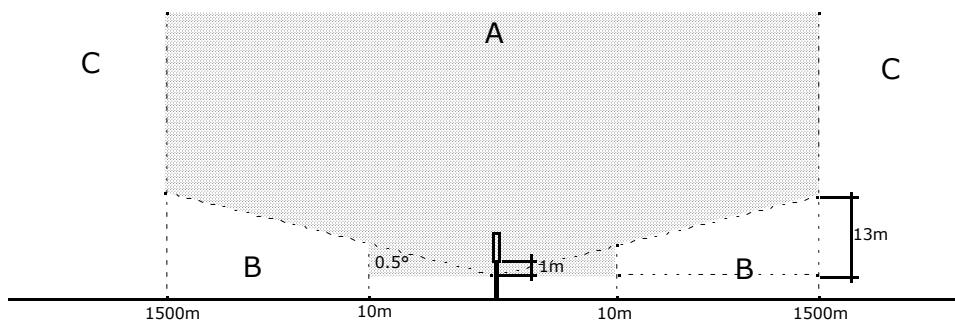


DME

Not to scale

Notes: The areas marked in the diagram are valid for 360° azimuth.
The heights shown are measured from 1m below the base of the antenna
as depicted and are independent of terrain.



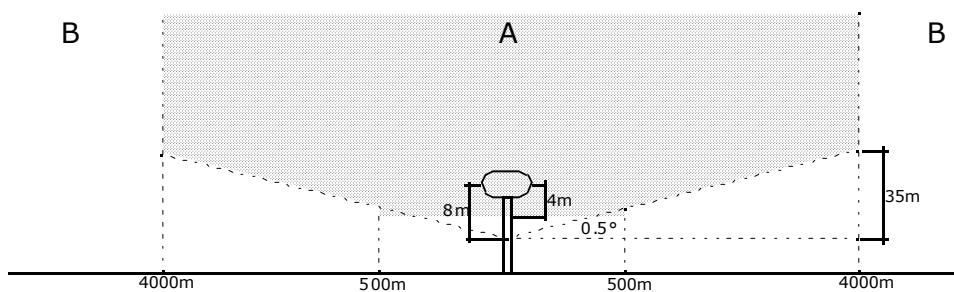
Development Constraints

- A:** All buildings, structures, trees, fences or any other physical obstructions are incompatible.
- B:** Buildings, trees, power and telephone lines and fences that fit beneath the profile are compatible.
- C:** No constraints.

Radar

Not to scale

Notes: The areas marked in the diagram are valid for 360° azimuth.
The heights shown are measured from 8m below the middle of the antenna
as depicted and are independent of terrain.



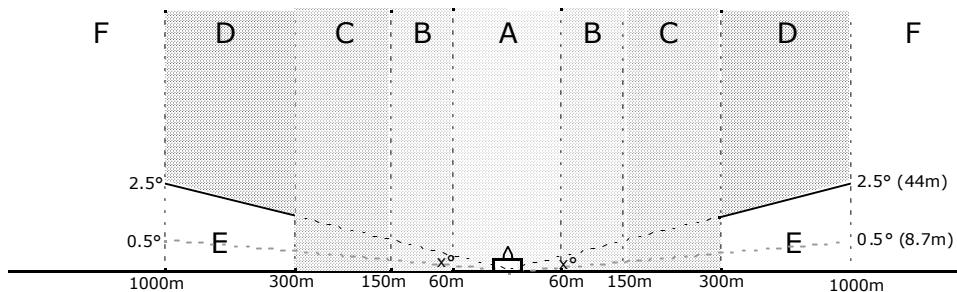
Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** No constraints.

CVOR

Not to scale

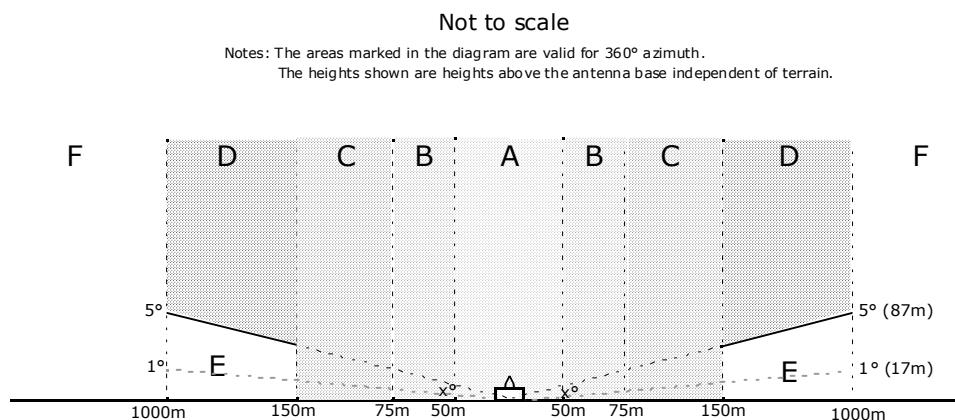
Notes: The areas marked in the diagram are valid for 360° azimuth.
The heights shown are heights above the antenna base independent of terrain.



Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** 1.2m wire fences are compatible.
- C:** Single trees and wire fences are compatible.
- D:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- E:** Structures, low tension power lines, groups of trees, telephone lines, taxiways, roads, railway lines and other obstructions are compatible when they remain below x° where x is defined as:
 - 0.5° (8.7m) - Fences
 - 1.0° (17m) - Overhead lines
 - 1.5° (26m) - Metallic structures
 - 2.0° (35m) - Trees and open lattice towers
 - 2.5° (44m) - Wooden structures.
- F:** No constraints.

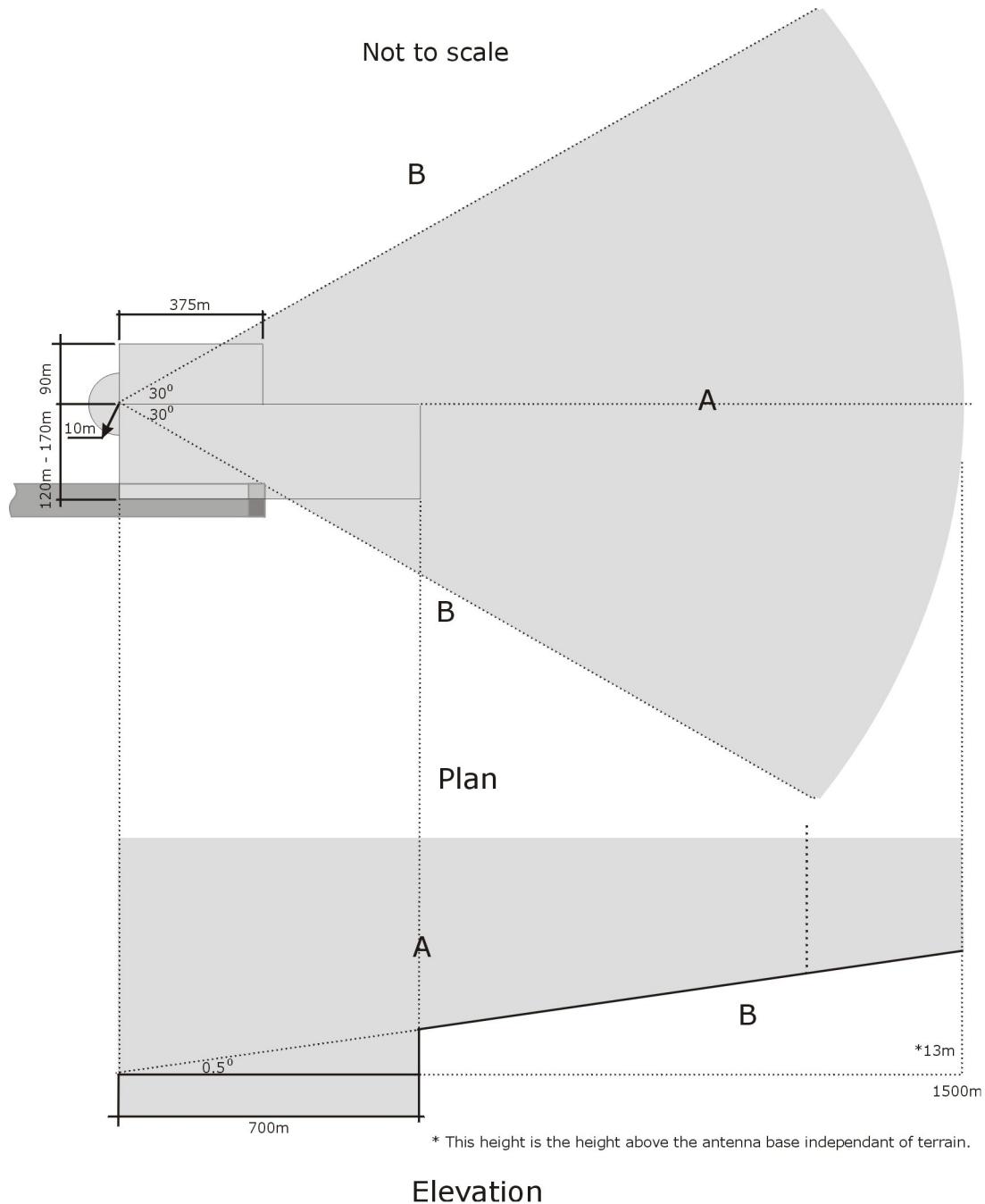
DVOR



Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** 1.2m high wire fences are compatible.
- C:** Single trees and 2.5m wire fences are compatible.
- D:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- E:** Structures, low tension power lines, groups of trees, telephone lines, taxiways, roads, railway lines and other physical obstructions are compatible if they remain below x° where x is defined as:
 - 1.0° (17m) - Fences
 - 2.0° (35m) - Metallic structures
 - 3.0° (52m) - Overhead lines no closer than 300m
 - 4.0° (70m) - Trees
 - 5.0° (87m) - Wooden structures.
- F:** No constraints.

ILS GLIDEPATH

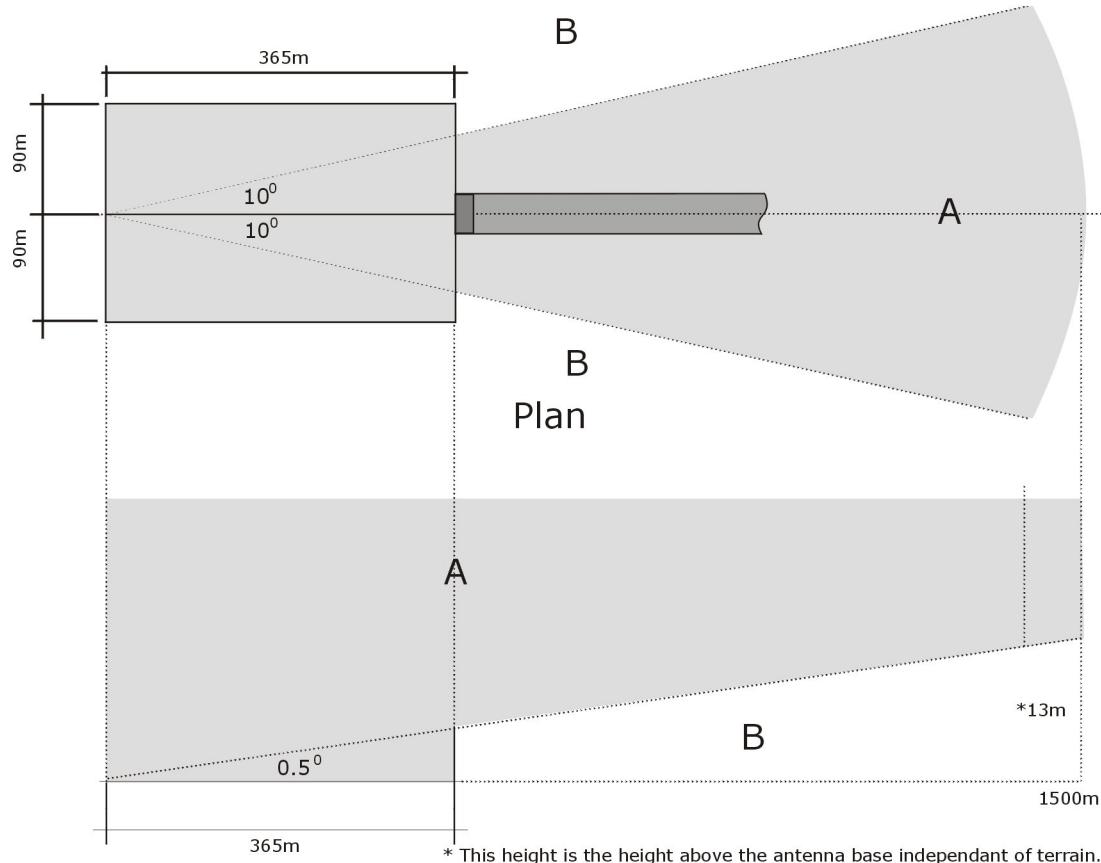


Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** No constraints.

ILS LOCALIZER

Not to scale



Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** No constraints.

HF COMMUNICATION FACILITIES

Receiver Sites

Man-made noise is the largest threat to HF receiver facilities. Noise measurements have been made at Aeronautical HF receiver sites to determine the level of man-made site noise. These are given below.

Site Noise Values

HF Receiver Site	Base Noise Figure @ 6.6 MHz (dBuVrms/kHz)
Brisbane	-13
Charleville	-13
Mt Isa	-23
Townsville	-24
Weipa	-30

Development Constraints

To minimise reduction in existing site performance, buffer zones are required around Aeronautical HF receiver facilities. These buffer zones are defined as:

- Zone A:** No sources of man-made radio noise unless they are under the strict control of the Australian Communications Authority.
- Zone B:** No new heavy/medium industrial, scientific, medical (ISM) or other similar radio frequency equipment. Residential uses are compatible provided all appliances comply with AS 1044 or, subject to investigation, a suitable mains filter is installed in houses. Any relaxation towards the extremities of the zone would need to be supported by a comprehensive study.
- Zone C:** All correctly operating ISM or other similar radio frequency equipment complies with AS 2064. Any relaxation towards the extremities of the zone would need to be supported by a comprehensive study.

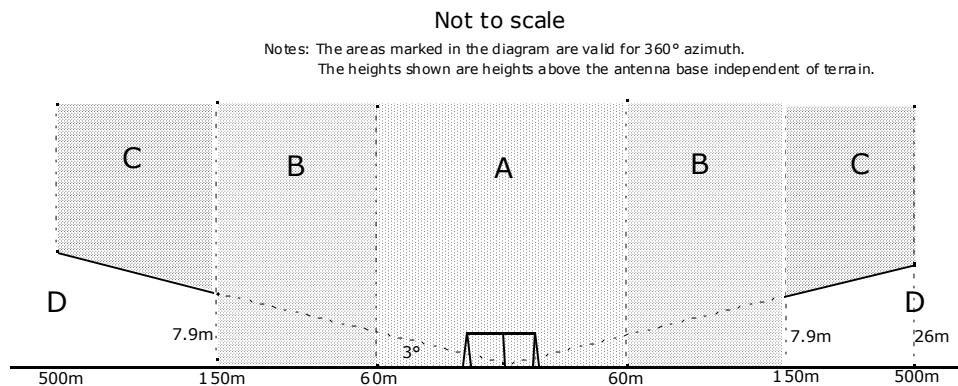
The buffer zones recommended are:

Zone Sizes

HF Receiver Site	Zone size (>= km)		
	Zone A	Zone B	Zone C
Brisbane	0.5	2.0	6.0
Charleville	0.5	2.0	6.0
Mt Isa	1.7	4.0	12.0
Townsville	1.7	4.0	12.0
Weipa	1.8	5.5	16.0

These zones sizes are the distance from the receiver site boundary.

TRANSMITTER SITES



Development Constraints

- A:** All buildings, structures, trees, fences and any other physical obstructions are incompatible.
- B:** Small non-metallic buildings less than 2.5m in any dimension may be compatible.
- C:** Steel masts and towers below 3° from the base of the HF Antenna are compatible.
- D:** No constraints.

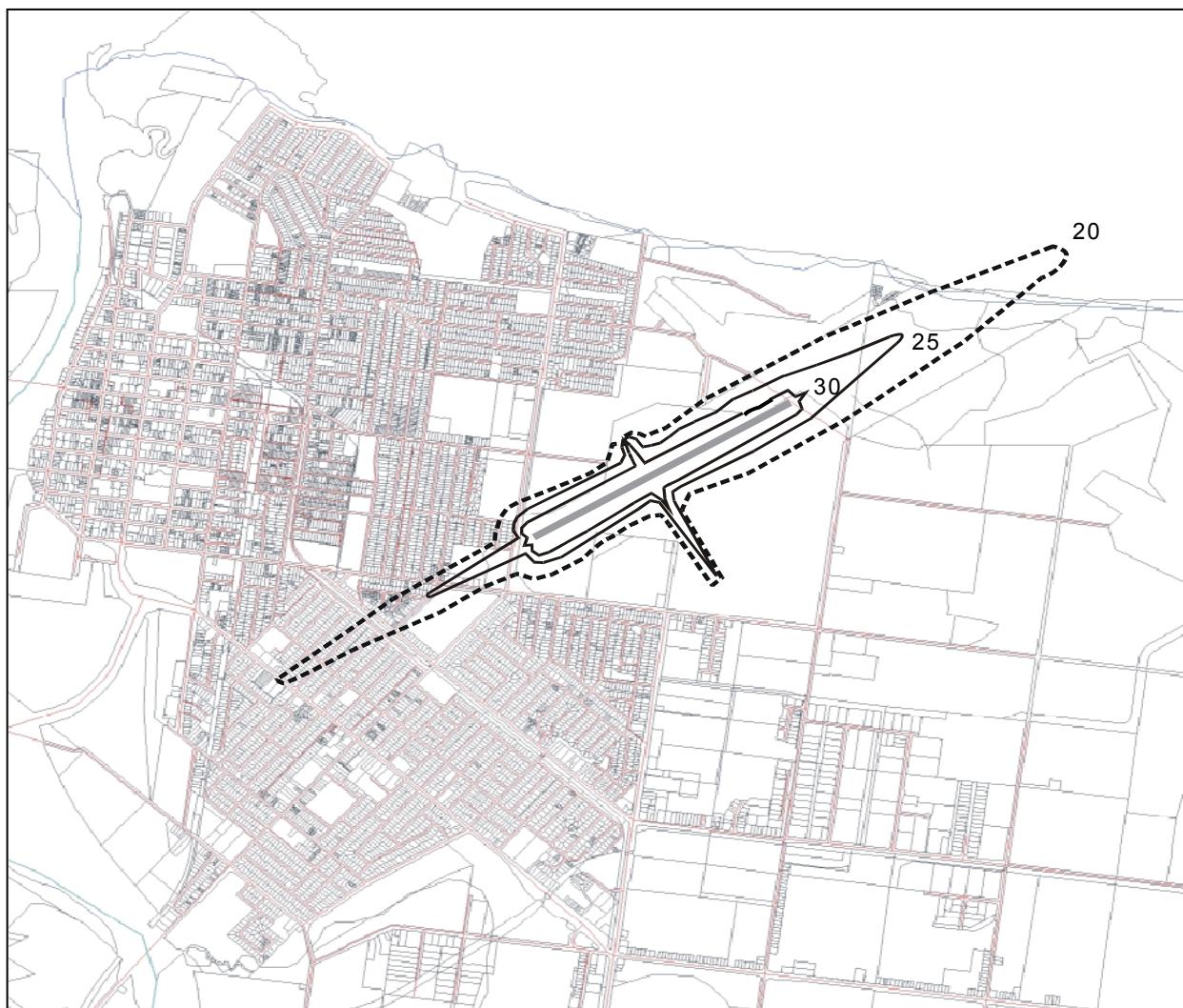
VHF COMMUNICATION FACILITIES

In general, Airservices Australia VHF sites are ‘collocated receive and transmit’ sites. The propagation distance for VHF signals is essentially governed by line of sight from the antenna at the transmitting site. Generally, the antenna is mounted so that it is clear of local obstructions such as trees, buildings and hills. Tower heights usually vary from 3m to 100m, or more in some cases.

Development Constraints

Obstructions such as buildings or other constructions may reduce the propagation distances. When siting new buildings or other constructions within 500m of communications masts or towers supporting existing Aeronautical VHF, care should be taken to ensure that the new structure does not impact on the signals from the existing aeronautical facilities, either by attenuating the signals or by causing the signals to be reflected. Siting considerations will need to be supported by a comprehensive study.

APPENDIX 4: EXAMPLE OF AN AUSTRALIAN NOISE EXPOSURE FORECAST (ANEF) CHART



APPENDIX 5: MANAGING WILDLIFE ISSUES

- A5.1** In implementing SPP 1/02, a local government should recognise, and reflect in its planning scheme and development assessment processes, the most current best practice for wildlife management. Queensland Transport can provide advice on current sources of best practice. When this Guideline was prepared, these included the International Civil Aviation Organisation (ICAO), the deliberations of the Bird Strike Committee USA, and the implementation programs of Transport Canada. These references could be used where appropriate, with appropriate solutions modified for local circumstances.
- A5.2** In many instances there are likely to be ways of managing a particular use to reduce its propensity to attract wildlife. This may require specialist advice and the development of a specific management plan. For example, to facilitate a reduction in bird populations a fully enclosed waste transfer station is likely to be acceptable whereas landfill comprising putrescible waste disposal would not be acceptable.

Addressing Wildlife Hazards associated with Existing Uses

- A5.3** Local governments, airport operators and landholders need to follow a common coordinated approach to managing existing wildlife hazards in, and within the vicinity of, airports. The primary strategy should be to discourage the presence of wildlife on, or within the vicinity of the airport, by managing the habitat.
- A5.4** A recommended process to address wildlife management issues is outlined below:
- identify stakeholders in the process of managing wildlife within 15km of the airport;
 - consult stakeholders to identify aviation needs, roles and responsibilities;
 - review relevant legislative framework and programs in place;
 - identify key issues and discuss potential solutions;
 - develop wildlife management policies and programs (strategies, plans and processes) to the level adequate for the local circumstances;
 - promote these policies and programs to stakeholders and communities through public awareness and marketing;
 - monitor management program(s) and identify successes / failures; and
 - upgrade programs accordingly.

APPENDIX 6: DEVISING DETAILED MEASURES FOR DEVELOPMENT ASSESSMENT

- A6.1** The following material is not intended to be incorporated directly into a planning scheme, but should be used to help devise appropriate detailed measures for achieving the development outcomes of SPP 1/02, and integrating those measures with other provisions of the planning scheme. The material refers to scheme measures in terms of ‘overlays’ and associated ‘assessment criteria’ and is consistent with the approach and terminology suggested for planning schemes in the *IPA Plan Making Guideline 1/01* published by the Department of Local Government and Planning.
- A6.2** Depending on the circumstances in a particular local government area and the organisation of the scheme provisions, there are different ways to incorporate the overlay provisions for aircraft/airport issues in a planning scheme. For example:
- both the triggers for assessment and the assessment criteria may be dealt with **separately** through overlay assessment tables and associated assessment criteria; **or**
 - both the triggers for assessment and the assessment criteria may be **integrated** within one or more zone tables and their associated assessment criteria; **or**
 - the **triggers for assessment may be integrated** with the assessment tables for one or more zones, but the **assessment criteria are located separately**.

Overlays

- A6.3** The following areas need to be mapped on overlays, as appropriate, for the local government area:
- Overlay 1:** for protecting operational airspace from structures, activities or emissions—area covered by airport operational airspace;
- Overlay 2:** for protecting operational airspace from wildlife interference—areas within 13km [area 2(a)], within 8km [area 2(b)] and within 3km [area 2(c)] of each airport runway³⁰;
- Overlay 3:** for protecting operational airspace from interference by light—area within 6km of each airport runway;
- Overlay 4:** for the continued functioning of aviation facilities—area covered by those parts of an aviation facility’s sensitive area to be regulated by the planning scheme³¹;
- Overlay 5:** for achieving development compatibility with aircraft noise—areas within each ANEF contour; and
- Overlay 6:** for protecting public safety near the ends of runways—each public safety area as defined by SPP1/02.

[**NB:** Some of the above overlays could be combined in one or more overlays, depending on the complexity of the mapped information for the particular airport and aviation facilities.]

³⁰ Areas 2(a), 2(b) and 2(c) are subsets of Area 2 and are necessary to reflect the differing potential of various uses to attract wildlife.

³¹ See Paragraph 5.21 above and refer to Appendix 3 for the specifications of sensitive areas by type of facility and advice on mapping.

Assessment Triggers and Assessment Criteria

A6.4 It is suggested that development is made assessable or self-assessable under the planning scheme **if**:

- **located in a mapped overlay** identified by column 1 on the following pages; and
- **of a type and in circumstances** stated in column 2 on the following pages.

A6.5 Whether development is made assessable or self-assessable depends on whether it is possible to identify all relevant assessment criteria in a precise way that does not require any interpretation/discretion. If that is possible, self-assessable is the appropriate assessment category.

A6.6 In the following tables, suggestions for one or more overall **outcomes sought** for each type of overlay are stated in column 3, as well as specific outcomes and solutions in some cases.

PROTECTION OF OPERATIONAL AIRSPACE

A. Potential Interference from Structures, Activities or Emissions

Area mapped on Overlay 1	Type of development made assessable or self-assessable	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Airport's operational airspace	<p>For area depicted on overlay area 1:</p> <ul style="list-style-type: none"> (a) works over 12m in height, or material changes of use involving works over 12m in height. [NB: A different height 'trigger' could be appropriate – see comment opposite.] (b) material changes of use involving either temporary or permanent aviation activities (e.g. parachuting or hot air ballooning). 	<p>Overall outcome: Aircraft safety in operational airspace is maintained.</p> <p>Specific outcome: Permanent or temporary physical obstructions do not adversely affect operational airspace.</p> <p>Solutions:</p> <ul style="list-style-type: none"> (a) Buildings, other structures and trees do not enter operational airspace. (b) Uses involving temporary or permanent aviation activities are not located beneath operational airspace. <p>(c) works or material changes of use involving the emission of:</p> <ul style="list-style-type: none"> • gaseous plumes; or • smoke, dust, ash, or steam. 	<p>The 12m height limit and the specifications regarding emissions and aviation activities may be incorporated in the scheme as criteria for self-assessable development (i.e. acceptable solutions), or be incorporated as a probable solution in a code for code assessment.</p> <p>The combination of local topography, existing built development and the boundaries of a particular airport's operational airspace might justify a different height trigger than 12m. The appropriate height should be determined following advice from the airport operator.</p> <p>As self-assessable criteria, they may be linked to the mapped overlay area and added to other criteria (e.g. in codes for residential, industrial or recreational uses), or they may be incorporated in a code dealing specifically with one or more aircraft operational overlays.</p> <p>A code for code assessment would need to specify the outcome sought. Such a code may also deal with other matters (e.g. be a code for a zone that incorporates the aircraft operational outcome and solution in relation to the mapped overlay area), or be a dedicated aircraft operational overlays code.</p> <p>Solution: None of the following is emitted:</p> <ul style="list-style-type: none"> • a gaseous plume at a velocity exceeding 4.3m per second; or • smoke, dust, ash or steam.

PROTECTION OF OPERATIONAL AIRSPACE [Continued]

B. Potential Interference from Wildlife

Area mapped on Overlay 2	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
(a) Area within 13km of runways; (b) Area within 8km of runways; (c) Area within 3km of runways.	For area depicted on overlay 2a: (a) Material changes of use involving the disposal of putrescible waste. For area overlay 2b: (b) Material changes of use involving: • aquaculture; • food handling or processing of an industrial nature; • stock handling or slaughtering; • pig production; • fruit production; • turf production; or • the keeping or protection of wildlife outside enclosures. For area overlay 2c: (c) Material changes of use involving: • the keeping, handling or racing of horses; or • outdoor dining, food handling or food consumption (e.g. fairground, drive-in theatre or restaurant).	Overall outcome: Aircraft safety in operational airspace is maintained. Specific outcome: Wildlife, particularly flying vertebrates, such as birds and bats, are not attracted into operational airspace in significant numbers. Solution: Uses in column 2(a) are not located within 13km of runways. Solution: Uses in column 2(b): • are not located in within 3km of runways; or • if located within 3km and 8km of runways: - potential food/waste sources are covered/collected so that they are not accessible to wildlife; and - for fruit and turf production, wildlife deterrence measures (e.g. bird scarers, netting) are carried out. Solution: Where uses in column 2(c) are located within 3km of runways, potential food/waste sources are covered and collected so that they not accessible to wildlife.	<p>Depending on the planning scheme, the identified uses may equate with defined terms in the scheme or they may be components of a more generally defined term (e.g. ‘industry’, ‘community’ or ‘recreation’, ‘agriculture’).</p> <p>In the latter situation, the trigger in the scheme for applying the aircraft operational outcomes needs to relate not only to the mapped overlay area, but also to the particular type of use within the defined term. For example, ‘Community or recreation if involving one or more of the following:</p> <ul style="list-style-type: none"> • the creation of an artificial water body; • the keeping or protection of birds outside enclosures; • the keeping, handling or racing of horses; or • outdoor dining, food handling or food consumption.’ <p>If a fauna sanctuary, or similar, (a column 2(b) use) is proposed between 3km and 8km of runways, some wildlife management measures additional to the solution opposite need to be considered.</p> <p>If exceptional circumstances justify approving a 2(a) or 2(b) use within 13km and 3km respectively of an airport’s runways, rigorous wildlife management measures with certainty of avoiding attracting wildlife should be required.</p> <p>See Note 1 at end of Appendix for advice regarding assessment triggers.</p>

PROTECTION OF OPERATIONAL AIRSPACE [Continued]

C. Potential interference from artificial lighting

Area mapped on Overlay 3	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Area within 6km of airport runways	<p>For area depicted on overlay 3:</p> <ul style="list-style-type: none"> (a) material change of use involving external lighting that includes: <ul style="list-style-type: none"> • straight parallel lines 500m to 1000m long; • flare plumes, buildings with reflective cladding (e.g. glass or metallic), upward shining lights, flashing or sodium lights; (b) works involving the same external lighting not associated with a material change of use; and (c) reconfiguring a lot involving the creation of new streets with street lighting of straight parallel lines 500m to 1000m long. 	<p>Overall outcome: Aircraft safety in operational airspace is maintained.</p> <p>Specific outcome: External lighting does not cause significant interference by: <ul style="list-style-type: none"> • distracting or temporarily interfering with a pilot's vision; or • confusing a pilot because of similarities to approach or runway lighting. </p> <p>Solution: Standards specified in CASA Guidelines: <i>Lighting in the vicinity of aerodromes: Advice to lighting designers</i>.</p>	See Note 1 at end of Appendix for advice regarding assessment triggers.

PROTECTION OF AVIATION FACILITIES

Area mapped on Overlay 4	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Aviation facility sensitive area - as identified for each facility (area varies with type of facility)	<p>For the area(s) depicted on overlay 4:</p> <ul style="list-style-type: none"> (a) material changes of use involving works over X_m (where X is the lowest height specified for the relevant aviation facility; or (b) works over that height (as identified in (a) above). (c) material changes of use involving the conduct of arc welding (e.g. steel fabrication); or (d) material changes of use involving metal, glass or other reflective surfaces exceeding X_m^2 (where X is determined in consultation with Airservices Australia). <p>Overall outcome: The functioning of aviation facilities is maintained.</p> <p>Specific Outcome: Permanent or temporary physical obstructions do not enter an aviation facility's sensitive area.</p> <p>Solution: Works are not constructed at a height above that specified for the relevant aviation facility.</p> <p>Specific outcome: Electrical or electromagnetic fields or reflective surfaces do not adversely affect the functioning of aviation facilities.</p> <p>Solution: Works involving arc welding etc., do not operate within the sensitive area of a VHF or HF facility.</p> <p>Solution: Uses involving metal surfaces exceeding X_m^2 are not constructed in the sensitive area for an NDB facility (where X is determined in consultation with Airservices Australia).</p>	<p>The assessment triggers and the sensitive areas for each facility will need to be determined following consultation with Airservices Australia or the airport operator, depending on which owns/operates the facility (indicated in Appendix 2).</p> <p>Significant portions of the sensitive areas shown in Appendix 3 will be owned and/or controlled by either Airservices Australia or the airport operator. Therefore, those portions need not be regulated by the planning scheme as far as the protection of the aviation facility is concerned.</p> <p>Additionally, the planning scheme is not expected to regulate minor buildings and structures, such as fences, that are not normally regulated by schemes.</p> <p>See Note 1 at end of Appendix for advice regarding assessment triggers.</p>	

AIRCRAFT NOISE

Area mapped on Overlay 5	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Aircraft noise depicted by ANEF contours	<p>For areas depicted on overlay 5:</p> <p>(a) Material changes of use involving one or more of the following:</p> <ul style="list-style-type: none"> • residential (all forms including caravan parks); • education; and • care for the ill or elderly (hospitals, nursing homes etc.): <p>i) self-assessable if located in areas between the 20 & 25 ANEF contours; and</p> <p>ii) assessable if located in areas within an ANEF contour higher than 25.</p> <p>(b) Material changes of use involving general access to the public (e.g. library, community centre) buildings or public gatherings:</p> <p>i) self-assessable if located in areas between the 20 & 30 ANEF contours; and</p> <p>ii) assessable if located in areas within an ANEF contour higher than 30.</p> <p>(c) Material changes of use involving short-term accommodation:</p> <p>i) self-assessable if located in areas between the 25 & 30 ANEF contours; and</p> <p>ii) assessable if located in areas within an ANEF contour higher than 30.</p>	<p>Overall outcome: Land uses not directly associated with the airport are protected from noise levels that may cause harm or undue interference.</p> <p>Specific outcome: Uses involving any of the type specified as assessable in column 2 are not located within an ANEF higher than indicated, unless there is an overriding need in the public interest and no other site is reasonably available for the proposed use.</p>	<p>Depending on the planning scheme, the identified uses may equate with defined terms in the scheme (e.g. 'single residential', 'tourist accommodation') or they may be components of a more generally defined term (e.g. 'community or recreation').</p> <p>In the latter situation, the trigger in the scheme for applying the outcomes for aircraft noise needs to relate not only to the mapped ANEF areas, but also to the particular type of use within the defined term. For example, '<i>Community or recreation if involving one or more of the following:</i></p> <ul style="list-style-type: none"> • <i>public access or gathering of the public;</i> • <i>education; or</i> • <i>care for the ill or elderly'.</i> <p>"Overriding Need"</p> <p>Where an 'overriding need' is demonstrated, any associated building works should include noise attenuation measures designed by a suitably qualified acoustic practitioner³² to comply with specific standards in the SPP 1/02 Guideline.</p>

³² A suitably qualified acoustic practitioner would be a member (or would qualify for the membership) of the *Australian Acoustical Society*. If used in a planning scheme, such a term would need to be defined in the planning scheme.

AIRCRAFT NOISE (Continued)

Area mapped on Overlay 5	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Aircraft noise depicted by ANEF contours	<p>(d) Material changes of use involving the operation of a business:</p> <ul style="list-style-type: none"> i) self-assessable if located in areas between the 25 & 35 ANEF contours; and ii) assessable if located in areas within an ANEF contour higher than 35. <p>(e) Material changes of use involving the operation of a light industry:</p> <ul style="list-style-type: none"> i) self-assessable if located in areas between the 30 & 40 ANEF contours; and ii) assessable if located in areas within an ANEF contour higher than 40. 	<p>Assessing noise attenuation measures The noise attenuation measures would be assessed when building work is assessed against the <i>Standard Building Regulation</i>.</p> <p>a) are not located within an ANEF higher than indicated; and</p> <p>b) associated building work incorporates appropriate noise attenuation measures designed by a suitably qualified acoustic practitioner in accordance with Table 2 in this Guideline.</p>	<p>See Note 1 at end of Appendix for advice regarding assessment triggers.</p>

PUBLIC SAFETY AREAS

Area mapped on Overlay 6	Type of development made assessable (or self-assessable)	Outcomes sought to be achieved (and, if applicable, a solution)	Comment
Public safety areas near the ends of runways	<p>For area depicted on overlay area 6:</p> <p>If inconsistent with ‘development commitments’, material changes of use involving:</p> <ul style="list-style-type: none"> • residential; • the manufacture or bulk storage of hazardous or flammable materials; or • gathering of people in large numbers (e.g. sports stadium, shopping centre, education establishments, hospitals, and industrial or commercial uses involving large numbers of workers or customers). 	<p>Overall outcome: The effects of aircraft accidents that may occur near runways in association with takeoff or landing are minimised.</p> <p>Specific outcome: A significant increase in the numbers of people living, working or congregating in public safety areas is avoided, unless there is an existing ‘development commitment’.</p>	<p>SPP 1/02 recognises that the overall outcome should not be applicable when the proposed development is a ‘development commitment’ as defined in Section 8, Glossary. Therefore, triggers for assessment and assessment criteria will need to be devised in the context of the particular planning scheme area and the development commitments within the public safety areas.</p> <p>See Note 1 below for advice regarding assessment triggers.</p>

Note 1: The triggers for assessment under the planning scheme may be incorporated in either zone or overlay assessment tables, as appropriate for the scheme, and the outcomes incorporated in zone or overlay assessment criteria, also as appropriate.

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