



Review of Environmental Impacts at Orford
Sewage Treatment Plant with respect to

**Attenuation Code 9.0 of Tasmanian Planning
Scheme - Glamorgan Spring Bay**

For Subdivision at Lot 2 Rheban Rd Orford

for Rheban Rd P/L per Ben Comelli

Glamorgan Spring Bay Council

August 2022

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Summary

This Environmental Report (EIR) has been prepared to provide supporting information for a permit under the *Land Use Planning and Approval Act 1993*. The Report has been prepared to conduct the Attenuation Report including a review and assessment of odour impacts which was already completed in 2018. Due to the Interim Planning Scheme being superseded by the Tasmanian Planning Scheme - Glamorgan Spring Bay, the existing odour report was considered to need reviewing.

The following parameters form the basis of the development:

- ❑ Orford Sewage Treatment Plant Odour Assessment for M & H Lawrence and Others prepared by Environmental Dynamics
- ❑ The Attenuation Code C9 of the Tasmanian Planning Scheme – Glamorgan Spring Bay Council

This review has considered the Odour Assessment report and other impacts in relation to the location of the proposed residential subdivision development.

Those matters listed in the Attenuation Code C9 have been considered.

The study has not identified any significant environmental impacts based on an assessment of odour, noise and visual impact of the sewage lagoons to the proposed house site.

The Attenuation Distance (AD) has been established to maintain the safe operations of the sewage lagoons and also residential amenity. The odour modelling was completed using the CRIRO model The Air Pollution Model (TAPM). The model predicted fully 3-D winds from synoptic meteorological data gathered by the Bureau of Meteorology from nearby weather stations. Although the proposed subdivision is within the 350 AD, the odour modelling predicted there will not be detectable odour from the STP by residents of the subdivision.

Notwithstanding, to further mitigate any possible odour impacts, it is recommended that the subdivision have the screen of vegetation planted between the lagoons and the subdivision along Rheban Road maintained. The final subdivision layout needs to take this recommendation into account.

The performance criteria of Attenuation code C9 have been addressed.

CONTENTS

Summary	3
Background.....	5
Site Description.....	6
Planning	7
Attenuation Code.....	8
General	8
Attenuation for Orford Sewage Treatment Plant.....	8
Environmental Impacts	10
Scope of Assessment	10
Orford Sewage Treatment Plant	11
Odour	12
Visual impact.....	14
Noise Impacts	14
Effluent Reuse	14
Summary	15
Conclusion.....	16
References	17
Appendix A – Attenuation Code C9 of TPS - Glamorgan Spring Bay Criteria.....	18
Appendix B – Orford Sewage Treatment Plant Plans (ref: DPIWE Environmental Permit Conditions).....	27

List of Figures

Fig 1 – Site Location	6
Fig 2 – Zoning or Area (source Tasmanian Planning Scheme Glamorgan Spring Bay).....	7
Fig 3 – 350m & 150m radius around Sewage Lagoon	9
Fig 4 - Orford Sewage Lagoon System.....	11

Background

The Odour Assessment was completed at the request of TasWater as the proposed subdivision is within the attenuation zone of the former Glamorgan Spring Bay Interim Planning Scheme. This scheme has now been superseded by Code C9 of the TPS - Glamorgan Spring Bay Planning Scheme 2022. However, the attenuation code between the two schemes has little difference. It is anticipated that it may be used in conjunction with the requirements of any environmental condition(s) imposed within a permit issued by the Council.

The development is for a 91-unit residential subdivision at lot 2 Rheban Rd Orford. The substance of the TasWater request requires the applicant to demonstrate compliance with the Attenuation Code C9 of the Tasmanian Planning Scheme – Glamorgan Spring Bay Council “the code”.

Figure 1 details the Site Location within Orford. The title boundaries and development site are highlighted. The sewage lagoons are located to the south of the property.

Site Description

The site is vacant land and appears to have been a horse training track (see Fig 1). The surrounding land areas are relatively flat and there are drainage lines running through the development site. Residential houses sit to the west and north of the proposed subdivision. The east of open vacant land. To the south is Rheban Road and the Orford Sewage Treatment lagoons which occupy a flat swampy area.

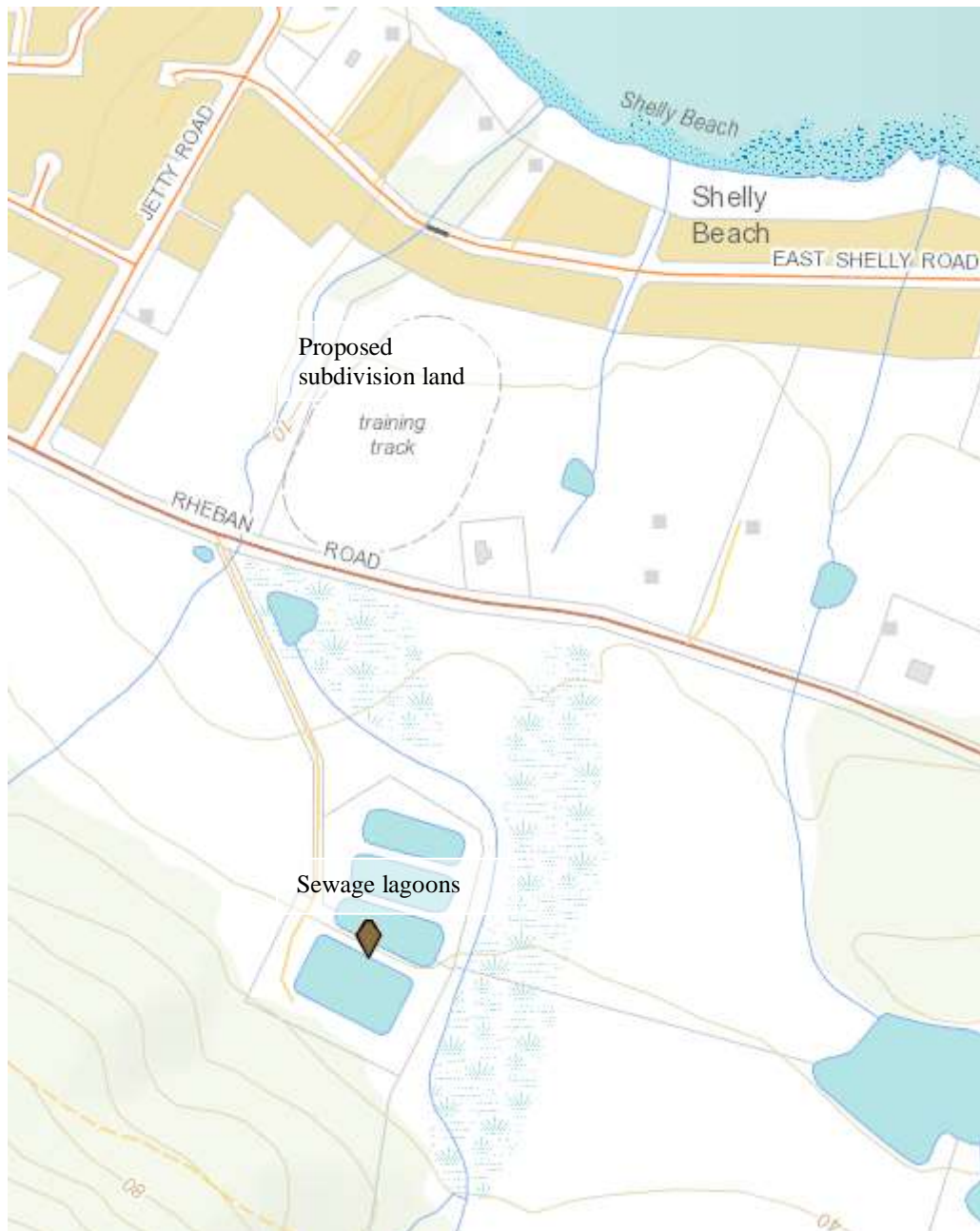


Fig 1 – Site Location

Planning

Planning matters have been addressed by Neil Shephard & Associates. Notwithstanding the zoning of the area is shown in Fig 2 below. The land proposed to be subdivided is zoned Future Urban. This report only considers the matters in Code C9.

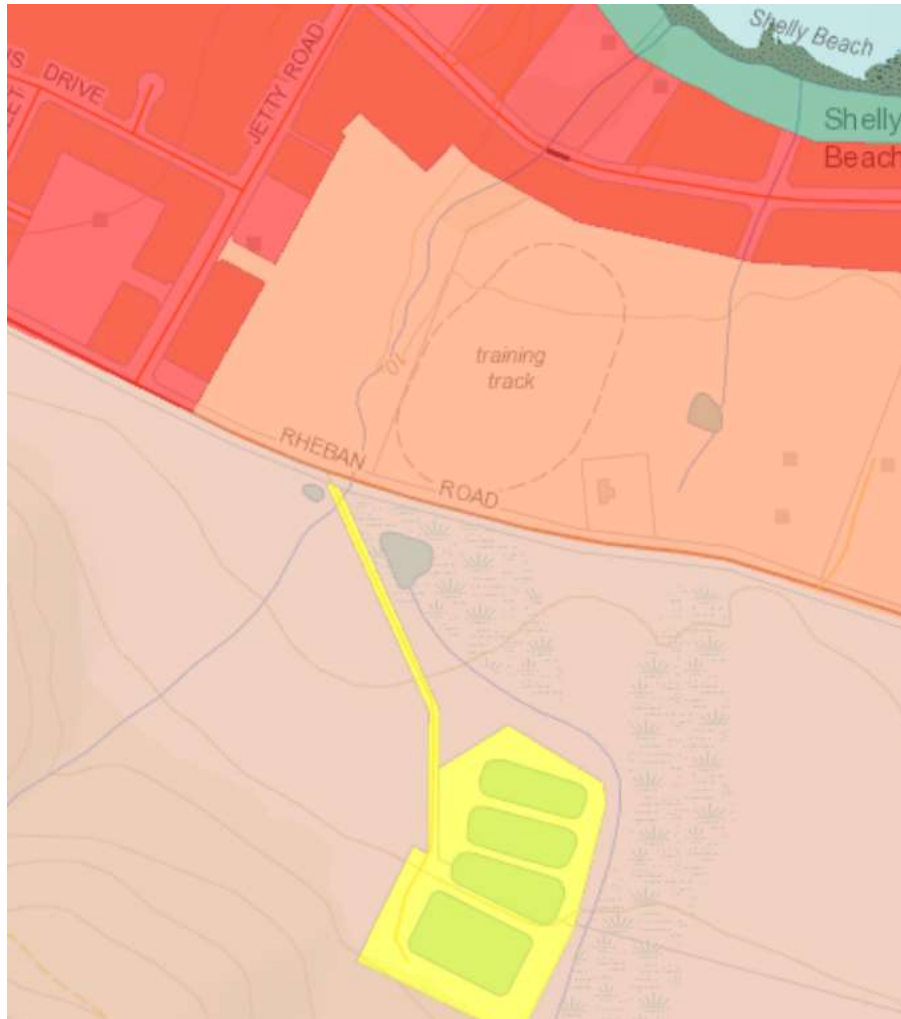


Fig 2 – Zoning or Area (source Tasmanian Planning Scheme Glamorgan Spring Bay)

Legend

- General Residential
- Future Urban
- Rural
- Utilities

Attenuation Code

General

Parts C 9.2 of the code states that the code applies to:

- (a) activities listed in Tables C9.1 and C9.2,
- (b) sensitive uses and
- (c) subdivision if it creates a lot where a sensitive use could be established, within an attenuation area.

Provisions C9.2.2, C9.2.3 and C9.2.4 state where the code does not apply. These provisions are not applicable in this case.

The table below shows the SRADs for various Sewage Treatment Plants. (see also Appendix A)

Table C9.2 Attenuation Distances for Sewage Treatment Plant Processes

Activity (type of sewage treatment plant process)	Attenuation distance according to sewage treatment plant designed capacity (average dry weather flow) in kL/day or person equivalent (pe)				
	<275kL/day or <1000pe	<1375kL/day or <5000pe	<5500kL/day or <20000pe	<13750kL/day or <50000pe	>13750kL/day or >50000pe
Mechanical/biological treatment (includes aerated lagoons)	100m	200m	300m	400m	>400m
Aerobic lagoons	150m	350m	700m	1,000m	>1,000m
Facultative lagoons	300m	550m	700m	1,000m	>1,000m
Anaerobic lagoons	400m	700m	1,400m	2,200m	>2,200m

Table C9.2 provides attenuation distances for sewage treatment plants and in the author's professional opinion, the attenuation distances are a guide only. Issues such as predominant wind directions, odour modelling, history of odour complaints, slope and vegetation in and around the ponds are factors that may mitigate any environmental impacts.

Attenuation for Orford Sewage Treatment Plant

The proposed land for subdivision is shown in Fig 3. The blue circles illustrate the 350m distance from the edge of the final sewage lagoon. The Attenuation Distance for an aerobic lagoon <1375 kL/day dry weather flow has been set at 350m. The Attenuation Distance for an aerobic lagoon <275 kL/day dry weather flow has been set at 150m.

The current plant has an average dry weather flow of 179 kL/day but has a design capacity of 473kL/day. Therefore the current capacity is well within the SRAD of 150m. The design capacity of 473 kL/day is only 30% of the 1375kL/day which is this threshold for the 350m SRAD, thus at the lower end of the scale.

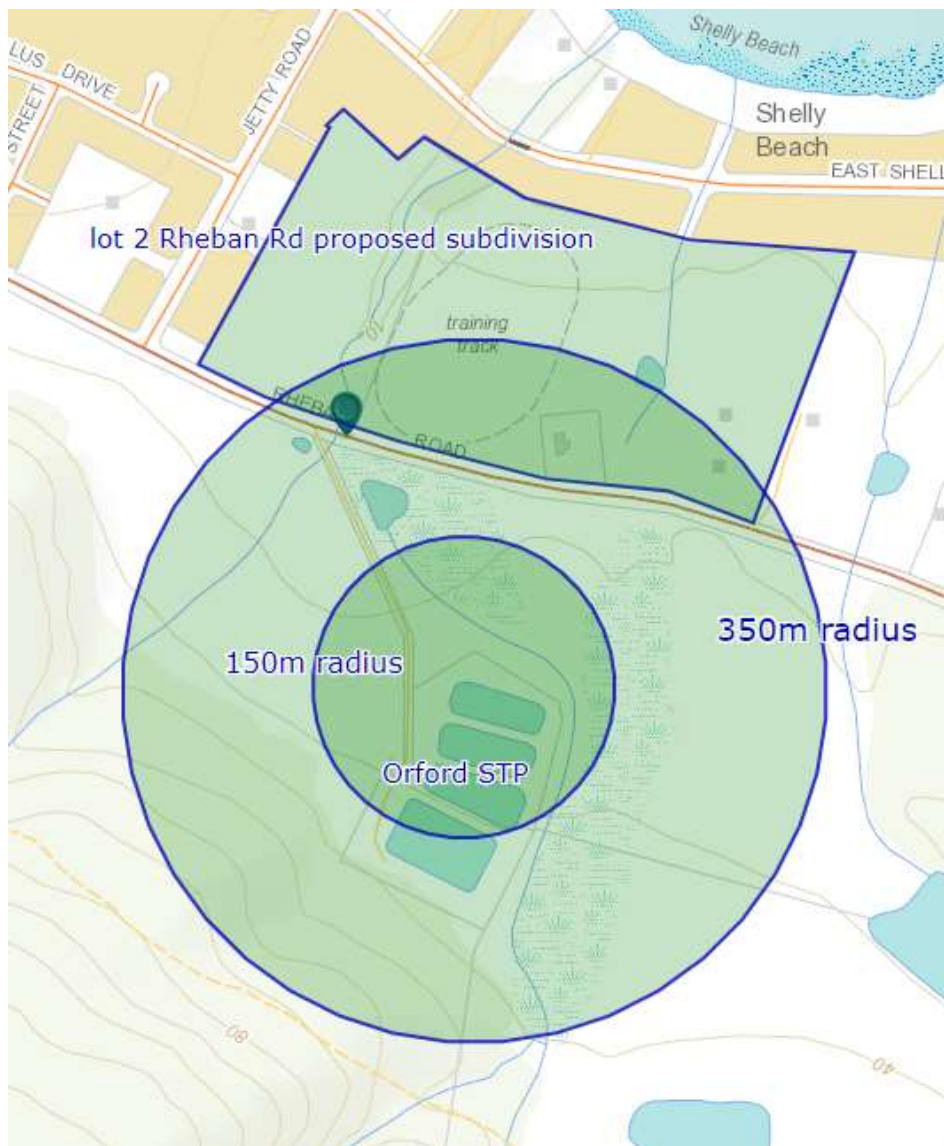


Fig 3 – 350m & 150m radius around Sewage Lagoon

Environmental Impacts

Scope of Assessment

Code C9 of the Tasmanian Planning Scheme – Glamorgan Spring Bay 2022 provides criteria to be met for sensitive use within an attenuation area (clause C9.5.2) and Development Standards for subdivision (clause C9.6). There are no Acceptable Solutions in Clause C9.5.2 and the development does not meet the Acceptable Solutions under clause C9.6 because lots will be in the attenuation area.

Therefore the scope of the assessment is against Performance Criteria.

Clause C9.5.2 includes

Sensitive use with an attenuation area, must not interfere with or constrain an existing activity listed in tables C9.1 or C9.2 having regard to

- (a) the nature of the activity with potential to cause emissions including:
 - (i) operational characteristics of the activity;
 - (ii) scale and intensity of the activity; and
 - (iii) degree of hazard or pollution that may be emitted from the activity
- (b) the nature of the sensitive use
- (c) the extent of encroachment by the sensitive use into the attenuation zone
- (d) measures in the design, layout and construction of the development for the sensitive use to eliminate, mitigate or manage effects of emissions of the activity;
- (e) any advice from the Director, Environment Protection Authority; and
- (f) any advice from the Director of Mines

Clause C9.6 includes

Each lot, or a lot proposed in a plan of subdivision, within an attenuation area must not result in the potential for a sensitive use to be impacted by emissions, having regard to:

- (a) the nature of the activity with potential to cause emissions including:
 - (i) operational characteristics of the activity;
 - (ii) scale and intensity of the activity; and
 - (iii) degree of hazard or pollution that may be emitted from the activity
- (b) the nature of the sensitive use

These criteria are addressed below in discussing the environmental impacts and nature of the activity.

Orford Sewage Treatment Plant

According to TasWater's submission to Planning Authority Notice, they do not object to the draft amendment to planning scheme and has not formal comments for the Tasmanian Planning Commission. The Orford Sewage Treatment plant is understood to have been performing well and can be verified according to TasWater's Annual Environmental Review. Fig 4 shows the STP in relation to the proposed subdivision.



Fig 4 Orford Sewage Lagoon System

The dry weather flow (design flow) of the system is 473 KL/day and as defined in EMPCA, has been classed as a Level 2 facility. The system has capacity to accommodate more residential development without needing any future expansion. Average daily inflow is 179 kL/day and the treated effluent has an outfall at a discharge Point near Quarry Point. The design capacity is at the low end of the range

and its current average daily flow is only 40% of the low end of the range. [addresses in part Performance criteria (a) (i), (ii) (iii), (b) and (c)]

The plant operates under an Environmental Permit conditions (ELMS 6235) issued on 26 August 2002 by the Environment Division within DPIPWE (now the EPA). This is the regulatory tool to manage the STP by the EPA. The permit includes two proposed 10ML holding lagoons to be located to the SE of the plant in a location to be selected subject to geological investigations. The plans of the system including the discharge location is shown in Appendix B.

The lagoon discharge limits are shown below:

- BOD 30 mg/L
- Ammonia nitrogen 25 mg/L
- Suspended Solids 40 mg/L
- Total Nitrogen 25 mg/L
- Total Phosphorus 10 mg/L
- Oils and Grease, phosphorous 10 mg/L
- Thermotolerant coliforms 1000 cfu/100ml

TasWater, have indicated that there is no immediate intention to expand the system.

If the treated effluent is discharged to Discharge Point 2 for the purposes of reuse it must have a BOD not exceeding 50mg/L and thermotolerant coliforms of <1000 cfu/100ml. [Advice of the EPA is that the STP is licensed and compliance with the permit addresses Performance criteria (e)]

As the sensitive use is not an STP, the Director of Mines has not been consulted [covers Performance criteria (f)]

Odour

As part of this application, and to address the indiscretion of the Attenuation setback, odour modelling was conducted by Environmental Dynamics in 2018 (Environmental Dynamics 2018) . Dr Steve Carter conducted the odour modelling and used the CRIRO model The Air Pollution Model (TAPM). The model predicts fully 3-D winds from synoptic meteorological data gathered by the Bureau of Meteorology from nearby weather stations. The report discusses and verifies the suitability of using the TAPM.

The predominant winds predicted by TAPM are shown in the figure below from the Environmental Dynamics report. The diagram shows the annual surface (10m) 2013 wind roses predicted at the STP by TAPM. The reports states:

“The dominant west to south west wind signature is associated with the flow weather system across Tasmania from west to east, together with terrain channelling of winds including nocturnal katabatics. The digital terrain plot clearly shows that terrain blocking / channelling is expected. The east to north-east wind signature is due to the afternoon sea breeze and becomes more prominent in a wind rose showing the 3pm winds. The wind rose confirms that winds from the south, towards the proposed subdivision are rare.”

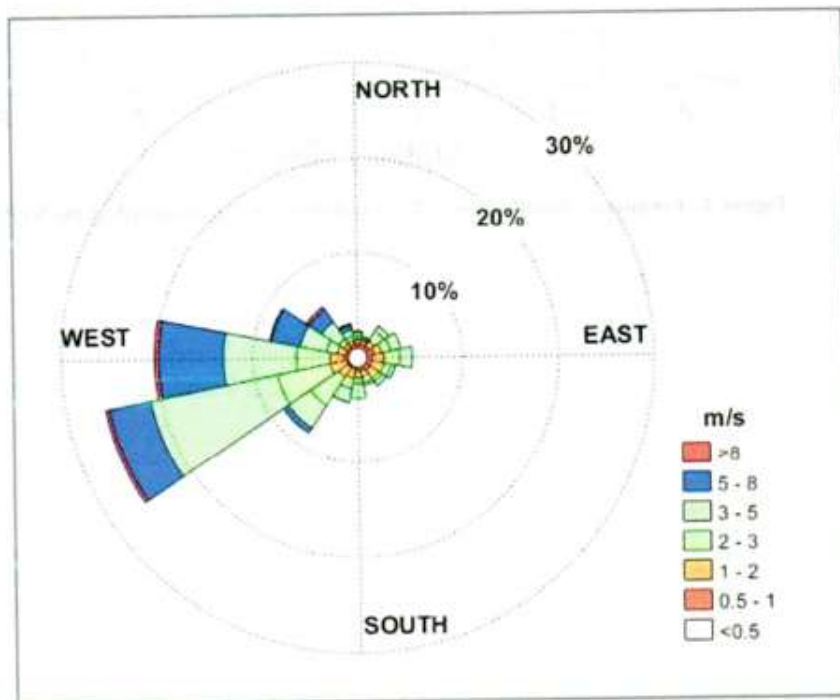


Figure 3. 2013 surface wind roses (m/s) predicted at the STP by TAPM.

The study found that the aeration lagoon was the only source of detectable odour, mainly near the inlet works located at the SW corner of the lagoon. The aeration lagoon was sampled at three locations. The measured specific odour emission rates (SOERs) were:

0.42 OUV/s per m² near the inlet works

0.20 OUV/s per m² near the lagoon outflow, and

0.37 OUV/s per m² half way between these locations

Where OUVm² is unit for Specific Odour Unit Emission Rate

At the intake works a minor source of odour was detected.

Odour Ground Level Concentrations (GLCs) were predicted across a grid with 31 east – west points and 31 north – south points. GLCs are used to assess compliance with the design GLC of 2 odour units (1 hour). The design CGL was met everywhere on and beyond the STP, which is where ambient air quality standards apply.

Considering the proposed subdivision, the highest predicted GLCs are naturally concurring along its Rheban Road boundary, with the maximum GLCVs predicted to be 0.13 odour units(1 hour) and the highest 99.5 percentile GLCs predicted to be just under 0.1 odour units hour).

The importance of this calculation is that the highest predicted odour concentration on the Rheban Road boundary of the proposed subdivision is less than one odour unit over a very short averaging period (3 minutes). Since one odour unit is the threshold of odour detection by humans, the modelling exercise prepared by Environmental Dynamics predicted that odour from the Orford STP will never be detected by residents of the subdivision.

The report expresses the limitation that the study did not consider upset conditions because there is little that can go wrong with the Orford STP, particularly as the STP does not receive trade waste. Obviously desludging of the primary lagoon, which would be expected to occur once every 20 years, will provide some odour impacts. [addresses in part Performance criteria (a), (b), (c) and (d).

Visual impact

The lagoons are over 220m from Rheban Road and there is a difference of 20m height between the proposed subdivision and the lagoons (ie the lagoons are 20m upslope). There is also a berm wall around each lagoon. Given this, they are a very low visual impact

Therefore, the visual impact is considered low. [addresses in part Performance criteria (c) and (d)].

Noise Impacts

The lagoons are understood to not be subject to aeration therefore very little noise emanates from the site. Road traffic along Rheban Road is likely to be a greater noise issue than the operation of the STP.

Therefore, the impact from noise is considered low. [addresses in part Performance criteria (c) and (d)].

Effluent Reuse

As mentioned earlier the Orford Sewage Treatment Plant is set up for possible future reuse of the treated effluent presumably on adjacent land (see Appendix B). The area that is subject to reuse is to the south east of the ponds. The proposed holding ponds are further away from the proposed subdivision than the existing STP.

The Tasmanian Planning Scheme – Glamorgan Spring Bay Code C9 specifies a recommended attenuation setback from secondary effluent reuse areas of 200m.

Therefore any future storage lagoons or reuse of treatment effluent must meet this criteria.

Summary

The assessment has revealed that the highest predicted odour concentration on the Rheban Road boundary of the proposed subdivision is less than one odour unit over a very short averaging period (3 minutes). Although one odour unit is the threshold of odour detection by humans, the modelling exercise prepared by Environmental Dynamics predicted that odour from the Orford STP will only be detected by residents of the subdivision in upset conditions. Upset conditions are unlikely and are may occur when the primary pond is desludged (once every 20 years), or a contaminant enters the ponds and causes the biological activity to be compromised.

The assessment also has highlighted that the visual impact of the ponds is low, given the lagoons are 20m elevated and have a berm wall around them. Also odour detection is very unlikely, vegetation screening does assist in abating odour dispersal

A “*measure in the design, layout and construction of the development for the sensitive use to eliminate, mitigate or manage effects of emissions of the activity*” is recommended to address this performance criteria [Performance criteria (d)]. Thus it is recommended that the existing screen of vegetation planted between the lagoons and the subdivision be retained and enhanced. The final subdivision layout needs to take this recommendation into account.

Conclusion

This report has considered the environmental impacts from the existing sewage treatment lagoon system at Orford. It has drawn upon an odour modelling report prepared by Environmental Dynamics and considered local meteorological data, including wind direction and strengths, and the proposed subdivision in relation to the sewage lagoons.

The odour impact assessment (Environmental Dynamics 2018) follows the methodology expected by the Tasmanian Environment Protection Policy (Air Quality) 2004. Odour emission rates for the lagoons were both consistent and conservative when compared to those measured or estimated from similar STPs operated by Tas Water.

The wind predictions are supportive of the location for the subdivision. A southerly wind is required for odour from the STP to impact the proposed subdivision. Westerly winds are most common. Since one odour unit is the threshold of odour detection by humans, the modelling exercise prepared by Environmental Dynamics predicted that odour from the Orford STP will never be detected by residents of the subdivision.

This report concludes that the visual impact and the impact from noise will be negligible. The issue of odour has been well addressed by Environmental Dynamics and their assessment based on reputable modelling concludes that when the STP is operating well, there will not be detectable odour from the STP by residents of the subdivision.

Notwithstanding, to further mitigate any possible odour impacts the subdivision have the screen of vegetation retained along the road reserve between the lagoons and the subdivision. The location is on the north side of Rheban Road. The final subdivision layout needs to take this recommendation into account.

References

Department of Primary Industries, Water and Environment, Tasmania; Permit conditions – Environmental; the LIST

Department of Tourism, Arts and the Environment, Environment Division, 2004; *Environmental Protection Policy (Air Quality) 2004*

Environment Protection Authority, 2016; *Environmental Protection (Noise) Regulations 2016*

Glamorgan Spring Bay Planning Scheme 2013; C9 Environmental Impacts and Attenuation Code

Environmental Dynamics 2018; Orford Sewage Treatment Plant Odour assessment prepared for M & H Lawrence & Others

Appendix A – Attenuation Code C9 of TPS - Glamorgan Spring Bay Criteria

C9.1 Code Purpose

The purpose of the Attenuation Code is:

C9.1.1 To minimise adverse impacts on the health, safety and amenity of sensitive use from activities which have the potential to cause emissions.

C9.1.2 To minimise the likelihood for sensitive use to conflict with, interfere with, or constrain, activities which have the potential to cause emissions.

C9.2 Application of this Code

C9.2.1 This code applies to:

- (a) activities listed in Tables C9.1 and C9.2;
- (b) sensitive uses; and
- (c) subdivision if it creates a lot where a sensitive use could be established, within an attenuation area.

C9.2.2 The code does not apply to attenuation areas between the activities listed in Tables C9.1 and C9.2 where those activities occur within the Light Industrial Zone, General Industrial Zone, Port and Marine Zone, and Utilities Zone.

C9.2.3 The code does not apply to sensitive uses occurring within the Light Industrial Zone, General Industrial Zone, Port and Marine Zone, and Utilities Zone.

C9.2.4 The code does not apply to a plant nursery or controlled environment agriculture activities occurring within the Rural Zone and Agriculture Zone.

C9.3 Definition of Terms

C9.3.1 In this code, unless the contrary intention appears:

Term	Definition
aerated lagoon	means a lagoon with mechanical aerators sufficient to transfer the oxygen required for biological treatment of sewage and to maintain solids in suspension to undergo aerobic decomposition.
aerobic lagoon	means a lagoon where the water column is characterised by aerobic conditions, being where oxygen is freely available for biological purposes.
anaerobic lagoon	means a lagoon where the water column is characterised by anaerobic conditions, being where oxygen is totally depleted and oxidised nitrogen is absent.
attenuation area	means land that is: <ul style="list-style-type: none">(a) within the boundary of an attenuation area shown on an overlay map in the relevant Local Provisions Schedule; or(b) within the relevant attenuation distance from an activity listed in Table C9.1 or C9.2, which is an existing activity or an activity for which a planning permit is in force. If an inconsistency exists between the relevant attenuation distance in Tables C9.1 or C9.2, and an attenuation area shown on an overlay map in the relevant Local Provisions Schedule, the distance shown on the overlay map applies.
attenuation distance	means the distance listed in Tables C9.1 and C9.2 for the relevant activity measured as the shortest distance from the boundary of the site on which the activity is located.
facultative lagoon	means a lagoon similar to an aerobic lagoon, but with lower energy input, sufficient to transfer the oxygen required to biological treatment of sewage but not to maintain solids in suspension which settle onto the lagoon floor and undergo anaerobic decomposition.
level 1 activity	means as defined in the <i>Environmental Management and Pollution Control Act 1994</i> .

C9.4 Use or Development Exempt from this Code

C9.4.1 The following use or development is exempt from this code:

- (a) use or development assessed as a level 2 activity; and
- (b) additions or alterations to an existing building used for sensitive use, provided that the gross floor area does not increase by more than 50% or 100m², whichever is the greater, from that existing at the effective date.

C9.5.1 Activities with potential to cause emissions

Objective:

That an activity with potential to cause emissions is located so that it does not cause an unreasonable impact on an existing sensitive use.

Acceptable Solutions

A1

The attenuation area of an activity listed in Tables C9.1 or C9.2 must not include:

- (a) a site used for a sensitive use which is existing;
- (b) a site that has a planning permit for a sensitive use; or
- (c) land within the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone.

Performance Criteria

P1

An activity listed in Tables C9.1 or C9.2 must not cause:

- (a) an unreasonable loss of amenity or unreasonable impacts on health and safety of a sensitive use which is existing, or has a planning permit; or
- (b) unreasonable impacts on land within the relevant attenuation area that is in the General Residential Zone, Inner Residential Zone, Low Density Residential Zone, Rural Living Zone A, Rural Living Zone B, Village Zone or Urban Mixed Use Zone, having regard to:
 - (i) operational characteristics of the activity;
 - (ii) scale and intensity of the activity;
 - (iii) degree of hazard or pollution that may be emitted from the activity;
 - (iv) hours of operation of the activity;
 - (v) nature of likely emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste;
 - (vi) existing emissions such as noise, odour, gases, dust, particulates, radiation, vibrations or waste; and
 - (vii) measures to eliminate, mitigate or manage emissions from the activity.

C9.5.2 Sensitive use within an attenuation area

Objective:

That sensitive use located within an attenuation area does not interfere with or constrain the operation of an existing activity listed in Tables C9.1 or C9.2.

Acceptable Solutions

A1

No Acceptable Solution.

Performance Criteria

P1

Sensitive use within an attenuation area, must not interfere with or constrain an existing activity listed in Tables C9.1 or C9.2, having regard to:

- (a) the nature of the activity with potential to cause emissions including:
 - (i) operational characteristics of the activity;
 - (ii) scale and intensity of the activity; and
 - (iii) degree of hazard or pollution that may be emitted from the activity;
- (b) the nature of the sensitive use;
- (c) the extent of encroachment by the sensitive use into the attenuation area;
- (d) measures in the design, layout and construction of the development for the sensitive use to eliminate, mitigate or manage effects of emissions of the activity;
- (e) any advice from the Director, Environment Protection Authority; and
- (f) any advice from the Director of Mines.

C9.6 Development Standards for Subdivision

C9.6.1 Lot design

Objective: To provide for subdivision so that a lot intended for a sensitive use:	
(a) is located to avoid an activity with potential to cause emissions and enable appropriate levels of amenity; and (b) does not conflict with, interfere with or constrain an existing activity with potential to cause emissions.	
Acceptable Solutions A1 Each lot, or a lot proposed in a plan of subdivision, within an attenuation area must:	Performance Criteria P1 Each lot, or a lot proposed in a plan of subdivision, within an attenuation area must not result in the potential for a sensitive use to be impacted by emissions, having regard to:
(a) be for the creation of separate lots for existing buildings;	(a) the nature of the activity with the potential to cause emissions, including:
(b) be for the creation of a lot where a building for a sensitive use can be located entirely outside the attenuation area; or	(i) operational characteristics of the activity;
(c) not be for the creation of a lot intended for a sensitive use.	(ii) scale and intensity of the activity; and (iii) degree of emissions from the activity; and
	(b) the intended use of the lot.

Table C9.1 Attenuation Distances

Table C9.1 Attenuation Distances (A-B)

Activity	Attenuation Distance	
	Level 1 Activity	Level 2 Activity
Abattoir or slaughterhouse (primary) The conduct of meat processing within the meaning of the Primary Produce Safety Act 2011, excluding rendering or fat extraction works – emissions such as odour, noise, dust and light pollution	500m	1,000m
Abrasive blasting The cleaning of materials by the abrasive action of any metal shot or mineral particulate propelled in a gaseous or liquid medium.	Blasting in cabinets less than 5 cubic metres in volume or totally enclosed automatic blast cleaning units – emissions such as noise and dust.	–
	All other types of operation – emissions such as noise and dust.	–
Agricultural produce processing works The conduct of works for the processing of vegetables, seed, grain, or any other agricultural crop by deep fat frying or roasting or boiling or drying through application of heat – emissions such as odour and noise.	100m	300m
Animal saleyard Yards for the holding of live animals pending sale, shipment or slaughter – emissions such as odour, noise and dust.	500m	–
Aquaculture operation	Marine or estuarine operations – emissions such as odour and noise.	–
	Land operations – emissions such as odour and noise.	–
Bakery Excluding a bakery primarily selling produce directly to the public – emissions such as noise.	200m	–
Beverage production (non-alcoholic) Beverage production plants with the capacity to produce more than 2000L per day – emissions such as odour and noise.	300m	–
Biosolids application to land Class 2 biosolids as classified in accordance with the requirement of Sections 4 and 5 of the <i>Tasmanian Biosolids Reuse Guidelines 1999</i> – emissions such as odour, noise and disease vectors.	100m	100m
Brewery or distillery The conduct of works for the production of beer by infusion, boiling or fermentation, or spirits by distillation with the capacity to produce more than 2000L per day – emissions such as odour and noise.	200m	500m

Table C9.1 Attenuation Distances (C-L)

Activity		Attenuation Distance	
		Level 1 Activity	Level 2 Activity
Cement works The conduct of works as described in Schedule 2 clause 2(a) of the Environmental Management and Pollution Control Act 1994 – emissions such as noise and dust.		–	2,000m
Ceramic works The conduct of works for the production of any products such as bricks, tiles, pipes, pottery goods, refractories or glass that are manufactured or are capable of being manufactured in furnaces or kilns fired by fuel – emissions such as noise and dust.		200m	500m
Chemical works	The manufacture (through chemical reaction) of any inorganic chemical, including sulphuric acid, inorganic fertilisers, sodium silicate, lime or other calcium compound – emissions such as odour, noise and gases.	300m	1,000m
	The manufacture (through chemical reaction) or processing of any organic chemicals or chemical product or petrochemical – emissions such as odour, noise and gases.	300m	1,500m
Cidery	Bottling facilities only – emissions such as odour and noise.	300m	–
	Cider production facilities – emissions such as odour and noise.	500m	–
Composting works Excluding backyard composting for domestic use, on-farm composting for use on agricultural land having the same owner as the land on which the compost is produced, and works in respect of silage for use on agricultural land.	Vegetation only – emissions such as odour and noise.	250m	500m
	Human or animal wastes – emissions such as odour and noise.	500m	1,000m
Concrete batching plants The conduct of works for the production of concrete by the mixing of cement, sand, rock, aggregate or other similar materials, excluding the manufacture of concrete products – emissions such as noise and dust.		200m	–
Concrete or stone product manufacture The conduct of works to manufacture concrete or stone products, excluding concrete batching plants – emissions such as odour, noise and dust.		300m	–
Crematoria Emissions such as odour and gases.		300m	–
Dog kennels Commercial operations only – emissions such as odour and noise.		300m	–
Effluent irrigation scheme Irrigation of land by treated sewage effluent.	Spray irrigation	200m	–
	Flood irrigation	50m	–
	Drip irrigation	20m	–
	Storage lagoon/holding dams	250m	–
	Effluent transfer/irrigation pumps	50m	–
Feedlot Intensive animal husbandry (excluding piggeries, poultry farms, horse stables, and any such operation carried out at an abattoir, slaughterhouse or saleyard or for the purpose only of drought or other emergency feeding) – emissions such as odour, noise and dust.		3,000m	–

Fibreglass manufacture Manufacture of fibre-reinforced plastic products – emissions such as odour and noise.		300m	–
Fish processing The conduct of works for scaling, gilling, gutting, filleting, smoking, drying or otherwise processing fish for sale, other than by freezing, chilling or packing, excluding the processing of fish only in the course of a business selling fish directly to the public – emissions such as odour and noise.		250m	500m
Flour mill Grain or seed milling works, excluding non-commercial processing for on farm use – emissions such as noise and dust.		300m	–
Frost fan Emissions such as noise.		2,000m	–
Fuel burning Excluding fuel burning associated with a domestic or on-farm use.	Waste incinerator: Wood waste – emissions such as odour, particles and gases.	100m	300m
	Waste incinerator: Plastic or rubber waste – emissions such as odour, particles and gases.	500m	1,000m
	Waste incinerator: Chemical, biomedical or organic waste – emissions such as odour, particles and gases.	500m	1,000m
	All other types of operation – emissions such as odour, particles and gases.	100m	300m
Gas pressure reduction facility A facility for altering the pressure between a gas transmission pipeline and a gas distribution system – emissions such as odour, noise and gases.		300m	–
Horse stables Commercial operations only – emissions such as odour, noise and dust.		500m	–
Joinery Production of wooden furniture and household items such as doors, kitchen fittings, flooring and mouldings – emissions such as noise and dust.		200m	–
Liquid waste spray application to land Spray application of liquid fruit or vegetable wastes, excluding spray application of treated sewage effluent.	Primary treated	500m	–
	Secondary treated	200m	–
Liquid waste treatment Lagoons for the treatment of wastewater, such as treatment of wastewater for wineries and cider production, excluding sewage treatment plants [S39] and organic waste treatment – emissions such as odour.		300m	–

Footnotes

[S39] For sewage treatment plants, refer to Table C9.2.

Table C9.1 Attenuation Distances (M-Q)

Activity	Attenuation Distance	
	Level 1 Activity	Level 2 Activity
Marinas Excluding maritime construction and maintenance works – emissions such as noise.	200m	–
Maritime construction and maintenance works The conduct of works for the construction, maintenance or repair of ships, vessels or floating platforms or structures, being works with the capacity to construct or repair ships, vessels or floating platforms or structures.	Organotin compounds used or removed from ships, vessels, or floating platforms or structures – emissions such as odour, noise, dust and gases.	–
	All other types of operation – emissions such as odour, noise, dust and gases.	–
Materials handling Processing of chemicals, rubber, rock, ores and minerals by crushing, grinding, milling or separating into different sizes by sieving, air elutriation or in any other manner – emissions such as noise and dust.	Crushing or grinding.	750m
	Other methods.	500m
Metal fabrication The fabrication of sheet metal, structural metal and other iron and steel products, excluding metallurgical works, and ferrous and non-ferrous metal melting – emissions such as noise and particles.	500m	–
Metal melting (ferrous and non-ferrous) The melting of ferrous or non-ferrous metal in a furnace – emissions such as odour and noise.	300m	1,000m
Metallurgical works The conduct of metallurgical works as described in Schedule 2, clause 2(d) of the <i>Environmental Management and Pollution Control Act 1994</i> – emissions such as odour, noise, dust and gases.	–	2,000m

Milk processing works The conduct of works at which milk is evaporated or otherwise processed for the manufacture of milk powder, cheese, butter, ice cream or other similar dairy products – emissions such as odour and noise.		100m	500m
Milking shed (dairy) Milk shed operations on dairy farms – emissions such as odour, noise and dust.		300m	–
Mine The extraction of any minerals, excluding a quarry or extractive pit – emissions such as noise, dust, ground vibration and shock waves.	Open cut.	1,000m	2,000m
	Underground.	1,000m	1,000m
Motor bodyworks Panel beating, spray painting, and the like – emissions such as odour and noise.		100m	–
Motor racing or performance trials The conduct of facilities designed for motor vehicles or motor-driven boat racing competitions, or speed or performance trials – emissions such as odour, noise and dust.		3,000m	–
Oil and gas extraction and production Land or offshore, excluding gas extraction from landfill sites – emissions such as odour, noise and gases.		2,000m	–
Oil refinery The conduct of oil refinery works as described in Schedule 2, clause 1(c) of the Environmental Management and Pollution Control Act 1994.	Refining of recycled oil – emissions such as odour, noise and gases.	–	500m
	All other refining – emissions such as odour, noise and gases.	–	2,000m
Organic waste treatment The treatment of organic waste such as animal manures, and solid waste from fruit or vegetable processing, excluding sewage treatment plants and liquid waste treatment – emissions such as odour, gases and disease vectors.		500m	–
Piggery Intensive animal husbandry.	Less than 50 pigs – emissions such as odour and noise.	500m	–
	50 or more pigs – emissions such as odour and noise.	2,000m	–
Piggery Intensive animal husbandry.	Less than 50 pigs – emissions such as odour and noise.	500m	–
	50 or more pigs – emissions such as odour and noise.	2,000m	–
Plant nurseries and controlled environment agriculture Excluding operations primarily selling directly to the public.	With manure or refuse use – emissions such as odour.	300m	–
	All other types of operation use – emissions such as odour.	100m	–
Poultry farm Intensive animal husbandry – emissions such as odour, dust and noise.		500m	–
Pre-mix bitumen plant Works in which crushed or ground rock aggregates are mixed with bituminous or asphaltic materials for the purpose of producing road-building mixtures – emissions such as odour and noise.		500m	1,000m
Pulp and paper works The conduct of pulp and paper works as described in Schedule 2, clause 2(f) of the Environmental Management and Pollution Control Act 1994.	Process involving combustion of sulphur or sulphur-containing materials – emissions such as odour, noise, particles and gases.	–	5,000m
	All other processes – emissions such as odour, noise, particles and gases.	–	1,000m
Quarry or extractive pit Extraction of rock, gravel, sand or clay, excluding a mine – emissions such as noise, dust, ground vibration and shock waves.	No blasting, crushing or vibratory screening – emissions such as noise, dust, ground vibration and shock waves.	300m	300m
	Vibratory screening – emissions such as noise, dust, ground vibration and shock waves.	500m	500m
	Crushing or grinding – emissions such as noise, dust, ground vibration and shock waves.	750m	750m
	Blasting – emissions such as noise, dust, ground vibration and shock waves.	1,000m	1,000m

Table C9.1 Attenuation Distances (R-Z)

Activity		Attenuation Distance	
		Level 1 Activity	Level 2 Activity
Rendering or fat extraction works The conduct of works at which animal, fish or grease trap wastes or other matter is processed or is capable of being processed by rendering or extraction or by some other means to produce tallow or fat or their derivatives or proteinaceous matter.	Processing of fish – emissions such as odour and noise.	500m	1,000m
	Processing of other matter – emissions such as odour and noise.	1,000m	1,500m
Scrap metal recovery The conduct of works at which scrap metals are treated in any type of fuel burning equipment or electrically heated furnaces or are disintegrated by mechanical means for recovery of metal, excluding commercial printing establishments at which type metal is melted or re-melted in thermostatically controlled pots for the purpose of type casting – emissions such as noise, dust and light pollution.		500m	–
Shooting range The conduct of facilities for outdoor shooting competitions, practice or instruction – emissions such as noise.		2,000m	–
Smallgoods manufacture	Smoking, drying and curing – emissions such as odour, noise and smoke particles.	250m	–
	All other types of operation – emissions such as odour, noise and smoke particles.	100m	–
Storage	Petroleum products and crude oil with fixed roofs – emissions such as odour and noise.	500m	–
	Petroleum products and crude oil with floating roofs – emissions such as odour and noise.	200m	–
	Wet salted or unprocessed hides – emissions such as odour and noise.	300m	–
	Chemicals – emissions such as odour and noise.	500m	–
Surface coating The conduct of works for:		300m	–
(a) metal finishing, in which metal surfaces are prepared or finished by means of electroplating, electrolyse plating, anodising (chromating, phosphating and colouring), chemical etching or milling, or printed circuit board manufacture;			
(b) hot dip galvanising; or			
(c) spray painting and powder coating, excluding motor bodyworks.			
– emissions such as gases, odour, noise and dust.			
Textile bleaching and dyeing The works involving bleaching, dyeing or printing of yarns, threads, fabrics or other textiles – emissions such as odour, noise and gases.	Textile bleaching and dyeing factory.	500m	1,000m
Waste depot The conduct of depots for the reception, storage, treatment or disposal of waste, excluding:	Waste depot non-putrescible waste only – emissions such as odour, noise, dust and disease vectors.	150m	300m
	Waste depot putrescible waste – emissions such as odour, noise, dust and disease vectors.	300m	750m
(a) temporary storage at the place at which the waste is produced while awaiting transport to another place;			
(b) storage, treatment or disposal of clean fill;			
(c) storage, treatment or disposal of domestic waste at residential premises; or			
(d) a waste transfer station.			
Waste transfer station Emissions such as odour, noise, dust, light pollution and disease vectors.		150m	–

Wind energy facility Output per wind turbine generator of less than 250kW.	single turbine generator <10kW – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	60m	–
	single turbine generator >10kW – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	250m	–
	wind farm with 2-4 turbine generators – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	350m	–
	wind farm with 5 or more turbine generators – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	500m	500m
Wind energy facility Output per wind turbine generator 250kW or greater.	single turbine generator – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	500m	–
	wind farm with 2-4 turbine generators – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	750m	750m
	wind farm with 5 or more turbine generators – emissions such as noise, electromagnetic radiation, shadow flicker and blade glint.	1,000m	1,000m
Winery	Bottling facilities only – emissions such as odour and noise.	300m	–
	Wine making – emissions such as odour and noise.	500m	–
Woodchip mill	Less than 1000 tonnes per year production capacity – emissions such as noise and particles.	250m	–
	1000 tonnes to 20 000 tonnes per year production capacity – emissions such as noise and particles.	–	500m
	More than 20 000 tonnes per year production capacity – emissions such as noise and particles.	–	1,000m
Wood preservation works The conduct of wood preservation works as described in Schedule 2, clause 1(d) of the <i>Environmental Management and Pollution Control Act 1994</i> – emissions such as odour and noise.		–	300m
Wood processing works The conduct of works (other than works at a builders supply yard, home improvement centre or firewood depot) at which timber is sawn, cut, compressed, milled, machined or kiln-dried.	Sawmill – emissions such as noise and particles.	250m	500m
	All other types of operation (excluding joinery, firewood merchant or woodchip mill) – emissions such as noise and particles.	250m	1,000m
Wool scouring, tannery or fellmongery The conduct of works for the scouring of wool or the commercial preservation or treatment or drying of animal skins or hides – emissions such as odour and noise.		250m	500m
Wrecking yard (automotive) Emissions such as noise and dust.		200m	–

Table C9.2 Attenuation Distances for Sewage Treatment Plant Processes

Activity (type of sewage treatment plant process)	Attenuation distance according to sewage treatment plant designed capacity (average dry weather flow) in kL/day or person equivalent (pe)				
	<275kL/day or <1000pe	<1375kL/day or <5000pe	<5500kL/day or <20000pe	<13750kL/day or <50000pe	>13750kL/day or >50000pe
Mechanical/biological treatment (includes aerated lagoons)	100m	200m	300m	400m	>400m
Aerobic lagoons	150m	350m	700m	1,000m	>1,000m
Facultative lagoons	300m	550m	700m	1,000m	>1,000m
Anaerobic lagoons	400m	700m	1,400m	2,200m	>2,200m

Appendix B – Orford Sewage Treatment Plant Plans (ref: DPIWE Environmental Permit Conditions)

