

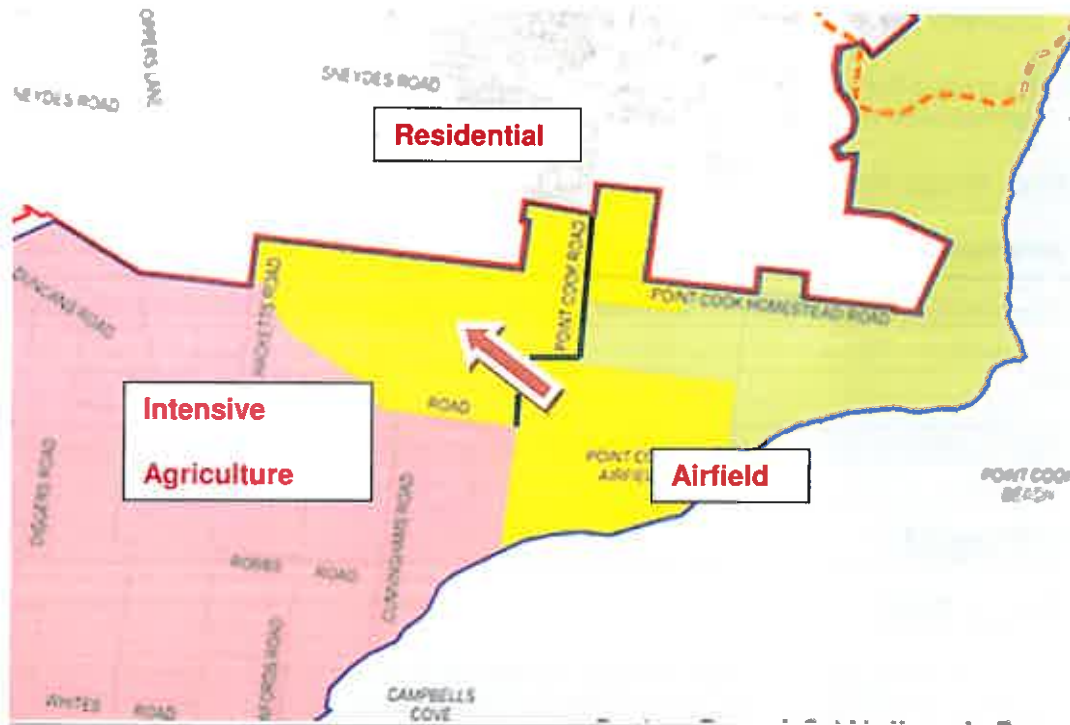
WYNDHAM LOGICAL INCLUSIONS SUBMISSIONS

PROPOSAL A – CONSOLIDATED RURAL-URBAN BUFFER, SOUTH OF POINT COOK

1. Introduction

South of the Point Cook residential area, there is a dry (non-irrigated) farming buffer between proposed (or existing) housing and intensive agriculture. The proposed logical inclusion into the UGZ includes the whole buffer area west of Point Cook Road:

Figure 1: Werribee South Dry Farming Precinct



The gross area involved is about 430ha. However, two key elements of the proposal include:

- Creation of a permanent buffer in the form of a golf course or at least an equally effective and durable equivalent: approximately 55ha; and
- Restoration of two degraded wetlands: 80ha (part) to 120ha (whole)

This leaves about 265 to 305ha, of which the net **developable area may be about 220 to 260ha** after providing for areas such as floodways, schools and other public lands. (This does not allow for any area that may need to set aside in aircraft noise buffers in the north-east; or for any open space that the Council may purchase, beyond the 10% that will be regained from the net developable area.)

It is proposed that the golf course buffer and wetland restoration be funded as a condition of allowing residential use of the net developable area.

2. Existing Zoning and Planning Policy

The land is in the Green Wedge A Zone; in which:

- The minimum lot size for subdivision is 40ha, exceeded by only 6 of the 20 lots; and

- The recently gazetted Werribee South Green Wedge Policy and Management Plan confirms this dry (non-irrigated) farming area's role as a "Dryland Buffer".

The Green Wedge Policy and Management Plan outlines the following objectives for the Dryland Farming Precinct:

- "To ensure that the aviation-urban interface is well managed and that an adequate buffer is maintained between residential development, agricultural activities and the airport environs.
- To encourage a broadening in the range of uses within the dryland farming area and promote flexibility of land use to improve the precinct's functions as a buffer given its proximity to the Urban Growth Boundary.
- To protect the dryland farming area from small incremental incursions which compromise the area's long term strategic role as the Green Wedge buffer."

The Green Wedge Management Plan later state that:

"The area does include some larger properties that may be developable for land uses that create more effective buffers between residential and agricultural areas. To attract golf courses and other extensive land uses to the buffer may require specific incentives in the Planning Scheme; however the Council and relevant State agencies are encouraged to pursue this concept."

The recently adopted policy is therefore considered to support this "Logical Inclusions" proposal.

3. The Proposal

a. Need for Action

A number of Council submissions have argued the need for buffers between housing and intensive agriculture, as they are typically incompatible neighbours. However, the dry farming area is itself adversely affected by a location next to residential areas, for several reasons:

- it is unsuitable for raising any forms of livestock that would be impacted by attacks by roving domestic animals from urban areas;
- it is unsuitable for any form of farming that generates odour, noise, dust or other impacts on adjacent housing; and
- it requires its landowners and uses to form a buffer between two external areas, with little scope to benefit from that role.

the future of this buffer area needs a review that:

- (i) creates a more effective buffer than currently provided, that is physically attractive and reinforced by vegetation,
- (ii) is legible and credible,
- (iii) minimises land use conflicts,
- (iv) protects and restores two degraded but evidently significant wetlands, especially the larger westerly one, based on further studies; and
- (v) results in viable land uses that contribute economic and community benefits.

b. Form of Buffer

The most effective form of buffer identified to date is a golf course, which can meet all 5 numbered criteria in the above paragraph. It would also help address a looming shortage, as Wyndham has only 2 golf courses (one per 75,000 people – barely a third of the Melbourne average of almost 1:25,000, with no others planned in Wyndham's major residential areas.

To attract a golf course or equivalent buffer is likely to need an urban (residential) component, to underwrite the relatively high establishment costs, and restore at least a significant part of the area's wetlands.

Attachment 1 is a simple sketch, showing that a realistic buffer is achievable through one golf course.

Uses such as sporting reserves and private schools (if permitted in future) would offer further options. However, they would be less effective in forming such long buffers as a golf course would, so are better seen as partial solutions.

The Planning Scheme provisions would need to be written in a manner that ensures delivery of the buffer as the primary objective.

The proposed buffer would then create a much more legible, sustainable and equitable rural/urban interface, meeting the suggested criteria numbered (i) to (v) above.

c. Buffer Width

The nearest relevant guide that Council officers have sourced on relevant buffer widths is "Buffer Areas – Minimising conflict between agricultural and residential areas", by the Queensland Department of Natural Resources and Water (2006). It provides guidance on the following "elements of conflict":

- spray drift from agricultural chemicals,
- odour,
- noise
- dust, smoke and ash, and
- sediment and stormwater run-off from residential development.

A copy of the 4 page fact sheet forms Attachment 2, with a summary table on Page 4.

In essence, recommended minimum buffer widths are:

- on open ground, typically 300m, but up to 1,000m for night-time spraying and odour producing activities; and
- with a vegetated buffer and noise barrier, typically up to 100m, but up to 500m for chemical spraying and odour producing activities.

The proposed strategy in Attachment 1 would create a buffer of about 200m, including:

- the golf course, if that's the use, with a minimum of 2 fairways and 3 shelter belts – 165-170m;

- the width of the D1 Drain and Aviation Road – at least 20m; and
- the width of interfacing residential streets along the golf course – at least 15m.

This width is below the recommended distances for night time tractor use (250m), and agricultural chemical sprays and odour producing activities (500m in both cases). Otherwise, all other standards are met. At this time, it is considered that the 200m buffer achievable with a treed golf course (including adjacent roads and drains) may be sufficiently effective, given the nature of sprays and odours commonly associated with market gardening in Werribee South.

Without the vegetation associated with a golf course, a buffer below 300m would fail many of the recommended standards. This suggests that:

- without commitment to land use that is heavily treed, the buffer width should increase to at least 300m, at which point it would still fail some of the Queensland tests; and
- a golf course development would need to be required to be heavily treed to both sides and between the fairways, and any alternative would need to at least match this.

d. Development Concept

The proposed conceptual form of development is sketched in Attachment 1. It is not detailed, as further studies are needed to determine several detailed elements. However, the sketch shows a means to achieve a development with features including:

- at least 3,300 dwellings;
- a community of at least 10,000 people;
- a primary school and small neighbourhood activity centre (not shown, but combined (possibly with a pre-school and community centre) to form a central community hub);
- buffer(s) to the whole residential interface;
- a central clubhouse facility, ideally complemented by a social club, reception and conference centre and motel, to reinforce its recreation, community and employment benefits;
- a collector road network that links Point Cook's southern communities and provides an effective bus route; and
- residential streets addressing all recreation and retained wetland areas.

The sketch shows a number of active open space reserves. They include options for the local active space that will be required, and a possible Council acquisition to create a major sports reserve. More work will be needed when the area's future is known.

e. Planning Process

The Urban Growth Zone, Precinct Structure Plan Process and Development Plan offer a good approach. It will address the need to work through means to integrate components of the proposal, address how small lots are affected, and incorporate native vegetation precinct plans and other elements needing more work.

4. Evaluation Against Standards for Logical Inclusions

The proposal:

- Is in a growth area municipality,
- Is located on the existing Urban Growth Boundary (UGB), and
- Proposes a residential development, with a golf course or equivalent, substantial use, encouraged to include facilities that would reinforce its modest role as an employer.

5. Evaluation on Design Criteria

5.1 Consistency with the State Planning Policy Framework and any Ministerial Directions.

It is believed that the proposal is consistent with the SPPF and relevant Ministerial Directions. Although it does involve intruding into the Green Wedge, as all logical inclusions do, it does so in a way that:

- uses an area of low agricultural value;
- preserves and restores wetlands;
- introduces substantial recreation areas; and
- creates a vital buffer between incompatible urban and rural uses.

5.2 Analysis of Constraints and Opportunities

a. Agricultural Activities

(i) Activities in the Precinct

Most lot sizes in this dry farming area are far too small for most, if not all forms of agriculture and animal husbandry that are not:

- Irrigated (in a locality with an average annual rainfall around 520mm), or
- Sources of regular odours or other impacts on neighbours' amenity (as poultry farms and feed lots are likely to be), or
- Sensitive to harassment or attacks by town dogs, or to other forms of urban impacts.

It is understood that there may be no viable farming enterprise in the whole precinct.

(ii) Activities Outside the Precinct

As outlined in Section 3, a buffer is needed between housing and intensive agriculture.

This proposal aims to introduce a buffer use that:

- is effective, and
- is compatible with both housing and agriculture as neighbours.

b. Biodiversity

(i) Wetlands

The major remnant biodiversity in this precinct is believed to be contained in the more central of the two wetlands, which is recognised as a Biosite (No 6536). The wetland section within the current UGB includes Ecological Vegetation Class 655 Lignum Cane Grass Swamp, which is an endangered EVC in the Victorian Volcanic Plain Bioregion.

- It is essential that the current size, quality, condition and functionality of the lignum wetland (also known as Cunninghams Swamp) are not compromised. The boundary of this wetland is identified by the most outer stand/line/ring of Lignum plants.
- It is also important that roads, paths and utility services do not enter into or cross the lignum swamp.
- Prior to a Precinct Structure Plan (PSP) being prepared or approved for any of the adjacent or affected land, the following is required:
 - 1) A flora and fauna survey and assessment of the entire Precinct, the results and recommendations of which need to be discussed with and approved by relevant stakeholders (including Council). The assessment needs to investigate development's impacts to migratory birds that utilise this Precinct, including the lignum swamp.
 - 2) The impacts (if any) of expected stormwater runoff on the lignum wetland need to be identified and discussed with relevant stakeholders before any decision is made on any proposed PSP.
 - 3) A suitable planning overlay (eg ESO) or zone needs to be placed over the entire lignum swamp at the time of re-zoning the land to provide protection to this valuable environmental asset.
 - 4) Confirmation is needed that the design of development within any expanded UGB will not compromise retained natural areas. Road and open space should be planned to buffer development from retained natural areas.

(ii) Grasslands

The original grasslands have evidently been largely removed by cropping and introduction of exotic grasses. Nevertheless, as elsewhere within the UGB, detailed fauna and flora surveys would be needed before any PSP is approved for land in the area.

(iii) Initial Research

It is understood that a potential purchaser or the current owner of one of the relevant properties has commissioned biodiversity research, though Council has yet to see the results. If available before the Advisory Committee's work is completed, it will be provided.

c. Drainage Corridors

Attachment 1, Shows 2 drainage corridors;

(i) The D1 Drain (forming the south-west boundary of the proposal).

This is the major drain between Werribee River and Skeleton Creek, servicing a significant portion of the Wyndham growth area and following a straightened

channel that forms the south-west boundary of the proposed logical inclusion. In that section, it would combine with the proposed golf course to create an effective rural/urban buffer.

There will be opportunities for integration of water quality management and landscaping with the proposed adjacent golf course, not yet explored.

(ii) A Secondary Drain (Entering the main wetland in the north)

A significant tributary to the D1 runs from the Point Cook residential community and through the main wetland area, to connect with the D1 Drain, to the south.

d. Extractive Industry

There is no existing or proposed extractive industry in or within 5km of the proposal.

e. Heritage

Council's Cultural Heritage Study did not identify any matters that would affect the proposal. Aboriginal heritage sites in Wyndham appear to most commonly relate to well-formed streams or the coast; neither of which affect the proposed logical inclusion area. No post-European settlement features were identified. However, appropriate cultural heritage studies should still be undertaken.

f. Landscape features

The majority of the subject area lies between 6 and 12 metres on AHD. Much of it is almost flat, with the two ephemeral wetlands occupying shallow, broad depressions just below 8m, but perched above the southern edge of the area. The main exception is the northern half of the Australand property, extending northbound along the west side of Point Cook Road, rising about 4m over the last 300m to the UGB and R1 zone boundary. There is a gentler rise to about 12m to the west.

The other main internal landscape features are the wide grazing areas (including, at most times, much of the wetlands), with occasional trees in the south, and planted windrows around several smaller properties along the west side of Point Cook Road.

There are few buildings; mostly dwellings and sheds on the smaller easterly lots. However, a notable exception is an olive grove with large reception and recreation buildings and 40 motel units, partly constructed on one of the smaller (4ha) lots on Point Cook Road.

Externally, the area is surrounded by the Point Cook RAAF base, with staff houses to the near edge, market gardens and grazing to the south and west, and residential development to the north.

A use like golf course, consciously designed as a buffer, would create a strong applied landscape element to the southern perimeter, and urban development would obviously transform the internal landscape.

g. Land Use

The dominant land use is animal husbandry (beef cattle and some horses), with one small market garden, the partly constructed motel-reception centre the rural residential sites along Point Cook Road and Aviation Road.

h. Salinity

Salinity is a common issue in Melbourne's West, though rarely sufficient to adversely affect building design or plant growth. It will warrant testing before development or selection of landscape species, especially around and within the margins of the wetlands, where some salinity has been identified.

i. Soil Capability

Most of the area's soils are arable, and if they had sufficient water, should be capable of being used for intensive agriculture. Such soils should pose few problems for urban use, possibly excepting the comments under (h), Salinity.

j. Transport

(i) Roads

The Point Cook growth area is more road dependant than Wyndham's other growth areas. Its 3 connections to and over the Princes Freeway can be readily upgraded, where necessary, to cope with a 13% increase in traffic demand, as the proposed logical inclusion would generate.

Past modelling also suggested that the Point Cook road network could be readily upgraded to accommodate 13% more traffic. This would be aided by a proposed new Princes Freeway overpass to the Hoppers Crossing station/education and medical precinct at Sneydes or Dunnings Road. However, whilst the Point Cook/Werribee South road network could be further upgraded to support a larger urban release, the freeway may not be able to cope if traffic demand by direction remains unchanged.

(ii) Rail

The Werribee rail line passes just north of the Princes Freeway, but is 4-5km from the subject area, and accessibility to stations is constrained. However, a new station is to be built by 2014 at Williams Landing, on Palmers Road, and access to the Hoppers Station precinct is likely to be improved by creating a new overpass at Dunnings Road and upgrading another at Sneydes Road; the reserves for which are to be created the PSP process for Point Cook West, which is currently underway.

(iii) Bus Network

Point Cook's bus network is only partly developed, and affected by the constrained access to stations noted above. However, the new station at Williams Landing, and better access to Hoppers Crossing, will provide the bus network with better connections.

In addition, as shown by the proposed concept plan, (Attachment 1), a single, continuous bus route is proposed through the logical inclusions area, linking it to northward routes to the stations.

(iv) Pedestrian-Cycle Network

A continuous pedestrian-cycle network is being rolled out in Point Cook, especially in its newer sections. It is increasingly combining routes along roads with others, along waterways, and will connect through the proposed logical inclusions area, to help create an integrated transport network. (A bicycle Network Strategy will be on exhibition soon.)

k. Trunk Services

Most trunk services are readily accessed in the subject area, although a detailed analysis has not been undertaken, and a pumping station may be needed for a connecting sewer.

l. Wildfire

Generally surrounded to the north, west and south by urban areas or intensive agriculture, the risk of wildfire is minimal.

m. Aircraft Noise

Point Cook Airport is immediately south-east of the subject area. Its main north-south runway directs the generally light aircraft traffic over a path starting roughly 200m east of Point Cook Road, but converging to meet it about 1.6km north of the end of the runway. As a consequence, the last published Australian Noise Exposure Forecast (ANEF) map for Point Cook shows a moderate effect on one property in the subject area (Attachment 3).

In Australia, ANEF ratings have been interpreted as affecting housing as follows:

- Over 25 ANEF: Residential development should not occur.
- 20 – 25 ANEF : Generally unsuitable for residential use, unless noise attention measures are undertaken.
 - : In Victoria, new residential development has generally not been permitted above 20 ANEF's.
- 13 – 20 ANEF : In 2003, there was a proposal to increase the density of rural residential development on the affected site, reducing the minimum lot size from 1.0ha to 0.4ha. In supporting the proposal, under Amendment C48 to the Wyndham Planning Scheme, the Panel proposed the following measures on addressing aircraft noise:

“...any lot of less than 1.0 hectare, which abuts Point Cook Road shall include a building envelope on any plan of subdivision requiring any new dwelling to be setback at least 50% of the depth of the lot to the west of its boundary with Point Cook Road.

“On any lot of less than 1.0 hectare which lies within 200 metres of Point Cook Road (which approximates the location of the 13 ANEF contour depicting the Indicative Noise Affected Area contained in the Point Cook concept

Plan) any new dwelling shall include acoustic treatment required to ameliorate aircraft noise in accordance with Australian Standard 2021."

The first condition effectively imposed a setback of about 50m from Point Cook Road.

Amendment 48 was not adopted, due to introduction of the Green Wedge A zone, so doesn't currently apply. However, it offers the last guidance on residential development in this location.

The owners:

- support the proposal that this land be a logical inclusion,
- propose that the land's whole area be treated as such, and
- propose to address the aircraft noise issue by acoustic treatments to all affected dwellings.

Council has resolved on the wider logical inclusions proposal on a number of occasions, but not specifically on the application to the area affected by ANEF's, or how to address them since Amendment C48. Therefore, it is proposed to seek a Council position on it, if possible on July 25th, 2011.

Meanwhile, some of the points to be considered by Council will include advice that:

- About 50% of the affected site has an ANEF below 13;
- The ANEF is below 20 for the whole property, evidently peaking about 18-19 along the Point Cook Road frontage; and
- There is a history of conditional Panel support for low density housing on the land, as quoted above.

However:

- The Department of Defence has not been consulted for comment until right now; and
- There has been a small number of complaints about aircraft noise from the Point Cook residential area in recent years, as housing occupies the nearer residential zones.

These comments suggest a case to allow housing into the area above 13 ANEFS, plus a need to at least ensure that acoustic controls are applied, and that buyers' attention is drawn to potential acoustic issues. Council staff will seek to obtain a Council position on this issue before the Advisory Committee considers it.

n. Sub-precincts

To the extent that all properties in the logical inclusions would benefit from its approval, it is considered that all should share the costs to upgrade the existing wetlands, based on their net developable areas.

To the extent that all rely on the buffer project as a key basis for urban extension, it could be argued that the same principle should apply to setting aside the land for the buffer and development of the golf course or equivalent. However, the major beneficiaries are the larger properties with no prior residential development rights,

especially those which also share the significant valuation benefit to housing land facing high amenity land such as a golf course. It is believed that this principle should be applied in implementing the strategy. The balance can be addressed through the PSP and DCP processes.

6. Correction to Map

Council's proposal to extend the Point Cook residential community, from 2003 onwards, has been largely motivated by the goal to create an effective rural-residential buffer. The exposure between these incompatible uses is essentially between Point Cook and Hackets Roads, and that's the area the proposal has related to.

However, at least one version of Council's previous "logical inclusions" submissions used the map of the "Dryland Farming" precinct in the Werribee South Green Wedge Management Plan. That may have unintentionally suggested a larger proposal.

The land immediately east of Point Cook Road includes the core of the ANEF contours, plus the Airport itself. Further east, there were no cases where a rural – urban interface lent itself to resolution by creating a buffer between rural and urban areas. Therefore, the areas east of Point Cook Road are not part of the logical inclusions proposal.

7. Private Submissions

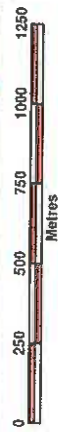
Council is aware of submissions on behalf of a number of property owners. It is not proposed to comment at length on those proposals, other than to note that:

- At least four landowners within the proposed logical inclusion area are believed to have made, or to propose supporting submissions.
- At this point, at least one or two are believed to offer more detail on issues such as biodiversity and drainage.
- The only known difference at this point relates to Australand's proposal that its entire property on Point Cook Road is residential, subject to acoustic treatment of dwellings. As noted above, Council's position is unclear on this proposal because its officers haven't yet consulted Council on its view of development to urban densities, out to the Point Cook Road frontage. It is proposed to clarify the position on July 25th.
- The Schembri submission, east of Point Cook Road, unfortunately relates to land that is more directly affected by aircraft noise, so has not been seen by Council as suitable for housing.

8. Conclusions

- a. The current circumstances include an unsatisfactory rural-urban interface and substantial, degraded wetlands that need a strategy to fund restoration of at least a substantial part of their area.
- b. The key to the logical inclusion proposal is the objective to create a long-term, effective buffer that is compatible with both agriculture and housing as neighbours, and the belief that a golf course at least sets a benchmark that any alternative would need to equal or better.

- c. Extended residential development is the logical means to fund the golf course development.
- d. All developable lots should be required to contribute to the wetlands' restoration on a per hectare basis, to the extent agreed in consultation with the DSE.
- e. The Urban Growth zone is the most appropriate for the new urban areas; to enable a PSP and DCP to be settled.



Property of _____

Scale 1:15,000



Discussion

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Buffer areas

Minimising conflict between agricultural and residential areas

Conflict between residential development and farming operations often occurs where residential land is adjacent to farmland.

Such conflict can arise from the use of agricultural chemicals and activities generating noise, dust or odour. Sediment from construction sites and stormwater runoff from hard surfaces can also damage farmland.

The Department of Natural Resources and Water (NRW) has produced a booklet entitled *Planning Guidelines: Separating Agricultural and Residential Land Uses* which provides technical advice and guidance to local governments, developers, consultants and landholders on minimising conflicts between farming activities and residential uses. The planning guidelines have been prepared to support State Planning Policy 1/92: Development and the Conservation of Agricultural Land.

This fact sheet provides a summary of the information on buffer areas presented in the planning guidelines.

While buffer areas can be an effective method of separating conflicting land uses, they will not eliminate all impacts of activities. Their use does not limit the rights of individuals to take action under the common law or legislation if they believe their rights to enjoy a safe environment and the use of their land are restricted.

Planning principles

1. When preparing planning schemes, local governments should avoid, as far as practicable, zoning land for housing in close proximity to agricultural land. Where this is not possible, mechanisms such as buffer areas should be used to minimise conflicts.
2. Buffer areas should be planned on the basis of the agricultural land use which is reasonably likely to be practised and has the potential to have most impact on adjacent land uses, regardless of current use.

3. To protect the prior rights of agricultural producers to practise agriculture on rural land, buffer areas should be located within the site being developed for residential purposes, and be provided/funded by the proponent of that development.
4. Where conflicts already exist between agricultural and residential land uses, mechanisms including mediation, source controls and public education should be implemented.

Objectives of buffer areas

1. To protect the use of reasonable and practicable farming measures that are practised in accordance with the Environmental Code of Practice for Agriculture and associated industry-specific guidelines.
2. To minimise scope for conflict by developing, where possible, a well-defined boundary between agricultural and residential areas as opposed to interspersing agricultural and residential areas.
3. To minimise the impacts of residential development on agricultural production activities and land resources.
4. To minimise the potential for complaints about agricultural activities from residential areas.
5. To provide residents with acceptable environmental conditions in residential areas that are located adjacent to agricultural production areas.

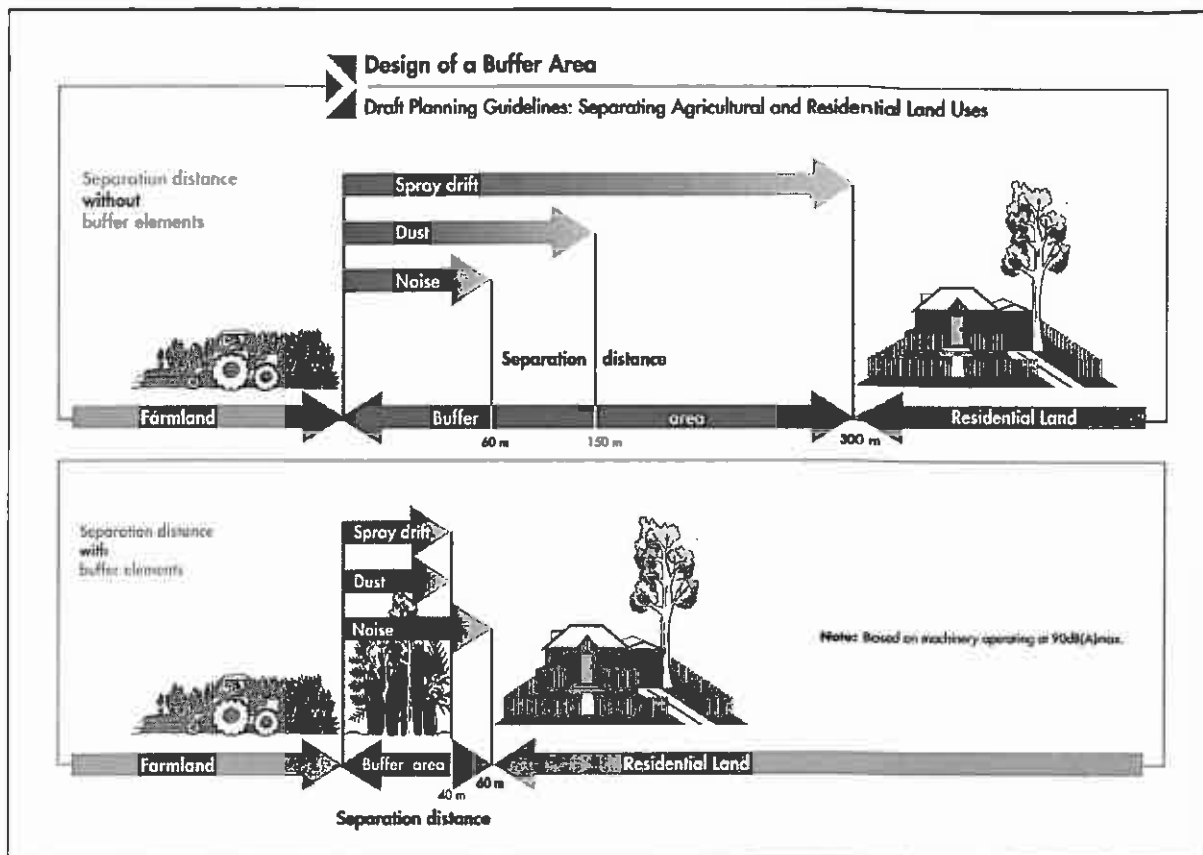


Figure 1 Design of buffer areas

Conflict assessment and buffer area design

In investigating the need for buffer areas, the following issues should be addressed:

- Determine the farming activity with the potential to cause most problems for adjacent residential uses and which is reasonably likely to occur on the subject land
- Identify the elements (e.g. spray drift, odour, noise, dust, sediment and stormwater runoff) that may cause conflict and the extent of the conflict
- Where possible, quantify the elements in terms of frequency and duration of activities to determine their impact
- Consider residential area design, size of lots, separation widths, tree planting, acoustic barriers etc. to minimise land use conflict
- Propose the means by which the proposed measures will be monitored and maintained.

Figure 1 – Illustrates designs of buffer areas appropriate for a range of activities that may cause conflict.

Elements of land use conflict

Spray drift of agricultural chemicals

The off-target movement of agricultural chemicals can cause concern to residents near to farming areas. These concerns are largely based on fears of exposure to agricultural chemicals, but can also be due to detection of odours associated with the chemical. Odour problems associated with chemicals are treated as a separate element for the design of a buffer.

Acceptable Solutions

- (i) a minimum separation distance of 300 m; or
- (ii) a 40 m vegetated buffer; or
- (iii) other measures acceptable to local government.

Odour

Detrimental odours can affect residential amenity and have the potential to affect public health. Odour is often a major factor in complaints about off-site chemical spray drift where there is sometimes no objective evidence of toxic exposure: residents' association of the odour with the chemical is sufficient to raise fears of exposure.

A buffer should be implemented if odour from intermittent agricultural activities (eg fertiliser spreading, effluent disposal or chemical spraying) exceed nuisance levels for greater than 1 percent of the time (or 88 h/yr).

Acceptable Solutions

- (i) a minimum separation distance of 500 m; or
- (ii) the above width may be reduced by adopting a buffer area design based on a report consistent with the Environmental Protection Policy (Air) verifying that odour design goals will be met; or
- (iii) other measures acceptable to local government.

Noise

The Environmental Protection Policy (Noise) and associated guidelines allow agricultural practices to generate noise provided that the activity is in accordance with reasonable and practicable industry measures as described in the Environmental Code of Practice for Agriculture and other industry-specific guidelines.

Table 1 indicates the noise levels and cumulative time thresholds that have been adopted to determine whether noise is likely to be excessive. If these noise levels are likely to be exceeded for longer than the specified time periods, then a buffer area should be implemented.

TABLE 1 – NOISE LEVELS AND CUMULATIVE TIME THRESHOLDS

Time of Day	Intermittent cumulative noise >10 h/yr	Long Term cumulative noise >50 h/yr
6 am - 10 pm	75 dB(A) ($L_{Amax,T}$)*	60 dB(A) ($L_{Amax,T}$)*
10 pm - 6 am	55 dB(A) ($L_{Amax,T}$)*	45 dB(A) ($L_{Amax,T}$)*

* Measured as the average maximum sound pressure level in a specified time interval

Minimum separation distances have been determined on the basis of noise attenuation rates of 5 dB(A) for each doubling of distance from the noise source and based on a noise source of 90 dB(A) ($L_{Amax,T}$) at 7.5 m from the source. This attenuation rate assumes open ground conditions.

Long-term noise sources such as pumps and cooling units operating >50 h/yr, particularly between 10 pm and 6 am, may require acoustic muffling to reduce noise to acceptable levels.

Acceptable Solutions

- (i) a minimum separation distance of 60 m for intermittent day time noise; 500 m for long-term day time noise; 1000 m for night time noise; or
- (ii) the above widths may be reduced by adopting a design consistent with the Environmental Protection Policy (Noise) eg adoption of sound barriers; or
- (iii) other measures acceptable to local government

For aerial agricultural activity, a separation distance of 100 m is required to comply with air navigation regulations.

Dust, smoke and ash

Some agricultural activities including cultivation, fertiliser spreading, tractor and transport movements, harvesting and cane fires can generate dust, smoke and ash.

In most cases, a vegetated buffer designed to capture chemical spray drift will also be effective in reducing conflict resulting from dust, smoke and ash.

Acceptable Solutions

- (i) a minimum separation distance of 150 m; or
- (ii) a 40 m vegetated buffer; or
- (iii) other measures acceptable to local government.

Sediment and stormwater run-off from residential development

Residential development affects land surface characteristics and the hydrological balance, with the effects often occurring on farmland located lower in the catchment.

Acceptable Solutions

- (i) residential development proposals which include:
 - an erosion control plan for the construction and operation phases of the development. Plans must meet the standards set in the Guidelines for Soils Erosion and Sediment Control for Construction Sites (Institution of Engineers Australia, 1996);
 - stormwater run-off from all hard surfaces to be detained or carried to stable waterways;
 - measures such as water spreading, run-off detention and diversion to minimise run-off peaks.
- (ii) other measures acceptable to local government.

Examples of minimum effective separation distances

Table 2 provides examples of effective minimum separation distances for each of the activities described. Design of individual buffer areas must take account of specific conditions and sources of conflict. In these examples it is assumed that a noise barrier will result in a reduction of noise level of 10 dB(A).

TABLE 2 – EXAMPLES OF EFFECTIVE MINIMUM SEPARATION DISTANCES FOR A SELECTION OF AGRICULTURAL ACTIVITIES

Selection of agricultural activities that may cause conflict	Duration	Minimum effective separation distance on open ground (metres)	Minimum effective separation distance with a vegetated buffer and noise barrier (metres)
<ul style="list-style-type: none"> Night-time tractor use with mister (90 dB(A) ($L_{Amax,T}$)) Agricultural chemical spray Odour producing activity 	>10 h/yr na >88 h/yr	1 000* 300 500 1000	250 40 500*# 500
Effective width <ul style="list-style-type: none"> Tractor (95 dB(A) ($L_{Amax,T}$)) Aerial spray application Agricultural chemical spray Dust generation activity 	>10 h/yr na na na	120 100 300* 150 300	30 100* 40 40 100
Effective width <ul style="list-style-type: none"> Tractor (85 dB(A) ($L_{Amax,T}$)) Agricultural chemical spray Day time irrigation pump (85 dB(A) L_{max}) Dust generation activity 	>10 h/yr na >50 h/yr na	30 300* 250 150 300	10 40 60* 40 60
Effective width <ul style="list-style-type: none"> Tractor (90 dB(A) ($L_{Amax,T}$)) Dust generation activity 	>10 h/yr na	60 150* 150	15 40* 40

Note:

- * indicates most limiting factor to determine minimum separation distance
- # minimum design distance for odour buffer area may be reduced on consideration of site factors and nature of odour

na duration of activity is not applicable

Assistance

Contact the Principal Policy Officer (07) 3224 8339 or Land Planning / Land Resources staff at district and regional offices of the Department of Natural Resources and Water.

Further reading

The following publications are available on the Department of Natural Resources and Water (NRW) web site at <www.nrw.qld.gov.au> (enter the phrase 'land resource planning' in the search box on the home page to access both guidelines)

Planning Guidelines: Separating Agricultural and Residential Land Uses

Planning Guidelines: The Identification of Good Quality Agricultural Land

The publications can also be obtained from the Department of Natural Resources and Water at Indooroopilly (phone 07 3896 9502).

The Department of Natural Resources and Water (NRW) fact sheet L48: *Protection of agricultural land from urban development – State Planning Policy 1/92* has information that is related to this topic. v

Attachment 3

