RESPONSE TO DOCUMENT A

Relevant section / topic	NT EPA Comment	No	Response to Comment
Waste Management and Pollution Control Act	The Integrated Live Export Facility (ILEF) will generate beef cattle effluent as part of the operations. "Animal effluent and residues (abattoir effluent)" is a listed waste under Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations*.	A.1.1	The exact wording of the *Waste Management and Pollution Control (Administration) Regulations* is: *"Animal effluent and residues (abattoir effluent, poultry and fish processing waste)"* This is understood to be; *Animal effluent and residues from abattoirs and poultry and fish processing; being from the slaughter and subsequent processing of these animals for meat and other by products in a "Processing Facility" or Factory on a daily basis.* If this is incorrect, and the Regulation simply lists a few examples of animal effluent and residues that a broad definition would apply to, the regulations should be stated as such. Further the Regulations should state that these are examples (not exclusive of other animal effluent production systems) to remove ambiguity. The Regulation currently does not. It is suggested to the NT EPA that this Act Regulation is not directly applicable to the ILEF per se. The ILEF is merely for holding livestock for short periods of time in yards. Most waste waters are generated through run off from yard areas. Small amounts of waste water are generated from a truck wash and from the office and rest area facilities. These waste waters are separately treated and disposed of in dedicated areas. An ILEF is similar to a beef cattle feedlot in some of its land uses and design

			attributes. It is however fundamentally different in its production systems. Attachment 2 provides comparison of the production systems.
	Current treatment and disposal options comprise the irrigation of treated effluent to pasture and onsite composting of manure generated from pens, yards, trucks, sediment basin, truck wash and occasionally cattle carcasses. It is likely that such activities would require an environment protection approval to construct the wastewater and composting treatment system and an environment protection licence to store, treat and dispose of animal effluent and residues under the *Waste Management and Pollution Control Act*.	A.1.2	As stated above, if the above Regulation includes animal effluent from intensive animal facilities such as saleyards, cattle feedlots and pre-export quarantine yards, environmental protection approvals and licences under the *Waste Management and Pollution Control Act* will be specifically sought. It is acknowledged that the ILEF is an intensive animal production system. However, while it has some attributes common to other such systems (land uses such as pens), it is fundamentally different to a grain feed "production" feedlot or a meat "processing" facility. As part of the ILEF development approvals, approval is sought for its primary pond and emergency / wet weather storage pond for rain-fall run off from the Wellard Darwin ILEF. Waste waters are expected to be low to medium strength which would normally allow a one in 2 and 5 year wet year overtopping / spill frequency (NSW DEC 2004[1]). A 1 in 10 year frequency has been applied which is inherently conservative for the development. The Department of Land, Planning and Environment (DLPE) has advised that an Environmental Protection License (EPL) is applicable for an "intensive animal facility" and the land uses set out in the EIS and Development Application for part of this facility. An EPL will be sought once approvals have been granted.
	Composting and reuse of manure is consistent with the waste hierarchy	A.1.3	The project design and layout has been amended. See Attachment 3. Attachment 4 provides the amended design and notes explaining the design

[1] NSW DEC 2004 NSW Effluent Irrigation Guidelines, Sydney NSW

	principles. The Supplement to the draft Environmental Impact Statement (the Supplement) should outline beneficial reuse criteria, including the proposed level of treatment that can be achieved by windrow composting and associated reuse options for the end product.		changes. The beneficial use criteria are those that are generally applied by the Queensland DEHP (see Skerman & QLD DPI, 2000). The Queensland government guidelines that applied to cattle feedlots, saleyards and pre-export quarantine facilities consider manure to be a "resource" and its reuse as a soil conditioner and fertiliser a most justifiable outcome. Manure and or composted manure can be applied to a soil and soil-crop system to deliver significant beneficial outcomes through increases in soil organic matter, and improve nutrient and water holding capacity. The project has reduced the composting area and will now only compost a small amount essentially with in a dry weather facility. Excess manure will be taken off site to collaborating land owners and a Wellard's owned property at Batchelor. These properties will use the manures as a fertiliser and soil conditioner. When composting at the ILEF, manure will be composted in 2m high windrows. To undertake composting, manure treatment is managed as a function of time and temperature. The composting operation will monitor temperatures to ensure the compost windrow remains thermophilic (>65^{o}C) so as diseases and weed seed destruction is assured. Compost will be held in a windrow for a minimum of 4-5 weeks (Skerman & QLD DPI, 2000). It will be turned regularly in this time. Formal Standard Operating procedures (SOP's) will be applied to the manure harvest, management, composting and transport and spreading process on the Wellard property. It will be managed within a quality assurance framework.
Solid waste management and separation	The major solid waste management activity is the composting of animal manure, sludge, animal bedding, food wastes and carcasses. The effectiveness of methods used for composting are impacted strongly by	A.2.1	The major waste management activity is cleaning of manure from pens and the placement of that manure into:

distance	the proposed management of water quality and potential for contamination, odour management requirements, and proposed separation distances.		(a) trucks for immediate off site transport to collaborating farms; (b) placement in short term heaps prior to (a); and, (c) placement of manure into windrows for composting. The effectiveness of composting is most determined by the moisture content of the manure, building of the windrow and regular turning. While possible composting of animal carcasses will be infrequent. Wellard have operated the 11,500 head Santavan PEQ for 6 years. The average number of deaths in this facility has been 50 head per year for the 2015 season (Wellard, 2016a). These animals are used for pet meat. Only bones remain as waste and they will be either composted, or rendered. Food wastes from workers and the office will not be composted on the site. These wastes will be placed in waste bins and be taken from site to a municipal landfill. Sludges from holding ponds will be evacuated from holding ponds and applied directly to compost wind rows and turned in immediately. If offensive odours arise they will be immediately mitigated by (a) direct application of lime, and or (b) turning of windrows, and or immediate removal of the odour source off site to a remote Wellard or collaborating reuse property. As a direct consequence of their current management practices, that in the 6 years of operation at Santavan, Wellard has not been advised of any verifiable and scientifically substantiated public complaint received by the NT EPA with respect to odour or any such negative external impact on the community or residents in the immediate vicinity.

	The EPA Victoria Guidelines[2] on separation distances for industrial residual emissions to air recommend a separation distance of 500 m for temporary holding, transport, sale or processing of stock. It should be noted that this type of facility does not include waste water ponds, waste water treatment or irrigation using odoriferous waste water.	A.2.2	In the EPA Victoria Guidelines (2013), 500 m is the listed separation distance for a "*stock saleyard*" industry. The "*stock feedlot*" industry is redirected to the *Victorian Code for Cattle Feedlots. These guidelines refer to the National Guidelines for the same.* The description of a stock saleyard under this guideline is "*where pigs, cattle or other stock are temporarily confined for sale, transport or processing*"; Saleyards hold livestock direct from farms. Here animals are held in confined areas and having come direct from farms they "empty" out. In the defaecation the subsequent manure production is from animals that have had a full gut generally of quality feed. The Saleyards typically have simple waste management systems and at times have to wash down the pens (eg pig pens) between sales. The Wellard Darwin ILEF is an integrated live export pre-quarantine facility for holding cattle that have been transport to a central holding point so that they can be checked prior to being loaded onto a ship. The facilities are NOT operated as a saleyard for all species of livestock nor as a "production" feedlot. See Attachment 2 which sets out the differences between a Production Feedlot and a Pre-Export Quarantine Depot. The Victorian guidelines for odour separation distances for saleyards are not applicable. The most relevant odour guidelines, are the conservative odour separation guidelines in, the *National Guidelines of Beef Cattle Feedlots* (MLA 2012). These are deemed to be suitable; given, appropriate modification and due consideration of the differences between a "production" feedlot and a "pre-export quarantine" facility.

[2] Environment Protection Authority Victoria, 2013. Recommended separation distances for industrial air emissions, Publication number 1518, Carlton, Victoria.

			These guidelines do take into account odour produced by wastewater systems.
	The presence of these additional facilities and methods for composting may require consideration of a larger separation distance.	A.2.3	The truckwash has a self-contained waste water recycling and management system. The presence of composting areas and waste water ponds proximate to cattle pens are taken into account by the *National Guidelines of Beef Cattle Feedlots* (MLA 2012), and thus the calculations contained within the odour assessment. This is reasonably applied in the modified calculation used in the draft EIS. Notwithstanding the project has been amended to substantially reduce the composting area and the amount of manure being held on the site. Given the reduced size of the facilities being presented in the amended design no increase in separation distance is warranted. Conservative, nationally regulated criteria have already been applied
	These include consideration of the following: • total mass of materials to be processed per year	A.2.4	Wellard operates the 11,500 head (550kg) or 10,695 SCU Santavan pre-export quarantine depot. In second half of 2014 and the whole of 2015 it harvested 3,484 tonnes (3,168m^3) and 13,516 tonnes (11,656m^3) of manure (Wellard Logistical Data, 2016). The through put of the yards were 51056 head for the second half of 2014 and 96,170 head for the whole 2015 period. The cattle sizes varied significantly from 300 to 600kg animals. Based on these actual data the manure generation rates are 0.5/T (DM)/SCU capacity per year (Wellard, 2016b). • The Solid and Liquid Waste Management Plan in Appendix H of the draft EIS sets out that approximately 190 ML of liquid waste and up to 15,000m^3 of solid waste (manure, feed/sludge) will be produced annually. • Since the preparation of the draft EIS further detail design has been undertaken of the ILEF and design amendments have been applied (see

			Attachment 4). • The wastewater treatment system has been designed to cope with these volumes. • The compost manure pad will have its compost sold off regularly and in the wet season will have the compost/manure sent to a secure facility in Batchelor and/or collaborative land owners to ensure that the compost/manure does not get wet and become odorous.
	• relative mass/volume of the materials to be composted (e.g. manure, sludge, carcasses, food wastes, animal bedding, etc.)	A.2.5	As stated in the solid and liquid waste management plan, up to 15,000m^3 of solid waste (manure, feed/sludge) will be produced annually, of which <500m^3 will be feed spoilage Based on past stock loss rates (2015) only 50 dead cattle per year have to be managed. Some are sold offsite for pet food rather than composted whole. Some bone waste has to be managed and it requires a small compost area; alternately it will be sent to landfill or rendered.
	• pasteurisation procedures (e.g. pathogen, plant propagule control, etc.)	A.2.6	In terms of solid waste, if aerobic composting is correctly managed, the amount of heat generated should be sufficient to reduce the viability of any pathogens and weed seeds which may be present in the raw material (MLA 2012). The Australian Standard AS4454 specifies standard processing requirements for pastuerization to destroy pathogens and to manage biological risks. The methods in this Standard or applicable alternates (as set out by the Standard) will be applied (see AS 4454:2012 Composts, Soil Conditions and Mulches). In terms of liquid waste, there is a three day withholding period from effluent application to pasture prior to use of the land for grazing (MLA 2012) At least one week of withholding will be applied between any waste water irrigation and cutting of the pasture / crop for hay to prevent any pathogen transfer.

			Waste waters from the "human" systems associated with the office and rest facilities are treated separately from the ILEF waste waters. The grey waters from this system will be applied to the lawn and garden surrounding the office. The waste waters from the rest facilities at the receival yards will be similarly managed. The pathogen profile of cattle is different from humans. Relatively few pathogens are transferrable between humans and cattle (these are generally limited to Q Fever, Leptosporosis and Gastro-entric zoonoses) ([3]Pelzer & Currin 2009; MLA 2006[4] & NT Department of Health 2011[5]) Most of these pathogens are in fact treated in cattle either prior to entry to the ILEF or at the ILEF. Given the treatments being applied potential transfer is low. The greatest risk of pathogen transfer is by Q Fever to workers in the yards handling cattle because of their direct contact with the livestock. Application of any wastewater to a soil–plant biomass removed residual bacteria due to (a) UV, (b) desiccation and (c) destruction by soil and plant microbes. (Lu et al 2012[6]) In addition a low pressure poly lined lateral move irrigator with drop hoses will be used to ensure that aerosols are not produced and spray drift cannot spread pathogens (MLA 2012). Soil and soil-plant biomasses provide the most aggressive means of reducing any odiferous impact from subsequent reuse of treated wastewater
	• reasons for not using aerated ponds or preferably enclosed anaerobic treatment (less odoriferous than anaerobic and usually required)	A.2.7	Aerobic ponds work best with steady state (constant daily) low strength waste water inflows. Aerobic ponds also require large amounts of energy to drive aerators. This

[3] Peltzer & Currin 2009 Zoonotic Diseases of Cattle, Virginia Cooperative Extension
[4] MLA 2006 Risk Assessment of Pathogens of Bovine Blood, Sydney NSW
[5] NT Government Department of Health 2011 Centre for Disease Control Q Fever Fact Sheet, Darwin NT
[6] Lu Q, He. Z and Stoffella. P.J. 2012 Review Article: Land Application of Bio-solids in the USA: A Review

			creates a need for a stable power supply. Given power outages and interference from electrical storms use of aerated systems should be avoided where power disruptions are likely. The ILEF produces most waste waters due to rainfall runoff. This means waste waters are generated by episodes and not every day. Waste waters are sporadic and of moderate to high strength. Provided that the anaerobic holding pond volume has been designed using a small-catchment hydrological balance, and a sedimentation system is used in conjunction with the holding ponds, the odour emissions produced by an anaerobic pond should be acceptable even during heavy rain (Casey et al. 1997[7]) An ill-managed aerobic pond can be more odoriferous than a well-managed anaerobic pond. An emergency lime dosing system will be use to rectify and imbalances.
	• assessment of the effects of local topography on odour plumes	A.2.8	The calculations in the odour assessment (Appendix C) take into account the topography of the site – calculation variable S3, Terrain Factor.
	• assessment of local meteorology, including high frequency localised events	A.2.9	The calculations in the odour assessment (Appendix C) take into account the rainfall and wind speed and direction that the site receives site – calculation variable S1, Feedlot Design and Management Factor; and S5, Wind Direction Factor.
	• quality of clay to be used for pads and compost base, i.e. should have a hydraulic conductivity of 1 x 10^{-9} m/s for	A.2.10	A geotechnical assessment of the materials at the site is presented in Appendix

[7]Casey, K. D., C. L. Lunney, P. J. Watts, and R. W. Tucker. 1997. Odour Emissions from Feedlot Retention Ponds Following Heavy Rainfall. Proceedings of the National Workshop on Odour Measurement Standardization. University of New South Wales, Sydney, Australia, August 20-22, 1997.

	fresh water and 50 000 ppm NaCl solution		N of the draft EIS. The data in this report shows that materials exist on site that meet or exceed the criteria of a permeability of $<1x10^{-9}$ m/s. Test Pit 7 has a measured permeability of 1×10^{-11} m/s These materials will be extracted on site and used in the construction process. Thus the clay based materials to be used in ponds and pads have a permeability of $<1x10^{-9}$ m/s. Application of a salt solution (NaCl) to the clay will cause the material to become sodic and thus cause soil dispersion, collapse and yes, may potentially reduce permeability. Such a measure is extremely poor environmental management as it also causes substantial weakening of soils and a loss of their structural integrity. Further, in poorly buffered soils the addition of salt may lead to the soil becoming hypersaline which when wet will cause clay particles to floc and then soil to become leaky. This suggestion by the NT EPA will not be taken up as it delivers a threat to the environment and sustainable operations; it is set aside. *Special Note. Dr Simon Lott is a Level 3 Certified Practicing Soil Scientist and a specialist in assessment of soil clay chemistry vs physics interactions and their engineering implications.*
	• physical protection of composting to protect the clay base from dehydration, cracking, and physical damage from composting activities	A.2.11	As stated in Section 7.3 of the EIS, the compost manure pad will be constructed of compacted clay covered with an armoured road base to protect the clay. The clay used has a relatively low shrink swell capacity and given the gravel and sand content it will have together with the armoured cover materials such a consideration can be set aside.

	• source of non-contaminated water for keeping compost moist following pasteurisation (e.g. does the proposed use of water from the anaerobic open pond treatment conform?).	A.2.12	The water used to keep compost moist will be from the freshwater runoff dam, and if required, bore water. All treated waste water will be applied to the irrigable area. The sites irrigation area has a water deficit and thus it is not sensible to direct waste waters separately to the compost area.
Risk Assessment	The objective of project specific risk assessment is to ensure that significant risks are identified and evaluated such that appropriate risk treatment can be implemented to mitigate risks. Risk assessment provides a mechanism to demonstrate to stakeholders that the project's environment risks are recognised, and that treatment measures are developed to adequately reduce risks to acceptable levels during the execution of a proposed action.	A.3.1	A detailed risk assessment and risk mitigation strategies have been provided in the Environmental Management Plan (Appendix E). This will be duplicated and clarified in the supplement.
	The Northern Territory Environment Protection Authority (NT EPA) requires an EIS to be undertaken in a risk assessment framework. The framework as defined by the International Organisation for Standardisation ISO 3100:2009 Risk Management – Principles and Guidelines, is as follows: 1. Establishment of context 2. Risk identification 3. Risk analysis 4. Risk evaluation 5. Risk treatment	A.3.2	A detailed risk assessment per these principles and guidelines has been provided in the Environmental Management Plan (Appendix E). The risk assessment has been enhanced. It is included as an appendix in the supplement

	6. Monitoring and review 7. Communication and consultation. When compared to the above framework, the draft EIS establishes the context; and discusses suggested risk treatment, monitoring and review and communicating and consultation throughout the remainder of the draft EIS. However, the credibility of the output of these processes is contingent on the procedures being used correctly and thoroughly. This involves clearly defined steps from ISO 3100:2009, which start with a statement of the objective/s of a particular analysis, the context of the analysis, definition of the risk criteria to be used, and in semi-quantitative/quantitative analyses, use of likelihood and consequence to provide ratings of the risk to attainment of the particular objective/s. Corporate objectives (e.g. reputation, finances, etc.) and identification of sensitive receptors, contaminant pathways, events, event frequencies, are also considered relevant. All steps must be included to provide a rigorous outcome.		
	The rigour of the analysis is dependent on articulation and use of clearly substantiated justifications for the levels of likelihood and consequence used to determine risk to objectives, and similarly expressed justification for likelihood and consequence in determining the effectiveness of mitigation and subsequent residual risk.		Specialists have been consulted in regard to the assessment of risks, practical application of mitigation measures and the determination of residual risk.
	The level of uncertainty associated with the justifications needs to be addressed. The NT EPA identified that the risk assessment for the ILEF applied poorly defined risk criteria and there was an absence of appropriate justification for the levels of likelihood and consequence chosen. Public confidence in the outcomes of the risk assessment is critical.	A.3.3	A detailed risk assessment and risk mitigation strategies have been provided in the Environmental Management Plan (Appendix E). This will be provided in the supplement document. The level of uncertainty associated with the justifications will be addressed in the duplicated risk assessment. The level of uncertainty associated with the mitigation, management and monitoring strategy (residual risk) is included for each impact area discussed in Section 7 under the heading “Confidence in Predicted Outcomes”.

	It is recommended that the risk assessment for the ILEF be revised in its entirety to ensure that the risk assessment framework is clearly defined, executed and presented.	A.3.4	The risk assessment has been revised to include the level of uncertainty and improve clarity. The revised document is included as an appendix in the supplement document.
	The assessment needs to identify the nature of the risks and potential impacts; assess the effectiveness of the proposed mitigation and management measures; and provide sufficient information to allow the decision-makers to understand whether or not the Project will have unacceptable impacts on the environment.	A.3.5	A detailed risk assessment has been provided in the Environmental Management Plan. The revised Risk assessment and Environmental Management Plan are included as appendices in the supplement document The level of uncertainty/effectiveness of the mitigation, management and monitoring strategy (residual risk) is included for each impact area discussed in Section 7 under the heading "Confidence in Predicted Outcomes".
	Items to consider include: • the majority of risk assessments were conducted using a single hazard with multiple potential sensitive receptors, and arrived at a single risk value with limited explanation of how this could be done given the probably widely ranging likelihood and consequence values for each of the receptors (e.g. transport of cattle in relation to odour, dust, noise, traffic, weeds, vermin, and greenhouse gases, etc.). There should have been separate objectives for each receptor for each hazard, and risks for each receptor summed across the various hazards involved. This would allow full assessment of risk to objectives and allow provision of appropriate mitigation and monitoring as required.	A.3.6	The figures given in Table 10 of the EIS are the summarised result of the full risk assessment of the Environmental Management Plan, which takes into account individual hazards of multiple aspects of the ILEF. The risk assessment has been updated. Separate objectives have been provided where applicable. Detail on mitigation measures has been added. Monitoring has been amended where required. The Environmental Management Plan (EMP) has been amended accordingly. The revised Risk assessment and Environmental Management Plan are included as appendices in the supplement document

	• avoiding assessments involving more than one hazard with likely differing likelihoods and consequences (e.g. surface runoff/spills of effluent to surface water)	A.3.7	This is addressed in Appendix B of the Environmental Management Plan (Appendix E of the EIS). The revise Environmental Management Plan is attached as an appendix to the supplement document
	• improper identification/confusion of hazards and potential impacts (e.g. biting insect breeding is classed as a hazard and insect bites as a consequence. The hazard is creation of breeding sites for biting insects, and the impact is large numbers of biting insects and lots of bites. This allows for the risk to be subject to mitigation via management of habitat)	A.3.8	This will be reviewed prior to moving the environmental management plan risk assessment into the EIS document.
	• incomplete identification and assessment of hazards (e.g. application of irrigation at varying rates, and nutrient levels in irrigation water, etc.)	A.3.9	The hazards have been fully appraised and the risk assessment has been updated. The Environmental Management Plan (EMP) has been amended accordingly. The revised Risk assessment and Environmental Management Plan are included as appendices in the supplement document
	• where a single sensitive receptor is subject to potential impacts from more than one hazard, the risks of impacts from each source of impact must be assessed separately, and the level of cumulative risk to the receptor determined; usually through summation of risk estimates.	A.3.10	This has been addressed in Appendix B and in Section 3.2 of the Environmental Management Plan (Appendix E). The revised Risk assessment and Environmental Management Plan are included as appendices in the supplement document
Water quality	The risks to water quality have broadly been identified and considered in the draft EIS. However, a more comprehensive assessment of the Project's potential risks to the quality and quantity of the receiving groundwater and surface water systems, including the downstream recreational areas and Darwin Harbour,	A.4.1	The predominant risk of the ILEF to surface water quality is through loss of nutrients (nitrogen, phosphorus, salts) and sediments in rainfall runoff. This is substantially mitigated. The entire ILEF is confined within a “controlled drainage area” (CDA). The

	should be provided in the Supplement.		hydrology of the area has been modelled on a daily time step and the pond systems sized so that they can contain all rainfall runoff for 90% of all years. If an over flow occurs that over flow first enters the fresh water tailwater systems where it is diluted before it leaves the property. Thereafter the dilution is massive as the entire Hardy Creek and Berri Creek catchments are in significant flood. Dilutions have been calculated as being greater than 1 in a billion. A tailwater drainage systems captures all rainfall runoff from the irrigable areas. Additional information has been provided in the Supplement in the section "Surface Water Management" and the subsequent appendix..
	At a minimum, an evaluation of the contaminants and microbiological pathogens from the project potentially entering the waterways and/or aquifer and risk mitigation and monitoring should be provided.	A.4.2	The main surface water contaminants mentioned in the draft EIS are nutrients and sediment. The main contaminates in any escape of treated waste water are likely to be organic matter and small amounts of potassium, nitrogen and phosphorus. The management of these are asserted in the monitoring program in the Environmental Management Plan (see Appendix E in the draft EIS). There are relatively few studies on pathogens in feedlot effluent (MLA 2012). Those studies found that bacterial counts (*Escherichia coli* and *Enterococcus faecalis*) are prevalent in raw feedlot effluent, but pond storage produces significant reductions in these micro-organisms. (MLA 2011). Application of any wastewater to a soil–plant biomass removed residual bacteria due to (a) UV, (b) desiccation and (c) destruction by soil and plant microbes. (Lu et al 2012[8]). The (residual) risks is considered very low given the mitigation measures that are being applied:

[8] Lu Q, He. Z and Stoffella. P.J. 2012 Review Article: Land Application of Bio-solids in the USA: A Review

			• capture, retention and treatment of waste waters; and, • application of treated waste waters to land when there is a water deficit in a soil profile associated with an actively growing improved pasture / fodder crop
Seasonal Inundation	The north-western corner of the site is currently subject to seasonal inundation, receiving significant input from discharges from the superficial aquifer.	A.5.1	Litchfield Council mapping shows no seasonally waterlogged or severely waterlogged areas on the property (See Surface Water Management Plan**Error! Reference source not found.**). The plans are based on a basic assessment from aged mapping. Recent aerial imagery shows that the north-west corner of the property appears greener than its surrounds during the wet seasons; indicating moister soil conditions. A thorough inspection has been made of the railway and railway easement and its drainage. The drainage is impeded below the property with the railway embankment causing some damming of flows and a resultant backwater effect. Discussions will be initiated with the owners of the railway in regard to their improvement of drainage on the eastern side of the railway. The freshwater pond will be the only piece of infrastructure interacting with this area. This pond receives tail waters from the irrigable areas and some freshwater rainfall runoff. A pump will extract fresh water from this dam for reuse purposes being additional (clean) irrigation water, wetting of composting, wash down waters etc. The effect of improved drainage on the NW corner of the property to the railway easement and placement of a fresh water dam in that corner with an extractive pump will be that the corner will be effectively dewatered.

	The drainage system seems unlikely to eliminate the transport of water in the superficial aquifer to the north-western corner. There are risks associated with the discharge of groundwater in the north western corner (including nutrient and salt contaminated water from the irrigation area).	A.5.2	These suppositions by the NT EPA are not correct. Transient flows in near surface soils are substantially interrupted by; (a) The cut-off drain below the irrigable area. This drain is cut to about 1m in depth. It will intersect any transient downslope flows from the area above the ILEF; and thus remove their downslope flow. (b) The land uses in the ILEF are all engineered surfaces that are largely impermeable. (c) The large roof area covering some 5% (4.5ha) of the ILEF will directly intercept rainfall runoff and prevent any of that water interacting with the land surface (d) The extraction of surface waters from the tailwater dam. The aim will be to keep this dam empty so that it stores are excess surface waters (or for that matter near surface transient flows) These design attributes deliver a significantly higher level of direct intervention than; those employed by (a) the approved AA Co abattoir, (b) the numerous household domestic waste water disposal systems, within the broader Darwin Catchment Area (c) the Santavan (and other) PEQ that has no runoff control systems what so ever, and (d) cattle grazing areas in the catchment. In short the ILEF, in all probability, poses less risk than the existing land uses on the property and surrounds.
	The Supplement should include an assessment of how this affects the integrity of the two water storages in this area and proposed uses of this water. Appropriate mitigation/management measures should be provided.	A.5.3	The land uses with the Controlled Drainage Area (CDA) above each sediment basin are engineered. They are relatively impermeable being roof, pen surfaces, road surfaces, or concrete. The sediment basins are concrete. The primary pond is built to be both above and below the natural surface. The primary pond is designed with an engineered liner. It comprises a clay liner

			covered by an engineered armouring. A cut off drain is placed around the primary pond so that any near surface soil waters is drained away. The wet weather / emergency storage is constructed above and below ground. It is lined with a 2mm HDPE liner and weighted down with bed weights. A shallow groundwater extraction system will be used to prevent shallow ground waters creating a positive pressure against the liner The design and construction of the ponds as mentioned in comment A.5.2 and A.5.3 will mitigate the effects of a high water table.
Irrigation	The Environmental Management Plan should include an Irrigation (Waste Water) Management Plan, which outlines measures for ensuring waste water produced during operation is managed in a way that protects the environmental values and beneficial uses of surface and groundwater resources during both Wet and Dry seasons. The Irrigation (Waste Water) Management Plan should include: • thresholds and criteria for wastewater and outline the additional mitigation measures in the event that the thresholds / criteria are exceeded	A.6.1 A.6.2	An Irrigation Management Plan has been developed and included as part of the final EIS. It is included in the Supplement document. The key thresholds are; • System exceedance is the wettest year in 10; which is applicable for high strength wastes (NSW DEC 2004[9]) • pH<5 or pH>9 will kill crops • Chloride (Toxic) • Inorganic Nitrogen (Burns plants). Waste waters are expected to be low-medium strength waste waters and as

[9] NSW DEC 2004 NSW Effluent Irrigation Guidelines, Sydney NSW

			such a sill frequency of 1 in 5yrs would be deemed acceptable in Qld, NSW and Victoria. The proposal exceeds these thresholds. • The wet weather storage by-washes into the tailwater dam. This provides further storage and or immediate dilution of any spill • A tailwater system that collects all tail-waters from the irrigable areas. These design criteria are "best practice" across intensive animal industries.
	• results from studies/assessments of anticipated water quality likely to be used for irrigation	A.6.3	An assessment of waste water quality achieved at grain fed cattle feedlots and saleyards has been undertaken. Raw waste water quality from these facilities ranges from >100 mg/L for Total Nitrogen, >20 mg/L for Total Phosphorus, >1,500 mg/L for BOD and >1,000-2,500 mg/L for Total Dissolved Solids as high strength waste waters (NSW DEC 2004). These are expected to be significantly higher than the run off from the ILEF. Given the lower nutrient profile in the ILEF manures and the higher rainfall over clean yards it is expected that the raw waste water quality would be in the order of 7.2 pH, 4000µS, 0.25% TS, 150mg/L Total Nitrogen, 15mg/L Total Phosphorus, 300mg/L Potassium and 150mg/L Sodium. With treatment in the primary pond and storage in the wet weather / emergency storage then the water quality is expected to be reduced to approximately 50% for the Total Nitrogen, 25% for Total Phosphorus and 10% Potassium. Thus the waste waters are expected to be a low-medium strength (Appendix M 23870.77886_Wellard_Darwin_Soil_Survey_Rev C).
	• rates of application of irrigation water	A.6.4	The rates of irrigation are defined by: (a) the ARR of the irrigation systems which is dictated by the infiltration

			rate of the soil; (b) the irrigable capacity; (c) the irrigation return frequency; and, (d) the nutrient loading rate (see Section 5 in Appendix M in the Draft EIS). These are set out the irrigation management plan.
	• measures to manage excess nutrient and salt input and associated odours at various times of year	A.6.5	The irrigation of waste water and recycled (fresh) tail-waters will be undertaken on actively growing improved pastures. The irrigation area has a nutrient deficiency of nitrogen and phosphorus (see Section 5.5 in Appendix M in the draft EIS). No odour emissions are expected through the irrigation process because: • the irrigation water is applied by droppers directly to the grass sward or the soil; and, • the collective biomass will quickly sorb nutrient and any volatile chemicals. If odours occur an emergency lime dosing system will be used to adjust the pH of the waste waters and eliminate any malodour.
	• the predicted rates of build-up of salts	A.6.6	No deleterious salts are expected to build up. This is because; the application rate of salts (gross salts including plant nutrients) is expected to be less than 712.50 kg/ha/year and given applications of manure, lime and gypsum to the irrigable area these will be readily displaced by the leaching fraction.

			No salts will build up. SaLF Modelling was undertaken. The results of the modelling have been included in the Supplement. Waste water will be applied to the land area when there is a crop water deficit. It is mostly applied in the period April – October each year: the "dry season". Fresh water will be applied to maintain crop growth when there is no waste water for irrigation. Fresh water can be applied together with the waste water as a shandy; if required. The SALF modelling shows that the annual average deep drainage is only 11mm/ha/annum. Most occurs in the wet season; little occurs in the dry season associated with the irrigation. In extreme wet seasons deep drainage may exceed 100mm/year and is driven solely by heavy rainfall. The deep drainage is restricted by the clay layers in sub soil and the ferricrete at depth. This is discussed in Section 3.9 of the Draft EIS and the Soils report in Appendix M of the EIS.
	• the estimated rates of leaching of nutrients/salts to surface water during the Wet season	A.6.7	Salts leach downward in the soil profile as deep drainage. The loss of nutrient to surface waters is generally through sediment removal and entrainment, or, some bleaching from plant residues. Given that all excess water from the irrigation area is conveyed to and then captured by a tail water systems then it is not expected that less nutrient will be lost in the wet season in comparison with surrounding rural areas where septic systems are not protected similarly from nutrient loss in the wet season.
	• the estimated rates for nutrients/salts to leave the site associated via the high transmissivity of the superficial aquifer	A.6.8	Almost no nutrient or salt is expected to leave the site via the superficial aquifer because; • A cut off drain is located on the downhill side of the irrigable areas;

			this is cut to a depth of about 1m to intersect these transient flows. • The surface waters and near surface transient flows are caught by this drain and directed straight to the tailwater dam; waters from this dam are recycled back to the irrigable area • The organic matter and applied lime and gypsum and insitu clays will capture and bind nutrient.
	• assessment of plant growth, nutrient uptake or harvest frequency	A.6.9	The amount of dry matter to be harvested from the irrigable area is described in the Nutrient Budget table (Table 9) on page 15 of Appendix M in the draft EIS
	• monitoring program and water quality criteria.	A.6.10	Groundwater, surface water and soil monitoring have already been included as part of the environmental management plan. Annual soil sampling will be undertaken across the irrigable areas to assess soil fertility and any nutrient deficiencies or excess amounts. Management of the soil profile to mitigate these issues will be then immediately deployed based on sound agronomic advices. Monitoring of ground waters below the site (downslope) will monitor the water quality of the ground waters down gradient of the development.
Odour Assessment	A key environmental risk associated with the ILEF relates to offsite impacts from odour on residents in nearby rural properties. The Odour Assessment provided as part of the draft EIS was preliminary and based on a number of assumptions that require further consideration in the Supplement, which include but are not limited to: • There was limited data and discussion on odour generation, modelling, management and monitoring, or on waste water/irrigation	A.7.1	Odour generation, modelling, management and monitoring were discussed in detail in Appendix C. The entire hydrology of the catchment and its irrigable area has been modelled hydraulically using the FSIM model (Lott, 1998). This model and its data underpin all State and National Guidelines for beef cattle feedlot waste water systems. Wastewater and irrigation water management and particular monitoring

	water modelling, management or monitoring.		aspects were discussed in the Liquid and Solid Waste Management Plan: "*Monitoring of treated wastewater (nitrogen, phosphorus, potassium, sodium) and irrigation block soil (nitrogen, phosphorus, P-sorption capacity, sodium) will be carried out at minimum biannually and results maintained for a minimum of 5 years.*" More irrigation detail will be described in the Irrigation Management Plan attached as an appendix to the Supplement document.
	• Odour modelling is essential to confirm or invalidate the proposed separation distance.		Odour modelling is only applicable if adequate data exists for that exercise. In the absence of quality data on generation rates, emission rates and indeed their transport empirical means are best applied. This statement by the NT EPA is misleading and not appropriate given the size of the development, the level and nature of the assessment that has been applied and the simple lack of data.
	• This is particularly important given the Environment Protection Authority Victoria Guidelines[10] on designing, constructing and operating compost facilities indicate that composting of green waste (far more benign than the material proposed for this project) would require a separation distance of up to 2 km if composting was to be conducted in the open air (depending on mass processed per year).	A.7.2	Composting in the Melbourne basin includes the composting of organic materials including; spend sheep hides, tannery by-products, spent cooking oil, grease trap wastes, STP bio solids and may other extremely volatile organics; which are then incorporated into green wastes. Green wastes are, even by themselves, quite unstable and certainly not necessarily more benign to compost than manure. They are often from well fertilised succulent gardens, and thus may have high moisture contents. The green wastes may not have been turned prior to receipt and can be highly odiferous. Unlike manures green wastes have not passed through the gut of an animal. Manure is the outcome of roughage that has undergone digestion and had

[10] Environment Protection Authority Victoria, 2014, *Draft Guideline – Composting, Publication number 1577*, Carlton, Victoria.

			nutrients and cellulose stripped from the plant matter. As a result, green waste is more volatile and more likely to combust in a composting process. When green waste is mixed *Special note: Dr Simon Lott undertook an assessment of all composting facilities within 50km of the city of Melbourne for Victorian Hide and Skin Producers (VHSP) and assessed their capacity, level of competence, products used (mix) and compliance with regulations. This assessment included some 85%+ of all composting in the State of Victoria. He is very knowledgeable about the composting process and odour generation that may result when it is not done properly. The Victorian EPA guidelines are applicable where unstable organic wastes are being mixed. Generally, they would not be directly applicable in the Northern territory to a high roughage low nutrient manure.*
	• The guidelines recommend that composting of the materials proposed should be conducted in an enclosed space (on concrete), and is likely to require odour controls. Without this information, it is difficult to assess the adequacy of the risk assessment and the mitigation / management measures.	A.7.3	The Victorian Guidelines makes this suggestion given the nature of the more unstable organics that are used in those States composting operations. The size of the composting area has been reduced from 31,105m^2 to 3,190m^2 for Stage 1 and 5840m² in Stage 2. This is a significant decrease in area; most manure will be sent to Wellard's property at Batchelor and collaborating properties for reuse or sale prior to the wet season. The limited composting that will be done at the ILEF will be done in the open air and during the dry season. The entire site will be cleaned prior to the wet season and then cleaning and composting will resume when the dry season arrives.
	• The Odour Assessment proposes the use of standardised cattle units based on the number of animals in the yard and the time the animals are held. The average number of cattle units is then used to conclude what Level of	A.7.4	Please see Attachment 2. This shows the difference between the production systems. Please see Attachment 4. This attachment shows tabulation and graphs of the "herd" dynamics between a grain fed production feedlot and an ILEF. The "normalisation" of the data is a standard simply mathematical calculation

	assessment is required. Given that operations will require rapid stocking and destocking of large numbers of cattle on the site there is potential for short periods of odour nuisance. The Supplement should provide justification for using averages as a 'normalised stocking rate'. The Supplement should outline whether the timeframe used in Figure 3 and 4 of Appendix C is adequate to fully consider human odour perception. The Supplement should justify why other methods that take into consideration temporal scales that are more relevant to human odour perception (i.e. peak to mean factors) were not used to determine average SCU.		that is factual see calculation sheet in Attachment 5. The NT EPA statement that; *Given that operations will require rapid stocking and destocking of large numbers of cattle on the site there is potential for short periods of odour nuisance.* is not correct. Most of these cattle will be resident for less than 4 days in the facility. Most of the livestock will be under rooves, most of the livestock will have an empty gut upon arrival and that gut will take 2+ days to become active and then let alone provide faeces for defecation. Odour from wet manure is unlikely as either the dry season will prevent wetting or, in the wet season, cattle will be predominantly handled under the rooves. The key determinant for odour will be dust and dust transport. It is for this reason that a dust suppression system has been designed into the facility. (see Plate 1 below).  **Plate 1 example of dust suppression sprays over stock pens**
	• The Odour Assessment stated that "*Odour from waste water ponds are considered to be part of the feedlot complex that is assessed in*	A.7.5	Henry et al (2102) concludes that *"an industry specific odour impact criterion must be expressed in terms of all*

	any separation distance calculation". There is published evidence that holding ponds and sediment basins produce odour emissions (Henry et al 2012[11]). Given that there is potential for the holding ponds to produce odours, the Supplement should outline how the 'modified separation distance calculation' takes into account the ponds (see chapter 5 of Appendix C).	*of the components of the assessment methodology".* The data collected by Henry et al (2012) are from an agricultural system that has odour sources containing materials different from those in a pre-export quarantine facility. The data are from two (2) grain fed production feedlots with feed and cattle management systems that are dissimilar to the proposed ILEF. Thus, the generation, emissions, and transport algorithms and data from Henry et al (2012) are, simply, not applicable. Furthermore and in addition to these facts: • The ILEF has 40% of its total capacity rooved; • The sedimentation basins being used in the ILEF are, vastly different from those used in a feedlot. They are concrete lined and they are "drive-through" meaning that a bobcat or front end loader is able to drive through each bay to collect sediments following rainfall events. Wet manures do not accumulate in a basin as they do in the feedlots studied by Henry et al (2012). • The primary pond spends the vast majority of its operating time empty (~7+ months per year). Skerman (1996[12] & 2000[13]) undertook a study of odour complaints from feedlots in S Qld and related them to odour separation distances. He found that the odour separation distance calculation provided a very good fit.

[11] Henry, C.G., Watts, P.J., Nicholas, P.J., 2012, The Development of Industry-Specific Odour Impact Criteria for Feedlots using Models, Journal of the Air and Waste Management Association, 58:((9):1177-1186

[12] Skerman, A.G., Casey, K. D., Gilloway, A. J. and Williamson, W. D. (1996), *The Impact of Technology on the Queensland Cattle Feedlot Industry As Measured by the Incidence of Public Complaints*, Proc. Conference on Engineering in Agriculture and Food Processing, University of Queensland, Gatton College, 1996, Paper No SEAg 96/020.

[13] Skerman, A. G., Casey, K. D. and McGahan, E. (2000), *Analysis of Complaint Records for Queensland Cattle Feedlots*, Proc. Enviro 2000 Odour Conference, Sydney, 9 – 13 April, 2000

			A modified odour separation distance calculation has been applied using this feedlot algorithm. It has been modified to take into account the systems differences. In alignment with the methods outlines in the Qld State and National Beef Cattle Feedlot guidelines; sedimentation basins and holding ponds have been considered as part of the facility and its separation distance calculation (see Pg 44, MLA, 2012[14]). The wet weather runoff dam is not accounted for in the buffer as it is infrequently used and when it is filled it is filled with relatively dilute waste waters. If any odour should occur, it will be dosed with lime through a recirculation system which will immediately remove the same.
	• The odour assessment should include the irrigation area.	A.7.6	No offensive odours are expected from the irrigation area and its use of wastewaters. Good practices will ensure that the irrigation area is irrigated through the day when the soil has a moisture deficit and the plants are actively growing. If odour is noted then irrigation will cease until the wastewater can be treated through the recirculation systems.
	• The odour framework outlined by the NSW EPA (Department of Environment and Conservation NSW 2006[15]) provides for a number of assessment procedures designed to progress in complexity and reduce uncertainty (moving from a Level 1 assessment, through Level 2 to Level 3). This framework is designed to account for project demands and ensure that the most complex situations are supported by more robust odour assessments.	A.7.7	The ILEF has a normalised capacity in Stage 1 of just 1,814 SCU. It is a modest development. The ILEF has a substantial area of pens covered by a roof (40%). Given the relatively small size of the facility (on a normalised SCU basis), the complete lack of odour generation, emissions and transport data from pre-export quarantine livestock export facilities; a Level 1 assessment modified for the differences in agricultural systems is considered best practice. To attempt to use a Level 2 or 3 assessment would be scientifically inept due

[14] Meat and Livestock Australia (2012), *National Guidelines for Beef Cattle Feedlots in Australia*, Sydney NSW.
[15] Department of Environment and Conservation NSW, 2006, Technical framework – Assessment and management of odour from stationary sources in NSW, Sydney.

			to the unavailability of baseline raw data to apply to this degree of modelling.
	It is noted that limited availability of data restricts the ability to undertake dispersion modelling studies (i.e. a Level 2 or Level 3 odour assessment), yet in the case of the ILEF, the absence of information on odour emission rates and suitable meteorological information does not justify the use of a Level 1 assessment: o Wind information exists for the Noonamah and Middle Point weather stations. Given these data exist and are more relevant climatically to the ILEF, outline why data from Darwin Airport was used rather than these datasets. o With respect to the availability of information on odour emission rates, there are a number of published studies quantifying odour emissions from feedlots and manure pads using a range of techniques.	A.7.8	The most important data required in the odour modelling process is actual data on odour generation rates and emersions rates. None of these data are available to allow any from odour modelling to be undertaken in a meaningful way (see response to 7.5 above). Whilst wind data is available for sites nearer to the proposed ILEF site (Noonamah and Middle Point), these data are only for the records of 9am and 3pm wind conditions with data for the last 14 months only available. For a detailed level 2 or 3 odour assessment site specific hourly run data is required. The nearest weather site with this information was Darwin Airport. The Darwin Airport site has the best quality data and quantity of data within the region being considered. The 9am and 3pm data for these two sites have been included in the "Supplement"; they are however of limited value. Please see Attachment 2 that describes the differences between a production feedlot and a pre-export quarantine livestock depot. There are no published studies of odour emission rates from pre-export quarantine facilities. There are no published studies of odour emissions rates from manure surfaces in northern Australia There are no published odour studies from sedimentation basins below semi-confined PEQ facilities such as that proposed by the Wellard ILEF. The NT EPA's statement is not correct and can only be set aside.

	○ While it is preferred that odour emissions data are derived from (see review by Henry et al 2012 [16]) measurements that are assumed to be representative of the development, the use of published data may serve as a proxy for these measurements.		Please see Attachment 2 that describes the differences between a production feedlot and a pre-export quarantine livestock depot. The data described by Henry et al (2012) are for two (2) production feedlots. They are not applicable to the Wellard Darwin ILEF nor to any pre-export quarantine facility.
	• There are concerns that the Level 1 assessment does not fully address the potential impacts of seasonality of emissions/impacts or consider future land uses.	A.7.9	It is not feasible, sensible, practical to undertake a Level 2 or 3 assessment. In the absence of specific generation, emission data and in light of the paper by Skerman (2000) a modified Level 1 assessment has been applied. It is noted that the NT EPA has no guidelines for (a) the environmental management of pre-export quarantine livestock export facilities, and, (b) odour assessments. Further the NT Government has explicitly excluded the livestock export industry from inclusion in the National Feedlot Guidelines and their subsequent application Given these issues the application of the, modified, Level 1 assessment is considered to be the application of best practice.
	• The Supplement should provide additional information (or a Level 2 assessment) to properly address these matters.		The "Supplement" has included additional information (a) on the assessment of odour.

[16] Henry, C.G., Watts, P.J., Nicholas, P.J., 2012, The Development of Industry-Specific Odour Impact Criteria for Feedlots using Models, *Journal of the Air and Waste Management Association*, 58:((9):1177-1186

			(b) Odour management and mitigation (c) The odour assessment that will be undertaken prior to any move from Stage 1 to Stage 2. Before the ILEF moves from Stage 1 to Stage 2 Wellard will conduct a detailed odour assessment based on the operations of Stage 1; this will involve; benchmarking operations against odour performance, application of onsite measurements (weather and odour emissions). Wellard and EnviroAg Australia have applied for funding from the MLA and Livecorp to undertaken research and data gathering from the new facility to support the same and obtain data for the NT Live Export industry and the NT community.
	• The matter of cumulative odour impacts has not been adequately addressed. Section 7.7.4 of the draft EIS proposed the establishment of an "agricultural business precinct" and notes that there are currently neighbouring operations that have some aspect of animal husbandry. These operations are highly likely to generate odours that may contribute to a cumulative impact. The Supplement should include further clarification and justification with respect to existing sources of odour and include a revised odour assessment outlining how the ILEF will contribute to cumulative odour emissions in the Livingston Locality.	A.7.10	Cumulative impacts can be set aside. The Department of Lands, Planning and Environment has advised Wellard and all stakeholders that (a) the AA Co Meat processing facility has been approved that all its odours are to be managed inside its boundary, and (b) the Santavan PEQ yard has not been included in future land use plans. The redesign on the ILEF included with this supplement also has been engineered to ensure that any potential odiferous impacts are contained within the boundary of the property.
Section 7.7.2 Table 13	A buffer width of 496.4 m was recommended in the draft EIS. The buffer was based on the cumulative impact separation distance calculation, which assumed completion of upgrades at the adjacent Santavan facility. Details of how the Santavan facility will be upgraded and appropriate discussion regarding how the upgrades affect the separation distance	A.8.1	The design of the ILEF has been reconfigured to ensure that the odour buffer of the ILEF alone does not encroach on neighbouring properties to be developed into urban/peri-urban areas, per the East Weddell Development. This includes the Santavan property, which is planned to become urban/peri-urban under the Darwin Regional Land-Use Plan. Wellard have been advised that the Santavan facility will not continue as a pre-

	calculations should be provided in the Supplement.		export quarantine yard, in the future as the land is to be developed for peri-urban and urban use. The odour buffers have been updated to reflect this change. This figure is attached in Attachment 4 and included in the Supplement document. If upgrades were to take place, the facility ought to be improved to an equivalent level of a Class 1 feedlot design and management criteria.
Page ii	The draft EIS notes: "*The pre-quarantine export yard is covered. The open feedlot will not be operated during the wet season (per se) and will be cleaned prior to the wet so there will be no manure pack to generate significant amounts of offensive odours*" The Waste Management Plan does not detail what will happen to the manure pack prior to the Wet Season and after compost has been removed. Given that all compost is planned to be removed from the site prior to the Wet Season, please update the Waste Management Plan to identify whether the manure pack will be stored onsite or transported offsite for disposal. If the manure storage/composting pad is uncovered, outline what measures will be used to maintain composting conditions during the Wet Season as per Table 11.	A.9.1	The manure/compost will be transported offsite to a secure facility prior to the wet season, and the Liquid and Solid Waste Management Plan will be updated to reflect this.
Section 7.9.3	The draft EIS stated: "*Maximum acceptable increases of dust will be 1 or 2 g/m^2/month over pre-existing levels (Cattle and Elias 2003)*" The reference list in the draft EIS does not include 'Cattle and Elias 2003' and searches for this publication were unsuccessful. Provide this publication, or alternatively provide different evidence to support the 'proposed acceptable increases of dust', in the Supplement.	A.10.1	Below is the reference for the citation stated in the EIS: Cattle, S., & Elias, S. (2003). Dust deposition across the central wheat/sheep belt of NSW. *Agricultural Science* 16(1), 42-46. It is also found in: NSW 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.

Section 3.6.2	The draft EIS stated that "*the "standard cattle unit" (SCU) is for a 600 kg animal held full time in a yard. The SCU unit is used to define manure build up rates, manure moisture contents and likely odour generation rates. Given a peak holding capacity of 12,000 SCU then the real full time equivalent capacity of the PEQ yard is 3,000 SCU*". The National Beef Cattle Feedlot Environmental Code of Practice[17] outlines the method to be used for determining SCUs and states: "*At any point in time, the <u>total</u> number of SCU in a feedlot can be calculated by multiplying the number of cattle in the feedlot by a scaling factor that allows for adjustments for differences in the size of cattle….*" Given that the facility will have a peak holding capacity of 12,000 SCU, the method used to calculate the "*real full time equivalent capacity*" (3,000 SCU) appears to differ from what is described in the National Beef Cattle Feedlot Environmental Code of Practice. In the Supplement, provide examples of other facilities where the Cattle Units have been standardised based on the holding period and any research or evidence that this method is appropriate.	A.11.1	This statement is not correct and is an error in the main EIS. Please see the normalised capacities that are set out in Appendix C in the draft EIS. And the calculation has been explained in Attachment 5. The feedlot has been removed from the Stage 1 development. The "feedlot" is simply the short term holding of sick or underweight or poor cattle between shipments. It is named a feedlot because they may be held over 30 days on "feed". The feeding will not be grain fed production lot feeding. The ILEF has a normalised capacity in Stage 1 of just 1,814 SCU (average: based on 12,000 SCU peak holding). It is a modest development. The data has been amended in the Supplement and the EIS. The 12,000 SCU is a peak holding capacity for about 24 hrs. The dynamic of the ILEF herd is shown in Attachment 4 in tabulated and graphical form. A comparison is made with stocking of a production feedlot. The herd dynamics are totally different. This calculation is simple maths (area under the curve) and it is entirely factual and appropriate. Indeed the calculations are in fact conservative because manure production is known to be much less because the cattle are generally empty when they arrive and have to make up for "gut fill" and then compensatory factors. This is verified by actual manure harvesting data from Wellard's for the "Santavan" facility. Attachment 5 presents a formal calculation sheet for this calculation.
Section 7.3.3	Inclusion of on-site burial of dead cattle can be problematic, primarily because dead cattle can pose a significant risk to groundwater without adequate mitigation measures. All animal disposals should at a minimum have	A.12.1	As stated in Section 7.3.2: Solid Waste Management, Livestock pens and compost manure pads will have compacted clay surfaces and are sloped to

[17] Meat and Livestock Australia Limited, 2012. *The National Guidelines for Beef Cattle Feedlots in Australia*, 3rd ed. Sydney, NSW.

	guaranteed requirements of lining of pits with appropriate clays.		sedimentation drains to eliminate potential seepage and water runoff. The compost manure pad will also have an armoured base (road base). If dead cattle are treated on site the dead cattle will not be buried in a hole in the ground (dead pit), but buried on top of the compost manure pad with compost. It is expected that individual carcasses will preferentially be disposed off site through commercial arrangements (pet food or rendering).
Section 3.11.3	The draft EIS stated that "*the general hours of operation for the proposed facility would be 5 am to 9 pm for the incoming and outgoing trucks delivering stock to the facility*". The draft EIS did not detail the potential for operations outside these times, especially in relation to stock offloading and/or reloading onto trucks at the facility. This information is relevant to the operation of the facility and should be included in the Supplement.	A.13.1	The Supplement provides further detail and clarity with regard to; • "general hours of operation", as opposed to • "ship loading operations". It is acknowledged when ship loading occurs then for about 2 days of 16 trucks will operate 24 hours per day.
Section 7.1.2	The draft EIS claimed that "*dust and noise are likely to be similar to odour in terms of buffer zones and cumulative effects, given that the main sources of these impacts are the same*". This is a generalised statement and should be supported by evidence.	A.14.1	Odours from the ILEF will be produced when cleaning pens, turning compost and possibly from wastewater systems, truck movements associated with these activities; as well as through feed storage and preparation activities. These activities produce the majority of dust and noise. Noise, dust and odour are all attenuated with vegetation screens and separation distances. It is expected that earthen bunds will be carefully placed in association with the tree lines to dampen noise. Dust will be suppressed by watering. Dust is not expected to be transported far at all and will be contained around the facility and certainly within the

			boundary (Plate 1).
Section 7.1.2	The draft EIS provided conflicting information in respect of the amount of water that will be extracted for the ILEF. For example, extraction rates of 200 ML and 250 ML per year were provided. The amount of water to be extracted for the ILEF should be clarified in the Supplement.	A.15.1	The conflicting data are corrected in the errata in the Supplement. "The ILEF will extract up to 250ML per year" for the full development for stock water supply, washing and clean water irrigation. Stage 1 will extract up to 160 ML/annum and stage 2 will extract the remainder to a maximum of about 250ML/annum
Section 7.7.3	Section 4 of the Environmental Management Plan (EMP) should be updated so it is in a form that can be readily used for operational purposes. In particular, the EMP should have specific thresholds for when staff will undertake specific mitigation and emergency procedures (e.g. what threshold does lime need to be added to wastewater to adjust the pH? etc.). In addition, the EMP sets out performance objectives and in some cases monitoring against those objectives. One example is the Water Quality Management Plan which includes performance objectives related to the presence of contaminants in surface and groundwater resources. Without relevant baseline information, it will be difficult, if not impossible to determine whether contaminants in surface/groundwater are attributable to the ILEF or other agricultural activities in the catchment (Santavan etc.).	A.16.1	The environmental management plan has been updated to include specific mitigation measures including: • Wastewaters will be treated with lime if they become anoxic and or the pH drops below 5.5 • Water quality has been assessed against the water quality criteria set out in the following guidelines ✓ NSW Effluent Irrigation Guidelines (NSW DEC, 2004[18]) – Low to Medium ✓ Victorian Guidelines to Wastewater irrigation EPA (VIC EPA 1991[19]) – Class1 • Surface water (Hardy Creek), groundwater (onsite bores) and soil (irrigation block) samples will be collected prior to the operational phase to establish baseline conditions.
Section 7.11.3	The Department of Natural Resources, Environment and the Arts (NRETA) no longer exists. The Department of Lands Planning and the Environment	A.17.1	This is noted in the errata.

[18] NSW DEC 2004 NSW Effluent Irrigation Guidelines, Sydney NSW
[19] Victoria EPA 1991 Guidelines to Wastewater irrigation

	(Heritage Branch) is now responsible for administering the *Heritage Act*.		
Section 7.11.4	The draft EIS stated "*The Aboriginal Areas Protection Authority assessed the proposed site and found no sites of aboriginal heritage significance present. As such, there is a high degree of confidence in the predicted outcomes*". It should be noted that the Aboriginal Areas Protection Authority is responsible for administering the *Northern Territory Aboriginal Sacred Sites Act*. This Act identifies and protects specific Sacred Sites in the Northern Territory. All other Aboriginal Heritage items are protected under the *Heritage Act* regardless of whether those items have been identified.	A.18.1	This statement will be expanded to include the Heritage Branch of the NT Department of Lands, Planning and the Environment and the federal Department of Environment EPBC protected matters search.
Section 7.16	The draft EIS stated "*This development proposes to share the access with AA Co. as this is a stipulation set out by the Department of Transport in the terms of reference (Appendix U)*". The Terms of Reference do not stipulate that the traffic arrangements are to be shared with the AA Co. operations. It is recommended that this statement is be corrected or clarified to ensure there is no confusion about this claim.	A.19.1	This will be corrected to "This development proposes to share the access with AA Co. This is a stipulation set out by the Department of Transport in their comments (dated 14 May 2015) to the Development Application".

RESPONSE TO DOCUMENT B – Police, Fire and Emergency Services – 11 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
	We advise that the proponent should engage with the NT Fire and Rescue Service in the certification process prior to the construction of any buildings at the project site (as suggested in the document).	**B.1.1**	Prior to the construction of the facility the Northern Territory Fire and Rescue service will be engaged in order to assess the buildings, for fire safety, in particular the separation distances. A pressurised water systems and water tanks have been included in the design. It will have a redundant capacity available for firefighting.

RESPONSE TO DOCUMENT C – Public Comment – Mr Glenn Speirs – 9 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
9.2 Monitoring Program	No plan for removal of manure in the wet season /stockpiled manure in the Wet season will emit odours.	**C.1.1**	The ILEF design has been altered since the submission of the draft EIS to reduce the encroachment of the facility on neighbouring residential properties. Stage 1 of the ILEF development will include the wastewater system and the 12,000 (peak) standard cattle unit (SCU) pre-export quarantine (PEQ) yards, whilst Stage 2 will add the additional 26 pens for the short term feedlot. Cattle in PEQ yards produce much less odour than a production feedlot of the same capacity, due to the effect of a low protein ration diet (as opposed to a high protein fattening diet). Stage 2 is expected to take place approximately 12 to 18 months after the commencement of Stage 1, and Stage 1 odour will be assessed prior to the development of Stage 2. A buffer of 251m is current for Stage 1, whilst with a tree line planted, the buffer reduces to 195m as odour is dispersed and lessened by vegetation. Compost/manure will be cleaned from pens regularly and sold off prior to the wet season. During the wet season livestock will be housed in the shedded areas that have engineered floors. These sheds are not likely to emit much odour at all.

9.2 Monitoring Program	Manure pollution run off in the wet season into the Berry Springs, Hardy Creek and possibly other surrounding catchments.	**C.1.2**	The entire facility is designed to be within a "Controlled Drainage Area: (CDA)". All runoff is completely contained. All runoff is held in wastewater storages. The entire area including the irrigable areas must drain to a tailwater storage. This level of site runoff control exceeds all surrounding lands and indeed the AACo abattoir. These facilities including their wastewater ponds have been placed above the flood line. Monitoring of surface water flows from the facility will be undertaken on as per the surface water monitoring plan contained within the Supplement document.
7.18 Social Impacts	Health issues from dust and the heightened risk of contracting Q fever as we have AACO, Santavan and now the proposed Wellard development Increased mosquito infestation from open water storage.	**C.1.3**	Dust will be reduced through dust control systems in the PEQ yards, regular spraying of the roads onsite and progressive bitumen sealing of onsite roads over time. The risk of Q fever from dust is also reduced significantly by the vegetation buffer between the ILEF and Affleck Road. EnviroAg consulted with the Department of Health (Medical Entomology Branch) on water use and storage and its effects on mosquito breeding throughout the development of the draft EIS. Female mosquitoes require a blood source and male mosquitoes require vegetation within a short distance (dependent on species) to water in order to survive and reproduce. Cattle will be back-lined with insecticide to reduce available blood supply, and ponds are deep with steep sides to reduce the desirability of the pond for reproduction. Notwithstanding, ponds are to be maintained empty and the irrigation systems are designed to empty the storages very quickly (significant pump capacity and storage capacity). An emergency lime dosing system is to be installed to allow direct intervention to control both mosquitoes and odour should they occur. Lime dosing rapidly changes water chemistry thus mitigating such potential occurrences.

	Commercial use of ground water that will impact levels on existing home use bores in the area, my bore is at 80m as are many others	**C.1.4**	The bore report for RN38579 for your property shows that the bore was drilled to 78m, with a slotted steel screen from 55.3m to 59.5m below ground level. The bore at the ILEF drilled through near surface aquifers and an aquifer at about 42-52m; these were blanked off so water was not drawn from it. The bore on the Wellard ILEF is screened from 66.4m to 74.1m and then from 106.5m to 112.5m. The pressure from the deep aquifers screen is greater than the pressure and flows from the secondary aquifer. Thus most water will be drawn from the lower aquifer. Given the ground levels of your property and the ILEF it appears that your bore occurs within the upper aquifer that was screened in the bore at the ILEF. Given (a) the separation distance from your bore to the ILEF bore of 1.2km, (b) the ILEF will draw more water from the lower aquifer as it had a higher pressure and flow rate and (c) the fact your property is in the recharge zone for the aquifer, there will be minimal impact of the proposed ILEF water usage on the production of your bore.
7.18 Social Impacts	Reduced property values	**C.1.5**	The land on which the ILEF is proposed to be developed is sloped towards the west, with a treed road reserve on the eastern, Stuart Highway border. This slope will reduce the visibility of the ILEF from Stuart Highway. Tree lines will also be planted along the two remaining boundaries of the property. These trees will reduce the effects of the ILEF on visual amenity of the community, as well as reduce the spread of any odour, dust and noise. The development will significantly improve the value of the property. It is expected that, in totality, land values would actually increase.

	There will be only one wastewater treatment pond this will not suffice considering the AACO plant should have had at least 3-4 treatment plants as recommended by Worlds best practice.	**C.1.6**	The wastewater treatment ponds required for a meat processing facility are subject to different guidelines and standards to a live export holding yard, as the volume of wastewater and type of contaminants produced are different. Meat processing facilities produce waste that has high oil and grease concentrations, as well as waste that has high temperatures. Waste produced by the ILEF will contain nutrients. Since wastewater treatment relies on a combination of screening to remove solids and microorganisms to carry out degradation of the remaining contaminants, different wastewater processing processes are required to remove these contaminants. The ILEF has a sedimentation basin to remove the solids, while the microbial degradation will be carried out in the primary wastewater pond. A secondary wet weather / emergency storage is located below the primary pond. In fact three storages are being used for management of wastewaters.

RESPONSE TO DOCUMENT D – Department of Land Resource Management – 11 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
	The EIS identifies the risks to surface water quality adequately. However, the proposed monitoring program of ground and surface water quality, as well as the monitoring of potential shallow groundwater contamination, should be improved.	**D.1.1**	More detail is provided below; and in the Supplement.
	Runoff from the irrigation area is directed to the 'clean water storage dam'. As stated by the proponent, this runoff could potentially carry pollutants from the application of wastewater to the irrigation area. Water from the clean water storage eventually flows into Hardy's Creek; however the monitoring program does not include monitoring of stormwater or monitoring of water released from the dam.	**D.1.2**	Wastewaters applied by the AA Co abattoir are applied to areas without a tail water or "clean water" storage as the Wellard Darwin ILEF has shown it on the plans (the naming has been since changed)..
	Despite being identified as a risk, there is no monitoring of groundwater under the irrigated area, or for stormwater runoff from the irrigated area. Shallow groundwater quality testing is currently restricted to the wastewater pond. It is recommended that shallow groundwater testing should be extended to the irrigation area where wastewater is directly applied to the ground and there is a high risk of nutrient leaching. The frequency of testing should also be increased.	**D.1.3**	Monitoring of nutrient movement in a waste water irrigation area is best done with soil monitoring as it better predicts nutrient accumulations. These can be managed in the soil profile BEFORE the nutrient gets to the groundwater systems. The most important monitoring is thus soil attributes within the wastewater irrigation area; then groundwater monitoring down gradient. Piezometers will be installed as part of the construction works. Additional piezometers have been added to the monitoring programme; one in each irrigable area. The frequency of monitoring ought to be related to the time of groundwater accession. This could be between one month and 10 years depending on the stratigraphy, region, climate and land practices. It is proposed that

			groundwater will be monitored initially every 6 months. If contamination is detected then the frequency will be increased.
	To adequately assess the effectiveness of the wastewater systems, and to establish whether the facility has an impact on the ground and surface water quality of the area, a monitoring program based on a BACI (before/after/control/impact) design is required. As a minimum, the monitoring program should include the following: Assessment of baseline (prior to commencement of construction) water quality in Hardy's Creek with at least monthly sampling plus event based sampling Assessment of baseline groundwater quality in the existing bores prior to commencement of construction Assessment of baseline water quality in shallow groundwater under wastewater ponds and irrigation area (possibly installation of additional piezometers under the irrigation area) Assessment of baseline stormwater quality (runoff from the site to Hardy's Creek) prior to commencement of construction. Ongoing monitoring of surface water (Hardy's Creek and stormwater runoff from 'clean water storage'), shallow and deep groundwater quality during construction and operation of the facility (at least monthly, as currently proposed) Ongoing assessment of water quality against baseline measures and water quality objectives for surface waters Inclusion of proposed action if contamination is detected.	**D.1.4**	A Surface Water Management Plan has been prepared and is attached to the Supplement Report. Hardy Creek is an ephemeral system and monthly sampling is not realistic. Sampling in association with major runoff events is more practical. Surface water monitoring has commenced so as to obtain background data. Background data on ground water quality has been obtained for nearby bores. Piezometers will be installed as soon as a development consent is provided so background water quality of shallow aquifers is obtained. Shallow groundwater's are only present substantially in the wet season and then disappear in the dry season. The environmental monitoring programme includes surface and groundwater monitoring and it has been included in the EMP.
	The Environmental Management Plan (Appendix E) specifies a procedure for managing non-compliance incidents in regards to monitoring but does not	**D.1.5**	Thresholds for surface and groundwater quality has been set in the EMP.

	specify what compliance means in relation to surface and groundwater quality. Surface water quality objectives are available for the Darwin region; however, pre-construction groundwater quality needs to be assessed by the Proponent.		Piezometers will be installed when development consent is provided so background water quality data of shallow aquifers can be obtained. Shallow groundwater's are only present substantially in the wet season and then disappear in the dry season. Groundwater quality data has been assessed and is presented in the Supplement.
	The conceptualisation in the Hydrological Assessment (Appendix O) is incorrect. The geological formation underlying the site is believed to be White's Formation. The aquifers developed in this formation are within moderate to steeply dipping strata and not connected to Berry Creek in the manner as depicted in Figure 6 of the report.	**D.1.6**	The diagram has been updated.
	In regards to groundwater availability, the test bore drilled as part of the hydrological investigation is believed to have intersected White's Formation, in which beds of dolomite are occasionally reported. The dolomite beds may form aquifers; however, the yields will vary – typically ranging from 0.5L/s up to approximately 5L/s. While the single bore drilled at the north-east corner of the study site may have yielded 7L/s during drilling, this result does not imply that this is an extensive resource, or that this pumping rate would be sustainable.	**D.1.7**	The pump test was undertaken for an extended period of time. The flow rate was maintained.
	It is noted that the bore drilled as part of the investigation is not a registered water bore.	**D.1.8**	The bore registration has been undertaken by NT Bores; it is permitted and registered. DLRM has confirmed they have found the required documentation.
	The project seeks to extract 250ML/y which equates to approximately 8L/s continuous pumping. White's Formation is extensively weathered across the region and recharge would occur through the weathered profile. In calculating	**D.1.9**	The 3 bores that have been permitted on the property have a permitted use of up to 15L/s. The groundwater take is from an unregulated groundwater zone. The 3 bores, if developed, with a take of 15L/s would allow a total entitlement

	potential recharge across the development site, a figure of 200mm (approximately 10% of rainfall) is applied over an area of 905,100m^2. The calculated recharge is 181ML/y. If 20% of recharge is available for consumptive use, then the sustainable yield is 36.2ML/y. The required volume of water (250ML/y) therefore exceeds the sustainable yield.		of up to 1,491ML/year. This amount of water can be legally taken from the bores. It greatly exceeds what the required amount is. The NT Government is a signatory of the National Water Initiative (NWI). The NT Implementation of the Plan (NT Government 2006) sets out that in an entire recharge area that 80% of water should be provided and 20% for consumptive use. Nowhere in this plan is this rationale applied to a single property; its recharge and its potential maximum take. If the NT DLRM were to apply this then entire irrigation properties and areas would be shut down overnight in the NT. We respectively suggest that this calculation is grossly misleading / incorrect. It is certainly contrary to the permitted use of the bore permits that the NT Government has provided and out of sync with the NWI to which the NT Government is a signatory. NT Government (2006). *Northern Territory Implementation Plan for the Intergovernmental Agreement on a National Water Initiative*. June 2006.
	The Department considers that the findings of the draft EIS, with respect to low risks to flora and fauna, are sound and consistent with the location of the facility on a property that has been entirely cleared of native vegetation.	**D.1.10**	Noted.
	A review of the Erosion and Sediment Control Plan (ESCP), provided in Appendix I has identified the following: • In section 1.2 of the ESCP, the last paragraph on Page 1 states that '*The early works is expected to commence in late 2015 followed by Stages 1 and 2, to have all the works completed by September 2016*'. However , the last paragraph on page 2 states that Stage 2 'is planned for construction in 2017'. The timing of works should be clarified.	**D.1.11**	A detailed ESCP will be formulated when consent is gained and approval conditions are defined. These will determine the final design and construction methods. These in turn will dictate the character of the ESCP. EnviroAg and Wellard will be pleased to submit prior to the commencement of works an ESCP for approval by the consent authority. The ESCP will reference NT guidelines and include;

	• The use of broad-scale soil mapping for site specific work is not considered to be appropriate. More detailed soil information should be used to determine soil erosivity (K) • The factors that have been used to calculate the estimated rate of soil loss (using the Revised Universal Soil Loss Equation – RUSLE) appear to be incorrect. It is advised that these factors be revised to ensure the estimated soil loss is calculated correctly, as this will affect the design of controls (e.g. basin sizing, bank spacing, etc). Incorrect design may result in the failure of erosion and sediment control infrastructure. The proponent is encouraged to contact the Department's Land Management Unit on (08) 8999 4572 for further information. • Assuming that the soil texture descriptions listed in Table 1 of the ESCP have been derived from the Unified Soil Classification, soil textures of sandy silt and silty clay correspond to K factors of 0.02 and 0.033 respectively – both higher than the value of 0.012 which has been used in the ESCP to estimate the rate soil loss (Table3). • The information provided in the ESCP is general in nature and is insufficient to enable proper assessment to determine whether the risk of erosion associated with the proposed works will be satisfactorily minimised and be able to be effectively implemented on the ground by contractors. However, it is recognised that this version of the ESCP is to be superseded, as section 3 of the ESCP indicates" "A revised ESCP including a diagram with the mapping control measures throughout the construction phases of the project will be provided on finalisation of the detailed design". Therefore it is recommended that the revised plan comprise the following: o A3 Graphical plan for cut and fill o A3 Graphical plan for construction phase o A3 Graphical plan for completed works o A3 page of standard drawings and construction notes. The Proponent is encouraged to refer to the Department's erosion and		• Soil mapping • Soil erosivity data based on the soil maps and land classifications and covers • A3 plans showing works including placement, cut fill and construction notes and specifications

	sediment control fact sheets and technical notes, including Tech Note No. 17 – Graded Banks (http:www.lrm.nt.gov.au/soil/management/technotes) (in preference to DERM 2004 specifications listed in Table 6 of the ESCP). The Department recommends that prior to the commencement of works, an Erosion and Sediment Control Plan (ESCP) should be submitted to and approved by the consent authority. The plan should be developed by a suitably qualified and experienced professional in erosion and sediment control planning, and should detail methods and treatments for minimising erosion and sediment loss from the site during the construction phase. The IECA Best Practice Erosion and Sediment Control Guidelines 2008 (or higher) may be referenced as a guide to the type of information, detail and data that should be included in an ESCP. Information regarding erosion. And sediment control and ESCP content is available at www.ausieca.com.au and the DLRM website: http://lrm.nt.gov.au/soil/management.		
	The draft EIS in conjunction with the Weed Management Plan (Appendix G) addresses the concerns of the Department in relation to weed spread to or from the proposed facility and the ongoing management of weeds present on site.	**D.1.12**	Noted

RESPONSE TO DOCUMENT E – Department of Health, Environmental Health Branch – 10 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
1.1 Regulatory context	Regulatory context of the proposal Add 'Public and Environmental Health Act and regulations'	**E.1.1**	The addition of 'Public and Environmental Health Act and regulations' will be included in the supplement document.
3.8.3 Sedimentation Basin	3.8.3 Sedimentation Basin Provide a definition of wastewater as it is extensively referenced throughout the document. It is recommended that 'wastewater' be added to the glossary.	**E.1.2**	Waste water in the context of the ILEF will be described in the glossary as: "Liquid waste that is produced by open cattle pen runoff, runoff from the compost manure storage pads, truckwash supernatant, treated septic waters."
3.8.4 Primary Wastewater pond, wet weather storage dam and freshwater runoff dam	The second paragraph should note that the primary wastewater pond does not store any sewage	**E.1.3**	An errata has been provided in the Supplement document to reflect this comment.
3.9.1 Liquid Waste Management	This paragraph should note that the primary wastewater pond does not store and sewage	**E.1.4**	An errata has been provided in the Supplement document to reflect this comment.
7.2 Liquid Waste Management	There is no mention about on-site sewage management of wastewater generated by staff facilities and design and installation compliance with the Code of Practice for Onsite Wastewater Management	**E.1.5**	A section has been included in the supplement document describing the onsite wastewater management system for treatment and disposal of sewage from the staff facilities.
9.0 Mitigation Measures	Mitigation measures should also include an Irrigation Management Plan (IMP) in addition to an Environmental Management Plan (EMP).	**E.1.6**	An Irrigation Management Plan is provided in Appendix C of the supplementary document.

7.9 Air quality	The proponent shall ensure that the construction and operation of the ILEF does not create a public health nuisance, in particular from dust or other particulate matter. DoH has provisions to deal with public health nuisances under the Public and Environmental Health Act.	**E.1.7**	The main dust producing aspects of the ILEF are the cattle pens (pre-export quarantine and feedlot), compost manure pad, onsite roads and loading (unloading) of the trucks with compost and cattle. Precautions put in place for dust management include irrigation sprays in the pens and cattle lanes to reduce dust in the dry season and monitoring the moisture content of the pens and compost manure pad to ensure that action is taken when required. Dust around the access roads for truck movement and loading/unloading will be controlled through application of water to the road during dry times. Baling of hay from the irrigation area will only be undertaken subject to weather (wind) conditions. In addition, fenced off tree lines will be planted on the two fence lines that currently do not have a vegetation buffer. This should reduce the spread of dust to residents downhill.

RESPONSE TO DOCUMENT F – Department of Transport - 8 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
3.8.5 Irrigation Area	An appropriate water and waste water runoff mitigation strategy to reduce any incursion onto the road reserve and Highway	**F.1.1**	The Stuart Highway exists on the Eastern side of the property, there is a 20m vegetated road reserve existing, which will be left untouched. The irrigation area is divided into two areas one being approximately 300m by 800m and the second being approximately 430m by 210m which will be irrigated using an automated low pressure poly lined lateral move irrigator with drop hoses, which will have no spray effect, what so ever, onto the highway. The facility is also, at 48m AHD (Australian Height Datum) and the Stuart Highway is 54AHD. There is little to no chance that any runoff will occur onto the Sturt Highway.
	Traffic Management. This Department has already provided information to the proponent on what information is required to further the development as per the Department of Transport's policies and procedures (Letter to proponent from Dept. of Transport Appendix C).	**F.1.2**	A document is being prepared in response to the DoT letter sent on 14th of May 2015. It will be provided as part of the development application.
7.14 Weed, Pest and Insect Control	Weeds – The EIS mentions a weed management plan has been developed however did not take into consideration the potential for week spread outside of the project area as a consequence of the proposed activities. The Department of Transport would like assurance that the weed management plan is compliant with the Weed Management Act and that the proponents will take all measure to ensure no weed incursion or spread onto the road reserve	**F.1.3**	The Weed Management Plan (Appendix G) follows the requirements as enforced in the Northern Territory Weed Management Act 2013, *Part 3, Division 2* Weed *Management Plans, Clause 10: (1-5).* A wash down facility is being built onsite and ingoing and outgoing vehicles can be washed down and checked for any seed or organic matter. The wash down facility is designed to allow for capture, containment and drainage of contaminated water and prevent any water from escaping during heavy rainfall. This will ensure that no weeds will contaminate the road verge. The construction topsoil piles have an increased risk of weed germination because of the disturbed nature of the soil, these piles will be continually monitored and treated for any weeds that germinate to prevent weed spread.

Appendix E Environmental Management Plan	I couldn't find reference to a fire management plan which is a critical consideration in the Darwin Region. The proponent should consider adequate fir breaks within their boundary and ensure measures are taken to protect the neighbouring landowners and road reserve from spread of wildfire.	**F.1.4**	There is no fire management plan per se as the site is heavily developed and highly controlled. There are however, many fire preventative techniques listed within the EIS and the Environmental Management Plan, Appendix E. The fire preventative techniques within the facility are: • Irrigation water sprinklers within the stock pens to control dry conditions/dust; • Daily monitoring of compost area for spot fires; • Hay sheds are separated to prevent spread of fires between hay stocks; • Hay is moisture checked before it is placed in sheds or stockpiles; • Mains water supply is connected to the house and office and facilities; • Machinery onsite and available to create fire breaks to slow/stop the spread of fire; • Fuel loads can be reduced on the property in case of a pre-existing wildfire and will be generally kept low as all areas will be either irrigated pasture cut for hay or garden or tree lines • A water storage and reticulation system is included in the design containing redundancy that can be used to support firefighting tasks (water storage and pressurised water supply). Fire has been addressed within the Emergency Management Plan with the relevant emergency contacts stated.

RESPONSE TO DOCUMENT G – Department of Lands Planning and the Environment - 7 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
	The Locality The locality is presented as being characterised by existing agricultural activity, including the meat processing facility and the existing export facility, and largely undeveloped land. The area is in fact characterised by a range of rural rather than agricultural activities including a significant component of rural lifestyle lots used exclusively for residential purposes.	**G.1.1**	The draft EIS described the facility locality as having a pre-export quarantine facility and meat processing facility as neighbouring properties to the north and south-west borders, with a 200m vegetation buffer on the east, after which there are several houses in Hughes. Other agricultural uses include; mango plantations, horticultural crop growing areas, and cattle grazing. Rural lifestyle lots do exist; The description provided is an accurate description of the properties surrounding the proposed ILEF.
Appendix C- Odour Assessment	Planning Policies: The discussion of land use and planning controls (at 4.10) suggests that the closest house is 800 metres away from the facility so providing appropriate mitigation of odour and visual impacts. There is also some discussion of aspects of policies and current proposals. This discussion does not acknowledge that while much of the land around the proposal is currently vacant, the existing zones allow future development of this land for a variety of uses, in many instances without consent. The recognition of the Darwin Regional Land Use Plan (DRLUP) and the current proposal for urban development in the locality is limited to identification of a possible sewerage treatment facility on the site immediately north of the current proposal and the likely need for a buffer. The significance of the DRLUP and the current proposed amendment to facilitate urban development are far more significant as a constraint to the proposed facility than the limited synergies that may be associated with adjoining buffers.	**G.1.2**	The design of the ILEF has been reconfigured to ensure that the odour buffers do not encroach on the surrounding residential properties proposed in the DRLUP (design will be provided in supplementary document). No odour modelling was undertaken for the AACo abattoir in its assessment despite it being a much more substantial development. NT Government approval of the AA Co meat processing facility (abattoir) has been based on the buffers being kept within site boundaries; the same process has been applied to the N, E, and S of the Wellard Darwin ILEF.

3.8 Drainage systems **9.3 Monitoring Locations**	Ground and Surface Waters: There appear to be a number of potential impacts on both the quantity and quality of both ground and surface water including liquid and solid waste management, drainage and stormwater and the irrigation of waste. The management and mitigation measures emphasise the need for consideration of these potential impacts within the context of other existing or potential contributors. Given the significance of the water resources in this locality in terms of both stock and domestic supply to a significant number of residents and commercial horticulture activities and to the iconic Berry Springs and Territory Wildlife Park more definitive consideration of potential impacts and mitigation strategies appears necessary.	**G.1.3**	The facility has been designed to exceed various wastewater reuse guidelines, and, *where applicable*, pertinent sections of the National Guidelines for Beef Cattle Feedlots in Australia. This site is a particularly suitable site for a pre-export facility, as its slope is conducive to creating an efficient drainage system. The drains are placed downslope, onsite roads are placed inside the controlled drainage area (pens and compost manure pads) to ensure that runoff is captured and directed to the wastewater ponds. All surfaces where manure and contaminants are likely to sit on the ground will have constructed hard, impermeable surfaces. Pens, compost manure pads and ponds will be lined with impermeable clay and/or HDPE liners, as appropriate, to ensure that contaminants do not leach into groundwater. To prove that these design features are functioning and effective, groundwater and surface water monitoring programs will be undertaken monthly during the operation of the facility as stated in the Environmental Management Plan. Soil in the irrigation areas will also be tested for physical and chemical properties to ensure that the irrigated improved pasture grasses remove the nutrients applied to the soil through treated wastewater application. Testing of groundwater and surface water for baseline nutrient and chemical data will be undertaken prior to operation of the facility to determine the effects.

4.8 Noise **Appendix E Environmental Management**	Noise (7.8): Although sensitive receptors and mitigation measures are identified for the construction period, no consideration has been given to the ongoing impacts of operational noise. Of particular concern is the lack of recognition that 24 hour loading operations may impact on both current and potential future development as identified in the NT Planning Scheme and the Darwin Regional Land Use Plan 2015.	**G.1.4**	The Santavan pre-export quarantine facility currently houses livestock that will be taken up by the Wellard Darwin ILEF. Essentially the ILEF will replace the Santavan facility. Santavan has no noise mitigation measures in place. The ILEF does. Simply, the ILEF replaces an existing facility but with a lower noise "footprint". There is a net benefit The Environmental Management Plan which is an operational phase plan contains an operational noise management sub-plan. Generally, separation distances for noise are similar to those for odour as noise is attenuated with distance. Further the earth and treed buffers that are being placed along the boundary and close to the facilities will reduce noise. Additionally it is noted that: • All equipment will be fitted with efficient silencers, in accordance to the Motor Vehicles Act 1949; • All equipment will be maintained to reduce noise emissions, • Noisier activities will be undertaken in the late morning through to early afternoon when most people are at work; • Vehicle engines (specifically trucks) will be turned off and not left idling when not in use; • Silencers will be used on equipment where possible; • All efforts will be made to reduce the effects of noise on personnel and neighbours; and • A vegetation buffer will be planted to reduce the effects on neighbouring properties.

Appendix C Odour Assessment	Odour (7.7): The identified base line conditions are not a legitimate reflection of the existing development in the locality. This section does not differentiate between intensive animal husbandry and agriculture. While there is some ongoing agricultural activity in the locality the predominant land use is rural living and the policy for future development is for more intense residential development. The abattoir is in the immediate locality but was approved only after it was established that **the impacts would be limited to the site of the development**.	**G.1.5**	Land use in the ILEF area is described as being dominated by grazing, dryland cultivation, meat processing and rural residential areas. It is also said that such activities do generate odours, particularly operations such as wastewater processing, pesticide applications, mowing and ploughing, as well as the handling of grazing livestock in yards and loading facilities. This a general opening statement based on land use mapping by Litchfield Council. It is factual. Since the predominant odour producing activities likely to affect the rural residents in the ILEF area were from Santavan PEQ yards and the AACo. meat processing facility, these sources were the main topic for baseline odour conditions. This was not written to mislead readers into thinking that the area was predominantly agricultural per se, it was written to help determine what was most likely to affect the rural residents in the vicinity of the ILEF prior to its development. The odour calculations for the ILEF are based on a level 1 assessment using a modified equation from the *National Guidelines for Beet Cattle Feedlots in Australia*. As such, the odour section does take into account the difference between intensive animal husbandry and agriculture. The design of the ILEF has also been reconfigured so that "**impacts would be limited to be contained within the site of the development**" (per the Department of LPE approvals for the AACO abattoir). Details of the design and operation improvements have been provided in the supplement document.
	Feasible Alternatives: Identification of the feasible alternatives rule out a remote facility on the grounds of the greater costs of holding cattle distant to the harbour and embarkation point but elsewhere the role of the facility is identified as a stopover between farm and ship. Some discussion is needed as to why a longer journey from farm to facility and shorter journey from there to embarkation is more cost effective than a shorter journey from the farm to the facility and a longer journey from the facility to embarkation	**G.1.6**	It is possible to hold cattle at a remote facility a significant distance from Darwin. However, the costs of holding cattle distant to the harbour and embarkation point increase significantly and are not economically justifiable. A brief economic analysis is provided in the Supplement to the Draft EIS. Further potential animal welfare impacts increase with stock transported further between the pre-export quarantine yard and the point of loading as they have to be, potentially, held longer both on truck and at port.

Heritage	The EIS adequately addresses cultural heritage and aboriginal archaeological issues and incorporates advice previously provided by the department regarding the proposed ILEF development.	**G.1.7**	Noted

RESPONSE TO DOCUMENT L – Tourism NT - 3 December 2015

Relevant section / topic	Agency Comment	No	Response to Comment
	The facility will adjoin similar neighbouring developments, and is separated by appropriate distance and buffers from the nearby tourist area of Berry Springs, which is eight kilometres west. Tourist will travel past the location and vegetation and tree lines alongside the Stuart Highway will be important to act as a buffer for visual amenity, noise, dust and odour. Impacts on tourists travelling past are likely to be low if the buffer is adequate.	**L1.2**	The roadside vegetation along the edge of the facility is vegetated with trees, shrubs and grasses, approximately 20m wide. No changes will occur to the roadside verge, keeping the visual amenity of the area intact. The pens are located approximately 300m from the road, with a decrease in height from 54m at the road and 48m to the pen facility. The decrease in topography will ensure that only the shed roofs can just be seen. These two factors will ensure that little visual amenity impairment will occur in the area. Proposed tree-lines will hide parts of the facilities and will improve amenity.
Traffic Plan Appendix E	The increased volume of vehicles (particularly road trains) has the potential to create an increased risk of road accident and/or have implications for travellers and residents alike. There is an overarching Environmental Management Plan and a smaller sub plan for traffic management with minimal detail. Tourism NT recommends the mitigation, management and monitoring procedures within the EIS under section 7.16.3 be adhered to.	**L.1.1**	The Wellard Darwin ILEF essentially will replace existing traffic volumes from the Santavan pre-export quarantine facility. The main access route off the Stuart Highway has been designed to suit double and triple road trains. The traffic study conducted by the AACo subcontractors *i3 Consultants* found that the existing road intersection had spare capacity for the projected 2015 movements. There is going to be increased traffic within the general area over time as the entire region is developed. In respect of the ILEF development the sight distances at the intersection being larger than legislatively required. EnviroAg believes it will have no decrease on the safety of vehicles within the area.