has been available for more than 95% of the time the plant has been operating.

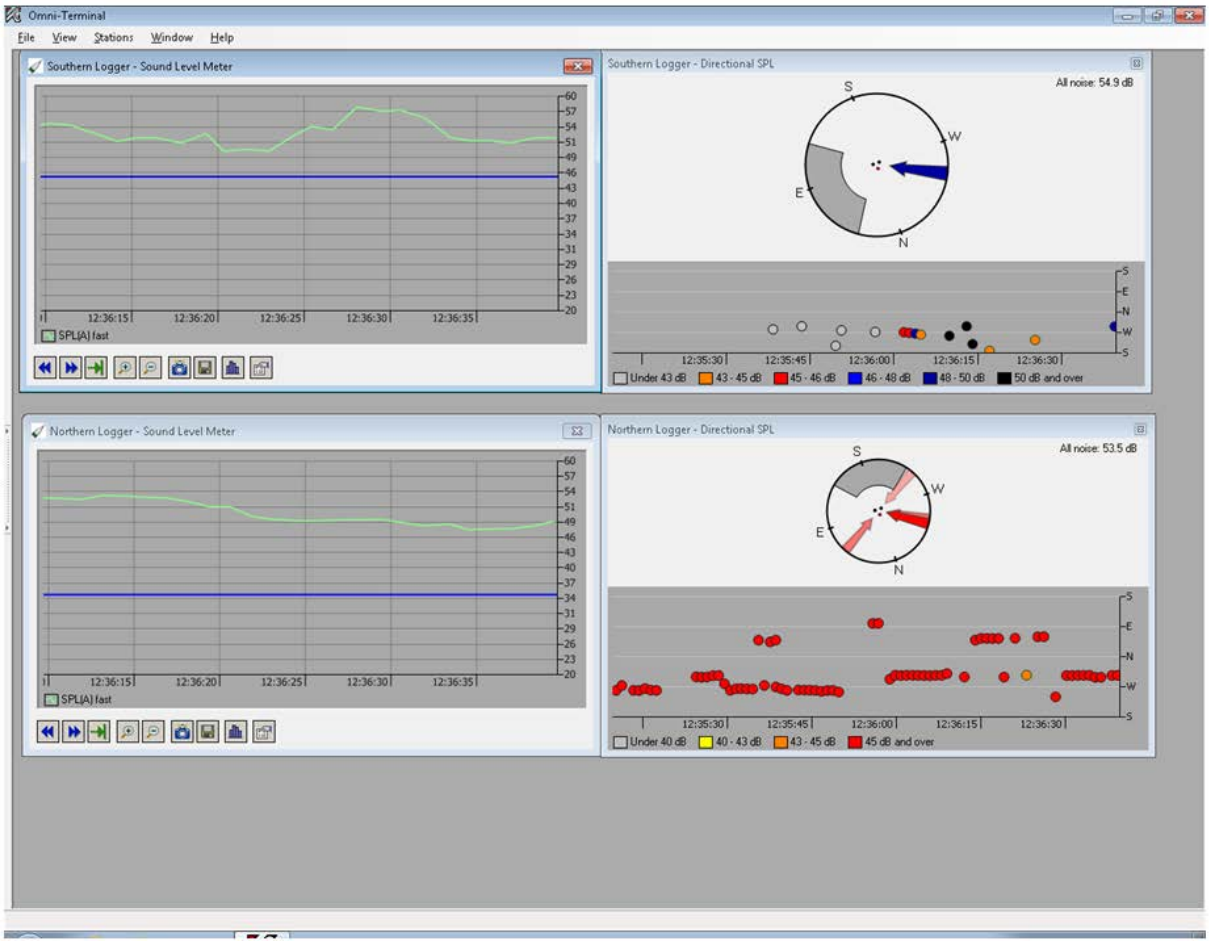

Figure 7. A screenshot of the active live noise monitoring system for Tutunup South Mine.

Should the noise level approach the limits prescribed in the *Environmental Protection (Noise) Regulations 1996,* then the site controllers can take action to reduce it. The system allows the operator to listen to the sound the DSLM is measuring by remote and therefore determine if the noise is due to mining activity or not. Should the noise be from the operations, then a series of actions are taken including: moving machinery; shutting down ancillary plant; and ultimately shutting down all activity.

Records of any self-managed shutdown actions are kept by the operators. There has only been one public complaint relating to mining activity noise at Tutunup South since its inception. The investigation into the incident indicated that the site was likely to have been compliant with the regulations but still audible to the resident.

Figure 8. Example of the directional sound level meters (DSLM) used at Tutunup South Mine.

4. Public Availability

This report has been made publicly available on the Iluka Website.

http://www.iluka.com

5. References

RPS (2013). Potential Acid Sulphate Soil Data Review and Report – Iluka Tutunup South Mine 2012. (RPS Ref 11206902).

RPS (2010). Technical Review – Iluka Resources Limited – Tutunup South Mineral Sands Project. (RPS Ref 110392).

Leigh Sullivan (2008). Third Party Review of acid sulphate soil management plan for Tutunup South mineral sands project. School of Environmental Science and Management. Southern Cross University, Lismore, Australia.

Iluka Resources (2012). Annual Environmental Report. Tutunup South. Pages 1 – 86.

Iluka Resources (2013). Annual Environmental Report. Tutunup South. Pages 1 – 83.

Appendix 1 Groundwater Dependent Ecosystem Transplant Presentation

Tutunup South Wetland Relocation Progress

August 2013

ILUKA

Pre Mine Agreement and Conditions

Iluka Resources Limited

Preliminary Closure and Rehabilitation Plan

Tutunup South Mineral Sands Project

February 2008

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9. NATIVE VEGETATION REHABILITATION

The native rehabilitation program will revegetate areas cleared of native vegetation to native vegetation (Figure 6). Iluka will strive to improve on the condition of native vegetation areas from pre-mining condition. The disturbance area will be revegetated predominantly from the topsoil seed store with the remainder comprised of planted seedlings, direct seeding and transplanting. In addition vegetation corridors will be established over areas as shown in Figure 6 to link the southern wetland to the State forest.

N

Nth Wetland

60 30 0 60 Meters

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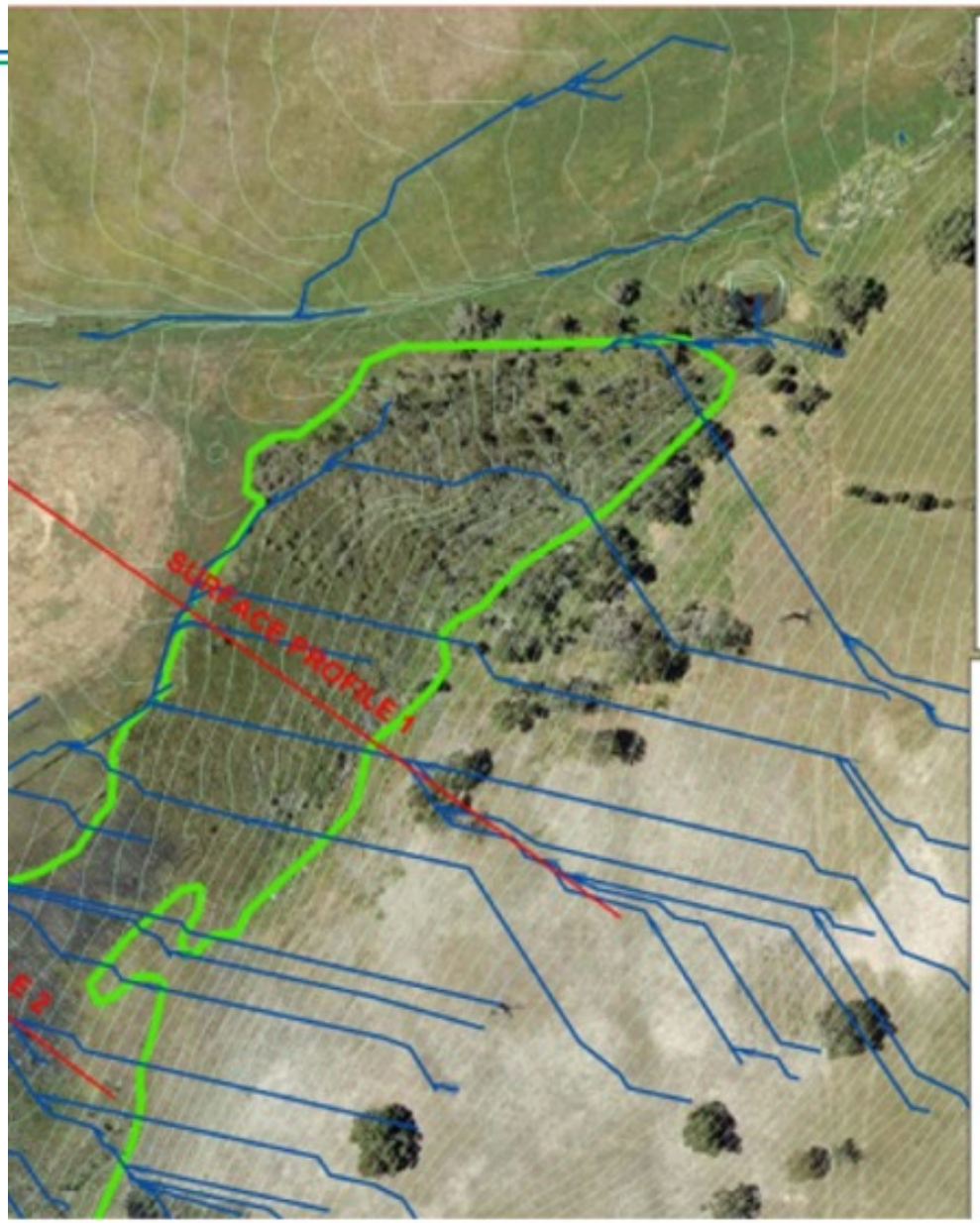
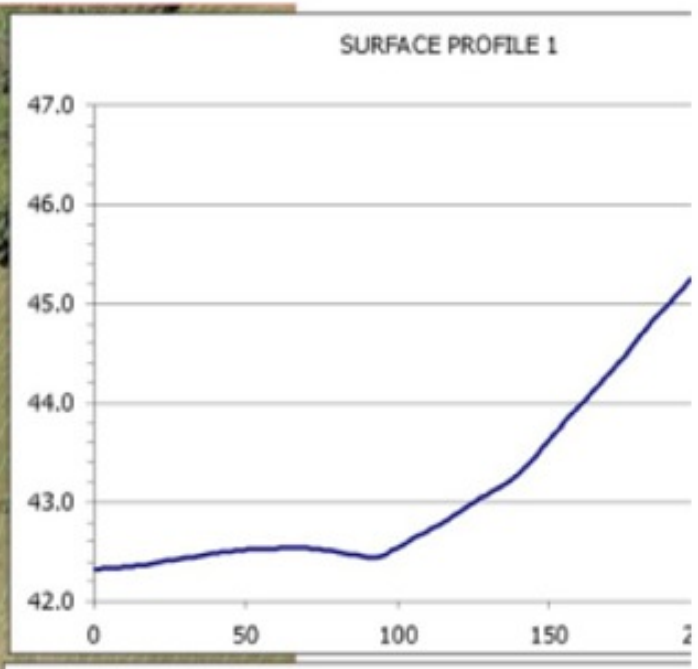
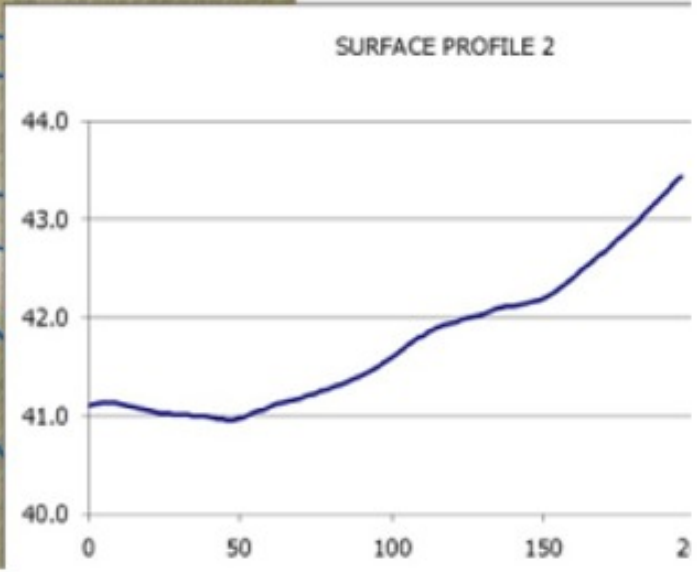
Pre Mine Contours and Surface Flows







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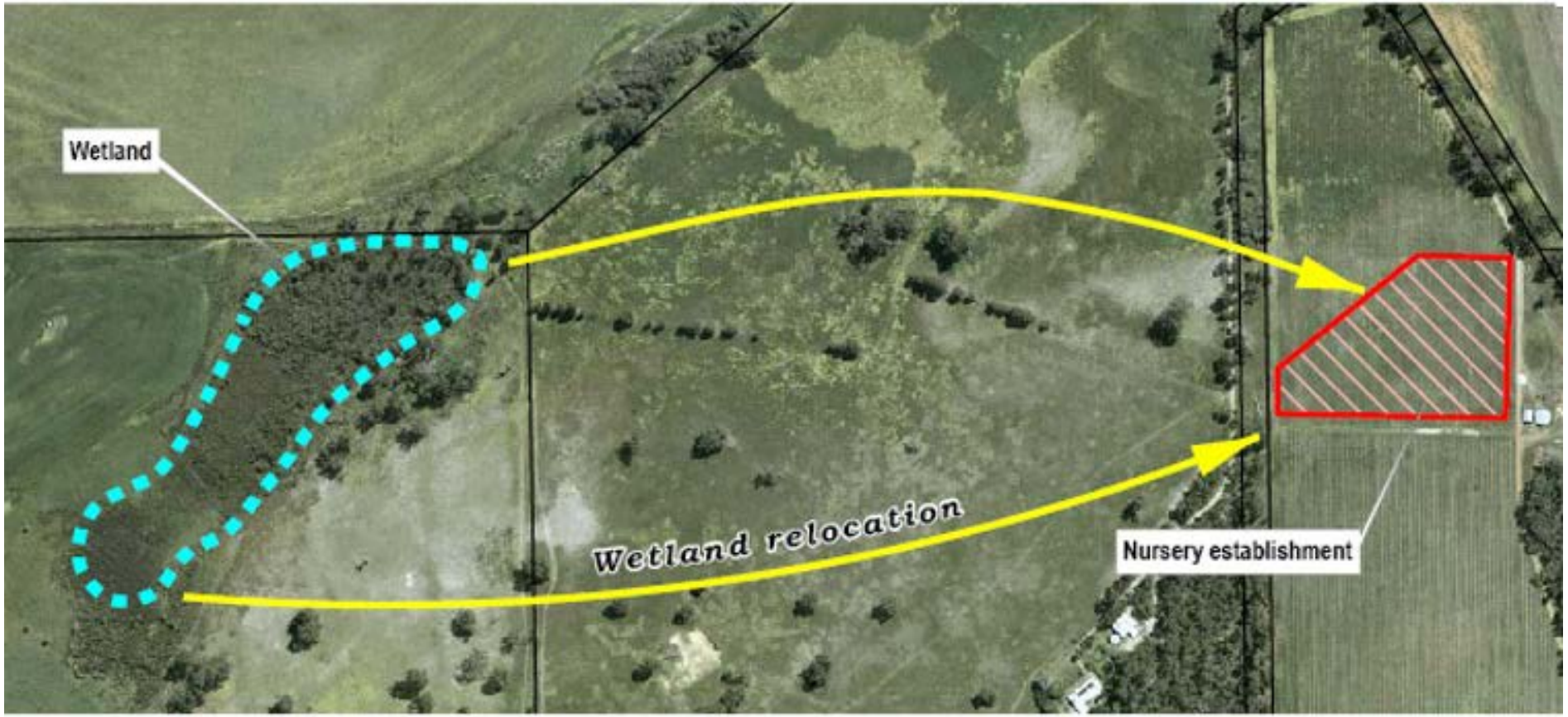
M1 Transect(s) Combined Species
Acacia divergens
Acacia saligna
Aotus cordifolia (P3)
Astartea scoparia
Baumea articulata
Baumea sp.
Callistachys lanceolata
Cyathochaeta teretifolia
Cyperus polystachyos
Drosera sp.
Hypolaena exsulca
Juncus pallidus
Lepidosperma squamatum
Lepidosperma sp.
Leucopogon australis
Leucopogon verticillatus
Lobelia alata
Loxocarya sp.
Melaleuca preissiana
Pteridium esculentum
Senecio glomeratus
Taxandria linearifolia
Tetraria capillaris

Translocation



Translocation Process : Commenced Nov 16 2010

Translocation Process

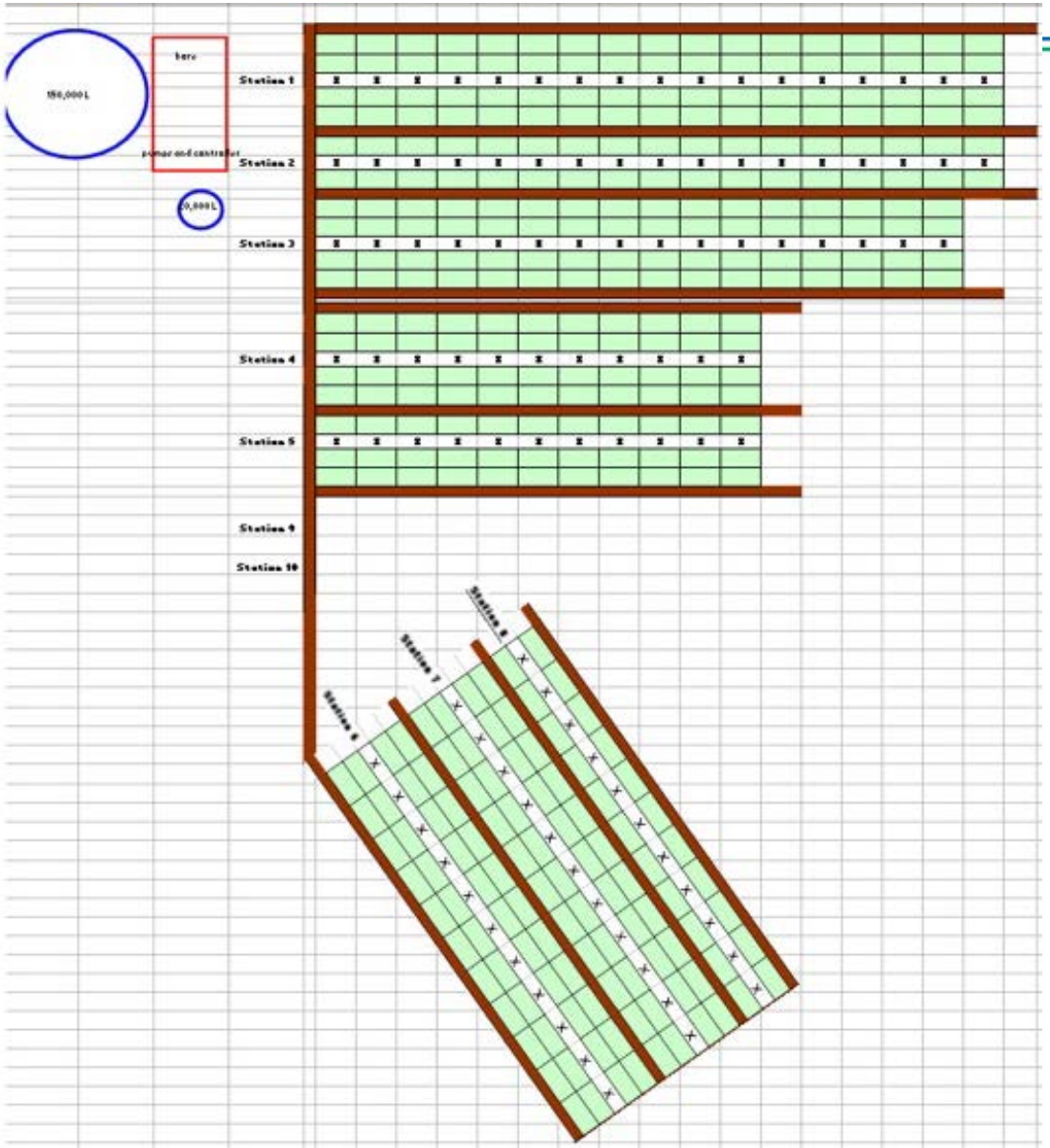
Translocation Process: Completed Dec 7 2010

ILUKA

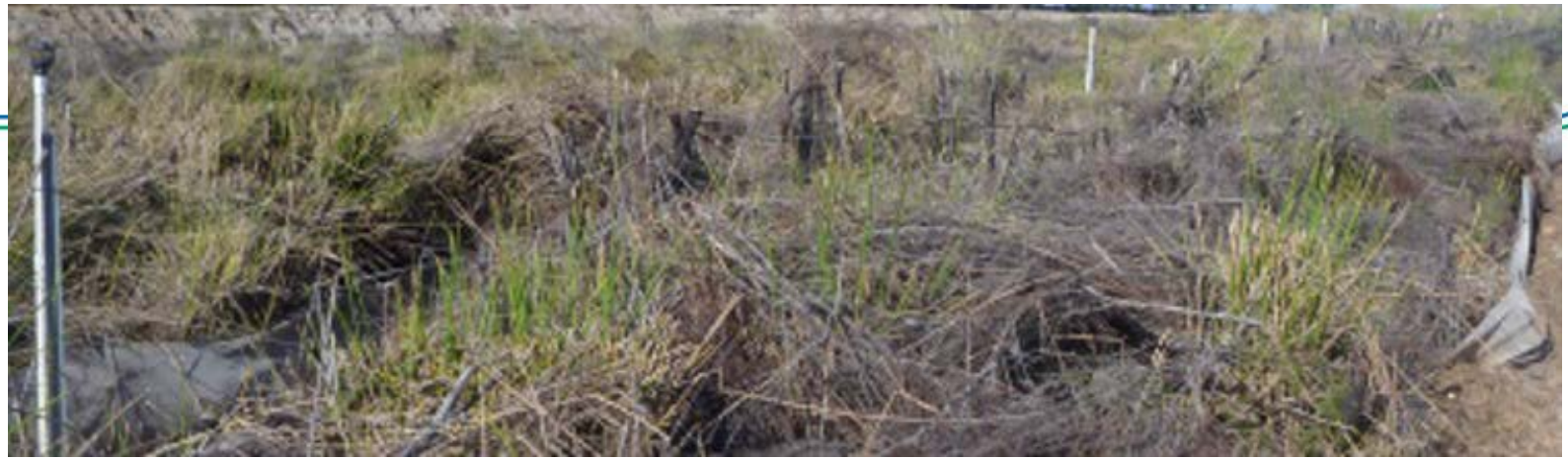
Pruning Process - Manual

Pruning Process – mechanical and manual

Nursery Layout (Approx 2.25 ha) and Reticulation aim of 25mm per week



Translocation Progress After 6 Weeks Dec 23 2010



Translocation Progress After 8 Weeks Jan 6 2011

ILUKA

Translocation Progress After 12 Weeks Feb 2 2011

Translocation Progress After 26 Weeks April 2011

Translocation Progress After 26 Weeks April 2011

Translocation Progress After 9 months: July 2011

Translocation Progress After 9 months: July 2011

Translocation Progress After 12 months: November 2011

Translocation Flora Survey: January 2012

FLORA AND VEGETATION SURVEY

OF THE WETLAND RELOCATION TRIAL

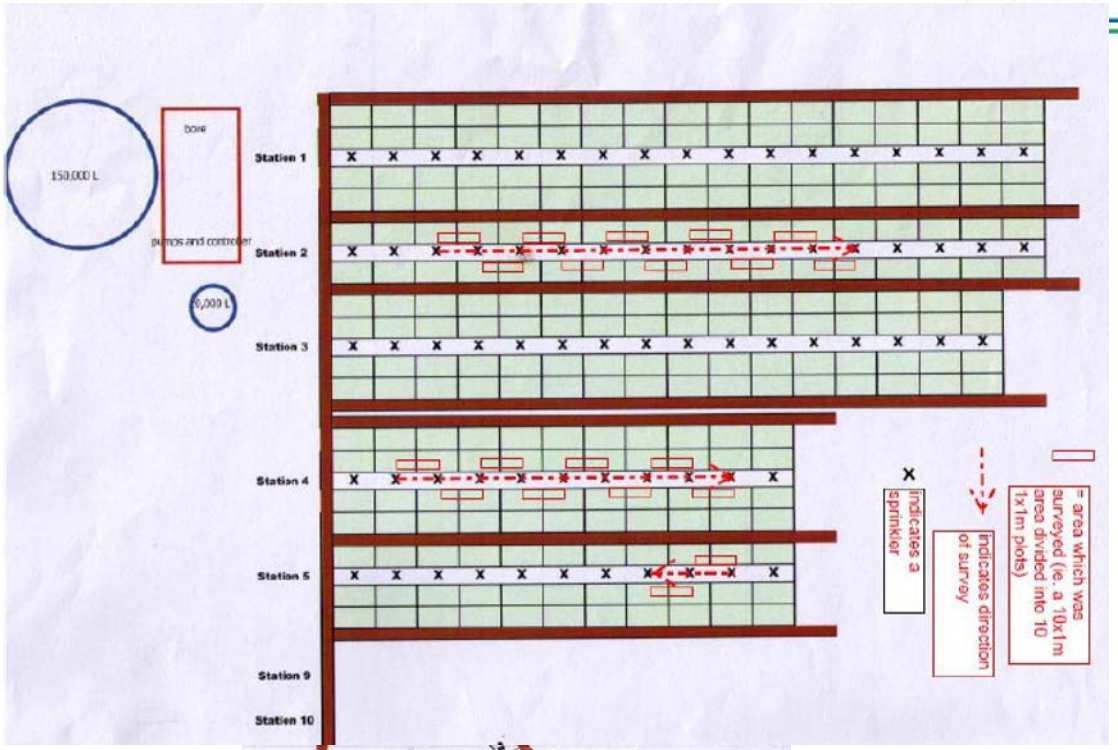
TUTUNUP SOUTH MINERAL SANDS PROJECT

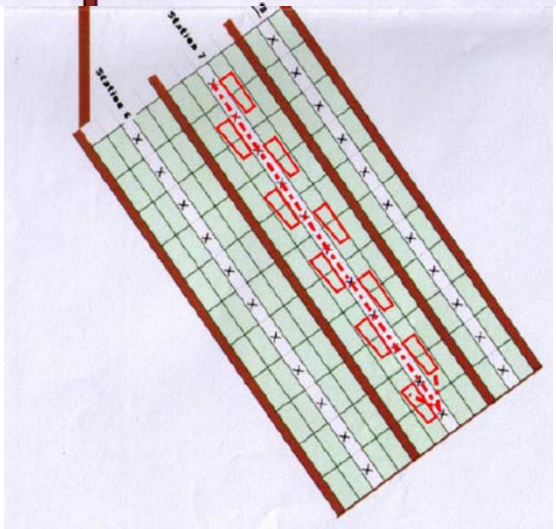
Prepared for:
Iluka Resources Ltd

Prepared by:
Mattiske Consulting Pty Ltd

January 2012

MATTISKE CONSULTING PTY LTD





Translocation Flora Survey: January 2012

PHOTOGRAPH E5: Transect 4, 80-70m

PHOTOGRAPH E6: Transect 5, 80-90m

Confirmed Species
Acacia divergens
Astartea scoparia
Baumea ?rubiginosa
Comesperma sp.
Comesperma virgatum
Cyathochaeta teretifolia (P3)
Cyperus sp.
Drosera macrantha subsp. *macrantha*
Drosera sp.
Empodisma gracillimum
Gratiola pubescens
Hypolaena exsulca
Isolepis ?cernua var. *setiformis*
Lepidosperma sp.
Lepidosperma squamatum
Lepyrodia muirii
Leucopogon australis
Lobelia anceps
Loxocarya sp.
Luzula meridionalis
Melaleuca preissiana
Prasophyllum sp.
Sonchus asper
Sphaerolobium sp.
Sphaerolobium vimineum
Sporadanthus strictus
Taxandria fragrans
Taxandria linearifolia
Taxandria parviceps
Tetraria capillaris

Translocation Progress After 20 months: July 2012

Translocation Progress After 24 months: November 2012

Translocation Progress After 24 months: November 2012

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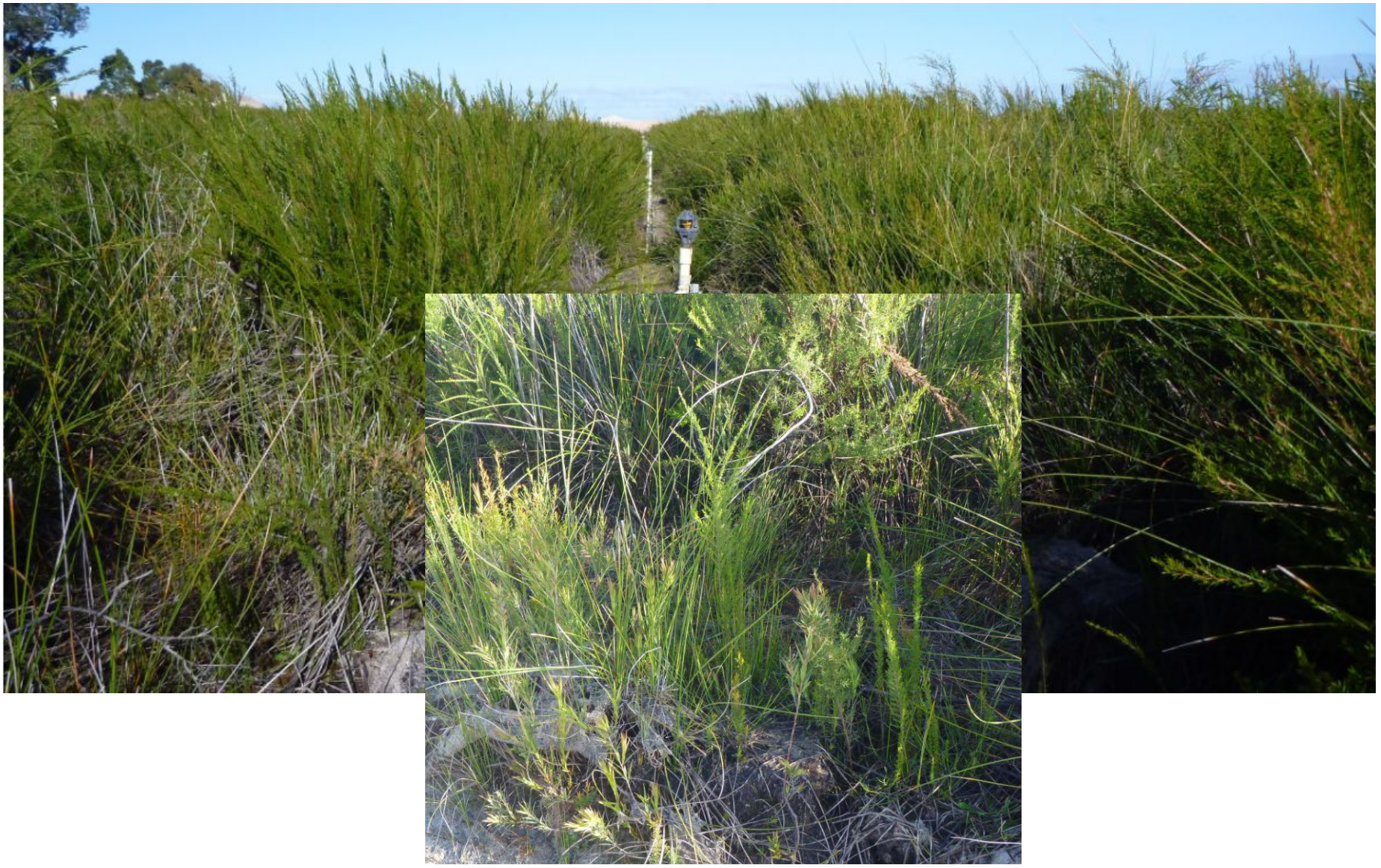
Translocation Progress After 24 months: November 2012



Translocation Progress After 26 months: December 2012

Mechanical Pruning to reduce transpiration and stress on watering system

Translocation Progress After 26 months: December 2012

Mechanical Pruning to reduce transpiration and stress on watering system

Translocation Progress After 26 months: December 2012

Management issues going forward:
Watering, Yearly pruning , weeds, rabbits and Dodder invasion

Translocation Progress After 34 months: August 2013

Progress Cost v's Budget

Actual	rate per hr	total hrs	Total $'s
Traxcavator	$204	31.75	$6,477
Dozer	$296	9	$2,664
Hessian	$116	111	$12,876
carry grader	$265	42.8	$11,342
Side tipper	$176	1.5	$264
slasher	$146	16	$2,336
slasher mob/demob	$150	4	$600
grader	$202	27	$5,454
water cart	$205	42.25	$8,661
labour	$63	723.75	$45,596
labour	$95	12	$1,140
face shovel	$147	148.7	$21,859
truck	$274	190	$52,042
loader	$160	18.2	$2,912
topsoil to nursery			$7,073
Nursery Reticulation			$34,198
			$215,494