**Selwyn District Council Plan Change 69 2021**

**To Commissioner David Caldwell**

**SDC Plan Change 69: Submitter NC Borrie**

**Sir**

Thank you for the opportunity to comment on the agreement reached between the Applicant's experts, Mr England SDC and Mr Bender odour expert for SDC. It was apparent during the hearing that the Applicant's experts were not fully aware of how SDC was operating the Lincoln Wastewater Treatment Plant (LWTP) and they had made a number of incorrect assumptions in their evidence. For that reason they were asked to meet to discuss the situation regarding the setback from the LWTP.

My concern is that their decision to reduce the minimum setback to 100m from the edge of the pond at the LWTP was made rather rapidly during the hearing and there was no opportunity to see what scientific criteria or public health factors were taken into account when they were deciding to reduce the 150m setback.

I still have very serious concerns regarding the wisdom of reducing the 150m setback from the boundary of the area designated for the LWTP as shown in the Operative Selwyn District Plan (OSDP) to 100m from the edge of the pond. The wording has been significantly altered. *The edge of the pond* is a very different measuring point than that of *the boundary of the area designated for the LWTP*. I see this as a significant change from the original intent in C48/2000 and the OSDP and therefore continue to oppose the proposed reduction to 100m from the edge of the LWTP pond.

My reasons for taking this position are as follows:

**1. Infrastructure investment and cost to the community**

Rezoning land and building houses on land are long term actions. While land can be rezoned relatively simply and there is a recognised mechanism for doing that under the RMA, removing people's homes once built is a more complex matter, politically, socially and economically. However I agree affected residents properties can be bought in order to silence complaints/opposition and this strategy has been used to resolve some resource management matters/disputes.

If complaints of odour require SDC upgrades to or alterations in the operation of the LWTP the cost of these changes will be borne by Lincoln ratepayers. If complaints of odour require SDC to purchase some or all of the affected properties then again the cost would be borne by Lincoln ratepayers.

I consider the current 150m setback is legally in place and enforceable therefore it should be retained as it protects the economic investment that Lincoln residents have made in essential infrastructure.

**2. Wind direction and odour**

I notice that none of the odour experts gave any evidence regarding the prevailing wind direction in the vicinity of the LWPT. In my Attachment 1 Figure 3.2 Percentage frequency of wind from different directions at four sites in *The Natural Resources of Lake Ellesmere (Te Waihora) and its catchment* Canterbury Regional Council/ Report 96(7) June 1996 the wind direction of various sites in the Lake Ellesmere/Te Waihora Catchment are shown.
Figure 3.2 shows that the predominant wind at Lincoln is from the north north-east.

The prevailing wind direction indicates that for 30+% of total time wind will be blowing over the land at the southern end of the pond i.e. the area within the proposed 100m setback. Any odour will blow directly over houses that are built just 100m from the pond.

To my mind this a public health issue. Untreated wastewater is known to contain pathogens, viruses and protozoa and wind and wave action will occur on the pond surface. Will there be an aerosol effect? We now know that viruses can be picked up in wastewater discharges e.g. Covid 19. Can viruses become airborne from treatment ponds? What will we find out next?

It is not clear the extent to which those agreeing to the setback reduction have taken into consideration the potential impact on human health, well-being and enjoyment. In fact the Applicant and SDC have agreed that anyone purchasing a section within 150m of the edge of the pond will be required to enter into a no complaints agreement in favour of Selwyn District Council. To me this would hardly indicate concern for the well-being and enjoyment of the future residents on those sections. I thought that one of the purposes of the Local Government Act was S.1 (b) *to promote the social, economic, environmental and cultural well-being of communities in the present and for the future.* I would have expected more consideration to be given to community/resident well-being. I also am concerned at the ability to enforce a no complaints agreement. While such agreements are acceptable and enforceable in law, I question whether it is desirable and equitable that some future residents of Lincoln are bound ( 'gagged'?) by such an agreement. I would prefer that such an agreement is not required of any future resident of Lincoln.

Note: The prevailing north north-east wind direction in the vicinity of the LWTP was given as the reason why the original 300m setback around the LWTP was reduced during Plan Change 45 (Ryelands) in 1999/2000. My understanding is that SDC staff agreed to a reduced 150m setback, based on the argument that for the majority of the time (the figures given by SDC staff were well over 30% frequency) the wind would be blowing odour away from existing and proposed housing. And now the area is again being reduced to accommodate the desires of a developer but this time the prevailing wind will blow over not away from the proposed housing. It appears that the Applicant's economic imperatives are taking precedence over protecting existing community infrastructure from reverse sensitivity complaints and the consideration of the health, well-being and enjoyment of the residents who will live in close to the pond.

**3. Cultural values and separation distances:**

It is interesting to note in *The New Zealand Wastewater Sector. Prepared for Ministry for the Environment* by Beca, GHD, Boffa Miskel. 2021 'Chapter 4 Maori Values 4.2 Tikanga Maori, Mataurangi Maori, Maori Values and Principles' that …"human waste is considered harmful, tapu and needs to be kept as far away as possible from where people cook, eat, harvest food, talk and sleep" i.e. "separate wastewater treatment from places where people may live". p.121-122. I commend the iwi of New Zealand for having formulated a 'cultural guideline' for protecting the health of their people and find it very unfortunate that the New Zealand Government hasn't yet developed a similar Guideline.

I understand that currently MfE refers people looking for guidance in this matter to the Guideline drawn up by the EPA in the State of Victoria, Australia as the conditions are considered similar to NZ. In that Guideline Wastewater Treatment Plants are seen as industrial activities and

activities locating within the vicinity of such plants are required to meet certain setback distance requirements. There can be numerically worked out using the provided equation.

In the case of Plan Change 69, if 2000 houses were going to locate in the vicinity of an aerobic pondage system the recommended setback distance would be 367 metres. A 150m setback would not appear unreasonable when compared against those Guidelines. See Attachment 2.

**4. Need for the LWTP pond to remain.**

Mr English, in his Summary Statement of 25 November, stated that LWTP's wastewater management pond is a critical part of the Eastern Selwyn Sewage Scheme network that provides resilience within the system. In para 14 he states that if reverse sensitivity issues impact the operating or consenting of the plant then emergency storage in the event of infrastructure failures may occur. I am concerned about impacts on this critical infrastructure for the following reasons.

Dry weather overflows, i.e. due either to pipe blockages or system failures and wet weather overflows due to infiltration, do occur in any wastewater system. Mr Bender in his Summary Statement of 26 November refers to the frequency of these occurrences at LWTP in para. 6. I.e. 11 events when the ponds were used to divert wastewater from the Pines site in 20 months. He also states in para 8 that ' *provided the LWTP is maintained in an aerobic state, the effects of odour generated will an acceptable level offsite for most discharges'*(my underlining). Also '*a deposit of fresh wastewater into the pond will potentially release odour so a setback should be applied'*. This would indicate that odour is currently released on occasion and that if the pond is not kept aerobic, for whatever reason, odour will potentially be an issue.

What is unclear is the impact 2000 additional houses will have on the existing LWTP. Will that increase the likelihood of dry and wet overflow events? The high water table/ location of springs within the PC 68 area would suggest that wet overflows could potentially increase as it is not possible or desirable to exclude all infiltration. An additional 2000 connections to the LWTP will potentially put a higher loading on the plant that could lead to an increase in the number of dry overflow events. There appears to currently be no plan to increase the pond size and given the given the size of the existing LWTP there is little room for physical expansion. Complete elimination of overflow events is considered to be unrealistic according to the MfE Wastewater Report CR 452 2021.

So there needs to be a buffer pond that can absorb overflow in an emergency. I realise that there can be some storage within the existing pipe system but if development is accelerated, as in the case for Plan Change 69, there can be a delay in installing/upgrading infrastructure and the system may become "full' i.e. not have emergency capacity if the pond had to be decommissioned due to reverse sensitivity complaints.

Without a pond, in an emergency untreated wastewater would be discharged into the Ararira/LI LII streams and ultimately in to Te Waihora /Lake Ellesmere. I consider this unacceptable for cultural reasons. If Lincoln has a pond that can be used to store untreated wastewater in a dry or wet flow event, thereby avoiding discharging untreated wastewater in the local streams, then it should be protected at all cost. I suspect, given the sentiments expressed by Ngai Tahu and Taumutu Runanga, they too would agree that such discharges are to be avoided.

*"*Aaron Leith of Te Rūnanga o Ngāi Tahu gives similar sentiments in a paper given to the 2001 New Zealand Land Treatment Collective Conference*:*
*Te Rūnanga o Ngāi Tahu's tribal policy opposes the direct discharge of wastewater, including effluent, to waterways. Discharges to land are generally encouraged….Agencies need to be aware that although discharges to water may be within acceptable biological or physical water quality standards, it may not be acceptable from a cultural perspective…It is not a question of the water being within national or international health standards – if water contains wastewater…then the mahinga kai that particular waterway sustains cannot be harvested and eaten.*

These issues were again raised in a Cultural Impact Assessment Report for Te Taumutu Rūnanga by Dyanna Jolly on the Rolleston Sewage Upgrade in 2003*:*

*For tangata whenua, water is an essential ingredient of life both physically and spiritually. It is a cultural taonga left by the ancestors for the life sustaining use of their descendants, and thus the descendants have the responsibility to protect it. While the land is able to filter, cleanse and replenish itself when given enough time, the impact on water from contaminants is much more permanent. It is for this reason that sewage must not be directly disposed to water without being treated appropriately by the whenua/land. For Te Taumutu Rūnanga, dilution of pollution through disposal to water is unacceptable…Maintaining the integrity of kai is another cultural value that influences assessments of proposals for sewerage schemes. All human sewage must be kept separate from food preparation, harvesting and processing. This value applies even if the sewage is treated and appears 'clean'. For example, disposal of sewage directly to water is inappropriate, as water is a source of mahinga kai."* Pauling 2010. Pg. 18.

**5. Precautionary Principle**

I would ask that in this instance a precautionary approach be taken and if any uncertainty remains as to the desirability or feasibility of a reduction in the current 150m setback distance on social, environmental, health and wellbeing grounds then I ask the Commissioner to please err on the side of caution and retain the existing 150m setback at the designated LWTP site as per OSDP Rule 4.9.32.

I agree with Mr Philips where he states in his Summary of Evidence 24 November 2021 para. 7.7 …" In the event that doubt remains, and in light to the applicable CRPS and OSDP provisions concerning infrastructure, I accept that a precautionary approach would warrant retention of the 150m setback".

**Conclusion:**

For the above reasons I consider that the existing setback of 150m from the boundary of the designated for the LWTP as set out in the OSDP Rule 4.9.32 should be retained.

As I suggested at the hearing, the Applicant could follow the example set in Te Whariki subdivision and create at least one of the required storm water treatment areas within the area covered by the existing 150m setback. With appropriate development and planting this area would become part of a blue–green drainage/ storm water network system that enhances the biodiversity of the Ararira Stream/ LI and LII and the Te Waihora Lake Ellesmere Catchment.

The Applicant has agreed to put 100m separation distances around a large number of springs in recognition of their value to the Ararira Stream/ LI and LII Te Waihora Lake Ellesmere Catchment and wider Eastern Selwyn area.

I ask is that the value of the LWTP to the Lincoln community and the associated river catchment be recognised and, accordingly, that the existing 150m setback from the boundary of the area designated in the OSDP for the LWTP be retained so that the present and long term health and wellbeing of the Te Waihora Catchment and future residents of Lincoln are maintained.

Nancy C Borrie

8 December 2021

**References**


Canterbury Regional Council June 1996. Report 96(7) *The Natural Resources of Lake Ellesmere (Te Waihora) and its Catchment.*

EPA Victoria: *Recommended separation Guideline distances for industrial residual air emissions*

Publication number 1518 March 2013 Authorised and published by EPA Victoria, 200 Victoria Street, Carlton. Environment Protection Authority Victoria
https://www.epa.vic.gov.au/about-epa/publications/1518

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1/02/2021 CR 452.

Pauling, Craig. *Tiaki Para : a study of Ngāi Tahu values and issues regarding waste / Craig Pauling [and] Jamie Ataria.* -- Lincoln, N.Z. : Manaaki Whenua Press, Landcare Research, 2010. (Landcare Research science series, ISSN 1172-269X ; no. 39).
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Attachment 1

# The Natural Resources of Lake Ellesmere (Te Waihora) and its Catchment

Edited by
K.J.W. Taylor

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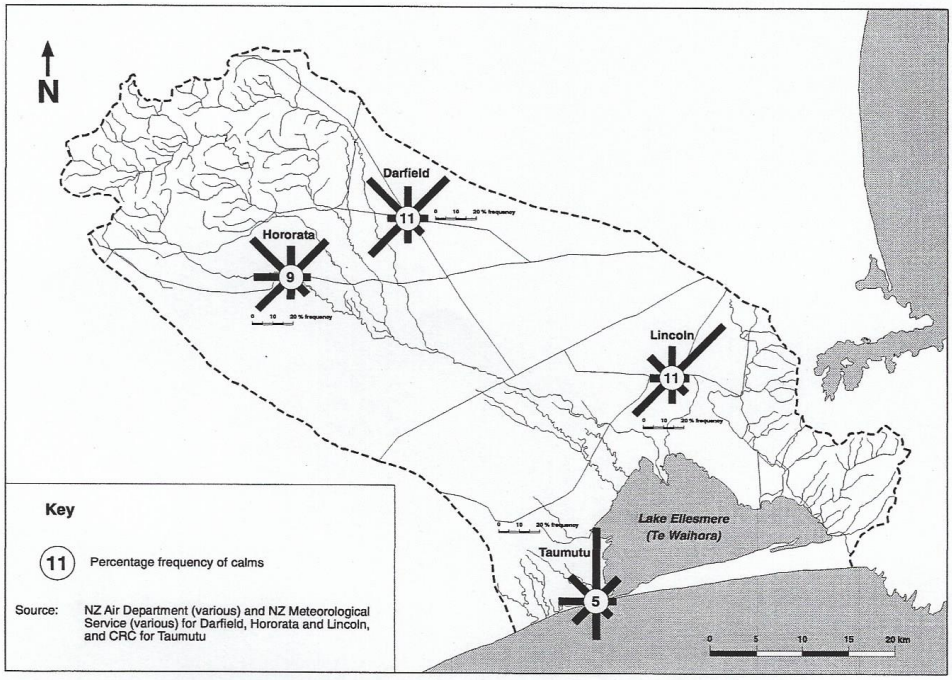


**Figure 3.2 Percentage frequency of wind from different directions at four sites**

Motukarara winds can be especially strong, as the north-east wind flows up Lyttelton Harbour and is funnelled over Gebbies Pass.

A layer of stratus or cumulus cloud is often associated with these 'northeasters', particularly in winter, extending over the Port Hills and inland from a line extending roughly south-west from Gebbies Pass. Eastwards of this line, skies are often clear due to the sheltering effect of Banks Peninsula.

The third mechanism giving rise to a north-easterly wind is the classic sea breeze phenomenon, where the land heats up more rapidly during the day than the ocean, and convection occurs over it, with cooler air being drawn in from the sea. Sea breezes are more frequent in summer than winter (McKendry, 1983). This third mechanism produces a north-easterly wind over the Plains, north of about Prebbleton. Over the region of Lake Ellesmere and Taumutu, the orientation of the coast is such that a sea breeze flows in from the south-east. These two sea breeze systems appear to converge between Lincoln and Prebbleton, and a line of cumulus clouds may form. McKendry *et al.* (1987) note that this convergence may be important in enhancing convective storm development in the area.

The nocturnal westerly is a 'drainage' wind, most common in winter. Anticyclonic conditions, with clear skies and greater radiative cooling of the ground, together with little pressure gradient, result in the lower layer of the atmosphere cooling and partially decoupling from the layers above. The cooler, more dense air flows down the plains toward the coast. These winds are more prevalent inland nearer the foothills than at the coast (McKendry, 1983). Typically they are 30-60 m deep, with speeds of several km $hr^{-1}$ (Ryan, 1980).

Wind speed varies over the catchment due to the effects of topography. Near the Rakaia and Waimakariri River gorges, stronger north-west winds are funnelled out onto the plains. As a result, Darfield records 4.6 days of gale force winds per year, in comparison to 0.6 days at Hororata. Lincoln, which can experience strong north-west and south-west winds, averages about 2.4 days with gale force winds per year. A gale is defined as winds between 62-74 km $hr^{-1}$.

Ryan (1987) gives maximum expected gusts of 148 km $hr^{-1}$ and 158 km $hr^{-1}$ for Taumutu, with return periods of 25 and 50 years respectively.

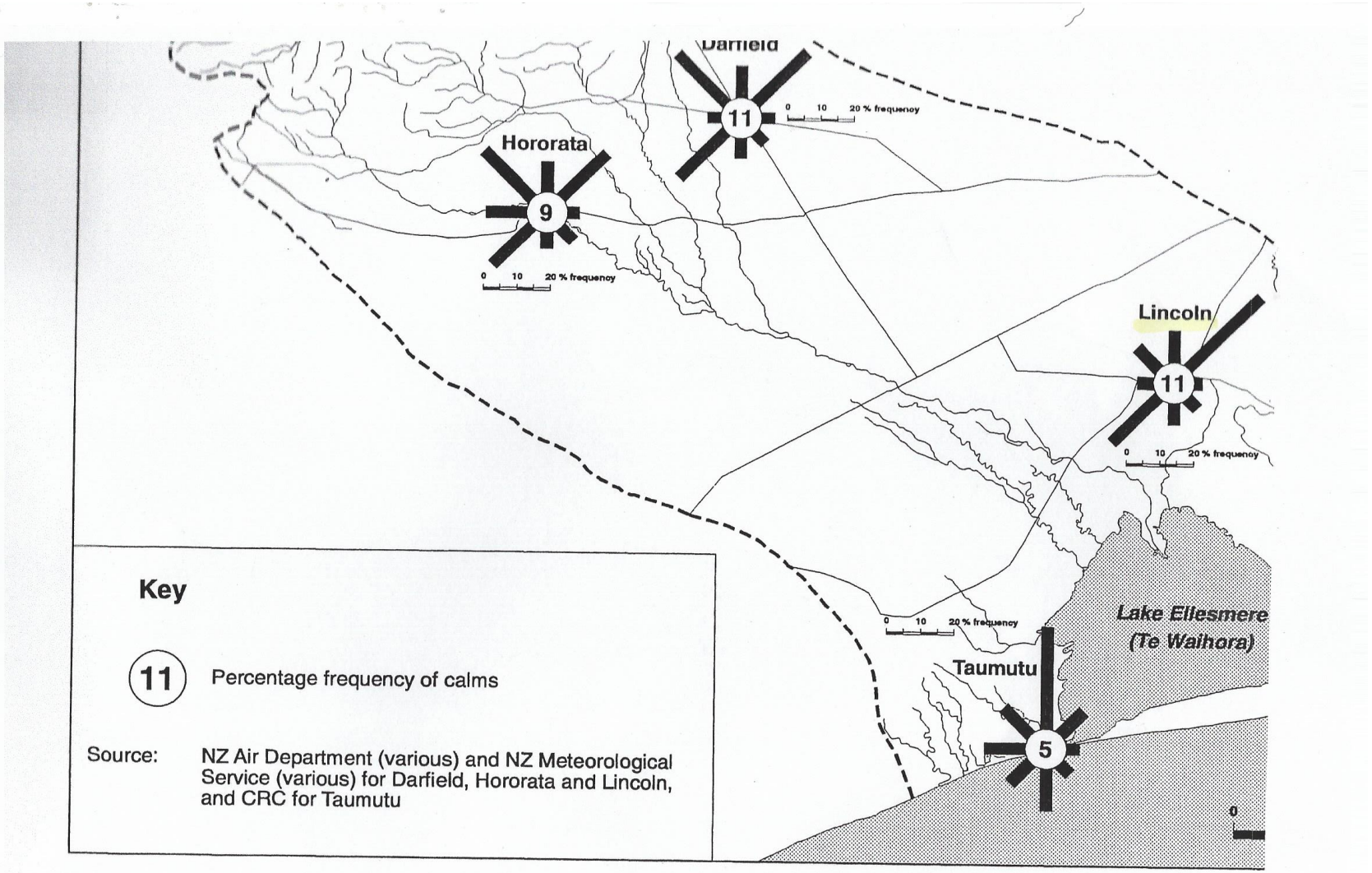


**Figure 3.2 Percentage frequency of wind from different directions at four site**

Attachment 2.

# Recommended separation distances for industrial residual air emissions

Guideline

Publication number 1518 March 2013
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## Contents

## Recommended separation distances for industrial residual air emissions

| | | | | |
|---|---|---|---|---|
| Green waste composting facility | Receiving, storing temporarily and transferring putrescible solid and green waste | | (See further guidelines) | Separation distances for composting facilities, EP/ Publication 1495, 2012 Draft guidelines for separ distances for composting facilities, EPA Publicatior 2012 |
| Landfill | Landfills used for the discharge or deposit of solid wastes (including solid industrial wastes) onto land, except premises with solely land discharges or deposits, used only for the discharge or deposit of mining wastes, and in accordance with the Extractive Industries Development Act 1995 or the Mineral Resources (Sustainable Development) Act 1990 | | (See further guidelines) | Best Practice Environmer Management – Siting, De Operation and Rehabilita Landfills, EPA Publicatior 2010 |
| Materials recovery and recycling facility | Collecting, dismantling, treating, processing, storing, recycling, or selling used or surplus materials | | (Case by case) | |
| Permanent contaminated soil treatment facility | Permanent facility for the temporary storage, processing and treatment of contaminated soil. Excludes on-site (temporary or mobile) contaminated site soil treatment. | | 500 | |
| Prescribed industrial waste treatment facility | Storage, treatment, reprocessing, containment or disposal facilities handling any prescribed industrial waste not generated at the premises | | 500 | |
| Sewerage treatment plant | Premises on or from which sewage (including sullage) effluent, is treated, discharged or deposited | Exceeding a design or actual flow rate of 5,000 litres per day | (See Section 11 of this guideline pg. 15) | |
| Transfer station | Collecting, consolidating, temporarily storing, sorting or recovering refuse or used materials before transfer for disposal or use elsewhere | | 250 | |
| Wood, wood products and furniture | | | | |
| Manufacture of wood-fibre or wood-chip board | Manufacture of particleboard, plywood, MDF or chipboard | | 250 | |
| Sawmill | Handling, cutting and processing logs into timber, including timber drying/seasoning | | 250 | |
| Timber preserving works | Treating or preserving timber using hazardous or toxic chemical substances | >10,000 cubic metres of timber per year. | 100 | |

Table 5: Examples of interface land uses and their suitability

| Suitability | Examples of interface land use |
|---|---|
| To be encouraged | Agriculture, car parks, cinema-based entertainment facilities, emergency services facilities, natural systems, offices, research centres, service stations and veterinary clinics. |
| To be considered (subject to assessment) | Light industry with no adverse amenity potential and utilities (except for sewage works). |
| To be prevented | Sensitive land uses and industrial land uses that require separation distances as listed in the Index. |

### 10.3 Inter-industry separation distances

Certain industries are incompatible and their locations with respect to each other should be carefully considered. The reason for incompatibility is often quite particular and should be addressed on a case-by-case basis to ensure that appropriate planning solutions are reached.

For example, the location of a food manufacturing industry requires consideration where it is proposed to be located in close proximity to or downwind from the manufacture, production or storage of wastes, and/or extraction of minerals or stone. Odour and dust from such industries have the potential to affect food manufacturing processes, resulting in food contamination or inconsistent food taste or smell.

Planning authorities need to ensure that their strategic land use plans, policies and controls are appropriately framed for managing incompatible inter-industry uses. Designation of sub-precincts that are dedicated to particular types of industrial activities, within a larger industrial precinct, is an effective means of preventing and managing incompatible industries.

## 11 Separation distances for sewage treatment plants

Sewage treatment plants are linked to the size of the population that they serve. Generally, if the population that the infrastructure serves grows, then the size of the separation distance will need to increase. The exception to this is if the treatment process is upgraded, for example from the use of facultative ponds to an aerobic pondage system.

The recommended separation distance for sewage treatment plants should be determined in consultation with EPA. Wind regimes, topography, waste-loading, treatment/disposal methods and design capacity should be taken into account.

The equations and distances shown in table 5 below should be used when considering proposals for new and existing sewage treatment plants.

Table 6: Separation distances for sewage treatment plants (in metres)

| Type of installation | Separation Distance (n = equivalent population) |
|---|---|
| Mechanical/biological wastewater plants | $=10n^{1/3}$ |
| Aerobic pondage systems | $=5n^{1/2}$ |
| Facultative ponds | $=10n^{1/2}$ |
| Disposal areas for secondary treated effluent by spray irrigation | 200m |
| Disposal areas for secondary treated effluent by flood irrigation | 50m |

Example of how to use this table:
What is the recommended separation distance for an aerobic pondage system serving an equivalent population of 10,000 people?
Distance = $5n^{1/2}$ where n=10,000
Distance = $5(10{,}000)^{1/2}$
Separation distance = 500m