Appendix K

Preliminary Hazard Analysis

(SLR, 2015c)



global environmental solutions

SEPP 33 - Preliminary Risk Screening & Hazard Assessment
Intensive Livestock Agriculture
Euroley Poultry Production Complex
Sturt Highway, Narrandera NSW 2700

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SEPP 33 - Preliminary Risk Screening & Hazard Assessment
Intensive Livestock Agriculture
Euroley Poultry Production Complex
Sturt Highway, Narrandera NSW 2700

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1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR Consulting) has been engaged by ProTen Ltd (ProTen) to assess the potential impacts of the proposed construction and operation of an intensive poultry broiler production farm, known as the Euroley Poultry Production Complex, within a rural property near Euroley, in south western New South Wales (NSW).

The proposed "Development Site" compromises approximately 1,160 hectares of rural land located around 4 kilometres off the Sturt Highway, approximately 26 kilometres north-west of Narrandera and 48 kilometres south-east of Griffith in south-western NSW, (see Figure 1). It is identified as Lots 1, 41, 42, 44, 45 and 54 in DP 750898 and Lot 1 in DP 1054064 and is located within the Parish of Ourendumbee, County of Boyd and the Local Government Area (LGA) of Narrandera (see Figure 2). The Development Site is zoned RU1 Primary Production, as are the majority of Lots surrounding the site. The exception is on three Lots to the north west of the Development Site, specifically Lots 48, 66 and 67 in DP 750898 which are zoned E1 National Parks and Nature Reserves (see Figure 3).

This Preliminary Risk Screening assessment forms part of the supporting documentation for the Development Application (DA) for the Proposal in accordance with Secretary's Environmental Assessment Requirements (SEARs), which required the following in relation to Land Use Safety:

> *A preliminary risk screening completed in accordance with Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines (DoP 2011). Should the screening indicate that the development is "potentially hazardous", a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011). The PHA should estimate the cumulative risks from the existing and proposed development.*

The purpose of this report is to provide a screening assessment of the hazards associated with the storage of dangerous goods on the site in accordance with *NSW State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33). The purpose of the initial SEPP 33 risk screening is to exclude from more detailed studies those developments which do not pose significant risk.

Where SEPP 33 identifies a development as potentially hazardous and/or offensive, developments are required to undertake a Preliminary Hazard Analysis (PHA) to determine the level of risk to people, property and the environment at the proposed location and in the presence of controls.

If the risk levels exceed the criteria of acceptability and/or if the controls are assessed as inadequate, or unable to be readily controlled, then the development is classified as 'hazardous industry'. Where it is unable to prevent offensive impacts on the surrounding land users, the development is classified as 'offensive industry'. Both of these classifications may not be permissible within most industrial zones in NSW.

A development may also be considered potentially hazardous with respect to the transport of dangerous goods. A proposed development may be potentially hazardous if the number of generated traffic movements (for significant quantities of hazardous materials entering or leaving the site) is above the cumulative annual or peak weekly vehicle movements. **Table 2** in the document Applying SEPP 33: Hazardous and Offensive Development Application Guidelines (NSW Department of Planning, 2011), outlines the screening thresholds for transportation.

This report presents information on hazardous materials, flammable substances, and compressed or liquefied gases proposed to be stored or handled in the Development Site, including on site or transported to or from the site, including any associated risk issues.

2 PROPOSED DEVELOPMENT

2.1 Overview

ProTen is seeking development consent under Part 4 of the EP&A Act to develop an intensive poultry broiler production farm known as the Euroley Poultry Production Complex, within a rural property near Euroley in south-western New South Wales (NSW).

The proposal comprises the Euroley Poultry Production Complex with the development of five poultry production units (PPU), where broiler birds will be grown for human consumption. Each PPU will comprise 16 tunnel-ventilated fully-enclosed climate-controlled poultry sheds, with associated support infrastructure and staff amenities. Each shed will have the capacity to house a maximum of 49,000 broilers at any one time, equating to a PPU population of up to 784,000 broilers, and a total farm population of 3,920,000 broilers. The complex will employ a total of 30 full time employees, 10 of which will live on site as farm managers and assistant managers. Figure 4 shows the conceptual layout of the proposed development.

The proposed PPU sites will be relatively small and the commercial activities associated with the poultry operation will be largely confined to this area. The proposed disturbance footprint within the Development Site will amount to a total area of approximately 90 hectares which is approximately 8% of the site area (totalling 1,160 hectares). ProTen intends to continue use of the residue land within the Development Site for ongoing agricultural production purposes under some form of lease or share farming arrangement.

In addition to poultry shedding, the development will also include:

- The construction of 10 residential dwellings to accommodate farm managers and assistant farm managers; and
- The construction of ancillary infrastructure and improvements required to support the poultry production operation.

2.2 Supporting Infrastructure

Additional infrastructure necessary to support the operation of the proposed poultry production complex is outlined in the following sub-sections.

2.2.1 Residential Dwellings

The scale of the proposed poultry development will necessitate the construction of ten residential dwellings within the Development Site to accommodate five Farm Managers and five Assistant Farm Managers. These dwellings are considered ancillary and subsidiary to the proposed development, in that it will provide necessary support to the poultry production operation.

2.2.2 Ancillary PPU Improvements

In addition to the poultry shedding, ancillary improvements will be required at the Development Site to support the poultry production operation. This infrastructure will comprise:

- An amenities facility encompassing office space, toilets, and staff change rooms;
- Servicing infrastructure to ensure that the development's electricity, gas and water requirements can be met;
- An engineered surface water drainage and management system;
- Dead bird chiller/chiller room;
- Chemical storage;

- Generator shed;
- Workshop;
- Wheel wash facility at the PPU entrance;
- Feed silos, which will automatically dispense the feed into the poultry sheds,
- Water storage tanks, with the capacity to store adequate supply at peak demand,
- Poultry shed floor bedding material storage shed.

The final location of these infrastructure items at each of the PPU sites will be subject to detailed engineering design and the necessary Council approvals where required.

2.3 Hours of Operation

While the proposed poultry development will operate 24 hours a day, seven days a week, the majority of activity will be carried out between 7.00 am and 7.00 pm

There will typically be one daily shift for farm workers commencing at 7.00 am and finishing at 4.00 pm.

2.4 Process Description - Production Cycle

The cycle of a broiler production farm typically lasts about nine weeks, with a maximum bird occupation of eight weeks and a 'down-time' of close to one week for cleaning in preparation for the next batch of birds. There are 5.7 production cycles per year, with each cycle typically comprising the following steps:

1. Delivery of Bedding Material - Clean and fresh bedding material, such as soft wood shavings, rice hulls or chopped straw, will be delivered to the site from a storage facility near Hanwood and spread over the floor of the poultry sheds.
2. Delivery of Chicks - Day-old chicks will be transported from Baiada's hatchery facility on the western outskirts of Griffith to the Development Site in ventilated chick boxes in specially designed air-conditioned rigid trucks. On arrival, the day-old chicks will be placed onto the floor of the shed, where they will initially be confined to a smaller area within the shed (the 'brooding area') and given supplementary heating from gas heaters.
3. Chick Nurturing - Chicks will be nurtured and grown within the sheds on site, with their period of service depending on the live-weight of the birds but is normally between five and eight weeks of age.
4. Removal of Birds - As birds reach their desired slaughter weight, they will be removed from the sheds and transported to Baiada's processing complex near Hanwood. Shed thinning (partial depopulation) will occur at various times during the production cycle depending on the live-weight of the birds.
5. Removal of Poultry Litter - When all birds have been removed after about eight weeks, the spent bedding material (poultry litter) will be removed from the sheds and transported off-site for disposal or re-use.
6. Cleanout – The poultry sheds will be cleaned and sanitised to reduce the risk of pathogens and disease using high pressure water in preparation for the next batch of chicks. Additional activities will include scrubbing feed pans, cleaning out water lines, cleaning the feed silos and scrubbing fan blades and other equipment.

On this basis, the first round of shed thinning/de-populating will commence at around day 32 of bird occupation. Shed thinning will typically occur on another two occasions, being at around day 40 and day 45, with the final bird collection at day 56.

The average mortality rates for broiler poultry housed within tunnel ventilated shed is:

- Week 1 of cycle (1 to 7 days of age) - 1.0 percent of population; and
- Weeks 2 to 8 of cycle (7 to 56 days of age) - 0.6 percent of population per week.

2.4.1 Vehicular Access and Parking

Access to the Development Site will be via the Sturt Highway (refer **Figure 3**). An intersection will be constructed in accordance with NSW Roads and Maritime Services requirements to enable site access from the Highway, allowing adequate room for development-generated vehicles to manoeuvre without impacting on highway traffic.

The following works will be required to provide safe and adequate access for light and heavy vehicles to the site:

- Construction of an intersection off the Sturt Highway;
- Development of an easement through privately owned land between the proposed Development Site and the intersection with the Sturt Highway;
- Upgrades to this road to allow for heavy vehicle access.

The site will have one-way circulation roads (ring roads) around the perimeter of each PPU to enable traffic to enter, exit and manoeuvre around the PPUs for loading-unloading and servicing activities in a forward direction to minimise the potential for traffic conflict and noise.

The roads will be constructed as all-weather rural-type roads able to carry the anticipated heavy vehicle movements.

2.4.2 Traffic Generation

The majority of traffic generated by the proposal will travel between the Development Site, Griffith and Hanwood (approximately 6 kilometres south of Griffith on Kidman Way). The primary operational activities that will generate traffic to and from the Development Site are:

- Delivery of the shed floor bedding material in rigid trucks from a storage facility located near Hanwood;
- Delivery of day-old chicks from Baiada's hatchery facility located approximately 3 kilometres west of Griffith on Snaldero Road in insulted pantechnicon trucks;
- Delivery of feed from Baiada's feedmill facility located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and McWilliams Road in semi-trailers;
- Delivery of bulk liquid petroleum gas (LPG) from Griffith in rigid trucks;
- Removal of birds to Baiada's processing complex located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and Murphy Road in semi-trailers;
- Removal of shed floor litter (spent bedding material) in semi-trailers to various locations;
- Removal of dead birds to Baiada's processing complex, which includes a protein recovery/rendering plant, located approximately 1 kilometre south of Hanwood on the corner of Kidman Way and Murphy Road in rigid trucks;
- Removal of general garbage in rigid trucks to disposal facilities located within the vicinity of Griffith; and
- Staff visits by cars. It is assumed that the majority of farm workers will travel from Narrandera and Griffith areas.

Table 1 summarises the anticipated traffic volumes to be generated by the proposed development over a typical nine week production cycle, and over a typical year comprising 5.7 production cycles.

Table 1 Estimated Traffic Volumes

Activity	Vehicle Type	Vehicles (Two Way Vehicle Trips)	
		Production Cycle (approx. 9 weeks)	Annual (approx. 5.7 cycles)
Heavy Vehicles			
Delivery of shed bedding material	Twin axle rigid truck	108 (216)	613 (1226)
Delivery of chicks	Twin axle rigid truck	45 (90)	256 (513)
Delivery of feed	Semi-trailer	722 (1,445)	4,118 (8,236)
Delivery of fuel	**Rigid tanker**	**2 (4)**	**12 (24)**
Delivery of gas	**Rigid tanker**	**10 (20)**	**56 (112)**
Removal of birds	Semi-trailer	745 (1,490)	4,246 (8,493)
Removal of birds – catching equipment transporter	Semi-trailer	6 (12)	34 (68)
Removal of birds – catching staff	Bus	42 (84)	240 (480)
Removal of shed litter material	Semi-trailer	178 (355)	1012 (2024)
Shed wash down equipment transporter	Semi-trailer	2 (4)	12 (24)
Removal of dead birds	Twin axle rigid truck	64 (128)	364 (728)
Removal of garbage	Rigid truck	2 (4)	12 (24)
Heavy Vehicle Sub-Total		**1,926 (3,852)**	**10,975 (21,950)**
Light Vehicles			
Staff Visits (ProTen and Baiada)	Car	970 (1,940)	5,529 (11,058)
Tradesman	Ute / Van	10 (20)	58 (116)
Catching equipment maintenance	Van	22 (44)	126 (252)
Shed litter material removal contractors	Car	24 (48)	136 (272)
Shed wash down contractors	Car	36 (72)	206 (412)
Light Vehicle Sub-Total		**1,062 (2,124)**	**6,055 (12,110)**
TOTAL		**2,988 (5,976)**	**17,030 (34,060)**

The following points should be noted in terms of the volume of traffic to be generated:

- It is estimated that close to 35 percent of the total traffic will be generated by light vehicles (car/ute/van);
- With the exception of live bird removal, which will generally occur between the hours of 8.00 pm and 2.00 pm, all transport activities will occur during daylight hours;
- There will typically be one daily shift for farm workers between 7:00am and 4:00pm each day; and
- Heavy vehicle trips will be mostly spread over the nine week production cycle and will be distributed relatively evenly over the predicted delivery hours.

2.4.3 Gas

Heating of the poultry sheds, which is anticipated to be required for up to 14 days of each production cycle, will be provided by wall mounted gas heaters. At present the only option is LPG, which will be supplied from Griffith and stored on-site in bulk tanks installed at each of the PPU sites.

2.4.4 Chemical Containers

The only chemicals that will be used at the site will be for sanitisation and disinfection purposes, along with pest, vermin and weed control.

Chemicals will be purchased from a local chemical supply company and/or delivered to the Site by Baiada. It is the usual practice for chemicals to be delivered only a few days prior to the commencement of the cleaning phase in order to minimise on-site chemical storage requirements and time. Appropriate bunded areas or specifically-purchased chemical sheds will be installed at the Site for the short-term storage of the limited volumes of chemicals delivered.

2.4.5 Dead Birds

Dead birds will be collected from the poultry sheds on a daily basis and stored in on-site chillers. A rigid truck will visit the site on a regular basis to collect the dead birds and transport them to Baiada's protein recovery plant (rendering plant), which is part of the poultry processing complex, near Hanwood on Kidman Way. Dead birds will not be allowed to stockpile within the Development Site for reasons of strict quarantine control.

2.4.6 Waste Management

There will not be any on-site stockpiling or disposal of waste materials. Appropriate systems will be implemented to ensure that all waste streams generated by the development will be effectively managed and disposed of off-site.

Day to day general waste will be placed into enclosed skips and removed from site by a licensed contractor on a regular basis. This type of waste will be transported to and disposed of at a local landfill site. No waste material will be disposed of on-site.

2.4.7 Chemical Containers

The only chemicals that will be used at the site will be for sanitisation and disinfection purposes, along with pest, vermin and weed control.

It is the usual practice for chemicals to be delivered only a few days prior to the commencement of the cleaning phase in order to minimise on-site chemical storage requirements and time. Appropriate bunded areas or specifically-purchased chemical sheds will be installed at the Site for the short-term storage of the limited volumes of chemicals delivered.

On the basis of the best management practices and mitigation measures to be implemented, including appropriate staff training and incident management procedures, the potential for adverse environmental impact from chemical use is considered relatively low.

3 SURROUNDING LAND USES AND ZONING

Under the provision of the Narrandera Local Environmental Plan (LEP) 2013, the Development Site is zoned RU1 Primary Production as is the majority of land surrounding the site. The exception is three Lots to the north west of the Development Site which are zoned E1 National Parks and Nature Reserves (see Figure 3).

In accordance with the LEP, intensive livestock agriculture industries are permitted with development consent within land zoned RU1 Primary Production.

Those land uses permissible with consent in the RU1 zone are:

Airstrips; Animal boarding or training establishments; Aquaculture; Boat launching ramps; Boat sheds; Car parks; Cellar door premises; Cemeteries; Dual occupancies (attached); Dwelling houses; Environmental facilities; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Helipads; Home businesses; Home industries; Home occupations (sex services); Information and education facilities; Intensive livestock agriculture; Jetties; Markets; Mooring pens; Moorings; Open cut mining; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Sewerage systems; Signage; Tourist and visitor accommodation; Turf farming; Water recreation structures; Water supply systems

Those land uses prohibited in the RU1 zone are:

Advertising structures; Backpackers' accommodation; Hotel or motel accommodation; Serviced apartments; Any other development not specified in item 2 or 3

The Development Site is removed from any urban areas and, as evident on Figure 2, there is a very low density of surrounding residential dwellings. The nearest populated area is identified as the Narrandera township located approximately 26 kilometres to the south-east of the site.

The nearest privately-owned residences, R5 and R4 are located approximately 2.1 kilometres and 2.3 kilometres respectively to the north of the northern-most PPU, as illustrated on Figure 2.

In addition, it is understood that a Development Application has been lodged with Narrandera Shire Council for a dwelling approximately 2.2 kilometres east of the development site (R6). Whilst a residence has not been constructed on this property, given that a DA has been lodged, this receptor has been considered in this assessment.

4 PRELIMINARY RISK SCREENING

Preliminary risk screening of the proposed development is required under SEPP 33 to determine the need for a Preliminary Hazard Analysis (PHA). The preliminary screening assesses the storage of specific dangerous goods classes that have the potential for significant off-site effects. Specifically, the assessment involves the identification of classes and quantities of all dangerous goods to be used, stored or produced on site with respect to storage depot locations as well as transported to and from the site.

4.1 Dangerous Goods Storage

The proposed inventory of Dangerous Goods (DG) in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code) is provided in **Table 2** below.

The information contained in the table compares the total storage quantity of the required dangerous goods classes against the storage screening threshold in Table 3, and Figure 9 of *Applying SEPP 33* (NSW Department of Planning, 2011).

The dangerous goods to be stored on the site were grouped into their respective ADG classes. If more than one packaging group was present in an ADG class it was assumed that the total amount for that class was the more hazardous packing group.

Table 2 Dangerous Goods Classes in Storage*

Substance	Hazardous Class	Packing Group	Total Storage on Site	Threshold Quantity	SEPP 33 Threshold Level Findings
LPG	Dangerous Goods Class 2.1	-	300m^3 (40 x 7,500L Tanks)	16m^3 (above ground storage)	Above
Sodium Hypochlorite (10-30%)	Dangerous Goods Class Class 8	III	7.34 tonnes	50 tonnes	Below
Petrol	Dangerous Goods Class 3	II	2.5 tonnes	4 tonnes	Below
Diesel	Not applicable		12,500 litres	Not applicable	Not applicable

* Information provided by ProTen.

The proposed dangerous goods planned to be stored on site is above the screening thresholds and therefore is considered potentially hazardous.

It should be noted that the above listed dangerous goods are a total inventory for the entire site. However the storage will be divided into five locations, one for each PPU. Furthermore due to the large scale of the development each PPU and hence dangerous goods storage areas will be approximately 1km apart (See Figure 4).

The technical and management safeguards required in place for LPG systems are self-evident and readily implemented as part of plant safety engineering.

Despite consideration of the above engineering controls, the Project may require the preparation of a Preliminary Hazard Analysis.

4.2 Dangerous Goods Transport

In applying SEPP 33 a proposed development may be deemed potentially hazardous if the numbers of generated traffic movements for significant quantities of dangerous goods entering and leaving the site, are above the cumulative vehicle movements shown in **Table 2** of the SEPP 33 guideline. The levels of maximum proposed movements at the site per week are provided below in **Table 3**. Note that the annual levels directly reflect the weekly vehicle movements.

Table 3 Dangerous Goods Vehicle Movements*

ADG Class	Substance	Maximum Proposed DGs Vehicle Movements (per week)	SEPP 33 Threshold Vehicle Movements (per week)	SEPP 33 Threshold Minimum Quantity (per load)	Load Type (relevant to the facility)	SEPP 33 Threshold Level Findings
2.1	LPG	1	>40	2 tonne	Bulk	**Above**
8	Sodium Hypochlorite	< 1	>30	5 tonnes	Package	**Below**
3 PGII	Petrol	< 1	>45	3 tonnes	Bulk	**Below**

Note: Assumes each dangerous good class is transported separately.

* Information provided by ProTen

The actual site needs are substantially below the SEPP 33 Thresholds on both load quantity and weekly movement thresholds for Sodium hypochlorite and diesel.

The quantities of LPG required for each delivery (vehicles movement) will be greater than 2 tonne and is therefore classified as potentially hazardous with respect to the transport of dangerous goods.

5 PRELIMINARY RISK SCREENING CONCLUSION

This report has reviewed and applied the requirements of SEPP 33 in order to determine whether the policy applies to the Project.

The SEPP33 screenings for storage of dangerous goods indicate that the development may be classified as a hazardous or offensive industry due to the amount of LPG stored on site and the transportation of the LPG to site.

A Preliminary Hazard Assessment may be required to determine risk, if any, to adjoining properties near the facility, or surrounding areas.

6 HAZARD IDENTIFICATION

The hazard analysis and quantified risk assessment approach developed and recommended in HIPAP relies on a systematic and analytical approach to the identification and analysis of hazards and the quantification of off-site risks to assess risk tolerability and land use safety implications. HIPAP advocates a merit-based approach, the level and extent of analysis must be appropriate to the hazards present and therefore, need only progress to the extent necessary for the particular case.

6.1 Methodology

The procedures adopted by this study for assessing hazardous impacts involve the following steps:

Step 1: Hazard identification;

Step 2: Hazard analysis (consequence and probability estimations); and

Step 3: Risk evaluation and assessment against specific criteria.

The following sections of the report discuss the hazard identification and analysis process as prescribed in HIPAP.

6.2 Hazard Identification

This is the first step in the risk assessment. It involves the identification of all theoretically possible hazardous events as the basis for further quantification and analysis. This does not in any way imply that the hazard identified or its theoretically possible impact will occur in practice. Essentially, it identifies the particular characteristics and nature of hazards to be further evaluated in order to quantify potential risks.

To identify hazards, a survey of operations was carried out to isolate the events which are outside normal operating conditions and which have the potential to impact outside the boundaries of the Site. In accordance with HIPAP 4, these events do not include occurrences that are a normal part of the operation cycles of the Site but rather the atypical and abnormal, such as the occurrence of a significant liquid spill during product transfer operations.

6.3 Hazard Analysis

After a review of the events identified in the hazard identification stage and the prevention/protection measures incorporated into the design of the Site, any events which are considered to have the potential to result in impacts off-site or which have the potential to escalate to larger incidents are carried to the next stage of analysis.

6.3.1 Consequence Estimation

This aspect involves the analysis and modelling of the credible events carried forward from the hazard identification process in order to quantify their impacts outside the boundaries of the Site. In this case these events typically include explosion, fire fume, dispersion/propagation and their potential effects on people and/or damage to property.

6.3.2 Probability Likelihood Estimation

Where necessary, the likelihood of incidents quantified in the hazard analysisare determined by adopting probability and likelihood factors derived from published data.

6.3.3 Risk Evaluation and Assessment

The risk analysis includes the consequences of each hazardous event and the frequencies of each initiating failure. The results of consequence calculations (radiation and overpressure contours, and toxic exposure levels) together with the probabilities and likelihood's estimated are then compared against the accepted criteria, as specified by the Department of Planning and Environment applicable for the Site. Whether it is considered necessary to conduct the predictions would depend on the probabilities and likelihood estimated and if the risk criteria are exceeded.

6.4 Assessment Criteria

The risk criteria applied is specified by Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning (HIPAP 4). Following is a general discussion of the criteria that is used to assess the risk of a development on the surrounding community and environment.

6.4.1 Individual Fatality Risk Levels

The following paragraphs are reproduced from HIPAP 4 relating to individual fatality risk levels:

"People in hospitals, children at school or old-aged people are more vulnerable to hazards and less able to take evasive action, if need be, relative to the average residential population. A lower risk than the one in a million criteria (applicable for residential areas) may be more appropriate for such cases. On the other hand, land uses such as commercial and open space do not involve continuous occupancy by the same people.

The individual's occupancy of these areas is on an intermittent basis and the people present are generally mobile. As such, a higher level of risk (relative to the permanent housing occupancy exposure) may be tolerated. A higher level of risk still is generally considered acceptable in industrial areas".

The risk assessment criteria for individual fatality risk are presented below.

Land Use	**Risk Criteria x 10^{-6}**
Hospitals, schools, etc	0.5
Residential	1
Commercial	5
Sporting and active open space	10
Industrial	50

6.4.2 Injury Risk Levels

Injury risk levels from HIPAP 4 are stated below for heat of radiation.

- Incident heat flux radiation at residential areas should not exceed 4.7 kW/m^2, at frequencies of more than 50 chances in a million per year.

- Incident explosion overpressure at residential areas should not exceed 7 kPa, at frequencies of more than 50 chances in a million per year.

The requirements for toxic exposure are stated as follows:

- Toxic concentrations in residential areas should not exceed a level that would be seriously injurious to sensitive members of the community following a relatively short period of exposure at maximum frequency of 10 in a million per year.

- Toxic concentrations in residential areas should not cause irritation to the eyes or throat, coughing or other acute physiological responses in sensitive members of the community over a maximum frequency of 50 in a million per year.

Please note that a risk hazard assessment only examines events that are considered to have the potential for significant off-site consequences.

6.4.3 Risk of Property Damage and Accident Propagation

HIPAP 4 indicates that siting of a hazardous installation must account for the potential for propagation of an accident causing a “domino” effect on adjoining premises. This risk would be expected within an industrial estate where siting of hazardous materials on one Site may potentially cause hazardous materials on an adjoining premises to further develop the size of the accident.

The criteria for risk to damage to property and of accident propagation are stated as follows:

- Incident heat flux at neighbouring potentially hazardous installations or at land zones to accommodate such installations should not exceed a risk of 50 in a million per year for the 23 kW/m^2 heat flux level.

- Incident explosion overpressure at neighbouring potentially hazardous installations, at land zoned to accommodate such installations or at nearest public buildings should not exceed a risk of 50 in a million per year for the 14 kPa explosion overpressure level.

6.4.4 Criteria for Risk Assessment to the Biophysical Environment

HIPAP 4 indicates that siting of potentially hazardous developments also needs to consider the risk from accidental releases into the biophysical environment. Acute and chronic toxicity impacts are considered to be of most relevance.

The assessment of the ultimate effects from toxic releases into the natural ecosystem is difficult, particularly in the case of atypical accidental releases. Consequence data is limited and factors influencing the outcome variable and complex. In many cases, it may not be possible or practical to establish the final impact of any particular release. Because of such complexity, it is inappropriate to provide generalised criteria to cover any scenario. The acceptability of the risk will depend upon the value of the potentially affected zone or ecosystem to the local community and wider society.

The suggested criteria for sensitive environmental areas relate to the potential effects of an accidental release or emission on the long-term viability of the ecosystem or any species within it and are expressed as follows:

- Industrial developments should not be sited in proximity to sensitive natural environmental areas where the effects or consequences of the more likely accidental emissions may threaten the long-term viability of the ecosystem or any species within it; and

- Industrial developments should not be sited in proximity to sensitive natural environmental areas where the likelihood or probability of impacts that may threaten the long-term viability of the ecosystem or any species within it is not substantially lower than the existing background level threat to the ecosystem.

6.5 Potential Hazardous Incidents Identified For Further Discussion

Following a review of neighbouring properties a series of potentially hazardous events or scenarios were considered to identify if further comprehensive qualitative analysis is required. Each event or scenario shall be discussed in detail and the need for a further quantitative analysis considered.

The following current potential hazards could not be eliminated through the first review and require further examination:

- LPG Fire

This scenario are discussed below.

6.5.1 LPG

The proposed development will have LPG tanks for the heating of the poultry sheds and are required to be at quantities classified as an industrial or commercial site. At each PPU there will be LPG storage consisting of 8 tanks each of 7,500L capacity, giving a maximum LPG storage at each PPU of 60,000L. Therefore the maximum onsite storage of LPG will be 300,000L.

The LPG total storage will be separated into five areas with associated PPUs and approximately 1 km apart. Whilst each individual PPU LPG store (above ground) will exceed the SEPP 33 Threshold Level Quantity, the location and installed equipment will meet the requirements of AS/NZS 1596:2014 *The storage and handling of LP* Gas.

AS1596 requires the installation and maintenance of number of safety features for LPG plant and equipment specifically designed to reduce the overall risk of operations. The correct operation and maintenance of this equipment has been assumed as part of the likelihood assessments.

The location of the above-ground storage shall comply with the following requirements for ventilation and access and set up:

(a) Above-ground storage tanks shall be in the open air, outside buildings.

(b) Nearby construction, fences, walls, vapour barriers, or the like shall permit free access around and cross-ventilation for the tank.

(c) The largest LPG tanks on site have a diameter of 1.2m and therefore adjacent LPG tanks will be 1.2m apart from each other.

Table 6.1 *Location of Above-Ground Storage Tanks* from AS 1596 (below) shows the minimum allowable distances from the LPG installation at each PPU to a public place, which in this case includes the National Park and Nature Reserve and on-site residences, and protected places. In this study we have expanded the protected place to include a building where people are employed or reside within a development's boundaries such as any office, lunchroom, warehouse, processing area or caretaker accommodation.

Each LPG storage facility is significantly further than minimum distances required by AS 1596, which as set out in Table 6.1 below is10m from a public place and more than 17m from a protected place.

TABLE 6.1

LOCATION OF ABOVE-GROUND STORAGE TANKS

1	2	3	4
Capacity of the tank kL	Minimum distance to an adjacent LP Gas tank m	Minimum distance from the tank to a public place, or a railway line m	Minimum distance from the tank to a protected place m
≥0.5	Diameter of the largest tank	1.5	1.5
1		2	3
2		4 (3)	6 (4.5)
5		5 (3.5)	8 (5)
8		6 (4)	10 (6)
10		7	11
15		8	14
20		9	15
50		10	17
100		11	20
200		12	25
500		22	45

In addition is should be noted that the design and layout of the LPG storage facilities at the proposal development has been designed by the LPG gas supplier, Elgas .

6.6 LPG Transportation

The LPG storage areas are separated by distance of up to 1km between each PPU. Each PPU may contain up to 8 tanks with each tank containing up to 7,500L, totalling up to 60kL per PPU.

The LPG requirement is limited with up to two deliveries per month. Additional heating may be required for the chicks during batching for a period no longer than 2 weeks.

SLR Consulting has been advised that rigid transport trucks will be undertaking LPG deliveries. This will limit the amount of LPG that can be delivered at any one time. Each delivery would be a maximum 17,500L of LPG over the site. The maximum delivery may not be required at each visit as each PPU has multiple tanks which may not require refilling.

Whilst the quantities of LPG transported to site exceed SEPP 33 threshold levels the number of truck movement is less than 1 per week, the deliveries are being undertaken in a sparsely populated area and rigid vehicles are being used, which limits the capacity of LPG transported, and as such a further consequence analysis for transport risks is not considered necessary.

6.7 Assessment Criteria Applicable to the Proposed Development Application

In accordance with HIPAP 4 Risk Criteria for Land Use Safety Planning, the following is a discussion of the risk assessment criteria that shall be applied to the proposed development application.

6.7.1 Heat-Flux Radiation Criteria

As discussed above, further consequence analysis of an incident involving heat radiation from a fire from neighbouring sites is not considered necessary.

6.7.2 Explosion Over-Pressure Criteria

As discussed above, further consequence analysis of an incident involving explosion over pressure from a fire on-site is not considered necessary.

6.7.3 Toxic Exposure Criteria

The proposed development does store chemicals at quantities to be classified as an industrial or commercial site, however the sodium hypochlorite total storage will be separated into five areas with associated PPUs and approximately 1 km apart. Furthermore the individual storage at each PPU will be below the SEPP 33 Threshold Level Quantity.

Consequently, a consequence analysis of an incident involving toxic gas emissions from a fire on-site is not considered necessary.

6.7.4 Biophysical Environment Risk Criteria

The proposed development will store volumes of dangerous goods, in the form of sodium hypochlorite. This may tend to generate toxic releases in the event of a large spill or fire (and chemical reaction in some cases releasing chlorine) however the total storage will be separated into five areas with associated PPUs and approximately 1 km apart. Furthermore the individual storage at each PPU will be below the SEPP 33 Threshold Level Quantity.

Consequently, a further consequence analysis of an incident involving toxic releases into the biophysical environment is not considered necessary.

6.8 Concluding Remarks

It is considered that the operations of the proposed development with the safeguards as stipulated would not cause significant off site risks. The development is considered to be potentially hazardous based on the SEPP 33 screening thresholds, given the quantity of LPG stored on site. However the total storage will be separated into five areas with associated PPUs approximately 1 km apart. Furthermore the surrounding area is lightly populated with the closest potential residence approximately 2.3 km from the boundary and the nearest population centre, Narrandera 26 km away. In addition it should be noted that the design and layout of the LPG storage facilities at the proposed development has been designed by the LPG gas supplier, Elgas. In consideration of all these factors, the development does not pose a significant offsite risk.

7 CONCLUSION

The Preliminary Hazard Analysis has found that the operation of the proposed development meets the criteria laid down in HIPAP 4 Risk Criteria for Land Use Safety Planning and would not cause any risk, significant or minor, to the community.

Other spill, fire and incident events are not likely to extend significantly beyond the boundary of the site, with the exception of a major facility fire where, regardless of the type of operation there will always be a risk of potentially harmful smoke plumes downwind from a fire. In the majority of large fires the buoyant nature of a smoke plume means any potentially harmful materials are rapidly dispersed.

LPG storage, whilst significant at each PPU is well within the storage and handling requirements of AS/NZS 1596:2014 The storage and handling of LP Gas, both for public places and protected places, which including onsite residences and work areas.

It is the conclusion of this PHA that the proposed development meets all the requirements stipulated by the Department of Planning and Environment, and hence would not be considered, with suitable engineering and design controls in place, to be an offensive or hazardous development on site or would not be impacted by any hazardous incidents from adjoining facilities off site.

8 REFERENCES

AS/NZS 1596:2014 The storage and handling of LP Gas

Commonwealth Government, 2014, Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Number 7.3).

State Environmental Planning Policy No. 33-Hazardous and Offensive Development.

Department of Planning NSW, 2011, Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines.

Planning NSW, 2011 Rick Criteria for Land Use Safety Planning – Hazardous Industry Planning Advisory Paper No 4, New South Wales Government

Planning NSW, 2011 Hazard Analysis – Hazardous Industry Planning Advisory Paper No 6, New South Wales Government