13 Environment Strategy summary

INTRODUCTION

The Archerfield Airport Environment Strategy 2017 (AES) addresses the ongoing environmental management of the airport site. It also provides the framework for responsible environmental management by airport tenants.

This strategy comprises:

- a statement of environmental responsibilities that apply to Archerfield Airport;
- a description of the airport environmental management system, including the process by which AAC implements the AES and related environmental management procedures;
- the AAC corporate environment policy;
- a summary of existing environmental issues, management responses to those issues and an action plan to address them;
- details of the ongoing consultative processes AAC uses to implement and review the AES.

This strategy was approved on 15 July 2017 and should be read in conjunction with the Archerfield Airport Master Plan that sets out AAC's 20-year vision for the development of the airport.

ACHIEVEMENTS 1998-2016

AAC has over the period 1998-2016 achieved a number of milestones which have contributed to the improvement of the airport environment.

Studies have been completed, Environmental Management Procedures (EMPs) prepared, major drainage works have been implemented, water and energy use has been audited, water conservation measures implemented, the airport environment has been monitored and analysed, environment protection awareness information made available, installation of an additional six groundwater monitoring wells since 2012 and relationships with key stakeholders strengthened.

A summary of these achievements is provided in Chapter 14.

AAC ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Environmental responsibilities

AAC maintains the runways, taxiways, grassed areas, and infrastructure; develops new airport facilities; leases sites; and oversees environmental compliance by tenants.

AAC prepares the AES; develops and maintains the airport's environmental management system; undertakes environmental reviews of relevant aspects of the airport; works with the Airport Environment Officer (AEO) and tenants to protect the environment of the airport and assist with the investigation of incidents on the site; liaises with environmental authorities; and provides annual reports to Department of Infrastructure and Regional Development (DIRD) on progress on implementing the AES.

These responsibilities are established through legislation and are set out in Chapter 15 and in the airport Environmental Management Procedures (EMPs).

AAC tenants are responsible for environmental management of their leased site in accordance with the AES, lease conditions and relevant legislation, standards and guidelines; providing

practical assistance to AAC in developing, reviewing and revising the AES; adhering to requirements of the AES; devising environmental management procedures and implementing improvements specific to the lease site; and adhering to appropriate dangerous goods handling and storage standards, and to workplace health and safety standards.

Scope

The Archerfield Airport EMS addresses AAC operations, existing tenants, new facilities, non-aviation tenants and activities, and emergency events occurring on the site.

It comprises this Strategy, the EMPs, and the management processes that are in place.

AAC works with tenants to ensure that all responsible parties are aware of their environmental obligations.

Environmental Management Procedures

The EMPs include procedures for assessing prospective tenants, communication and consultation, emergency preparedness and response, minor and major spill response, environmental awareness and training, tenant environmental reviews, environmental reviews at the end of a tenancy, and assessment of new development works.

Action plan

The actions identified in the AES are summarised in the *Archerfield Airport Environment Action Plan*, which is included in Appendix D.

Communication

AAC communicates with a variety of parties both on the site (tenants and operators) and external to the site.

Key aspects relevant to environmental management include:

- facilitation by AAC of monthly management meetings involving the AEO, Airport Building Controller (ABC) and AAC personnel;
- a rolling program of reviews of tenant operations;
- provision of information on the AAC web site;
- targeted consultation with stakeholders on specific issues;
- community consultation on major projects;
- regular 12 monthly reporting of environmental matters to DIRD;
- environmental training and education.

Environmental training

All current AAC staff undertake environmental awareness training on an annual basis. Training is ongoing, responsive to needs. AAC personnel and tenants will be briefed on the new AES.

AIRPORT ENVIRONMENT POLICY

AAC recognises the importance of maintaining and where practical, enhancing the quality of the environment on Archerfield Airport and neighbouring areas.

Its commitment and actions to realise this are described in the AAC Corporate Environment Policy in section 15.2 3.

CURRENT ENVIRONMENTAL STATUS, ISSUES, AND ACTIONS

The AES includes for each aspect of the environment, management objectives, a statement of existing conditions, potential impacts, management measures, and targets for the planning period.

The information is based on a review of past studies and more recent investigations of groundwater, surface water, potable water consumption, asbestos and heritage.

More detail is provided in Chapter 16.

Archaeology

In 2001 AAC completed a *Cultural Heritage Assessment and Management Plan: Archerfield Airport, Brisbane*. The findings informed subsequent development decisions, including the major upgrade of Hangar 6, demolition and new works at Hangar 5 and fitout and refurbishment of the ground floor, Level 1 and 2 of the Airport Terminal and Administration Building.

There is no evidence of archaeological sites or features that require specific management at this time.

European heritage

God's Acre Cemetery and the Airport Terminal and Administration building are significant historic features. In addition, there are some hangars and other buildings that mark important phases in the development of the airport.

AAC, and its parent company Miengrove Pty Ltd have invested more than $3.8M in heritage projects. In 2001 AAC restored the Shell building. In 2009 the Terminal building again became the airport administration offices with the refurbishment of Level 2 of the building by AAC. In 2015 Level 1 of the Terminal building was significantly refurbished, winning two awards at the 2015 Brisbane Regional Architecture Awards. The awards were for the Heritage and Interior Design categories.

AAC continues to work closely with The Friends of God's Acre to ensure the cemetery is well maintained.

Consideration will be given to conserving or relocating other identified features in future development projects.

Flora and fauna

The airport environment has been heavily modified since prior to the establishment of the airport, when the site was farmed.

The main operational areas have been subject to a continuous maintenance program that has included mowing and removal of large trees where these infringe on obstacle clearance standards.

The area fringing Oxley Creek has some remnant values, and this land has been incorporated into a green buffer.

A flora and fauna assessment of the buffer area (shown in Figure 18 *Development precincts*) will be undertaken prior to any future development in this area.

Air emissions

There are negligible emissions to air. Establishments which include spray paint booths have appropriate filters installed and these are maintained in accordance with Brisbane City Council requirements and are inspected by AAC and the AEO.

Ozone depleting substances

A detailed audit of the airport in 1993/94 identified all equipment containing ozone depleting gasses. All BFC fire extinguishers were removed in 1997, and there are no remaining air conditioners filled with Freon/CFC's.

Ongoing environmental reviews by AAC seek to identify any ozone depleting gasses on site. If any are identified their removal will be negotiated.

Surface water

The airport surface water falls into six sub catchments (Figure 17), and is conveyed ultimately to Oxley Creek by a network of open and piped drains.

A detention basin at the south-west boundary of the airport assists with managing peak flows, and improving water quality prior to discharge to Oxley Creek. Three additional bio-filtration and detention basins have been constructed recently adjacent to the Boundary Road frontage to manage peak flows from future works at Transition Estate. Gross Pollutant Traps were constructed between Basin 4 and Boundary Road (at Transition Drive) to further improve the quality of stormwater from the Boundary Precinct and central sub catchment prior to its release to the BCC drainage system to the north of the airport.

Rainwater tanks have been installed in a number of tenancies, and in new developments undertaken by AAC.

Groundwater quality

Groundwater quality is monitored annually, and since this practice commenced in 1993, water quality has generally conformed to or exceeded relevant environmental criteria. Localised elevations are addressed progressively with the AEO.

Six new groundwater monitoring wells have been installed since 2012 to ensure all on-airport areas are monitored as well as to test contamination coming onto airport from off-site locations. The bore locations and the direction of groundwater flow are shown in Figure 26 *Groundwater*.

Soil

With the exception of BP Truckstop (which was subject to soil contamination from a leaking storage tank, discovered in 2006), there are no known areas of soil contamination that pose a threat to the environment of the airport.

Assessments show that localised contamination levels are within accepted criteria. Any soil contamination at the Truckstop is being managed by BP in accordance with a remediation and monitoring program.

Hazardous materials and waste

Existing asbestos is recorded in the airport asbestos register, which is kept up to date as works are completed. A significant quantity of asbestos was removed between 2012 and 2015 as a result of extensive repair and upgrade works to various hangars and buildings.

DIRD recommends that AAC determines levels of Perfluorinated Chemicals (PFCs), which are non-biodegradable chemicals that are highly persistent in the environment (and in the past used in fire-fighting foam and equipment), to gain an understanding of the background levels of PFCs on airport and coming from off-site areas.

AAC currently considers the recommendations within the most recent DIRD issued *Guideline for Environmental Management* (GEM) and will consider any alterations to these guidelines when they become available..

The storage and handling of hazardous materials is required to comply with relevant State legislation, and this is assessed during tenant environmental reviews.

Waste is managed and disposed of in accordance with Trade Waste requirements.

Natural resources and energy

Potable water use was reviewed and a management plan formulated in 2008 to minimise consumption and improve efficiency.

When the drought ended the State government abolished the Queensland Water Commission and its permanent water conservation measures on 1 January 2013.

Energy usage is considered as part of the periodic environmental reviews of tenant and AAC operations.

Opportunities for energy efficiency are also considered in the design, siting and specification of new works by AAC and the assessment of new works by tenants.

Noise

Potential noise sources from on ground activities at Archerfield Airport are limited to maintenance and general commercial activities conducted on site, and ground running of aircraft.

Noise emissions are considered as part of the assessment of new tenancies and ongoing tenant environmental reviews.

To address noise from ground running of aircraft, dedicated engine run-up areas have been established away from the main centres of development.

NEW FACILITIES

AAC is committed to sustainable development.

The environmental performance of refurbished offices in the historic Terminal building is a prime example of this.

Improvements in energy efficiency, water use and indoor environment quality, whilst maintaining the heritage aspects of the building, were paramount to this project.

Since completion, AAC energy consumption has been reduced by almost half, saving around 5000 kg of greenhouse gas emissions per annum.

Water tanks have been incorporated into new developments such as the Corporate Hangars, the Lot 15 warehouse, and the Aviall building at Site 111.

AAC requires new tenants to identify all potential environmental issues or impacts, and assists them to clarify applicable legislative requirements and best practice management guidelines that will be applied.

AAC's EMPs include procedures to manage this process.

The AEO and Airport Building Controller (ABC) (if required) are involved in this process.

14 Scope and overview of the AES

14.1 SCOPE OF THE ENVIRONMENT STRATEGY

Under the *Airports Act 1996* and regulations, AAC is required to develop and implement an AES that:

- sets out AAC's objectives for the environmental management of the airport;
- identifies environmentally significant areas within the airport;
- identifies sources of environmental impact associated with airport operations;
- defines studies, reviews and monitoring to be carried out in relation to the environmental impact of the airport;
- sets timeframes for completion of audits and reviews;
- sets out specific measures to be implemented by AAC to address existing or potential impacts, and timeframes for completion of these; and
- provides details of consultation undertaken in preparing the AES.

14.2 OVERVIEW OF 2017 AES

The AES addresses the management of environmental issues arising from airport activities and operations.

It covers the ongoing environmental management at the airport arising from the use of the airport site.

The relationships between the various elements of the AAC environmental management system are illustrated in Figure 25, in section 15.4.

This strategy comprises:

- a statement of environmental responsibilities that apply to Archerfield Airport;
- a description of the Airport Environmental Management System, including the process by which AAC will implement the AES and related environmental management procedures;

- the AAC corporate environment policy;
- a summary of existing environmental issues, management responses to those issues and an action plan to address them;
- details of the ongoing consultative processes AAC will adopt in implementing and reviewing the AES.

This AES was approved on 15 July 2017 and builds on the previous strategies (1999, 2000, 2005, 2010 and 2012).

14.3 ENVIRONMENTAL MANAGEMENT ISSUES

The principal environmental management issues at Archerfield Airport are:

- management of new development works to minimise and ameliorate impacts on the environment;
- conservation of any significant flora and habitat values along Oxley Creek;
- protection of storm water and groundwater quality from contamination by pollutants from the airport;
- encouraging the efficient use of water and energy;
- ensuring that all chemicals on airport are appropriately handled, used, stored and disposed of;
- containment and management of spills;
- appropriate containment and handling of all asbestos in buildings and plant on airport (as identified in the asbestos audit and register);
- protection of any cultural and heritage values (pre and post contact); and
- ensuring that airport tenants are aware of their environmental obligations and comply with all relevant requirements.

14.4 OVERVIEW OF ACHIEVEMENTS 1998-2016

Over the period 1998-2016, AAC has achieved the following milestones. These have all contributed to improvements to the management of the airport environment.

Table 5. Summary of achievements 1998-2016 (AES)

Activity	Date
Environmental management system	
AAC adopted new airport *Environmental Management Procedures* (EMPs).	2003
AAC reviewed EMPs, and identified minor revisions	2010
Heritage	
AAC has supported the restoration works by Friends of God's Acre Inc, including with donation of funds and provision of maintenance services over the past 18 years.	1998 onwards

Activity	Date
AAC restored the Shell building	2001
The *Cultural heritage assessment and management plan* for the airport was completed.	2003
AAC purchased in 2000 and refurbished the 2nd floor of the neglected Airport Terminal building and relocated its administration offices to the upper floors of the building	2009
Brisbane Regional Commendation awards for both Heritage and Interior Architecture for refurbishment of the middle floor of the Airport Terminal building.	2015
Refurbishment of the ground floor public areas, and painting and waterproofing of the exterior of the Airport Terminal Building in preparation for Brisbane Open House	2015
Flora and fauna	
Fire Ant control has been undertaken by helicopter and motorcycle broadcasting.	2001 onwards
Creation of a conservation zone in the south-west part of the airport, adjacent to Oxley Creek, to provide a permanent buffer	2009
Air quality	
Existing data on airshed quality obtained from the DEHP (formerly DERM/EPA) monitoring station at Rocklea	2004
Inventory of existing airport tenants and users was compiled as a baseline for possible future air quality assessments	2004
Air quality testing at Site 400 Yak Investments	2015
Dust	
Wirraway Avenue was reconstructed and resurfaced.	2000
Beaufighter Avenue was sealed and extended into the Beaufighter Precinct.	2000
Alex Fraser monitored dust coming off Site 670-672 over a six month period.	2015
AAC commissioned URS consultants to conduct an assessment of dust coming off site from Site 670 occupied by Alex Fraser	2015
Surface water management	
The former open drainage line through the Beaufighter, Boundary Road, Runway, and Beatty precincts (which was subject to significant scouring) was piped, and silt traps and dissipation structures installed to moderate peak flows and manage water quality prior to discharge to Oxley Creek.	2001
A significant new stormwater detention basin was constructed in the Beaufighter precinct, treating stormwater prior to its discharge to the Oxley Creek.	2001
The stockpile areas for the Alex Fraser Group recycling facility on Beaufighter Avenue drain to a sedimentation basin for treatment prior to discharge to the main drainage system on airport. Water is recycled for dust suppression and irrigation purposes.	2001
A triple interceptor was installed to treat water from the aircraft washdown bay. The washdown bay was signed to encourage its use.	2002
The second wash down bay (at the eastern end of Taxiway Bravo) was decommissioned.	2002
Swale drains were constructed along the southern boundary of the Beaufighter Precinct.	2003
The open drain running north-west from the Runway precinct, under the 04/22 runways to Boundary Road was upgraded with the piping of the	2008

Activity	Date
section near the runways, and the creation of a detention basin in the Boundary precinct. This will modulate peak flows entering the drainage system through Rocklea, which ultimately discharges to Oxley Creek approximately 2 km downstream of the airport.	
Stormwater tanks were provided for the new corporate hangars on Wirraway Avenue, and a warehouse constructed by AAC on Beaufighter Avenue to retain rainwater for use on site, and assist with reducing peak discharge volumes to Oxley Creek.	2007-8
Small rock landscaping has been introduced to localised sections of open drains showing evidence of minor soil erosion.	1998 to present
Civil construction work, which included stormwater and associated services to improve drainage at the northwest end of Archerfield Airport was completed. The works included construction of three stormwater basins	2014
Underground stormwater drains around the southern and eastern areas of the airport were examined by CCTV camera and significant repair/upgrade work was carried out to improve drainage	2014/2015
Open earth drains have been periodically slashed and weeds removed.	Ongoing
Surface water quality monitoring in open drains and at drain outlets has been undertaken on an annual basis.	Ongoing
Groundwater	
The network of groundwater quality monitoring wells across the airport was serviced and upgraded.	2004
Well No. 9 was relocated, to fit with redevelopment in the Beaufighter precinct.	2004
A new sampling and analysis program was implemented.	2004
Simmonds & Bristow commissioned to review groundwater monitoring program	2012
Six new groundwater monitoring wells were installed between 2012 and 2015	2015
The annual groundwater monitoring program by AAC has continued throughout the planning period.	Ongoing
Issues identified from analysis have been assessed in consultation with the AEO and will continue to be addressed over the planning period.	Ongoing
Soil contamination	
The former Airport Rescue and Fire Training Area was closed and remediated	1994
The former battery recycling site was remediated by removal of the contaminated soil and reclamation with clean fill.	1997
The underground storage tanks at the Shell Building were decommissioned and the site remediated.	1998
The former Mobil fuel depot at Site 12 was decommissioned and the site remediated	1999
Soil tests were carried out at Site 110 (formerly occupied by Flying Colours)	2013 2014
Soil tests were carried out at Sites 9 and 635	2015
Soil tests were carried out at Site 668	
Hazardous materials and waste management	
Asbestos Audits Queensland Pty Ltd prepared an *Asbestos Materials Report and Register for Archerfield Airport.* The report identified asbestos in AAC owned buildings, and was updated regularly as buildings come into AAC ownership until 2012	2003 to 2012

Activity	Date
A Management Plan and risk assessment was added to the asbestos register.	2006
Asbestos Audits Queensland Pty Ltd prepared an *Asbestos Management Plan and Register for Archerfield Airport, which* incorporated new buildings and recognised 2011 codes of practise. Update of the plan is ongoing	2009 2012
AAC created a *Chemical and Hazardous Materials Register* for its grounds maintenance and works operations	
AAC has included in its tenant inspections consideration of materials storage, handling, waste management, and disposal.	Ongoing
Brisbane City Council regularly tests sewage entering its treatment system from the airport. Any non conformances are reported to AAC and the tenant (if applicable) for action.	Ongoing
Natural resources and energy	
AAC installed rainwater tanks for the corporate hangar development on Wirraway Avenue and the warehouse and office on Beaufighter Avenue	2007-8
AAC installed a 3000L Rainwater Tank for the Aviall warehouse on Ditchmen Avenue	2012
Water meters have been upgraded to improve monitoring of consumption.	2008
Efficient water fittings have been installed in AAC buildings.	2007
AAC developed a *Water Efficiency Management Plan* (WEMP) in accordance with Queensland Water Commission requirements, in consultation with tenants and Brisbane Water. Subsequent legislation abolished The Queensland Water Commission and its Permanent Water Conservation Measures on 1 January 2013.	2008
The airport has secured a number of businesses that recycle materials and equipment for reuse in construction and manufacturing. These include Veolia Environmental Services, Alex Fraser Group and Q-Crete. These operations promote the reuse of resources, and reduce the energy required to produce materials.	1998-present
Use of natural resources and energy is considered in tenant assessments.	1998-present
Noise	
Noise emissions from tenancies on airport are managed in accordance with the EMPs and any site environmental management plan in place for their operation.	Ongoing
New facilities	
EMPs have been developed for new tenancies, renewal of existing tenancies, and for assessment of major works and are periodically updated	2003-present
Corporate hangars were constructed, incorporating rainwater harvesting.	2006
A warehouse and office development incorporating energy efficiency measures and rainwater harvesting was constructed by AAC at Lot 15.	2008
A new warehouse and office development incorporating energy efficiency measures and rainwater harvesting were constructed at Site 111.	2012

15 Environmental management framework

15.1 REGULATORY FRAMEWORK

15.1.1 Airports Act 1996

The *Airports Act, 1996* and the associated *Airports (Environment Protection) Regulations, 1997* provide the primary mechanism for Government to ensure the ongoing responsible environment management of Archerfield Airport.

This legislation requires AAC to produce and implement an Airport Environment Strategy (AES).

All operators of undertakings on the airport, including AAC, have an obligation to comply with the AES, the *Airports Act 1996* and Regulations.

AAC has the additional obligation to prepare the AES, monitor pollution levels at the airport in accordance with its AES and report the results of this monitoring on an annual basis.

The first AES for Archerfield was approved on 15 November 1999. In December 2000, an amended version was published, including the approved 2019 ANEF for Archerfield Airport. The AES for 2004-2009 was approved on 18 January 2005, the AES for the period 2010-2015 was approved on 26 March 2010, and an updated version for the period 2011-2016 was incorporated into the 2011-31 Master Plan. This version was approved on 15 July 2017.

Airport operators and airport regulators

The Act provides a system for separating the roles of the airport operator and airport regulator.

In the case of Archerfield Airport, the Commonwealth Department of Infrastructure and Regional Development (DIRD) and the Civil Aviation Safety Authority (CASA) provide the regulator role. Archerfield Airport Corporation being the Airport Leasing Company (ALC) undertakes the airport operator role.

AAC as airport operator is responsible primarily for activities that take place on the ground and within airport confines. Airservices Australia (AsA) has the principal responsibility for aircraft operations.

AAC recognises that operational issues at times need to be addressed jointly by AAC and Airservices Australia, and AAC is proactive in identifying relevant aspects and potential solutions as appropriate.

Airports (Environment Protection) Regulations 1997

The regulations:

- set limits for environmental pollution of air, water and soil, and for noise emissions;
- set out the duties everybody operating at the airport must comply with; and
- authorise the monitoring and remediation of breaches of environmental standards.

The Regulations do not apply to pollution generated by aircraft, or to noise generated by an aircraft in flight or when landing, taking off or taxiing at the airport.

All users of Archerfield Airport are required under the *Airports (Environment Protection) Regulations 1997* to:

- avoid polluting the environment
- preserve local biota and the ecosystems and habitats of native species
- preserve existing aesthetic, cultural, historical, social and scientific (including archaeological and anthropological) values of the local area;
- ensure there are no adverse consequences for endangered or vulnerable flora or fauna species or endangered ecological communities;
- ensure there are no adverse consequences for sites of indigenous significance on the airport site; and
- prevent the generation of offensive noise.

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

The Commonwealth EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places.

The Act applies to the following areas or matters of national environmental significance:

- world heritage sites;
- national heritage places;
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed);
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;

- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

The Act aims to:

- provide for the protection of the environment, especially matters of national environmental significance;
- conserve Australia's biodiversity;
- protect biodiversity internationally by controlling the international movement of wildlife;
- provide a streamlined environmental assessment and approvals process where matters of national environmental significance are involved;
- protect Australia's world and national heritage; and
- promote ecologically sustainable development.

The Act is triggered when a proposal has the potential to have a significant impact on a matter of national environmental significance.

The Commonwealth Department of the Environment administers the Act and coordinates the assessment of potential impacts. After consultation and assessment, the environment Minister (or delegate) is responsible for deciding whether a project needs approval under the Act, and if it does, whether it is allowed and under what conditions.

The Minister will not intervene in a proposal that has no significant impact on one of the eight matters of national environmental significance, even though there may be other undesirable environmental impacts, for example on air quality, noise, odour, general amenity or on animals that are not listed as threatened or endangered under the EPBC Act.

The regulation of these matters is the responsibility of the Queensland State government, and the environment protection requirements are administered by various agencies, including Brisbane City Council.

Airport Environment Strategy

Under the *Airports Act 1996* AAC is required to produce and implement an Airport Environment Strategy. The Strategy must:

- set out AAC's objectives for the environmental management of the airport;
- identify environmentally significant areas within the airport;
- identify sources of environmental impact associated with airport operations;
- define studies, reviews and monitoring to be carried out in relation to the environmental impact of the airport;

- set timeframes for completion of audits and reviews;
- set out specific measures to be implemented by AAC to address existing or potential impacts, and timeframes for completion of these; and
- provide details of consultation undertaken in preparing the AES.

The previous AES was approved on 24 May 2012, after completion of the consultative processes set out in the *Airports Act*.

State law

AAC is required to comply with relevant State legislation and regulations, to the extent that these do not conflict with the Airports Act or Regulations.

State laws concerning workplace health and safety, waste management (including trade waste), motor vehicle pollution, emissions of substances that deplete stratospheric ozone, or the use of a pesticide are examples that are relevant to activities at Archerfield.

Compliance requirements

All operators of undertakings on the airport, (AAC and tenants), have an obligation to comply with the *Airport Environment Strategy*, the *Airports Act* and Regulations. It is an offence to cause deliberate damage to the environment.

Legal register

AAC has identified in Appendix A legislation and regulations relevant to its operations.

The register of legal requirements will be kept up-to-date through liaison with the Airport Environment Officer (AEO) at least monthly during the regular Airport Environmental Management Forum (AEMF).

15.2 ARCHERFIELD AIRPORT CORPORATION ENVIRONMENT POLICY

Environmental management at Archerfield is guided by the AAC environment policy.

Policy scope and principles

In developing and managing Archerfield Airport, AAC will:

- identify and manage the environmental issues that are within AAC's responsibility;
- comply with relevant environmental legislation and regulations;
- establish environmental objectives and targets to minimise the environmental impact of the airport;
- measure, monitor and improve upon the environmental performance of the airport;

- promote to AAC's employees, tenants, customers and neighbours its commitment to sound environmental management.

These principles have been taken into account when preparing this AES.

AAC environment policy

Archerfield Airport Corporation Environment Policy

Archerfield Airport is operated and developed by Archerfield Airport Corporation (AAC). AAC is a private company which in 1998 acquired the long term lease to the airport.

AAC has overall responsibility for environmental management on the airport. Airport users, including tenants have responsibility for appropriate environmental management of their activities.

AAC recognises the importance of maintaining and where practical, enhancing the quality of the environment of Archerfield Airport and neighbouring areas.

AAC will:

- *operate the airport in an environmentally responsible manner*
- *minimise any adverse environmental impacts of its operations*
- *comply with all legally binding environmental management requirements*
- *encourage environmental responsibility amongst its employees and contractors*
- *encourage environmental responsibility amongst airport tenants and users*
- *strive to continually improve environmental performance of all aviation and non-aviation operations on the site.*

To achieve this AAC will:

- *establish and maintain procedures and practices to comply with all applicable environment laws and regulations*
- *ensure that this policy, management procedures and environment protection actions are communicated to all relevant personnel, including AAC staff, airport tenants, airport users and contractors*
- *conduct regular reviews of all site operations to identify areas which are or may have the potential to breach a regulatory requirement or which require improvement*
- *conduct regular monitoring and analysis of the airport environment to identify potential issues and ensure compliance with relevant regulations*
- *implement environmental management and operating procedures to ensure that the development of Archerfield Airport is carried out in an environmentally sound manner*
- *consult as appropriate with authorities and the community to ensure that the views of external parties regarding environmental issues are considered when making decisions*
- *ensure that AAC staff are appropriately trained and briefed on compliance and regulations*
- *ensure that tenants and users of the airport are adequately informed of their obligations, compliance and regulatory requirements.*

AAC managers are accountable to the Managing Director to ensure that this policy is implemented.

15.3 ENVIRONMENTAL MANAGEMENT SYSTEM

AAC's system for management of environmental issues on Archerfield Airport follows the principles and format of *ISO 14001:2016 Environmental Management Systems-Requirements with guidelines for use.*

The management system provides a structure for identifying environmental issues, developing environmental management plans to manage these issues, and a method to review and measure environmental performance.

It applies to all operations carried out at Archerfield Airport, encompassing both aviation and non-aviation related activities. As a minimum, it provides a system to ensure that operations for which AAC is responsible will comply with all applicable legal requirements, and where deemed necessary, exceed these requirements.

15.4 ENVIRONMENTAL ROLES AND RESPONSIBILITIES

The roles and responsibilities of AAC, tenants, the Airport Environment Officer (AEO), and the Airport Building Controller (ABC) are set out below. The relationships between the various stakeholders are illustrated in Figure 25.

AACs responsibility

AAC is responsible for:

- overall environmental management on the airport;
- preparation of the AES;
- overseeing implementation of the AES, including informing tenants of their obligations under the Strategy;
- conducting reviews of AAC's own operations, such as maintenance of runways, taxiways, aprons and grassed areas;
- development and management of new airport facilities, such as runways and airport infrastructure;
- preparing Environmental Management Procedures (EMPs) for AAC activities and developments;
- leasing sites to tenants (and setting environmental management requirements via lease conditions, where appropriate);
- adhering to appropriate dangerous goods handling and storage standards, and to workplace health and safety standards; and
- monitoring pollution levels (for aspects defined in the AES) and reporting the results of this monitoring on an annual basis.

Under common law as a landlord AAC may also conduct pollution and contamination tests, order remedial works, or stop activities in the event of environmental harm. Under the *Airports (Environment Protection)*

Regulations 1997, the Commonwealth can also assist AAC in having tenants comply with tests, implement remedial works, or stop harmful activities.

Responsibilities of tenants of AAC

Tenants on the site can be broadly divided into four categories:

- aircraft maintenance and service facilities;
- aircraft charter operations;
- airport passenger facilities and flight schools; and
- sites carrying out non-aviation related activities, such as industry, warehousing, service stations and shops.

Tenants are responsible for:

- environmental management of their leased site in accordance with the AES, lease conditions and relevant legislation, standards and guidelines;
- providing practical assistance to AAC in developing, reviewing and revising the AES;
- adhering to requirements of the AES;
- implementing improvements relevant to the leasehold;
- devising environmental management procedures specific to the lease site;
- implementing guidelines set by AAC;
- meeting the requirements of their lease agreements; and
- adhering to appropriate dangerous goods handling and storage standards, and to workplace health and safety standards.

Most leases entered into, or renewed since 1999 stipulate the tenants' environmental responsibility and the requirement to conform to the AAC Environment Policy and AES.

Airport Environment Officer (AEO)

The AEO is part of DIRD and fulfils the role of environmental regulator on the airport.

The AEO monitors operations on airport sites and where necessary, enforces the requirements of the Act and its subordinate legislation.

The AEO works cooperatively with AAC and tenants, supporting and ensuring compliance with environmental standards. The AEO can apply financial penalties to environmental offenders.

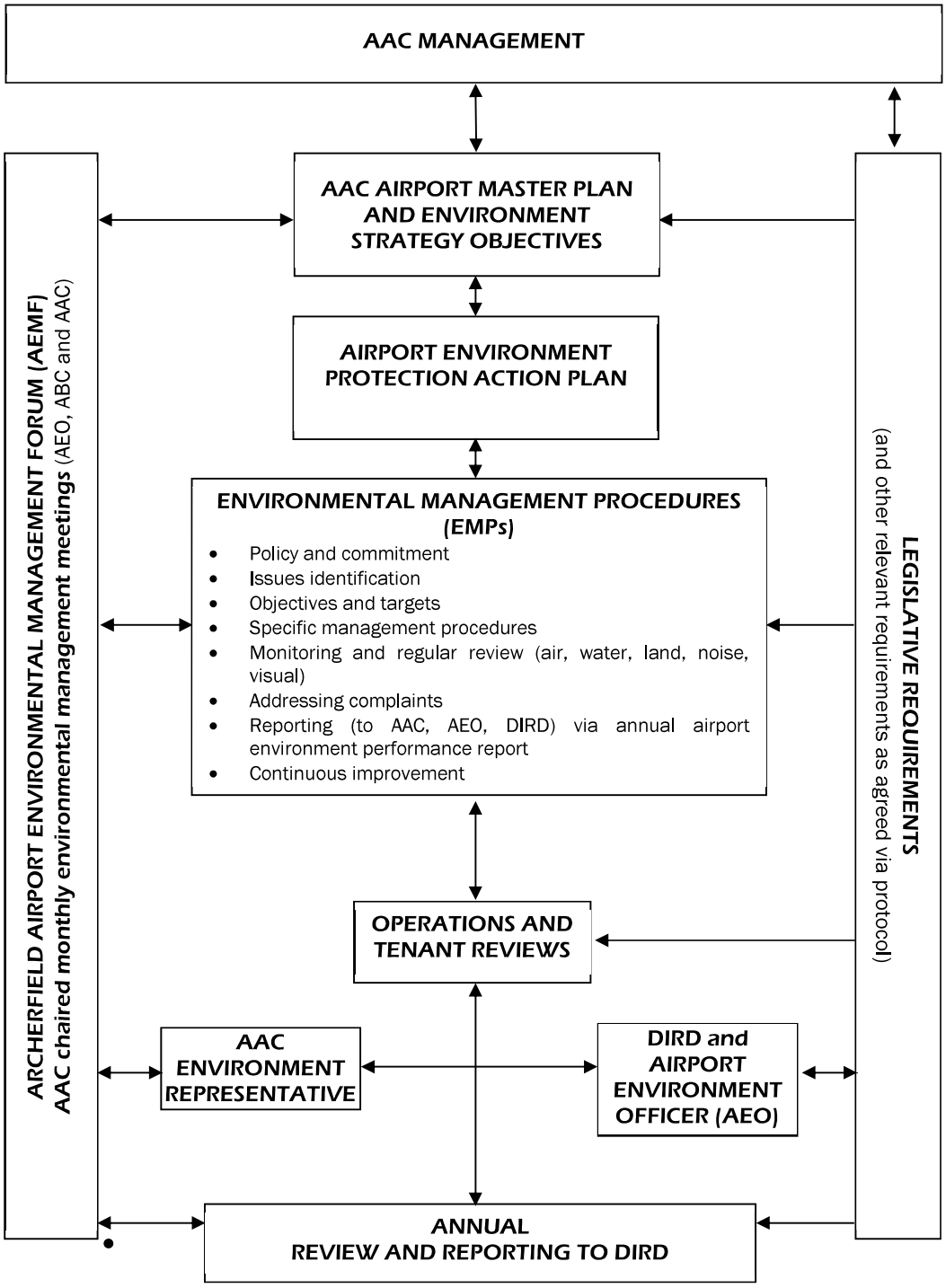


Figure 25. **Overview of environmental management process at Archerfield Airport**

AAC may also conduct pollution and contamination tests, order remedial works or stop activities in the event of environmental harm.

The AEO investigates incidents relating to pollution. The AEO can require any operator on the airport to carry out works; reduce or cease generation of pollution.

If an operator cannot meet the standards detailed in the Regulations due to local conditions, but the operator believes the operations will still comply with the general objectives of the Regulations, the operator can apply to the AEO for an authorisation, allowing the non-compliance to continue for a specified period. If the AEO is satisfied that the authorisation is warranted and the objectives of the Regulations can be achieved, then the authorisation may be granted.

If necessary, the AEO can issue an environmental protection order or infringement notice to any operator on Archerfield Airport who has committed an offence. If the offence is considered serious, the operator and individuals involved can be prosecuted.

Building approval requirements

DIRD has appointed an Airport Building Controller (ABC) who is responsible for ensuring that all activities at Archerfield Airport meet the appropriate building and engineering standards.

The ABC must be notified in writing of all proposed construction and building activities; including minor repairs, alterations, and signs. Some minor works are exempt from formal approval.

Building and construction must comply with the *Building Code of Australia* (BCA) as operational in Queensland. Where the BCA does not apply (for example in relation to civil engineering works) the relevant Australian Standard or international standard will apply. The ABC identifies the appropriate standards.

A Certificate of Compliance for Occupancy is required for all building or construction work that requires formal approval by the ABC. A Certificate of Compliance for Occupancy is issued before a building can be occupied, and a Certificate of Compliance for Use is required before engineering works, electrical works, or other utility services can be used.

The consent of AAC is required before the ABC can approve a development application. AAC is responsible for ensuring that all development proposals are consistent with the Archerfield Airport Master Plan and AAC's planning objectives. AAC will in each case assess the impact of the proposal on infrastructure and the operations of the airport, and may impose conditions on building activities.

AAC environment representative

In addition to facilitating the Airport Environmental Management Forum (AEMF), the appointed AAC environmental representative also has the following responsibilities:

- work with the Airport Environment Officer on issues associated with Archerfield Airport;
- prepare associated documentation;
- make recommendations to the Managing Director, AAC;
- ensure that AAC is compliant with relevant legislation and laws;
- work with the airport community to ensure that compliance is being achieved;
- conduct or coordinate environmental reviews in accordance with policy; and
- apply policy initiatives and identified strategies.

The following table sets out who at Archerfield is responsible for ensuring that the environment protection obligations are fulfilled and environmental management procedures are followed.

Items marked with an asterisk need to be addressed by each tenant in their environmental management plans and other initiatives. Their compliance will be assessed during the cyclical tenant reviews.

Table 6. Environmental responsibilities

Function	Responsibility
Policy and strategy-direction	
Defining environmental policies, and modifying existing policies	AAC Board
Determining objectives, priorities and targets in accordance with policy	AAC Board
Determining environmental management procedures in accordance with the policy direction, objectives, priorities and targets	AAC management
Construction and maintenance activities	
Securing building and environmental approvals	Proponent (typically AAC or tenant)
Assessing contractor's abilities to meet AAC's environmental requirements	For AAC works-Airport Planning & Compliance Manager * For works by tenants-each tenant, ABC, AEO and AAC
Ensuring compliance with environmentally sound work practices	For AAC works- Airport Planning & Compliance Manager * For works by tenants-each tenant, ABC, AEO and AAC
Operation phase	
Compliance with State regulated waste, hazardous good and other requirements	AAC for AAC operations. * Tenants and contractors are responsible for their own activities.

Function	Responsibility
Containment of chemicals, fuel and oils	AAC for AAC operations (staff and contractors). * Tenants and their contractors are responsible for their own activities.
Awareness and training	
Promoting awareness of environment protection and management requirements amongst AAC personnel and tenant representatives.	AAC management
Promoting environmental awareness and compliance within each tenant's operation	* Each tenant, with assistance from AAC and AEO
Induction of AAC personnel	AAC management
Training of AAC personnel	AAC management
Induction of tenant personnel	* Each tenant
Training of tenant personnel	* Each tenant
Ensuring that AAC is conversant and compliant with relevant legislation, including changes	Airport Planning & Compliance Manager
Ensuring that tenants are aware of changes in environmental management requirements	AAC and AEO
Ensuring compliance with legislation	AAC for AAC activities and works * AEO for tenants
Monitoring and review	
12 monthly reviews of AAC operations, surface water and groundwater	AAC
Cyclical tenant reviews, with the review schedule determined according to an assessment of risk to the environment (12 monthly for tenants with hazardous materials on site)	AAC and AEO
Annual Airport Environment Performance report to DIRD.	AAC
Revision of EMP documentation to reflect findings of reviews of AAC operations and tenancies	AAC management
Maintenance of records of overall condition of airport environment	AAC
Monitoring and reporting of emissions from tenancies	* Each tenant is responsible for monitoring and reporting on their emissions. Such reports to be made available to AEO/AAC on request.
Monthly AEMF meetings between the AAC, AEO and ABC.	Minutes of meeting maintained by AAC
Emergency response	
Spill containment airside, and from AAC operations	AAC
Spill containment within tenancies	* Each tenant
Spill containment on common airport land (where caused by a person other than a representative of the AAC).	The person causing the spill (enforced by AAC and the AEO)
Document control	
Ensuring that the key users of the EMPs have up to date copies of the EMPs	Airport Planning & Compliance Manager.
Acquiring and disseminating environmental management information	Airport Planning & Compliance Manager with assistance from AEO.
Maintaining EMPs up to date (from replacement pages provided by AAC)	Each person on the Document Distribution Register.

15.5 ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS

The potential impacts of airport activities (to the extent these are required to be addressed by this strategy) on aspects of the environment is summarised in the table below.

The activities have been grouped into three phases:

- construction;
- operation (AAC and tenants); and
- emergency action.

Table 7 Summary of environmental aspects and potential impacts

Activity	Aspect	Impact or potential impact
Construction activity		
Transportation of machinery and materials	Increased traffic on nearby roads	Nuisance noise
	Dirt on roads	Nuisance dust
		Disruption to local traffic
		Possible importation of weeds and plant pathogens
		Possible importation of Fire Ants
		Contamination of stormwater
		Pollution of surface water
Operation of machinery/equipment on site	Increased noise levels	Nuisance noise
	Production of dust	Air pollution
		Nuisance dust (possible impacts on aviation and ground based activities, on and off airport)
Plant and vehicle wash down	Discharge of wash down water contaminated with oils, fuels etc	Contamination of soil, surface water and/or groundwater
		Possible spread of weeds and plant pathogens
		Possible importation of Fire Ants via contaminated plant or vehicles
Site clearance	Vegetation removal	(Low) potential loss of habitat and/or significant plant species along Oxley Creek
	Heritage values	Potential disturbance of heritage or archaeological sites
	Surface destabilisation	Sediment pollution of receiving waters (Oxley Creek)
		Nuisance dust (possible impacts on aviation and ground based activities, on or off airport)
Demolition of buildings, structures or plant containing asbestos	Human health	Potential for impacts on health if asbestos material is not appropriately contained and/or disposed of.
Excavation/levelling and construction of stormwater drains	Increased sediment discharge in runoff from surface disturbance	Sediment pollution of receiving waters
On site storage of fuel and oil	Major spillage or leakage of fuel	Soil, surface water and/or groundwater contamination

Activity	Aspect	Impact or potential impact
Refuelling plant and vehicles	Minor spillage or leakage of fuel	Soil, surface water and/or groundwater contamination
Concrete work on site	Increased suspended matter in stormwater runoff	Sediment pollution of receiving waters
Landscaping works	Flora and fauna	Importation or spreading of soil or plants contaminated by Fire Ants
Earthworks	Increased suspended matter in stormwater runoff	Sediment pollution of receiving waters
	Release of acid sulphate soils-potentially found at or below the 5m (AHD) contour	Degradation of Oxley Creek environment
Airport operation (AAC and tenants)		
Storage and use of chemicals, fuel, oils (including hazardous and dangerous chemicals)	Escape of chemicals to the environment from spillage or leakage	Health impact on site personnel and neighbours Potential pollution of soil, air, surface, and/or groundwaters.
Aircraft wash down	Discharge of wash down water contaminated with oils, fuels etc	Contamination of soil, surface water and/or groundwater
General rubbish from airport activities	Production of general waste and litter	Potential stormwater contamination
		Potential visual pollution
	Tracking of waste from generation to disposal	Potential nuisance or hazard to aviation activities
Hard rubbish generated by airport activities	Disposal of waste off site	Use of landfill space
Generation and handling of regulated waste	Containment of waste	Potential occupational health and safety issue
	Tracking of waste from generation to disposal	
Ground running of aircraft	Aircraft noise	Nuisance noise in nearby areas
Industrial plant and equipment used on site.	Machinery noise	Health risk to site workers
		Nuisance noise in surrounding areas
Maintenance work, office operations and staff facilities	Production of general waste and litter	Use of landfill space
Activities with emissions to air.	Discharge of pollution to the atmosphere	Potential effects on air quality
Handling of dangerous goods	Accidental discharge via spill	Pollution of soil, air, surface water and/or groundwater
Handling of hazardous goods	Accidental discharge via spill	Pollution of soil, air, surface water and/or groundwater
Emergency actions		
Incidents or accidents causing material spills	Escape of materials to the environment from spillage or leakage	Pollution of soil, air, surface water or groundwater
Identification of Fire Ant in plants or soil on airport	Introduction of Fire Ant via imported plants or soil	Containment and destruction in accordance with government requirements

As part of the ongoing management of the airport environment, site and activity specific assessments are required. The methodology for doing this is provided in the EMPs.

15.6 ENVIRONMENTAL OBJECTIVES AND TARGETS

Objectives and targets for each aspect of the airport environment are set out in the sections that follow.

Actions and the timing of their implementation are summarised in the Airport Environment Protection Action Plan in Appendix D.

15.7 TENANT REVIEWS

AAC will identify environmental issues on the airport by conducting regular reviews of its own operations and works and those of its tenants on a cyclical basis.

In the case of tenants with hazardous goods, the reviews will be undertaken on an annual basis. The timing of reviews for other tenancies will be determined from an assessment by AAC of the likely risk to the environment of the tenant activities.

The reviews will identify:

- level of compliance with environmental regulations, guidelines or standards;
- any unacceptable work practices;
- any opportunities for minimising the use of natural resources or generation of waste; and
- any general environmental training that may be required by the organisation being reviewed.

Each environmental review will identify any operations or works that are, or could cause a breach of the regulations and also identify possible environmental improvements.

Issues identified by previous environmental reviews will also be checked to ensure that they have been appropriately addressed.

Environmental review results will be compiled into a summary report and where required, management plans will be devised. For each case where an environmental issue is identified, the following key steps will be taken:

- following clear definition of the issue(s), a priority will be assigned, based on AAC's assessment of the environmental risk posed by the aspect;
- an objective and target(s) will be developed detailing what needs to be achieved;
- a management plan will be developed showing how objectives and targets will be achieved, who is responsible for ensuring the necessary actions are taken, and the timing of that action; and
- the achievement of the management plan actions will be monitored, and AAC personnel advised of this.

Where the issues relate to tenant activities, AAC (with the AEO as appropriate) will liaise with the tenant to ensure that they take all necessary action to bring their operations and/or works into conformity with legislation, standards, and guidelines.

15.8 ENVIRONMENTAL MANAGEMENT PROCEDURES

Environmental Management Procedures (EMPs) have been prepared by AAC to manage the environmental effects of operations and works on the airport.

The EMPs identify a range of activities likely to take place at Archerfield Airport, the aspects of the environment that might be affected by these activities, and the potential impacts of these activities. Objectives and targets are also described.

Procedures

The EMPs currently include the following procedures:

- Procedure AA1-Environmental assessment of new tenancy or lease renewal;
- Procedure AA2-Communication and consultation;
- Procedure AA3-*Emergency preparedness and response*;
- Procedure AA4-*Minor spill response*;
- Procedure AA5-*Environmental awareness and training*;
- Procedure AA6-*Tenant environmental reviews*;
- Procedure AA7-*End of lease tenant environmental review*; and
- Procedure AA8-Assessment of environmental effects of new works.

Forms

The EMPs include the following standard forms:

- ENV-01 Tenant Information Form;
- ENV-02 Environmental awareness and training record;
- ENV-03-Environmental complaint;
- ENV-04-Environmental accident/incident report;
- ENV-05-Review of environmental non conformance; and
- ENV-06-Environmental management checklist for new works.

Review

The procedures and forms in the EMPs are subject to ongoing review and may change over the life of this Strategy.

Information for tenants

On request, relevant parts of these operating procedures will be provided to airport tenants carrying out similar activities to assist them with environmental compliance.

The AAC EMPs provide a starting point for specific EMPs to be developed by tenants for their construction or operational activities. AAC will encourage tenants to work with AAC and the AEO to formulate EMPs to meet their environmental management obligations.

15.9 ENVIRONMENTAL TRAINING

AAC

Existing AAC personnel

AAC has in place an internal communication system that provides frequent forums for disseminating relevant information about environmental management issues and responsibilities. This comprises:

- weekly management meetings attended by the Airport General Manager, Airport Operations and Technical Officer, Airport Planning & Risk Compliance Manager and Airport Foreman; and
- monthly staff meetings (involving AAC administration, operations and management personnel).

The training of AAC personnel focuses on improving awareness of responsibilities and liabilities under the AES; relevant State, and Federal environmental legislation; regulations and guidelines.

Training also assists personnel to familiarise themselves with the company policy, the management system and the environmental risks on the site.

New AAC personnel

All new AAC personnel are provided with an overview of the environmental issues relating to the airport; AAC's environmental policy, strategies, and procedures; and their role and responsibility in addressing those issues as part of their induction. Refresher awareness training is provided for all staff on an annual basis.

Contractors

The Airport EMPs set out procedures for ensuring that all potential effects of new operations or works are considered by AAC prior to commencement. Where required, Environmental Management Plans will be prepared and form part of the specification for the works (or management of the operation).

Any contractors carrying out environmentally sensitive activities on behalf of AAC will be required to demonstrate that they have completed appropriate

skills, experience and management systems to successfully address relevant environment protection requirements.

Contractors will need to have in place appropriate environmental management procedures and personnel will be required to undergo relevant training.

The specific requirements will be highlighted in the project specification. All contractors must complete the Contractors Induction which includes the environmental management requirements.

Tenants

Tenants and their employees also need to have an understanding of the 2017 AES.

AAC will provide all tenants with access to the AES and will require that all tenants:

- provide their staff and contractors with awareness training of the AES, and
- provide further training on specific aspects, these being principally determined through the environmental reviews AAC undertakes at each tenancy.

15.10 EMERGENCY PREPAREDNESS

Archerfield Airport has developed *Airport Emergency Procedures* through a committee that includes the Police, Fire Brigade and Ambulance Services.

Emergency procedures are currently in place to deal with incidents which could impact on the environment, such as spills. AAC ensures that its personnel are familiar with these procedures and the location of emergency equipment.

Procedure AA3-*Emergency preparedness and response* in the EMPs details the methodology to be followed.

The need for tenants to maintain emergency equipment on their sites, develop emergency procedures, and ensure that staff are aware of the proper procedures will be identified during site environmental reviews.

15.11 INCIDENTS

Any incident on the airport that is within the responsibility of AAC will be managed in accordance with Procedure AA3-*Emergency preparedness and response*.

If an environmental incident occurs the details will be recorded on Form ENV-04 *Environmental accident/incident report* in the Airport Environmental Management Procedures.

The AEO will be contacted immediately. The incident will be investigated by AAC and a formal internal reporting, investigating and corrective action procedure initiated in accordance with the EMPs.

The AEO will be kept informed of all findings. If the incident has the potential to cause off site effects, the State Department of Environment and Heritage Protection (DEHP, formerly DERM) and Brisbane City Council will also be advised.

The AEO will also be advised if routine monitoring indicates that an excessive discharge or level of pollutant is present.

Incident reporting

Any major environmental incidents which occur on the site, such as chemical spills, will be investigated by AAC and reported to the AEO.

Depending on the nature of the incident, the State Department of Environment and Heritage Protection may be informed of the incident, and may also be involved in consequential management measures.

This information will also be reported to DIRD in the annual report.

15.12 MANAGEMENT OF NEW FACILITIES

15.12.1 Application requirements

AAC will require new tenants or proponents of new aviation or non-aviation facilities or activities to apply for approvals as provided for in the *Airports Act, 1996*.

In addition to the requirements of the Airport Building Controller, the application for approval will need to detail, as appropriate:

- the activities and operations proposed, in accordance with the Archerfield Airport EMPs;
- any chemicals to be used or stored on the site including type and maximum quantities;
- evidence that the proposal meets any applicable legislative requirements and guidelines for the construction and operation of the activity or site; and
- evidence that the proposal will meet any applicable workplace health and safety, storage and placarding requirements.

Procedures for this and relevant forms are set out in the Airport EMPs.

These include:

- ENV-01 Tenant Information form; and
- ENV-06 Environmental management checklist for new works.

The information provided with applications will assist AAC and the tenant/proponent to identify all potential environmental issues or impacts, and to also clarify applicable legislative requirements and best practice management guidelines that will be applied. If required, the AEO will be provided with this information.

15.12.2 Assessment

From an environmental perspective, the assessment of new works will consider the implications of the proposal for:

- airside operations;
- existing land uses on and adjacent to the airport, including through the emission of noise, dust or odour;
- existing infrastructure and utility services, and any connections proposed during and following construction;
- efficient use of water and electricity;
- access to, from and within the airport;
- significant native flora and fauna;
- heritage values (pre and post contact);
- potential risk of soil or air pollution;
- noise impacts;
- groundwater, including potential changes to groundwater levels on or off airport, and/or water quality;
- surface water, including potential changes to peak volumes entering existing drainage lines, diversion of existing stormwater flows and/or impacts on water quality;
- containment of asbestos, where works relate to buildings or plant listed in the airport asbestos register;
- the potential for the works to result in the introduction or spreading of Fire Ants; and
- the appearance of the site and the airport.

If on reviewing the proposal potential environmental impacts are identified, AAC will work with the proponent to identify how impacts can be mitigated. The preparation of a Site Environmental Management Plan for the construction and/or operational phases may also be required.

15.12.3 Consultation

All new proposals for the site will be reviewed by AAC against the AES, the Airport Master Plan, and other relevant policies, guidelines or standards.

Where the *Airports Act 1996* requires consultation with the wider community, AAC will facilitate this.

The AEO will be involved in assessing and advising on the environmental aspects of any major new developments on the airport site, including any Environmental Management Plan for the construction or operational phases.

If in the opinion of AAC, the development could result in a significant off-site impact, AAC will identify and consult with relevant stakeholders including Brisbane City Council, and possibly State agencies and/or the community and their comments taken into consideration.

Information concerning new proposals will be provided to the AEO, in accordance with the Airport EMPs.

All comments received will be reviewed and considered by AAC before deciding on whether the proposal should proceed, and if relevant, under what conditions.

Any significant changes to airport operations will be reviewed in accordance with prevailing DIRD's environmental requirements for new airport development.

Where the *Airports Act 1996* requires consultation with the community (such as in the case of a Major Development Plan), AAC will initiate an appropriate consultative process. Comments received by external parties will be taken into account by AAC when deciding whether the proposal should proceed.

15.12.4 Leasing conditions

For all new leases, conditions will be included that ensure that facilities are constructed and operated in accordance with the AES and relevant environmental requirements.

Following construction of the facility, AAC will inspect the premises and verify compliance with any environmental requirements stipulated in the development approval.

Prior to lease expiry, termination, transfer or change of use the AEO will, where there is reason to suspect soil contamination, ensure the sublessee, licensee or occupier, investigates the site pursuant to the requirements of the *Airport (Environment Protection) Regulations* in particular Part 6.07.

AAC undertakes prelease or entry condition reports and exit condition reports on tenancies serving as benchmark reports to ascertain asset, site and environment conditions before and at the expiry or transfer of a lease.

15.13 NEW OPERATIONS AND WORKS

New operations will also be reviewed prior to and following their establishment, to ensure operations are conducted in a proper fashion and do

not result in a breach of any legal requirements and comply with the requirements of this Strategy.

The EMPs include:

- Procedure AA8-Assessment of environmental effects of new works, and
- Form ENV-06 Environmental management checklist for new works.

These set out AAC's requirements for management of new operations or works by AAC.

15.14 NON-CONFORMANCES

AAC's role

In administering the Archerfield Airport environmental management system for AAC operations or works, AAC is responsible for detecting non-conformances, developing appropriate corrective and preventative actions, and ensuring that such incidents do not recur.

The following types of non-conformances can occur on the site:

- breach of an applicable Act or Regulation;
- failure to follow a formal procedure;
- non-achievement of a formal target; or
- an environmental incident.

Actions by AAC

In the instance of a non-conformance relating to AAC operations or works, the AAC is responsible for carrying out the following actions:

- recording details of the non-conformance using the form ENV-05 *Review of environmental non-conformance*;
- investigating and identifying the reason for the non-conformance;
- developing an appropriate corrective and preventative action to avoid future non-conformance;
- ensuring the corrective and preventative actions are implemented in accordance with agreed EMPs or other relevant guidelines; and
- initiating incident reporting procedures.

Following an incident, the findings of the investigation and development of the corrective and preventative actions will be provided to the person/s involved in the non-conformance and the person/s carrying out the necessary preventative and corrective actions.

Typically, the results of a non-conformance investigation may result in one or more of the following actions:

- amendment of the Airport Environment Protection Action Plan;

- amendment of the relevant Environmental Management Plan;
- amendment of an existing environmental management procedure;
- development of a new procedure;
- additional training and instruction;
- new capital works; and/or
- involvement of the AEO or other relevant government authorities.

15.15 COMMUNICATION

Successful management of the airport environment requires appropriate and workable communication on environmental issues, management measures, and achievement of environmental objectives and commitments.

This communication includes:

- communication within the AAC organisation;
- communication with airport tenants;
- communication with local, state and Federal government via the Planning Coordination Forum (PCF) meetings which occur three times a year;
- communication with other interested parties external to the airport, such as the community and regulators; and
- ongoing liaison with other airports.

Communication procedures are set out in Procedure AA2-*Communication and consultation* in the airport EMPs.

Information and training for AAC personnel

AAC will ensure that its personnel are informed about existing and emerging environmental issues by:

- conducting environmental awareness training in accordance with its Environmental Management Procedures;
- making available to AAC operational personnel the results of annual environment reports, relevant environmental reviews and any management plans; and
- involving relevant personnel in the review of existing environmental management plans and procedures, and the formulation of new procedures.

Communication with tenants and operators

Airport tenants and operators will be kept informed about new and emerging environmental issues and requirements via a variety of methods, including:

- newsletters;
- discussions during the cyclical tenancy reviews;

- discussions at the time of applications being made for new works, or lease renewal;
- information provided on the Airport web site; and
- email.

Airport Environment Management Forum

AAC meets with the AEO and the ABC on a quarterly basis, or at other times as required for individual projects.

The management forum:

- disseminates information to relevant stakeholders concerning environmental aspects of new proposals, proposed environment management plans, etc.;
- discusses current environmental issues and management practices, and their application to Archerfield Airport;
- considers and makes recommendations to AAC on future amendments to the Airport Environment Strategy and Airport Master Plan;
- assesses and makes recommendations on the EMPs;
- recommends training and awareness programs; and
- makes recommendations to AAC on preventative initiatives that could be implemented.

AAC currently provides a monthly report for the ABC and AEO on AAC environmental and building related activities.

Communication with government departments and regulatory agencies

AAC communicates regularly with DIRD, the AEO, Brisbane City Council, and State and Federal government. This includes liaison with stakeholders on issues arising from, or potentially impacting on the operations at the airport.

Procedures for this communication and consultation are set out in Procedure AA2-*Communication and consultation* in the airport EMPs.

15.16 COMPLAINTS

Complaints from the community or other parties (except the regulatory bodies) are recorded in the AAC *Environmental and Complaints Register*.

Any environmental complaints received concerning an operation on the site will be recorded on Form ENV-03 *Environmental complaint* and dealt with promptly. The complaint will be investigated and appropriate action taken to resolve any issues identified.

The AEO will be advised of complaints as appropriate.

A summary of environmental complaints received and actions taken will be reported to DIRD on an annual basis.

16 Environmental conditions and actions

16.1 OVERVIEW

Consistent with the *Airports Act* and AAC's *Environmental Management Procedures*, the airport environment is described in the following categories:

- heritage;
- flora and fauna;
- noise;
- emissions to air and ozone depleting substances;
- surface water;
- groundwater;
- soil contamination;
- hazardous materials and waste management; and
- use of natural resources and energy.

The following sections provide, for each aspect of the airport environment:

- objective(s) for environmental management;
- an overview of existing conditions;
- identification of potential impacts of on-airport activities or developments;
- proposed measures to manage those impacts;
- a summary of achievements for the term 1998-2016; and
- a summary of targets for actions for the period 2017-2022.

Actions for the planning period for the 2017 AES are summarised in the *Airport Environment Protection Action Plan*, in Appendix D.

16.2 HERITAGE

16.2.1 Objective

To identify and appropriately manage cultural heritage values on the airport

16.2.2 Existing conditions

In 2001 AAC completed the *Cultural Heritage Assessment and Management Plan: Archerfield Airport, Brisbane* (Bonhomme Craib and Associates). The brief was prepared in consultation with the Queensland Department of Environment and Resource Management (now DEHP).

The assessment and management plan address both Aboriginal heritage and European settlement.

Archaeology

Archerfield's original inhabitants were the Yerongpan clan who spoke a dialect of the Turrbal language. The first Europeans arrived in the Acacia Ridge area in the 1820s but the area remained mostly rural well into the 20th Century.

The airport site has been highly disturbed since European occupation of the area as a result of land clearance, stock grazing, and establishment of the airport in the 1930s.

The 2001 heritage assessment included a search of relevant literature, registers, and other data; identification and consultation with Aboriginal traditional owners, Native Title claimants and other indigenous interest groups; archaeological field surveys and preparation of recommendations and a Cultural Heritage Management Plan for the airport.

The study did not locate any sites or features of cultural heritage significance. It noted however that retention of the Oxley Creek margins as a buffer area (as shown in the Airport Master Plan) will protect any features that may exist in this part of the site.

European heritage

The airport developed in four historical phases, being *Pastoral* (pre 1927); *Development of air transport* (1927 to 1939); *World War II* (1940 to 1945); and *Post war*.

The airport site was originally purchased in 1855 by Thomas Grenier, publican of the Brisbane Hotel in Russell Street, South Brisbane. The land was lightly timbered alluvial soil, and some of the best grazing land in the district. The land was subdivided into three family farms in 1862. Grenier died in 1877 and was buried in God's Acre cemetery. The farms were sold to the Beatty family in the late 1890s and early 1900s.

In 1927 Qantas Airways test landed a DH-61 on Franklin's Farm which was located at the western side of the airport. Brisbane City Council decided that the site was suitable to be an airfield, and the Government initially acquired about 121 hectares (300 acres) of land in 1929. Two gravel air strips 1500 metres long were built and the airfield started operations. More land was purchased in 1930, 1936, 1942 and finally the cemetery (God's Acre) in 1946.

In the 1930s Qantas moved their operations from Eagle Farm to Archerfield after the first hangars were erected at Archerfield. Australian National Airways (ANA) and Trans Australia Airlines (TAA) both used Archerfield during the 1930s. The Queensland Aero Club, established in 1919, moved from Eagle Farm to Archerfield in 1931.

The Airport Terminal and Administration building was built in 1941 when Archerfield was the main airport in Brisbane. In the Second World War Archerfield became a base for the RAAF, and the United States Fifth Air Force and the Royal Dutch Air Force.

American B-17 Flying Fortresses, Kittyhawks, Dakotas and Dutch Mitchell bombers were at Archerfield. Large hangars were built on both sides of Beatty Road. There are examples of those remaining today along Kerry Road (on the eastern side of Beatty Road, off airport).

The Mustang and Vampire aircraft of the RAAF 23 Squadron were based at Archerfield until September 1955.

Once Eagle Farm became established as the main civilian passenger centre and the RAAF moved to Amberley, Archerfield became a thriving light aircraft centre.

The Bonhomme Craib report identifies a number of buildings and items on airport that are of historical interest and assist with interpretation of the past use and development of Archerfield.

Archerfield Airport was Brisbane's major airport from 1930 to 1947, and has been Brisbane's main general aviation airport since 1947. It played a significant role in the development of Australia's fledgling domestic and international airmail networks, and in controlling air traffic and operations during World War Two.

Items of interest include:

- Hangars 1-6;
- Fire Station (building 13);
- Shell kiosk (building 16);
- Toilets (buildings 17, 18 and 19);
- Dope building (building 21);
- Building 25;

- Airport Administration Building/Terminal (building 28);
- Building 107; and
- God's Acre cemetery.

Of these features, God's Acre Cemetery and the Airport Administration/Terminal building have been assessed as having sufficient value to be included in a heritage register.

God's Acre Cemetery

God's Acre Cemetery is located on the corner of Beatty Road and Grenier Drive, at the main entry to the airport. This historic site is one of Queensland's oldest cemeteries. It is shown in Figure 4 *Existing airport layout*.

The site was established by the early settler and South Brisbane Publican, Thomas Grenier on the family property after the death of their 16 year-old son. It was dedicated as a cemetery in 1859, just before Queensland became a separate state. 2009 marks 150 years since the cemetery was established.

About 200 people including descendants of the Grenier family and other members of the local community are buried in the cemetery, with the last funeral held there in 1980.

The land was acquired by the Government in 1946. It represents an historic link to the pioneers of the district, and a valuable resource for interpreting the evolving history of the local community.

The cemetery was previously on the Queensland Heritage Register but was removed in 2004 as the Queensland legislation is not applicable to Commonwealth sites.

The cemetery was assessed by the Australian Heritage Council for inclusion in the Commonwealth Heritage List.

The assessment found that the site satisfied two criterion for listing. The following is an extract from the assessment, as published on the Australian Heritage Database (www.environment.gov.au).

> ***Criterion: A Processes***
>
> *God's Acre Historic Cemetery was among the earliest cemeteries established in Brisbane, and is now one of the oldest surviving. Of nearly 400 cemeteries in Queensland, most are in rural areas, and God's Acre Historic Cemetery is unusual as a former rural cemetery in metropolitan Brisbane.*
>
> *The place is uncommon in that it was a privately-established burial ground in the Brisbane area. It illustrates some of the principal characteristics of a small burial ground, including a lack of denominational divisions.*
>
> *It is associated with many of the earliest pioneering families in the Cooper's Plains /Oxley district and their descendants, and provides important evidence of an early Queensland farming community.*

Criterion: G Social value

There is broad community support for the God's Acre Historic Cemetery, both from descendants of those interred in the cemetery, and from people with no direct ancestral link to it. An annual 'Day of Remembrance' draws significant numbers to the cemetery.

The place has broad community support, as is evidenced by the involvement of the Archerfield Airport Corporation, the Brisbane City Council and the Commonwealth, and is a valuable resource for interpreting the evolving history of the local community. A historical education pack about the cemetery is used in local schools.

The Minister responsible for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) decided that the cemetery has Commonwealth heritage values with respect to Criterion A and G, above. The Minister decided not to include the cemetery on the Commonwealth Heritage List as the heritage management regime implemented by the *Airports Act* and regulations, and under the EPBC Act provided the appropriate mechanism for conservation of the cemetery.

Airport Administration Building/Terminal

This building dates back to the 1940s and is still used today as the airport terminal. AAC owns the building.

Plans for the building were first drawn up in 1936, but construction did not commence until 1941. The terminal housed the airline companies, the Civil Aviation Department, the Flight Checking Department, the weather bureau and Airport control officials.

Facilities included a restaurant, restrooms, lounges, and a roof garden and reception hall. A control tower originally constructed on top of the building has since been dismantled.

The building is included in the Commonwealth Register of the National Estate. The Register was closed in 2007 as part of the rationalisation of heritage lists as agreed between the States, Territories and Commonwealth in 1997.

The Register is an archive of information about more than 13,000 places throughout Australia. It has no statutory effect, but provides useful information which can be taken into account in any future decisions about the conservation of the heritage values of the Airport Administration Building.

The building was also previously on the Queensland Heritage Register, but was removed from this in 2004 as Queensland heritage legislation is not applicable to Commonwealth land.

The building was assessed by the Australian Heritage Council for inclusion in the Commonwealth Heritage List.

Consistent with the decision on God's Acre, the Minister responsible for the EPBC Act decided that the building has Commonwealth heritage values and that the heritage management regime implemented by the *Airports Act* and

regulations, and under the EPBC Act provided the appropriate mechanism for conservation of the building.

16.2.3 Potential impacts

The potential impacts on heritage values would stem from:

- demolition or inappropriate alterations to buildings or structures;
- lack of maintenance.

16.2.4 Management

AAC will continue to support the work of The Friends of God's Acre Inc. which is engaged in conservation of the cemetery.

It will consider the findings and recommendations of the *Cultural Heritage Assessment and Management Plan: Archerfield Airport, Brisbane* (or any revised Cultural Heritage Assessment & Management Plan) in any decisions relating to development of sites or features of heritage value.

AAC is sensitive to the need to retain historically significant landmarks where adaptive uses can be found or their removal would otherwise contribute to the significant loss of past history.

AAC also recognises that a number of older buildings on the airport are no longer suited to modern aircraft and are inefficient in terms of their layouts for modern aviation related purposes.

In order to ensure Archerfield continues to attract aviation tenants of a high calibre and the airfield continues to regenerate, development options will be canvassed when approached by prospective aviation tenants.

Each development will be assessed on an individual basis, taking into account the tenant's requirements, the historic significance of the building, its potential for adaptive reuse, refurbishment, removal or relocation. Buildings containing asbestos will be handled in accordance with the AES.

The appropriate agencies will be consulted prior to either approving works by tenants of buildings of recognised historic significance, or undertaking works that may impact on these sites or features.

AAC will use the *Cultural Heritage Management Plan* as a framework to guide such decisions.

16.2.5 Achievements 1998-2016

Completion of the *Cultural Heritage Assessment and Management Plan: Archerfield Airport, Brisbane* by Bonhomme Craib and Associates for AAC in 2001.

AAC has over the past 18 years spent more than $3.8M on heritage conservation initiatives at Archerfield. This includes purchase of the historic Terminal Building, restoration of the former Shell Building, refurbishment of the ground, first and second levels of the Terminal Building in 2009 and 2015, and repainting the exterior walls and waterproofing the external surfaces of the Terminal Building.

The upper floors of the Terminal building are now used for the airport administration offices.

AAC has supported the conservation work being undertaken by the Friends of God's Acre Inc., through donations and contribution of labour and provision of specialised equipment for maintenance works.

AAC has encouraged enjoyment and pride in the airport by opening the Terminal building and surrounds to the public on Brisbane Open House days where they can view memorabilia from the past.

16.2.6 Implementation targets for the 2017 AES

Continue to support the conservation work by the Friends of God's Acre Inc. and seek the cooperation of all levels of government and the broader community in improving the site and promoting it to the local community and visitors.

Consult with the relevant agencies prior to either approving works by tenants of buildings of recognised historic significance, or undertaking works that may impact on these sites or features.

Review and update the Cultural Heritage Management Plan to reflect legislative changes and provide to DIRD for its information.

16.3 FLORA AND FAUNA

16.3.1 Objectives

To identify and conserve significant indigenous flora and fauna.

16.3.2 Existing conditions

History

The land that the airport occupies was cleared by early settlers and used for farming.

In 1931, with the exception of the Oxley Creek environs the area was an open grassed paddock and since then, the airport has been managed mainly as a grassed area, with extensive mowing and removal of large trees where these infringe on obstacle clearance standards.

Trees and shrubs grow along the banks and flood area of Oxley Creek, and there is planted vegetation around the built up areas of the airport.

Oxley Creek context

Oxley Creek Catchment has an area of approximately 260 square kilometres. The creek is about 50 kilometres long and flows from the Flinders Peak Region to the Brisbane River.

The airport is in the lower to middle reaches of the creek catchment, approximately 500m upstream of the confluence of the Oxley and Blunder Creeks. This part of the Oxley Creek catchment is urbanised, and the land along the creek is used for housing, industry, open space, and sand extraction.

The Creek is part of a regional open space and habitat corridor that runs through the southern part of Brisbane to the Brisbane River.

In the general locality (and upstream of) the airport there are some remnant paperbark (*Melaleuca nodosa*) wetlands which before European settlement would have covered most low-lying areas of the catchment and provided habitat for waterbirds, frogs, and fish.

Riverine or vine forest was the dominant vegetation on creek banks, and 'dry' rainforest grew on the well-drained floodplains. In poorer soil, a mixture of Eucalypt and wetland species grew.

In recent years Brisbane City Council has secured the land on the south side of Oxley Creek immediately to the south of the airport (extending upstream of the confluence of Oxley and Blunder Creeks) and has designated this as an 'environmental protection area' in the Brisbane City Plan. This action was taken following an unsuccessful proposal to undertake sand extraction in that area.

The south western corner of the airport has a frontage of approximately 550 metres to Oxley Creek.

Along the creek banks there is riparian vegetation that makes a contribution to the landscape and ecological values of the creek. The balance of the area is largely clear of vegetation. It is managed by grazing and occasionally slashing, consistent with current practices on many other properties along this part of the creek.

The area accommodates also important stormwater management works, including a major stormwater detention basin, and drainage outfalls.

With this in mind, the land has been designated as a 'creek buffer' in Figure 2 *Master Plan vision*, and zoned *Conservation* in Figure 18 *Airport land use zoning.*

Flora and fauna significance

In May 1997 the (then) Queensland Environmental Protection Agency (Stewart 1997) was commissioned by the Airport to advise on flora and fauna values.

The study included site surveys and literature reviews. It concentrated on the Oxley Creek as, due to past and current use, and the relationship of the creek to the broader regional environment, this area was assessed to have the highest probability of containing flora and/or fauna of regional or higher significance.

The study found that:

- the vegetation of the Creek and surrounding area is considerably disturbed with numerous plant and weed species and substantial clearing of native vegetation;
- a total of 45 vertebrate species are known to occur along Oxley Creek. None are vulnerable (Schedule 3) or rare (Schedule 4) species under the *Queensland Nature Conservation (Wildlife) Regulations* 1994;
- two species of migratory birds or birds in danger of extinction, Little Curlew (*Numenius minutus*) and Sharp-tailed Sandpiper (*Calidris acuminata*) are species closely related to the short grass and wetlands of the area;
- a further species of international significance, the Rainbow Bee-eater (*Merops ornatus*) may breed in the sandy banks of the Creek;
- no mammals, frogs or reptiles were recorded along Oxley Creek during the survey; and
- no threatened or endangered species of fauna were identified.

It concluded that the creek provides essential habitat for some native fauna, but is unlikely to support populations of regional significance. Three species of local significance and three of international significance are recorded along or in close proximity to the creek.

The (then) Queensland Department of Natural Resources and Water advised in June 1999 that:

- a more comprehensive survey would probably identify frogs, reptiles or mammals in Oxley Creek;
- migratory waders *Numenius minutus* and *Calidris acuminata* are listed by DNR as being in danger of extinction. This occurrence is very transient as waders prefer coastal habitat. Waders are most likely to visit the creek during times of drought. This requires further investigation;
- historically there is a high possibility of the rare frog species *Litoria brevipalmata* occurring within the Oxley Creek catchment. If it occurs within the area its presence would be significant
- the vegetation description suggests that the existing habitat is unsuitable for any scheduled species other than *Litoria brevipalmata*; and
- conservation of remnant fauna should be concentrated along Oxley Creek.

It is noted that some species including the Little Curlew, Sharp-tailed Sandpiper, and the Rainbow Bee-eater are currently listed under the EPBC Act.

Any actions that interfere with listed threatened species, listed migratory species, or listed marine species may require a permit under the Act. This will require further investigation and assessment if there are any proposals that could include actions that might impact on species listed under the Act.

Pest animals

The airport has not been subject to excessive pest animal populations, with the exception of Fire Ants which were confirmed in 2001 and have been subject to a rigorous ongoing control program since then.

16.3.3 Potential impacts

The main potential impacts of airport activities on flora and fauna values in Oxley Creek are:

- altered surface water flow patterns (including peak flows) entering the Creek;
- water quality decline, in particular through sedimentation; lowering of pH; changes in temperature; excess nutrient loads; and pollution by hydrocarbons or metals;
- pollution from heavy industry and waste processing;
- weed and pest animal invasion; and
- vegetation removal or other changes to habitat in proximity to the creek.

16.3.4 Management of impacts

The riparian zone of Oxley Creek is likely to provide habitat for frogs, reptiles, birds and mammals, and these values have the potential to improve over time, particularly following habitat restoration by Brisbane City Council in 2014 on the land on the south side of Oxley Creek.

Identification of appropriate management measures for the creek frontage will also be addressed prior to any significant new development of land next to Oxley Creek.

AAC will continue to facilitate the Fire Ant control measures being implemented by the State government.

The use of mainly indigenous plants in landscaping works will provide some additional habitat opportunities, and reduced reliance on watering when compared with exotic species.

Bird and bat strike is a significant issue for airport management, so measures need to be implemented to manage bird and bat habitat to minimise the risk of this occurring.

16.3.5 Achievements 1998-2016

AAC has maintained the airport grounds through regular mowing, control of weeds and maintenance of landscaped features on the site.

AAC has also worked with tenants to ensure that facilities on airport are established and maintained in a tidy manner.

Fire Ant control by helicopter and motorcycle broadcasting has since 2001 been undertaken by the State government which is proactive and conducts regular inspections of the airport grounds, and carries out spraying as required.

Extensive stormwater management works were implemented in 2003-2004 in association with developments in the Beaufighter Avenue/Mortimer Road, and Central precincts. These works have replaced eroding open drains with a system of pipes, grassed swales and detention facilities. The new drainage system protects water quality and manages the peak quantity of water discharged to Oxley Creek. It has the potential to improve the habitat values of the creek over time.

Additional stormwater drainage works have been implemented with the construction of piped drainage under Runway 04L/22R and construction of a detention basin complex to the north-west of this. Extensive maintenance and restoration of stormwater drains on the southern and eastern side of the airport was also carried out in 2015/2016

New landscaping work was carried out alongside the Grenier Drive entrance road and along Ditchmen Avenue in 2012. This included replacing existing inappropriate vegetation with Tuckeroos. The areas around Hangars 5 and 6, and Buildings 8 and 9 have also been landscaped with appropriate plants. The newly landscaped areas have successfully improved the presentation of these areas.

16.3.6 Implementation targets for the 2017 AES

The area next to Oxley Creek serves as a buffer between the aviation activities on the airport, and the Oxley Creek, and is also developed with significant drainage infrastructure that assists with managing the stormwater discharges from the airport to the creek.

In recent years BCC has made significant commitments to plan, and implement initiatives for managing the natural values of Oxley Creek, including the section in proximity to the airport.

AAC will continue to liaise with BCC where there are opportunities to work together to manage more efficiently and cost effectively the creekside land.

AAC will also consider options for introducing best practice grazing (including limiting stock access to the creek banks) if this can be implemented as part of a coordinated management strategy involving BCC and other landholders/land managers along this part of Oxley Creek.

This area of land is currently being considered as part of the Oxley Creek Transformation Project being managed by Oxley Creek Transformation Pty Ltd. AAC will consider any feasible proposals that assist in improving current grazing practices or implementing alternative management techniques, where these are consistent with the sustainable management of the airport land and the initiatives for other land included in the project.

Prior to any significant development of land in the area that is not currently intensively managed through slashing or grazing, appropriate flora and fauna investigations will be undertaken to confirm the existence of any significant species. If these are identified, appropriate nature conservation measures will be implemented.

AAC will continue to facilitate the Fire Ant control measures being implemented by the State government.

Landscaping will be provided in new developments to improve the presentation of the site. AAC will encourage the planting of mainly indigenous species on airport property.

A list of suitable plants for landscaping on AAC property has been developed and will be used when assessing landscaping works by AAC or tenants.

All developments on the airport, including flood mitigation works and site landscaping, will be carefully planned to ensure that they do not increase bird or bat populations at the airport, due to the hazard to aircraft of bird or bat strike.

16.4 AIR QUALITY AND OZONE DEPLETING SUBSTANCES

16.4.1 Objective

To minimise where practicable emissions to air from AAC and tenant related activities (except emissions from aircraft)

16.4.2 Existing conditions

The airport is located in the industrial area of Archerfield/Rocklea, which is home to general manufacturing, and service industries; transport and related activities. The area is bisected by a network of arterial and main roads including Ipswich Motorway, Granard Road, Beaudesert Road, Boundary Road, Ashover Road, Kerry Road, Mortimer Road and King Avenue/Learoyd Road.

There are no significant sources of greenhouse gas emissions on the airport. No tenants or AAC operations produce significant discharges to the atmosphere.

A detailed audit of the airport in 1993/94 identified all equipment containing ozone depleting gasses. Since then, all BFC fire extinguishers have been

removed (in December 1997), and there are no remaining air conditioners filled with Freon.

Archerfield Airport has no dedicated spray painting operations. A number of tenant operations include spray paint booths as part of their maintenance activities and some tenants undertake minor painting, but as an ancillary activity.

16.4.3 Potential impacts

Experience at similar general aviation airports in Australia shows that a relatively small quantity of pollutants are released during the running of aircraft engines while on the ground for testing and maintenance procedures.

The majority of emissions are solvent vapours released either during the spray painting of aircraft bodies and components, or through cleaning of equipment.

Emissions would be similar to other spray painting and mechanical repairs establishments in the surrounding industrial areas. Due to the mix of uses and the extensive open space on airport the density of these uses is significantly lower than nearby industrial areas.

16.4.4 Management of impacts

Painting and cleaning

The main potential impact on the air environment from painting or cleaning operations is odour from solvents.

AAC has replaced its solvent based line marking paints with water based alternatives to reduce the emission of solvent vapour from this source.

For new tenancies, any potentially odorous activities will be identified and managed so that there is no unacceptable impact on neighbouring areas. If painting is proposed, consideration will be given to the acceptable scale of the activity, and any mitigation measures that will be required.

Measures for achieving appropriate odour control will be determined prior to the establishment of the tenancy, in accordance with the EMPs.

In the case of existing tenancies, if any odour emission issues arise, these will be addressed through direct negotiation (if a complaint is received) or via the periodic environmental review process.

AAC requires all tenants with trade waste discharges to obtain from BCC appropriate trade waste disposal approvals, and maintain their operations in accordance with these requirements.

Ozone depleting substances (ODS)

AAC facilities

AAC operations will be managed to ensure that all discharges meet the requirements of relevant legislation being the *Airport (Environment Protection) Regulations 1997*, the *Ozone Protection Act 1989* and the *National Environmental Protection Measure (NEPM) for Ambient Air Quality*.

Regular environmental reviews will identify any ozone depleting substances on site, and their phase out will be arranged.

The progressive phase out and replacement of any remaining AAC equipment containing ozone depleting gasses will also occur as replacement equipment becomes commercially available and older equipment is replaced.

Tenants

The regular environmental reviews of tenant facilities will identify any halon fire extinguishers (sometimes used in aircraft), and if any are found in service for non-essential use, the tenant will be advised to remove the equipment from service as required by State and Federal legislation.

As the presence of halon extinguishers will be readily identifiable during the regular environmental reviews, additional monitoring is not considered necessary.

16.4.5 Achievements 1998-2017

AAC has collated existing data on airshed quality from the DEHP Rocklea monitoring site.

AAC has produced an inventory of existing airport tenants and users, as an indicative baseline for possible future air quality assessments.

Water based line marking paints are now used by AAC to reduce the emission of solvent vapour from this source.

16.4.6 Implementation targets for the 2017 AES

Continue to identify the presence of ODSs in AAC and tenant reviews, and negotiate appropriate management (including decommissioning and removal wherever feasible).

Continue to advise tenants of their responsibility to obtain relevant environmental approvals in accordance with the Airports Act and Regulations.

16.5 SURFACE WATER

16.5.1 Objective

To minimise the impact of airport operations on surface water quality

16.5.2 Existing conditions

Catchment context

The airport is located in the middle to lower reaches of the Oxley Creek catchment, just upstream of the confluence of Oxley Creek and Blunder Creek. Oxley Creek discharges ultimately to Brisbane River.

The airport location relative to the Brisbane River is shown diagrammatically in Figure 1. The location of Oxley and Blunder Creeks, and the alignments of the main drainage outfalls from the airport to these waterways is shown in Figure 3 *Airport context*.

The middle and lower reaches of the Oxley Creek catchment are highly urbanised.

The *1999 Oxley Creek Catchment Management Plan* identified the following issues for the catchment overall:

- water quality within the creek system exceeds standards across all water quality parameters (suspended solids, total nitrogen, total phosphorus, faecal coliforms) in the lower urbanised part of the catchment. There was however some evidence of improvements since 1988;
- the primary causes of the existing degradation are point sources such as the Inala Sewage Treatment Plant, minor point sources (sewer overflows) and the non-point sources of sand extraction, stormwater run-off and land development, including areas using septic treatment systems;
- Brisbane River and Moreton Bay, the receiving waters of Oxley Creek, are experiencing excess sediments, nutrients and faecal coliforms, giving rise to problems of sea grass loss and algal blooms;
- further development in the upper reaches of the catchment could exacerbate flooding;
- riparian vegetation including wetlands has some critical areas requiring management and buffering; and
- soil erosion is an issue along the watercourses.

Stormwater management on the airport site needs to have regard to these broader contextual issues, and in particular to avoid causing detriment to water quality or flood conditions in Oxley Creek.

Site sub catchments

Surface water runoff from the airport falls generally into one of six main sub catchments and these are shown diagrammatically in Figure 17.

The boundaries of the sub catchments are indicative only, as there are few clearly defined watersheds across the site. In some cases, drainage infrastructure has been constructed such that stormwater flows will cross between the sub catchments as currently shown.

All surface water from the airport is discharged ultimately to Oxley Creek, and from there flows to Brisbane River and Moreton Bay. The northern and eastern part of the airport drains to Stable Swamp Creek (to the north) which enters Oxley Creek on the north side of the Rocklea industrial area.

1: Southern sub catchment

This sub catchment includes:

- grassed areas;
- sealed Runway 28L/10R and taxiways;
- hangars and businesses;
- open storage; and
- the control tower.

This stormwater drains to the main detention basin that is located between the Alex Fraser Group recycling facility and the neighbouring Archerfield Speedway. The detention basin then discharges to Oxley Creek.

A small part of this sub catchment drains south under Mortimer Road, and through the neighbouring industrial area to Oxley Creek. This drain collects water from the eastern end of Lores Bonney Drive, and from the adjacent tenancies.

2: Beaufighter Avenue and Wirraway Avenue sub catchment

This sub catchment includes:

- the western end of the 28R/10L runway and associated taxiways;
- the majority of the '500' tenancies on Boundary Road;
- development along Wirraway Avenue; and
- development along Beaufighter Avenue, generally west and north of Alex Fraser Group recycling.

Stormwater in this sub catchment is conveyed via a piped drainage system along Beaufighter Avenue to a concrete end wall and dissipation structure prior to entering Oxley Creek.

The three bio-filtration and detention basins constructed along the Boundary Road boundary of the airport manage peak flows from future works at Transition Estate. A Gross Pollutant Trap constructed between Basin 4 and

the corner of Boundary Road and Transition Drive further improves the quality of water from the central drainage sub catchment which includes parts of the Boundary, Wirraway, Ashover, Runway and Beatty precincts. These basins convey water to Brisbane City Council drainage systems,

3: BP Truckstop

Stormwater from the BP Truck Stop site on the corner of Beaufighter Avenue and Boundary Road discharges to a drain at Boundary Road that runs north through the Rocklea industrial area before joining to the main drain to Oxley Creek.

4: Central sub catchment

This sub catchment comprises the grassed areas associated with the 04/22 runway complex, most of the northern half of the 28R/10L runway, the fuel farms, and aircraft parking positions.

The majority of storm water in this sub catchment is collected by an on airport drainage system that falls north-west under the 04/22 runways to the recently constructed detention basins in the Transition Estate, and then passes under Boundary Road. From there the drainage runs through the neighbouring industrial area, under the Ipswich Motorway to Oxley Creek. Water in the Oxley Creek then enters the Brisbane River.

5: Eastern sub catchment

The fifth catchment on airport is the eastern and north eastern area fronting Beatty Road and Barton Street.

The stormwater run-off from this area enters the Brisbane City Council drains that run parallel with Beatty Road. At three locations along Beatty Road there are drains under the road that take stormwater to the east and then north to Stable Swamp Creek.

Underground stormwater drains in this area of the airport were examined by CCTV camera and significant repair/upgrade work was carried out to improve drainage in 2015/2016.

This part of the sub catchment is reasonably intensively developed, with extensive impervious areas (building roofs, roads, sealed aircraft parking, and manoeuvring areas).

The balance of the sub catchment has at present less impervious surfaces. Stormwater from development planned for this area could potentially discharge to points on Barton Street and Balham Road (subject to design investigation, and approval by BCC).

6: Beatty Road South

The vacant airport land on the north-east corner of Beatty Road and Mortimer Road drains to the north-east. It discharges to the main drainage line that runs parallel to Beatty Road, to Stable Swamp Creek, and then to Oxley Creek.

Stormwater quality

AAC undertakes stormwater quality analysis on an annual basis. The sampling is undertaken at the main drainage discharge points, and at locations within the airport drainage network. During drought periods, there has been insufficient water at some of the sampling locations resulting in incomplete historical data.

Notwithstanding this, the program has provided useful information about site conditions.

The assessment completed by Simmonds & Bristow Pty Ltd in April 2015 found:

- the PH, conductivity measures and suspended solids concentrations were within regulatory limits;
- the aluminium concentration at SWM8 and SWM5 had decreased compared to the previous year;
- concentrations of arsenic, beryllium, chromium, nickel and selenium measured below the regulation limits; and.
- high concentrations of aluminium, cadmium, copper, lead and zinc were found at varying locations across the airport. SWM5 contained the most non-compliant concentrations of trace elements.

The report noted the following as possible sources:

- sources of possible cadmium contamination include metal plating, transportation equipment. heavy machinery, water pipes, batteries, welding and painting;
- sources of possible copper contamination include metal plating, industrial and domestic waste, painting and mineral leaching;
- sources of possible lead contamination include pipework, paint, industrial waste and petrol;
- sources of possible Zinc contamination include industrial waste, metal plating, paint and plumbing.
- concentrations of Total Nitrogen, Total Phosphorus and, in most cases, Ammonia were above permitted levels, however, these results were consistent with concentrations returned from previous sampling events;
- there were no volatile, semi-volatile petroleum hydrocarbons ($>C_9$) or aromatic hydrocarbons detected in the water samples. This is consistent with previous annual sampling events; and
- although high concentrations of certain heavy metals were found, an investigation into possible sources could not identify any activities which may have contributed to these results.

Assessments completed in 2016 and 2017 were generally consistent with the findings in 2015, apart from increases in aluminium at SWM5 and SWM8 in 2017.

It is noted that the 2017 aluminium findings are similar to levels found in these wells prior to 2015. Both results could be a result of suspended solids contained in the sample. There were no volatile, semi-volatile petroleum hydrocarbons (>C_9) or aromatic hydrocarbons detected in water samples in 2017, which is generally consistent with previous annual sampling events. The 2017 report concluded that there were no concentrations of elements identified that posed a serious risk to the aquatic health of Oxley Creek.

AAC will work with the AEO to monitor the situation. Future results will be assessed to identify whether the 2015 results were an isolated event.

16.5.3 Potential impacts

The potential impacts of stormwater drainage are:

- export of suspended solids off site leading to increased sedimentation of Stable Swamp Creek or Oxley Creek;
- transport of chemical pollutants, trace elements, or nutrients into these creeks and ultimately into Brisbane River;
- increased peak flood flows discharged to Oxley Creek, with the potential for exacerbating flooding in the creek; and
- increased peak flows into the existing main drainage system through the Rocklea industrial area, and through Archerfield, north to Stable Swamp Creek.

16.5.4 Management of impacts

AAC is vigilant regarding stormwater management on the airport.

The following EMPs have specific relevance to managing the water aspects of the airport environment:

- Procedure AA1-Environmental assessment of new tenancy or lease renewal
- Procedure AA4-Minor spill response
- Procedure AA6-Tenant environmental reviews
- Procedure AA7-End of lease tenant environmental review
- Procedure AA8-Assessment of environmental effects of new works.

For example, the procedure for new construction requires an assessment of the potential impacts of construction on all aspects of the airport environment (including stormwater drainage), and where impacts are possible, the preparation of a construction phase Site Environmental Management Plan (CEMP).

Washing of aircraft in the wash-down bay (with triple interceptor) is strongly encouraged. However, if aircraft owners wish to wash their aircraft in its

parking position to remove general dirt and insects this is allowed provided biodegradable detergents are used.

If there is a risk that oil or grease will be discharged onto the ground, then the wash-down bay must be used. If there is regular washing of aircraft in parking positions, then AAC reserves the right to request soil testing to monitor for any contamination. This monitoring would be at the aircraft owners' expense.

AAC maintains a spill containment trailer that can be mobilised at short notice to deal with fuel and chemical spills from its own operations and for incidents involving aircraft.

Where appropriate, tenants are also required to have spill procedures for their operations. In addition to providing appropriately bunded storage facilities, tenants are also required to maintain stocks of spill control equipment where their operations have the potential to release environmentally hazardous materials to the environment.

16.5.5 Achievements 1998-2016

Stormwater management measures (addressing water quality and peak discharge volumes) have been incorporated where appropriate into new tenancies and into the airport development precincts.

The former open drainage line through the western part of the Boundary precinct and the west of the Beaufighter precinct (which was subject to significant scouring) has been piped, and silt traps and dissipation structures installed to moderate peak flows and manage water quality prior to discharge to the Oxley Creek.

A significant stormwater detention basin (basin 8) was constructed in the Beaufighter precinct in 1997/8, treating stormwater prior to its discharge to the Oxley Creek. The stockpile areas in the Alex Fraser Group Recycling facility drain to a sedimentation basin prior to discharge to the on-airport stormwater system.

Swale drains have been constructed along the southern boundary of the Beaufighter precinct, to direct flows from Runway 28L/10R and development in the Beaufighter precinct to the sediment basin.

Three additional bio-filtration and detention basins (Basins 3, 4 and 5) were constructed along the Boundary Road boundary of the airport in 2014 to manage peak flows from future works at Transition Estate. A Gross Pollutant Trap was constructed between Basin 4 and Boundary Road/Transition Drive to further improve the quality of water from Boundary Road and Transition Drive. These basins convey water to Brisbane City Council drainage systems,

Small rock landscaping has been introduced to localised sections of open drains showing evidence of minor soil erosion.

The drainage line under the 04/22 runways has been piped and extended into Basin 3 at the north-western end, to moderate peak flows prior to discharge to the district drainage network.

Rainwater tanks have been included in new developments, including the corporate hangars on Wirraway Avenue, the QGAir facility on Wirraway Avenue, the office and warehouse development on Beaufighter Avenue and the warehouse and office at Site 111 occupied by Aviall.

Open earth drains have been periodically slashed and weeds removed.

The aircraft wash down bay is identified with signage. Washdown water passes through a triple interceptor prior to discharge from the site.

Surface water quality monitoring has been undertaken at various locations in the drainage network on an annual basis.

16.5.6 Implementation targets for the 2017 AES

The annual surface water quality assessments will continue at spot locations, on a sub catchment basis and will be analysed for contaminants.

Where elevated concentrations are found, AAC will undertake further investigations within the relevant sub catchment area(s) to identify the likely cause of reduced water quality. It will work with the AEO to identify the source and improve water quality wherever feasible.

If necessary, the surface water monitoring program will be revised to assist with identifying the distribution or source of pollutants.

Water sensitive design measures, including the use of rainwater tanks for capture and reuse of stormwater flows will be incorporated into new developments wherever feasible.

16.6 GROUNDWATER

16.6.1 Objective

To minimise the impact of airport operations on groundwater quality

16.6.2 Existing conditions

Groundwater at the airport has been assessed on an annual basis since 1993.

A network of groundwater monitoring wells has been developed and expanded with the installation of six new wells since 2012.

The new wells were installed to ensure all on-airport areas are covered as well as to test contamination coming onto airport from off-site locations. All 14 wells are shown in Figure 26.

The most recent assessment, the *2015 Ground Water Monitoring Event for Archerfield Airport* was completed by Environmental Management & Remediation Pty Ltd in October 2015.

Regional hydrogeology

The *2013 Annual Ground Water Monitoring Report* by Simmonds & Bristow included information about the existing site conditions as follows:

The site geology consists of Tertiary semi consolidated sediments and basalt (Sunnybank Formation). It is estimated that the basalt dips to the west. Underlying this is the Triassic-Jurassic Woogaroo Sub-group which is comprised of sandstone, siltstone, shale and conglomerate. These rocks are less permeable to groundwater flows than basalt. Alluvial deposits occur along Oxley Creek (southwest boundary) and Stable Swamp Creek further north.

Potentiometric contours have indicated that the groundwater flow across the site is in a northwest direction. This was supported by the findings of the 2014 groundwater monitoring report.

Therefore, the receiving environment for groundwater would be the section of Oxley Creek along the airport's south west boundary and in areas immediately adjacent to the creek. Groundwater from the site would also tend to flow further northwest toward the junction of Oxley Creek and Stable Swamp Creek. The indicative flow direction is shown in Figure 26.

Beneficial uses of groundwater

Groundwater resources in the area are not used for potable supply. Alex Fraser Group uses water for dust suppression at their site in the Beaufighter precinct.

Underground Storage Tanks

Although AAC generally discourages tenants from installing USTs, a 55,000 litre UST for storage of Adblue, was approved and installed at Site 450 in 2014.

Adblue is used in heavy vehicle exhaust systems to reduce harmful emissions. New Euro 4 and Euro 5 equipped vehicles incorporate an additional separate tank for the product which is injected into the vehicle's exhaust manifold. Adblue is a water based solution containing 35% urea. It is not a hazardous or dangerous chemical under the NOHSC Criteria and ADG Code.

The USTs on site are required for current uses and are summarised below.

Table 8 Underground Storage Tanks

Site	Tank Reference	Fuel type	Capacity (litres)
AAC Compound (Site 652)	AAC 1	Diesel	5,300
Air BP (Site 121)	Air BP 1	Avgas	55,000

	Air BP 2	Jet A1	55,000
BP Truckstop (Site 450)	BP 1	Diesel	110,000
	BP 2	Diesel	110,000
	BP 3	ULPe10	50,000
	BP 4	ULT98	30,000
	BP 5	PULP	30,000
	BP 6	LPG	30,000
	BP 7	Adblue	20,000
Exxon Mobil (Site 123)	Mobil 1	Avgas	50,000
	Mobil 2	Jet A1	50,000
Shell (Site 120)	Shell 1	Avgas	90,000

Above Ground Storage Tanks

Shell in 2013 installed a 55,000 litre Jet A1 above ground storage tank.

BP Spill

In 2006 one of the diesel tanks at the BP Truckstop on the corner of Boundary Road and Beaufighter Avenue was found to be leaking.

The tank was removed and a soil and groundwater remediation and monitoring program was implemented by BP, under the supervision of an independent environmental assessor.

The tanks and related infrastructure were replaced with double walled tanks and pipes.

The groundwater and soil remediation works were undertaken in accordance with an Environmental Management Plan, and the remediation, monitoring and reporting program will continue until the remedial plan can be closed.

Groundwater quality

In 1993 Otek studied the potential migration off site of various compounds in the groundwater. The study found that BTEX, TPH and metal concentrations were below method detection limits in all monitoring wells.

The assessment undertaken in 1993 has been followed up with annual groundwater sampling and analysis to monitor for any changes in these conditions.

Analysis of the water quality in 2003 indicated concentrations of chromium, lead and zinc above accepted limits in four monitoring wells. Field measurements at two of these four wells showed dissolved oxygen and conductivity levels that did not meet accepted levels. The AEO and AAC reviewed historical groundwater data but were unable to determine any possible causes for elevated chromium in groundwater.

In 2003-4 AAC reviewed its water quality monitoring program and serviced and upgraded monitoring wells.

Since 2003, annual reports have shown contamination in a number of wells to varying degrees.

As a result of on-going contamination, AAC commissioned Simmonds & Bristow to review its groundwater monitoring program in November 2012. The aim of the review was to assess whether the program was adequate for AAC to effectively manage the impact of on-site and off-site activities on the groundwater. The review included an investigation into the source of the contaminants and possible remediation strategies.

The report concluded that off-site activities behind MW2, MW3 and MW6 had an impact on the levels of heavy metals in the groundwater since 2006, that activities around MW4 and near MW9 could have had an impact on the concentration of contaminants in those areas.

The report recommended that four new bores be installed along the area bounded by Mortimer Road, Wirraway Avenue and lower Beaufighter Avenue. The new bores were recommended to ensure that all contamination from off-site and on-site activities is being monitored.

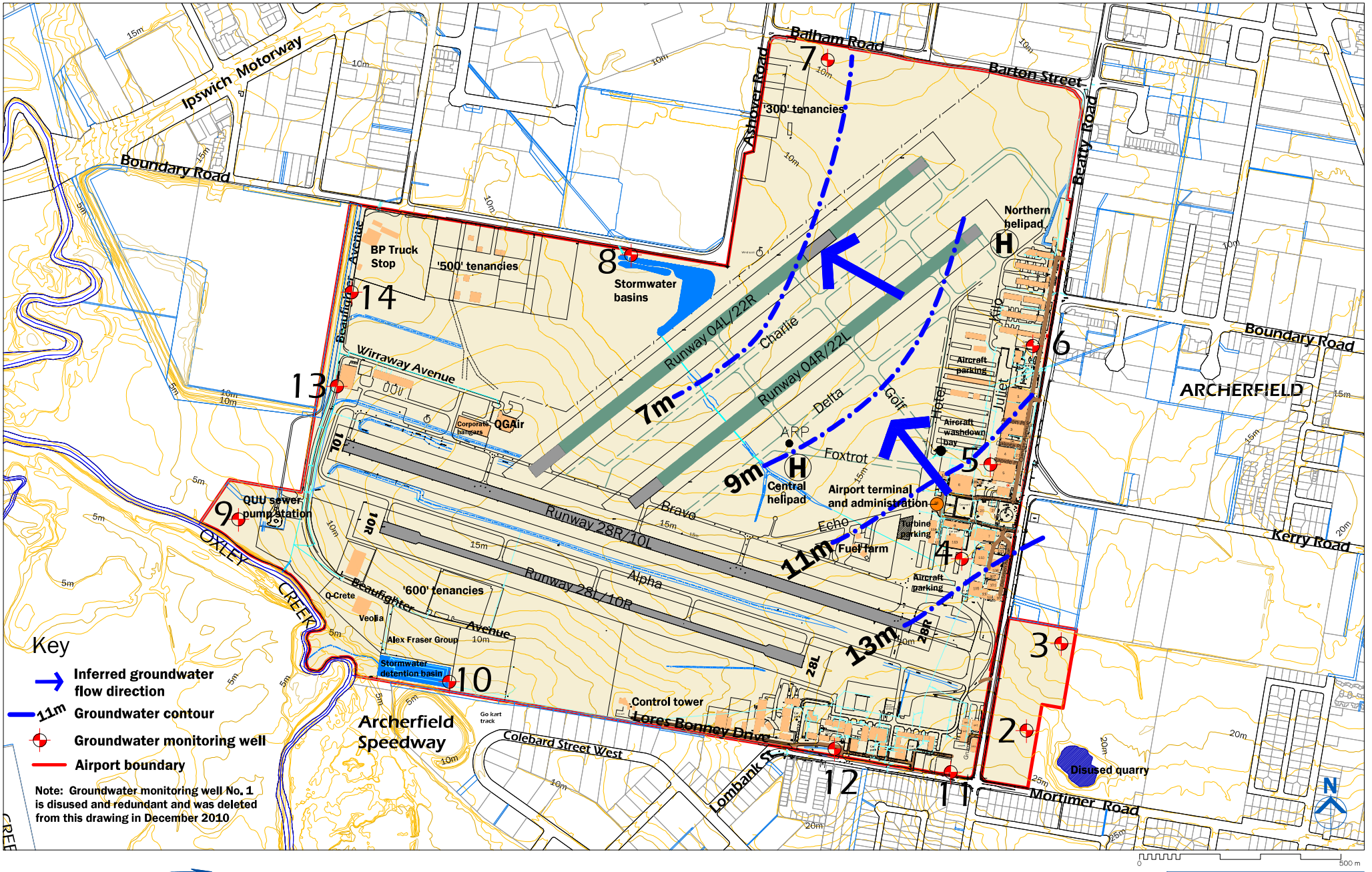
The four new bores were installed in April 2013. Further investigation into the activities around MW4 and MW9 could not confirm that those activities were the source of contaminants identified in those wells.

A significant factor influencing the high metal readings, is that the AEPR requires analysis of total metal concentrations, i.e. readings from non-filtered samples. The presence of silt in non-filtered samples can result in readings showing high concentrations of metals.

Analysing dissolved metals is a more accurate method of testing groundwater quality. This was shown in the 2015 groundwater report where a review of the dissolved versus total metal concentrations reported during the 2014 groundwater monitoring event (GME) showed that the total concentrations were approximately one order of magnitude higher than the dissolved, which was likely attributed to the presence of silt in the total concentrations.

The subsequent groundwater monitoring report, dated October 2016, concluded that, overall, the groundwater concentrations reported do not indicate that a serious risk exists to the water quality or aquatic ecosystem of Oxley Creek.

AAC continues to monitor sampling results and works closely with the AEO to attempt to identify the source/s of any contamination.



Archerfield
Brisbane's Metropolitan Airport

Archerfield Airport Master Plan 2017-2037

Figure 26 **Groundwater**

PlannedFX
Planning Environment Strategy Design

16.6.3 Potential impacts

Impacts in groundwater from activities on airport could arise from:

- leaking USTs and related infrastructure (pumps, pipes etc.);
- inappropriate storage, handling or disposal of hazardous materials;
- buried waste (including from past occupiers);
- spills from the QUU sewer pump station off Beaufighter Avenue (and near Oxley Creek); or
- material spills.

Similarly, there is the potential for areas surrounding the airport to impact on the groundwater conditions on airport. The past and present industrial uses, wartime developments, and the former quarry on the north side of Mortimer Road (next to the south-east corner of the airport) are all potential sources. These need to be considered in any groundwater monitoring program.

16.6.4 Management of impacts

AAC has in place a number of measures to protect groundwater from contamination by airport activities.

These include:

- annual monitoring of groundwater via the network of bores on site;
- provision of spill containment equipment for deployment by AAC in areas under its direct management;
- decommissioning of old and redundant USTs;
- discouraging tenants from installing new USTs if bunded above ground storage is feasible;
- requirements in the EMPs for new tenants to address hazardous materials storage and containment in their plans; and
- consideration of spill containment during tenant reviews.

Any new UST and related infrastructure needs to be installed and operated in accordance with industry standards.

Existing tanks and related pipe and pumping infrastructure require ongoing monitoring to confirm the integrity of the fuel storage system. Any losses from the system need to be identified early so that remedial action can be taken.

This needs to be addressed by each tenant, and AAC needs to confirm during the environmental reviews of each tenancy with USTs that monitoring is being undertaken.

16.6.5 Achievements 1998-2016

The network of groundwater sampling bores has been periodically serviced and was upgraded in 2003.

A new groundwater monitoring well was established in the area between Beaufighter Avenue and Oxley Creek for the 2010 monitoring cycle. This provides baseline data about groundwater conditions and movement in the south-western part of the airport.

An additional 6 new wells were installed along the Mortimer Road Boundary and Beaufighter Avenue boundary between 2012 and 2015 and two unserviceable wells in other locations were repaired.

The annual groundwater monitoring program by AAC has continued throughout the planning period and now provides data for the past 20 years.

Annual integrity testing is carried out on AAC's underground diesel tank. No loss of product has been identified.

All tenants with USTs have in place gain/loss monitoring systems.

16.6.6 Implementation targets for the 2017 AES

The annual groundwater monitoring and analysis program will continue. Attention will be given to determine the likely reasons for any elevated levels. The monitoring program will be updated if required.

AAC will during the cyclical environmental reviews follow up tenants with USTs to ensure that monitoring for losses is being undertaken.

AAC will continue to undertake annual integrity testing of the diesel UST in the AAC grounds maintenance compound. If any discrepancy is identified immediate remedial action will be taken. These actions will be in accordance with the Australian Institute of Petroleum's Code of Practice, *'CP4 1998, Design, Installation and Operation of Underground Petroleum Storage Systems'*.

Any new USTs will be subject to either an integrity testing plan or an appropriate gain/loss monitoring system. The testing, monitoring, and reporting regime will be in accordance with the relevant industry standards.

16.7 SOIL

16.7.1 Objectives

To minimise the potential for soil contamination to occur

To continue to manage contaminated sites in accordance with relevant legislation

16.7.2 Existing conditions

Soil conditions at the airport consist of silty and sandy clays that overlay weathered basalt. The basalt becomes less weathered as depth increases.

Soil contamination

In July 1993, a *Background Investigation Report* (Otek 1993) identified several potential areas of subsurface contamination associated with the airport. These included a number of USTs, scrap yards, a battery recycling operation, maintenance shops, painting facilities, and drum storage areas.

A subsequent more detailed environmental investigation (Otek September 1993) found that Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX) and Total Petroleum Hydrocarbon (TPH) levels were below method detection limits in all borings tested. Metal analyses indicated elevated levels of lead in proximity to the former battery recycling facility. The study concluded that detectable concentrations of nickel, copper, cadmium, and chromium were consistent with background concentrations and were within applicable criteria. Analyses for volatiles, pesticides, and PCBs showed no concentrations above the method detection limits.

The study found no adverse impact on the environment from the USTs.

The minimal localised soil contamination detected in the Otek environmental reviews is well within the current acceptable environmental standards.

Otek, in 1993 also undertook soil sampling in the open unlined drains along the northern and western perimeters of the site. The analysis of the samples concluded that there was no detectable soil contamination.

In 2006 BP advised that one of the diesel tanks at the BP Truckstop on the corner of Boundary Road and Beaufighter Avenue was found to be leaking. BP subsequently replaced all tanks and implemented a soil and groundwater remediation and monitoring program, under the supervision of an independent environmental assessor. This is subject to ongoing assessment and reporting.

An independent environmental assessor has overseen the containment of pollution and the implementation of the remediation and monitoring program which is still in place. Contaminated soil was excavated to the maximum feasible extent (some allowance had to be made for protection of canopy foundations and other structural elements). The soil was farmed on adjacent land on the airport for approximately six months, before being disposed of off-site.

The USTs on the site have been replaced with double walled tanks and related infrastructure.

Soil samples have also been tested from Site 635, at Site 668 (formerly occupied by Australian Paving Services (APS) and at Building 9. In all instances, no contamination above accepted levels was detected.

Acid sulfate soils

As part of the Brisbane City Plan, Brisbane City Council has collated information about acid sulfate soils in the Council area, and made available a potential and actual acid sulfate soils overlay which identifies land subject to the requirements of the State Planning Policy (SPP).

The Department of Environment describes acid sulfate soil as follows:

> *Acid sulfate soil is the common name for soils that contain metal sulfides. In an undisturbed and waterlogged state, these soils may pose no or low risk. However, when disturbed or exposed to oxygen, acid sulfate soils undergo a chemical reaction known as oxidation. Oxidation produces sulfuric acid which has led to these soils being called acid sulfate soils.*

In Brisbane, acid sulfate soils are generally found in land at or below 5m Australian Height Datum (AHD) and in Holocene sediments (organic-rich sediments and silts). They are usually associated with coastal lowlands and estuarine flood plains. Under natural conditions the soils are usually located below the water table.

The only parts of the airport at or below the 5 metre contour are found in the south-west corner of the site, next to Oxley Creek. The 5 metre contour is shown in the *Existing conditions* drawing.

The Department of Environment notes that acid sulfate soils may affect the following key environmental values or uses, and provides examples of how these values are affected:

Table 9 Potential effect of acid sulfate soils

Environmental values	Impact or potential impact
Aquatic ecosystems	Aquatic ecosystems may be affected by changes to water and soil quality. This can lead to negative effects on the species and ecological communities that depend on this ecosystem.
Primary industries	Irrigation water may be acidic and/or have high concentrations of metals, which may affect stock drinking water, infrastructure and machinery, and crop growth and yield. Commercial fisheries may be affected by poor water quality that may cause fish kills or disease, and affect human consumption of aquatic foods.
Recreation and aesthetics	An environment may not be able to be used or enjoyed to the same extent for recreational purposes due to factors including acidic water, odours, loss of aesthetic appeal, loss of fishing amenity and acid-tolerant mosquitoes increasing in number.
Drinking water	Water quality may be unsafe for human consumption due to factors such as pH change, changes to the concentration of dissolved metals or load of suspended metals and tastes and odours.
Industrial water	Water may not be suitable for certain industrial purposes. For example, acidified water may corrode metals in the manufacturing process.
Cultural and spiritual values	Areas of cultural and spiritual significance may be degraded or may not be able to be used for cultural, recreational or consumptive uses. Significant fish and plants may be affected by acidic water, metal contamination or oxygen depletion in water.

16.7.3 Perfluorinated chemicals (PFC)

There is the potential that Perfluorinated Chemicals (PFC) exist on airport, as a result of historical fire-fighting or other activities. PFCs are non-biodegradable chemicals that are highly persistent in the environment, can bio-accumulate and can be harmful to animals and human health.

At this stage the extent to which AAC and other airport leasing companies are required to address PFCs has not been determined by DIRD.

There is currently no nationally recognised guidance material or Australian standards, guidelines or regulations on PFC contamination and management.

AAC will continue to liaise with DIRD on this issue, to determine an appropriate course of action for environmental assessment, or for remediation of any contamination that might be identified.

16.7.4 Potential impacts

The main potential impacts of airport activities are:

- soil contamination from USTs;
- soil contamination from chemical spills;
- soil contamination from oil leaks from aircraft and motor vehicles; and
- soil contamination from PFCs.

16.7.5 Management of potential impacts

AAC will continue to review activities on airport to identify any potential sources of soil contamination. For AAC operations and areas under AAC management, this will occur on an ongoing basis. Individual tenancies will be assessed during the tenant reviews, and at the end of lease assessment.

Underground storage tanks and businesses associated with the storage and use of potential contaminants (including waste materials) will attract specific surveillance.

All new AAC leases have the requirement for tenants to monitor for contamination, and where issues arise, to remediate. These activities will in each case be addressed through a tenant *Site Environmental Management Plan* for construction and/or operation phases (as applicable).

Tenants will be required to provide AAC with independent validation of site clean-up works.

AAC will encourage tenants to decommission underground tanks, regardless of condition, due to the significant potential liability associated with the ageing underground tanks. In the future, all storage tanks installed on the site (apart from fuel services) will wherever possible be above ground with appropriate containment, including bunding.

Bunding of hazardous materials storage equipment (containers and conveying infrastructure) will be required where there is the potential for spills.

AAC's PFC Trigger Assessment will be applied to any development or works involving excavation.

Any future development in the lower lying land in the south-west corner of the airport, immediately adjacent to Oxley Creek, needs to take into account the possibility of acid sulfate soils. This should be addressed in an assessment to be undertaken as part of the formulation of any development proposals for the land at or below the 5 metre (AHD) contour.

In addition, if excavation of more than 100m^3 is proposed at or below 5m AHD on land with a natural surface level of between 5m and 20m AHD, appropriate consideration will be given to acid sulfate soils in the design and construction of the works.

16.7.6 Achievements 1998-2016

The former battery recycling site has been remediated by removal of the contaminated soil and reclamation with clean fill in 1994. The remediation is described in report reference B94C094/C1 prepared by OTEK Australia Pty Ltd dated 14 December 1994.

The former Airport Rescue and Fire Training Area was closed and remediated in 1994. The site remediation is also described in the 14 December 1994 report by OTEK Australia Pty Ltd.

The former underground storage tanks used by Mobil, Air BP and Shell were decommissioned and the sites remediated over the period 1997 to 2000.

With the exception of the BP Truckstop site, there are no known contaminated sites on the airport. The assessments indicate that only small contamination issues such as oil leaks from aircraft and motor vehicles exist on the airport.

16.7.7 Implementation targets for the 2017 AES

All tenants operating or proposing to install underground storage tanks will be required to institute programs to ensure tanks do not leak. Tenants will be required to carry out annual testing of tanks, or alternatively implement a continual monitoring program as detailed in the Australian Institute of Petroleum's Code of Practice, *'CP4 1998, Design, Installation and Operation of Underground Petroleum Storage Systems'*.

Bunding will be required for all new storage facilities for hazardous materials.

AAC will continue to apply EMPs (and in particular the *End of lease tenant environmental review*) to ensure that leaseholds are appropriately managed and any contamination is identified and rectified.

An assessment for acid sulphate soils will be undertaken before any development requiring ground excavation in the south-west corner of the airport, at or below the 5 metre contour.

16.8 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

16.8.1 Objectives

To minimise the use of hazardous materials, where practicable

To minimise the quantities of waste produced where practicable

To maintain current information on hazardous materials on the airport

To ensure that wastes are properly handled, stored, transported, and disposed of

To encourage recycling of materials

16.8.2 Existing conditions

Effluent

The airport is serviced with reticulated sewer and is connected to the metropolitan network (including for trade waste). QUU has a sewer pump station in the south-west corner of the airport, adjacent to Oxley Creek.

Hazardous materials

AACs objective is to minimise where practicable the use of hazardous materials and to ensure that where hazardous materials are used, their impact on the surrounding environment is kept to a minimum.

Hazardous materials are stored in a variety of locations at the airport, and while some storage locations are fairly well designed, others require some improvement. There is also a need for constant vigilance to ensure that the storage methods and signage are appropriate to the types of product storage currently in use. Australian Standards will apply.

Potentially contaminated building materials

A comprehensive survey of buildings conducted in 1994/1995 and reviewed regularly since then has found evidence of some in situ building materials likely to contain asbestos. These materials are mostly in sheet 'fibro cement' form and have been used most commonly for cladding some buildings, and roofing in particular. There are also incidences of asbestos in other building materials including flooring.

The survey found that this is confined to older existing structures, and, provided it is not disturbed from its current state, is regarded as not presenting any hazard.

The survey also identified a limited amount of asbestos fibre used in pipe lagging.

In 2003 Asbestos Audits Queensland Pty Ltd completed its *Asbestos Materials Report and Register for Archerfield Airport.* The report addressed all AAC buildings on the airport and included an inventory of asbestos, and recommendations for its management.

In 2006 the asbestos register was upgraded to include a risk assessment and Management Plan, which was updated as developments occurred, buildings were demolished, and buildings came into the ownership of AAC.

In 2012 Asbestos Audits Queensland Pty Ltd prepared a new plan *Asbestos Management Plan and Register for Archerfield Airport* - which incorporated new buildings and recognised 2011 codes of practice. AAC updates the plan as asbestos is removed.

Recycling

AAC's objective is to comply with current waste management standards and to minimise waste. It will ensure that it adopts the most recent recycling practices.

Where possible during tenant reviews opportunities to minimise waste or utilise waste from other activities on site will be identified.

16.8.3 Potential impacts

The potential impacts of ground based airport activities include discharge of hazardous materials or waste to soil, surface or groundwater; and litter pollution of the site or neighbouring land.

16.8.4 Management of impacts

AAC maintains a current register of asbestos in its buildings. Asbestos material is marked with hazard stickers, and the asbestos register is made available to tenants and contractors undertaking work on the airport.

The asbestos register is updated as works are undertaken, and any changes are included in the annual environment report to the Commonwealth.

If buildings containing asbestos are to be demolished or modified, this work will be undertaken in accordance with an Environmental Management Procedure applying precautions stipulated under the *Work Health & Safety Act* and regulations, applicable codes of practice and other relevant guidelines

Monitoring of the quality and quantity of waste materials on site, and the actions taken to recycle this material will continue as part of environmental reviews of tenant operations.

Ongoing reviews will ensure environmental issues previously identified are addressed appropriately, as well as identifying any new issues related to the management and disposal of hazardous materials and wastes.

Environmental reviews will include an inspection of storage facilities and work practices, identification of unacceptably large waste stockpiles and a review of tenant records concerning the proper disposal of industrial wastes.

The regular environmental reviews will be supplemented by the on-going vigilance of all AAC staff. AAC personnel noticing unacceptable work practices, such as improper storage or leaking wastes will report their findings to AAC management for action.

The Archerfield EMPs require prospective new tenants (tenants or renewing their lease) to provide details of the materials they propose to store and use on site, and how these will be managed.

16.8.5 Achievements 1998-2016

AAC has conducted regular inspections of tenancies to identify all materials storage and handling, waste management and disposal and other aspects of the activities conducted in the tenancy that could potentially impact on the safety of the airport, or on the environment.

Brisbane City Council regularly tests sewage entering its treatment system from the airport. Any non-conformances are reported to AAC and the tenant (if applicable) for action.

In May 2003 Asbestos Audits Queensland Pty Ltd completed its *Asbestos Materials Report and Register for Archerfield Airport.* The register was maintained until 2006 when a risk assessment and management plan was formulated.

This guided decisions on the ongoing management of asbestos until 2012 when the *Asbestos Management Plan and Register for Archerfield Airport* was implemented. The 2012 plan is subject to ongoing review and updating as works are completed.

A significant quantity of asbestos was removed between 2012 and 2015 as a result of extensive repair and upgrade works to various hangars and buildings.

AAC has compiled a register of chemical and hazardous materials for its grounds maintenance and works activities (2009).

16.8.6 Implementation targets for the 2017 AES

Maintain the AAC asbestos register, management plan and risk assessments.

Review AAC operations and expand the Hazardous Materials Register as required.

Develop Hazardous Materials Register for relevant tenancies and prepare baseline snapshot.

Monitor hazardous materials on airport through tenant reviews and record quantities of hazardous materials in Hazardous Materials Register.

Ensure that tenants have hazardous materials licences where applicable and have a HAZMAP located at the site entrance.

Monitor the quality and quantity of waste materials on the airport.

Comply with regulations relating to the management of PFCs on airport.

16.9 USE OF NATURAL RESOURCES AND ENERGY

16.9.1 Objectives

To identify opportunities for cost effective reductions in consumption of natural resources and energy

To encourage efficient use of water and energy

To encourage the use of alternative sources of energy and water

To reduce airport use of non-renewable resources

16.9.2 Existing conditions

Archerfield Airport is supplied with reticulated water, mains power and other utility services from the Brisbane urban infrastructure networks.

Water

Sustainable Solutions International Pty Ltd prepared a *Water Efficiency Management Plan* (WEMP) for Archerfield Airport in April 2008.

The WEMP included a detailed assessment of past and existing water usage, and identified opportunities for more efficient use of water. It was prepared at a time when SEQ was in a protracted drought, and State government implemented legislation to conserve water use. The Government subsequently abolished The Queensland Water Commission and its permanent water conservation measures on 1 January 2013.

AAC encourages tenants to minimise use of potable water and to recycle water wherever possible.

Alex Fraser Group uses bore water and water from its detention basin for dust control, Veolia Environmental Services (Australia) Pty Ltd uses recycled water for dust management, and Q-Crete recycle water from its triple interceptor for its operations.

Water tanks are installed with new developments. Tenants are discouraged from hosing out hangars.

Electricity

The airport is connected to the Brisbane grid. Electricity is supplied directly to the airport substations, and the airport distributes the electricity to tenants on serviced sites.

Infrastructure includes:

- a 500 kVA transformer substation at the BP Truckstop;
- a 300 kVA transformer serving developments in Wirraway Avenue;
- a 500 kVA transformer substation at the Veolia Environmental Services site, serving developments in Beaufighter Avenue;
- a 300 kVA supply to the BCC sewage pump station near the Oxley Creek;
- a 200 kVA and a 300 kVA transformer in the south east of the site, near Mortimer Road;
- a 300 kVA transformer at the fuel farm;
- a 750 kVA substation and a 60 kVA diesel powered standby generator (for essential power only) to the east of the Airport Terminal building; and
- a 200 kVA substation serving the tenants on Beatty Road, opposite Boundary Road (on the east side of the airport).

16.9.3 Potential impacts

Efficient use of energy and water at Archerfield will become increasingly important in coming years.

Water scarcity is expected to be more prevalent due to climate change and increasing demand for water to serve population and economic growth in South East Queensland.

Energy usage will also become a significant issue, from the perspectives of cost, and carbon emissions in particular.

AAC is committed to securing the economic sustainability of the airport, and is working hard to attract additional enterprises and people to the site.

It recognises that water and energy consumption overall could increase due to:

- occupation of vacant leasehold premises, or connection of existing sites to the reticulated network;
- increased staff and visitor numbers on airport;
- construction activity; and/or
- increased production by tenants (particularly those with higher water usage requirements).

With growth in airport activity, the focus will be on achieving best practice efficiencies in water and energy use in new enterprises; use of renewable

energy (including on site generation where feasible); and encouraging progressive improvements in existing AAC operations and tenancies.

Management of impacts

The management of water use will include:

- ongoing monitoring of consumption by AAC and tenants using the AAC metered supply, to identify opportunities for reductions;
- harvesting and reuse of water on site as a replacement (or supplement) for potable water (for suitable aviation and non aviation purposes);
- use of water efficient fittings and appliances in AAC facilities and new developments; and
- incorporating grey water reuse in new developments, where feasible.

As part of on-going improvements the following water reduction initiatives have been identified:

- sub metering of tenancies with high water usage, to identify unaccounted for uses and possible leakages;
- use of water efficient fixtures with a minimum of 3 WELS stars at the airport; and
- a leak identification and monitoring program including repair of known leakages.

In addition, drought tolerant indigenous vegetation will be used where possible in new landscaping, to minimise the need for irrigation.

Improvements in recent years includes new landscaping work alongside the Grenier Drive entrance road and along Ditchmen Avenue in 2012. This included replacing existing undesirable vegetation with Tuckeroos. The areas around Hangar 5, 6, Building 8 and Building 9 have also been landscaped with appropriate plants.

A staged reduction in energy usage will be pursued, through initiatives such as:

- specification of energy efficient appliances and fittings (including lighting) in refurbishments and new developments;
- achievement of energy efficiency in the siting, design, building fabric and specification of services for new development by AAC and tenants; and
- encouraging tenants during environmental reviews to implement reduction strategies.

Improved efficiency in water and energy use will be pursued in new airport and commercial development. AAC has implemented such measures in the refurbishment of the Airport Terminal and administration building, the corporate hangars, the new warehouse development on Beaufighter Avenue and the new Aviall building on Ditchmen Avenue.

16.9.4 Achievements 1998-2016

Use of natural resources and energy has been considered in tenant assessments.

The airport has secured Alex Fraser Group, Veolia Environment Services (Australia) Pty Ltd and Q-Crete as tenants, all of which are recycling operations. These businesses promote the reuse of resources and reduce the energy used in producing these raw materials.

Water efficiency initiatives by AAC since the 2005/06 baseline year include:

- upgrade of all taps, showers, toilets and urinals at AAC owned buildings to more efficient fittings;
- installation of rainwater tanks; and
- upgrading of water meters.

Rainwater tanks have been installed for the Q G Air complex (for washdown for operational purposes), the corporate hangar development on Wirraway Avenue, the warehouse and office on Beaufighter Avenue, and the Aviall warehouse/office building on Ditchmen Avenue.

Energy and water efficiency were key considerations in the refurbishment of the administrative offices in the historic Terminal building. Since completion, AAC energy consumption has been reduced by almost half saving around 5000 kg of greenhouse gas emissions per annum.

Energy requirements for airport operations have also been addressed. AAC has installed a new runway/taxiway lighting control system to accommodate the planned replacement of runway/taxiway lighting with LED which will result in energy saving in the future.

16.9.5 Implementation targets for the 2017 AES

Use of natural resources and energy in AAC operations, and by tenants will continue to be monitored through the cyclical environmental review process.

Tenants will be encouraged to reduce natural resource and energy use, and initiatives will be recorded and reflected in management plans (as appropriate).

AAC will consider energy efficiency, water efficiency, and sustainable design when designing and specifying future projects or reviewing proposals by new or existing tenants.

16.10 NOISE

16.10.1 Objectives

To minimise within the scope of AAC's responsibility ground based noise disturbance associated with airport operations.

16.10.2 Existing conditions

Aircraft noise

The major contributor of noise and vibration associated with airport operations is aircraft in flight.

Aircraft noise is modelled and mapped for each airport as an Australian Noise Exposure Forecast (ANEF). The ANEF shows the expected noise effects on land around the airport. It is reviewed and endorsed by Airservices Australia.

AAC in 2010 prepared an updated ANEF for Archerfield Airport that illustrates the practical capacity of the airport (Figure 13). This ANEF was developed in consultation with Airservices Australia, BCC and the State Government and was endorsed in August 2010. It replaced an ANEF that showed projected aircraft activity to the year 2019.

The Archerfield Airport ANEF identifies forecasted noise impacts. It takes into account current standards, the projected aircraft movement patterns, likely aircraft mix, and maximum aircraft volumes forecast for the Airport Master Plan.

The approved ANEF provides useful information for planning decisions for land around the airport. It identifies areas that are not suitable for noise sensitive uses unless mitigating measures are implemented in the siting, design and construction of any buildings.

BCC and the State Government take the ANEF into account when they prepare the planning scheme for land around the airport, or consider development proposals near the airport.

Under the *Civil Aviation Act 1988* noise due to aircraft in flight, landing, taking off or taxiing is under the direct control of Airservices Australia (AsA). It is exempted from being the responsibility of the ALC under the *Airports (Environment Protection) Regulations 1997*.

Any complaints received concerning aircraft movements are immediately directed to the responsible officer at Airservices Australia.

The Airservices Noise Enquiry Service can be contacted by phone on 1800 802 584 (freecall), by mail at PO Box 211, Mascot NSW 1460, or by email at: *community.relations@airservicesaustralia.com*

AAC works with AsA and aircraft operators on any aspects that involve AAC's areas of responsibility or interest.

AAC developed a Fly Neighbourly program in 2015 and works with AsA and aircraft operators to minimise the impact of aircraft on the community and on any aspects that involve AAC's areas of responsibility or interest.

Other noise sources

Noise emitted from an airport (other than discussed above) may be caused by activities including:

- ground running of aircraft;
- noise from aircraft parked near buildings;
- operation of engine test cells;
- construction operations;
- noise from non-aviation activities; and
- road traffic movements.

These sound sources may affect the area immediately surrounding the airport.

16.10.3 Management of impacts

Noise levels due to ground based aircraft engine activities are minimised by restricting ground running and testing procedures to appropriate locations on the airport, distant from sensitive land uses.

Helicopters are directed to pod Tango for run up, jet engine testing is only allowed at the run up bay to Runway 10L, and truck based dynamic engine test beds are directed to pod Tango.

Evening or night time activities of this nature rarely occur.

AAC investigates any complaint due to the ground running of aircraft. The approach to this is addressed in the EMPs, and is subject to monitoring for effectiveness, and periodic review.

AAC considers that its noise control strategy described above is suitable, and that noise monitoring or changes in noise management practices does not appear to be warranted.

If current circumstances change significantly then the need for monitoring and further controls will be reassessed and actions taken. Changes that would trigger further assessment could include proposals to commence a new 'noisy' process, or a significant increase in the frequency of ground based engine operation.

With respect to other potential noise sources, there has not been a significant history of complaints. Since 1999, all new leases have included clauses relating to the environmental management obligations on tenants.

Under the current environmental management regime, tenants assessed as having the potential to generate nuisance noise are required to develop and

implement a *Site Environmental Management Plan* (operations) to address potential off site impacts. Implementation of these management plans will be subject to ongoing monitoring and periodic review by the AEO.

16.10.4 Achievements 1998-2016

There have been four complaints relating to ground running of aircraft. These have been addressed in accordance with AAC procedures.

Noise emissions from tenancies on airport are managed in accordance with the EMPs and any environmental management plan in place for their operation.

16.10.5 Implementation targets for the 2017 AES

Continue with noise management initiatives adopted by AAC which include:

- working with AsA to identify and implement solutions to any noise complaints, where these relate to AAC's areas of direct responsibility as airport operator;
- monitoring and reviewing the use of airport facilities (including ground running and testing procedures) with the view to minimising the noise impact on the community;
- ensuring if a significant issue arises that appropriate consultation processes are put in place to resolve the issue;
- working with Brisbane City Council and other relevant government agencies to ensure that structures built near the airport have taken noise into consideration and that off airport land is appropriately zoned; and
- assisting neighbouring landholders with advice on anticipated noise from airport operations, and options for minimising potential noise impacts on the use or development of their land.

Ensure that all AAC personnel know of the noise complaints process (as set out in the EMPs). Advise new employees during initial induction and refresh all personnel annually.

Develop guidelines for when tenants are able to produce noise and the noise limitations that apply.