DENMARK AIRFIELD

LAND USE STRATEGY

ADOPTED AT THE ORDINARY COUNCIL MEETING ON 21 DECEMBER 2010

Contents Page

ATTACHMENTS

Study Area Plan
Operations and Circuits Plan
CAA Guidelines
Conceptual Land Use Strategy Plan
Figure 29 (Denmark LPS)
Land Use Buffers Plan

EXECUTIVE SUMMARY

The Denmark Airfield (the airfield) is located approximately 5km north east of the town centre. Following the recent upgrade of the landing strip and the release of additional hangar lots, it is expected that the airfield will become busier. The Shire of Denmark recognises the need for a land use strategy to inform the community and guide staff and Council in decision-making. This strategy considers potential land use options for the airfield, including airpark/hangar accommodation as well compatibility with the proposed Light Industrial Area (LIA) on the adjoining lot to the south in McIntosh Rd. This strategy provides a framework for future development of the airfield and immediate surrounds.

The subject land includes Lot 8027 (Reserve 41390) together with Freehold Lot 8154 Wrightson Road and eight freehold hanger lots on Paxillus Way. For the purpose of this strategy, the study area includes the surrounding Reserve 26565 (Lot 8219) and adjoining freehold land to the south.

The Airfield is within Lot 8027 (Reserve 41390). It is categorised by CASA as an Aeroplane Landing Area (ALA). The runway pavement is 1200m long and 15m wide within a 45m wide 'runway strip'. The ALA can accommodate light aircraft, up to 5700kg. The airfield is used predominantly for recreation, tourism and sport aviation with some business and charter flights. The RFDS, Water Bombers and other emergency services use the landing strip as required. The airfield has lighting and is suitable for night landings. Other facilities include the apron and taxiways, parking areas, the terminal building and a community water tank.

The Shire of Denmark has the care and control of Reserve 41390 and the Power to Lease for up to 21 years, subject to the consent of the Minister for Lands. Its purpose is Aerial Landing Ground. Nine leasehold hangar lots have been established within Reserve 41390.

Fly-in Estates or airparks are becoming increasingly popular in Australia and are recognised as an important growth sector. Airparks include a variety of aviation compatible businesses and land uses. Many provide residential options with direct access to the airfield and runways. In addition to hangar accommodation other potential activities include scenic tour flying, charter flying, student flight training, selected service industry, aircraft maintenance and repair. A number of airparks are under consideration and in Western Australia. The attributes and characteristics of the airfield give it natural advantages for this type of development.

Although there is no CASA legislation governing the erection of buildings on an Aeroplane ALA, there are guidelines that protect the airspace surrounding the ALA for the safety of aviation so aircraft can operate into and out of such places safely.

Any development should be used exclusively for aviation related activities. The subject land, being the whole of the airfield reserve, including leasehold lots and freehold hangar lots is considered to be suitable for a range of airpark uses, including hangar accommodation.

The area around the airfield, as identified by the Special Control Area Airspace Protection Plan should not be used for sensitive uses, such as single dwellings or rural living. The Shire of Denmark may impose conditions at the time of development requiring Notifications and Acknowledgement by landowners and/or lessees regarding potential noise impact of the Aerial Landing Ground.

The planning and development of the future LIA is subject to further assessment and detailed study, land swap and rezoning. Consideration is to be given to the Environmental Protection Authority Guidance Statement No. 3 'Separation Distances Between Industrial and Sensitive Land Uses' and State Planning Policy 4.1 'State Industrial Buffer (Amended)' July 2009 Draft. The future LIA adjoins the Denmark Airfield. It is considered to be compatible and is appropriate adjacent to the ALA. Given its proximity to the runway and flight paths, this area would not be suitable for conventional Rural Lifestyle lots or other sensitive land uses. Noise impact and amenity issues, however, are not a constraint to Light Industrial uses. In this case there is scope for the 'buffers' to overlap. The airfield and proposed Airpark are not regarded as a sensitive land uses for the purpose of the State Industrial Buffer Policy, however hangar accommodation is and this needs to be factored into the strategic decision making process.

The purpose of the Strategy and the associated Policy is to provide for an Aeroplane Landing Area and aviation related operations at the Denmark Airfield and ensure all development and land uses are carried out and managed so as to protect and enhance the purpose and function of the Airfield. ALA facilities and activities are to comply with relevant regulations, CASA guidelines and statutory requirements in regard to aviation operations and procedures. All work and development at the Airfield is to satisfy relevant safety standards, Environmental Health and Planning requirements. In determining development applications at the Airfield and on surrounding lots consideration is to be given to siting, height of buildings and structures, reflectivity of external materials, servicing, fire safety, amenity and land use compatibility.

Glossary of Terms and Abbreviations

The following terms and abbreviations are used throughout the report.

- AHD – Australian Height Datum
- AL – Aerial Landing Ground
- ALA - Aeroplane Landing Area
- ANEF - Australian Noise Exposure Forecast
- CAR - Civil Aviation RegulationsCASA - Civil Aviation Standards Authority
- CASR - Civil Aviation Safety Regulations
- DLPS - Draft 2005 Denmark Local Planning Strategy
- EPA – Environmental Protection Authority
- FESA – Fire and Emergence Services Authority
- LIA - Light Industrial Area
- RAAO - Recreational Aviation Administration Organisations
- RAAF – Royal Australian Air Force
- RFDS – Royal Flying Doctor Service
- RSS - Rural Settlement Strategy
- SCA – Special Control Area
- SR – Special Rural
- TPS – Town Planning Scheme

1. INTRODUCTION

1.1 Purpose

The purpose of this report is to consider potential land use options for the Denmark Airfield and to provide a framework for future development of the Airfield and immediate surrounds.

The Shire of Denmark recognises the need for a land use strategy to inform the community and guide staff and Council in decision-making for the land and any uses. Following the recent upgrade of the landing strip, it is expected that the airfield will become busier. As reported to Council in January 2010, the introduction of additional uses "should be expected and encouraged to assist meet the maintenance of those improvements". The concurrent review of TPS Policy No. 25 Denmark Airport Hangar Lots is also advocated.

The runway is 15m wide and can generally accommodate light aircraft up to 5700kg. It is used infrequently by RFDS aircraft and in emergencies by FESA Water Bombers. Currently the majority of users are recreational aviation enthusiasts, business charters, and holiday makers. The Denmark Airport Association meets regularly and takes responsibility for the maintenance and upkeep of airfield equipment, including runway lights, the wind-sock and landing markers.

There is growing popularity and demand for Fly-in Estates within Australia. Such Estates are well established in both the United States and the eastern states of Australia. Existing airparks are being expanded and new parks are being developed. There is a rapidly growing interest in these types of developments and a number are under consideration and in WA. The attributes and characteristics of the Denmark Airfield give it natural advantages for this type of development.

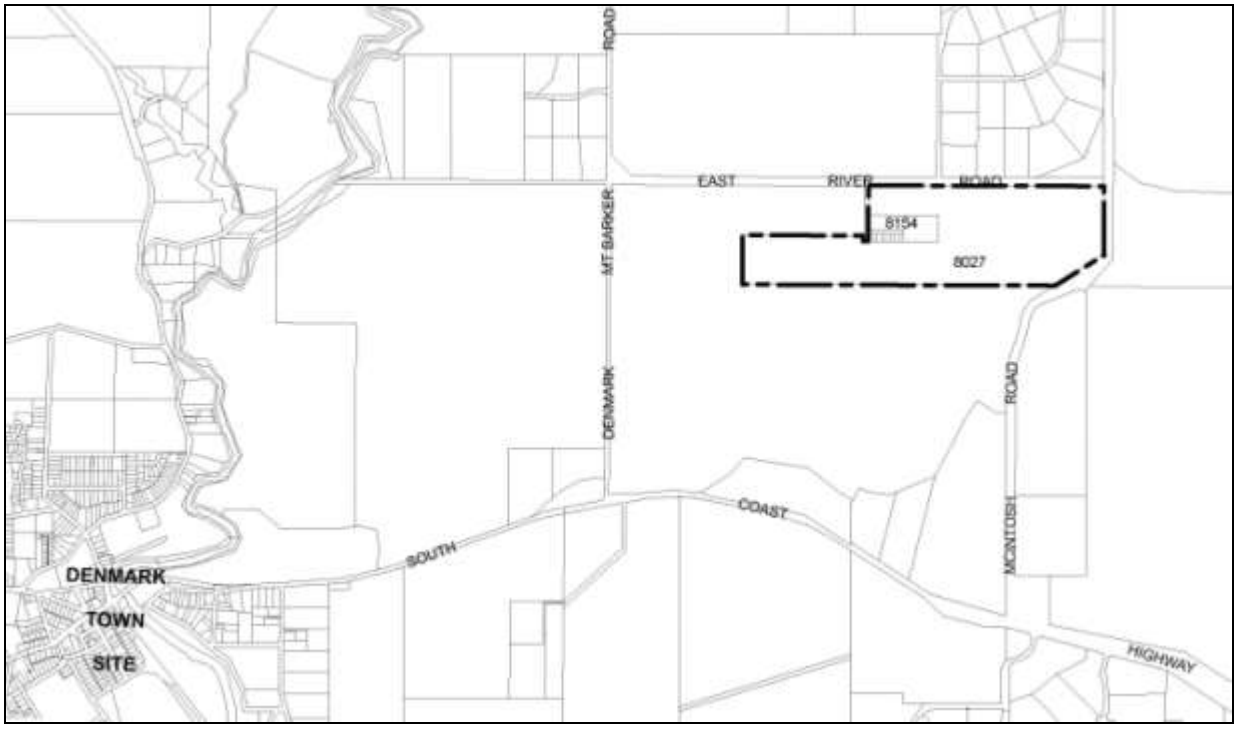
1.2 Denmark Airfield Details (as of 24/11/2010)

- Location of strip – S34 deg 56.75 E117 deg 23.83
- Windsock – SE of 27, NW of 09
- Lighting P. A. L. – 120.6
- Runway Length – 1205m
- Runway Width – 15m
- Strip Width – 45m
- Surface of airstrip – bitumen sealed
- Caution – beware kangaroos, hills to west, strip slopes down to the west
- Terminal door combination lock number – [redacted] (number restricted)
- Paxillus Way Electronic Gate Number – [redacted] (number restricted)

2. SUBJECT LAND

2.1 Location

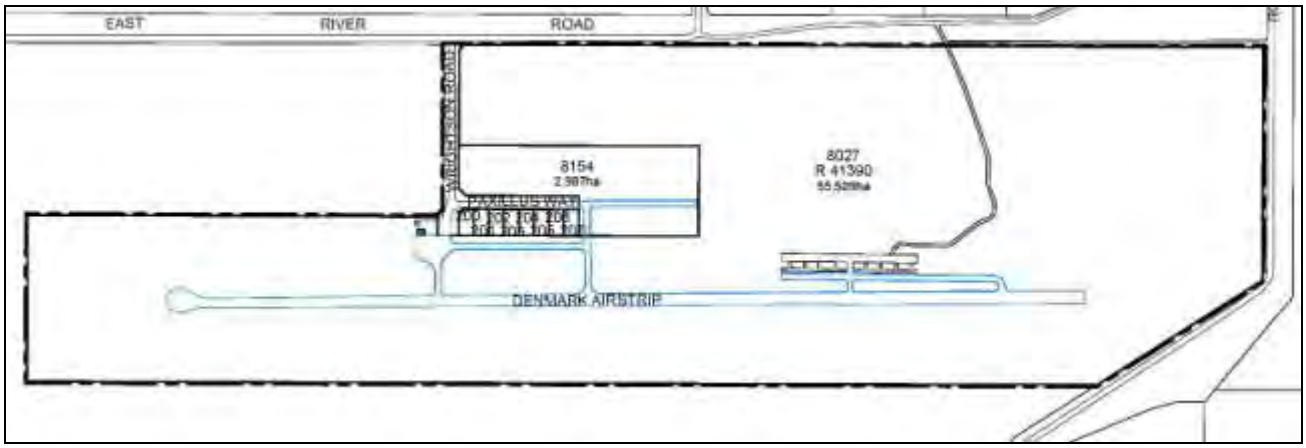
The Denmark Airfield is located approximately 5km north east of the town centre.



Location

The subject land includes Reserve 41390 (Lot 8027) No. 9 Wrightson Road together with Freehold Lot 8154 Wrightson Road and eight freehold hanger lots on Paxillus Way.

For the purpose of this strategy, the study area includes the surrounding Reserve 26565 (Lot 8219) and adjoining freehold land to the south.



Study Area

2.2 Land Description & Tenure

Reserve 41390, Lot 8027 (formerly Pt Plantagenet Location 7805) is bounded by East River Rd, McIntosh Rd and Wrightson Rd. Its purpose is Aerial Landing Ground. The Shire of Denmark has the care and control of the reserve as the 'Primary Interest Holder'. Nine leasehold hangar lots have been established within Reserve 41390, north of the Airstrip. The Management Order contains conditions to be observed and the power to lease for up to 21 years, subject to the consent of the Minister for Lands. The reserve is 55.5ha in area.

Freehold lots 200 - 207 front Paxillus Way. These lots and the road reserve were former Lot 8149 and previously portion of former Plantagenet Location 7804. The southern (rear) boundaries of these 700sqm lots face the airstrip and adjoin the taxiway. Four lots have been developed with hangars with a nil setback to the taxiway.

Lot 8154 is 2.9871ha in area. It fronts both Wrightson Road and Paxillus Way and is the balance of former Plantagenet Location 7804. Lot 8154 is the subject of an approved subdivision (WAPC ref 133101) to create sixteen (16) additional freehold hangar lots ranging from 700sqm to 2600sqm. The freehold lots will have frontage to Paxillus Way which will function as a dual access for vehicles and aircraft taxiway.

Reserve 26565 (Lot 8219) is bounded by South Coast Hwy, the Denmark-Mt Barker Rd, East River Rd, McIntosh Rd and Wrightson Rd. It surrounds the airstrip on three sides. Lot 8219 is Crown Land and forms part of the Denmark Agricultural College.

Lot 2 is approximately 30ha and is under freehold ownership. It is bounded by South Coast Hwy and McIntosh Rd and adjoins Reserve 3234 and the waste transfer site on Reserve 7937 to the east. The northern portion of Lot 2 is included in the study area.

2.3 Zoning

Lot 8027 (the airfield), the eight freehold hangar lots and Lot 8145 are shown on the TPS No.3 zoning maps as reserves for Public Use – Aerial Landing Ground (AL).

The Shire of Denmark TPS Policy No. 25 applies to the freehold land (former Location 7804). It sets out objectives and development guidelines for the "airport subdivision" and contains guidelines relating to development approvals, building design and materials, lighting, communication devices, the requirements of other statutory authorities, cleaning, maintenance and repair, car parking, fire safety and use of the hangar area.

Lot 8219 is shown on the zoning map as Public Use.

2.4 Site Description and Land Use

The subject land is within the Denmark River catchment which drains into Wilson Inlet. The soils in the area are generally good quality and landform is characterised by dissected river valleys. Predominant management issues relevant to this proposal, as identified in the endorsed Rural Settlement Strategy (RSS) and draft 2005 Denmark Local Planning Strategy (DLPS), include

protection of landscape, rural character, remnant vegetation, waterway eutophication, fire risk and conflict between intensive agriculture, hobby farms and townsite expansion. Although the Crown Reserves are not specifically shown on the land capability maps in the RSS, the information can be extrapolated from surrounding areas. As such, the subject land is regarded as having medium to low capability for perennial and annual horticulture, high capability for grazing and medium to very low capability for Rural Residential.

The airstrip is located on a crest amidst undulating country. Lot 8027 slopes from approximately 65m AHD down to 50m AHD in the south east and 45m AHD in the north along East River Road. The runway itself is at the "official" elevation of the airfield listed in CASA documents is 230 feet or 70m. Approximately 5m of fill has been installed at the western end of the runway.

The runway is 1200m long and has a 15m wide sealed pavement within a 45m wide 'runway strip'. The landing area is defined by white markers. Reserve 41390 also contains a sealed apron and taxiway, parking areas, the terminal building and a community water tank.

Stock proof fencing is erected at the western end and southern side of the landing strip. It is located inside the boundary of Lot 8027. Consequently, portion of Lot 8027 is used by the Denmark Agricultural College for livestock grazing.

The Shire of Denmark has supported the development of a leasehold hangar area north of the landing ground. Nine sites are under construction, and have all been leased.

A total of eight freehold hangar lots have been created between Paxillus Way and the sealed taxiway east of the apron and terminal. The lots at the eastern end have been partially filled and retained.

Some remnant vegetation exists on the northern portion of Lot 8027 adjacent to East River Road. There are re-plantings in areas formerly used for sand extraction north of Lot 8154 and in portions of Lot 8219 north of the existing terminal. Small pockets of remnant vegetation and shelter belts occur on Lot 8219. Significant vegetation exists within the local road reserves, Lot 6716 to the north and the Crown Land (Lot 3234 and 7937) to the south east. (Refer Attachments – Study Area Plan).

Both Wrightson Rd and Paxillus Way are constructed to a sealed standard. Wrightson Rd provides vehicular access to the Denmark Airfield. A portion of the public car park is located within the cul-de-sac and portion is within Lot 8027. The car park is fenced with gated access to the apron and taxiway. It provides legal road frontage to the existing freehold lots. Paxillus Way has a dual function: it provides vehicular access and is intended to serve as an aircraft taxiway for the approved hangar lots. The control of vehicles, taxiing of aircraft and public access can be achieved through a local Traffic Management Plan approved by the Shire.

The East Denmark Volunteer Bush Fire Brigade sheds are located within Lot 8027 (Reserve 41390) off Wrightson Rd, north of Lot 8154.

Lot 8219 is used by the Denmark Agricultural College, predominantly for cattle grazing. It contains extensive areas of pasture, boundary and paddock fences, dams, shelter belts and pockets of remnant vegetation.

Lot 2 is used for rural purposes.

Adjoining lots along South Coast Hwy are zoned rural. Lot 1 is used for rural living. Lot 42 contains a winery, including vineyard and cellar sales.

3. BACKGROUND

3.1 Airfield

Lot 8027, Reserve 41390 contains the Denmark Airstrip, associated taxiways, the terminal building, communal water tank and public car parking. It is categorised by CASA as an Aeroplane Landing Area (ALA). All aircraft utilising the airfield are classed as light aircraft; being less than 5700kg. Emergency aircraft in excess of 5700kg may also use the airfield.

The airfield is used predominantly for recreation, tourism and sport aviation with some business and charter flights. Planes are generally small single and twin engine aircraft, with some occasional warbirds and ultra light craft in the traffic mix. The runway is, in the main, too short for jet aircraft, and none are expected with Albany nearby. Aircraft expected are mostly single engine sport and general aviation (factory built) single engine planes mostly less than 1750kg and twin engine aircraft up to about 3000kg. The region has among the highest density per capita in the world of owner builder/home built aeroplanes.

The RFDS and other emergency services use the landing strip, as required; generally not more than twice a week. The Denmark Airfield has lighting and is suitable for night landings. It is estimated around 1% of landings into the airfield are undertaken at night, limited by night time restrictions applied to various pilots. In general most night flights are for emergency purposes only.

Expectations for growth are modest. Since 2004 the airfield has gained about 1-2 aircraft per year and currently nine aircraft are based in hangars. If all current approved freehold and leasehold hangar blocks were built upon and occupied up to 30 aircraft could be expected to be based at the Denmark Airfield. Future development might raise this to 30-35. Usage levels are highest during fly-ins, which occur once in four years, bringing 40 – 60 aircraft as visitors. Only limited charter flights in and out using light aircraft are expected. Night flights are few, and most flying activity is in summer.

Work in progress at present includes:

- Development of leasehold hangar sites and taxiways (north of airstrip and east of the freehold hanger lots),
- Maintenance (wind socks, lighting, weed spraying, runway marker repainting), and
- Communal water supply.

Short term works, as agreed with the Shire of Denmark include:

- Sealing of the taxiway adjacent to the existing freehold hangar lots (recently completed as gravel and loose material is problematic as propellers are easily damaged), and

- Additional hardstand parking (to replace the area assigned to water bombers).

3.2 Regional Context

The Denmark Airfield is used predominantly for recreation, tourism, business and emergency purposes. There are a number of small private aerial landing grounds in the Great Southern. There are ALAs at Augusta, Bremer Bay and Margaret River. Those at Albany, Manjimup, Bunbury, Esperance and Jandakot, in addition to the Perth Domestic and International Airports are categorised as Aerodromes and handle regularly scheduled public transport aircraft ("airliners").

The Harry Riggs Albany Regional Airport is located less than 50km from the Denmark airfield. It is a CASA Licensed Airport for Regional Public Transport aircraft. The Regional Airport accommodates larger aircraft (in excess 5700 kg) which is a demarcation point between "light" aircraft and "regional air carriers" generally of 20 seats or more. It provides for commercial passengers (with 18 Skywest flights a week carrying 50,000 passengers per year) and freight with the associated airfield security and gate considerations. It also caters for general aviation charter flights, Royal Flying Doctor Service and RAAF deployments. The Regional Airport has refuelling facilities for both jet fuel as well as aviation petrol.

The Regional Airport operates at a much higher order with many specific CASA and security requirements. It serves a different function than the airfield and is required to comply with considerably more relevant standards and requirements. The local ALAs serve a complementary role and do not, as such, compete with the Regional Airport. Given the distance between the Regional Airport and the Denmark airfield there is more than sufficient separation between the respective circuit areas.

There are opportunities for improvements and upgrades to the Denmark airstrip, but it will not and cannot be extended beyond capacity for light aircraft. This self limiting factor is appropriate in light of its predominant function for sport aviation, tourism, charter and suitability for hangar accommodation. As reported to the Council in January 2010 (refer item 9.1.6) the growth potential of the Denmark airfield is recognised, however it is "not envisaged in the medium to long term the ALA will develop into and Aerodrome facility."

3.3 Aviation Safety

While the Denmark Airfield is not licensed by CASA, its use and landing instrumentation are required to comply with relevant standards.

CASA has the primary responsibility for civil aviation safety in Australia. Its function is to conduct the safety regulation of civil air operations. It provides safety education and training programmes and administers certain elements of the Civil Aviation Act (the Act). The Civil Aviation Regulations (CAR) and the Civil Aviation Safety Regulations (CASR) provide for general regulatory controls for the safety of air navigation. The Act and regulations empower CASA to issue Civil Aviation Orders on detailed matters of regulation and to issue Manuals of Standards which provide detailed technical material.

Although there is no CASA legislation governing the erection of buildings on an Aeroplane Landing Area (ALA), there are guidelines that protect the airspace surrounding the ALA for the safety of aviation so aircraft can operate into and out of such places safely. All arriving and departing aircraft are expected to follow a standard circuit made up of four legs. At Denmark, standard left hand circuit procedures are used so that the circuit for Runway 09 is counter clockwise and north of the airstrip, and the circuit for Runway 27 is also counter clockwise but south of the strip. All runways have two designations or "names" corresponding to their magnetic direction rounded off to the nearest five degrees. Aircraft landing to the east at Denmark use "runway 09" whilst landing on the same strip of pavement going to the west it becomes "runway 27." The size of the circuit varies with larger faster planes flying a larger circuit while slower planes fly a smaller circuit. The Operation and Circuits Plan (Refer Attachment) depicts the runways and typical circuit dimensions for most aircraft landing at Denmark. The plan indicates the circuit or airfield traffic pattern as well as the departure climb corridors normally used. Beyond this, aircraft are required to remain 500 feet minimum above ground level in open areas, and 1000 feet above ground level in "built up" areas.

Other than the obstacle limitation surfaces, also know as Lateral Transitional Slopes, there is no CASA legislation governing any accommodation combinations and fire regulations. In terms of night operations, the guidelines are similar to the rules and standards that would apply to Licensed Aerodromes. CASA suggest that the higher standard be applied to ensure future development prospects are not constrained.

The transition surface is the most likely limiting factor for the type of developments being considered for the Denmark Airfield. The datum for the transition surface should be the adjacent level on the runway centreline. The CASA guidelines (refer attachments) have been used to set the building height restrictions for the airfield shown in this strategy and to generate the climb out paths and landing circuit mapping as indicated on the Operation and Circuits Plan.

CASA acknowledges that sport aviation makes up almost half of the aircraft operating in Australia. This includes about 40,000 participants, more than 9000 aircraft and 288,000 parachute jumps each year.

Sport aviation includes:

- light recreational and microlight aircraft
- gliders
- gyroplanes
- hang gliders, paragliders and powered parachutes
- model aircraft
- parachuting
- warbirds
- amateur built and experimental aircraft
- recreational ballooning

Sport aviation provides a wide range of activity options and an economical way to take part in aviation. It also offers a proving ground for new aviation concepts and technology.

The Australian sport aviation industry includes manufacturers, training facilities, organised competitions and enthusiasts all contribute to growth of the aviation sector with positive spinoffs for local economies.

Australian sport aviation operates under self administration. While CASA sets the regulations it works in close cooperation with established organisations, known as Recreational Aviation Administration Organisations (RAAO), to ensure the regulations are applied and enforced. CASA acknowledges that the RAAOs provide specialist knowledge and insight into the sport aviation industry.

RAAOs are required to meet performance standards as well as undergo audits. CASA works in close cooperation with RAAOs and receives reports about activities and safety performance. This builds a safer sport aviation industry for both those taking part and the general public. (www.casa.gov.au March 2010)

3.4 Airpark Concept

Fly-in estates are becoming increasingly popular in Australia and are recognised as an important growth sector. Such facilities are sometimes referred to as "Airparks". The concept of fly-in estates is not new, and is common in the United States and on the east coast of Australia.

By way of example:

- The Airlie Beach Whitsunday Aviation Village Estate (WAVE) includes 57 freehold lots (Hangar Homes) and 30 leasehold commercial lots are proposed.
- The Gatton Airpark is releasing 33 hangar lots in the 3rd and final stage.
- Kensington Airpark is an upscale development still in the planning stages.
- The Latrobe Regional Airpark Master Plan identifies 40 proposed Residential sites, 14 Industrial sites, new hangar sites, a helicopter precinct, and Heli-med facilities. These are in addition to the existing terminal, hangars, two aero clubs and Gippsland Aeronautics (Australia's only export passenger aircraft manufacturer). The Airpark complex is adjacent to the regional Hospital, a Caravan Park and accommodation.

Within WA proposals are under consideration at Serpentine, Margaret River, Esperance and Jurien Bay; as well as the applications for Denmark.

These fly-in estates provide for a variety of airfield related operations. The Estates house a range of aviation compatible industries and businesses. Many provide residential options with direct access to the airfield and runways. In addition to the hangar accommodation and light aircraft storage that could be incorporated within the Denmark ALA, other potential activities include scenic tour flying, charter flying, student flight training, selected service industry, aircraft maintenance, sales and repair.

3.5 Light Industrial Area

The Shire of Denmark is investigating options for the establishment of a Light Industrial Area (LIA) with the land south of the Airfield and west of McIntosh Rd being identified as a possible site. It is strategically located and appears to be suited for this purpose. The Shire has

undertaken preliminary assessment, consultation and planning. A report on this matter was considered by the Council at its meeting held 22 December 2009 (refer item 9.5.1 and resolution 231209).

The indicative area for the possible LIA is shown on this Land Use Strategy. Development is subject to further detailed assessment, environmental and capability analysis, approvals from relevant authorities, rezoning, and extension/upgrade of services.

4. PROPOSAL

4.1 Airfield

The Denmark Airfield is well patronised, predominantly by sport aviation enthusiasts and other light aircraft users. It is within convenient access of the Albany Regional Airport, however is less constrained in regard to level of usage, Regulations and Landing Fees. The Denmark Airfield is suitable only for light aircraft and is ideal for sport aviation. The Denmark facility is largely self-managed by Denmark Airport Association. These volunteers play a vital role in the operation and day-to-day maintenance of the airfield facilities as well as surveillance and security. This will be enhanced through opportunities for hangar accommodation and additional hangar sites through increased Caretaker roles and a growing sense of community.

The members of the Denmark Airport Association are considered to be key stakeholders and have been consulted during the preparation of this strategy. In addition to background information and technical advice, the Association has assisted with mapping and research. Members have provided input and guidance on suitable land uses and future development of the precinct.

Proposed and desirable future works include:

- Install fencing along the East River Road boundary,
- Install gates and appropriate locks to control access behind the Fire Shed,
- Construct kangaroo proof fencing around the perimeter of the landing strip,
- New taxiway along the length of the landing strip (northern side) to improve runway safety during times of higher traffic density,
- Improved emergency services facilities,
- Fuel terminal,
- Hardstand parking (with cable tie downs) for visitors,
- Multi purpose passenger terminal and club house building,
- Additional leasehold lots, and
- Other points discussed by the Shire of Denmark.

The above requires approval by the Shire of Denmark prior to any works being undertaken and will be subject to detailed assessment at that time.

4.2 Airpark

It is desirable to allow a range of aviation compatible land uses and enterprises at the airfield. Allied and associated uses such as servicing and aviation engineering, freight, aviation related

storage (restricted), scenic flights, flying schools/training and associated offices could be considered. In addition, there is a demonstrated demand for hangar accommodation, that is, the combination of an aircraft hangar and permanent residence combined on a single freehold or leasehold lot.The current designation of the land on the TPS zoning maps as Public Purpose – Aerial Landing Ground does not preclude use as an airpark. The aim and objectives set out in the Shire's current TPS Policy No. 25 'Hangar Lots' are relevant and provide some scope for allied uses, however the policy applies only to freehold lots and does not recognise hangar accommodation. There are controls and guidelines contained in the policy relating to aesthetics and amenity, design, materials, building size and bulk which should apply to all future developments (on both freehold and leasehold lots, as well as public facilities, buildings and structures). Through the review of the policy it is advisable to introduce performance based standards and to incorporate selected guidelines and controls which apply in other airparks and fly-in estates.

Hangar accommodation and aviation associated activities are considered to be complementary to the safe operation of the airfield. The land north of the runway is/can be readily serviced; power, access and water (for emergency purposes) are available. The freehold land is development-ready and is unconstrained. It has a northerly aspect and is ideally suited to hangar accommodation and other uses ancillary to the airfield. It is identified on the Conceptual Land Use Strategy Plan.

Additional development areas for the Airfield as shown on the attached Conceptual Land Use Strategy Plan are subject to servicing and consideration of statutory, tenure, safety and amenity considerations.

The sites north of the runway are more readily serviced (power and roads) than land to the south and there are safety advantages in locating all structures to one side of the landing strip. The Conceptual Land Use Strategy Plan identifies areas for future aircraft parking, aviation allied activities as well as future hangar lots with an accommodation component. Options include the area to the east of the leasehold hangar lots, an extension of the freehold hangar lots, areas at the western end of Lot 8027; both north and south of the airstrip and portion of Lot 8219 (Reserve 26565). Various matters to be considered include proximity to the future LIA, clearing of vegetation, visual amenity, land tenure and the reserve purpose. The possible hangar accommodation site south of the runway affords spectacular views across the Inlet and is well separated from the proposed LIA. Services could be extended to this area (at the proponent's cost). Careful consideration would need to be given to visual amenity as the site is visible from South Coast Highway.

The reserve land is subject to a Management Order; care and control is vested with the Shire of Denmark. Issues relating to tenure, purpose and leasing of the reserve will need to be addressed. The Shire of Denmark will continue to liaise with State Land Services and Department of Regional Development and Lands in this regard as additional proposal are detailed.

5. PLANNING CONTEXT

5.1 Strategic

The subject land is predominantly within Policy Area No. 5 'Denmark River Catchment' of the endorsed Rural Settlement Strategy (RSS). The eastern extremity of the site is the watershed; portion of Lot 8027 drains in to the Hay River and is therefore within Policy Area No. 8 of the endorsed RSS. Predominant management issues are "protection of landscape, rural character, remnant vegetation, waterways, natural resources and conflict between special rural development and surrounding agricultural uses, eutrophication, salinity, water-logging and fire risk."

Plan No. 2 "Rural Districts" of draft 2005 Denmark Local Planning Strategy (DLPS) identifies the Denmark Airfield, immediate surrounds and the area below the climb out paths to the east and west as a proposed Special Control Area (SCA) (refer Clause 6.7.3 and see attached Fig 29). The extent of the Airstrip Environs SCA is based on the Airspace Protection Plan prepared by the Perth Airport Corporation in 2004. This land use strategy incorporates the intent and boundary of the SCA nominated in the DLPS. The draft DLPS, is currently being reviewed with the intention of being finalised in 2011, shows the SCA as continuing as an Airport Buffer area.

5.2 Statutory

Lot 8027 (the Airfield), the eight freehold hangar lots and Lot 8145 are shown on the TPS No.3 zoning maps as reserves for Public Use – Aerial Landing Ground (AL). Lot 8219 is shown as Public Use. The TPS provisions enable the Local Authority to call in development applications and assess proposals. This is considered to be an appropriate mechanism for land use control of the subject land. Rezoning is not warranted.

The TPS is supported by policies which provide guidance and necessary controls. Such policies are flexible and are able to be reviewed/updated, subject to the process detailed in Clause 8.2 of the TPS being followed.

5.3 Shire of Denmark Town Planning Scheme Policy No. 25

The aim of the Shire of Denmark TPS Policy No. 25 is:

To ensure any new development on the lots created by the airport subdivision will be carried out and managed as hangar lots, and not be used for any competing, alternative or inappropriate uses".

The objectives of the policy are:

1. To prevent buildings or vacant lots being used for any other purposes than that associated with aircraft.
2. To provide strict design and amenity controls to ensure appropriate development takes place on this land.

The policy contains guidelines and criteria for development and is an appropriate planning device. The Aims and Objectives of TPS Policy No. 25 are still partially relevant, however the 1998 policy is due for review. The plan which accompanied the policy is superseded and the redundant location/lot numbers require updating. The policy does not recognise hangar accommodation, nor does it relate to Reserve 41390. The policy should apply to developments on both freehold and leasehold lots. It would also be appropriate to include performance based standards for ancillary and allied activities.

5.4 Integration with Adjoining Activities

Lot 8027 is surrounded on three sides by the Lot 8219 (Reserve 26565) which is used for rural purposes by the Denmark Agricultural College. A portion of the Airfield Reserve is outside the stockproof fencing around the airstrip and is pastured and used for cattle grazing. This arrangement is mutually beneficial; it maximises productive use of the land, provides a buffer and reduces grounds maintenance/mowing costs for the Airfield. These land uses are regarded as compatible.

The existing freehold and leasehold hangar lots on the northern side of the runway are/will be used for the storage (and maintenance) of aircraft. The lots adjoin the taxiways, with most structures having a nil setback and doors opening directly onto the existing/proposed taxiway. By necessity they are close to the runway. Conventional hangar lots are an integral component of most airfields.

The proposed airpark could include a variety of aviation allied land uses and enterprises. Flying related activities, businesses and flight training are compatible and complementary to the operation of the airfield. Hangar accommodation, by it specific nature, is also a compatible land use. Notwithstanding there is a residential component, the hangar accommodation lots are acceptable and increasingly common at airfields in Australia.

The future Light Industrial Area (LIA) to the south of Lot 8027 is considered to be generally compatible adjacent to the airfield. Given its proximity to the runway and flight paths, the proposed LIA would not be suitable for conventional Rural Lifestyle lots or other sensitive land uses. The noise impact and amenity issues, however, are not a constraint to light industrial uses. Other factors to be taken into consideration in determining development applications both at the airfield and on surrounding lots include height of structures (particularly chimneys and towers), communication devices and reflectivity of external materials. The airspace surrounding the airfield, based on transitional slope, measured from actual runway height, is to remain 'obstacle free' in accordance with CASA guideline CAAP 92-1(1). The height restrictions are most stringent for the approach and takeoff areas, and are greatest within 45m of the 'runway strip', but do extend beyond the proposed SCA across the future LIA. General land uses expected to locate within the LIA have recommended buffers ranging between 100-300m from sensitive uses, including hangar accommodation.

The waste transfer station and Tip Shop located in Reserve 23067 on the eastern side of McIntosh Rd is more than 1km from the subject land. This is well in excess of the 150m separation distance required for residential uses from a Class 1 Inert Landfill Site and the 500m separation distance required for "sensitive uses" (subdivision) from Putrescibles landfill sites (Class 2 & 3 Refuse Site).

5.5 Amenity – Noise Impact

Typical noise sources at airfields include aircraft, surface transport, construction, plant and machinery, alarm and warning systems and engine ground running. Current and anticipated usage of the Denmark Airfield is limited to light aircraft (less than 5700kg). Given the size of the planes and relative infrequency of flights the associated noise impact is comparatively low. The Airspace Protection Plan prepared in 2004 nominates an area extending approximately 400m either side of and 2000m from either end of the runway as a SCA.

The 450m distance is consistent with guidelines contained in Schedule 3 of the *Environmental Protection (Noise) Regulations 1997.* 100m and 450m measurements points are used for determination of influencing factors on noise sensitive premises. These distances, measured from the runway, together with the proposed Airstrip Environs Special Control Area are shown on the Land Use Buffer Plan (Refer Attachments).

On-ground noise levels will be highest within the airfield itself, but are within acceptable safety and comfort levels, given the function and purpose of the airfield. Noise levels in areas surrounding the airfield are seldom likely to constitute an 'unreasonable emission of noise' or to exceed the Australian Noise Exposure Forecast (ANEF) acceptable criteria. The scope of the noise impact of assessments already undertaken for the airfield are appropriate given the scale of existing and anticipated usage; more detailed noise modelling is not warranted. Noise is permissible to be up to 45db during daylight hours and 35db at all other times. A recent inspection by the Shire's Health Officer confirms noise readings at the adjacent Special Rural No. 11 – Airport Estate returned a reading at take off of 40db. This was for a conventional plane commonly associated with the airfield. Should Council in the future have concerns relating to any proposed use associated with the airfield on adjoining land uses/properties, an acoustic report prepared by a suitably qualified expert may be sought.

The greatest noise impact from aircraft is under and near the departure corridors extending out from the runway ends when the aircraft are low, climbing, and using full power. This is reflected in the Airspace Protection Plan and is depicted with arrows of increasing size on the Operation and Circuits Map. The corresponding areas of potential noise impact are also shown in relation to landing circuits and climb out paths.

The area adjacent to the runway should be used exclusively for aviation related activities. The subject land, being the whole of the Airfield Reserve, including leasehold lots and freehold hangar lots is suitable for a range of airpark uses, including hangar accommodation. Aviation enthusiasts, pilots and residents of airparks and fly-in estates choose to live/stay close to the airfield. Potential noise impacts are understood, None-the-less it is appropriate to require Notifications on the Titles and conditions in any future Lease Agreements regarding potential noise impact.

The area around the airfield, as identified by the Airspace Protection Plan should not be used for sensitive uses, such as single dwellings or rural living. This land is shown on the TPS zoning maps as Public Use, Rural or Parks and Recreation. It is used predominantly for Rural Purposes; the Crown Land being managed by the Denmark Agricultural College. The existing land uses are considered to be compatible, and are not adversely impacted by the airfield. The existing TPS

provisions combined with the proposed Special Control Area are the appropriate mechanisms to control future development and limit/preclude sensitive land uses in this area.

Beyond the area identified in Airspace Protection Plan there are existing Special Residential and Special Rural developments that are within 3km of the airstrip. The closest is SR Area 11, the Denmark Airport Estate Special Rural zone. Special provision (viii) requires notification of prospective purchasers and acknowledgement by landowners of the Aerial Landing Ground and associated aircraft noise. Although the actual and potential noise impact in SR Area 11 is relatively low, these notification devices are appropriate.

5.6 Buffers

The planning and development of the future LIA is subject to further assessment and detailed study. In particular, consideration will need to be given to the Environmental Protection Authority (EPA) Guidance Statement No. 3 'Separation Distances Between Industrial and Sensitive Land Uses' June 2005 and State Planning Policy 4.1 'State Industrial Buffer (Amended)' July 2009 Draft.

Relevant objectives of the policy include to:

- avoid land use conflict,
- provide for the development of industry and/or the provision of essential infrastructure in a way that maximises amenity, minimises environmental and health impacts and takes account of risk to nearby sensitive land uses, and
- promote compatible uses in areas affected by off-site impacts of industry and/or essential infrastructure.

The onus is on new industries to demonstrate if and how they intend to contain emissions on-site. Land uses considered to be potentially sensitive to emissions from industry and infrastructure include residential developments, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds, and some public buildings. Generally, new industry should be located to provide and maintain an appropriate buffer between the proposed industrial uses and sensitive land uses. In essence, off-site impact is to be minimised. Typically an Industrial Estate would comprise a core area in which intensive industry is to be located. To ensure there is no unacceptable impact on, or risk to, adjacent development this core area would be surrounded by an internal buffer containing industries that have a lesser potential for off-site impact.

As set out in State Planning Policy 4.1, the core area and the buffer are together considered to be the industrial area and are expected to be designed accordingly. Control of the location of activities in the core and buffer areas will be achieved through appropriate subdivision design and statutory land use planning controls.

The EPA Guidance Statement provides advice on the use of the generic separation distances that have been developed for a range of industrial land uses. In the absence of site-specific technical analysis, the separation distances contained in Appendix 1 of the EPA Guidance Statement are applied. These range from 100m to 1000m and take account the typical emissions that may affect the amenity of nearby sensitive land uses and include gaseous and particulate emissions,

noise, dust; and odour. Light, General, Service and Rural Industry use that would be permitted in the LIA are at the lower end of the spectrum, with likely separation distances between 100 and 300m. Such uses may include Automotive Spray Painting, Bakery, Composting, Food Processing, Joinery and Small Goods Manufacturing. The attached Land Use Buffer plan shows the various separation distances, measured from the future LIA.

In this case, the future LIA adjoins the Denmark Airfield and there is scope for the 'buffers' to overlap. The Airfield and proposed Airpark are not regarded as a sensitive land uses for the purpose of the State Industrial Buffer Policy.

The land immediately to the north of the proposed LIA is the eastern end of the airfield. This area would be impacted by a conventional LIA buffer. The nine leasehold hangar sites are approximately 175m from the edge of the future LIA, however these hangar lots are to for aircraft storage and maintenance is form of industry, and not a 'sensitive use'. To appropriately manage the future development of the LIA, all hangar accommodation lots are to be situated more than 300m from proposed LIA boundary as determined by Council. This approach allows for the likelihood that the majority of future land uses located within the LIA will require a 300m buffer. This recommendation may result in the staged development of hangar accommodation, and additional lots may be suitable for hangar accommodation upon finalisation of the LIA rezoning and planning process.

Portion of the land to the east of the LIA contains the Denmark Waste Transfer Site. The buffer distance (for a waste disposal site; inert land fill) would be 150m for residential uses. The policy also requires an internal buffer of 25m from the boundary. This internal buffer is already achieved. The external buffers to both the Waste Site and proposed LIA can, and do overlap. Again neither constrains future development within the other. The land to the west of the LIA is used by the Denmark Agricultural College. The activities on the adjoining land are not considered to be 'sensitive land uses' for the purpose of the Guidance Statement and Policy.

Agricultural land uses adjacent to rural-residential development do have the potential to cause land use conflict. In terms of residential amenity this can arise from agricultural activities and practices including spray drift of agricultural chemicals or 'out of hours' noise from use of machinery. However, given the nature of the proposed hangar accommodation lots within the airfield this is not considered to be an issue and appropriate statutory controls, such as section 70A notification on any future titles or Statutory Declarations (as a condition of development approval) can be applied accepting this context.

6. IMPLEMENTATION AND ACTIONS

6.1 Policy Review

Shire of Denmark Town Planning Scheme No.3 Policy No. 25 is to be updated and revised to achieve/address the following:

- To reflect the recommendations contained in the Land Use Strategy,
- Provide consistent guidelines for development of both the freehold and leasehold lots,

- Recognise fly-in estate/airpark development (which was not envisaged in the 1998 policy),
- Introduce performance based standards for ancillary and allied activities
- Ensure that all new development is complementary to the purpose and function of the airfield.

6.2 Lease/Tenure of Crown Land

As reported to Council in January 2010, the *"permissibility of the hangar accommodation proposal (under the present management order) will need to be determined through Department of Regional Development and Lands in consultation with Council and the proponents. If permitted and approved by the Minister, the proponents would be required to meet all associated costs including preparation and execution of lease documents. The leases shall be prepared to protect the primary interests of the airport land as an aerial landing ground and in the event of any non-compliance or breach of conditions will result in the lease being forfeited and/or planning approval being rescinded."*

6.3 Safety Security and Amenity

All works and development at the airfield will satisfy relevant safety standards, CASA guidelines, Environmental Health and Planning requirements as well as the purpose and objectives contained in the policy.

Access to the runway, taxiways and terminal shall be by way of gates and/or a key pad/swipe card security system. Vehicles, personnel and animals are to be restricted from some areas to ensure they do not become a hazard to aviation and are not exposed to the dangers of ground movement of aircraft. Paxillus Way provides frontage to the freehold hangar lots and is proposed to have a dual function for both an aircraft taxiway and vehicular access. This shall be formalised through the preparation of a Local Traffic Management Plan which details and provides confirmation of the legal rights and restrictions of planes to use a public road.

Stock and kangaroo proof fencing around the runway is to be installed and maintained as determined by the Shire.

When determining development applications within the airfield and Special Control Area - Airspace Protection, due consideration is to be given to noise levels, siting, height and bulk of buildings, reflectivity of materials, servicing, fire safety and land use compatibility.

6.4 Maintenance

On-going site maintenance (mowing, terminal upkeep and servicing) shall be the responsibility of the Shire of Denmark.

Equipment Maintenance – the Shire recognises the contribution and the importance of the on-going voluntary role of the Denmark Airport Association, given the knowledge, skills and expertise of the members.

6.5 Management

Continue to foster open and positive consultation with the Denmark Airport Association and key stakeholders. Seek input into the future planning, upgrade and improvements to the airfield.

Governance responsibility, including the administration and management of leases shall remain with Shire of Denmark, in accordance with the CASA regulations and standards, the Transfer of Land Act and any other relevant legislation.

6.6 Source/Secure Funds for Future Upgrades

The Shire of Denmark may introduce a Special Rate for Hangar Lots and factor in an equivalent Lease Fee to raise revenue towards the cost of airfield maintenance.

The Shire of Denmark, in conjunction with the Denmark Airport Association and/or other key stakeholders may pursue funding through the Regional Airport Development Scheme and other such sources for upgrading and improvements to the Denmark Airfield.

The Shire of Denmark may also consider payment of a landing fee in the future, an appropriate figure to be determined after consultation with relevant stakeholders.

Attachments

Study Area Plan
Operations and Circuits Plan
CAA Guidelines
Conceptual Land Use Strategy Plan
Figure 29 (Denmark LPS)
Land Use Buffers Plan

STUDY AREA
Denmark Airfield
Hay, Shire of Denmark

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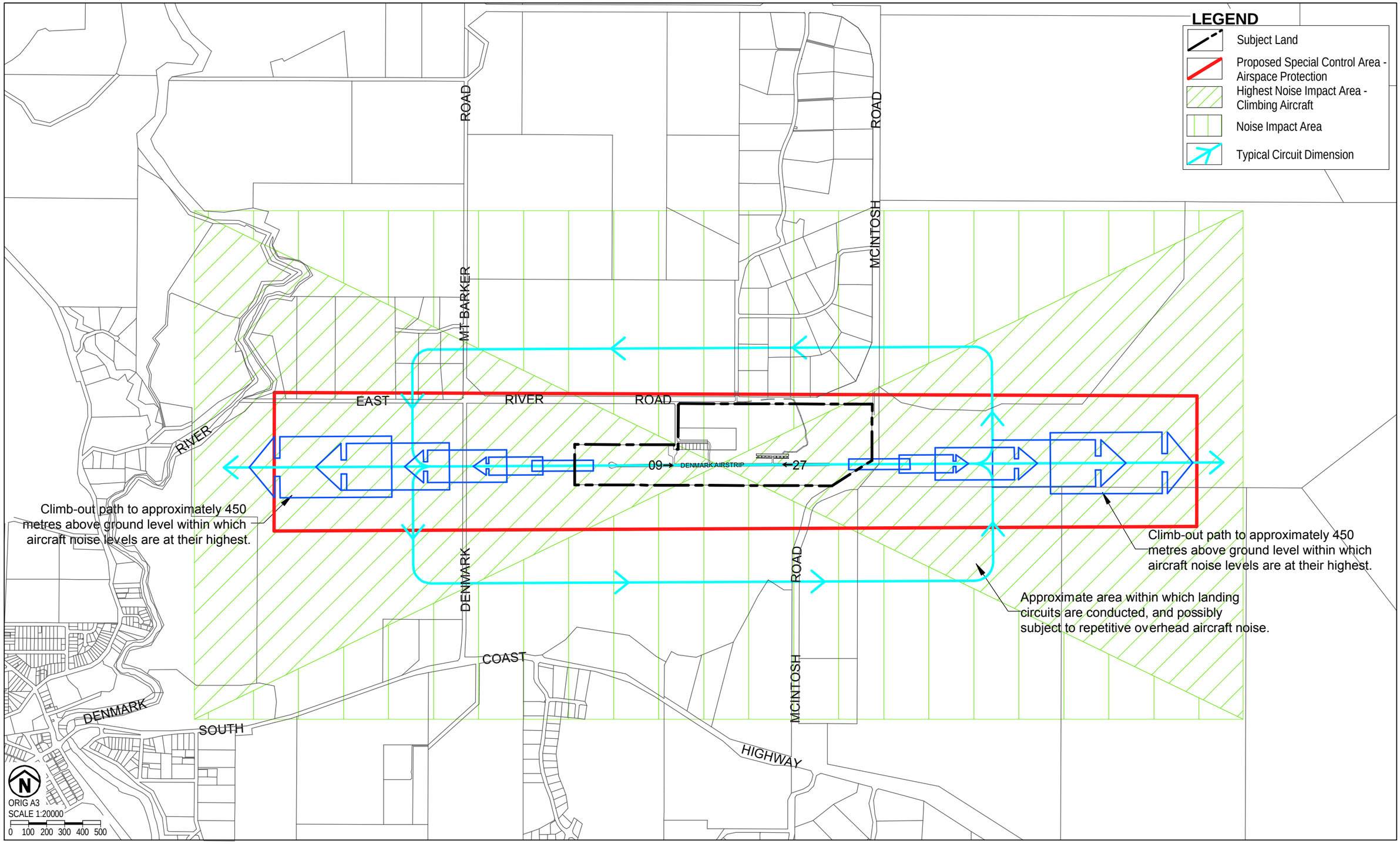
10-06-SA(a) APRIL 10



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OPERATION AND CIRCUITS

Denmark Airfield
Hay, Shire of Denmark

10-06-OC(c) APRIL 10

CIVIL AVIATION AUTHORITY

CIVIL AVIATION ADVISORY PUBLICATION

Date: July 1992 No: 92-1(1)

SUBJECT: GUIDELINES FOR AEROPLANE LANDING AREAS

IMPORTANT

The information in this publication is advisory only. There is no legal requirement to observe the details set out in this publication. The Civil Aviation Regulations set out the legal requirements that must be complied with in relation to the subject matter of this publication. There may be a number of ways of ensuring that the requirements of the Civil Aviation Regulations are met. This publication sets out methods that may be used and which experience has shown should, in the majority of cases, ensure compliance with the Regulations. However, before using the information in this publication the user should always read the Civil Aviation Regulations listed in the reference section below to ensure that he or she complies with the legal obligations of the Regulations.

PURPOSE

Civil Aviation Regulation 92 (1) states that: "An aircraft shall not land at, or take-off from, any place unless: ...(d) the place....is suitable for use as an aerodrome for the purposes of the landing and taking-off of aircraft; and, having regard to all the circumstances of the proposed landing or take-off (including the prevailing weather conditions), the aircraft can land at, or take-off from, the place in safety."

Regulation 92 (1) does not specify the method of determining which "circumstances", other than the prevailing weather conditions, should be considered in any particular case. These matters are the responsibility of the pilot in command and, in some circumstances, are shared with the aircraft operator.

These guidelines set out factors that may be used to determine the suitability of a place for the landing and taking-off of aeroplanes. Experience has shown that, in most cases, application of these guidelines will enable a take-off or landing to be completed safely, provided that the pilot in command:

(a) has sound piloting skills; and

(b) displays sound airmanship.

CANCELLATION

This is the second issue of CAAP 92-1, and supersedes CAAP 92-1(0).

REFERENCES

This publication should be read in conjunction with: Civil Aviation Regulations 92 (1), 93, 233 and 235; Civil Aviation Orders; and the Aeronautical Information Publication.

HOW TO OBTAIN COPIES OF THIS PUBLICATION

Copies of this publication may be obtained from:

Civil Aviation Authority Publications Centre
607 Swanston Street
Carlton
Victoria 3053

Telephone (008) 331676
(008) 334191
(03) 342 2000

CONTENTS

1 - DEFINITIONS

1. In these guidelines, unless the contrary is stated:

"clearway" means an area in which there are no obstacles penetrating a slope of 2.5% rising from the end of the runway over a width of 45m;

"float plane" means any aeroplane designed for landing or taking-off from water;

"fly-over area" means a portion of ground adjacent to the runway strip which is free of tree stumps, large rocks or stones, fencing, wire and any other obstacles above ground but may include ditches or drains below ground level;

"landing area" (LA) means an area of ground suitable for the conduct of take-off and landing and associated aeroplane operations under specific conditions;

"lateral transitional slope" means a desirable area around all LA's which provides greater lateral clearance in the take-off and landing area and may reduce wind-shear when the runway is situated near tall objects such as trees and buildings. The dimensions of a suitable lateral transitional slope are shown in the following diagram;

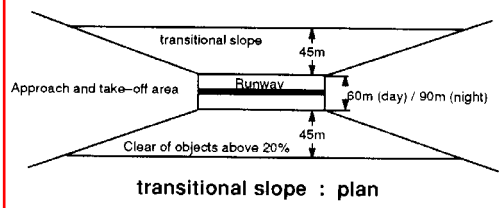


Figure 1 - Transitional Slope

"obstacle free area" means there should be no wires or any other form of obstacles above the approach and take-off areas, runways, runway strips, fly-over areas or water channels;

"runway" means that portion of the landing area which is intended to be used for the landing or take-off of aeroplanes;

"runway strip" means a portion of ground between the runway and fly-over area which is in a condition that ensures minimal damage to an aeroplane which may run off a runway during take-off or landing;

"water alighting area" means a suitable stretch of water for the landing or taking-off of a float plane under specific conditions.

2 - CONVERSION TABLE

2. Landing area gradients and splays expressed as a percentage, in accordance with ICAO practice, may be converted into ratios or angles using the following table:

Percentage	Ratios	Degrees & Minutes
1	1:100	0 34'
2	1:50	1 09'
2.5	1:40	1 26'
2.86	1:35	1 38'
3	1:33.3	1 43'
3.33	1:30	1 55'
5	1:20	2 52'
12.5	1:8	7 08'
20	1:5	11 18'

3 - WHICH AIRCRAFT MAY USE A LANDING AREA?

3. Use of landing areas other than aerodromes is not recommended for aircraft with a MTOW greater than 5700 kg.

4 - WHICH TYPES OF OPERATIONS MAY BE CONDUCTED FROM A LANDING AREA?

4. Aeroplanes engaged in the following operations may use a landing area:

(a) private;

(b) aerial work—excluding student solo flying and student dual flying prior to successful completion of the General Flying Progress Test; and

(c) charter.

5 - RECOMMENDED MINIMUM PHYSICAL CHARACTERISTICS OF LANDING AREAS AND WATER ALIGHTING AREAS

5.1 **Runway Width**. For other than agricultural operations, a minimum width of 15 metres is recommended although aeroplanes with a MTOW below 2000kg can be operated safely on runways as narrow as 10 metres provided there is no or only light cross-wind. For agricultural operations, a 10 metre wide runway is the recommended minimum.

5.2 **Runway Length**. For other than agricultural operations by day, a runway length equal to or greater than that specified in the aeroplane's flight manual or approved performance charts or certificate of airworthiness, for the prevailing conditions is required (increasing the length by an additional 15% is recommended when unfactored data is used). For agricultural day operations, the minimum runway length is the greater of 75% of the take-off distance specified in the aeroplane's flight manual or approved performance chart for the prevailing conditions with the balance as clearway or the landing distance so specified.

5.3 **Longitudinal Slope**. The longitudinal slope between the runway ends should not exceed 2%, except that 2.86% is acceptable on part of the runway so long as the change of slope is gradual. For agricultural operations, the slope should not exceed 12.5% for day and 2% for night operations: where the overall slope exceeds 2% the runway should only be used for one-way operations — downhill for take-off and uphill for landing.

5.4 **Transverse Slope**. The transverse slope between the extreme edges of the runway strip should not exceed 2.5% or 12.5% upward slope over the fly-over area. For agricultural day operations, the transverse slope should not be more than 3% over the runway and 5% over the runway strip.

5.5 **Other Physical Characteristics**. Both ends of a runway, not intended solely for agricultural operations, should have approach and take-off areas clear of objects above a 5% slope for day and a 3.3% slope for night operations. Other recommended landing area physical characteristics are shown on the following diagrams:

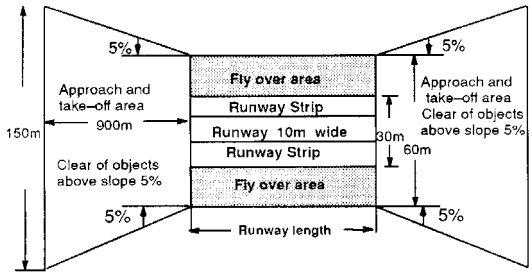


Figure 2A - Single engined and Centre-Line Thrust Aeroplanes not exceeding 2000 kg MTOW (day operations)

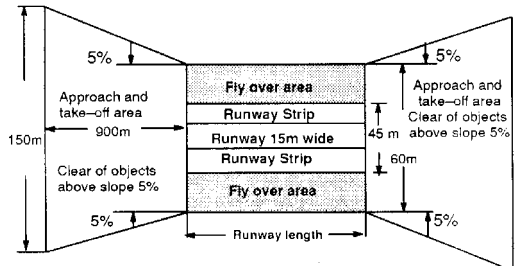


Figure 2B - Other Aeroplanes (day operations)

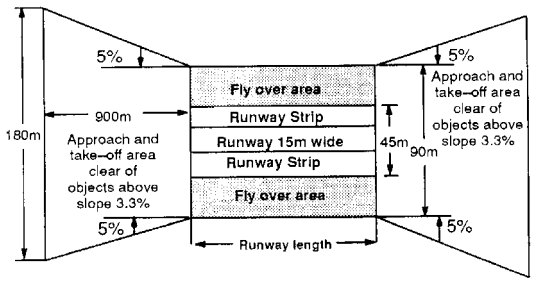


Figure 3 - Dimensions (night operations)

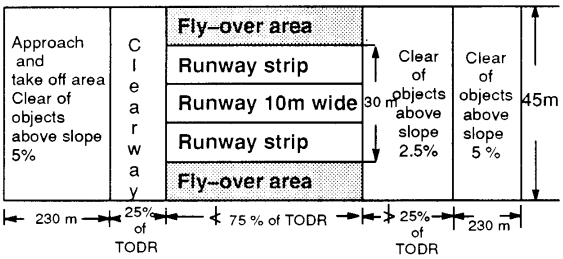


Figure 4 - Dimensions - agricultural day operations

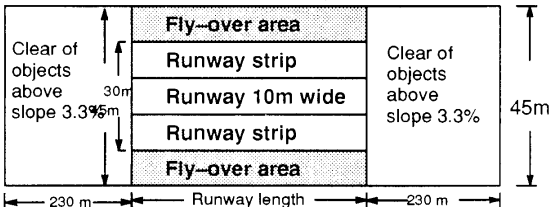


Figure 5 - Dimensions - agriculture night operations

5.6 **Float plane alighting areas**. For water operations, a minimum width water channel of 60 metres for day operations and 90 metres for night operations is recommended. The depth of water over the whole water channel should not be less than 0.3 metres below the hull or floats when the aeroplane is stationary and loaded to maximum take-off weight. An additional area, as shown in the following diagrams, provides a protective buffer for the water channel but need not consist of water. Where the additional area consists of water then it should be clear of moving objects or vessels under way. The centre line of a water channel may be curved, provided that the approach and take-off areas are calculated from the anticipated point of touchdown or lift-off.

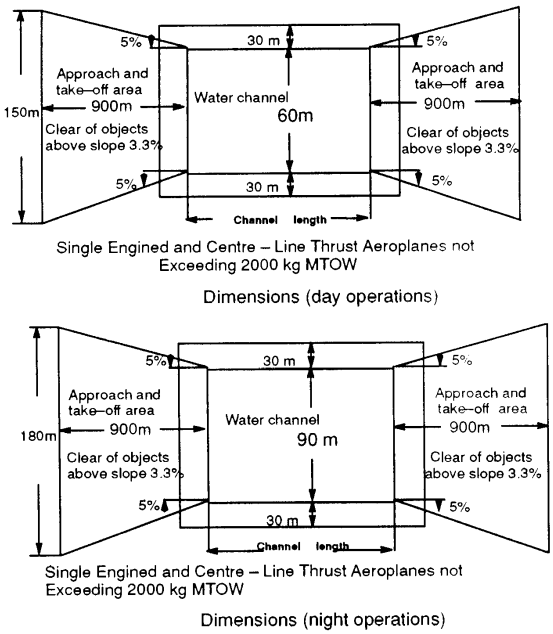


Figure 6 - Float planes

6 - MARKING OF LANDING AREAS

6.1 Where extended operations are expected to be conducted at a landing area, the owner/operator is encouraged to provide markings similar to those found at government and licensed aerodromes. If markings are provided, they should follow the colours and specifications set out in AIP AGA. A suitable layout is shown at Figure 7.

6.2 Where runway markers are provided which are not flush with the surface, they should be constructed of a material that is not likely to damage an aircraft.

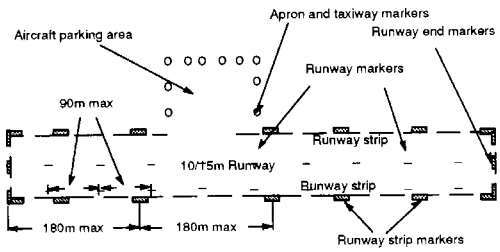


Figure 7 - Typical ALA layout and marking

7 - LIGHTING FOR NIGHT OPERATIONS

7.1 The recommended minimum lighting and layout is as follows:

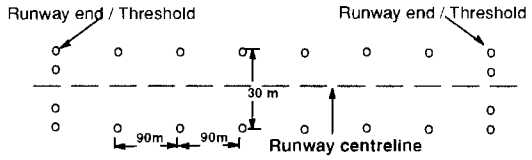


Figure 8 - Lighting for Night Operations

7.2 The lights should, under the weather conditions prevailing at the time of the flight, be visible from a distance of no less than 3000 metres.

7.3 Substitution of runway lights with reflectorised markers is permitted but not recommended by the Authority.

7.4 The different types of reflectorised markers vary in efficiency. Their luminosity can be affected by a number of factors, including equipment cleanliness/layout, the position/strength of the aircraft landing light(s) and meteorological conditions -— especially cross winds on final.

7.5 The following lights should not be substituted by reflectorised markers:

(a) runway end/threshold corner lights;

(b) lights 90m from each runway end/threshold; and

(c) lights nearest to the illuminated runway mid-length point.

8 - OTHER FACTORS THAT SHOULD BE CONSIDERED PRIOR TO USING A LANDING AREA

8.1 A pilot should not use a landing area or have an aeroplane engine running unless the aeroplane is clear of all persons, animals, vehicles or other obstructions.

8.2 A pilot should not use a landing area without taking all reasonable steps to ensure the physical characteristics and dimensions are satisfactory. For aerial work and charter operations the operator should provide evidence to the pilot on the suitability of a landing area prior to its use.

8.3 Runway lengths calculated for take-offs and landings should be increased by 50% for agricultural operations on one-way runways at night.

8.4 **Geographic Location**. A landing area should not be located:

(a) within the area or in such close proximity as to create a hazard to aircraft conducting a published instrument approach, excluding the holding pattern; or

(b) within any area where the density of aircraft movements makes it undesirable; or

(c) where take-off or landing involving flight over a populated area creates an unnecessary hazard.

8.5 Except in an emergency, the consent of the owner/occupier is required before a landing area may be used.

8.6 If the proposed landing area is located near a city, town or populous area or any other area where noise or other environmental considerations make aeroplane operations undesirable, the use of such a landing area may be affected by the provisions of the *Commonwealth Environment Protection (Impact of Proposals) Act 1974* and parallel State legislation as well as other legislation. It is the responsibility of the pilot and/or operator to conform with these requirements.

8.7 A method of determining the surface wind at a landing area is desirable. A wind sock is the preferred method.

8.8 The surface of a landing area should be assessed to determine its effect on aeroplane control and performance. For example, soft surfaces or the presence of long grass (over 150mm) will increase take-off distances while moisture, loose gravel or any material that reduces braking effectiveness will increase landing distance.

9 - SURFACE TESTING OF A LANDING AREA

9.1 **Rough Surfaces**. The presence of holes, cracks and ruts will degrade aeroplane performance and handling and increase the possibility of structural damage. The smoothness of a runway

can be tested by driving a stiffly sprung vehicle along the runway at a speed of at least 75 kph. If this is accomplished without discomfort to the occupants, the surface can be considered satisfactory.

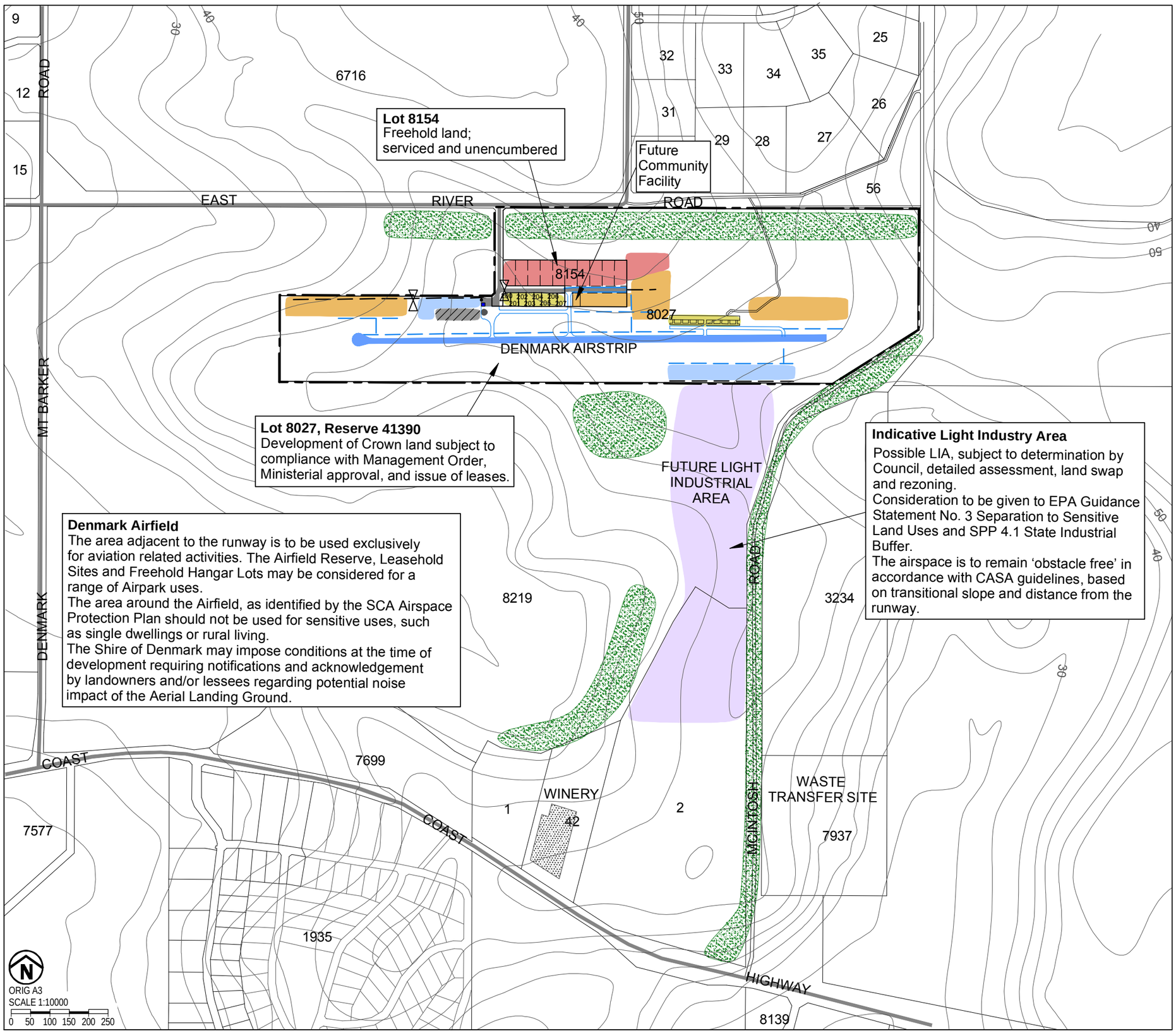
9.2 **Soft, Wet Surfaces.** A test vehicle as indicated in the table below should be driven in a zig-zag pattern at a speed not exceeding 15 kph along the full length and width of the runway. Particular attention should be paid to suspect areas with possibly three passes over these areas. If tyre imprints exceed a depth of 25mm the surface is not suitable for aircraft operations represented by the test vehicle. Experience may prove that for a certain type of aircraft (eg, an aircraft with small wheels or high tyre pressure) operations are unsafe with a lesser imprint. Testing with a crowbar should also be done in several places along the runway to ensure that a dry surface crust does not conceal a wet base.

USER AIRCRAFT WEIGHT	SUGGESTED VEHICLE TO BE USED FOR TEST
1. MTOW not exceeding 2000kg	Fully laden utility, Landrover, station sedan.
2. MTOW 2001 kg to 3400kg	Fully laden 1.5 tonne truck or lightly laden 3 tonne truck.
3. MTOW 3401 kg to 5700kg	Fully laden 3 tonne truck
Attention should also be given to the remainder of the strip as this area is provided for run–off in the event of an abnormal take–off or landing.	

CONCEPTUAL LAND USE STRATEGY

Denmark Airfield
Hay, Shire of Denmark

10-06-CLU(e) Feburary 11



LEGEND

- Subject Land
- Vegetated Visual Buffer
- Possible Future Industry
- Hangar Lots (existing)
- Hangar Accommodation / Air Park
- Air Park
- Aircraft Parking
- Aviation Allied Activities
- Existing Taxiway / Apron (aircraft)
- Future Taxiway
- Airfield Access (vehicles)
- Future Access (vehicles)
- Water Bomber Access
- Gate
- Existing Tank
- Terminal Building

Denmark Airfield Land Use Strategy

Key Objectives and Land Use Management Criteria:

- This plan to be read in conjunction with the endorsed Land Use Strategy.
- The primary objective is to protect and enhance the function of the Denmark Airfield as an Aerial Landing Ground.
- Aviation and aviation related activities will be encouraged.
- All works and development at the Airfield to satisfy relevant safety standards, CASA guidelines, Environmental Health and Planning requirements as well as the purpose and objectives set out in the Shire's Policy.
- Consideration to be given to siting, height and bulk of buildings, reflectivity of materials, servicing, fire safety, amenity and land use compatibility.

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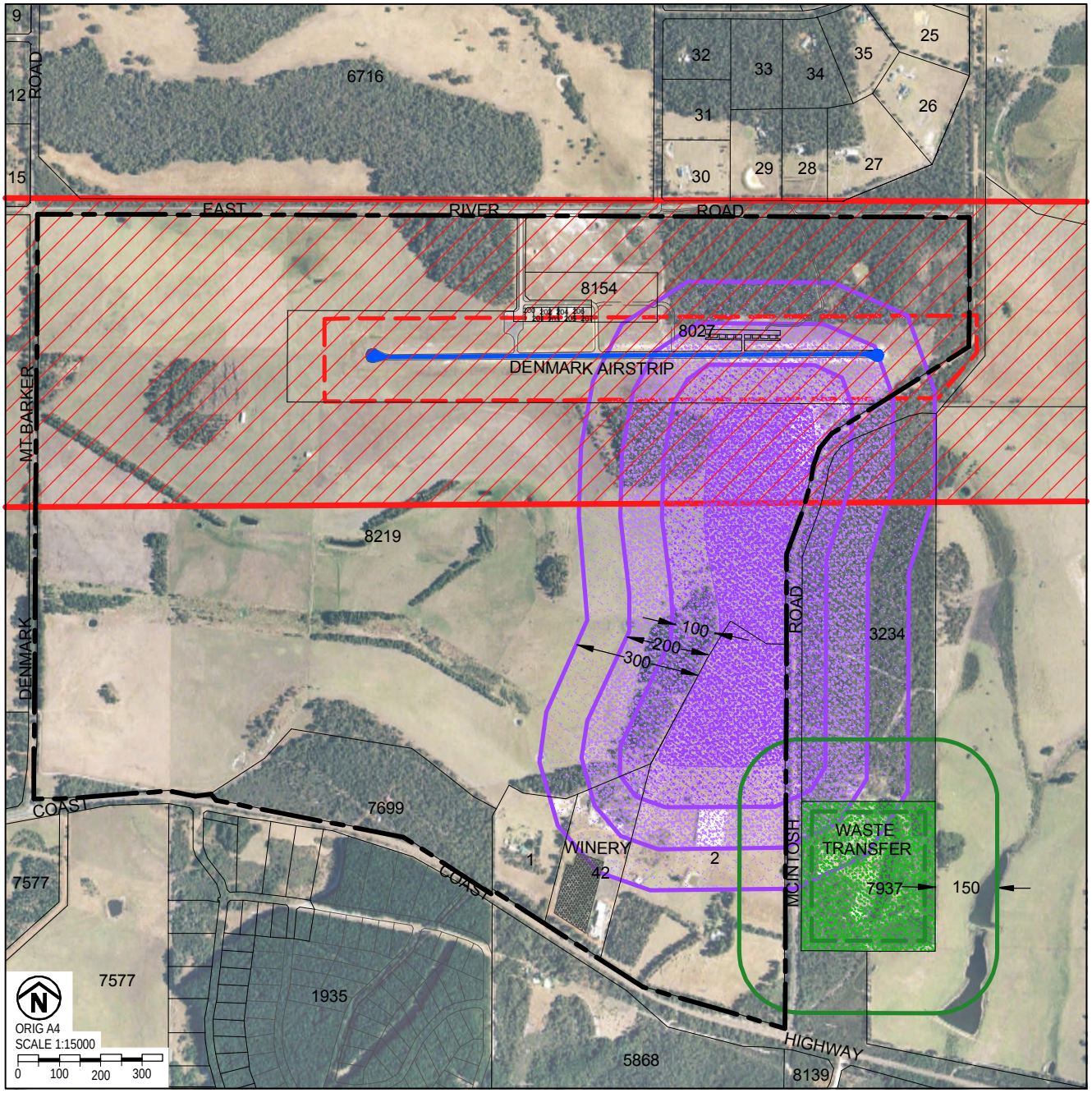
FIGURE 29 – Airstrip Environs Special Control Area

Source: Airspace Protection Plan – Perth Airport CorporationMarch, 2004



NOTES

AIRFIELD
The 2004 Airspace Protection Plan nominates an area approximately 400m north and south of the runway and 2km from either end as a Special Control Area.

Environmental Protection (Noise) Regulations 1997 measurements points are used for determination of influencing factors on noise sensitive premises.

LIGHT INDUSTRIAL AREA
Development of the Airfield and the future Light Industrial Area is to give consideration is to be given to the Environmental Protection Authority Guidance Statement No. 3 'Separation Distances Between Industrial and Sensitive Land Uses' and State Planning Policy 4.1 'State Industrial Buffer (Amended)' July 2009 Draft.

Light, General, Service and Rural Industry use may be permitted. Applicable separation distances are likely to range from 100 and 300m for uses such as Automotive Spray Painting, Bakery, Composting, Food Processing, Joinery and Small Goods Manufacturing.

WASTE TRANSFER SITE
The buffer distance for a waste disposal site (inert land fill) is 150m from residential uses. An internal buffer of 25 from the boundary applied. This is achieved at the Denmark Waste Transfer Site.

LEGEND

- Denmark Airfeild Runway
- SCA - Airspace Protection
- 100m Noise Sensitive Measurment
- Possible Future Light Industry Area
- Industrial Area Buffer
- Waste Transfer Site
- 150m Landfill Buffer
- 25m Internal Setback

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LAND USE BUFFERS
Denmark Airfield
Hay, Shire of Denmark

10-06-LUB(b) February 11