(2) Objectives of the Zone
The objective of the 5(a) Defence Purposes Zone is to provide for specific defence force and associated uses of land in appropriate locations.

(3) Development allowed without development consent
Development by the Department of Defence for defence purposes.
Exempt Development.

(4) Development allowed only with development consent
Development for the purpose of:

- aircraft maintenance,
- aircraft manufacture,
- airports,
- any activity associated with airports or defence,
- manufacture of components used in aircraft maintenance or manufacture,
- tourist facilities.

(5) Development which is prohibited
Any development not included in Items 3 and 4.

Zone No. 7(c) – Environment Protection (Water Catchment) Zone

(1) Description of the zone
The Environment Protection "C" (Water Catchment) zone is comprised of lands which are environmentally sensitive and are also in the care and control of the Hunter Water Corporation. Development in this zone generally relates to the on going and long-term management of the surface and groundwater catchment by the Hunter Water Corporation. There are also other sympathetic and compatible uses of the land in the zone.

(2) Objectives of the zone
The objectives of the Environment Protection "C" (Water Catchment) Zone are –

(a) to ensure the protection of water catchment areas to safeguard the quality and quantity of groundwater and surface water, and

(b) to regulate development so as to avoid uses of land that would destroy or damage the quality and quantity of groundwater or surface water.

(3) Development allowed without development consent
Exempt development.

(4) Development allowed only with development consent
Development for the purpose of:

- agriculture,
- bushfire hazard reduction,
- clearing,
- community facilities,
- dams,
- dwelling-houses,
- earthworks,
- recreation areas,
- recreation facilities,
- tourist facilities,
- utility installations.

Subdivision permitted by clause 33.

(5) Development which is prohibited
Any development not included in Item 3 or 4.

Appendix C

Runway Future Planning Allowance Assessment

CLIENTS | PEOPLE | PERFORMANCE

NSW Department of Planning

Report for Report for RAAF Base Williamtown/Newcastle Airport Related Employment Zone Land Use Strategy

Runway Future Planning Allowance Assessment

August 2006

Contents

1. Introduction

1.1 Background

GHD has been awarded a commission by the NSW Department of Planning for the provision of services associated with the Land Use Strategy for the RAAF Base Williamtown/Newcastle Airport Aviation Industry Employment Zone. The project comprises of three stages, the first stage is to prepare the site selection report.

1.2 Purpose

The purpose of this assessment is to ensure the selected site for the RAAF Base Williamtown/Newcastle Airport Aviation Industry Employment Zone does not preclude options for a second runway or extended runway and that all decisions incorporate the long term needs and opportunities for both RAAF Base Williamtown and Newcastle Airport Limited (NAL).

1.3 RAAF Base Williamtown

GHD, on behalf of the Department of Defence, has recently prepared a RAAF Base Williamtown State and Local Government Agencies Information Package, dated February 2006. Defence has developed this 'information pack' for use by government development assessment and strategic officers. The pack or 'guidelines' may be utilised by Council's or State Government's strategic planners for incorporation into an environmental planning instrument. Alternatively, it is proposed to be also useable by development assessment officers during the development application process.

Additionally, GHD has previously prepared, on behalf of the Department of Defence, the RAAF Base Williamtown Master Plan. A Master Plan for any ADF base is a strategic plan for the long-term layout of facilities that satisfies the operational and functional needs of the establishment while minimising its impact on the local environment. A Master Plan for ADF purposes, is generally based on a long-term horizon of 25 years or more, reviewable every 10 years.

The background information on RAAF Base Williamtown below has been taken from these documents.

1.3.1 Operation

RAAF Base Williamtown has been a permanent fighter base since its construction in 1941 and the Department of Defence has confirmed that it will be retained as a major RAAF fast jet base. It is currently the home of the Air Combat Group (ACG) and is expected to remain the home base for two operational and two fast jet training squadrons and a flight of three forward air control aircraft. One squadron of AEW&C aircraft will be based at Williamtown from 2006. In the future, the aircraft that will replace the F/A-18 and F-111 will also be based at RAAF Base Williamtown.

1.3.2 Site description and location

RAAF Base Williamtown has the following characteristics:

- The Base covers an area of approximately 800 hectares with a perimeter of 14.5 km;
- The Base is bounded by Nelson Bay Road to the south-east, Medowie Road to the east and, and Hunter Water Corporation land to the north and west;
- Pacific Highway is located approximately 5 km north-west of the base;
- The main base precinct is located in the north-eastern corner of the site and comprises residential accommodation and recreational facilities as well as a full range of operational and aircraft parking and movement areas; and
- The civil aviation facilities, operated by Newcastle Airports Limited (NAL) are located to the south-west of the Runway 30 threshold.

1.3.3 RAAF Base Williamtown Master Plan

Aircraft Movement Areas

RAAF Base Williamtown Master Plan provides for a number of aircraft movement areas including:

- **Main Runway**. The existing main runway (Runway 12/30) satisfied the current and proposed operational requirements and the existing runway length of 2,438 m has been retained in the Master Plan;
- **Parallel Taxiway**. The existing parallel taxiway (Taxiway A) is generally 15 m wide. The Master Plan includes allowance for the widening of the parallel taxiway to 23 m for access by larger aircraft. The layout of the facilities has planned for this taxiway to be used as an emergency runway;
- **Second Parallel Taxiway**. The Master Plan includes provision for a second parallel taxiway on the civil side of the airfield. This taxiway and relocation of the TACAN would be the responsibility of NAL as it purely facilitates operations by civil aircraft;
- **Ordnance Loading Aprons (OLAs)**. The Master Plan includes provision of new OLAs/EOAs. These have been master planned in the north-west sector of the Base at a location sufficient to allow concurrent civil aircraft use of the main runway and minimise sterilisation of the parallel taxiway while EO activities are being conducted on the OLAs;
- **Fighter/Strike Aprons**. The existing base layout includes aircraft parking aprons for the fighter/strike aircraft that are based at RAAF Base Williamtown;
- **AEW&C Aprons**. The AEW&C aircraft will be home based at RAAF Base Williamtown. The AEW&C aircraft parking aprons have been located on a green field site between Taxiways B and D;
- **Transport and Visiting Aircraft Aprons**. The Master Plan makes provision for a new transport aircraft parking apron. The parking positions have direct access to the master planned Air Movements facility; and

- **Engine Run-up Facilities**. The existing F/A-18 engine run-up facility is a high value asset and will be retained in the Master Plan for in-frame and out-of-frame engine run-up requirements for fighter aircraft.

Facilities for Civil Aviation

Existing civil aviation facilities are contained within the Newcastle Airport Limited leased area on the western side of the runway. The Master Plan has retained the existing leased area for civil aviation purposes and has not examined the master planning of any facilities within this area.

Navigation Aids

The navigation and approach aids provided at RAAF Base Williamtown include TACAN, NDB, ILS, T-VASIS, ASR and airfield lighting. These aids have been retained in the Master Plan. As the Master Plan has included a parallel taxiway on the civil side of the airfield, there will be a requirement to relocate the TACAN. It is suggested that the TACAN should be replaced with a VORTAC, which can be used by civil aircraft, and a site has been included in the Master Plan on an attached property at the end of the runway.

2. Limitations and Design Criteria

2.1 Aerodrome Design Criteria

2.1.1 General

The physical characteristics and layout design criteria for runways, taxiways and associated aircraft movement areas are detailed in two documents:

- **ADFP 602**. Australian Defence Force Publication 602 Joint Services Works and Administration Aerodrome Design Criteria, published by the Department of Defence; and
- **MOS 139**. Manual of Standards Part 139 – Aerodromes, published by the Civil Aviation Safety Authority.

ADFP 602 sets out the criteria for all permanent aerodromes under the control of the Department of Defence, except where the Department has determined that International Civil Aviation Organisation criteria should take precedence.

MOS 139 sets out the standards and operating procedures for certified, registered aerodromes and other aerodromes used in air transport operations.

2.1.2 Runways

ADFP 602 states that the width of a runway will normally be 45 m. ADFP 602 states that for operational airfields, a minimum runway length of 3050 m normally will be provided. Master plans for RAAF Bases are to include provision for the extension of the main runway length to 3500 m, or Department of Defence (AFHQ) may determine such lesser length as it deems appropriate. For future planning considerations a runway length of 3500 m has been factored.

2.1.3 Runway Strip

ADFP 602 states that the dimension criteria of the runway strip are:

- **Length**. A length equal to the length of the runway plus 60 m beyond each threshold; and
- **Width**. Instrument Precision Approach Runways shall have a 300 m wide runway strip (150 ms each side of the centre-line).

ADFP 602 state that the runway strip is to be cleared, graded and free of all natural or other obstructions, unless required for operational purposes, and surface dust is to be kept to a minimum. No part of any open drain, or other such depression is permitted within the runway strip.

Allowance for a 150 m runway strip, 23 m wide taxiway and 45 m taxiway strip should be considered and thus for future planning purposes within this report a cleared runway strip of 300 m radius has been allowed for.

2.1.4 Parallel Runways

MOS 139 states that where parallel runways are intended for simultaneous use, the minimum distance between the runway centrelines must not be less than:

- For independent parallel approaches — 1,035 m;
- For dependent parallel approaches — 915 m;
- For independent parallel departures — 760 m; and
- For segregated parallel operations — 760 m.

ADFP 602 states that the distance between the centre lines of the parallel runways is to be approved by Air Force Headquarters (AFHQ).

To allow maximum operation flexibility for the purposes of future planning a minimum distance of 1035 m has been used between the respective runway centrelines where parallel runways been considered.

2.1.5 Stopways

ADFP 602 states that a stopway is a paved or stabilised rectangular area at the end of a runway in which an aircraft can be stopped in the case of aborted take-off. The stopway is to be free of above-ground structures, abrupt surface irregularities and ponding areas. The only exception is equipment, which because of its function must be located in the stopway. Such equipment should be of frangible construction and sited to reduce the hazard to a minimum.

ADFP 602 states that the geometric criteria for a stopway are:

- **Stopway Width**. The width of a stopway shall be the same as the combined runway/shoulder width of the associated runway; and
- **Stopway Length**. The total length (paved and unpaved) of the stopway shall normally extend for 305 m beyond the end of the runway.

2.1.6 Taxiways

ADFP 602 states that to permit maximum runway utilisation, sufficient entrance and exit taxiways will be provided to expedite the movement of aircraft to and from the runway. Taxiway criteria include:

- **Taxiway Width**. Taxiway will normally have a full strength pavement width of 15 m, but to cater for larger aircraft which may use the aerodrome, one access taxiway between the apron and the runway should have a full strength pavement width of 23.0 m.
- **Taxiway Orientation**. Under normal circumstances a taxiway parallel to the main runway will be provided together with such other taxiways as may be deemed necessary;
- **Taxiway Minimum Clearance**. The distance between any point on the edge of a taxiway and the edge of a runway should be not less than 150 m; and

- **Taxiway Strips**. A taxiway shall be included in a taxiway strip. The taxiway strip shall extend 45 m either side of the taxiway centre-line. No natural or other obstruction (unless required for operational purposes) should penetrate a horizontal surface equal in level to the taxiway centre-line. No part of any drain or other such depression is permitted within 23.0 m from the centre-line of a taxiway. Where a taxiway is designed to also serve as an emergency runway, a taxiway strip shall extend 75 m either side of the taxiway centre-line.

This information is provided as background to the logical assessment of future runway options and therefore the assessment of whether the chosen employment zone would impact future runway expansion options.

2.1.7 Runway Naming Conventions

Within this report, reference is made to RAAF Base Williamtown Runway 12/30. This naming convention refers to the azimuth alignment of the runway, when considered from the approach perspective. Runway 12 corresponds to a runway alignment of 120 degrees (south-east) and 30 to 300 degrees (north-west).

2.2 Protection of Airspace

2.2.1 General

Protecting the airspace on the airfield and in the immediate vicinity of the airfield is important to ensure the safe operation of aircraft and navigational aids by eliminating obstacles from the airspace that may pose a hazard to aircraft in flight.

This protection is achieved externally for Defence Bases by controlling and monitoring any protrusion into the airspace in accordance with the Defence (Areas Control) Regulations [D(AC)R] which set height limitations based on a set of defined Obstacle Clearance Surfaces (OCS). As well as controlling the airspace by the regulation of all new man, made objects, trees, etc, the D(AC)Rs also regulate other functions or facilities which may effect aircraft safety such as electromagnetic emissions, extraneous lights, cranes, land uses which may attract birds and plumes.

The control of the airspace around civil airfields is legislated in the Regulation 95 of the Civil Aviation Regulations (1988). This regulation is based on the civilian Obstacle Limitation Surfaces (OLS) as distinct from the Defence OCS. Although very similar in nature, the OCS and OLS differ in detail in some areas.

The Defence Obstacle Clearance Surfaces are detailed in ADFP 602. The civilian Obstacle Limitation Surfaces are detailed in Annex 14 of the Convention of the International Civil Aviation Organisation (ICAO) and CASA's MOS 139. The OCS and the OLS are comprised of the following elements:

- **Approach Surface**. A combination of planes preceding the threshold of the runway;
- **Take-off Climb Surface**. An inclined plane beyond the end of the runway;

- **Inner Horizontal Surface**. A surface located in the horizontal plane above the aerodrome and its environs;
- **Transitional Surface**. A complex surface along the side of the runway strip and part of the side of the approach surface, that slopes upwards and outwards to the inner horizontal surface;
- **Conical Surface**. A surface upwards and outwards from the periphery of the inner horizontal surface; and
- **Outer Horizontal Surface**. The outer horizontal surface is horizontal 150 m above the aerodrome and extends from the upper edge of the conical surface for a distance of 15,000 m (radius) from the aerodrome. The outer horizontal surface is normally only provided for precision approach runways.

The OCS for RAAF Base Williamtown is currently being revised.

In order that structures in the vicinity of the airfield do not pose a hazard to aircraft operations, it is important that planning approvals include a requirement to protect these surfaces. Legislation currently in place to protect the airspace around military airfields is in accordance with the D(AC)Rs. These regulations detail the heights of buildings and structures permitted in the vicinity of airfields.

Planning constraints and guidelines would have abide by the relevant regulations extant at the time for any development within the Airport Related Employment Zone. These may include but not be limited to those names above.

2.2.2 Defence (Area Control) Regulations

The Department of Defence is progressively applying the D(AC)Rs to military airfields around Australia. The D(AC)Rs place various height restrictions on areas around airfields. Similar restrictions apply around major civil airports under the provisions of Airports Act 1996, Part 12.

The D(AC)Rs for RAAF Base Williamtown will be similar to the D(AC)Rs already established for most RAAF Bases and may limit the height of new structures or additions to existing structures to ground level (ie no structures permitted) or to heights of 7.5, 15, 45 or 90 m. It must be emphasised that the Regulations do not prohibit all buildings or structures exceeding these heights, but rather provides a mechanism whereby Defence can assess against technical criteria and topographical conditions the impact of each proposal on the safe operation of military and any civil aircraft utilising airfield and associated facilities. In most cases, construction will be able to proceed as originally planned or with modification to the siting and/or design. However, in some cases it will be necessary to prohibit the proposed construction exceeding the height applicable to the site. The Regulations do not effect existing objects.

The Regulations confer powers in association with the height restrictions, such as a right of entry on land and authority to order removal of a building or structure. The Regulations also provide for compensation to landowners whose land is diminished in value by reason of the land becoming affected by the restrictions. The Administrative

Appeals Tribunal is empowered to review decisions or directions made or given under the Regulations.

Determining the different height restriction zones is a complex exercise. While the height restrictions would normally range anywhere between 0 and 150 m above ground level, for ease of identification by the public and planning authorities only five height restriction zones are used: 0, 7.5, 15, 45 and 90 m. The zones take into account the proximity of the land to the airfield or navigational aids, the elevation of the land, existing higher structures or hills nearby and local weather anomalies.

While one property may be affected by a height restriction zone of say 15 m, a nearby property could be affected by a 45 m height restriction. Generally, areas located closer to the ends of the runways, and/or close to radio and navigational aids, would be affected by the more restrictive height zones.

It is vital that future planning constraints and guidelines abide by these and other such regulations extant at the time for any development within the Airport Related Employment Zone at Williamtown.

2.2.3 Reporting of Tall Structures

Tall structures pose a significant hazard to aircraft operations particularly for low level flying operations. Military operations particularly involve low flying operations often remote from the airfield. The risk posed by tall structures can be minimised if information of a tall structure is conveyed to pilots so that they can fly at a safe margin above or away from the structure.

Tall structures are defined as those structures being 30 m above the ground level within 30 km from the airfield or 45 m above the ground level elsewhere. In addition the reporting of these structures, it should be noted that under the Defence D(AC)Rs and the CASA Civil Aviation Safety Regulations, tall structures below 30 m within 15 km of the airfield must be reported. There is also a requirement that any structures over 110 m above ground level be assessed for the need to have obstacle marking and/or lighting.

2.3 Plumes

There is a potential hazard to aviation where the vertical velocity from gas efflux may cause airframe damage and/or affect the handling characteristics of an aircraft in flight. This is especially critical during periods of high pilot workload or when the aircraft is being manoeuvred at low altitudes, particularly with flaps extended and/or gear down. Typically this includes the initial take-off climb or approach to land; specialist flying activities such as crop dusting, pipeline inspections, fire-fighting etc.; search and rescue operations; and military low level operations.

Exhaust plume typically originate from chimneys or elevated stacks at power generating stations, smelters and similar combustion sources or as a flare created by an instantaneous release from pressurised gas systems.

Both the Department of Defence and CASA have recognised the potential hazard to aircraft operations of plumes from chimneys or elevated stacks. Both organisations have legislation in place to control the potential hazard from plumes.

The Department of Defence apply the D(AC)Rs to regulate the plumes, and CASA includes assessment of plumes under the new Civil Aviation Safety Regulations (CASRs)

The CASR Part 139 requires that CASA be notified of any existing or potential obstacles, i.e. any object that infringes or will infringe the aerodrome Obstacle Limitation Surfaces. This may include the area within 15 km of the aerodrome. The "obstacle" referred to in CASR Part 139 does not necessarily have to be a solid object such as a building or stack. It includes gaseous efflux which is capable of physical definition or measurement. CASR Part 139 defines a hazardous gaseous efflux as one with the vertical and horizontal limits of the plume at which the average vertical velocity reduces to a value of 4.3 m/s.

Proponents of a facility to be located within 15 kilometres of an aerodrome are to consult with the aerodrome operator if that facility includes a combustion source which generates an exhaust plume which has an average vertical velocity exceeding the limiting gust value of 4.3 m/s at the aerodrome OLS. The aerodrome owner is to notify CASA of the details of the exhaust plume so that CASA can determine if the plume should be classified as a "hazardous object" under CASA Part 139.

In areas remote from an aerodrome, CASA Part 139 requires that the proponent of such facilities if the exhaust plume would have an average vertical velocity exceeding the limiting gust value of 4.3 m/s at a height of 110 m (360 feet) or more above ground level (AGL).

CASA has recently released an Advisory Circular AC 139-05(0) dated October 2003 on Guidelines for Plume Rise Assessments. The purpose of the AC is to provide guidance about the information required to assess the potential hazard to aircraft operations.

AC 139-05(0) sets out the minimum requirements established by CASA for the analysis of the vertical rise and dispersion of hot buoyant plumes and the presentation of data requirements for a subsequent hazard assessment of the risk posed to aircraft operations.

This information has been provided to aid planners in land use options considerations within the Airport Related Employment Zone.

2.4 Protection of Navigation Aids including Radars and Communication Systems

In order to support aircraft operations the operational integrity of navigational aids, radars and communication systems need to be assured. It is necessary, therefore, that any facility which can impact on the performance of the above be assessed.

The Department of Defence controls the operation of their navigational aids by the application of the D(AC)Rs. ADFP 602 details the separation requirements for the navigational aids.

The navigational aids which could be affected by adjacent facilities include the following:

- VHF Omni Range (VOR);
- Distance Measuring Equipment (DME);
- Non Directional Beacon (NDB);
- TACAN;
- Air-Ground-Air Communications;
- Locator Beacons;
- Radars;
- ILS Localiser Beacon;
- ILS Glide Path; and
- ILS Marker Beacons consisting of a Middle Marker located approximately 1,100 m from the runway threshold and an Outer Marker located approximately 3.9 nautical miles from the runway threshold.

The relevant off Base aid associated with the operations at RAAF Base Williamtown is the outer marker located on New Line Road. The Middle Marker is located on the Base boundary on the extended centreline for the approach to Runway 12. The RAAF Base Williamtown Master Plan also includes the possibility of a VORTAC (a combined VOR and TACAN) to be located on Defence land to the east of Medowie Road. This aid has the potential to impact on the land use of the adjacent properties.

2.5 Aircraft Noise

In the proximity of airfields, aircraft noise is often the loudest and most readily identifiable single source of noise. It attracts a high level of community concern and opposition.

The Australian Noise Exposure Forecast (ANEF) system is a scientific measure of noise exposure levels. It provides a measure from which an evaluation of the impact of aircraft noise on communities in the vicinity of Australian airports can be made. The details of the ANEF system are defined in the Australian Standard AS2021-2000 Acoustics–Aircraft Noise Intrusion–Building Siting and Construction. The objective of this Standard is to provide guidance on the siting and construction of new buildings against aircraft noise intrusion.

The ANEF system defines a means of determining a scientific measure of the noise exposure levels around Australian airports taking into account the following factors:

- The intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft take-offs, approaches to land, overflights and reverse thrust after landing;
- The forecast frequency of aircraft types and movements on various flight paths; and
- The average daily distribution of aircraft take-off and landing movements in day time and night time.

The impact of aircraft noise on communities is illustrated by ANEF contours drawn on maps of the airport locality. ANEF contours provide a means of planning effective noise abatement measures and determining land use compatibility. These noise contours indicate land areas around Defence airfields which are forecast to be exposed to a significant aircraft noise level. The higher the ANEF value the greater the aircraft noise exposure.

Land use considerations and the associated planning constraints and guidelines should take into account the ANEF contours of the RAAF Base Williamtown.

2.6 Bird Hazards to Aircraft

Birds can be a significant hazard to aircraft, especially during the operational critical take-off and landing phases of flight. During these operations aircraft require all or most of their available power and are operating close to minimum flying and manoeuvring speeds leaving little room for recovery from major bird strikes. Collision with individual birds, especially if large, can result in damage to windscreens, leading edges of wings, tails, aerials, lights and engines. Collisions with flocks of birds can result in simultaneous damage to a number of the aircraft structures and/or systems with the aircraft engines being particularly vulnerable.

Because RAAF Base Williamtown is close to the ocean and adjacent the flood plains, the potential for bird strikes by aircraft is high. The presence of the sewage treatment works with aeration ponds immediately to the south of the runway would normally be taken to enhance that potential.

Bird strikes at RAAF Base Williamtown over recent years has averaged two per year, which is an extremely low strike rate compared with the national average and with other airfields of similar characteristics. Given the high potential for bird strikes on and around the airfield, it is important that suitable planning and management practices both on and off the airport be maintained so that there is not an increase in future bird strike rates.

The Department of Defence controls the land use in the vicinity of the airfields to not be attractive to birds by the application of the D(AC)Rs.

CASA through the Civil Aviation Regulation (CAR) 96 has the authority to control the dumping of rubbish or collection of waste foodstuffs around airports, which may contribute an attraction to birds creating a hazard or potential hazard to aircraft using the airport.

In addition, to the above CAR, ICAO provides guidance information on effective measures to control birds on or in the vicinity of the airport (ICAO Airport Services Manual, Part 3: Bird Control and Reduction Doc 9137 – AN 898 Part 3).

The ICAO document considers the compatibility of various land use activities within an inner and outer area of 3 and 8 kilometre radii centred on the airport reference point.

This information has been provided to aid planners in land use options considerations within the Airport Related Employment Zone.

2.7 Extraneous Lights

The specification covering extraneous lighting in the vicinity of aerodromes is given in ADFP 602, although there is no Defence Regulation directly covering the application of the requirements. The Department of Defence the D(AC)Rs to control the installation of lights in the vicinity of their airfields.

The Civil Aviation Safety Authority (CASA), however, does have the power through Regulation 94 of the Civil Aviation Regulations 1988 to require lights which may cause confusion, distraction or glare to pilots in the air, to be extinguished or modified. Ground lights may cause confusion or distraction by reason of their colour, position, pattern or intensity of light emission above the horizontal plane.

Advice for the guidance of designers and installation contractors is provided for situations where lights are to be installed within a 6 km radius of a known aerodrome. Lights within this area fall into a category most likely to be subjected to the provisions of CAR 94. Within this large area there exists a primary area that is divided into four light control zones: A, B, C and D. These zones reflect the degree of interference ground lights can cause as a pilot approaches to land.

This information has been provided to aid planners in land use options considerations within the Airport Related Employment Zone.

2.8 Public Safety Areas

Studies indicate that the majority of aircraft accidents occur within 1.5 km of the airfield during the critical landing and take-off operations. For this reason the establishment of 'public safety areas' at the ends of runways provide a means to ensure the risk to life from an aircraft accident is minimised.

Development within public safety areas should not increase the risk to public safety from an aircraft accident near the ends of the runways. Therefore material changes in land use involving the following should be avoided:

- increases in the numbers of people living, working or congregating in the public safety areas; or
- the use of noxious or hazardous materials.

Any assessment of a development's compatibility with public safety areas should consider the following:

- the direct impacts to people in the aircraft and on the ground; and
- the secondary incidents arising from damage to ground facilities such as storage facilities for explosive, flammable or other hazardous materials.

Incompatible developments within public safety areas include the following:

- residential uses;
- uses that attract large numbers of people;
- institutional uses;
- uses that involve the manufacture or storage of hazardous materials, and
- transport terminals.

Due to the nature of the aircraft movements at RAAF Base Williamtown being by fast jet aircraft, the suggested critical public safety areas at the end of runways that need special land use considerations are:

- Length of 1,500 m from the runway ends; and
- Width of 450 m (225 m on either side of the extended runway centreline).

This information has been provided to aid planners in land use options considerations within the Airport Related Employment Zone. The associated maps developed as part of this report show a 1500 m extended centreline area from each runway threshold out to a width of 225 m. This 225 m zone has been extended around the entire length of the runway.

Taking into account the above regulations, publications and guidance, for the purposes of examining the Airport Related Employment Zone investigation area so as not to preclude future runway expansion options the following dimensions have been used:

- Length:
  - Runway 3500 m;
  - Stopway 305 m at each end;
  - Public Safety Area 1500m at each end of Stopway, and
  - Length Total = 7110 m for the purposes of restrictions on any built environ.
- Width:
  - 1035 m minimum between parallel runways, and
  - a cleared runway strip of 300 m radius has been allowed for around total length of 7110 m.

These distances are depicted on the attached maps as:

- Runway: 4110 m (runway and stopway);
- Public Safety Area 1500 m at each end of the runway area, and
- Width radius 300 m.

3. Runway Master Planning Options

This assessment identified five runway master planning possible options for a second runway or runway extension at RAAF Base Williamtown. It should be noted that this assessment involved only a desktop assessment without detailed consideration of environmental or site conditions or detailed design/layout of the second runway or runway extension. The five identified option are:

- Extension of Runway 12/30;
- Construction of a second runway to north of the existing Runway 12/30;
- Construction of a second runway to south of the existing Runway 12/30;
- Construction of a parallel runway to the south-west of the existing Runway 12/30; and
- Construction of a cross runway on RAAF Base Williamtown.

It should be noted that a study on the feasibility of establishing a second runway at RAAF Base Williamtown was commissioned by the Department of Defence in 1998 (Kinhill, June 1998). The report noted, inter alia, that the existing runway orientation meets the 95% wind useability criteria and that a cross-runway or realignment of the main runway is not required. Therefore, the likely catalyst for the construction of a second runway would be to increase aircraft operations capacity. This demand is envisaged to be driven by civil rather than Military aircraft movements.

Other considerations relevant to this study have been derived from direct discussions with staff from the Department of Defence, including RAAF Williamtown (as represented by the Base Commander) raised further matters. These organisations have positions on the Project Control Group.

At the Project Control Group Meeting on 1 June 2006 Defence made the following relevant points:

- The existing runway is part of RAAF Base Williamtown and is owned by the Department of Defence;
- Defence activities and operations take primacy over civil airspace use. This will remain the case indefinitely;
- Defence does not require a second runway nor an extension to the existing runway. The length of the existing runway is adequate for current or future Defence capabilities. In the past, Defence had preliminary investions undertaken as part of the RAAF Base Williamtown Masterplan 2002 with regard to extending the 12/30 runway or installing a cross runway however it was found that a cross-runway or realignment of the main runway was not required;
- Defence identified that the width of the existing runway pavement may be increased to accommodate future capability; and
- The issue for Defence is the impact a second runway/extension to the existing runway will have on operational capability due to an expectation that this will permit an increase in civil airspace usage. An increase in civil airspace usage is unlikely to be supported by Defence due to impacts on capability.

Furthermore, at a meeting on 21 June 2006 between the consultants (GHD) and the Department of Defence held at Newcastle Airport, the following relevant points were made by Defence

- Duplication of the existing runway would increase airspace usage to such an extent as to provide likely operational difficulties for the RAAF;
- The continued use of the Salt Ash Air Weapons Range for existing purposes is intended;
- Opportunities to reduce security risks to the RAAF Base tenancy usage are favourable; and
- The RAAF considers its future operational requirements to be contained within the currently defined parcel of Defence owned land.

Other considerations relevant to this study were also derived from direct discussions with staff from Newcastle Airport Limited (NAL). NAL has a position on the Project Control Group of the Study. A meeting between the consultants (GHD) and NAL was held at Newcastle Airport on 21 June 2006. At this meeting the following relevant points were made;

- That the basis for design of future airport master planning options was the Boeing 787 design;
- That the NAL Master Plan essentially considers a three-tiered approach when examining its Master Planning Options. These being:
  - Primary usage - those operations requiring direct access to taxiways or aprons (air side access);
  - Secondary usage – those operations that do not require air side access however are directly supportive in nature to air side activities;
  - Tertiary usage – those activities that are supportive to the general airport precinct however their location directly adjacent to the airport is not imperative.

3.1 Extension of Runway 12/30

The existing Runway 12/30 is 2,438 m long and 45 m wide and capable of accepting operations by A320/B737/B707 without restrictions. Larger civil aircraft such as the B747/B767/A380 and future B787 require a longer runway for maximum all-up-weight operations.

This option would involve lengthening the existing runway.

As part of the study for the 2002 RAAF Base Williamtown Master Plan, a number of runway extensions were investigated. The investigations showed that an extension to the north-west (NW) was not possible due to the proximity of Raymond Terrace. For this reason, any extension of the runway to the NW has not been considered in this study. Any extension of the runway to the south-east would require the relocation of Medowie Road and Nelson Bay Road.

Further analysis work would need to be undertaken as to the operation feasibility of any extension to runway 12. These may include the impacts of the threshold of runway 30 moving relatively closer to the higher ground associated with the barchan dunes of the nearby coastal fringe impacting with runway 30 approaches by military aircraft in emergency configurations.

Analysis of the operational requirements for large aircraft identified that the needs could be accommodated from the existing runway length and significant cost of a runway extension to the south-east could not be justified. The 2002 RAAF Base Williamtown Master Plan therefore retains the existing runway orientation and length.

Any consideration of an Airport Related Employment Zone should ensure that an extension to runway 12 is not precluded.

3.2 Construction of a Second Runway to North of the Existing Runway 12/30

This option considers a second runway to the north of the RAAF Base.

Construction of a second runway to the north of the existing Runway 12/30 would impact the Hunter Water Corporation (HWC) land and the operation of the HWC bores that are located on the land. Additionally, the land to the north of RAAF Base Williamtown is environmentally sensitive, includes areas of native bushland, koala habitat and contains endangered species. Additionally there may be a need to realign Richardson Road. Construction of a second runway to the north of RAAF Base Williamtown would result in significantly longer taxiing for civil aircraft using the second runway if the civilian terminal remains in its current locations. Similarly, the operation of RAAF Base Williamtown and Salt Ash Air Weapons Range may be impeded by this option.

Due to the above issues, a second runway to the north of RAAF Base Williamtown, whilst technically feasible, is deemed to be a non-viable option, based on economic, environmental and operational constraints. In either case, whether it be viable or not, the location of the currently considered portion of land for the Airport Related Employment Zone does not preclude future runway usage options to the north of the RAAF Base Williamtown.

3.3 Construction of a Second Runway to South of the Existing Runway 12/30

As distinct from a closely placed parallel runway, this option considers placement of a new runway in the southern portion of the study area.

Construction of a second runway to the south of the existing Runway 12/30 would require the relocation of Medowie Road and Nelson Bay Road, as a minimum. Any consideration of a southern runway option in the study area would likely require a complete relocation and redevelopment of the NAL facility and precinct due to the distances that the runway displacement would be from the existing terminal facilities. Such an option would also need to ensure that HWC land was not impacted.

Any requirement for a second runway is not in the Master Plans being considered by either Defence or NAL. Any drivers for such an expansion would be come from civil usage rather than military operations and would be far in excess of planned future requirements. Any considerations of such an expansion would most likely be in the realms of a national or international discussion rather than a regional planning consideration over the subsequent 20-30 year time frame.

These considerations, when combined with the magnitude of the economic cost of a new runway and associated relocation of the complete NAL facilities and the increased airspace impact on the RAAF, would most likely mean a broad based comparative site analysis would be undertaken on a state wide level, rather than restrict options to within the 5-10 km of the RAAF Base/NAL. Such broad based analysis is such as to mean that the location of the currently considered area for the Airport Related Employment Zone would not effect likely future options for a second runway.

3.4 Construction of a Parallel Runway to the South-West of the Existing Runway 12/30

This option considers a parallel runway located next to the existing runway 12/30.

Construction of a parallel runway to the south-west of the existing Runway 12/30 would require the second runway to be built with a minimum separation distance between the second runway and the existing Runway 12/30. The distance of offset could vary between 760 and 1,035 m, depending on the scenarios, as discussed below. Such a parallel runway, would result in a second runway alignment that requires the infilling of Lake Cochran, demolition of the existing civilian Newcastle Airport precinct (including the civilian terminal), the BAE Systems hangar, the sewage treatment plant and other facilities. Additionally, due to the operational need to de-conflict arriving and departing aircraft, such a runway configuration would result in aircraft tracks that directly overfly Raymond Terrace, resulting in significant aircraft noise impacts on the residents of Raymond Terrace.

Die to the cost of relocation of the NAL facilities and the cost of any second runway, this option invokes the same discussion points as raised in the above option for a new runway in the south of the area. For this reason a parallel runway is not considered a viable option on economic and operational grounds and thus will not be considered further in the Airport Related Employment Zone investigation area discussion.

3.5 Construction of a Cross Runway on RAAF Base Williamtown

Construction of a cross north south runway is considered to be non-viable, due to its impact on RAAF Base Williamtown and the civilian Newcastle Airport precinct, a cross runway would require the relocation of a significant number of facilities. Additionally, as noted earlier, the existing runway orientation meets the 95% wind useability criteria and that a cross-runway or realignment of the main runway is not required. This option will not be considered further in this report.

3.6 RAAF Base Williamtown/Newcastle Airport Related Employment Zone Impacts on a Second Runway or Runway Extension

3.6.1 Extension of Runway 12/30

Analysis of the operational requirements for large aircraft indicates that the existing runway can accommodate these requirements. As such, a runway extension to the south-east is not currently required. However, to ensure future options for the extension of Runway 12/30 are not sterilised, the proposed RAAF Base Williamtown/Newcastle Airport, Airport Related Employment Zone should exclude from any development an area from the existing threshold of runway 30 in a direction of 120 degrees (existing runway alignment), for an aggregate distance of 7110 m and width of 300 m. This distance takes into account future runway length consideration of 3500 m plus public safety distances along the extended centreline of the runway.

The development in the Aviation Industry Employment Zone would need to take into account the limitations and design criteria for:

- Protection of operational airspace;
- Plumes;
- Protection of navigation aids, radars and communication systems;
- Aircraft noise;
- Bird hazards to aircraft;
- Emission of airborne particulates;
- Temporary/transient obstructions;
- Extraneous lighting and reflective surfaces; and
- Public safety areas.

3.6.2 Duplication of Runways

All duplications (constructions of new runways) were considered of such magnitude, cost and possible impact to both RAAF Base Williamtown operations and increased local noise impact as to necessitate wider consideration of available airport relocation options. For these reasons, the current site under consideration as part of the Aviation Industry Employment Zone study does not preclude future second runway options.

4. Conclusion

The purpose of this assessment is to ensure the selected site for the RAAF Base Williamtown/Newcastle Airport, Airport Related Employment Zone does not preclude options for a second runway or extended runway and that all decisions incorporate the long term needs and opportunities for both RAAF Base Williamtown and Newcastle Airport Limited (NAL).

The existing runway orientation meets the 95% wind useability criteria and as such, a cross-runway or realignment of the main runway is not required. Furthermore Defence have identified that it does not require a second runway nor an extension to the existing runway Therefore, the likely catalyst to warrant the construction of a second runway at RAAF Base Williamtown would be an increase in civil aircraft operations.

This assessment identified five runway master planning options for a second runway or runway extension at RAAF Base Williamtown. The five identified option are:

- Extension of Runway 12/30;
- Construction of a second runway to north of the existing Runway 12/30;
- Construction of a second runway to south of the existing Runway 12/30;
- Construction of a parallel runway to the south-west of the existing Runway 12/30; and
- Construction of a cross runway on RAAF Base Williamtown.

Of these options, all duplications (constructions of new runways) were considered of such magnitude, cost and possible impact to both RAAF operations and increased local noise impact as to necessitate wider consideration of available airport relocation options. For these reasons, the current site under consideration as part of the Airport Related Employment Zone study does not preclude future second runway options.

To avoid excluding the potential of a future extension to runway 12, the Airport Related Employment Zone should exclude any development for an area extending from the existing threshold of runway 30 in a direction of 120 degrees (existing runway alignment), for an aggregate distance of 7110 m and width of 300 m. This distance takes into account future runway length consideration of 3500 m plus public safety distances along the extended centreline of the runway.

The development in the Airport Related Employment Zone would need to take into account the limitations and design criteria for:

- Protection of operational airspace;
- Plumes;
- Protection of navigation aids, radars and communication systems;
- Aircraft noise;
- Bird hazards to aircraft;

- Emission of airborne particulates;
- Temporary/transient obstructions;
- Extraneous lighting and reflective surfaces;
- Height limitations; and
- Public safety areas.

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Appendix D

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Williamtown Airport Related Employment Zone (AREZ)

Land Use and Development Strategy

(Final) Part C - Development Control Framework

December 2007

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

Contents

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Figure Index

Abbreviations

ADFP	Australian Defence Force Publication
AEW&C	Airborne Early Warning and Control
ADREZ	Airport and Defence Related Employment Zone
ASS	Acid Sulphate Soils
CBD	Central Business District
CKPoM	Port Stephens Council Comprehensive Koala Plan of Management
DCP	Development Control Plan
DEC	Department of Environmental Conservation
DEH	Department of Environment and Heritage
DoD	Department of Defence
DoP	Department of Planning
EECs	Endangered Ecological Communities
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
GPS	Global Positioning System
Ha	Hectare
HWC	Hunter Water Corporation
Km	Kilometre
LEP	Local Environmental Plan
LGA	Local Government Area
LHCCREMS	Lower Hunter & Central Coast Regional Environmental Management Strategy
m	Metre
MOS	Manual of Standards
NAL	Newcastle Airport Limited
NES	National Environmental Significance
NSW	New South Wales
NPWS	National Parks and Wildlife Service

OLAs	Ordinance Loading Aprons
PCG	Project Control Group
PSC	Port Stephens Council
RAAF	Royal Australian Air Force
SEPP	State Environmental Planning Policy
SEPP 44	State Environmental Planning Policy No. 44 – Koala Habitat
Sp	Species (singular)
Spp	Species (plural)
TSC Act	Threatened Species Conservation Act 1995
WWTW	Waste Water Treatment Works

Executive Summary

This report is the third document in a series of four aimed at guiding the development of approximately 100 hectares of land south of the RAAF Base Williamtown and the Newcastle Airport for the purposes of defence and airport related employment development.

The Stage 1 - Site Selection (July 2006) report identified an initial area of land for further investigation as to its suitability for development purposes.

The Stage 2 - Land Capability and Suitability Assessment (Revised October 2007) examined in more detail, the social, cultural and economic issues as well as the physical and man-made constraints applying to the selected site that are influencing, to varying degrees, the development potential of the land. It then analysed a range of development options before recommending a preferred option in the form of a conceptual layout for discussion purposes. The concluding sections discussed: the necessary controls on development; staging of land release; the implications for the provision of infrastructure; and the conservation and/or offsetting of environmentally sensitive areas within the site.

This Stage 3 – Structure Plan and Development Control Framework draws together the findings and recommendations contained in the two previous reports, and provides further detail as to the necessary controls to guide development. This Stage 3 report should be read in conjunction with the two previous reports and the various technical papers contained in the Appendices.

The last in the series of documents, being the *Consolidated Airport Employment Zone – Land Use and Development Strategy*, will consolidate the findings and recommendations together into a preferred land use strategy for the staged development of the area over the next 10-25 years. This document will be in the form of a Local Environmental Study that provides the justification for the rezoning of the land and a framework for the development controls that will guide its future development.

1. Introduction

1.1 Overview

This Stage 3 – Structure Plan and Development Control Framework report is made up of the following components:

Chapter 1 – Introduction.

Chapter 2 – Structure Planning – Provides additional discussion of the constraints and opportunities of the site as identified in the Stage 1 and 2 reports, and synthesises this information into a Structure Plan.

Chapter 3 – Local Environmental Plan Amendments – This Chapter presents the recommended amendments to the Council's Local Environmental Plan.

Chapter 4 – Further Controls on Development – Provides a framework for the preparation of a Development Control Plan containing specific planning provisions to guide the subdivision and development process.

Chapter 5 – Implementation Strategy – This Chapter discusses those issues relating to the funding and staging of the project and concludes with an outline of the process to bring the project to completion.

The recommendations contained in the above Chapters are for discussion purposes only and, following further consultation with and feedback from stakeholders and endorsement by the Project Control Group (PCG), these will be refined and included in the *Consolidated Airport Employment Zone – Land Use and Development Strategy*. The Strategy is to be prepared in the form of a Local Environment Study (LES) that will be presented to Port Stephens Council to consider in relation to the initiation of the rezoning process pursuant to Section 54(1) of the Environmental Planning and Assessment Act 1979.

1.2 Qualification

This document provides a structure plan and introduces the development control framework for the proposed Defence and Airport Related Employment Zone (DAREZ). The DAREZ Structure Plan is a diagrammatic representation of the long term development of the subject land. It is conceptual only and has been produced to assist in justifying the rezoning of the land for the purposes described.

The Structure Plan was prepared in consultation with the Project Control Group (PCG), which included representatives from Port Stephens Council, the Department of Planning, the Department of Defence, Hunter Water Corporation, Newcastle Airport Limited, NSW Premiers Department and the Department of State and Regional Development.

The Development Control Framework is a collection of guiding statements and controls addressing the particular issues relevant to the development of the subject land. It is not comprehensive in its content as there will be other generic matters that Council may wish to include before adoption as a controlling document under the EP & A Act 1979. The design detail and elements are preliminary only and the content and wording of some of the controls are likely to need revision to reflect changes to the subdivision layout following further detailed investigations as part of the rezoning and pre-development application design process.

2. Structure Planning

2.1 Guiding Principles for Development

The following discussion has been drawn from the findings of the previous investigative reports and the principles contained in the overarching sustainability principles and criteria found in the Port Stephens Community and Infrastructure Strategy 2007. These principles together with the Environmentally Sustainable Development principles, guide the future development of the employment centre.

2.1.1 Current Character and Background

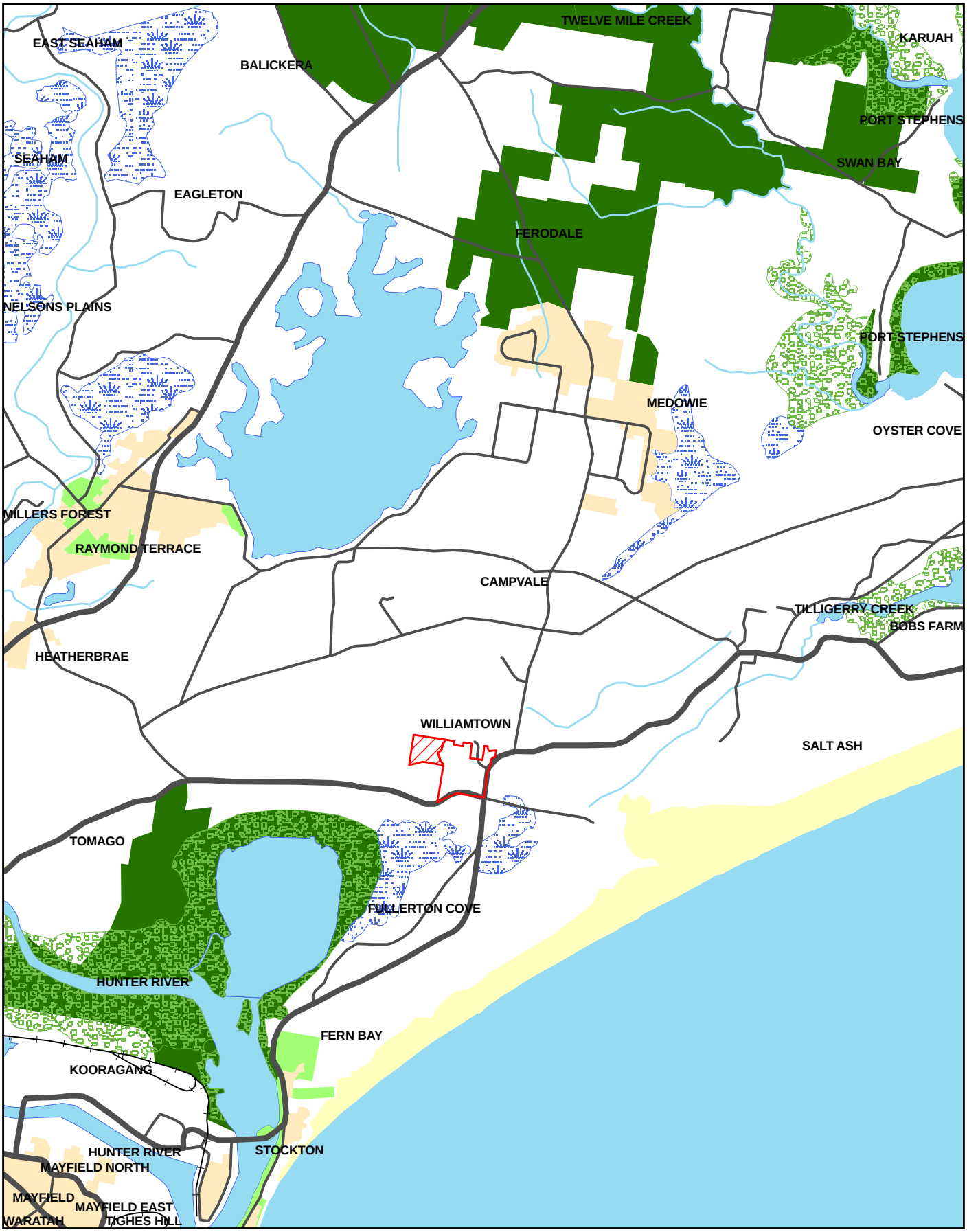
The Site is located at Williamtown 20 kilometres north of Newcastle (refer to Figure 1) and is currently dominated by the RAAF Base Williamtown, a significant element in Australian Defence Force capability. It is Australia's primary fast jet training Base and is periodically used by a number of other services. The Base accommodates the Australian Defence Force (ADF) Warfare Centre and the Air Defence Eastern Regional Operations Centre.

Newcastle Airport Limited (NAL) is jointly owned by Newcastle and Port Stephens Council and is located on Commonwealth land occupied by the Base and leased to NAL by Defence. It occupies approximately 28ha.

These facilities abut the subject site, which is located north-west of the junction of Nelson Bay Road and Cabbage Tree Road, which connect the site to Nelson Bay, Newcastle and the F3 Freeway at Raymond Terrace and via Medowie.

The Site (refer to Figure 2) is primarily rural in character with the area immediately south and in the vicinity of the civil airport and RAAF Base facilities used for grazing purposes on an intermittent basis. The topography is predominantly flat with substantial areas of lower lying wetlands and a smaller area of coastal sand dune rising and falling sharply over short distances within the flatter landscape.

The Lower Hunter Regional Strategy identified the potential to develop a specialised employment area to complement the activities of both the Department of Defence and Newcastle Airport on the land adjoining the existing RAAF Base Williamtown. Developing the employment centre in a way that complements rather than compromises the operation of the RAAF Base and the existing airport, is crucial to the success of this proposal.



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LEGEND

- Additional Land for Investigation
- Study Area
- Rail
- Main Road
- Road
- Drainage
- Built area
- Park
- Water
- Mangrove
- Wetland
- Reserves
- Sand dunes, beach

1:115,000 for A4

0 500 1,000 2,000 3,000 4,000

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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Locality Plan

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Figure 01

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LEGEND

- Investigation Area
- Additional Land for Investigation

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Metres

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Grid: Map Grid of Australia, Zone 56

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Site Plan

Figure 02

3rd December 2007

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2.1.2 A Vision for the Defence and Airport Related Employment Zone (DAREZ)

The vision for the DAREZ is one of:

"An employment centre that builds on the competitive advantages that the unique location offers, tapping into new economic growth activities in the aviation, Defence and airport related industries.

Development in the DAREZ is a model to similar development throughout the Hunter Region in its recognition of both the environmental sensitivities of the land, the response to the specific limitations on development that apply and its ongoing management of potential impacts. In this regard it is specifically recognised that the operational capabilities and requirements of the existing RAAF Base and Newcastle Airport are of paramount importance. This issue and associated land use compatibility is carefully addressed in the proposed LEP Zoning and Development Control Planning framework for the employment zone.

The employment centre enhances the arrival and departure experience for the visitors to the area and continues to operate as an attractive gateway to Port Stephens and the Hunter. Its development continues to generate a lasting legacy with far reaching and long term local and regional community benefits. Local employment and business opportunities are being realised and the State Plan's priority (P6) for increased business investment in rural and regional NSW is being attained.

2.2 Summary of the Constraints and Opportunities

An identification and analysis of the constraints and opportunities applying to the DAREZ site was completed as part of the Stage 2 – Land Capability and Suitability Assessment (Revised Oct 07).

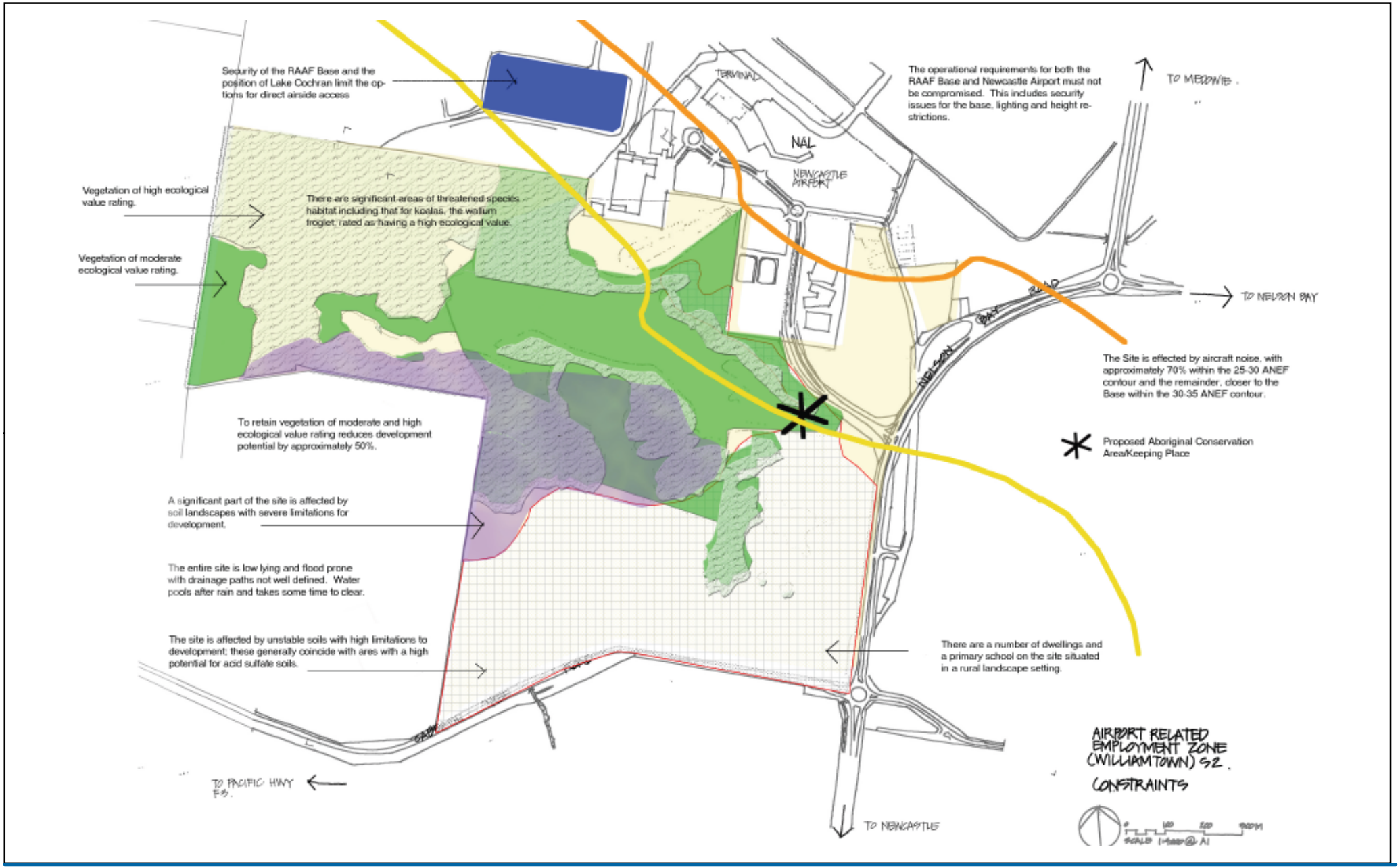
2.2.1 Constraints

A summary of the constraints that the site presents for the future development of a specialised employment zone are listed below.

- The operational requirements for both the RAAF Base and Newcastle Airport must not be compromised. This includes security issues for the base, lighting and height restrictions;
- There are significant areas of threatened species habitat including that for koalas, the Wallum Froglet and the potential for others;
- To retain vegetation of both moderate and high ecological significance would reduce the land for development by greater than 50%;
- The presence of bushfire prone land will influence the design of any subdivision for development purposes;
- The entire site is low lying and flood prone with drainage paths not well defined. Water pools after rain and takes some time to clear;
- Approximately half of the site has a high potential for acid sulphate soils;
- The site is affected by unstable soils with severe and high limitations to development;
- The Site is remote from connection to sewage works;

- The presence of an aboriginal burial site and associated camp site to be preserved by way of a “keeping site”;
- Land closer to the base and about a quarter of the site, is within the 30-35 ANEF contour;
- Approximately 70% of the site is within the 25-30 ANEF contour; and
- Aircraft movements and any direct and indirect airside access must accord with the requirements specified by the Department of Defence and the NAL operating agreement.

The constraints applying to the site are presented diagrammatically in Figure 3 below:



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Constraints Map

Figure 3

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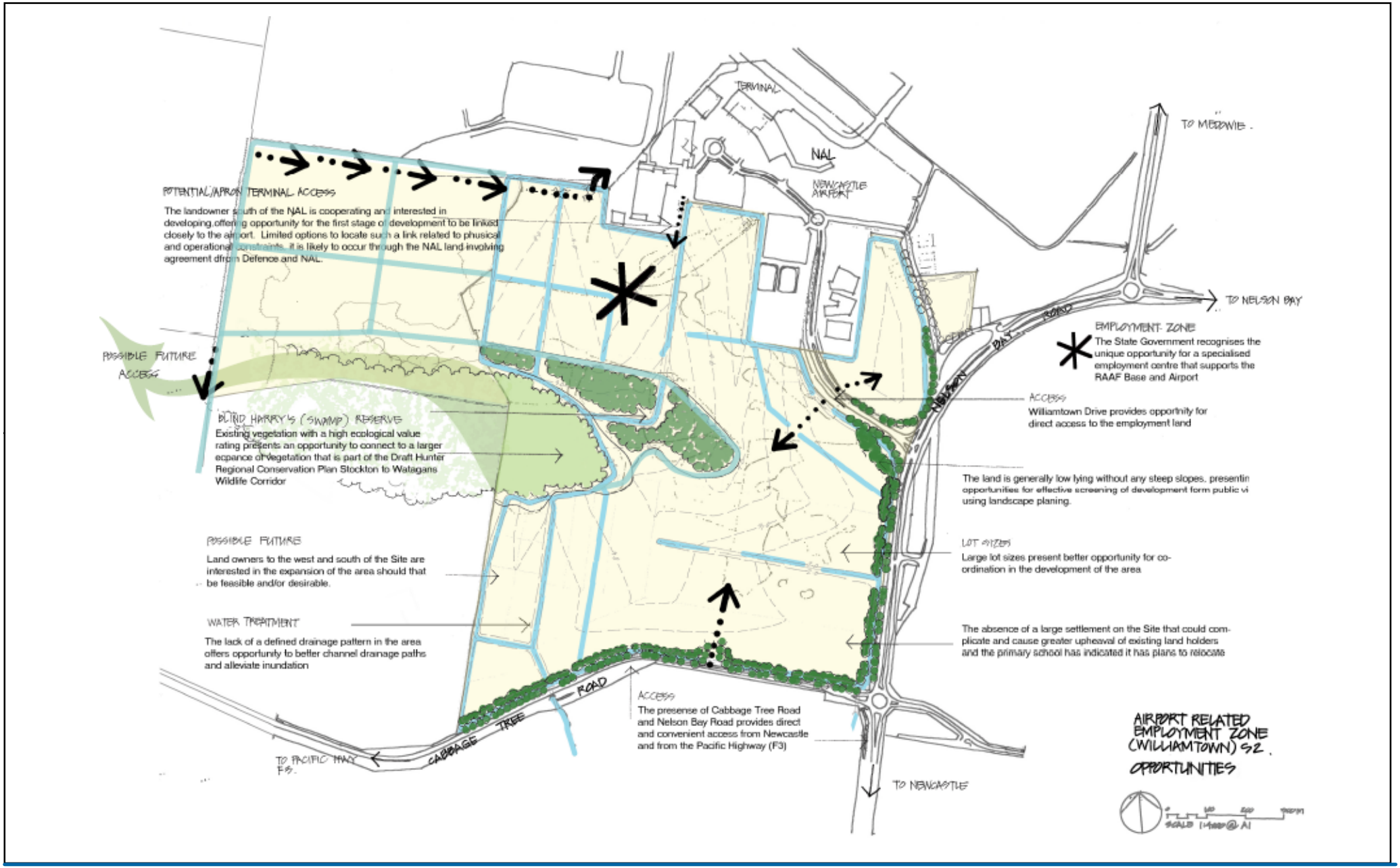
2.2.2 Opportunities

A summary of the opportunities that the site presents for the future development of a specialised employment zone are listed below:

- The State Government recognises the unique opportunity for a specialised defence and airport related employment centre close to the RAAF Base and Newcastle Airport (NAL);
- Existing vegetation with a high ecological value presents opportunity to connect to a larger expanse of vegetation that is part of the Draft Hunter Regional Conservation Plan and the Stockton to Watagans Wildlife Corridor;
- Land owners to the West and south of the selected site are interested in the expansion of the area should that be feasible and/or desirable;
- The lack of a defined drainage pattern in the area offers opportunity to better channel drainage paths and alleviate inundation effects;
- The land is generally low lying without any steep slopes, thus presenting opportunities for effective screening of development from public view using landscape planting;
- The landowner immediately south of the NAL area is cooperating and interested in developing, offering opportunities for the first stage of development to be linked closely to the existing airport operations;
- Large lot sizes present better opportunity for coordination in the development of the area;
- Williamtown Drive provides opportunity for direct access to the employment land; and
- The absence of a large settlement on the site that could complicate and cause greater upheaval of existing land holders.

The opportunities available to the site are presented diagrammatically in Figure 4 below:



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Airport Related Employment Zone (Williamtown)
Opportunities Map

job no. 22-12808
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Figure 4

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- The operational requirements for both the RAAF Base and Newcastle Airport must not be compromised. This includes security issues for the base, lighting and height restrictions;
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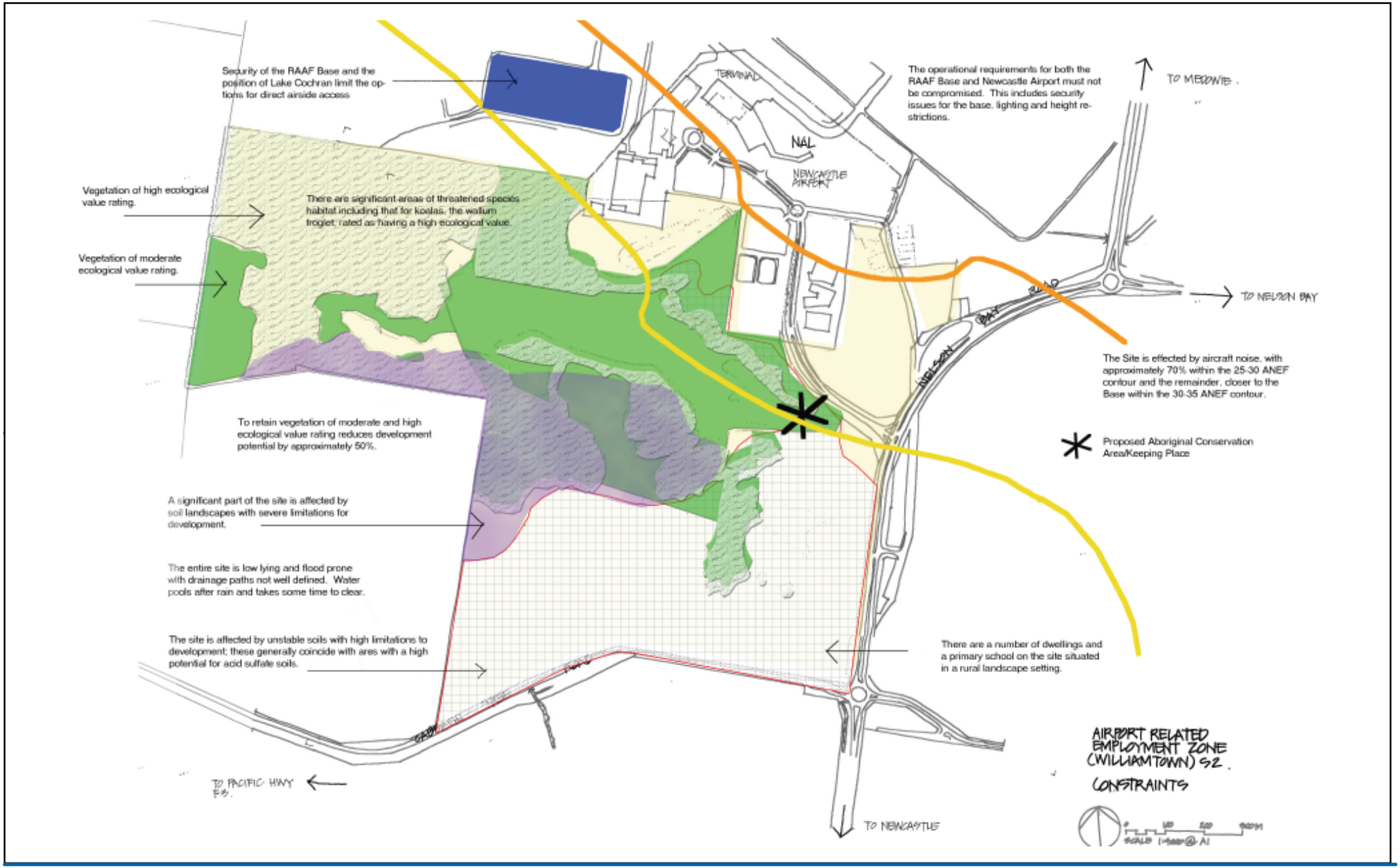

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Airport Related Employment Zone (Williamtown)

job no. 22-12808
rev no. A

Constraints Map

Figure 3

3rd | December 2007

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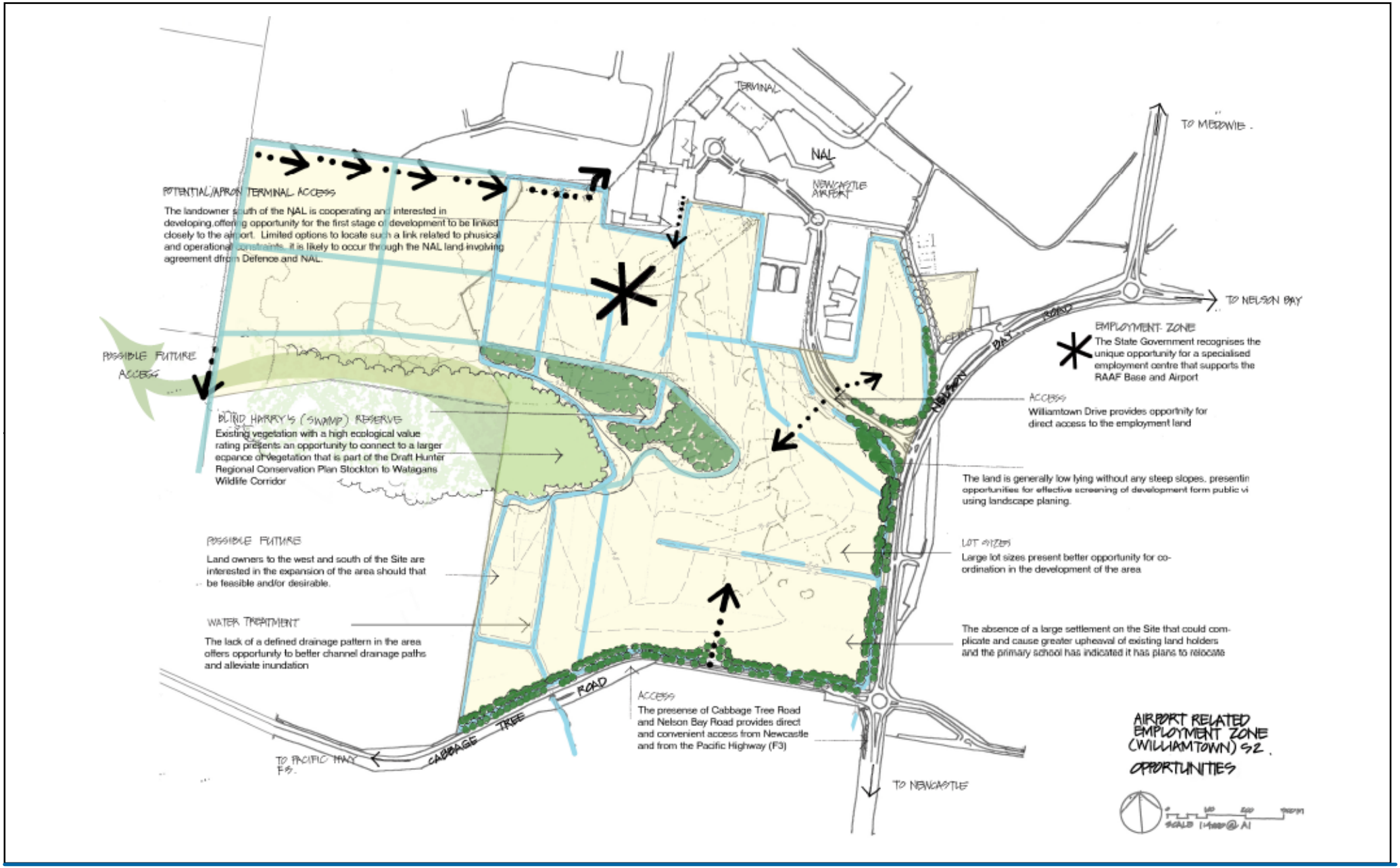
2.2.2 Opportunities

A summary of the opportunities that the site presents for the future development of a specialised employment zone are listed below:

- The State Government recognises the unique opportunity for a specialised defence and airport related employment centre close to the RAAF Base and Newcastle Airport (NAL);
- Existing vegetation with a high ecological value presents opportunity to connect to a larger expanse of vegetation that is part of the Draft Hunter Regional Conservation Plan and the Stockton to Watagans Wildlife Corridor;
- Land owners to the West and south of the selected site are interested in the expansion of the area should that be feasible and/or desirable;
- The lack of a defined drainage pattern in the area offers opportunity to better channel drainage paths and alleviate inundation effects;
- The land is generally low lying without any steep slopes, thus presenting opportunities for effective screening of development from public view using landscape planting;
- The landowner immediately south of the NAL area is cooperating and interested in developing, offering opportunities for the first stage of development to be linked closely to the existing airport operations;
- Large lot sizes present better opportunity for coordination in the development of the area;
- Williamtown Drive provides opportunity for direct access to the employment land; and
- The absence of a large settlement on the site that could complicate and cause greater upheaval of existing land holders.

The opportunities available to the site are presented diagrammatically in Figure 4 below:



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NSW Department of Planning
Airport Related Employment Zone (Williamtown)
Opportunities Map

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Figure 4

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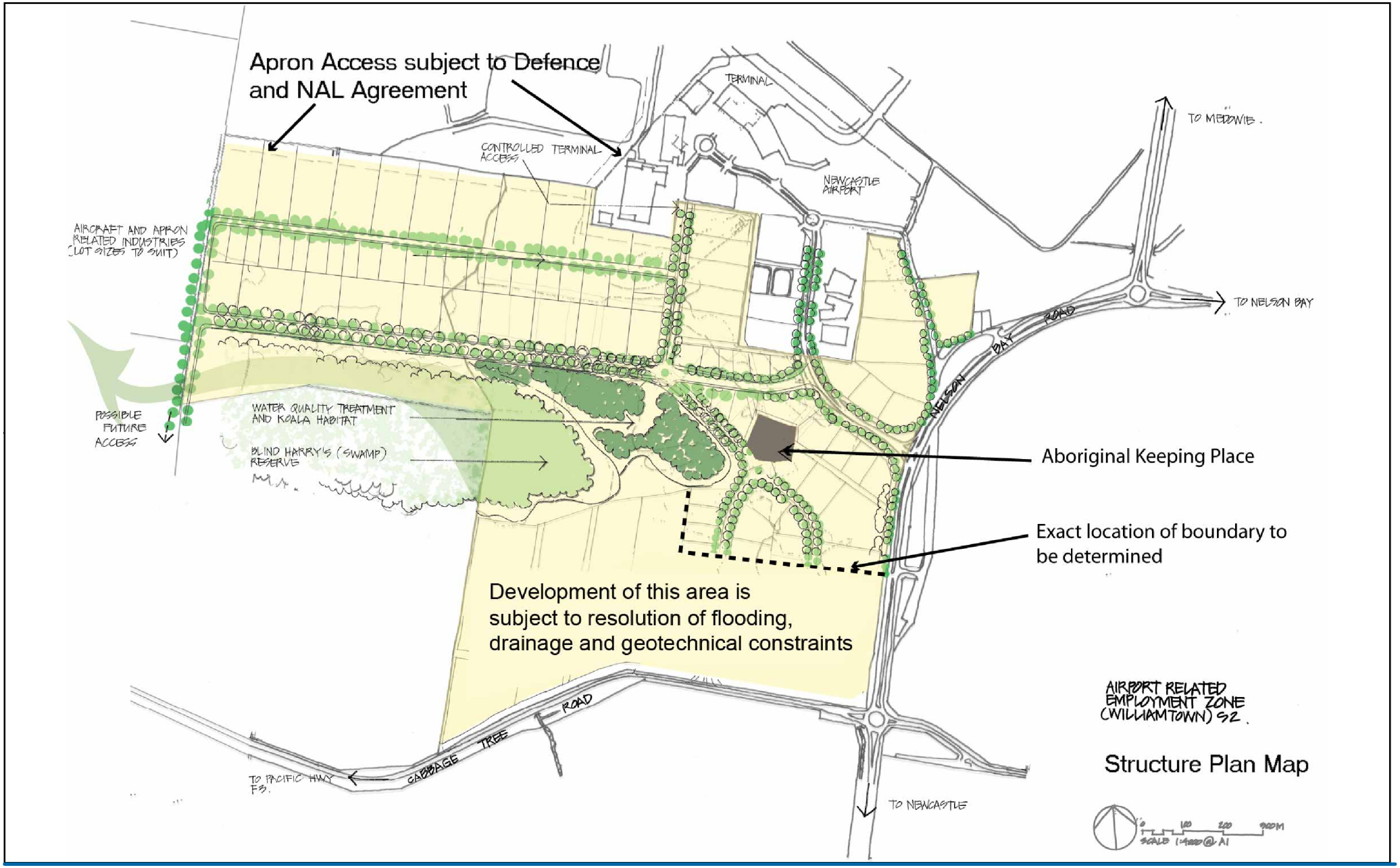
2.2.3 Conceptual Development Plan

Following on from the constraints and opportunities analysis contained in the Stage 2 - Land Capability and Suitability Assessment (Revised October 2007), a Concept Plan was prepared as a basis for further discussion. The Structure Plan (refer to Figure 5) was based on the philosophy of "maximum development with selected exclusions". It should be noted that the lower lying area to the south has been deferred from consideration at this point in time due to the apparent cost implications associated with the presence of compressible soils and the impacts of filling on flood levels on properties to the west. This land is similar in area to the land added to the investigation area in the north-west (approx. 40ha), although it is acknowledged that this land may become viable for development at some time in the future.

The concept plan presented in the Stage 2 report seeks to achieve maximum development of the Site with selected exclusions. This conceptual development scenario offers a balance between viable development and the resolution of the most critical environmental planning issues applying to the site. It acknowledges the importance of the employment centre as defined in the Lower Hunter Regional Strategy, the primacy of the RAAF Base, the crucial role the NAL plays and the value of the ecology of the Site. It aims to contribute to an adequate supply of employment land within the identified centre that together with other specialised/industrial lands are to accommodate 66,000 new jobs projected for the Lower Hunter Region.



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NSW Department of Planning
Airport Related Employment Zone (Williamtown)
Structure Plan Map
3rd December 2007

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Figure 5

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GIS Filename: G:\22\12808\GIS\Maps\Report Figures\Structure Plan and DCP - Part C\Fig5_Structure_Plan_031207.mxd

2.3 Economic Impact on Other Areas

The Airport Opportunity Study suggested that business and industry support for the Airport and Defence Base are currently sourced from diverse geographical locations including Newcastle CBD, a range of industrial areas, the Central Coast, Sydney and beyond. The DAREZ will thus have the capacity to wrest businesses and development from these areas should these existing businesses consider it advantageous to locate at or near the airport. It is not considered that this movement or attraction would significantly impact the viability of other areas and their businesses. Rather the DAREZ is expected to have significant capacity to generate external benefits by virtue of attracting new business rather than simply substituting existing operations.

The relatively remote location of Newcastle Airport and the considerable extent and diversity of retail establishments adjacent to the urban areas of Raymond Terrace, Salamander Bay, Greenhills, Jesmond and Wallsend currently justifies a cautious approach in allowing retail uses near the airport. These existing centres are considered sufficient to provide retail resources for the catchment rather than planning for significant new provision within the DAREZ. It is important to protect both the airport facility operations and the centres hierarchy in the Lower Hunter Regional Strategy. Any future potential retail precinct would be subject to the usual rigorous economic impact assessment.

The development of the specialised centre as a Defence and Airport Related Employment Zone (DAREZ) will capitalize and materialise potential stemming from existing activity at Newcastle Airport and the RAAF Base. It will facilitate the broad base establishment of business in direct, indirect and ancillary airport activity. This will extend to a range of airport related commercial, industrial, tourism and retail operations.

Investigations have found that the allocation of up to 100 hectares of land could yield in excess of 420,000 square meters of developed floor space. Land use parcels will need to range from smaller lots of 3,000 m^2 to up to 5 hectares to accommodate small commercial offices through to large scale hanger space. The land take up will span a 10 to 20 year period.

The “near” airport environment is likely to be attractive to a range of uses. Apart from uses seeking a nexus to airport activity, others that are compatible to and supportive of the environment will also be attracted.

The DAREZ will have capacity to provide for almost 6,000 jobs and will generate considerable expenditure impacts in both the construction and operational phases. With this change, there are expected to be some negative social impacts in relation to future development. These are likely to be lessened by the pace at which change will occur and the considerable positive benefits that will arise from the establishment of the DAREZ.

2.4 Social Impact

The development is expected to displace a number of people from their rural homes. It is also expected to change the rural character of the area. Conversely, the employment centre is expected to create a greatly expanded range of employment opportunities locally, with long term economic effects both locally and regionally. It is currently perceived that Medowie and Raymond Terrace provide labour for employment opportunities at the airport and the RAAF Base. The DAREZ is expected to broaden the range of employment and the current skill base required to service industry demand.

On balance it is considered that the potential negative social impact will be outweighed by the positive impacts. The time it will take to develop the DAREZ will facilitate opportunity for the community to adjust to the changed circumstances and allow measures to mitigate impact to be put in place.

It is relevant to note that up to 3,000 people work at the RAAF Base at any one time (civilian and military personnel) and that the Base is substantially self-sufficient with essential social services and accommodation complexes, the existence of which would constrain opportunities of similar enterprise in nearby, off base locations. The level of the Base self-sufficiency is not forecast to change in the immediate future.

2.5 Movement Networks

2.5.1 Road Transport Networks

The DAREZ is situated at the existing hub of Defence and civil aircraft activity for the region. The proposed specialised employment centre is also located at the intersection of main roads leading from Newcastle to Nelson Bay and Medowie, and linking Nelson Bay with the F3 (15kms from the DAREZ) thus taking advantage of the existing transit system to principal destinations of Sydney, the North Coast and Port Stephens. There is an increasing need to reduce the number of trips and energy used in the movement of goods and people. It is therefore important to ensure efficient movement in and around the centre, and between the centre and the local and regional areas. In this regard the following outcomes are essential:

1. The new employment centre is to be located and oriented to optimise access to the transport corridors of Nelson Bay Road and Cabbage Tree Road enabling the public transport network to be strengthened and to provide greater choice of routes for residents and transport users; and
2. Connections linking the employment centre internally and externally with desired destinations are to provide for the efficient movement of vehicles and people with provision for a choice in modes of travel.

2.5.2 Public Transport

Public transport in the form of a regular bus service and taxi services are currently available and will increase in response to demand. As the road layout will need to facilitate the movement of articulated vehicles, it would also facilitate bus movement. It is anticipated that as employment generating development within the DAREZ becomes established, bus routes will deviate through the estate to accommodate employees.

2.5.3 Cycle and Pedestrian

Williamtown is isolated from other urban centres and it is unlikely that there will be a need for external connections of cycle and pedestrian pathways. Internal roads will be of sufficient width to accommodate cyclists on-road and Council should require the provision of footpaths throughout the estate. The internal movement network is to be designed to cater for pedestrian and cycle paths on all streets in accordance with Council's requirements.

2.6 Land Use Relationships

The employment centre is dislocated from urban development and is to operate as a specialised centre with a focus on airport and defence related industry, and not general industrial development that other airports closer to urban areas include. The specialised employment centre will not expect or aim to generate growth by virtue of proximity to urban areas and economic integration, as do other “Aerotropolis”. Consequently the specialised centre is not expected to cater for development less directly related to airport activity, servicing the wider community and industry needs that can be accommodated in other Lower Hunter general industrial estates. It is considered that these existing and other proposed general industrial estates elsewhere will be an important resource for employment land opportunities at the airport. The effect on the centres hierarchy for the Port Stephens area and for the wider regional area should therefore be supportive and not competitive.

2.6.1 Regional and National

The Newcastle Airport precinct has a range of economic and business drivers supporting a diverse commercial activity at sub regional, regional and state levels. The links will extend to the regions of the North Coast, New England and Upper Hunter as well as to national and international business. The fast growing civil aviation activity along with the long-standing and indentured commitment to the RAAF Base, underpins the commercial environment and networks. It is justifiably recognised and acknowledged that the establishment of an airport and Defence related employment centre in the vicinity of the airport will have a high propensity to lever off this activity and result in the establishment of a range of commercial and industrial airport related enterprises.

2.6.2 Local

The DAREZ is expected to have significant capacity to generate external benefits by virtue of attracting new business rather than simply substituting existing operations. Businesses at Heatherbrae, Raymond Terrace, Newcastle and Medowie will continue to service demand arising from Newcastle Airport and RAAF Base Williamtown, regardless of whether this constitutes all or a fraction of the activity in their businesses.

2.7 Limitations on Development

Based on the aircraft operational requirements, some land use types will need to be excluded from the employment centre. The types of land uses to be excluded include any development that involves any of the following:

- Large amounts of putrescible waste (attraction of birds);
- Large gatherings of people close to areas identified as public safety areas;
- Plumes such as power generating industries through combustion; and
- Any development that cannot operate within the restrictions relating to height, interference, glare, noise and reflection.

2.8 Proposed Land Use Types

It is critical to identify land use types likely to be attracted to the airport, the characteristics displayed by such uses and to be clear about the kinds of land use types that best reflect the objectives of the employment centre (refer to Section 3.1 below – Objectives of the SP1 Zone).

Uses that rely substantially on the airport (civil and/or defence) activity from which they will generate business are categorised as having “high” linkage characteristics. Uses in “medium” and “low” categories have lesser dependency and would in all likelihood, rely on other parts of the economy to support their business activity. The resultant hierarchy of uses is shown in Table 2-1.

Table 2-1 Proposed Land Use Hierarchy

Linkage to Airport/Base	Use	Characteristics/Types
High (requiring direct access to the apron)	Airport and Department of Defence related activities requiring runway apron access including: ◗ Aircraft refuelling, maintenance, manufacture and assembly; ◗ Freight handling and forwarding.	◗ Requirement for runway and apron access; and ◗ Defence and civil related.
High (requiring runway proximity and direct access to the terminal)	Airport and Department of Defence related activities requiring proximity to the runway apron and/or terminal access including: ◗ Aircraft refuelling, maintenance, manufacture and assembly; ◗ Freight handling and forwarding; ◗ Aerospace industry; ◗ Defence support (non-secure); ◗ Fixed Base Helicopter Operations; ◗ Airport terminal related services; and ◗ Customs and other regulatory services.	◗ Goods in bond and storage; ◗ Catering, baggage; ◗ Possible links to education/government institutions; ◗ Defence and civil related; ◗ Off base services in supply, repair and maintenance equipment support; ◗ Facilities management, car hire, transport services and logistics, passenger services (including convenience retail); and ◗ Airport services and administration.

Linkage to Airport/Base	Use	Characteristics/Types
Medium (indirect) Direct and indirect uses servicing both direct (high correlated business) and air force/defence demands. Uses do not insist on immediate apron, terminal or Defence Base proximity.	Any of the above and including: ◗ Aero training (precluding training flights); ◗ Transport and Storage; ◗ Motor vehicle services; ◗ Defence and Airport related Commercial/Offices and Support Services; ◗ Manufacturing; and ◗ Education/training.	◗ Warehousing, goods in bond; ◗ Mechanical, fuel and supplies, tyres, detailing; ◗ National HQ's desirous of airport nexus; ◗ Technical equipment components and assembly; ◗ Primary product handling/Rural industry (excluding putrescible waste generating activities); and ◗ Service providers and agencies.
Low (incidental)	Any of the above and including: ◗ Defence and Airport related Convenience Retail/General Store; ◗ Defence and Airport related Industrial Facilities; ◗ Hotel/Motel; and ◗ Fitness and health.	Cafés (excluding fast-food/take-away food stores on large scale-floor space cap to be considered for retail); Petrol and mechanical service; Business equipment, supply and servicing; and Short-term accommodation, convention and meeting places.

2.9 Recommended Land Allocation and Lot Sizes

The proportions of land allocated to certain land use with varying degrees of reliance on proximity and the range of lot sizes must be appropriate to ensure the successful development of the proposed specialised centre for airport related employment. The recommendations have regard for the detailed investigations carried out during the investigative stage of the project. Table 2-2 below details the anticipated land allocations and lot sizes in relation to the respective linkage requirements to the airport, runway and RAAF Base. This table also takes into consideration the objectives of the centre and the demand expected for the various land use types. It includes the estimated precinct sizes and estimated development yield.

Table 2-2 Land Allocation and Lot Sizes

Linkage to Airport/Base	Precinct Area (ha) Typical Lot Sizes	Estimated Development Yield (m^2 of floorspace)
High (requiring direct access to the apron or requiring runway proximity and direct access to the terminal)	10-20 ha. Typically lots of 1 to 5 ha in size.	50,000 to 100,000
Medium (indirect) Direct and indirect uses servicing both direct (high correlated business) and airport/defence demands. Uses do not insist on immediate apron, terminal or Defence Base proximity.	20-30 ha Typically lots vary from 3- 5 ha in size.	80,000 to 120,000
Low (incidental)	40-50 ha. Typically lots 5000m^2 to 2 ha for industrial and 3,000- 5,000 m^2 for other.	160,000 to 200,000
Total	70-100 ha gross.	290,000 to 420,000

Precincts have been devised on the basis of the strength of the synergies between the anticipated land uses and the centres of activity being the domestic airport terminal, airside access and the Defence facilities. The area allocated and lot sizes are deliberately presented as a range to allow flexibility in response to the findings of further market analysis and to accommodate particular developments with specific land-take requirements. As such, a Precinct Plan has not been prepared but rather each Precinct is described as follows.

High Proximity Precinct 1 – All lots created (for highly correlated businesses) with a common property boundary with either Defence land or NAL land configured to accommodate specific development requiring direct access to the apron, runway proximity and/or direct access to the terminal – (10 to 20 hectares of land typically subdivided into lots ranging in size from 1 to 5 hectares in area).