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# Environmental Monitoring Plan

Harvey Fresh Juice, Hanwood, NSW

Report Number 24359.99526



*Prepared for*

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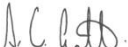
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## **Executive Summary**

Harvey Fresh Juice Pty Ltd (HFJ) operates a food processing plant at 126 Crawford Road in Hanwood, NSW. The food processing plant is currently approved to operate up to 100,000T/year under their Environmental Protection Licence (EPL) issued by the NSW Environmental Protection Authority (EPA).

As part of the development approval for the site, DA No.303-08-00 issued by the Department of Urban Affairs and Planning in December 2000, an Environmental Monitoring Program was required to be developed in accordance with condition 16 of this development approval.

This Environmental Monitoring Program addresses the specified environmental monitoring requirements for the development approval and EPL requirements that have been issued for this site.

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## 1. Introduction

Harvey Fresh Juice Pty Ltd (HFJ) operates a food processing plant at 126 Crawford Road in Hanwood, NSW. The food processing plant is currently approved to operate up to 100,000T/year under their Environmental Protection Licence (EPL) issued by the NSW Environmental Protection Authority (EPA).

**Table 1 Site Details**

Operator Details	Harvey Fresh Juice Pty Ltd
Site Contact	Neil Clark, Site Manager
Site Address	126 Crawford Road, Hanwood, NSW
Lot and Plan	Lot 7 DP113112
Local Government Area	Griffith City Council
Development Approval	303-08-00
EPL	11302
Total Site Area	148 ha

### 1.1 Purpose

As part of the development approval for the site, DA No.303-08-00 issued by the Department of Urban Affairs and Planning in December 2000, an Environmental Monitoring Program was required to be developed in accordance with condition 16 of this development approval.

The Environmental Monitoring Program addresses the specified environmental monitoring requirements for the development approval and EPL requirements that have been issued for this site.

### 1.2 Site Description

The HFJ site is located approximately 10km south of the Griffith town centre in a predominantly rural area with minimal sensitive receptors nearby (refer to Figure 1 for site location). The area contains significant agribusiness including direct neighbouring properties that operate poultry farms.

The majority of the HFJ site consists of cropping and irrigation uses with a minor section for the food process plant infrastructure. The site is relatively level with significant areas of flood irrigation installed (due to the past land use for rice growing and production purposes).

The location of the food processing plant and other site infrastructure are detailed in Figure 2. The site consists of the following infrastructure:

- Food processing plant (include storage areas and ancillary office buildings);
- Sewage Treatment Plan;
- Waste water storage and treatment dams; and,
- Irrigation infrastructure.

### 1.3 Environmental Requirements

To ensure that the site is operating at full environmental compliance, the site must regularly review environmental policies, procedures and management plans to certify that they meet the requirements of the following legislative documents:

- Development Approval (DA. 303-08-00);
- EPL (11302);
- Protection of the Environment Operations Act 1997; and,
- Environmental Planning and Assessment Act 1979.



## Site Location

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**Legend**

Lot Boundaries	Rail Network
<b>Infrastructure</b>	<b>Environment</b>
<b>Settlements</b>	<b>Waterways</b>
Town	Creek
<b>Road Network</b>	Channel
Road	
Lane	
Track	
Avenue	
Boulevard	
Close	
Court	
Crescent	
Drive	
Grove	
Place	
Street	
Way	

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Figure 1 Site Location



# Site Layout

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**Legend**

Lot Boundaries	Buildings
Site Infrastructure	Water Filtration Shed
Stormwater Bund	Food Processing
Vegetation Areas	Dams/Ponds
Irrigation Area	Stormwater Pond
Tree Lot	New Dam
Olive Plantings	Infrastructure
WW Systems	Road Network
Treatment Ponds	Road
	Way

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Figure 2 Site Layout

## 2. Environmental Issues

### 2.1 Noise

Potential noise sources from the site may consist of:

- Compressors;
- Cooling towers;
- Freezer fans;
- Boilers;
- Evaporators;
- Heavy vehicles movements; and,
- Unloading and loading operations.

Operational hours of the facility include 5am to midnight from Monday to Friday, there is provision for the facility to also operate 5pm Saturday to midday Sunday; however, this is only under exceptional circumstances (refer to SEE document dated March 2006).

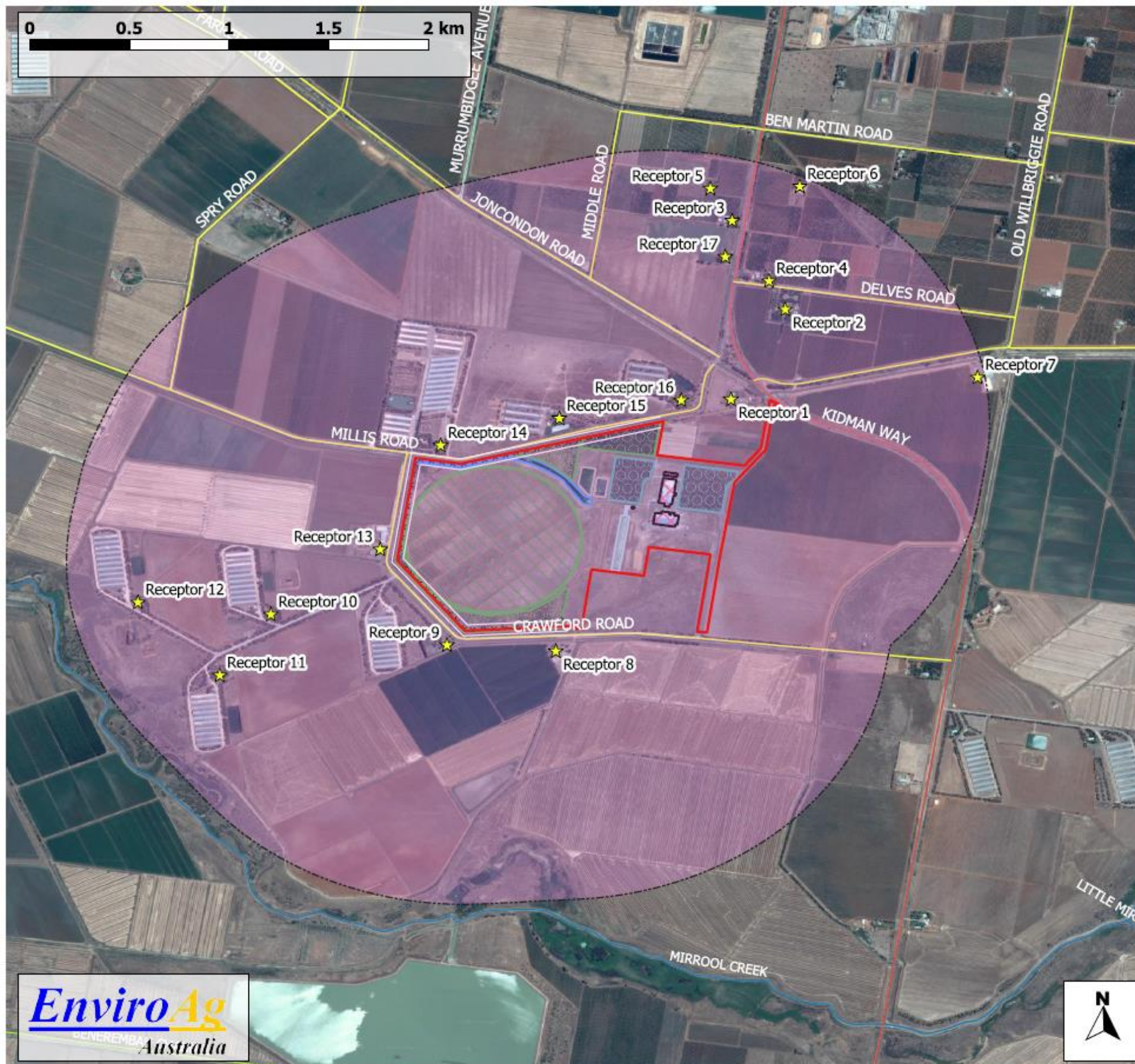
The site is located in a rural area; however, there is significant agri-business surrounding the facility including substantial poultry farms. These farms would operate 24 hours per day and have some similar infrastructure to the food processing plant that would produce significant noise concerns for nearby sensitive receptors. Of particular concern would be the frequent operation of extraction fans on the poultry sheds.

Nearby receptors are located as close as 500m from the food processing facility. Receptors in a 2km radius (of irrigation areas) are listed in Table 2 and shown in Figure 3. Note, some of the locations listed as “receptors” may not be actual sensitive receptors and may be commercial operations associated with agri-businesses.

**Table 2 Sensitive Receptor Locations**

Receptor ID	Distance from Food Processing Facility	GPS Location	Directional Location from Food Processing Facility
1	568m	-34.3711, 146.0345	NE
2	1.2km	-34.3662, 146.0375	NE
3	1.56km	-34.3647, 146.0366	N
4	1.25km	-34.3614, 146.0346	NNE
5	1.74km	-34.3596, 146.0334	N
6	1.83km	-34.3595, 146.0383	NNE
7	1.63km	-34.3699, 146.048	NE
8	1.23km	-34.3849, 146.0249	SSW
9	1.55km	-34.3846, 146.019	SSW
10	2.20km	-34.3829, 146.0094	SW
11	2.59km	-34.3862, 146.0066	SW
12	2.80km	-34.3822, 146.0021	SW
13	1.55km	-34.3793, 146.0153	SW
14	1.18km	-34.3737, 146.0186	W
15	681m	-34.3722, 146.0251	NW
16	477m	-34.3712, 146.0318	N
17	1.34km	-34.3634, 146.0342	N

Given the operational hours of the site noise monitoring would be required to be completed in all phases of the regulated timeframes, i.e. Daytime, Evening and Night-time.



## Receptors (2km Buffer)

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**Legend**

Lot Boundaries	Food Processing
<b>Receptors</b>	<b>Dams/Ponds</b>
Sites	Stormwater Pond
Buffer (2km)	New Dam
<b>Site Infrastructure</b>	<b>Infrastructure</b>
Stormwater Bund	<b>Road Network</b>
<b>Vegetation Areas</b>	Road
Irrigation Area	Avenue
Tree Lot	Way
Olive Plantings	<b>Environment</b>
<b>WW Systems</b>	<b>Waterways</b>
Treatment Ponds	Creek
<b>Buildings</b>	Channel
Water Filtration Shed	

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Figure 3 Sensitive Receptor Locations

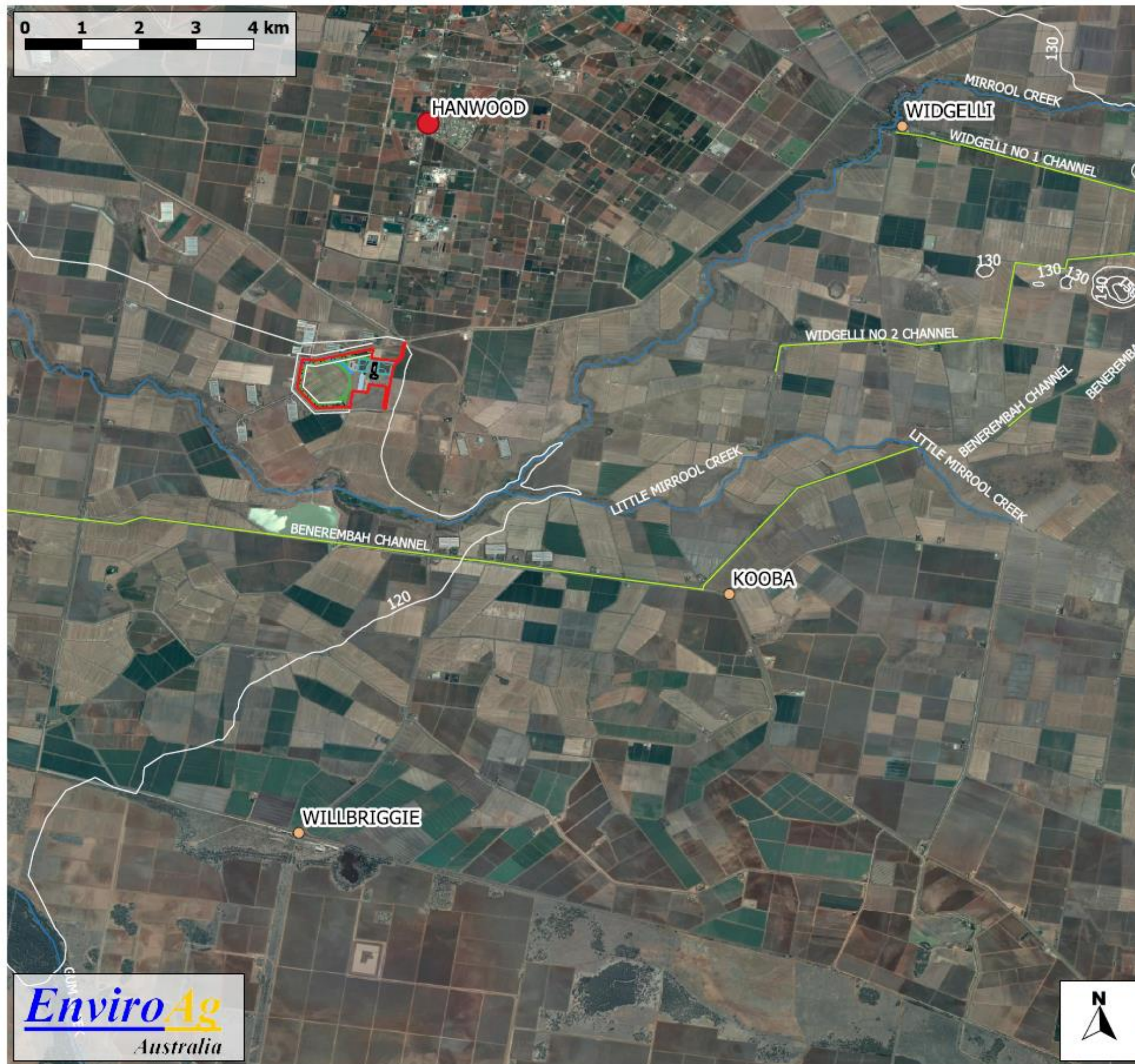
## 2.2 Stormwater

Stormwater catchment on site has been strategically designed to ensure that all waters captured on site are maintained on site. This reduces the potential of any contaminated waters escaping into the surrounding environment.

The site is considered quite flat with less than 1% slope across it (refer to Figure 4). All water flow across the site moves in a south western direction towards the south west border, towards irrigation area 1 (refer to Figure 5). The water is capture by the on-site bund that extends from the northern boundary, down the western boundary and along the southern boundary of the site (refer to Figure 5).

Stormwater from the food processing plant is captured on site by stormwater infrastructure and directed to the on-site stormwater storage pond (refer to Figure 2).

Given that stormwater is completely contained on site and very unlikely to leave the site under any circumstances, it is not considered necessary to implement a stormwater monitoring program. There are no direct water discharge points from the site where water monitoring could be performed. Water associated with other infrastructure on site (i.e. effluent ponds and irrigation areas) would provide a clear picture of water quality associated with any potential runoff that may leave the site.



## Topography

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**Legend**

- Lot Boundaries
- Contour (10m)
- Site Infrastructure**
- Stormwater Bund
- Vegetation Areas**
- Irrigation Area
- Tree Lot
- Olive Plantings
- WW Systems**
- Treatment Ponds
- Buildings**
- Water Filtration Shed
- Food Processing
- Dams/Ponds**
- Stormwater Pond
- New Dam
- Infrastructure**
- Settlements**
- Town
- Locality
- Environment**
- Waterways**
- Creek
- Channel

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Figure 4 Site Topography



## Site Layout and Topology

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**Legend**

Lot Boundaries	Food Processing
Contour (10m)	<b>Dams/Ponds</b>
<b>Site Infrastructure</b>	Stormwater Pond
Stormwater Bund	New Dam
<b>Vegetation Areas</b>	<b>Infrastructure</b>
Irrigation Area	<b>Road Network</b>
Tree Lot	Road
Olive Plantings	Way
<b>WW Systems</b>	<b>Environment</b>
Treatment Ponds	<b>Waterways</b>
<b>Buildings</b>	Creek
Water Filtration Shed	

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Figure 5 Direction of water flow

## 2.3 Waste Water

As per EnviroAg's report developed in 2015 (Report No. 23968.80641) for waste water management at this facility, the maximum wastewater production at this site is 55ML/year.

The site infrastructure for waste water management is shown in Figure 6.

Effluent from the facility is piped to effluent pond 1 which is an anaerobic lagoon with a 22ML capacity. Once treatment has occurred it is moved to effluent pond 2 which is an aerobic lagoon with 12ML capacity. Once treatment in effluent pond 2 has concluded, waters are either used direction for irrigation (on approved effluent utilisation areas) or stored in the "stormwater storage dam" until it can be utilised for irrigation. The site has a total effluent storage capacity of 39ML, which has been estimated to be approximately 3 months storage for the sites operations (EnviroAg 2015).

Issues that may be caused by waste water generated on site may include:

- Odour generation (more likely from anaerobic pond); and,
- Excessive nutrient loads into runoff waters, soils and groundwater.

Odour generation from the effluent ponds is considered to be negligible considering the surrounding background uses of the area that generate significant odour emissions (i.e. poultry farms). No odour monitoring conditions have been applied in the EPL or the DA.

Nutrient loads in treated waste waters are managed under the EPL. The EPA has designated 10 monitoring points which consist of surface, soil and ground water monitoring points for various chemical and physical properties.

The monitoring requirements for waste water are detailed in section 3.2.



## Site Layout and EPA Points

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### Legend

- Lot Boundaries
- EPA**
- EPA Monitoring Areas**
- EPA 10
- EPA 9
- EPA Monitoring Points
- Site Infrastructure**
- Stormwater Bund
- Olive Plantings
- WW Systems**
- Treatment Ponds
- Buildings**
- Water Filtration Shed
- Food Processing
- Dams/Ponds**
- Stormwater Pond
- New Dam

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Figure 6 Waste Water Management Infrastructure

## 2.4 Groundwater

The Statement of Environmental Effects report (Habitat 2006) and the site Annual Return reporting for the EPA (2016-2017) indicates that recorded ground water levels at the site are approximately 2m depth.

The high water table may be attributed to the soil composition and drainage capabilities (e.g. clay content of the soil), geographical location to existing water sources or the utilisation of flood irrigation on site. The cause for the high water table may be attributed to a combination of these factors (DES 2016). These factors may also be the cause of the elevated conductivity levels have been observed in the groundwater monitoring rounds (EPA 2003).

On site waste water contaminants, elevated nutrient levels, may also impact the quality of ground water and its' potential use for other purposes (ANZECC 2018).

Groundwater monitoring for this site has been detailed in section 3.3.

## 2.5 Potable Water

The SEE document (Habitat 2006) indicates that connection to treated town water supply is not available for the site. Water is acquired from the Murrumbidgee Irrigation supply channel and has entitlements to draw up to 1,084ML of high security water supply and 1,260ML of normal security supply.

Water acquired from the Murrumbidgee Irrigation channel is stored on site in 110ML freshwater storage dam which supplies the food processing plant. Water passes through a filtration plant for treatment prior to use on site. Treated waters are stored in two 285kL storage tanks for use in the processing plant.

The treatment system is maintained by the system suppliers on a quarterly basis, these suppliers will test the quality of water to ensure that water levels meet the Australian Drinking Water Guidelines (ADWG). Given the small supply of water that is specific to this facility only, it is recommended that assessment of drinking water quality be performed as per Chapter 4 of the ADWG. This will allow the basic range of measures to occur more frequently than the complex measurements performed on a quarterly basis. According to the ADWG the principle risk to human health from drinking water is the presence of pathogenic microorganisms (NHMRC 2018).

According to the SEE document (Habitat 2006) data from the treatment plant can be downloaded from the system and provide performance status. It is recommended that this occurs at least once daily to ensure the system is operating effectively.

The ADWG recommends the framework be implemented for best practice of potable water quality management

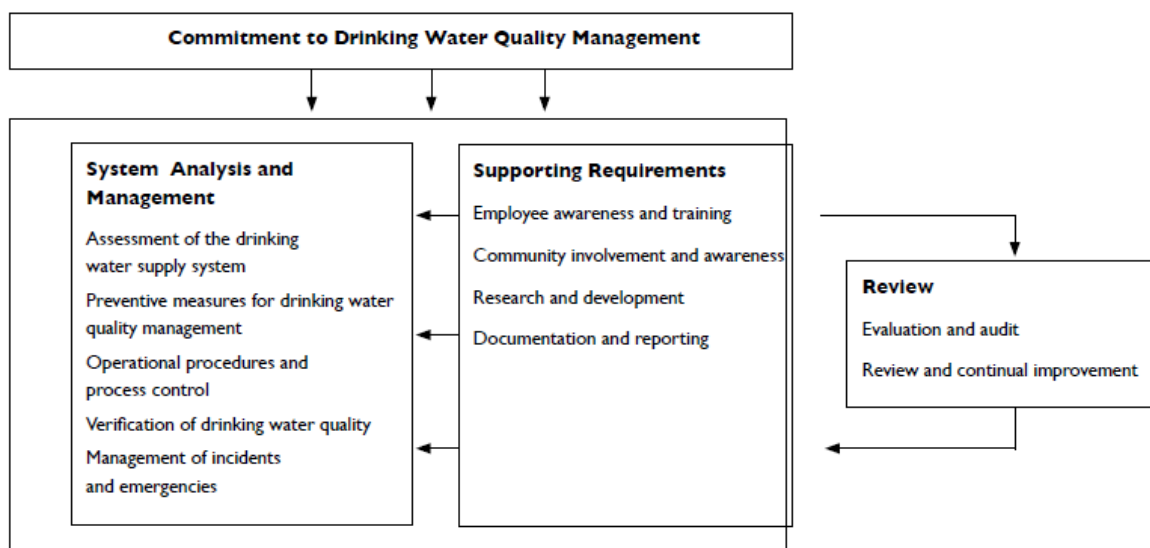


Figure 7 Framework for Management of Drinking Water Quality

Potable water monitoring requirements for the site are detailed in section 3.4.

## **2.6 Soils**

Soil monitoring on site is specifically targeted around the waste water utilisation areas to ensure that contaminants results from effluent utilisation is not resulting in contaminant build up in the soils.

As outlined in the groundwater section, the utilisation of effluent waters for irrigation purposes can increase nutrient loadings (nitrogen, phosphorus, potassium, magnesium, sulphur and calcium), the nutrient outputs of the waste water treatment areas can determine the type of crop utilised in irrigation areas (EPA 2003). The primary removal of nutrients from effluent irrigation waters in irrigation areas is the uptake of nutrients by crops and soil sorption. This is especially important for phosphorus removal. Excess potassium in soils can result in salinity and soil stability issues (EPA 2003).

Soil monitoring for this site has been detailed in section 3.5.

### 3. Monitoring Program

#### 3.1 Noise

As per the EPL (11302) requirements:

*“Noise from the premises is to be measured at nearest sensitive receiver or at any other impacted residential premises to determine compliance with the condition.”*

**Table 3 Noise Monitoring Requirements**

Location	Timing	Regulated Levels ( $L_{Aeq, (15 \text{ minute})}$ )	Frequency
Nearest Receptor / Impacted Resident	Daytime (7am to 6pm)	40 dB (A)	As required by the EPA (i.e. when requested by authorised office to complete monitoring).
	Evening (6pm to 10pm)	40 dB (A)	
	Night-time (10pm to 7am)	35 dB (A)	

##### 3.1.1 Measurement Criteria

For the purpose of noise measurements required for this condition:

- the  $L_{Aeq}$  noise level must be measured or computed over a period of 15 minutes using “FAST” response on the sound level meter.
- 5dBA must be added to the measured level if the noise is substantially tonal or impulsive in character. The location or point of impact can be different for each development, for example, at the closest residential receiver or at the closest boundary of the development.

Measurement locations can be:

- 1 metre from the facade of the residence for night-time assessment;
- At the residential boundary;
- 30 metres from the residence (rural situations) where boundary is more than 30 metres from residence;
- Noise from the premises is to be measured at the nearest sensitive receiver or at any other impacted residential premises to determine compliance with this condition;
- The noise emission limits identified in this condition apply for prevailing meteorological conditions (winds up to 3m/s), except under conditions of temperature inversions. Noise impacts that may be enhanced by temperature inversions must be addressed by:
  - documenting noise complaints received to identify any higher level of impacts or patterns of temperature inversions;
  - where levels of noise complaints indicate a higher level of impact then actions to quantify and ameliorate any enhanced impacts under temperature inversions conditions should be developed and implemented.

##### 3.1.2 Monitoring Records

Monitoring records must include:

- Date which monitoring occurred;
- Time at which monitoring occurred;
- Location at which monitoring occurred; and,
- Details of the person who conducted the monitoring.

### 3.2 Waste Water

Waste water monitoring is covered in both the EPL and the DA. It is noted that no discharge limits have been applied to the operational site in either of these regulatory licenses and is assumed that the EPA may apply ANZECC values or the NSW EPA *Environmental Guidelines: Use of Effluent by Irrigation* (refer to Figure 8).

**Table 3.1: Classification of effluent for environmental management**

Constituent	Strength (average concentration mg/L) <sup>1</sup>		
	Low <sup>2</sup>	Medium	High
Total nitrogen	<50	50–100	>100
Total phosphorus	<10	10–20	>20
BOD <sub>5</sub>	<40	40–1,500	>1,500
TDS <sup>3</sup>	<600	600–1,000	>1,000–2,500
Other pollutants (e.g. metals, pesticides)	Effluent with more than five times <sup>4</sup> the ANZECC and ARMCANZ (2000) long-term water quality trigger values for irrigation waters must be considered high strength for the purpose of establishing a strength class for runoff and discharge controls and will require close examination to ensure soil is not contaminated.		
Grease and oil	Effluent with more than 1,500 mg/L of grease and oil must be considered high strength and irrigation rates and practices must be managed to ensure soil and vegetation is not damaged.		

**Notes:**

1. Average concentrations established from a minimum of 12 representative samples, collected at regular intervals over a year.
2. Effluent generated by municipal sewage treatment plants with secondary treatment will generally be considered to be low strength.
3. Refer to Section 3.7 for relationship of TDS to EC.
4. Criteria of five times the ANZECC and ARMCANZ (2000) long-term irrigation criteria have been selected as nominal criteria at which the level of those contaminants warrants a higher level of management of the reuse system for the following reasons. This criteria when applied to 1 ML/d of effluent irrigated over 100 hectares would take approximately 10 years for soil contaminant levels in the top 15 cm of soil to rise to near the soil contaminant criteria for Cadmium, Chromium and Zinc, which are the most sensitive heavy metal pollutants in this scenario. This criteria is also approximately half the value for Nickel, Mercury, Beryllium and Arsenic at which the effluent would be considered a liquid waste and would need to be managed and disposed of according to the DEC's *Environmental Guidelines for the Assessment, Classification and Management of Liquid and Non-Liquid Waste* (EPA 1999a).

**Figure 8 Environmental Management Guidelines for Effluent Irrigation**

Waste water monitoring locations for the site are specified by the EPA in the EPL as detailed in Table 4 and shown in Appendix A.

**Table 4 EPA Waste Water Monitoring Locations**

EPA ID No.	Type of Monitoring Point	Location Description
EPA 1	Effluent Quality Monitoring	Waste water sample point located on effluent pond 2
EPA 2	<i>Volume Monitoring Only</i>	Waste water volume measure point located on the trade waste drainage line.
EPA 9	Discharge to utilisation area – <i>Volume Monitoring Only</i>	Main irrigation area
EPA 10	Discharge to utilisation area – <i>Volume Monitoring Only</i>	Irrigation area 1, Irrigation area 2 and Irrigation area 3.

Groundwater monitoring requirements as per the EPL for the facility are detailed in Table 5, this monitoring is to occur at all locations specified in Table 7.

**Table 5 Waste Water Monitoring Requirements for the EPL**

Parameter	Unit of Measure	Frequency	Sampling Method
Conductivity	µS/cm	Bi-annually	Representative
Nitrogen (ammonia)	mg/L	Bi-annually	Representative
Nitrogen (total)	mg/L	Bi-annually	Representative
pH	-	Bi-annually	Representative
Phosphorus (total)	mg/L	Bi-annually	Representative
Potassium	mg/L	Bi-annually	Representative
BOD	mg/L	Bi-annually	Representative
Total Suspended Solids	mg/L	Bi-annually	Representative

Groundwater monitoring requirements as per the DA for the facility are detailed in Table 6, this monitoring is to occur at all locations specified in Table 4.

**Table 6 Waste Water Monitoring Requirements for the DA**

Parameter	Unit of Measure	Frequency	Sampling Method
Conductivity	µS/m	Bi-annually	Grab Sample
Nitrogen (ammonia)	mg/L	Bi-annually	Grab Sample
Total Kjeldah Nitrogen	mg/L	Bi-annually	Grab Sample
Nitrate and Nitrite	mg/L	Bi-annually	Grab Sample
pH	-	Bi-annually	Grab Sample
Phosphorus (total)	mg/L	Bi-annually	Grab Sample
Potassium	mg/L	Bi-annually	Grab Sample
BOD	mg/L	Bi-annually	Grab Sample
Total Suspended Solids	mg/L	Bi-annually	Grab Sample

### 3.2.1 Monitoring Records

Monitoring records must include:

- Date which monitoring occurred;
- Time at which monitoring occurred;
- Location at which monitoring occurred; and,
- Details of the person who conducted the monitoring.

### 3.3 Groundwater

Ground water monitoring is covered in both the EPL and the DA. It is noted that no discharge limits have been applied to the operational site in either of these regulatory licenses and is assumed that the EPA may apply ANZECC values or the NSW EPA Environmental Guidelines: Use of Effluent by Irrigation (refer to Figure 8).

Groundwater monitoring locations for the site are specified by the EPA in the EPL as detailed in Table 7 and shown in Appendix A.

**Table 7 EPA Groundwater Monitoring Locations**

EPA ID No.	Type of Monitoring Point	Location Description
EPA 3	Groundwater Quality Monitoring	Piezometer located south of main irrigation area.
EPA 4	Groundwater Quality Monitoring	Piezometer located west of the main irrigation area.
EPA 5	Groundwater Quality Monitoring	Piezometer located north of the main irrigation area.
EPA 6	Groundwater Quality Monitoring	Piezometer located north of irrigation area 3.

Groundwater monitoring requirements as per the EPL for the facility are detailed in Table 8, this monitoring is to occur at all locations specified in Table 7.

**Table 8 Groundwater Monitoring Requirements for the EPL**

Parameter	Unit of Measure	Frequency	Sampling Method
Conductivity	µS/cm	Yearly	Representative
Nitrate	mg/L	Yearly	Representative
Nitrogen (total)	mg/L	Yearly	Representative
pH	-	Yearly	Representative
Phosphorus (total)	mg/L	Yearly	Representative
Potassium	mg/L	Yearly	Representative
Sodium	mg/L	Yearly	Representative
Standing water level	m	Yearly	Inspection

Groundwater monitoring requirements as per the DA for the facility are detailed in Table 9, this monitoring is to occur at all locations specified in Table 7.

**Table 9 Groundwater Monitoring Requirements for the DA**

Parameter	Unit of Measure	Frequency	Sampling Method
pH	-	Yearly	Grab Sample
Electrical Conductivity	dS/m	Yearly	Grab Sample
Total Suspended Solids	mg/L	Yearly	Grab Sample
Total Phosphorus	mg/L	Yearly	Grab Sample
Total Kjeldah Nitrogen	mg/L	Yearly	Grab Sample
Nitrate	mg/L	Yearly	Grab Sample
BOD	mg/L	Yearly	Grab Sample
Total Dissolved Solids	mg/L	Yearly	Grab Sample

### 3.3.1 Monitoring Records

Monitoring records must include:

- Date which monitoring occurred;
- Time at which monitoring occurred;
- Location at which monitoring occurred; and,
- Details of the person who conducted the monitoring.

### 3.4 Potable Water

The development of a potable water monitoring program is a requirement of the DA. Given the size of the facility the ADWG recommends that microbial testing for *E.coli* be performed at least once per week (NHMRC 2018). However, this may not be economically feasible. In the event that weekly monitoring does not occur, daily monitoring of the treatment system performance and daily sanitary inspections of equipment and water storage areas are to be completed and documented. Other recommended parameter testing required for potable water are listed in Table 10.

**Table 10 Potable Water Monitoring**

Parameter	Unit of Measure	Frequency	Water Quality Limit
Free Chlorine	mg/L	Daily	0.2 to 0.5 mg/L
E.coli		Weekly	Not present in 100mL of water sample
pH	-	Weekly	6.5 – 8.5
Turbidity	NTU	Weekly	5 NTU

#### 3.4.1 Sampling Methodology

Free-chlorine, pH and turbidity can all be sampled using suitable hand held probe machines. However, *E.coli* must be sampled in a laboratory. *E.coli* sampling requires specific sampling bottles to be supplied to the site that contain a preservative called sodium thiosulfate. A minimum of 200mL will be required and a headspace of 2cm will be required at the neck of the bottle. *E.coli* samples must be submitted to lab in a chilled container and within 24 hours of sampling (NMI 2018).

#### 3.4.2 Monitoring Records

Monitoring records must include:

- Date which monitoring occurred;
- Time at which monitoring occurred;
- Location at which monitoring occurred; and,
- Details of the person who conducted the monitoring.

### 3.5 Soils

Soil monitoring is covered in both the EPL and the DA. It is noted that no discharge limits have been applied to the operational site in either of these regulatory licenses and is assumed that the EPA may apply ANZECC values or the NSW EPA *Environmental Guidelines: Use of Effluent by Irrigation*.

Soil monitoring locations for the site are specified by the EPA in the EPL as detailed in Table 11 and shown in Appendix A.

**Table 11 EPA Soil Monitoring Locations**

EPA ID No.	Type of Monitoring Point	Location Description
EPA 7	Soil Quality Monitoring	Soil monitoring point in irrigation area 3.
EPA 8	Soil Quality Monitoring	Soil monitoring point in the main irrigation area.

Groundwater monitoring requirements as per the EPL for the facility are detailed in Table 12, this monitoring is to occur at all locations specified in Table 11.

**Table 12 Soil Monitoring Requirements for the EPL**

Parameter	Unit of Measure	Frequency	Sampling Method
Available Phosphorus	Mm/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Cation Exchange Capacity	cmol(+)/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Conductivity	dS/cm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Calcium	cmol(+)/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Magnesium	cmol(+)/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Potassium	cmol(+)/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Sodium	cmol(+)/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Nitrate	mg/kg	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
pH	-	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Total Organic Carbon	%	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)

Groundwater monitoring requirements as per the DA for the facility are detailed in Table 13, this monitoring is to occur at all locations specified in Table 11.

**Table 13 Soil Monitoring Requirements for the DA**

Parameter	Unit of Measure	Frequency	Sampling Method
pH	-	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Electrical Conductivity	dS/m	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Phosphorus	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Nitrate	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Sodium	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Potassium	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Calcium	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Exchangeable Magnesium	ppm	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)
Total Organic Carbon	%	Yearly	Representative sample from surface (0-15cm) and sub surface (45-60cm)

### 3.5.1 Monitoring Records

Monitoring records must include:

- Date which monitoring occurred;
- Time at which monitoring occurred;

- Location at which monitoring occurred; and,
- Details of the person who conducted the monitoring.

## 4. Compliance Management

### 4.1 Roles and Responsibilities

- All sampling and monitoring required by this monitoring program shall be completed by suitably trained staff members to carry out the requirements of this monitoring program.
- All water sampling must be conducted in accordance with the NSW EPA *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (2004).
- All noise monitoring is to be conducted in accordance with the NSW EPA *Noise Policy for Industry* (2017).

### 4.2 Training

All HFJ employees will be given a fundamental induction on environmental responsibilities relevant to their position which includes this Environmental Monitoring Program. Employees directly involved with environmental monitoring practices will be given detailed training in:

- Approved water sampling methods (both environmental monitoring and potable water monitoring);
- Acquiring systems performance data from the potable water treatment plant;
- Suitable soil sampling methods; and,
- Approved noise measurement and reporting methods.

A record of all employee training must be maintained on site.

### 4.3 Reporting

#### 4.3.1 EPL Requirements

As per the EPL requirements, all records of monitoring must be kept:

- In a legible form, or in a form that can readily be reduced to a legible form;
- Kept for at least 4 years after the monitoring or event to which they relate took place; and ,
- Produced in a legible form to any authorised officer who asks to see them.

All data in this monitoring program shall be provided to the EPA in the approved Annual Return form which outlines:

- A statement of compliance; and,
- A monitoring and complaints summary.

#### 4.3.2 Development Approval Requirements

HFJ are required to complete annual environmental management report (AEMR) under condition 27 of DA.303-08-00. This AEMR is to consist of:

- Identification of all performance measures on site to be complied with;
- Review of performance measures in 12 month period; and,
- Identification of any specific non-compliances with this monitoring program.

Any non-compliances reported are to be accompanied by a list of action items completed to rectify the issue.

## 5. Review and Improvement

The ongoing evaluation of environmental management performance against relevant environmental approvals and legislation will ensure that continuous improvement of this Environmental Monitoring Plan will be achieved. Regular review and reporting on environmental monitoring requirements will:

- Determine the cause of any non-conformances or operational deficiencies;
- Identify opportunities for improvement in environmental performance; and,
- Identify any needs to amend licenses or approvals as necessary.

## 6. References

- EnviroAg (2015). *Waste Water Management Plan: Harvey Fresh Juice Waste Water Management Plan – Report Number 23968.80641*. EnviroAg, Armidale, NSW.
- Habitat Planning (2006). *Statement of Environmental Effects: Modification of Food Processing Plant, Crawford Road, Willbriggie, Griffith*. Habitat Planning, Albury, NSW.
- National Health and Medical Research Council (2018) Australian Drinking Water Guidelines 6 2011, v.3.5. (online) <https://nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines> (25/02/2019).
- National Measurement Institute (2018). Testing Drinking Water For Domestic Use. (online) <https://www.measurement.gov.au/Services/EnvironmentalTesting/Documents/TestingDrinkingWaterDomesticUse.pdf> (accessed 25/02/2019).
- NSW EPA (2003). *Environmental Guideline: Use of Effluent by Irrigation*. (online) <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/epa/effguide.pdf> (accessed 25/02/2019).
- NSW EPA (2004). *Approved Methods for Sampling and Analysis of Water Pollutants in NSW*. (online) <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/water/approvedmethods-water.pdf> (accessed 25/02/2019).
- NSW EPA (2017). Noise Policy for Industry. (online) <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/noise/17p0524-noise-policy-for-industry.pdf> (accessed 25/02/2019).
- QLD Department of Environment and Science (2016). *Underground water*. (online) <https://environment.des.qld.gov.au/management/non-mining/groundwater.html> (accessed 25/02/2019).

## 7. Appendices

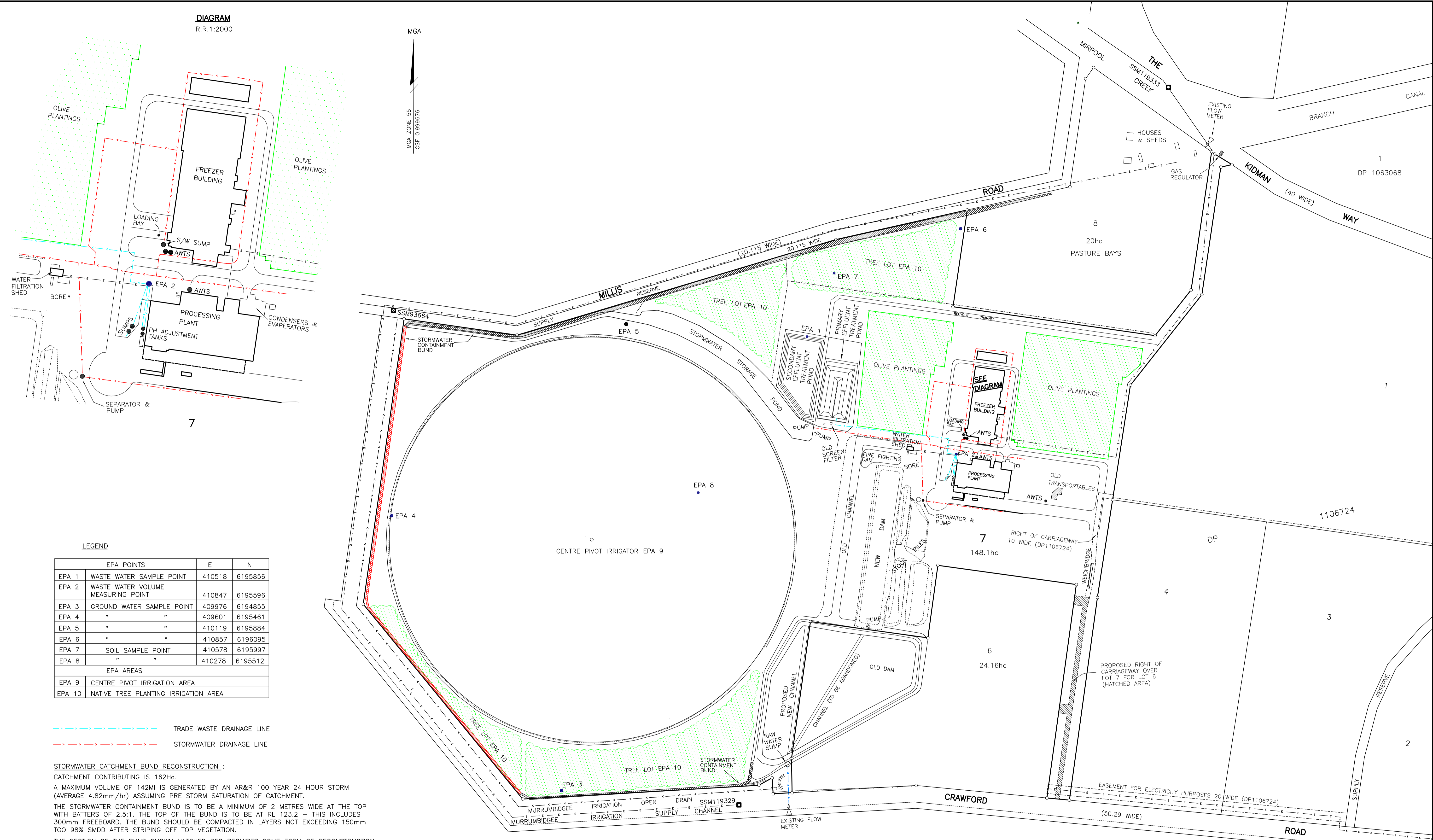
Appendix A. EPL Monitoring Location

A-1

## **Appendix A. EPL Monitoring Location**

**DIAGRAM**  
R.R.1:2000

MGA  
MGA ZONE 55  
CSF 0.989676



**LEGEND**

EPA POINTS		E	N
EPA 1	WASTE WATER SAMPLE POINT	410518	6195856
EPA 2	WASTE WATER VOLUME MEASURING POINT	410847	6195596
EPA 3	GROUND WATER SAMPLE POINT	409976	6194855
EPA 4	"	409601	6195461
EPA 5	"	410119	6195884
EPA 6	"	410857	6196095
EPA 7	SOIL SAMPLE POINT	410578	6195997
EPA 8	"	410278	6195512
EPA AREAS			
EPA 9	CENTRE PIVOT IRRIGATION AREA		
EPA 10	NATIVE TREE PLANTING IRRIGATION AREA		

- - - - - TRADE WASTE DRAINAGE LINE
- - - - - STORMWATER DRAINAGE LINE

**STORMWATER CATCHMENT BUND RECONSTRUCTION :**  
CATCHMENT CONTRIBUTING IS 162Ha.  
A MAXIMUM VOLUME OF 142MI IS GENERATED BY AN AR&R 100 YEAR 24 HOUR STORM (AVERAGE 4.82mm/hr) ASSUMING PRE STORM SATURATION OF CATCHMENT.  
THE STORMWATER CONTAINMENT BUND IS TO BE A MINIMUM OF 2 METRES WIDE AT THE TOP WITH BATTERS OF 2.5:1. THE TOP OF THE BUND IS TO BE AT RL 123.2 - THIS INCLUDES 300mm FREEBOARD. THE BUND SHOULD BE COMPACTED IN LAYERS NOT EXCEEDING 150mm TOO 98% SMDD AFTER STRIPPING OFF TOP VEGETATION.  
THE SECTION OF THE BUND SHOWN HATCHED RED REQUIRES SOME FORM OF RECONSTRUCTION. IT IS RECOMMENDED THAT GEOTECHNICAL TESTING BE UNDERTAKEN TO DETERMINE THE SUITABILITY OF EXISTING MATERIAL WITHIN THE BUND AND THE SUITABILITY OF ANY SELECT FILL TO BE UTILISED IN THE RECONSTRUCTION.

ORIGINAL A1 SHEET

200mm

09/11/2008	2	FIRE FIGHTING DAM ADDED	
15/08/2008	1	ORIGINAL ISSUE	
DATE	No.	ISSUE	AUTHORISED
DRAWN: JM		CHECKED: JDH	

COMPUTER FILES: ACAD: 212C08.dwg

**COMMENTS:**  
PLAN COMPILED FROM PARTIAL SITE SURVEY AND PRE EXISTING PLANS. HEIGHT DATUM IS AHD - ORIGIN IS SSM93664 RL123.489.  
AWTS : AERATED WASTEWATER TREATMENT SYSTEMS.

  
**POLKINGHORNE HARRISON LONGHURST**  
 115 Yambil Street, Griffith NSW 2680 Ph (02) 6964 3192  
 13 Gibraltar Street, Bungendore NSW 2621 Ph (02) 6238 0144  
[www.phlsurveyors.com.au](http://www.phlsurveyors.com.au)

CLIENT: NUGAN QUALITY FOODS	DATE: 15/08/2008
TITLE: FARM 1059 - CRAWFORD ROAD - HANWOOD	FILE: PN 212
UPDATED SITE PLAN OF PROPOSED LOT 7	SCALE: 1:4000
	A1 - 522120
	SHEET 1 OF 1