Northern Territory Environment Protection Authority

ASSESSMENT REPORT 78

INTEGRATED LIVE EXPORT FACILITY
WELLARD RURAL EXPORTS PTY LTD

March 2016

Northern Territory Environment Protection Authority
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Abbreviations and Glossary

Advisory bodies	Agencies having administrative responsibilities in respect of the proposed action
AHD	Australian Height Datum
Draft EIS	Draft Environmental Impact Statement
DCA	Development Consent Authority
EA Act	*Environmental Assessment Act*
EAAP	Environmental Assessment Administrative Procedures
EIS	Environmental Impact Statement
Environment	All aspects of the surroundings of man including the physical, biological, economic, cultural and social aspects (Section 3 of the *Environmental Assessment Act*)
ESD	Ecologically Sustainable Development
EPA	Environment Protection Approval under the *Waste Management and Pollution Control Act*
EPL	Environment Protection Licence under the *Waste Management and Pollution Control Act*
ILEF	Integrated Live Export Facility
NOI	Notice of Intent
NT EPA	Northern Territory Environment Protection Authority
PEQ	Pre-Export Quarantine
Responsible Minister	Northern Territory Minister for Lands and Planning
The Minister	Minister for the Environment
The Project	Integrated Live Export Facility
The Proponent	Wellard Rural Exports Pty Ltd
The Supplement	The Supplement to the draft EIS
the/this Report	This Assessment Report 78, for the Integrated Live Export Facility Project
WMPC Act	*Waste Management and Pollution Control Act*

Units and Symbols

%	percent
>/<	greater than/less than
g/m^2/month	grams per square metre per month
ha	hectare
km	kilometre
L	litres
L/s	litres per second
m	metre
ML	Megalitre
mm	millimetre
mm/yr	millimetres per year
N	Nitrogen
P	Phosphorus
SCU	Standard Cattle Units

Executive Summary

Environmental impact assessment (EIA) is a process for identifying the potential environmental impacts and risks of a proposed action, evaluating the significance of those impacts and risks and determining appropriate avoidance, minimisation/mitigation measures to reduce those impacts and risks to acceptable levels. This Assessment Report (the Report) examines the EIA of the Integrated Live Export Facility (ILEF), proposed by Wellard Rural Exports Pty Ltd (the Proponent).

The Proponent is proposing to construct and operate an ILEF in Livingstone Valley, Livingstone. The facility will be used as a beef cattle pre-export quarantine (PEQ) facility.

Construction of the ILEF will occur over two stages. The first stage involves the construction and operation of a 1814 Standard Cattle Unit (SCU) (average) PEQ facility with a peak capacity of 12 000 SCU. Stage 2 of the ILEF will involve an expansion of the PEQ yard to 3003 SCU (average) with a peak capacity of 20 000 SCU. A short-term 1000 SCU capacity feedlot / holding yard will be added to the facility. The layout of stage 1 is at Figure 1 and stage 2 is at Figure 2. The ILEF is proposed to operate in excess of 40 years.

This Report is provided to the Northern Territory Minister for the Environment (the Minister), the Minister for Lands and Planning (the responsible Minister) and the Development Consent Authority to be taken into account in decisions made by the Territory Government; it is not intended to provide an environmental approval.

Key risks identified for the Project included:

- adverse impacts on the air quality of the area as perceived at sensitive receptors due to odour and dust emissions from composting and manure generation and wastewater irrigation at the facility
- site suitability for irrigation
- adverse impacts on the amenity of the area as perceived at sensitive receptors due to noise emissions from construction and operation of the facility
- contamination of shallow groundwater resources with animal effluent through leaching of wastewater into soil and groundwater
- contamination of Hardy Creek through increased nutrient loads, suspended solids and pathogens, as well as residues of fuels, pesticides, antibiotics and other pharmaceuticals
- impacts to biosecurity in the region via the spread or introduction of weed / pest species.

Information requirements based upon identified risks were described in the final Terms of Reference for the Project and the Proponent submitted its draft EIS to address these requirements. The Proponent prepared a Supplement to the draft EIS to address respondents' issues and concerns following public review of the draft EIS.

The NT EPA considers that the potential environmental impacts and risks associated with the Project could be managed by delivering the commitments made in the EIS and by applying the recommendations described in this assessment.

While most of the likely impacts have been adequately identified and are relatively well understood, uncertainty remains with respect to the nature and extent of a number of potential impacts; these are odour from animal effluent and the sustainability of

proposed groundwater extraction. These uncertainties are largely due to gaps in data informing the EIA process.

In this regard, the NT EPA supports the staged approach proposed by the Proponent. The implementation of monitoring programs at stage 1 of the operation for odour, groundwater impacts and other aspects, in conjunction with the management actions included in the Proponent's Environmental Management Plan, will enable validation of impact predictions made in the EIA process, demonstrate that those impacts are able to be managed and inform decision-making prior to any expansion to stage 2.

The management measures and monitoring programs in the Proponent's Construction and Operational Environmental Management Plans will need to be of a standard that satisfies regulatory requirements. The Project will require development consent under the *Planning Act*, which is administered by the Department of Lands, Planning and the Environment, and an approval to construct and licence to operate under the *Waste Management and Pollution Control Act,* administered by the NT EPA.

The Project is likely to set a new, higher standard for live export facilities in the NT and will have local and regional economic and employment benefits. The NT EPA considers that the Project could be managed so that environmental impacts are maintained within acceptable bounds, provided that the environmental commitments, safeguards and recommendations detailed in the EIS, this Assessment Report and in the final management plans, are implemented and are subject to regular reporting and compliance monitoring.

The NT EPA makes 17 recommendations as an outcome of the EIA of the Project. These recommendations are for the Proponent and decision-makers to consider when entering into the next stage of the Territory assessment and approval processes and for the execution of the proposed action.

List of Recommendations

Recommendation 1

The Proponent shall ensure that the Integrated Live Export Facility is implemented in accordance with the environmental commitments and safeguards:

- **identified in the final Environmental Impact Statement (draft EIS and Supplement) for the Integrated Live Export Facility**
- **identified in further information provided by the Proponent on the NT EPA's direction**
- **recommended in this Assessment Report 78.**

The Northern Territory Environment Protection Authority considers that all safeguards and mitigation measures outlined in the Environmental Impact Statement are considered commitments by the Proponent.

Recommendation 2

The Proponent shall advise the Northern Territory Environment Protection Authority and the responsible Minister of any alterations to the Project, in accordance with clause 14A of the Environmental Assessment Administrative Procedures.

Recommendation 3

The Proponent shall revise the Odour Management Plan prior to the commencement of operations to incorporate:

- **performance indicators as a basis for measuring achievement of the environmental objectives**
- **corrective management measures.**

Recommendation 4

The Proponent shall conduct a 'Level 3' odour impact assessment (odour modelling) of stage 2 of the Project. The odour modelling shall be informed by the necessary operational and meteorological data collected at the site during stage 1, and shall consider cumulative odour impacts.

The odour impact assessment shall be provided to the Development Consent Authority and the Northern Territory Environment Protection Authority to inform decisions on expansion to stage 2.

Recommendation 5

It is recommended that approval of expansion to stage 2 of the Project (construction and operation) under the *Planning Act* and the *Waste Management and Pollution Control Act* be conditional upon the Proponent demonstrating:

- **satisfactory management of odour during stage 1 of the Project**
- **an acceptable assessment of odour impacts for stage 2 of the Project.**

Recommendation 6

The Proponent shall apply for an Environment Protection Approval under the *Waste Management and Pollution Control Act* prior to commencing construction on the Integrated Live Export Facility.

Once construction has been completed in accordance with the Environment Protection Approval, the Proponent shall apply for an Environment Protection Licence to operate the Integrated Live Export Facility.

Recommendation 7

The Proponent shall remove all dead livestock carcasses from the ILEF site for appropriate treatment and / or disposal in an approved waste disposal facility.

Recommendation 8

The Proponent shall revise the Surface Water Management Plan to include a surface water quality monitoring program with appropriately located monitoring sites including a control site that is not influenced by neighbouring businesses.

Contingencies shall be developed in the event that surface water quality management consistently fails to meet performance criteria.

Recommendation 9

Prior to commencement of construction, the Proponent shall submit to the NT EPA a detailed Irrigation Management Plan. The plan will form part of the Waste Management Plan for the site in accordance with approval and licensing requirements under the *Waste Management and Pollution Control Act*.

Recommendation 10

Prior to extracting groundwater for the ILEF, the Proponent shall obtain a Groundwater Extraction Licence under the *Water Act*.

Recommendation 11

The Proponent shall prepare a Groundwater Monitoring Program to the satisfaction of the NT EPA and the Controller of Waters to monitor the quality and quantity of:

- **shallow transient groundwater associated with stormwater and waste water infiltration**
- **the aquifer from which water supply will be extracted.**

Baseline data collection shall be sufficient to enable detection of impacts from the operational ILEF.

Recommendation 12

The Proponent shall submit a revised Erosion and Sediment Control Plan (ESCP) to the Development Consent Authority and the NT EPA prior to the commencement of works. The revised ESCP should:

- **be developed by a suitably qualified and experienced professional in erosion and sediment control planning**
- **detail methods for minimising erosion and sediment loss from the Project**
- **reference appropriate ESCP guidelines.**

Recommendation 13

The Proponent shall submit a revised Weed Management Plan to the Development Consent Authority prior to the commencement of works. The revised Weed Management Plan should outline measures for managing weeds during construction and operation of the Integrated Live Export Facility, including but not limited to:

- **further identification of high risk weeds in and around the Integrated Live Export Facility site**
- **measures for controlling the spread of weeds from fodder production and manure composting.**

The revised Weed Management Plan should be prepared to the satisfaction of the Department of Land Resource Management's Weed Branch and align with current Statutory Weed Management Plans.

Recommendation 14

Prior to the commencement of construction of the ILEF the Proponent shall:

prepare a Construction Environmental Management Plan and relevant, issue-specific management plans that incorporate clear performance criteria to measure achievement of performance objectives, and

- **include monitoring programs to enable the performance criteria to be measured and provide for adequate performance reporting for the construction of stage 1 and stage 2 of the Project.**

- **An Operational Environmental Management Plan incorporating relevant issue-specific plans with adequate performance criteria, monitoring programs and reporting facilities shall be prepared for the operational phase.**

All management plans must be prepared to the satisfaction of the Consent Authority and the NT EPA.

Recommendation 15

It is recommended that the Proponent prepare a communication and consultation strategy for the Project.

Recommendation 16

The Proponent taking the proposed action is wholly responsible for the implementation of all conditions of approval and mitigation measures contained in the Environmental Management Plan and must ensure all staff and contractors comply with all requirements of conditions of approval and mitigation measures contained in the Environmental Management Plan.

Recommendation 17

It is recommended that approval of expansion to stage 2 of the Project (construction and operation) under the *Planning Act* and the *Waste Management and Pollution Control Act* be conditional upon the Proponent demonstrating satisfactory management of all key environmental risks and impacts identified in this Report.

1 Introduction

Wellard Rural Exports Pty Ltd (the Proponent), proposes to develop and operate the Integrated Live Export Facility (ILEF) at Livingstone, approximately 8 km south of Noonamah in the Northern Territory (the Project). The Project has been assessed by the Northern Territory Environment Protection Authority (NT EPA) at the level of Environmental Impact Statement (EIS) under the *Environmental Assessment Act* (EA Act).

The NT EPA has prepared this Assessment Report (this Report) in accordance with section 7(2)(g) of the EA Act and clause 14(3) of the Environmental Assessment Administrative Procedures (EAAP). The purpose of this Report is to ensure that matters affecting the environment to a significant extent are fully examined and reported. This Report is provided to the Northern Territory Minister for the Environment (the Minister), the Minister for Lands and Planning (the responsible Minister) and the Development Consent Authority to be taken into account in decisions made by the Territory Government; it is not intended to provide an environmental approval.

1.1 Environmental impact assessment process

Environmental Impact Assessment (EIA) is the process for identifying the potential environmental impacts and risks of a proposed action, evaluating the significance of those impacts and risks and determining appropriate avoidance and minimisation/mitigation measures to reduce those impacts and risks to acceptable levels. The main purpose of the EIA is to inform decision-makers of the risks and potential impacts of a proposed action before any decisions are made and to engage and inform the public in the EIA process.

Through the assessment of the environmental risks of the Project, the Proponent must demonstrate:

- that these risks can be satisfactorily managed within acceptable levels, e.g. impacts would not result in long-term or irreversible environmental detriment; and
- the effectiveness/feasibility of management measures in a precautionary/risk management framework.

That the assessment gives weighted consideration to:

- values and risks
- estimation of the likelihood of success of preventative and remedial measures
- the validity and comprehensiveness of programs established to provide ongoing measures of the environmental effects of the Project.

The assessment of environmental risk can be more reliably evaluated when there is a substantial baseline of relevant information. Where this information is limited or not available, risk assessment is inevitably constrained and far less precise. In the absence of sufficient baseline information, and in keeping with the objectives of the *Northern Territory Environment Protection Authority Act* to promote ecologically sustainable development (section 1.4), the NT EPA adopts the guiding principle that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. If potential impacts are understood with a reasonable level of certainty, monitoring programs can be better informed to detect impacts, and management measures can be more effectively targeted to address those impacts.

This Report evaluates the adequacy of commitments and environmental safeguards proposed by the Proponent to avoid or mitigate the potential impacts and risks identified in the EIA process. Additional safeguards are recommended in this Report, where appropriate.

1.2 Approval and regulatory framework

The Project will require approval and regulation by the Northern Territory Government. The approval and regulatory framework for the Project is summarised here with an emphasis on the obligations and requirements of the Territory for clarity and completeness.

The principal approval and regulatory instruments for this Project are the *Planning Act* and the *Waste Management and Pollution Control Act*.

The site of the proposed ILEF is within Zone R (Rural). Zone R is intended 'to provide for a range of activities including residential, agriculture and other rural activities'. The NT Planning Scheme establishes that larger lots in this Zone facilitate separation between incompatible land uses. Under the NT Planning Scheme, the ILEF meets the definition of 'intensive animal husbandry', a discretionary use within Zone R. The ILEF requires consent and is subject to clause 10.1 of the Planning Scheme 'to minimise the adverse effect of animal-related activities on the environment and to ensure that those activities do not detract from amenity of the locality'. Clause 10.1 requires that the ILEF be designed so as not to cause any of the following:

- create risk of pollution of ground and surface waters
- contribute to the erosion of the site or other land
- cause detriment to the amenity of the locality by reason of excessive noise, offensive odours, excessive dust or the attraction of flies, vermin or otherwise, or
- constitute a risk of the spread of infectious disease or other health risk.

The Proponent has lodged a Development Application for the ILEF with the Department of Lands, Planning and the Environment (PA 2015/0296). The Application was exhibited from 1 May 2015 until 15 May 2015.

This Report will be provided to the Development Consent Authority (DCA) which must take into account the EIS and this Report in considering the development application for the Project. The DCA may incorporate any recommendations made in this report as relevant conditions on a development permit to form a basis for environmental safeguards and commitments.

The ILEF will generate 'animal effluent and residues (abattoir effluent, poultry and fish processing waste)', a listed waste under Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations*. In accordance with Schedule 2 of the *Waste Management and Pollution Control Act* (WMPC Act), the ILEF will require an environment protection approval (EPA) for its construction (Schedule 2, Part 1, clause 2) and an environment protection licence (EPL) for its operation (Schedule 2, Part 2, clause 3). This Report will inform the granting of an EPA and EPL.

1.3 Environmental impact assessment chronology

On 19 March 2015, the Northern Territory Environment Protection Authority (NT EPA) received notification under the EA Act of the Project. On 7 May 2015, the NT EPA decided that the Project required assessment at the level of an EIS. Draft Terms of Reference for the preparation of the EIS were prepared by the NT EPA and advertised for public comment on 4 July 2015 for a period of 14 calendar days. The NT EPA issued

the final Terms of Reference on 30 July 2015, and directed the Proponent to prepare its draft EIS.

The draft EIS for the Project underwent a seven week public exhibition period commencing 31 October 2015. The EIS documentation is available on the Integrated Live Export Facility project page of the NT EPA website at: http://www.ntepa.nt.gov.au/environmental-assessments/assessment/register/integrated-live-export-facility.

Ten submissions on the draft EIS were received from Government agencies and one from a member of the public. All submissions were individually forwarded to the Proponent.

The Proponent prepared the Supplement as required under the EA Act to address the issues raised by the respondents. A copy of full submissions on the draft EIS is included at Appendix A of the Supplement with the Proponent's responses in the main body of the Supplement.

On 2 February 2016, the NT EPA received and circulated the Supplement to Government advisory agencies for comment and members of the public that commented on the draft EIS (for information).

On 23 February 2016, the NT EPA wrote to the Proponent to seek additional information about aspects of the Project. The request was made in accordance with clause 14(2)(a) of the EA Act.

This Report is based on a review of the draft EIS, the Supplement, further information provided by the Proponent and comments on the EIS.

1.4 Ecologically sustainable development

The Australian Government affirmed its commitment to sustainable development at the United Nations conferences on environment and development, notably via the Rio Declaration and Agenda 21 in 1992 and the Johannesburg Declaration at the United Nations 2002 World Summit. Australia reaffirmed its commitment at the Summit to promote the integration of the three components of sustainable development – economic development, social development and environmental protection – as interdependent and mutually reinforcing pillars.

Australia developed the National Strategy for Ecologically Sustainable Development (ESD) identifying five national principles (Table 1). The Strategy identified ways to apply the principles to a range of industry sectors and issues such as climate change, biodiversity conservation, urban development, employment, economic activity, and economic diversity and resilience.

In December 1992, the Territory Government endorsed the National Strategy and agreed, along with all other States and Territories, to the Intergovernmental Agreement on the Environment.

The Strategy defines ESD as:

> *'Using, conserving and enhancing the communities' resources so that ecological processes, on which life depends, are maintained and the total quality of life now and in the future can be increased.*
>
> *ESD is development that aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations.'*

Table 1 – The principles of Ecologically Sustainable Development

ESD Principle	Definition
Integration principle	Consideration needs to be given to the long and short-term economic impacts as well as other environmental, social and equitable impacts.
Precautionary principle	Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by: (a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment (b) an assessment of the risk-weighted consequences of various options.
Inter- and intra-generational equity	The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of present and future generations.
Conservation of biological diversity and ecological integrity	The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
Improved valuation, pricing and incentive mechanisms	Should be promoted to ensure that the costs of environmental externalities are internalised and that the polluter bears the costs associated with environmental pollution.

To achieve the objectives of ESD, the Project needs to continually be informed and guided by the ESD principles. Accordingly, the assessment of this proposal, its potential impacts (positive and negative) and the management measures used to enhance positive and reduce negative impacts was undertaken in the context of ESD principles.

Subsequent decision-making processes by approval bodies must be guided by ESD principles, and the continued project design and development, as well as the development and implementation of management and monitoring programs by the Proponent, should all aim to meet the objective of ESD.

2 Project

2.1 Project description

The Proponent is Wellard Rural Exports Pty Ltd. Wellard Rural Exports Pty Ltd states on its website that it is Australia's leading livestock exporter with almost a million sheep and cattle transported around the globe. The Proponent operates feedlots, pre-export quarantine yards and a fleet of vessels for livestock transport to overseas markets.

The Proponent is proposing to develop and operate the ILEF as a beef cattle pre-export quarantine (PEQ) yard facility at Livingstone, approximately 35 km south-south east of Darwin and 7 km east of Berry Springs. The Project has a projected life of over 40 years.

The Proponent made a number of revisions to the Project in its Supplement (summarised in section 9 of the Supplement) and is now proposing to develop the ILEF in two stages. Stage 1 will consist of the construction and operation of a 1814 Standard Cattle Unit (SCU) (average) PEQ holding facility with a peak capacity of 12 000 SCU (Figure 1). Associated infrastructure includes:

- caretaker's house

- commodity and fodder storage shed
- feed storage and preparation area
- freshwater storage (ring tank and tanks) for capture and storage of roof runoff and groundwater for stock supply
- PEQ yard
- livestock truck washing facility
- compost manure pad (3190 m^2)
- wastewater treatment ponds
- access roads
- treed 'buffer' areas
- irrigation area for treated waste water reuse and hay /fodder production.

Stage 2 of the Project involves expansion of the operation to a 3003 SCU (average), 20 000 (peak) capacity and a short term 1000 SCU feedlot / holding yard (Figure 2). The manure handling and compost area will be expanded to 5840 m^2. The Proponent has committed to only commencing stage 2 of the Project after a positive assessment of odour management of stage 1 and further odour assessment using actual data from the site (refer section 4.3).

Operation of the ILEF will involve the temporary housing of livestock prior to the transportation offsite for export. Hours of operation will be 5am to 9pm, with some arrival and dispatch of livestock out of operational hours. Livestock for shipping will be aggregated in the PEQ yard over a 2-8 day period with an average holding period of four days, within an average shipping cycle of 16 days. Some manure will be composted on site during the Dry season, with the majority to be transported offsite for composting. Wastewater from the site is proposed to be collected, treated and irrigated onto pasture which will be harvested for feed. Operation of the site will require the extraction of up to 250 ML/annum (stage 2) of groundwater for stock water supply, truck washdown and to supplement irrigation.

The transport of livestock will use road trains to both stock and destock the ILEF with the frequency of movements dependent on export requirements (refer section 4.10).

2.2 Socio-economic considerations

The majority of livestock exported from the Northern Territory is for the Asian market with demand continuing to increase. Live export operations are a significant contributor to the Northern Territory economy and a large percentage of the Australian live export economy.

In the Northern Territory, the Proponent buys at least $50 million worth of livestock annually for export and locally spends approximately $5 million on transport, and $8 million on fodder and feedstuffs for pre-export quarantine yards and feed on ships. Approximately $4 million is spent on port costs each year.

The ILEF will have an initial cost of $12 million (based on 2014 costs) of which the majority is expected to be spent in the local Darwin business community (contractors, materials and labour). The feed storage and preparation sheds will be sourced interstate and transported to the site for erection. In addition to the initial costs, the Proponent estimates that $2 million will be spent each year on local labour and $3 million on local fodder and hay.

Construction of the ILEF will create short-term work for engineers, construction workers, environmental officers and other staff. The Proponent predicts that over the long-term, the ILEF could employ over 35 people at full development. The requirement for ancillary staff (transport, veterinarians, rural merchandise) is expected to have additional regional benefits over the long-term (>40 years).

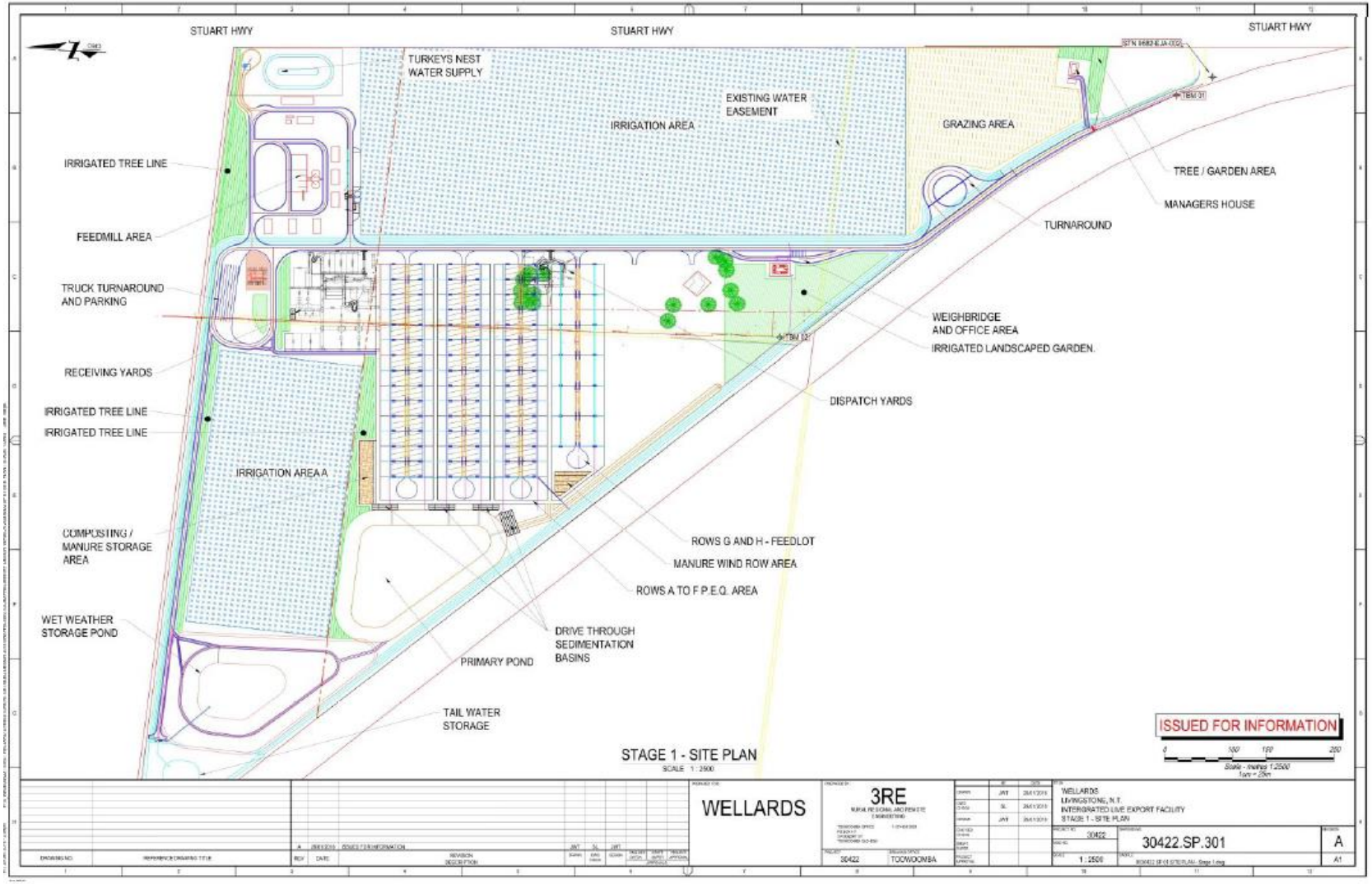

Figure 1- Stage 1 of the ILEF (source: Supplement)

Figure 2 Revised site plans including stage 1 and 2 (source: Supplement).

3 Regional Setting

Descriptions of the physical and social aspects of the Project region have been presented in the EIS. The following section provides an overview of the regional setting.

3.1 Location

The proposed location for the Project is Section 5544 Livingstone, Hundred of Strangways (2658 Stuart Highway, Livingstone). The ILEF site has a total area of approximately 90.5 ha and is currently used for cultivation, fodder crop production and grazing. The dominant land uses in the region comprise rural residential properties as well as agricultural businesses such as farming and cattle holding yards. The Australian Agricultural Company (AACo) Meat Processing Facility is situated on a property adjacent to the ILEF site.

The nearest population centre is Berry Springs which is approximately 7km to the west with a population of approximately 700 people. Berry Springs is a popular place for recreational purposes with the Berry Springs Nature Reserve and the Territory Wildlife Park visited by tourists.

3.2 Existing environment

3.2.1 Climate

The site of the ILEF is located in the Wet/Dry tropics region of the Northern Territory. The nearest weather station to the ILEF is at Middle Point which reports a mean annual rainfall total of 1407 mm. Rainfall in the region is highly seasonal with the bulk of the annual rainfall occurring during the Wet season (between November and April). The wettest months are January and February which have a mean monthly rainfall of 274 mm and 303 mm respectively. Middle Point has an average evaporation rate of 2400 mm per annum.

3.2.2 Water Resources

The site of the ILEF is at the top of a low ridge and is relatively flat with a general east to west slope of approximately 1.5-2%. Hydrological studies at the site suggest that the north western portion of the site has restricted drainage due to a reduced slope and the presence of the railway line. The Proponent notes that these areas are temporarily inundated during the Wet season due to poor drainage. Runoff leaves the site through large culverts under the railway line on the western boundary of the site. Water from the site eventually flows into Hardy Creek, which is a tributary of Berry Creek, and then into the Blackmore River. The Blackmore River eventually flows into the Middle Arm of Darwin Harbour.

Hydrogeological studies from the site have located several aquifers which range in depth from 25m -114m. The shallow aquifer is confined by a layer of ferricrete and interbedded siltstones/claystones. Deeper aquifers appear to be associated with sandstone and dolomitic layers.

3.2.3 Vegetation

The site was previously cleared for horticultural uses and largely comprises open paddocks dominated by pasture grasses (*Urochloa humidicola* cv *Tully* and *Digitaria milanjiana* cv *Jarra*) A patch of native vegetation is located in the northern portion of the site. Surveys of the site noted that this patch is highly degraded due to historical clearing activities. The surveys did not identify any threatened species or sensitive vegetation types on the site.

3.2.4 Weeds

A number of weed species occur in the region and there is potential that they may occur on the ILEF site. The proponent has undertaken surveys onsite and identified seven declared weed species. Weeds are discussed further in section 4.9 of this Report.

3.2.5 Air Quality

The ILEF site is located south of the Darwin airshed. During the Dry Season the major air pollutant comes from particles from bushfire smoke (April – October). The prevailing winds during this time are south-easterly to easterly.

The ILEF site is located immediately north of the existing AACo Meat Processing Facility. The facility has been subject to a number of recent complaints about odour nuisance. A recent odour audit report of the AACo facility identified a number of sources of odour from the site.

3.2.6 Heritage items and places

A search on the NT Heritage database indicates that there are no heritage sites registered under the *Heritage Act* on the ILEF site. The Aboriginal Areas Protection Authority notes that the site does not contain any sacred sites listed under the *Northern Territory Aboriginal Sacred Sites Act.*

3.3 Land Use and Planning

The site and adjacent areas are currently zoned 'R' (Rural) under the Northern Territory Planning Scheme. The Planning Scheme identifies this zone as being 'to provide for a range of activities including residential, agriculture and other rural activities'. A map showing the land zones under the Northern Territory Planning Scheme is at Figure 3.

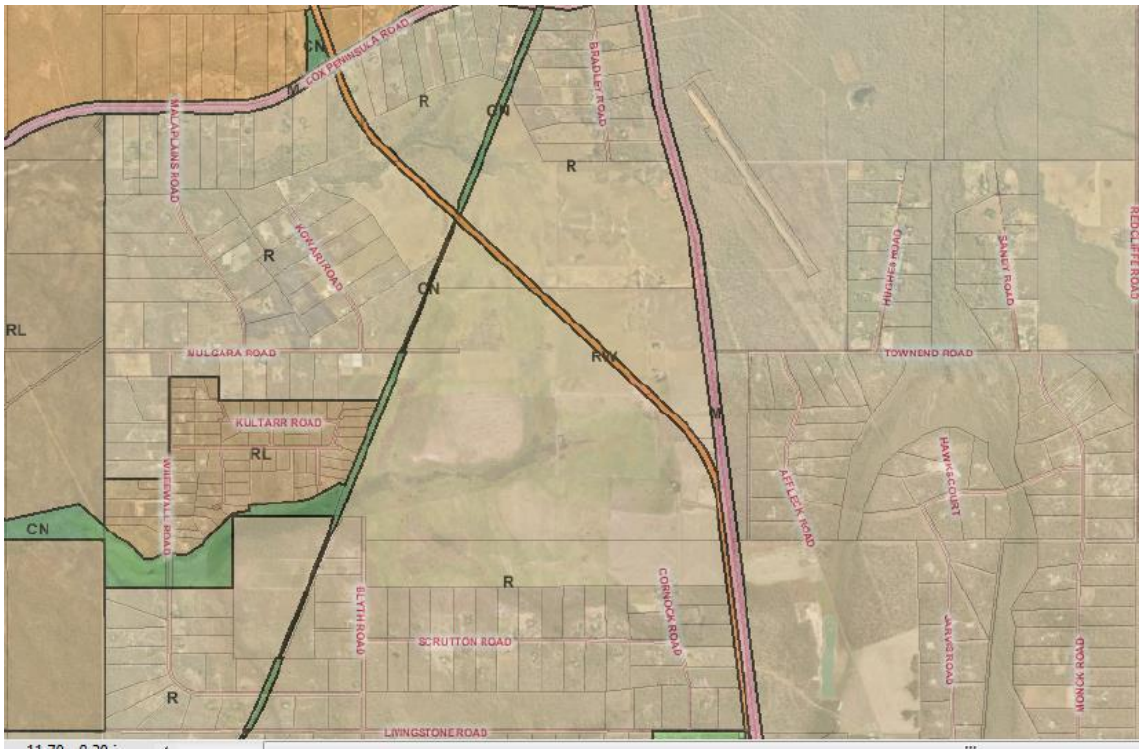

Figure 3 - Land use zoning under the Northern Territory Planning Scheme

4 Environmental Impact Assessment

4.1 Introduction

The purpose of this section is to evaluate the Project and to present the view of the NT EPA on the environmental acceptability of the Project. The environmental acceptability of this Project is based on analysis of the adequacy of information:

- outlining the proposed action (particularly which components or activities are likely to impact the environment)
- on the existing environment (particularly environmental sensitivities)
- identifying the potential environmental impacts and risks of the Project and evaluating the significance of those impacts and risks
- regarding proposed avoidance or minimisation / mitigation measures to reduce potential impacts and risks to acceptable levels.

It is not intended to record all the matters that were identified and subsequently resolved during the examination of the final EIS. Instead, this Report concentrates on the substantive potential impacts and risks identified during the EIA process. Conclusions drawn and recommendations made in this Report are derived from comments from the review of the draft EIS by advisory bodies and commenters, and responses from the Proponent to those comments in the Supplement. Recommendations are made in this Report to add to or emphasise any commitments made by the Proponent, where the proposed avoidance or minimisation / mitigation measures are considered insufficient or where a safeguard is deemed particularly important.

In this Report, the recommendations (in **bold**) are preceded by text that identifies concerns, suggestions and undertakings associated with the Project. For this reason, the recommendations should not be considered in isolation.

Minor and insubstantial changes are expected in the design and specifications of the Project following the conclusion of the EIA process. It will be necessary for approval mechanisms to accommodate subsequent changes to the environmental safeguards described in the EIS and recommendations in this Report. If the Proponent can demonstrate that changes are unlikely to significantly increase the risks of an impact on the environment, an adequate level of environmental protection may still be achieved by modifying the conditions attached to relevant statutory approvals governing the Project. Otherwise, further environmental assessment may be required.

Therefore, subject to decisions that permit the Project to proceed, the overarching recommendations of this Report are:

Recommendation 1

The Proponent shall ensure that the Integrated Live Export Facility is implemented in accordance with the environmental commitments and safeguards:

- **identified in the final Environmental Impact Statement (draft EIS and Supplement) for the Integrated Live Export Facility**
- **identified in further information provided by the Proponent on the NT EPA's direction**
- **recommended in this Assessment Report 78.**

The Northern Territory Environment Protection Authority considers that all safeguards and mitigation measures outlined in the Environmental Impact Statement are considered commitments by the Proponent.

Recommendation 2

The Proponent shall advise the Northern Territory Environment Protection Authority and the responsible Minister of any alterations to the Project, in accordance with clause 14A of the Environmental Assessment Administrative Procedures.

4.2 Summary of environmental issues

The NT EPA identified the following potential environmental impacts and issues, some of which contributed to the decision to assess the Project at the level of an EIS:

- adverse impacts on the air quality of the area as perceived at sensitive receptors due to odour and dust emissions from manure generation, composting and wastewater irrigation
- site suitability for irrigation
- adverse impacts on the amenity of the area as perceived at sensitive receptors due to noise emissions from construction and operation of the facility
- contamination of shallow groundwater resources with animal effluent through leaching of wastewater into soil and groundwater
- contamination of Hardy Creek through increased nutrient loads, suspended solids and pathogens, as well as residues of fuels, pesticides, antibiotics and other pharmaceuticals
- impacts to biosecurity in the region via the spread or introduction of weed / pest species
- impacts to regional groundwater resources and other groundwater users due to extraction activities for water supply.

A number of potential impacts and risks identified through the EIA process were addressed by the Proponent to the satisfaction of respondents and advisory bodies and are not discussed further. The remainder of section 4 of this Report discusses the more significant risks and potential impacts raised throughout the EIA process and the Proponent's commitments to address and manage these.

4.3 Air Quality

The NT EPA's objective for air quality is to *ensure that offensive odours and / or dust do not cause unreasonable interference to sensitive receptors* (NTEPA 2015a).

This objective is consistent with the requirements of clause 10.1 of the Planning Scheme that the ILEF be designed so as not to cause detriment to the amenity of the locality by reason of offensive odours or excessive dust.

The nearest receptors to odour and dust from the proposed site are listed in Table 13 of the draft EIS. The site is bordered by the 'Santavan' PEQ yard to the north and the AACo Meat Processing Facility to the south and south-west. To the east are a number of residential properties, the closest being 800 m from the boundary of the Project site. To the immediate west is the Adelaide to Darwin railway line (refer Figure 4).

Numerous complaints about offensive odours from the AACo facility have been received from landholders in the vicinity, and the local community is sensitive to the issue. Potential negative impacts from odour are identified as a key concern in consultation undertaken by the Proponent, and is an issue raised in the one public comment received on the draft EIS.

While the EIS outlines the benefits of siting the ILEF close to Darwin Port and the appropriateness of the rural zoning for the activity, the NT EPA has some concerns about siting the ILEF in a location where odour is already impacting local residents. The onus will be on the Proponent to ensure that the benefits of locating at the proposed site do not come at a cost to the local community.

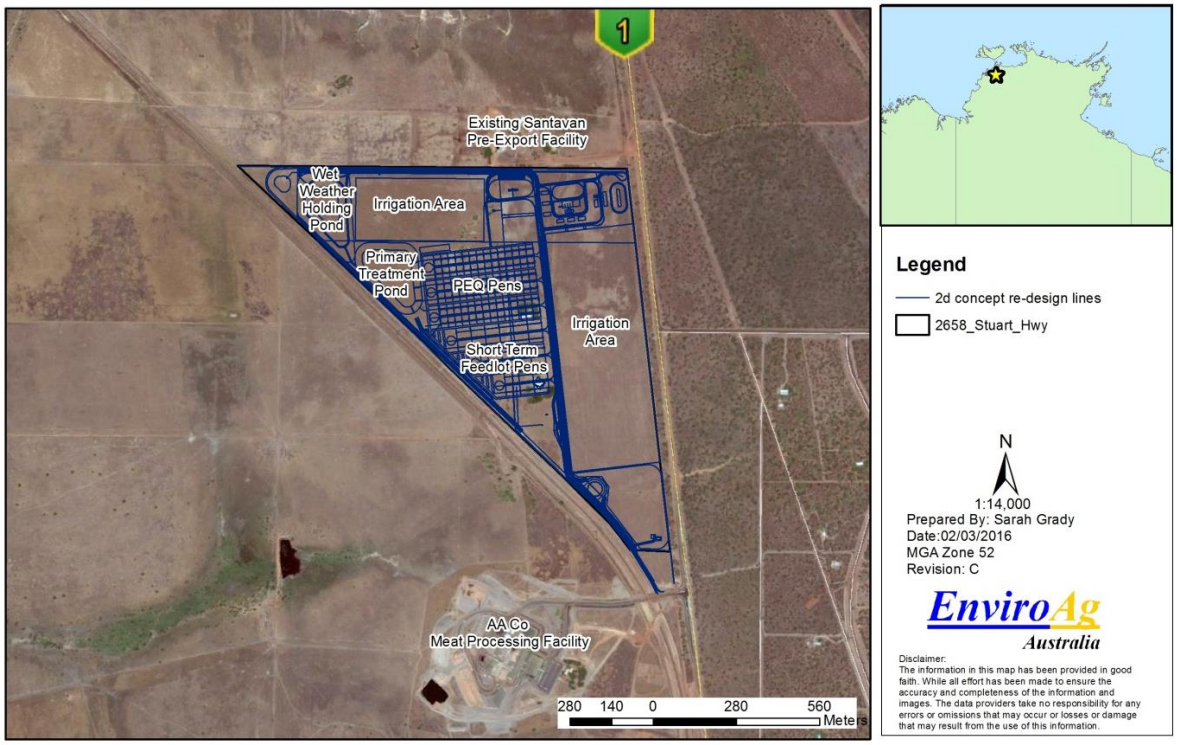

Figure 4 - Site arrangement of the facility in relation to adjacent land uses.

4.3.1 Odour

The Project will generate odour from a number of sources. This includes areas where manure collects (pen surfaces, cattle handling facilities, manure storage and composting areas) and where wastewater is collected and disposed of (sedimentation basins, wastewater holding ponds, irrigation of wastewater). Odour may also arise from inadequate management of dead animals.

The extent of odour emissions from each of these sources will vary depending on a range of factors. Of particular importance to odour generation from manure is the level of moisture within the manure, as wet manure is more likely to produce odour through anaerobic decomposition, and dry manure is more likely to generate dust (which in turn contributes to odour – refer section 4.3.2). Odour is more likely to be generated from wastewaters that are high in organic content and nutrients.

While it is accepted that the Project will generate odour, the issue is whether odour will negatively impact on the amenity of neighbours. This is dependent on a complex range of factors, including odour quality, intensity, frequency, timing and duration, and population sensitivity.

Odour is proposed to be managed through a combination of facility design, operational management, and an appropriate separation distance ('buffer') from receptors.

The Proponent revised the design and layout of the ILEF in the Supplement. Some of these revisions have been made to reduce potential odour emissions and bring the calculated separation distance within the ILEF site boundary. Relevant revisions include:

- relocation of the ILEF further away from the northern boundary
- reduction of the manure handling and compost area from 31 105 m^2 to 3190 m^2 for stage 1 (increasing to 5840 m^2 for stage 2) and its relocation closer to the pen areas
- inclusion of treed buffers on the northern and eastern boundaries
- removal of the short-term holding yards / feedlot from stage 1 to stage 2.

All PEQ pens in the ILEF will be 50% covered by roof which will reduce the impact of rainfall on manure moisture content in covered areas and should reduce wind effects.

An Odour Management Plan has been prepared that outlines a number of performance objectives, including the following:

- operation of the facility will not unduly impact community amenity or cause detrimental effects to the health of residents or the environment
- control of point source odour such that minimal complaints are received from nearby residents.

Operational measures to reduce and manage odour emissions include the removal of manure from pens consistent with industry standards in relation to timeframes and manure pack depths. The majority of the manure is proposed to be taken to the Proponent's property near Batchelor for composting and sale, as further discussed at section 4.5.1. Cattle will generally be confined to covered pens during the Wet season. Where necessary to reduce odour, it is proposed that wastewater from holding ponds will be treated with lime to adjust the pH and remove odorants. The management of dead animals is discussed at section 4.5.2.

The Odour Management Plan does not define performance criteria against which the performance objectives will be measured. In the absence of such criteria, the NT EPA assumes that odour will be managed within the boundaries of the site such that no verified odour complaints attributable to the facility will be received. The Odour Management Plan should be revised to establish clear performance criteria and to include any additional corrective measures (additional to the use of lime) available to reduce offensive odour should an environmental objective or performance criteria not be achieved. A final Odour Management Plan is expected to be a condition of Project approvals.

The Proponent has committed to establishing a community hotline for complaints, and the draft EIS references ongoing community meetings. Proactive management of the relationship with the community would be further supported by a communication and consultation strategy that serves to keep local community members informed and consulted on aspects that may impact upon them.

Recommendation 3

The Proponent shall revise the Odour Management Plan prior to the commencement of operations to incorporate:

- **performance indicators as a basis for measuring achievement of the environmental objectives**
- **corrective management measures.**

The Proponent has calculated an odour separation distance for the Project of 251 m, or 195 m with tree lines in place along the northern boundary. This separation distance is within the northern and eastern boundaries of the site, with a section of the odour buffer extending south-west onto AACo's property (Figure 5).

The EIS Terms of Reference required 'appropriate odour modelling' to be undertaken of impacts to local air quality. The Proponent did not undertake modelling, instead using a 'Level 1' odour assessment methodology to estimate the separation distance. The Proponent's rationale for this approach was that modelling could not be undertaken due to a lack of input data on odour generation and emission rates from PEQ's (compared to data that does exist for feedlots and local meteorological conditions), and that the relatively small scale of the operation did not warrant odour modelling.

No specific guidance exists on separation distance calculations for PEQ facilities. The Proponent adapted the methodology from the National Guidelines for Beef Cattle Feedlots in Australia (Meat and Livestock Australia 2012) to take account of a number of key differences between the Project and a feedlot. Attributes of the operation of a PEQ yard that differ from a cattle feedlot that are expected to lead to a lower level of odour generation include:

- short-term housing of cattle in PEQ yards (average of 4 days)
- cattle at a PEQ yard are fed a maintenance diet low in protein and starch, reducing the amount of nutrient bypassing the digestive system
- reduced manure output from PEQ cattle due to a lower body weight and compensatory metabolism of the cattle
- reduced gut content of cattle upon arrival as a result of long travel times.

With respect to the first attribute listed above, the PEQ yard will operate over an average 16-day rotation with cattle kept in the yard for only six days per rotation. The PEQ yard will be progressively stocked for four days and will reach a peak capacity (stage 1 - 12 000 SCU and stage 2 – 20 000 SCU) by the fifth day. The PEQ Yard is then emptied and remains empty for the remaining ten days of the rotation. The separation distance calculation for beef cattle feedlots used by the Proponent is a standard method used by the feedlot industry for calculating the required buffer from feedlots to avoid environmental nuisances associated with animal wastes. The method assumes that the pens are continuously stocked, which is normal for a feedlot. The Proponent used a 'normalised' number of cattle units in its EIS to simulate continuous stocking capacity between the short periods of peak stocking capacity and the periods where the PEQ yard is destocked over the full 16-day rotation. The 'normalised' calculation estimates that the amount of waste produced by the 12 000 SCU (stage 1) / 20 000 SCU (stage 2) during the shorter peak periods (1-3 days per rotation) will be equivalent to the waste produced in a feedlot with a stocking capacity maintained at 1800 SCU (stage 1) and 3003 SCU (stage 2) for the full rotation period. This approach acknowledges that it is the volume of waste rather than the number of cattle on the site that is the determining factor with respect to odour emissions formation.

While odour modelling is a more robust approach to assessing potential odour impact on the local environment, the NT EPA appreciates the limitations to undertaking modelling for this Project. The Level 1 approach takes into consideration facility design and management, characteristics of surrounding land use, terrain, vegetation and wind direction. The methodology may be used to assess site suitability and odour mitigation measures for new activities and is particularly suitable for smaller developments in

sparsely populated areas with few sensitive receptors (Department of Environment and Conservation 2006a). The prescribed distances using a Level 1 odour impact assessment have been found to lead to an acceptable impact on the amenity of the local environment in New South Wales (Department of Environment and Conservation 2006b) and generally produce conservative estimates (Meat and Livestock Australia 2012).

The potential for cumulative odour impacts was considered by the Proponent and discussed in the draft EIS. The Proponent concluded that odours emitted from the ILEF and those from the Santavan PEQ yard are the same and likely to be additive.

A cumulative separation distance calculation for the ILEF was provided in the draft EIS that incorporated the current operations at Santavan. A revised separation distance was provided in the Supplement that excluded the Santavan PEQ yard due to the understanding that the ILEF will replace the Santavan facility, with the Santavan site and surrounding land to be developed for urban / peri-urban use in the future.

The proponent claims that odours produced by the AACo's Meat Processing Facility have a different signature to those from the ILEF and those odours are not additive. In addition, the approach taken by the proponent is that odour from the AACo facility and the ILEF should be managed within their boundaries, and therefore cumulative impacts should not be a concern.

The NT EPA is not satisfied that cumulative impacts from the ILEF and the AACo facility have been adequately considered. Uncertainties remain about the manner in which differing odours from the respective facilities with potential to cause nuisance may accumulate to impact on sensitive receptors, and the ability to attribute odour to a particular facility should complaints arise. The NT EPA is not in a position to make definitive conclusions about this issue with respect to stage 1, and considers that further information is required to support expansion to stage 2 of the Project.

Having regard to the proposed design, operational odour management measures and the separation distance, the NT EPA considers that stage 1 of the Project could be managed to meet the objective in the Project Terms of Reference and the requirements of clause 10.1 of the Planning Scheme. This view is contingent upon the Proponent effectively implementing an amended Odour Management Plan and a communication and consultation strategy.

Expansion of the Project to a 3003 SCU facility (average) with the addition of a feedlot, as proposed for stage 2, could potentially increase odour generation and the potential for impacts on the amenity of the locality. The Proponent has acknowledged this, and stakeholder concerns about odour from the Project, and committed to only commencing stage 2 after a positive assessment of the odour management of stage 1 of the ILEF, and further odour assessment of stage 2 using actual emissions and meteorological data from the site. Meat and Livestock Australia has committed to assisting the Proponent with the funding of research on this site.

The NT EPA supports this approach as it will provide a level of validation of the odour impact assessment methodology employed for stage 1, and enable the approval of stage 2 to be informed by a more robust odour impact assessment using odour modelling. The stage 2 odour impact assessment should incorporate modelling of cumulative impacts to address the uncertainties identified above.

Recommendation 4

The Proponent shall conduct a 'Level 3' odour impact assessment (odour modelling) of stage 2 of the Project. The odour modelling shall be informed by the necessary operational and meteorological data collected at the site during stage 1, and shall consider cumulative odour impacts.

The odour impact assessment shall be provided to the Development Consent Authority and the Northern Territory Environment Protection Authority to inform decisions on expansion to stage 2.

Recommendation 5

It is recommended that approval of expansion to stage 2 of the Project (construction and operation) under the *Planning Act* and the *Waste Management and Pollution Control Act* be conditional upon the Proponent demonstrating:

- **satisfactory management of odour during stage 1 of the Project**
- **an acceptable assessment of odour impacts for stage 2 of the Project.**

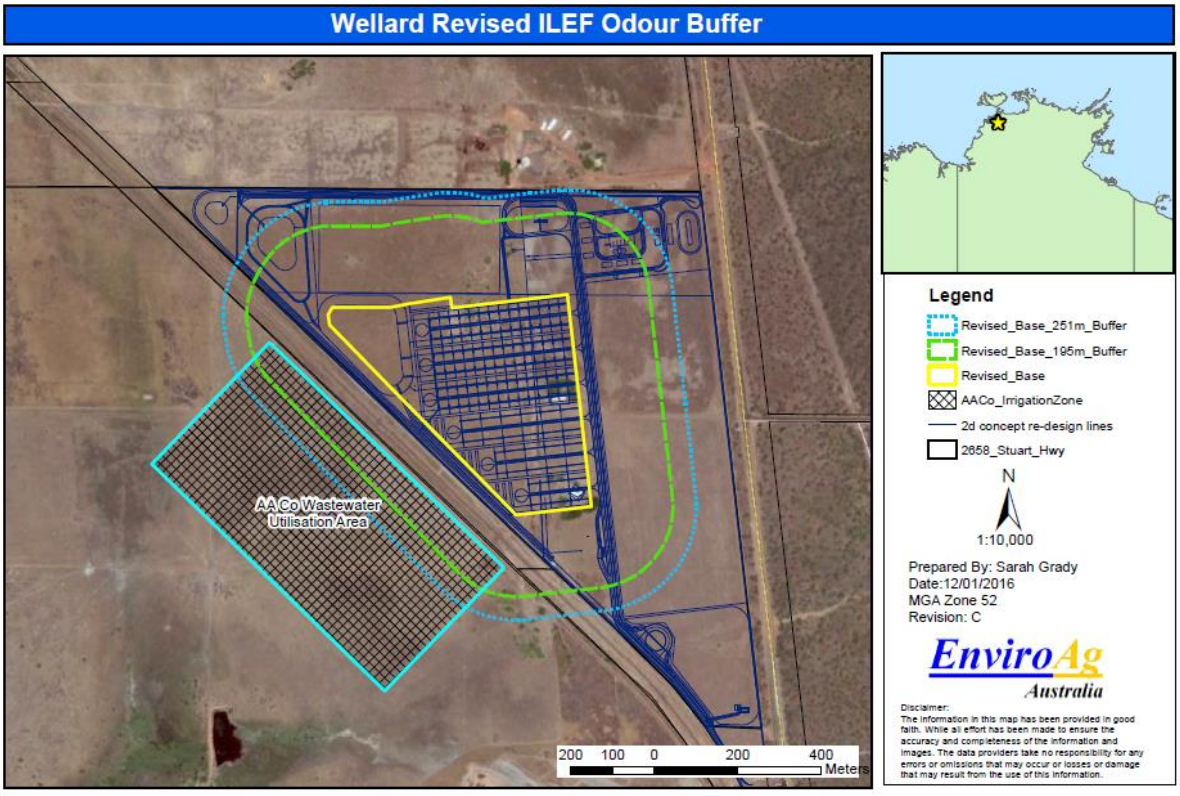

Figure 5 – Wellard ILEF Odour Buffer Plan (Amended from Appendix B of Attachment 4 of the Supplement).

4.3.2 Dust

Construction and operation of the ILEF may produce dust through vegetation clearance, earthworks, vehicle and cattle movements, compost and crop harvesting. The risk of dust impacting on the local amenity is likely to increase in the Dry Season as ground moisture content decreases.

The ILEF has been designed and will be managed to minimise the generation of dust. One of the major sources of dust at the ILEF will be manure. The Proponent will manage manure at the ILEF to ensure it has sufficient moisture content to reduce dust while not producing odour nuisance.

The Proponent has designed the ILEF with a dust suppression system that will be used to ensure dry areas can be wetted to prevent dust generation. Dust suppression sprays will be located in areas where dust may cause issues (i.e. cattle pens, manure pads, roads and in areas where trucks will be loaded with compost and cattle).

The Proponent has prepared an Air Quality Management Plan that sets out the management, monitoring and response criteria to incidents. The proposed maximum acceptable increase of dust is 1 or 2 g/m^2/month over pre-existing levels. This trigger threshold is consistent with the impact assessment criteria for modelling and assessing air pollutants in NSW (Department of Environment and Conservation 2005). Monitoring for dust is proposed to occur monthly for the first year of operation after which the monitoring program will be reviewed. In addition, the Proponent has committed to monitoring wind speed / direction to ensure that dust from ILEF operations does not affect visibility on the Stuart Highway.

The NT EPA considers that dust could be managed in a manner that does not cause unreasonable interference with sensitive receptors currently living in the region if the proposed maximum acceptable increase of dust is not exceeded.

4.3.3 Planning and future land use considerations

Existing odour and dust generating activities may become incompatible with neighbouring premises if the surrounding land-use changes and neighbours locate closer than when the activity was initially approved. This change in proximity of receptor could result in land-use conflicts that can be very difficult for facility operators and regulators to resolve. The strategic direction of land use in the vicinity of the Project has been set out in the Darwin Regional Land Use Plan 2015 and the draft Litchfield Sub-Regional Land Use Plan, with land to the immediate north and east identified as future urban / peri-urban. The potential for conflict is an issue that will need to be considered in future planning and development of the Livingstone region.

4.4 Noise

Background noise on the ILEF site was described by the Proponent as being made up of mainly natural (insects, frogs and birds) and man-made agricultural noises (harvesting, pesticide spraying or other farming operations). The Proponent noted in the draft EIS that current operations at both Santavan and the AACo Meat Processing Facility would produce similar noises to the ILEF. Another source of noise from the region is the Stuart Highway with a range of vehicular traffic including heavy vehicles and road trains.

The main source of noise associated with the Project is considered to be construction related activities. To mitigate the effects during construction, the Proponent proposes to undertake construction activities for 6.5 days a week, between 6am and 6pm Monday to Saturday and between 9am and 6pm on a Sunday / public holiday. The Proponent has committed to keeping residents informed of construction timetables.

While these construction times are outside the NT EPA's Noise Guidelines for Development Sites in the Northern Territory, it is acknowledged that the nearest residential receptor will be 800 m away and is unlikely to be affected. If the Proponent wishes to undertake construction activities outside the advised times, it has committed to preparing a Noise Management Plan. This is consistent with the NT EPA's requirements.

Operation of the facility is not considered to be a significant source of noise given the distance to the nearest receptor and the sources of noise from operations adjacent to and on the site.

Operational noises from the ILEF are likely to come from the movement of vehicles to and around the site, harvesting crops, cleaning pens, compost windrow turning and truck / tractor movements.

The Proponent has committed to undertaking noisier activities in late morning / early afternoon when most people are at work. An unavoidable exception to this commitment is the potential for night time livestock transport (arrival and dispatch). The distance to the nearest receptor may adequately attenuate noise from such events and the addition of treed buffers may provide some limited additional attenuation.

The Proponent will monitor noise from the site through a community hotline which has been established to receive complaints. Any incidents will be reported to the ILEF manager, documented and reviewed.

The NT EPA considers that the risks associated with noise from the Project have been suitably addressed.

4.5 Waste Management

The NT EPA's objective for waste management is to *ensure that waste generated by the facility does not cause contamination of land and water resources, or negatively affect the health and amenity of people in the surrounding area* (NT EPA 2015a).

The Planning Scheme requires the Project to be designed so that it does not constitute the risk of the spread of infectious diseases or other health risks.

To ensure that wastes at the facility are managed appropriately, the Proponent has prepared a Solid and Liquid Waste Management Plan outlining the sources, quantities and handling / disposal of different wastes.

Tables 2 and 3 of the Solid and Liquid Waste Management Plan set out the construction and operational activities that will result in waste generation at the ILEF. Waste materials such as cleared vegetation and excavated soil will be reused on site where possible, while other construction wastes will be disposed of at a licensed facility.

Major wastes generated during operations include sewage effluent (approximately 650 000 L/yr), manure / feedstock / sludge (up to 15 000 m^3/yr), and animal effluent / contaminated stormwater runoff (40 ML/yr). Some biohazardous waste animal carcasses could be generated.

4.5.1 Manure/composting

Onsite composting is proposed to occur at the ILEF. If managed poorly, composting activities can be a significant source of nuisance odour (refer section 4.3.1) and attract pests and scavengers.

The Project initially included an open composting pad of 31 105 m^2 with manure to be composted onsite. The composting area was revised in the Supplement and reduced to 3190 m^2 for stage 1 and 5840 m^2 for stage 2.

Pens would be cleaned of manure, at a minimum, every 13 weeks. Manure collected during the Wet season would be stored under cover. Most solid waste (manure, feed spoilage / sludge) from operations is proposed to be stockpiled and removed offsite to the Proponent's 'Gould' property near Batchelor. Manure and compost from the ILEF will be sold for reuse in farming and garden operations in the area.

Composting onsite will only occur during the Dry season and all compost will be removed from the site prior to the Wet Season. Composting will be undertaken in accordance with 'optimum' conditions for a range of parameters such as moisture content, temperature and oxygen levels as recommended in the National Guidelines for

Beef Cattle Feedlots (Meat and Livestock Australia 2012) and consistent with Australian Standard AS 4454:2003 - Composts, Soil Conditioners and Mulches. Moisture content and temperature will be monitored daily.

The NT EPA acknowledges that the removal of the majority of manure to a property offsite, confining on-site composting to the Dry season and managing manure in accordance with the Australian Standards (Composts, Soil Conditioners and Mulches) will minimise the potential nuisances associated with compost (dust, odour, vermin, weeds) at the ILEF site.

Animal effluent and residues are listed wastes under the WMPC Act. An EPA is required to construct premises for the storage and treatment of a listed waste, and an EPL is required to operate such premises and for the transport of a listed waste.

Recommendation 6

The Proponent shall apply for an Environment Protection Approval under the *Waste Management and Pollution Control Act* prior to commencing construction on the Integrated Live Export Facility.

Once construction has been completed in accordance with the Environment Protection Approval, the Proponent shall apply for an Environment Protection Licence to operate the Integrated Live Export Facility.

4.5.2 Dead Livestock

Operation of the ILEF will result in the occasional cattle death. Dead animals are a source of nutrients and disease and can encourage pests and scavengers. The Proponent estimates that up to 50 cattle will need to be disposed of each year, based on experience at the neighbouring Santavan facility.

The Proponent is proposing to have any dead cattle removed from the site and 'boned out' for pet meat with the remaining bones either rendered or disposed of in the composting windrows.

The NT EPA recommends that all dead stock are removed from the ILEF, including the bones, for appropriate treatment and/or disposal at an alternative, approved disposal location.

Recommendation 7

The Proponent shall remove all dead livestock carcasses from the ILEF site for appropriate treatment and / or disposal in an approved waste disposal facility.

4.6 Surface Water

The NT EPA's objective for water resources potentially impacted by the Project is: *To ensure that surface water and groundwater resources and quality are protected both now and in the future, such that ecological health and land uses, and the health, welfare and amenity of people are maintained* (NT EPA 2015a).

4.6.1 Stormwater management

Liquid and solid waste management were identified in the draft EIS as high priority issues. Runoff from pen areas typically carries dissolved nutrients and salts and may also entrain organic matter. Runoff and spills are considered to be the main sources of contamination of surface water downslope from the ILEF with the potential for algal blooms, eutrophication, and degradation of aquatic ecosystems. The potential impacts to surface water systems off-site are a key concern held by a number of respondents to the draft EIS, including the NT EPA.

The ILEF site is located on the western edge of a plateau bounded on the eastern side by the Stuart Highway and on the western side by the railway line. The property largely slopes to the west from a high point of 55 m AHD to a low point at 41 m AHD with an average slope of approximately 1.5%. Runoff is intercepted by a drainage line associated with the railway, passes under the railway line in existing culverts, through a natural grassed waterway and then into a swamp area.

Beneficial uses have been declared for all natural waterways in the Darwin Harbour catchment and include the protection of the environment, culture (aesthetic, recreational and cultural), agriculture, and rural stock and domestic water supply.

The Proponent has prepared a Surface Water Management Plan as part of its EIS. The performance objective identified in the Plan states that no contaminated water [will] leave the site via surface water; and no contaminants attributable to the ILEF [will be] found in surface water. To support this objective, the Proponent has included a range of measures in its operation to minimise the potential for contamination of stormwater runoff within the ILEF site. These include:

- separation of clean water catchments from potentially contaminated catchments
- covering of 50% of the semi-confined PEQ yard (approximately 4.5 ha), which would be the predominant yard used in the Wet season
- cleaning of feedlot pens back to an armoured surface prior to the Wet season
- storage of any manure cleaned during the Wet season in roofed pens
- a reduction in composting area on site by approximately 90% and composting to occur in the Dry season only.

The Proponent has designed an ‘enclosed and controlled drainage area’ to ensure that surface water from areas of the site likely to be contaminated is collected, stored and re-used onsite. The controlled drainage area within the ILEF has been revised down from 33 ha in the draft EIS to approximately 25 ha in the Supplement, which is likely to significantly reduce the inventory of contaminated water at the site. The Proponent provided confident assertions that a discharge of potentially contaminated water from the site would only occur in an extreme weather event such as a cyclone and that any discharge would be relatively minor. A diagram of the ‘controlled drainage area’ for the ILEF is at Appendix B of the Surface Water Management Plan. A summary of the drainage system is provided below (Figure 6).

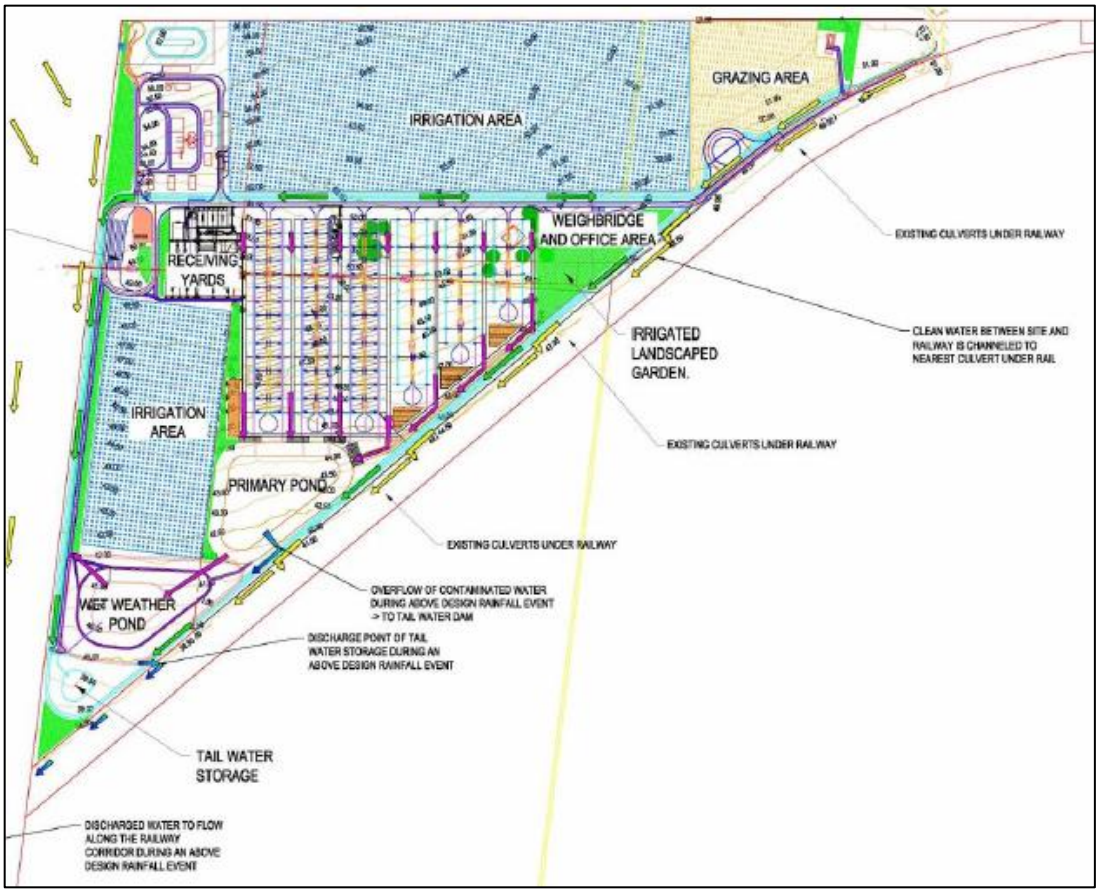

Figure 6 - Surface water site plan – stage1 & 2 (source: Surface Water Management Plan)

During a significant rainfall event, clean stormwater from catchment areas above the ILEF would be diverted around the perimeter of the site. Potentially contaminated stormwater runoff from within the ILEF would be contained within a controlled drainage network and collected in a primary treatment pond. The 'treated' water from the primary pond is proposed to be further treated through irrigation of improved pasture in appropriate conditions. The proposed irrigation strategy is discussed in the following section of this Report (section 4.6.2). Any water in the primary pond not used for irrigation would be pumped to a wet weather storage pond to minimise the potential for discharges in wet weather. The EIS indicated that most contaminated water in the primary pond would be transferred to the wet weather storage pond prior to any major rainfall event, providing maximum capacity in the primary pond to contain runoff.

The waste water system has been designed to 'spill' in a 1 in 10 year extreme rainfall event in accordance with waste water guidelines for high strength wastes (Department of Environment and Conservation 2004); the system should be capable of preventing overflow in a 90th percentile wet year. The optimum design capacity of holding ponds for stormwater retention within the 25 ha controlled drainage area is calculated to be 165 ML, based on a 1 in 10 year Wet season stormwater runoff yield of approximately 170 ML/yr.

In the event of a discharge, the Proponent proposed that water from waste water holding ponds would be routed through the tailwater system, where significant dilution would occur. The tailwater pond (also referred to in the EIS as the clean water storage or terminal pond) would normally function to intercept tailwater runoff from the irrigation areas and would also receive clean stormwater from within the ILEF site such as diverted rainwater from roofing.

In the event of a 1 in 10 year rainfall event, the Proponent has calculated that the dilution and mixing of discharge from the site through the tailwater pond spillway and into the Hardy Creek catchment would be in the order of one in one billion (1 ML:1 000 000 000

ML). In such an event, it is expected that flooding in the surrounding area would lead to significant mobilisation of soil and nutrients catchment-wide.

The Proponent has commenced implementation of a surface water quality monitoring program including five monitoring points; three sites within Hardy Creek, one site in Berry Creek downstream of the AACo property, and the discharge through the culvert under the rail corridor.

Baseline monitoring at the sites commenced in early 2016, although two of the sites were dry at the time, with monitoring proposed to continue monthly for the first year of operation and then on an annual and event-only basis (e.g. where surface flow to the creek has been observed, or after cyclones). The monitoring criteria are proposed to be drawn from Darwin Harbour regional water quality objectives.

The NT EPA has some concerns about the location of existing monitoring points as, with the exception of one creek site and the railway culvert, they are located downstream of, and possibly influenced by, the AACo Meat Processing Facility and the Santavan facility. The Department of Land Resource Management (DLRM) recommended that the monitoring program be designed using a BACI (before/after-control/impact) approach. The NT EPA recommends that an appropriate control site is established that is not influenced by runoff from the abattoir and the Santavan PEQ yard. The monitoring program must also take account of potential expansion to stage 2 of the ILEF with continuation of a program appropriate to detect any impacts from the additional capacity (refer to Recommendation 14 in this Report).

The NT EPA considers that the Proponent could meet the environmental objective for surface water in its operation of the ILEF provided that the site is managed in accordance with a detailed operational Waste Management Plan and Surface Water Management Plan that contains appropriate performance (water quality) criteria. These plans will need to be developed to align with the commitments made by the Proponent in its framework management plans included in the EIS. The Proponent should also develop contingencies in the event that the wastewater management strategy does not meet its expected performance measures.

Management of effluent at the ILEF will be regulated through an EPL to operate under the WMPC Act and any contingency for unplanned discharge may require a waste discharge licence under the *Water Act*.

Recommendation 8

The Proponent shall revise the Surface Water Management Plan to include a surface water quality monitoring program with appropriately located monitoring sites including a control site that is not influenced by neighbouring businesses.

Contingencies shall be developed in the event that surface water quality management consistently fails to meet performance criteria.

4.6.2 Irrigation management

Wastewater stored in the primary treatment pond is proposed to be treated through irrigation on two dedicated irrigation areas (wastewater utilisation area) located on the eastern and northern sides of the site. Together with tree lines and garden areas, the combined area of irrigable land is approximately 40 ha. Irrigated waste water would be used to grow improved pasture for hay or silage production.

While irrigation is regarded as a wastewater treatment method, if poorly managed, it could lead to additional impacts. A number of respondents to the draft EIS were concerned that nutrients and other contaminants in irrigation water could impact surface water and shallow groundwater aquifers and contaminate receiving waters. There are

two aspects to this; firstly, the entrainment of nutrients in water and secondly, the movement of that water to a sensitive receptor, in this case the aquatic ecosystem.

As discussed in the previous section of this Report, the ILEF's key mitigation strategy for preventing pollution of aquatic ecosystems off-site is the interception, collection and re-use of contaminated runoff. As part of this strategy, the wastewater utilisation area would operate with an annual water deficit.

The EIS indicated that the available retained wastewater in holding ponds would facilitate an application rate of typically 1 ML/ha/yr up to a maximum rate of 6ML/ha/yr over the 35 ha cropping area. This is based on a calculated annual average yield of 40 ML of wastewater from the facility (Supplement Appendix I – Hydrological Assessment). However, the total water demand of the proposed crop was estimated to be approximately 11 – 15 ML/ha/yr (approximately 400 - 500 ML). Even the catchment yield from the wettest year in 10 years, which was estimated to be approximately 170 ML, would only supply 4 – 5 ML/ha. To overcome this deficit, the Proponent calculated that freshwater inputs would be needed to account for an average of 65 days of plant stress per year, generally towards the end of the Dry season. Some freshwater could be drawn from return and re-use of tailwater with the remaining deficit proposed to be sourced from groundwater production bores. Groundwater supply is discussed in the following section of this Report (section 4.7).

While a net water deficit is likely for the year, stormwater runoff will occur during Wet seasons. Any excess nutrients are likely to be mobilised into surface and groundwater and, if not adequately intercepted, could move into the off-site environment.

As with water supply, the Proponent expects that a nutrient deficit is likely to exist in the wastewater utilisation area. The EIS indicates that the nutrient demand of the irrigated pasture would substantially exceed the application of nutrients through wastewater. Supplementation of the crop with composted manure or inorganic fertilisers would likely be required.

The important determining factors in the irrigation nutrient budget are considered to be soil properties, wastewater nutrient loads and plant uptake. The soils on the site are described in the EIS as 'classic Darwin lateritic red Kandasols' and yellow Kandosols. Typically, the Kandosols are slightly acidic, have a low organic matter and clay content, have poor water holding capacity, and low fertility (very low nitrogen and phosphorus concentrations).

The presence of well-drained soils with a low nutrient content in the wastewater utilisation areas suggests that the soils probably are a suitable matrix for irrigation of wastewater and pasture production. There are a number of other characteristics of the soils within the wastewater utilisation areas that are worth noting:

a) The lateritic material (ferricrete) at depth in the soil profile consists of iron and aluminium oxides that form a 'cemented' layer. A field soil survey conducted for the EIS observed that infiltrated rainfall produced a transient flow of water through the soils above the ferricrete layer. This could potentially provide a mechanism for nutrients that leach beyond the root zone to move downslope in shallow groundwater. The EIS proposes frequent and low to moderate applications of wastewater, addition of organic matter to help bind nutrients, maintenance of active plant growth to maximise nutrient uptake, and nutrient recovery through crop harvest to mitigate this risk.

b) Phosphorus (P) is a key nutrient implicated in aquatic pollution. Balancing the P level in the cropping system between labile (plant-available) and non-labile forms (i.e. P that is adsorbed to soil particles) is critical in maximising crop uptake and minimising mobilisation of P to surface and groundwater. The iron-rich soils are expected to provide ample capacity for adsorption of P to form non-labile iron

phosphates within the soil profile. The EIS reports a P sorption capacity of between 1000 - 2000 kg/ha within the top one metre of soil, which is considered to be typical for this Kandasol.

c) There is the potential for aluminium toxicity in soils if strongly acidic conditions were to develop. This could arise over the longer term with over-application of nitrogen (N) given the soils have a low cation exchange capacity. However, nutrient application would be regulated and gypsum and/or lime added to maintain optimum pH conditions for nutrient uptake and plant growth.

The NT EPA considers that the risks of impact to the off-site environment from irrigation of wastewater are manageable. However, the development and implementation of a robust monitoring program is critical to ensure that the complex factors that must be considered in the irrigation strategy are well understood. Although the draft EIS contained a summary of monitoring that would be conducted for activities at the ILEF, including monitoring to inform irrigation, the framework EMP contained very few management measures specific to the wastewater utilisation area and little detail.

The NT EPA requested that an Irrigation (Wastewater) Management Plan be developed that outlined measures to ensure irrigation of wastewater would not impact the environmental values and beneficial uses of surface and groundwater resources. One of the specific information requirements was for the inclusion of a monitoring program and water quality criteria.

A framework Irrigation Management Plan was included in the Supplement that provided an overview of the environmental conditions, soil characteristics, preferred crop for the site, the design and operation of the irrigation system, and some monitoring information.

The plan included proposed monitoring of:

- daily weather conditions
- rainfall
- shallow groundwater using piezometers (monthly for the first year and then reviewed)
- physical and chemical properties of soil including nutrient content (annually)
- wastewater quality (annually)
- inventory of site water balance (inputs and outputs)

The monitoring information in the Irrigation Management Plan was considerably briefer than in the draft EIS, and monitoring frequencies proposed for some parameters were reduced. For example, in the draft EIS, monitoring of wastewater quality and chemical analyses of soils was to occur biannually (six monthly); in the Supplement it was proposed to monitor them annually.

The NT EPA considers that annual monitoring of soil properties and wastewater nutrient loads would not be sufficient to inform optimum wastewater application rates and minimise the potential for contaminated leachate and degradation of soils. More frequent testing of nutrient concentrations in wastewater and soil, as well as soil moisture content, is recommended.

A detailed Irrigation (Wastewater) Management Plan is required as part of the Waste Management Plan that provides performance (water quality) criteria, a comprehensive description of the management measures, monitoring program and responses to non-compliances that will be implemented for the wastewater utilisation component of the

ILEF. The detail in the plan should be sufficient to guide the actions of ILEF operators in fulfilling their obligations for wastewater management. The Waste Management Plan will need to meet the requirements of an EPA to install and an EPL to operate under the WMPC Act.

Recommendation 9

Prior to commencement of construction, the Proponent shall submit to the NT EPA a detailed Irrigation Management Plan. The plan will form part of the Waste Management Plan for the site in accordance with approval and licensing requirements under the *Waste Management and Pollution Control Act*.

4.7 Groundwater

The NT EPA's environmental objective for groundwater is *to ensure that surface water and groundwater resources and quality are protected both now and in the future, such that ecological health and land uses, and the health, welfare and amenity of people are maintained* (NT EPA 2015a).

Water for the ILEF will be supplied through a mix of groundwater and harvested rainwater. The Proponent has revised the water use estimate for the ILEF in the Supplement to 130 ML extracted for stage 1 and 245 ML for stage 2.

The hydrogeological studies undertaken by the Proponent suggest that the site is underlain by a layer of ferricrete below which were interbedded siltstones and clays. The Proponent suggested that the claystone is likely to be relatively impermeable and may confine aquifers. Shallow groundwater was found during drilling of a test bore at a depth of 25 metres below ground level. This shallow aquifer supplies much of the domestic and local stock water in the region.

Groundwater models were prepared by the Proponent to predict the movement of regional groundwater. The model identifies where shallow groundwater is forced to the surface and identifies a seasonally waterlogged area downslope from the ILEF site in the north-west corner of the property. The waterlogged area is associated with a change in slope which allows transient flows in the shallow soil horizons to accumulate. As previously discussed, this is a potential mechanism for the transport of contaminants off-site and would need to be monitored and intercepted, particularly in the area of the terminal pond.

The Proponent is proposing to extract water for the ILEF from a deeper sandstone and dolomite aquifer approximately 98 -114 m deep. A test bore constructed on the site yielded a maximum of 7 L/s from the deeper aquifer. The DLRM noted that the aquifer formation has not been identified with certainty and that the yield result did not imply that the resource would be extensive or that the pumping rate would be sustainable.

As stated in the EIS, the NT Government is a signatory to the Intergovernmental Agreement on a National Water Initiative. Schedule C of the National Water Initiative Implementation Plan provides for a water allocation planning framework, which includes aquifers in the Top End of the Northern Territory.[1] This framework states that, in the absence of directly related research, *at least 80 per cent of annual recharge is allocated as water for environmental and other public benefit water provision, and extraction for*

[1] Northern Territory Implementation Plan for the Intergovernmental Agreement on a National Water Initiative (June 2006), viewed at: http://www.lrm.nt.gov.au/__data/assets/pdf_file/0006/15387/intro.pdf

consumptive uses will not exceed the threshold level equivalent to 20 percent of annual recharge.

The source water for the Project is from an aquifer which is believed to subcrop in the Acacia Hills area and which extends to depth beneath the development block. There is little information regarding the recharge and extent of the aquifer. Estimates of the recharge rate for the aquifer have been made based on a mapped subcrop area of 20 km^2 and rainfall recharge value of 200 mm/y (approximately 10% of rainfall), with the figure determined to be approximately 4000 ML/y. Under the NT Water Allocation Framework, the sustainable yield of the aquifer equates to 800 ML/y.

The DLRM expressed concerns about the possible impacts on users of the resource in the Acacia Hills area given that the proposed water requirement of 245 ML/y in stage 2 would represent approximately 30% of the estimated sustainable yield and the resource is shared with an estimated 60 users in the Acacia Hills area.

Under the *Water Act*, groundwater extraction from bores pumping more than 15 L/s requires a water extraction licence. Pumping rates within the ILEF site are well below that and there is an exemption in place for the Darwin Rural Water Control District. The Proponent is therefore legally able to extract water from the aquifer at a rate up to 15 L/s. Permits have been issued by the NT Government for the development of three production bores on the ILEF site entitling the Proponent to extract up to 1491 ML/year (Supplement to the draft EIS).

The NT EPA acknowledges that the Proponent is unlikely to require the maximum water entitlement and the maximum yield would not provide it. It is also acknowledged that significant uncertainty exists with respect to the nature and extent of the groundwater resource formation that could be impacted by the ILEF. There is limited understanding of the connectivity between aquifers in the area or what the potential effects of extraction on other users of the dolomitic aquifer might be, particularly for those located in the likely recharge zone in the Acacia area. The DLRM requested that an assessment of risks to these users be undertaken.

The NT EPA is concerned that the impacts of cumulative increases to groundwater usage in the region are unknown and that there is a risk that existing groundwater users could be affected by the Proponent's extraction requirements. The lack of certainty suggests that a precautionary approach should be taken by the Proponent in its extraction activities. In the short-term, monitoring may provide some indication of the sustainability of the resource.

The Proponent has committed to installing a meter on the production bore to record weekly water usage and two other bores are proposed to be monitored and tested monthly for the first year of operation. After this time, a review of monitoring would be undertaken with monitoring proposed to continue on an annual and event-only basis.

The NT EPA considers that monitoring should continue for the duration of stage 1 of the ILEF and then at least for the first year of stage 2 before it is subject to review. Contingencies should be considered in anticipation of a potential decline in pumping rates.

The NT EPA acknowledges the Proponent's commitment to obtain a Groundwater Extraction Licence prior to extracting any groundwater for the ILEF (section 8.2 of the draft EIS). It is possible that in the future the NT Government may revise its 15 L/s threshold and require all users to be licensed. By obtaining a groundwater extraction licence at this time, the Proponent will have a secured water supply. The formalisation of current and future groundwater extraction activities will also contribute to a better understanding of the groundwater resource in the region for allocation planning purposes.

Recommendation 10

Prior to extracting groundwater for the ILEF, the Proponent shall obtain a Groundwater Extraction Licence under the *Water Act*.

The potential sources of contamination from the ILEF in groundwater were identified as lime, effluent, sewage and/or hydrocarbons. The proponent proposes to manage the risks from lime and diesel by double bunding containers and making spill kits available onsite. The risks associated with effluent will be managed by lining pens, compost pads, wastewater ponds and drainage areas with compacted clay. Dams will be lined with compacted clay or HDPE and then covered with sand in accordance with engineering standards. Sewage will be appropriately treated on site in accordance with the NT Department of Health Code of Practice for Onsite Wastewater Management. Further discussion about the management of stormwater and wastewater is provided in sections 4.6.1 and 4.6.2 of this Report.

The effectiveness of the mitigation measures will need to be monitored as part of the groundwater monitoring program, informed by adequate baseline water quality data.

Recommendation 11

The Proponent shall prepare a Groundwater Monitoring Program to the satisfaction of the NT EPA and the Controller of Waters to monitor the quality and quantity of:

- **shallow transient groundwater associated with stormwater and waste water infiltration**
- **the aquifer from which water supply will be extracted.**

Baseline data collection shall be sufficient to enable detection of impacts from the operational ILEF.

4.8 Erosion and Sediment Control

Construction activities may increase the potential for erosion and mobilisation of sediments within the ILEF site and the risk of off-site contamination.

The Proponent has undertaken soil investigations on the site and estimates that the total soil loss over the 12 month construction period would equate to 101.71 tonnes.

The Proponent has prepared an Erosion and Sediment Control Plan (ESCP) which sets out key measures for managing erosion and sedimentation at the ILEF site.

Comments from the DLRM on the draft EIS noted some inconsistencies with the information provided and identified additional information requirements for the ESCP.

The Proponent responded to the comments in the Supplement and committed to revising the ESCP after consent for the Project had been obtained. The ESCP will form part of the requirements of an EPL under the WMPC Act and will be a requirement of development consent. It should be submitted to the NT EPA and consent authority prior to works commencing on the site.

Recommendation 12

The Proponent shall submit a revised Erosion and Sediment Control Plan (ESCP) to the Development Consent Authority and the NT EPA prior to the commencement of works. The revised ESCP should:

- **be developed by a suitably qualified and experienced professional in erosion and sediment control planning**
- **detail methods for minimising erosion and sediment loss from the Project**
- **reference appropriate ESCP guidelines.**

4.9 Weeds

Weed species can rapidly colonise areas following disturbance or degradation and then provide a source of infestation throughout an area. Weed spread can occur through contaminated vehicle and machinery movement, soil disturbance and relocation, aeolian and fluvial processes, and the movement of livestock.

The Proponent has prepared a Weed Management Plan for the facility which acknowledges that eight weeds declared under the *Weed Management Act* occur on the site. These weeds are:

- gamba grass (*Andropogon gayanus*)
- spinyhead sida (*Sida acuta*)
- sickle pod (*Senna obtusifolia*)
- neem (*Azadirachta indica*)
- hyptis (*Hyptis suaveolens*)
- lantana (*Lantana camara*)
- annual mission grass (*Cenchrus pedicellatus*)

The Proponent noted that eleven other declared weeds have been recorded on neighbouring properties. These weeds have the potential to become established on the site and potentially spread. To ensure the Weed Management Plan addresses the existing weed species and provides for adequate surveillance for other high risk weed species, the NT EPA recommends that the Proponent consider the potential for other high risk weeds to spread to the site. These should be included in the list of high risk weeds for surveillance (Appendix C of the Weed Management Plan).

The NT EPA has reviewed the Weed Management Plan and has concerns that the control measures identified in the plan only apply to the operational phase of the facility. Construction of the facility has the potential to result in the introduction and spread of declared weeds on and off the site. Given this, the NT EPA recommends that the Proponent revises and update its Weed Management Plan to include additional control measures that will be used during construction. The Weed Management Plan should be revised prior to commencing construction of the ILEF to reduce the risk of weeds spreading during this phase.

The EIS identifies that some weeds may be transported off site in the harvested fodder crop. Section 31 of the *Weeds Management Act* requires that ‘except to manage a declared weed in accordance with a weed management plan, a person must not cut or mow an area for the purpose of producing fodder of mulch if the person knows or should reasonably know that the area is infested or contaminated with a declared weed’. The Weed Management Plan has identified gamba grass within the proposed fodder area. To ensure weeds are not transported with fodder, the NT EPA recommends that the Proponent update its Weed Management Plan to ensure that all weeds in the irrigation and adjoining areas are treated prior to harvesting of the fodder crop.

Section 7.14.2 of the draft EIS acknowledges that livestock will be transported to the facility from farms in the NT, WA, QLD and SA. There is potential that weeds may be spread by livestock on hides, hooves or in manure. Weeds that are most likely to be spread may include hard seeded legumes, mimosa, prickly acacia and mesquite. To reduce the risk of weed spread, the NT EPA requests that the Weed Management Plan be updated to ensure seeds are rendered non-viable and monitored.

Given that most of the site will be disturbed during the construction phase, the NT EPA recommends that the Proponent undertake a property wide, post construction and pre-operation weed survey to inform the development of the initial property weed plan and 'weed control register'.

Recommendation 13

The Proponent shall submit a revised Weed Management Plan to the Development Consent Authority prior to the commencement of works. The revised Weed Management Plan should outline measures for managing weeds during construction and operation of the Integrated Live Export Facility, including but not limited to:

- **further identification of high risk weeds in and around the Integrated Live Export Facility site**
- **measures for controlling the spread of weeds from fodder production and manure composting.**

The revised Weed Management Plan should be prepared to the satisfaction of the Department of Land Resource Management's Weed Branch and align with current Statutory Weed Management Plans.

4.10 Traffic

The construction of the ILEF and its operation will generate additional traffic along the Stuart Highway.

The Proponent has prepared a Traffic Study for the ILEF to assess the risks associated with increased traffic from the Project. The study considered the existing traffic along the Stuart Highway and included the predicted traffic from the AACo Meat Processing Facility and the ILEF.

The study found that there was sufficient capacity on the existing transport network to accommodate construction and operation traffic from the ILEF. The study acknowledged that there could be some problems associated with outbound trucks accessing the Stuart Highway during peak periods, truck platooning and the lane widths / turning radii of the access intersection. The study also recommended consideration of a slip lane to facilitate merging of fully-laden, north-bound trucks with north-bound traffic. These issues can be resolved through engineering solutions.

While there was little information in the EIS regarding the impacts to road users and traffic closer to the port, the NT EPA does not expect that net heavy vehicle traffic on the Stuart Highway will increase as a consequence of ILEF operations as the 'Santavan' PEQ facility is likely to close once the ILEF becomes operational. The 'Santavan' facility has not been included in future land planning considerations in the Darwin Regional Land Use Plan.

4.11 Environmental Management

The Environmental Management Plan (EMP) (Appendix H of the Supplement) outlines the proposed environmental management measures that will be implemented across both the construction and operational phases to address the potential environmental

impacts associated with the Project. In addition to the EMP, the Proponent proposes specific management plans for some aspects of the Project, which include the following:

- Weed Management Plan
- Surface Water Management Plan
- Irrigation Management Plan
- Solid and Liquid Waste Management Plan
- Biting Insect Management Plan
- Erosion and Sediment Control Plan

Each plan contains information addressing the following:

- performance objectives
- implementation and/or mitigation measures
- monitoring
- incident/compliance failures
- corrective actions
- reporting.

With some exceptions (e.g. acceptable limits for dust), the EMP and issue-specific management plans do not identify clear performance criteria (targets and performance indicators) to measure achievement of the stated performance objectives. Performance criteria should be specific, well defined and measurable (NT EPA 2015b). Performance criteria are critical in informing the design of monitoring programs and performance reporting.

Monitoring programs are proposed for the various management plans. The NT EPA has identified areas for improvement in some of these monitoring programs elsewhere in this Report (e.g. section 4.6.1, section 4.7). Many of the monitoring programs are proposed for a period of 12 months, after which they will be reviewed. As the Proponent has committed to staging the Project, this initial commitment may not be appropriate. The Proponent will need to demonstrate that both stage 1 and stage 2 of the Project are achieving performance objectives, and monitoring requirements should be revised to accommodate this requirement.

Performance criteria and associated monitoring will need to be acceptable to the NT EPA before an EPL will be granted under the WMPC Act.

The Proponent has committed to establishing a community hotline for complaints, and the draft EIS references ongoing community meetings. It is recommended that the Proponent develop a communication and consultation strategy outlining its approach to keeping community members informed and consulted on aspects of the Project that may be of interest or impact upon them.

Recommendation 14

Prior to the commencement of construction of the ILEF the Proponent shall:

- **prepare a Construction Environmental Management Plan and relevant, issue-specific management plans that incorporate clear performance criteria to measure achievement of performance objectives, and**
- **include monitoring programs to enable the performance criteria to be measured and provide for adequate performance reporting for the construction of stage 1 and stage 2 of the Project.**

An Operational Environmental Management Plan incorporating relevant issue-specific plans with adequate performance criteria, monitoring programs and reporting facilities shall be prepared for the operational phase.

All management plans must be prepared to the satisfaction of the Consent Authority and the NT EPA.

Recommendation 15

It is recommended that the Proponent prepare a communication and consultation strategy for the Project.

Recommendation 16

The Proponent taking the proposed action is wholly responsible for the implementation of all conditions of approval and mitigation measures contained in the Environmental Management Plan and must ensure all staff and contractors comply with all requirements of conditions of approval and mitigation measures contained in the Environmental Management Plan.

Recommendation 17

It is recommended that approval of expansion to stage 2 of the Project (construction and operation) under the *Planning Act* and the *Waste Management and Pollution Control Act* be conditional upon the Proponent demonstrating satisfactory management of all key environmental risks and impacts identified in this Report.

5 Conclusion

The NT EPA considers that the potential environmental impacts and risks associated with the Project could be managed by delivering the commitments made in the EIS and by applying the recommendations described in this assessment.

While most of the likely impacts have been adequately identified and are relatively well understood, uncertainty remains with respect to the nature and extent of a number of potential impacts; these are odour from animal effluent and the sustainability of proposed groundwater extraction. These uncertainties are largely due to gaps in data informing the EIA process.

In this regard, the NT EPA supports the staged approach proposed by the Proponent. The implementation of monitoring programs at stage 1 of the operation for odour, groundwater impacts and other aspects, in conjunction with the management actions included in the Proponent's Environmental Management Plan, will enable validation of impact predictions made in the EIA process, demonstrate that those impacts are able to be managed and inform decision-making prior to any expansion to stage 2.

The management measures and monitoring programs in the Proponent's Construction and Operational Environmental Management Plans will need to be of a standard that satisfies regulatory requirements. The Project will require development consent under the *Planning Act*, which is administered by the Department of Lands, Planning and the Environment, and an approval to construct and licence to operate under the WMPC Act, administered by the NT EPA.

The Project is likely to set a new, higher standard for live export facilities in the NT and will have local and regional economic and employment benefits. The NT EPA considers that the Project could be managed so that environmental impacts are maintained within acceptable bounds, provided that the environmental commitments, safeguards and recommendations detailed in the EIS, this Assessment Report and in the final management plans, are implemented and are subject to regular reporting and compliance monitoring.

6 References

Department of Environment and Conservation (2004). Environmental Guidelines Use of effluent by irrigation, Sydney South, New South Wales, Australia.

Department of Environment and Conservation NSW (2005) Approved methods for the modelling and assessment of air pollutants in New South Wales. NSW Environment Protection Authority, Sydney.

Department of Environment and Conservation NSW (2006a). Technical Framework: Assessment and management of odour from stationary sources in NSW.

Department of Environment and Conservation NSW (2006b). Technical Notes: Assessment and management of odour from stationary sources in NSW.

Meat and Livestock Australia (2012). National Guidelines for Beef Cattle Feedlots in Australia 3rd Edition.

Northern Territory Environment Protection Authority (2015a) Terms of Reference for the Preparation of an Environmental Impact Statement, Integrated Live Export Facility Wellard Rural Exports, Northern Territory, Australia (online at: http://www.ntepa.nt.gov.au/__data/assets/pdf_file/0006/357981/terms_reference_live_export_facility_wellard.pdf).

Northern Territory Environment Protection Authority (2015b) Guideline for the Preparation of an Environmental Management Plan.