Hay Shire COUNCIL

Hay Aerodrome Manual

June 2018

DISTRIBUTION LIST

Manual No	Organisation	Contact Details
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AMENDMENT RECORD

No	Date of Amendment	Date Entered	Entered by
1	10/08/01	10/08/01	Don Payne
2	8/2/2005	8/2/2005	Bilal Akhtar
3	15/3/2005	15/3/2005	Sara Parr
4	28/07/09	09/09/09	P Derrig
5	30/06/2018	30/06/2018	Jack Terblanche
6			
7			
8			
9			
10			

AERODROME CONTACT LIST

Contact No.				
	Council			
1	Hay Shire Council		02 6990 1100	(B)
	PO Box 141		02 6993 1288	Fax
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2	**Aerodrome Manager**			
	Director of Technical Services		0448 230 608	(M)
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	(iv) Robbie Nisbet	Telephone	0427 933 414 (mobile)	
	Air Services Australia			
4	Airways Technical Services Group		03 9339 2345	(B)
5	**Australian NOTAM Office**			
	Air services Australia		02 6268 5063	(B)
			02 6268 5044	Fax
			nof@airservicesaustralia.com	Email
6	**CASA's Aerodrome Inspectorate**			
	CASA		13 17 57	
7	**Australian Transport Safety Bureau**		1800 011 034	24hr
	(Duty Officer 24hr)			
8	**Electrical Repairs**			
	CID Electrics Hay Pty Ltd		02 6993 1799	(B)
	Geoff Murphy (Mobile)		0408 962 972	
	Thomas Murphy (Mobile)		0429 962 972	
9	**Regular Public Transport Operators**			
	(None operating at time of production of this manual)			
10	**Fueling Agent**			
	Aero Refuellers		0413 003 808	(Mobile)
11	**Emergency Services**			
	Police		02 6993 1100	
	Ambulance		000 (Emergency)	

	Fire Brigade	02 6993 1101
	Hospital	02 6990 8700
	Rural Fire Service	02 6993 4213 (Hay Office) (B) 02 6966 7800 (Griffith Office) (B) 0429 934 214 (M)
	State Emergency Service	13 25 00 0429 038 777
12	**Australian Search and Rescue**	1800 815 257
13	**Principal General Aviation Operators**	
	Field Air (Peter Mackay)	03 5339 4224
	Agflite (Guy Stevenson)	0428 519 245

EMERGENECY MANAGEMENT PLAN

CONTACT DIRECTORY

1. REGIONAL EMERGENCY MANAGEMENT COMMITTEE

EMERGENCY MANAGEMENT OFFICERS

Owen Plowman
217 - 219 Tarcutta St (PO Box 474)
Wagga Wagga, NSW 2650

Ph: 02 6922 2612 **Fax: 02 6922 2611**
Email: plow1owe@police.nsw.gov.au

Scott Fullerton
Ph: 02 6023 9212
Email: full1sco@police.nsw.gov.au

2. Hay Local Emergency Management Committee

134 Lachlan Street, Hay

Ph: 02 6990 1100 **Fax: 02 6993 1288**

a) Local Emergency Operations Controller (LEOCon)
- Wayne McLachlan

b) Local Emergency Management Officer (LEMO)
- Jasmine Gregory

3. Hay Council

134 Lachlan Street, Hay

Ph: 02 6990 1100 **Fax: 02 6993 1288**

Mayor:	Bill Sheaffe
General Manager:	Amanda Spalding
Director Technical Services	Jeetendra Dahal
Director Planning & Development:	Jack Terblanche
Director Corporate Services:	Mark Dowling
Infrastructure Manager:	Gregory Stewart

4. Hay Police Station
Moppett Street, Hay

Ph: 02 6993 1100 **Fax: 02 6993 3400**

5. Hay Local SES
Dunera Way, Hay

Ph: 13 25 00 **Fax: 02 6993 1310**

Local Controller:	Wendy Mitchell	0411 174 087
Duty Officer:	Graham Matthews	0418 582 105

6. Town Fire Brigade
Macauley Street, Hay

Ph: 000 – Fire Calls
Ph: 02 6993 1101 – Business Calls Only

Captain:	Mick Edwards
Deputy Captains:	Paul Pless & Jake Murphy

7. Hay Rural Fire Service
Dunera Way, Hay

Ph: 02 6966 7800 **Fax: 02 6966 7878**

Fire Control Officer: Kevin Adams (0428 295 582)

8. Hay Ambulance Service
Murray Street, Hay

Ph: 02 6993 1705 (Business) **Fax: 02 6993 1705**
Ph: 000 (Operations)

Station Officer: Robert Marmont - Mobile 0428 696 248
Dean Smith - Mobile 0417 691 915

9. Essential Energy
Hay

Ph: 6990 8110, 13 23 91 (Enquiries), 13 20 80 (Supply, Interrupt & Emergency)

Fax: 02 6990 8120

10. Telstra (Hay)

Lachlan Street, Hay

Technician: **Ph: 02 6993 1500**

11. Roads and Maritime Services

Sidonia Road, Hay

Ph: 132 213 **Fax: 02 6990 8981**
Works Centre: 02 6990 8915

12. Department of Family and Community Services

Griffith	Ph: 02 6962 0500
Wagga Wagga	Ph: 02 6937 9300

13. Hay Hospital

351 Murray Street, Hay

Ph: 02 6990 8700

14. Radio

2RG	02 6969 7860
2 Hay FM	02 6993 1205
2QN	(03) 5881 1811
ABC Riverina	02 6923 4811

15. Newspapers

Riverine Grazier	**02 6993 1002**
Area News	**02 6962 8605**
Daily Advertiser	**02 6938 3300**
Pastoral Times	**03 5881 2322**

16. Television

WIN	**02 6960 1199**
Prime	**02 6360 8800 (Orange News), 02 6881 1777 (Dubbo News)**
ABC	**02 8333 1500**

17. EPA

Griffith	**02 6969 0700**
State	**131 555**

INTRODUCTION

General

Hay Aerodrome is owned and operated by Hay Shire Council. The Director of Technical Services is the Aerodrome Manager and is responsible for operating the aerodrome in accordance with the arrangements outlined in this manual

This manual has been produced to meet the requirements of Civil Aviation Safety Regulation Part 139, in particular for an aerodrome.

This manual is a document subject to review and amendment to meet the changes that may occur with facilities at the aerodrome or personnel associated with the aerodrome or changes to Civil Aviation Authority requirements.

Responsibilities

The Aerodrome Operator:

The aerodrome operator has overall responsibility for aerodrome safety, maintenance and for meeting Commonwealth statutory requirements including the standards set out in this manual.

The Pilot:

By using the published aerodrome data, it is the responsibility of the pilot or airline operator to decide whether an aerodrome is suitable for their aircraft type.

Civil Aviation and Safety Authority:

The Civil Aviation and Safety Authority sets the standards, publishes aerodrome information, authorises the use of a place as an aerodrome, and provides the accreditation of navigational aids, including those installed by the aerodrome operator.

The CASA also audits the operation of the aerodrome to gauge the level of aerodrome operator compliance with regulations and effectiveness of performance regarding safety.

The CASA will visit the aerodrome to monitor compliance with aerodrome safety standards. To do this the CASA carries out procedure reviews, physical inspections that together comprise the aerodrome audit. The CASA will arrange visits to minimise disruption to the aerodrome operator.

The Aerodrome Manual:

This aerodrome manual is a comprehensive reference document which provides Council staff, tenants, the CASA and other appropriate organisations with aerodrome information, administrative procedures and standards necessary for the safe and efficient operation of the Hay aerodrome. This manual will be updated in accordance with changes in information and other circumstances.

This manual is prepared for the following reasons :-

* Compliance with CASR

* To provide aerodrome information

* To ensure that safe operating procedures are developed and maintained

1. PART 1

1.1 PARTICULARS OF THE AERODROME SITE

Location:

Hay Aerodrome is located on the western side of and adjacent to the Cobb Highway, approximately two (2) km south of the Town of Hay. The aerodrome is situated on near level ground which is typical of the terrain extending for many kilometres in all direction from the aerodrome.

Tenure:

Hay Aerodrome is situated on an area of land comprising approx. 194 ha which is owned by Hay Shire Council.

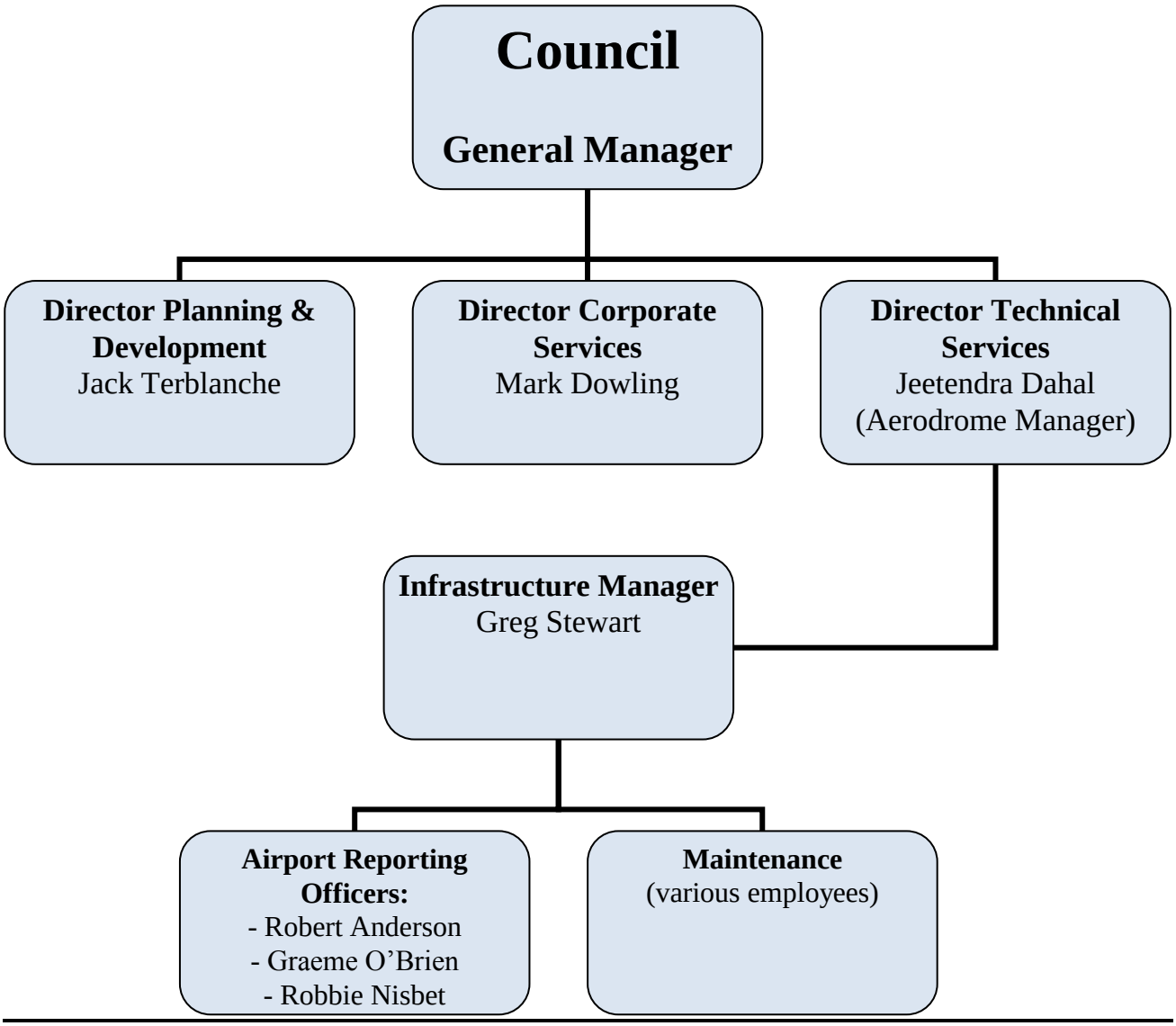
2. PART 2

2.1 PARTICULARS OF THE AERODROME OPERATING PROCEDURES

2.1.1 INTRODUCTION

Aerodrome operating procedures are designed to govern the conduct of routine aerodrome safety and maintenance and to respond to any aerodrome emergencies. Aerodrome Operators may include for their convenience procedures that meet state and local government requirements. Any inclusion not specified by the CASA should be clearly marked as such.

2.1.2 ORGANISATIONAL STRUCTURE



2.1.3 AERODROME ADMINISTRATION

Council
As the owner, to ensure that there are sufficient funds allocated for the maintenance of the Aerodrome.

Director Technical Services (Aerodrome Manager)

- Record keeping on persons who hold copies of this manual
- Distributing updates of information for the manual to those persons
- Monitor currency of all distributed copies
- Amending the manual when required
- Complying with CASA directions
- Notifying CASA with any amendments made to manual
- Include information on manual of where electronic copy of manual is kept
- Ensuring suitable training of reporting officers
- Directing staff to carry out maintenance works

Aerodrome Reporting Officers

- Twice Weekly inspections
- Replacement of globes
- Testing of PAL
- Other maintenance assistance
- Issue of NOTAMS

2.2 AERODROME EMERGENCY PLAN

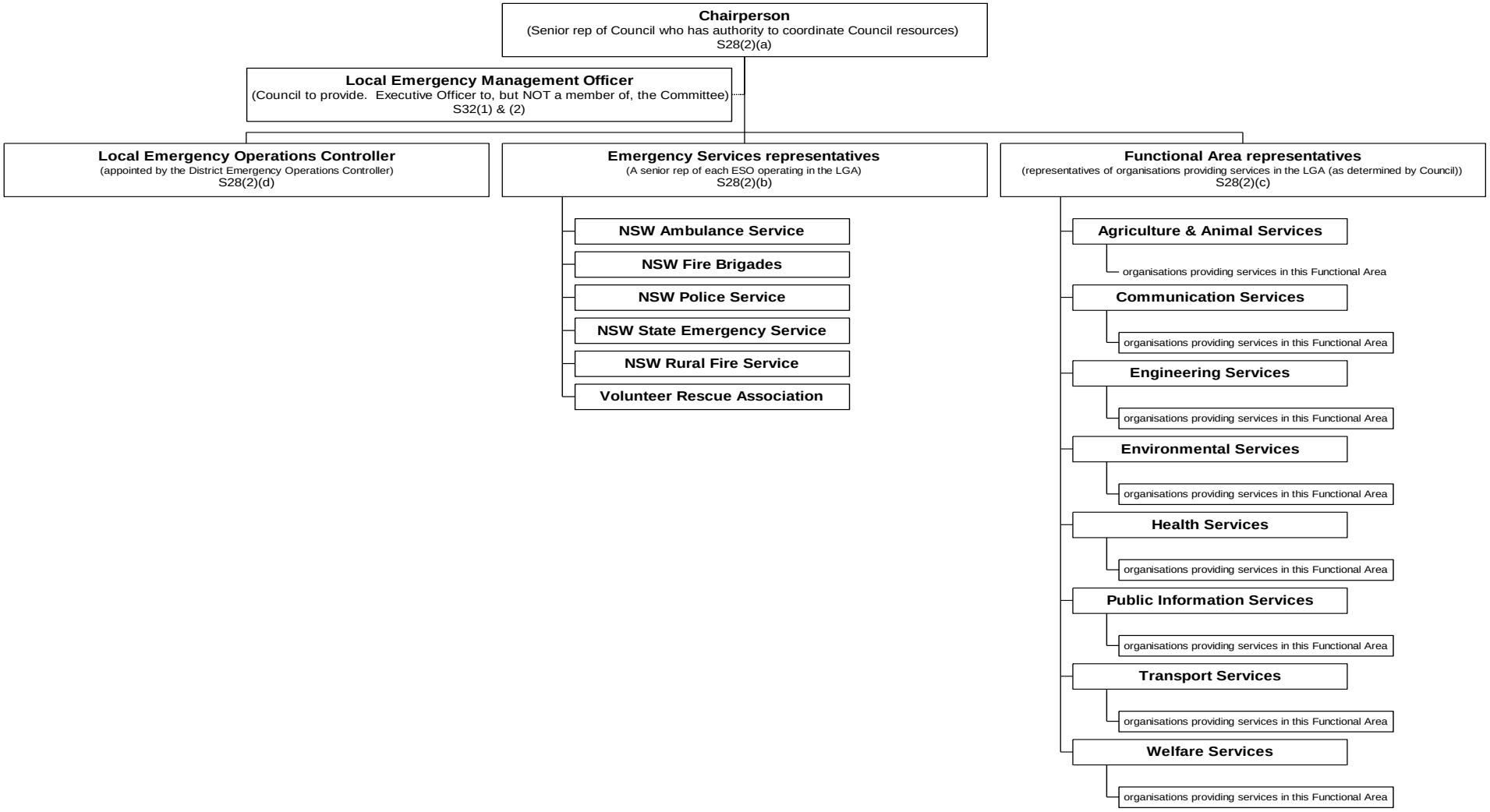
2.2.1 PURPOSE

This Aerodrome Emergency Plan (AEP) has been prepared to identify resources available and the procedures in place to provide assistance to aircraft in distress and to search for, provide aid to and organise the rescue of survivors of aircraft accidents and forced landings at, or near, Hay Aerodrome.

2.2.2 EMERGENCY MANAGEMENT COMMITTEE

The emergency management committee structure is shown below. The committee structure is the same as the one that exists for all emergencies that may occur within the Hay Shire.

Local Emergency Management Committee
for
..... Local Emergency Area



(NOTE : Schedule 2 (2)(1) & (2) provides for any Member to appoint a Deputy who, in the absence of the Member, has all the functions of the member)

2.2.3 EMERGENCY SERVICE ORGANISATIONS

2.2.3.1 CHAIRMAN & LOCAL EMERGENCY MANAGEMENT OFFICER

The Chairman is the Chief Executive Officer of the Local Emergency Management Committee. The Chairman is a senior management member of Council and has the authority to use Councils resources as required in the event of an emergency. The Chairman controls and updates the Emergency Management Plan (EMPLAN) with the assistance of other functional areas.

The LEMO offers secretarial assistance to the Chairman and the LEOCON and has the task of activating the Local Emergency Management Centre if and when requested by the LEOCON or other functional area that is in control of the emergency.

For Hay Shire the Chairman is Director Technical Services and the LEMO is Jasmine Gregory, Planning Administration.

2.2.3.2 LOCAL EMERGENCY OPERATIONS CONTROLLER (LEOCON)

The LEOCON, is a senior police officer and has the responsibility of opening the Emergency Management Center and controlling, and knowing the status of any emergency.

The LEOCON only takes control of an emergency once the initial combat agency requests additional assistance.

2.2.3.3 POLICE

The Police have the responsibility of restricting onlookers from the emergency and ensuring that the site is cordoned off so that as little as possible is disturbed pending an investigation.

2.2.3.4 RURAL FIRE SERVICE

Immediate response is to extinguish all fires resulting from an accident and/or ensuring that a fire is quickly contained if accidentally started. The Rural Fire Service will be the fire fighting service for any emergencies that occur outside the urban area.

2.2.3.5 STATE EMERGENCY SERVICE

Immediate response to free trapped victims, once the accident scene has been declared safe by either the Rural Fire Brigade or the NSW Fire Service. The rescue of trapped victims will be with the assistance and advice of the Ambulance Service once those victims have been stabilised.

2.2.3.6 NSW FIRE BRIGADE

Immediate response is to extinguish all fires resulting from an accident and/or ensuring that a fire is quickly contained if accidentally started. The NSW Fire Brigade will be the fire fighting service for any emergencies that occur inside the urban area.

2.2.3.7 AMBULANCE SERVICE

Immediate response is to ensure the health and safety and transportation of any victims from the accident once the accident scene has been declared safe by either the Rural Fire Service or the NSW Fire Brigade and to advise the State Emergency Service when a victim is stable for evacuation.

2.2.3.8 HAY SHIRE COUNCIL

Hay Shire Council will if first on the scene, immediately report the accident and request the attendance of Police, Ambulance, and Fire Brigade through the 000 call centre depending on the severity of the accident.

The site shall be cordoned off and the public prevented from entering until the emergency services are in attendance. Special care needs to be exercised in approaching an aircraft depending on the spillage of fuel, possible ignition of fire, and the removal of injured or trapped persons.

In general it is best to wait until the appropriate emergency services arrive on site.

Council will offer all assistance and resources requested by the combat emergency service.

2.2.4 ACTIVATION, CONTROL AND COORDINATION

Not every emergency at the aerodrome or resulting from an aircraft accident will require the activation of the Local Emergency Management Center. Some may be coordinated from a command post within the vicinity of the accident.

These procedures have been developed to ensure that maximum possible assistance will be provided to rescue the occupants of an aircraft which has crashed on or in the vicinity of the Hay airport.

Since there are no permanent Reporting Officers at the aerodrome at present, the notification of an accident will most probably be via the emergency call number of 000 by any member of the public.

The immediate response will from the Police who will advise the Airport Manager and request access onto airside if required. All available rescue and fire fighting facilities shall be dispatched to the scene of the crash so long as there is any possibility that there may be survivors, in need of assistance.

2.2.5 AERODROME EMERGENCY FACILITIES

The aerodrome does not have any permanent emergency services stationed at the aerodrome. Activation of these services is by the 000 number and would come from the services stationed in Hay.

Emergency services would respond to any call at the airport in a similar manner that they do for every day to day incident, however the call to an emergency at the aerodrome has special conditions associated with entry onto the aerodrome, and the emergency services are kept up to date with these through the Emergency Management Committee meetings and emergency management exercises at the aerodrome.

2.2.6 EMERGENCY MANAGEMENT EXERCISES

Exercises must be held at least once every two years, with a table top exercise being held in the intervening year and the committee shall meet in conjunction with the exercise.

Exercises are designed to test the co-ordination of the emergency agencies, as well as the adequacy of the procedures and facilities provided for in the plan.

Reports of aerodrome emergency committee's meetings shall be sent to the CASA Airport Inspector in charge of the Hay aerodrome and to all Emergency Services plus a copy retained for audit purposes. Tests of facilities and equipment to be used in emergencies will be carried out by the respective services.

2.2.7 OPERATIONAL RESPONSE TO AN EMERGENCY

These procedures have been compiled with the co-operation of and have been agreed to by:-

Hay Shire Council
Rural Fire Service
Hay NSW Fire & Rescue
Hay Police
Hay Ambulance
Hay Hospital
State Emergency Services, Hay

2.2.8 EMERGENCY PROCEDURES CRASH (FULL EMERGENCY)

2.2.8.1 DIRECTOR TECHNICAL SERVICES AND/OR REPORTING OFFICER

(a) Call Police giving location of crash, which gate is available for access to the scene and type of aircraft.
(b) Raise NOTAM closing aerodrome or specific runway to aircraft traffic
(c) Put cross in signal circle if aerodrome is closed,
(d) Airport Reporting Officer will call the Director Technical Services giving location of crash and type of aircraft (contact numbers on page 4),
(e) Director Technical Services to call Hay Shire's General Manager giving location of crash and type of aircraft (contact numbers on page 4),

(f) Proceed to scene of crash and ensure access routes are open for emergency service vehicles.
(g) At accident scene proceed with caution do not enter unless the area is obviously safe,
(h) Assist emergency services.
(i) Notify Duty Officer at ATSB, and advise Police if accident is to be cordoned off for investigation.
(j) If not cordoned off advise ATSB when emergency is over.

2.2.8.2 POLICE

(a) Requests VHR and requests that all emergency services be called to scene,
(b) If not advised by the Airport Manager of the accident, call Airport Manager (contact numbers on page 4), and request access to the accident site,
(c) Proceed to scene of crash and set up command post,
(d) Assess situation and injury count,
(e) Notifies Hospital (contact numbers on page 5),
(f) Control movements of unauthorised persons and vehicles both at the scene and on the approach roads to facilitate movement of emergency vehicles and essential persons,
(g) Direct all emergency services (except fire fighting personnel),
(h) Marshall walking survivors and account for all persons on board crashed aircraft,
(i) Represent the Coroner at the crash site, cordon off area,
(j) Assist in investigations as necessary,
(k) Guard wreckage against unlawful interference until BASI take custody or released by BASI,
(l) Co-ordinate with all emergency services as appropriate.

2.2.8.3 FIRE BRIGADE

(a) Proceeds to scene of crash,
(b) Take control of fire fighting and rescue operations in liaison with other services.

2.2.8.4 AMBULANCE

(a) Proceeds to scene of crash,
(b) Provides First Aid as required,
(c) Evacuate casualties to hospital.

2.2.8.5 HAY DISTRICT HOSPITAL

(a) Provides Medical team at crash site,
(b) Prepares to receive casualties.

2.2.8.6 STATE EMERGENCY SERVICE

(a) Proceed to the site,
(b) Free trapped victims
(c) Give assistance as required by Fire Brigade.
(d) Give assistance as required by Police.
(e) Give assistance as required by Ambulance.

2.2.9 LOCAL STAND BY

2.2.9.1 AERODROME MANAGER/REPORTING OFFICER OR POLICE

(a) Calls Police,
(b) Aerodrome Manager notifies General Manager,
(c) Reporting Officer/Groundsman notifies Airport Manager,
(d) Stand by.

2.2.9.2 POLICE

(a) Notifies as in 2.2.8.2,
(b) Stand by

2.2.9.3 EMERGENCY SERVICES

(a) All emergency services shall proceed to the Airport and Stand-by on apron until landing has been made and be prepared to go into full crash procedure if required.

2.2.10 BOMB THREAT

A bomb threat could come from any source either direct to the airline company or through the 000 system. If notification given to the airline company,

2.2.10.1 AIRLINE COMPANY

Airline company informs Police giving the following:
(a) Type and registration of aircraft.
(b) Estimated time of arrival or whether already on the airport.
(c) Number of persons on board.
(d) Any other additional information available

If possible
(a) Arrange for the speedy evacuation of the passengers,
(b) Remove the aircraft to a remote location after consultation with the Airport
(c) Assists police in searching the aircraft. If police unable to search, the airline company will arrange for another agency to conducts the search.

2.2.10.2 POLICE

(a) Aerodrome Manager/Reporting Officer for access to airside and locate a remote location at the aerodrome,
(b) Fire Brigade of location of aircraft
(c) Ambulance Hay to proceed to aerodrome,
(d) Hospital Hay to be on standby
(e) Proceed to aerodrome apron.
(f) Assist in evacuation of aircraft.
(g) Conduct search of aircraft.

2.2.10.3 FIRE BRIGADE

(a) Proceeds to the aerodrome apron.
(b) Covers the landing and subsequent evacuation of aircraft.
(c) Stands by in a strategic position until all danger has passed.

Note: If any explosion occurs, the Fire Officer shall assume control of the rescue and fire fighting operations.

2.2.10.4 AMBULANCE

(a) Proceed to aerodrome apron.
(b) Stand by until all danger has passed.
(c) Assist if any evacuees require medical attention.

2.2.10.5 AERODROME ACCESS

Keys to aerodrome gates are held by the following, entry can be accessed from Gate 1 after advising the Director Technical Services if the gate is not already opened.

Shire Office
Ambulance
Police
SES
Director Technical Services
Reporting Officer

CAUTION: The apron and airside areas may still be active or an inbound pilot unaware of the closure NOTAM. All movement on to airside should proceed with caution, preferable either the Airport Manager or Reporting Officer should be present that has an air radio.

2.2.11 FUEL SPILL

2.2.11.1 PILOT OR FUEL OPERATOR

(a) If possible isolate source of leak;
(b) Notify Fire Brigade;
(c) Keep public away from scene;
(d) Notify Airport Manager.

2.2.11.2 DIRECTOR TECHNICAL SERVICES

(a) Notifies all emergency services as in section 2.2.8.1,
(b) Stays on standby.

2.2.11.3 ALL EMERGENCY SERVICE EXCEPT NSW FIRE BRIGADE –

(a) On Standby

2.2.12 RETURN AERODROME TO OPERATIONAL STATUS

2.2.12.1 EMERGENCY SERVICES

The Emergency Service in control of the operation will advise the Police and the Airport Manager when it is considered safe to open the aerodrome or a the runway.

2.2.12.2 DIRECTOR TECHNICAL SERVICES/REPORTING OFFICER

(a) Shall inspect the area where the accident occurred to ensure that it is safe for aircraft to land or arrange for repairs to be carried out,
(b) Ensure that all Emergency Services and other personnel are clear of the airside area,
(c) Ensure that all lights are functional,
(d) Contact Air Services and cancel the NOTAM.

2.2.13 DEBRIEF OF ACCIDENT OR EMERGENCY EXERCISE

2.2.13.1 EMERGENCY EXERCISE

(a) Debrief of functional area leaders held immediately after exercise completed.
(b) All functional area leaders attend the Emergency Management Meeting held no later than 2 weeks after the exercise for a detailed discussion.
(c) Airport Manager to prepare report outlining pros and cons of the exercise, with suggestions on improvements.
(d) Functional area leaders hold their own debrief with members to discuss operational procedures and where improvements may be required and brief the Emergency Management Committee on their findings.
(e) Airport Manager to submit report to CASA Airport Inspector.
(f) Airport Manager to follow up on the recommendations.

2.2.13.2 ACCIDENT DEBRIEF

(a) Debrief of functional area leaders held immediately after accident completed.
(b) All functional area leaders attend the Emergency Management Meeting held no later than 2 weeks after the exercise for a detailed discussion.
(c) Director Technical Services to prepare report outlining pros and cons of the exercise, with suggestions on improvements.
(d) Functional area leaders hold their own debrief with members to discuss operational procedures and where improvements may be required and brief the Emergency Management Committee on their findings.
(e) Each service to assess their personnel and assess whether crisis management counselling is required, and organise this as a matter of urgency.
(f) Director Technical Services to submit report to CASA Inspector.
(g) Each functional area to follow up and implement any recommendations that have resulted from the debrief on a routine basis

2.2.14 REVIEW OF EMERGENCY MANAGEMENT PLAN

The Emergency Management Committee will review the Airport Emergency Management Plan on a yearly basis to ensure that it operates effectively.

The review of the plan can be either by a desk top exercise or by a staged emergency. The review must involve all agencies and if possible incorporate the local Doctors and Hospital.

Minutes and/or report of the review must be taken by the Director Technical Services and any changes to the Emergency Management Plan incorporated into this manual and distributed to persons holding copies of the Airport Manual. The distribution list is given on page 2 of this manual.

2.2.15 RECORD KEEPING

The Director Technical Services shall keep a record of all emergencies that have occurred at the aerodrome whether real of staged for a period of no less than three years.

All records of emergencies at the aerodrome whether real or staged shall be sent to the CASA Airport Inspector for his files.

2.2.16 DEFERRING AN EMERGENCY EXERCISE

In the event that an actual emergency occurs within six months prior to an emergency exercise being due, the Director Technical Services may in accordance with clause CASR 139.215 (2), request from CASA an extension in the period when the next emergency exercise is required.

2.3 AERODROME LIGHTING

2.3.1 INTRODUCTION

At Hay Aerodrome a pilot Activated Lighting (PAL) system (on frequency 119.6Mhz) is provided. PAL operates the lights on runway 04/22, taxiway, apron, the illuminated wind direction indicator (IWDI), floodlights and obstruction lights. The lighting control equipment is housed in a free standing control box near the entrance gate.

Particulars of the procedures for inspection and maintenance of the aerodrome lighting (including obstacle lighting) include the following:

2.3.2 THE ARRANGEMENTS CARRYING OUT INSPECTIONS AND THE CHECK LIST FOR INSPECTIONS

An operational performance inspection of the runway, taxiway, apron, IWI, beacon, flood, and hazard lighting is conducted every Monday and Friday mornings and monthly night inspections by the reporting officer, as an additional item to the normal daily inspection. The inspection requires that all lights are activated and checked. The aerodrome lighting performance checklist is at Appendix 1.

Every 12 months, a full technical inspection of the aerodrome lighting and beacon system is conducted by a licensed electrician. Refer to Appendix 2 for details.

2.3.3 SERVICEABILITY OF AERODROME LIGHTING

A light is deemed unserviceable when the main beam is out of its specified alignment or where its average intensity is less than 50 percent of the specified value.

A flashing light is deemed unserviceable when:

(i) The light ceases to flash or oscillate; or
(ii) The frequency and/or duration of flash is outside the specified range by a factor of 2 to 1 or greater; or
(iii) Within a 10 minute period, more than 20% of flashes fail to occur.

A lighting system is deemed to be unserviceable when:

(i) In the case of a lighting system comprising less than 4 lights (e.g. taxiway holding position lights or runway threshold identification lights), any of the lights become unserviceable;
(ii) In the case of a lighting system comprising 4 or 5 lights (e.g. wind direction indicator lights or runway guard lights), more than 1 light become unserviceable;
(iii) In the case of a lighting system comprising 6 to 13 lights (e.g. threshold lights or LAHSO lights), more than 2 lights become unserviceable, or 2 adjacent lights become unserviceable;
(iv) In the case of a lighting system comprising more than 13 lights, more than 15% of the lights become unserviceable, or two adjacent lights become unserviceable.

2.3.4 THE ARRANGEMENTS FOR RECORDING RESULTS OF INSPECTIONS AND FOR TAKING FOLLOW-UP ACTION TO CORRECT DEFICIENCIES

A record of each inspection whether operational performance or technical denoting any failures of the lighting system is made in the reporting officers log book held at the Council office. Any minor failures, such as failed lamps or broken lenses, are fixed immediately by the reporting officer.

Where appropriate, the reporting officer will notify the aerodrome manager of urgent electrical failures. Repairs of aerodrome lighting beyond the scope of the reporting officer will be undertaken by a licensed electrician as requested and arranged by the aerodrome manager.

The more significant lighting failures affecting aircraft operations will be reported to the NOF (contact 5), if required, a NOTAM is issued.

A report is made by the licensed electrician after any technical inspection; the report is submitted to the aerodrome manager. The Aerodrome manager is responsible for organising significant repair work identified in the report. Minor repairs are also undertaken during the inspection by the licensed electrician.

2.3.5 ARRANGEMENT FOR CARRYING OUT ROUTINE AND EMERGENCY MAINTENANCE

Routine maintenance will be undertaken by the reporting officer as required. For emergency maintenance a licensed electrician is on call. The electrician will carry out any emergency maintenance beyond the scope of the aerodrome reporting officer.

2.3.6 ARRANGEMENTS FOR STAND-BY POWER, IF ANY, AND IF APPLICABLE, PARTICULARS OF ANY OTHER METHOD OF DEALING WITH PARTIAL OR TOTAL SYSTEM FAILURE

Stand-by power is not available.

2.3.7 CONTACT FOR PERSONS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE OF AERODROME LIGHTING

Aerodrome Manager (contact 2)
Reporting Officer/s (contact 3); and
Licensed Electrician (contact 8)

2.4 AERODROME REPORTING

2.4.1 WHAT IS AERODROME REPORTING

Aerodrome reporting is the notification of changes to the published aerodrome information or of any other occurrence affecting the safety of aircraft using the aerodrome.

The occurrences may be known about beforehand, as in planned aerodrome works, or discovered during an inspection of the aerodrome or obstacle limitation surfaces.

2.4.2 WHAT IS AERODROME INFORMATION

Aerodrome information is the data on aerodromes and their environs (known as aerodrome particulars in Part 3 of this manual) which Airservices Australia publishes for pilots in Aeronautical Information Publications (AIP). The main publication that concerns aerodromes is the Enroute Supplement Australia (ERSA) it contains aerodrome information of a lasting character essential to air navigation. Detailed runway information is included in an associated document named ERSA Runway Distances Supplement.

2.4.3 WHERE IS AERODROME INFORMATION PUBLISHED

Aerodrome specific information is published in the facilities' section of ERSA. In addition, runway slope, declared and supplementary take-off distance information is included in the runway distances supplement.

For safe flight planning and operations, the information provided in ERSA must be correct at all times. ERSA is updated quarterly. In between updates, the published information may be changed temporarily or permanently due to weather, aerodrome development, or occurrences at or around the aerodrome. When a change affects the safety of aircraft using the aerodrome, the Reporting Officer or his deputy will notify the NOF who issue the NOTAM system to promptly advise airlines and pilots of the changes.

NOTAM is an acronym for "Notice to Airmen". The NOTAM is a legal document and the delegation to originate a NOTAM is restricted.

Defined: A NOTAM is a notice issued by or with the authority of the CASA containing information or instructions concerning the establishment, condition or change in any aeronautical facility, procedure or hazard, the timely knowledge of which is essential to advise persons concerned with flying operations of matters of an urgent nature that may affect aircraft safety or operations.

2.4.4 REPORTING CHANGES TO INFORMATION

(a) Particulars of the procedures for reporting any changes to the aerodrome information set out in AIP and procedures for requesting the issue of NOTAMS, including the following:

When changes occur at Hay Aerodrome in circumstances such as:

(i) aerodrome works affecting the movement area or obstacle limitation surfaces;

(ii) unserviceable portions of the maneuvering area;

(iii) temporary obstacles to aircraft operations;

(iv) obstacles infringing clearance surfaces;

(v) bird hazards;

(vi) any changes (permanent or temporary) in the aerodrome directory;

(vii) changes that affect the operation of radio navigation or landing aids; and

(viii) Any other temporary effect which closes a runway or the aerodrome.

The Aerodrome Reporting Officer (ARO) will promptly formulate a NOTAM as per Appendix 5**.** A request for the issue of the NOTAM will be sent by fax to the NOTAM Office (contact 15).

The aerodrome information published in ERSA is checked annually. Any change (not considered NOTAMMABLE) to this information is advised to the Aeronautical Information Service (AIS).

(b) The arrangements for reporting any changes to the Authority, and recording the reporting of changes, during and outside the normal hours of aerodrome operation;

The ARO:

Will report any changes of aerodrome serviceability to NOF by fax.

Changes to aerodrome serviceability during and outside normal hours of aerodrome operation, and any NOTAMS issued by the ARO are recorded in the ARO's log book.

Any changes to published information is to be sent to the District Aerodrome Inspector (DAI) contact 6. In the form of an amendment to Part 3 of this manual.

Copies of any NOTAMS issued by the ARO held by the Council Aerodrome Manager (contact No. 2) and is recorded in the ARO log book.

(c) the names and roles of the persons who are responsible for notifying the changes and the telephone numbers for contacting those persons during and after working hours;

The Aerodrome Manager has notified NOF and the CASA's Aerodrome Inspectorate that personnel authorised and responsible for notifying aerodrome changes have been appointed, they are:

Aerodrome Manager (contact 2); and

Aerodrome Reporting Officer (contact 3)

The ARO will notify NOF and the Aerodrome Inspector of any changes in aerodrome data or operating criteria and resultant of findings of the Obstacle Limitation Survey.

In the absence of the reporting officer, the aerodrome manager can access the latest aerodrome information by consulting the reporting officers log book.

(d) The location and telephone numbers, as provided by the Authority, of the place at which changes may be reported to the Authority;

- NOF (contact 5) for NOTAMS; and
- CASA's Aerodrome Inspectorate (contact 6) for consultation prior to issuing permanent changes to aerodrome operating criterion.

Are recorded:

(i) In the contact list of the Council Aerodrome Manual;

(ii) In the aerodrome emergency procedures manual;

(iii) At the aerodrome reporting officer telephone;

(iv) At the telephone (terminal building);

(v) in the front of the reporting officers log book, and

(vi) in each Study Notes for Reporting Officers of Local Aerodromes Reporting officers handbook.

2.5 UNAUTHORISED ENTRY TO AERODROME

Particulars of the procedures for preventing the unauthorised entry of persons, vehicles, equipment, plant or animals, or other things that may endanger aircraft safety, into the movement area, including details of the following:

(a) the arrangements for controlling airside access;

(b) the names and roles of the persons who are responsible for controlling access to the movement area and the telephone numbers for contacting them during and after working hours;

2.5.1 GENERAL

Because there is no regular passenger transport to the aerodrome, no permanent Reporting Officer is stationed at the aerodrome, Hay Shire Council cannot fully comply with the CASA requirement that an operator of an aerodrome shall ensure no person or thing can enter the movement area so as to endanger the safety of aircraft. But Council does ensure that restricted access from landside to airside is made obvious and controlled through fencing and signage.

Vehicle access on to airside is controlled by signage and locked gates.

The perimeter of the aerodrome and boundaries between movement areas and agricultural areas are fenced with stock proof wire, steel post, timber or steel strainers, "Ring-lock" netting fences.

The apron area has basic low fencing.

2.5.2 EMERGENCY ACCESS

In the event of an emergency, alternative access can be gained to airside from the white wooden gate to the south of the terminal building.

In the event of such emergency use, the Hay Shire Council undertakes to re-instate the gate immediately the emergency is over.

2.5.3 ACCESS TO AERODROME FIXED BASE OPERATORS

Vehicular access is available to selected organisations such as Police, Ambulance, NSW Fire Brigade, Rural Fire Brigade and the refuelling company.

Aerodrome fixed base operations have vehicular access on a limited basis by special agreement with Hay Shire Council, these being:-

(a) Lessees of lease sites
(b) Postal Services
(c) Local Transport Companies that utilise air freight
(d) Medical Services

All vehicles entering airside from these organisations will have a revolving flashing amber light mounted on a prominent position on their vehicle able to be seen for a full 360^{O}. Unless otherwise agreed with Council, vehicular access is limited to the Apron only.

2.5.4 PUBLIC SAFETY

All charter and private aircraft operators are responsible for controlling access of passengers to and from aircraft boarding.

2.5.5 KEY REGISTER

The Director Technical Services will authorise persons or operators requiring access to apron area a key and will keep a record of the names and roles of persons to whom keys have been issued.

2.5.6 PEOPLE RESPONSIBLE FOR CONTROLLING ACCESS AND THEIR ROLES

Council staff such as:

(a) Director of Technical Services
Delegation from Council to order unauthorised persons from airside. Unauthorised persons will be requested politely to leave, if problems arise the Hay Police will be called for assistance.

(b) Reporting Officer/s
Delegation by Director Technical Services to order unauthorised persons from airside. Unauthorised persons will be requested politely to leave, if problems arise the Hay Police will be called for assistance.

(c) Pilots for their passengers
Pilots are responsible to ensure that their passengers do not stray unescorted onto airside

Council employees have the authority to order people from the airside movement area if they are not attending an aircraft or in the company of a person who is attending an aircraft. No person should be inside the gable markers without permission especially if not in the presence of a reporting officer.

The names and telephone numbers of the above Council employees are listed in the contact list on page 4 and Clubs or organisations given on pages 4 to 8.

2.6 AERODROME SERVICEABILITY INSPECTIONS BY AERODROME OPERATOR

(a) the arrangements for carrying out inspections during and outside the normal hours of aerodrome operation;

Aerodrome serviceability inspection

Inspections are carried out by one of the nominated reporting officers. A reporting officer is on call 24 hours per day and will respond to any incidents reported.

(b) the means of communicating with Air Traffic Control during an inspection, if applicable;

Hay aerodrome is not an ATC controlled aerodrome.

During inspections a radio listening watch is kept on CTAF frequency 126.7 by the reporting officer.

(c) the arrangements for keeping inspection log sheets;

An aerodrome inspection log sheet is used and maintained on a regular basis. Typically the type of information contained in the log sheet will show:

(i) the facilities inspected;

(ii) further investigation or follow-up action;

(iii) weather details if significant;

(iv) bird strikes;

(v) vandalism;

(vi) location of substandard conditions that require attention, and a note of action taken;

(vii) copies of any document sent to the Airservices Australia;

(viii) objects including bird and animal remains found on the movement area;

(ix) new obstacles detected; and

(x) any problems with runway, taxiway and apron surfaces.

After any inspection or happening at the aerodrome, whether or not any unserviceability has been detected, the reporting officer is required to write an entry on the log sheet, detailing the date and time of the inspection.

An unserviceability or any other condition of concern that has been detected, that unserviceability, and any of the memo's to the Aerodrome Manager detailing operational items considered to require maintenance, is filed with the log sheet in Council's Electronic Documents Management System.

The reporting officer is required to sign the checklist each inspection with the time and date of the inspection.

(d) details for the intervals at which the inspections are carried out and the times of the inspections;

Aerodrome serviceability inspection

Aerodrome serviceability inspections are carried out by one of the nominated Reporting Officers Monday and Friday each week. In addition, inspections are carried out after unusual weather phenomena, such as heavy rainfall or severe wind storms.

Additional inspections may be carried out following requests from NOF or the District Aerodrome Inspector

(e) details of the inspection checklist;

Aerodrome Serviceability Inspection Appendix 4.

(f) the arrangements for reporting the results of the inspections and for taking prompt follow-up action to ensure correction of unsafe conditions;

Whenever a hazardous condition occurs at the aerodrome, the Reporting Officer is required to close the affected area of the aerodrome and set out the appropriate markers as detailed in the documents ***"Manual of Standards Part 139"*** and ***"Rules and Practices for Aerodromes".*** Once the hazard has been correctly marked the Reporting Officer is required to advise the NOF using the appropriate form from the manual.

The Reporting Officer is required to send a memo to the aerodrome manager giving details of any hazardous condition that occurs so that appropriate remedial action can be taken.

Similarly, the Reporting Officer is required to send a memo to the aerodrome manager advising of any maintenance work considered necessary to avoid a potentially hazardous condition developing.

(g) persons responsible for carrying out inspections;

Aerodrome Reporting Officer (contact 3) is responsible for twice weekly serviceability inspections.

Licensed Electrician (contact 8) is responsible for electrical inspections.

2.7 AERODROME WORKS SAFETY

Particulars of the procedures for planning and safely carrying out Works (including works which may have to be carried out at short notice) on, or in the vicinity of, the movement area, that may affect obstacle limitation surfaces, including the following:

General

Aerodrome works will be carried out in accordance with the "Manual of Standards part 139" Chapter 10.10.2 / 10.10.3, as appropriate.

Routine and minor maintenance items will be carried out as time limited works by, or under the supervision of, one of the reporting officers.

Time Limited Works are not to be carried out at night or during periods of low visibility.

Projects within the runway strips that cannot be completed as time limited works will be undertaken with the affected runway closed or if all runways are affected, with the aerodrome closed.

When closure of the aerodrome or a runway is required for planned maintenance work, a Method of Working Plan (MOWP) will not be issued.

(a) the arrangements for communicating with Air Traffic Control during the carrying out of works;

The Reporting Officer will contact the NOF using the telephone or fax in the Reporting Officers office.

(b) names of persons and organisations responsible for planning and carrying out works and arrangements for contacting those persons;

The Aerodrome Manager is responsible for carrying out all major projects at the aerodrome.

The Reporting Officer will carry out or supervise minor projects within the movement area.

(c) names of aerodrome fixed base operators and aircraft operators who are to be notified of the works;

Principal General Aviation Operators (contact 13);

(a) distribution of method of working plans;

Not applicable.

2.8 AIRCRAFT PARKING CONTROL

Particulars of the procedures for aircraft parking control, if established, including the following:

(a) the arrangements for allocating aircraft parking positions;

There are no formal parking procedures established at Council Aerodrome. Pilots are responsible for aircraft parking.

(b) the arrangements for initiating engine start-up land ensuring clearances for aircraft push-back;

Pilots are responsible for ensuring adequate clearance during start-ups. No aircraft push-backs occur.

(c) an inventory and description of any visual docking guidance system used at the aerodrome;

None provided.

2.9 AIRSIDE VEHICLE CONTROL

Particulars of the procedures for the control of surface vehicles operating on, or in the vicinity of, the movement area including the following:

Council controls vehicular access airside at the aerodrome by keeping the gate to the apron locked. The Aerodrome Manager issues keys to applicants requiring access to the apron area.

(a) details of applicable traffic rules (including speed limits and means of enforcement of the rules);

Applicants must have a current drivers licence and are expected to observe 20 kph speed limit on the aerodrome. Notices displayed on gates restrict access to people having a legitimate requirement to go on the apron. All vehicles must have a 360° flashing amber light.

(b) methods of instructing drivers in relation to applicable rules;

Reporting Officers, Aerodrome Manager, Aerodrome Technical Inspector and any CASA personnel having a legitimate reason to enter the movement area are the only personnel permitted to take vehicles onto the taxiways and runways. These people have adequate aerodrome safety training**.**

2.10 BIRD HAZARD MANAGEMENT

Bird hazard management is the arrangement to minimise bird hazards to aircraft operations on and in the vicinity of an aerodrome. There are two elements to bird hazard management:

Bird control: is action through planning that keeps any bird attracting activities eg minimising water ponding, siting of waste disposal dumps, abattoirs and certain types of farming activity away from the aerodrome and its approach and take-off paths; and

Bird reduction: is action taken to decrease the number of birds by adopting measures for discouraging their presence, on or in the vicinity of the aerodrome.

Particulars of the procedures to deal with danger to aircraft operations caused by the presence of birds on or in the vicinity of the aerodrome ("bird hazard"), including the following:

(a) the arrangements for assessing any bird hazard;

Reporting Officers are alert to the potential danger of significant numbers of birds at or in the vicinity of the aerodrome. Bird numbers are constantly monitored and possible bird attractions, such as food sources, are removed or changed where practicable in consultation with the local Conservation Commission.

Evidence of bird strikes is recorded in the reporting officers' logbook. A NOTAM is issued if a significant bird hazard arises. Hay Aerodrome ERSA notices contains a bird hazard at aerodrome warning.

Any incident will be reported to ATSB.

(b) the arrangements for the removal of any bird hazard;

Reporting Officers ensure that water ponding on the runway strips, all rubbish bins and other bird attracting situations is minimised and removed, if appropriate.

(c) the names and role of the persons responsible for dealing with bird hazard, and the telephone numbers for contacting those persons during and after working hours;

Reporting Officer/s (contact 3).

ARO will harass or remove bird/s that are posing a hazard

2.11 OBSTACLE CONTROL

Particulars setting out the procedures:

(a) monitoring the obstacle limitation surfaces for obstacles;

Council monitors the potential effect of the new structures on the aerodrome obstacle limitation surfaces through its planning approval process. This is completed prior to development approval under the NSW EPA Act by the Planning Department, checking heights against the latest OLS.

Reporting Officers include a visual check for new obstacles in the approach and transition surfaces during their inspections.

(b) monitoring building developments (in relation to the heights of buildings and other structures) within the horizontal limits of the obstacle limitation surfaces;

Council's Planning Department considers the potential effect on the obstacle limitation surfaces as part of its planning approval process comparing proposals to the latest OLS. The obstacle limitation surfaces contour plan (held in the Planning Department) determines the height control for any development within 15 kilometre radius of the aerodrome. Any potential obstacles will be referred to the CASA for assessment of effect on the operations at the Aerodrome.

(c) notifying the authority of the nature and location of obstacles;

The Aerodrome Manager or Reporting Officer will advise the NOF (contact 5) by NOTAM of any new obstacle that protrudes through the obstacle limitation surfaces (OLS). CASA's Aerodrome Inspectorate (contact 6) will also be notified of any objects which extends above the OLS.

(d) Detail procedure of corrective action taken after OLS.
Date, Runway Direction, Details of obstacle.

2.12 DISABLED AIRCRAFT REMOVAL

Particulars of the procedures for removing an aircraft which is disabled on or near the movement are except in an emergency, including the following:

(a) the role of the aerodrome operator and the holder of the aircraft's certificate of registration:

The pilot is expected to have the authority of the holder of the aircraft's certificate of registration to immediately remove an aircraft that is obstructing operations on the movement area of the aerodrome.

The holder of the aircraft's certificate of registration is responsible for providing, by the fastest means possible, any special equipment that may be necessary to permit removal of a disabled aircraft.

(b) the arrangements for notifying the holder of the certificate of registration:

The pilot of a disabled aircraft is expected to notify the holder of the aircraft's certificate of registration.

(c) arrangements for liaising with Air Traffic Control:

If the disabled aircraft cannot be immediately removed from within a runway strip, the reporting officer will ensure that unserviceability crosses will be displayed on the runway and the NOF is notified of runway closure. In the absence of the reporting officer the pilot will advise the NOF of the disabled aircraft closing the runway or aerodrome.

(d) arrangements for obtaining equipment to remove the aircraft:

The holder of the aircraft's certificate of registration is expected to provide by the fastest means possible any specialised equipment and personnel required to remove a disabled aircraft.

As far as possible, council employees and equipment will be made available at a reasonable charge to assist in removing a disabled aircraft that is obstructing operations at the aerodrome. Council will also advise the aircraft operator the contacts of any commercial crane operators that may assist in providing equipment for the removal of disabled aircraft.

(e) the names and roles of persons responsible for arranging for the removal of an aircraft which is disabled and the telephone numbers for contacting those persons during and after working hours:

In the event that a disabled aircraft cannot be immediately removed from within a runway strip, the pilot shall contact one of the aerodrome's Reporting Officer's. The telephone numbers of the reporting officers, both during and after working hours, are displayed in the terminal building.

- Aerodrome Manager (contact 2)
- Aerodrome Reporting Officer (contact 3) shall if required, advise the pilot to contact local salvaging contractors as may be listed in the local telephone directory.

2.13 HANDLING HAZARDOUS MATERIALS (Excluding Agricultural Chemicals)

Particulars of the procedures for the safe handling of hazardous materials on the aerodrome, including the following:

(a) persons who are to receive and handle hazardous materials;

Only two types of hazardous materials, aviation fuel and farm chemicals, are handled on the aerodrome.

Persons responsible for the handling of the hazardous materials are the employees of:

Fueling Agent (contact No. 10), for aviation fuel.

(b) arrangements for special areas on the aerodrome to be set up for the storage of hazardous materials;

Aviation fuel is stored on the aerodrome in a bunded area as specified by the State Department of Minerals and Energy. These are essentially the procedures detailed in the standards Association of Australia booklet AS1940 "Storage and Handling of Flammable and Combustible Liquids".

Any explosives, as defined by the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air, will be loaded and unloaded in accordance with CAAP 891-1 (Safe Distances for Explosive Laden Aircraft).

The area designated for loading and unloading explosives at Hay aerodrome is at a location nominated by the Aerodrome Manager.

(c) methods to be followed for delivery, storage, dispensing and handling of these materials;

Council does not have any specific guidelines to be followed for the delivery of hazardous materials other than that the materials are to be delivered in the most direct route to the dispensing point. In each case this route is well away and clear of any public area.

Aviation fuel is delivered and stored in accordance with the procedures specified by the State Department of Minerals and Energy. Adequate "no smoking or naked flames" notices have been placed near the point of aviation fuel dispensing.

2.14 AGRICULTURAL CHEMICALS

The requirements of the following must be complied with:

(i) Pesticides Act 1999
(ii) Pesticides Regulation 2009
(iii) All directions from the Australian Pesticides and Veterinary Medicines Authority (APVMA)
(iv) NSW EPA – Environmental Guidelines: Aerial Spraying Facilities 2017 (attached)

2.14.1 APPLYING PESTICIDES FROM AN AIRCRAFT

Pesticides can only be applied from aircraft endorsed by the Civil Aviation Authority (CASA) as suitable for agricultural operations. The Act prohibits the attachment of spray equipment to any aircraft not endorsed for agricultural operations.

Before a pesticide can be applied from an aircraft, both the employer and the pilot must hold specified qualifications (outlined below) and obtain a licence from the Environmental Protection Authority (EPA).

2.14.2 WHAT ARE THE LICENSING REQUIREMENTS?

Both the pilot and employer are required to hold EPA licences before an aircraft may be used to apply pesticides. The pilot must hold an aerial applicator pilot licence. The pilot must also hold an aerial applicator business licence themselves or be engaged or employed by a holder of an aerial applicator business licence.

If a person or company (business) employs or engages a pilot for the aerial application of a pesticide the employer must hold an aerial applicator business licence and must ensure that the pilot holds an aerial applicator pilot licence.

The qualifications required to apply for each licence are:

Aerial applicator pilot licence (previously known as a pilot (pesticide rating) licence)	Hold a current commercial pilot (airplane) licence or commercial pilot (helicopter) licence issued under the *Civil Aviation Act 1988* with an agricultural rating or an aerial application rating. Hold a certificate of approval issued under the Spray Safe Accreditation Program conducted by the Aerial Application Association of Australia, OR pass an exam conducted in accordance with the requirements of another state or territory for the purpose of obtaining an equivalent licence.
Aerial applicator business licence (previously known as aircraft (pesticide applicator) licence)	Hold an Air Operator's Certificate endorsed for aerial application operations, issued under the *Civil Aviation Act 1988.*

2.14.3 AREA'S AT HAY AERODROME TO BE USED

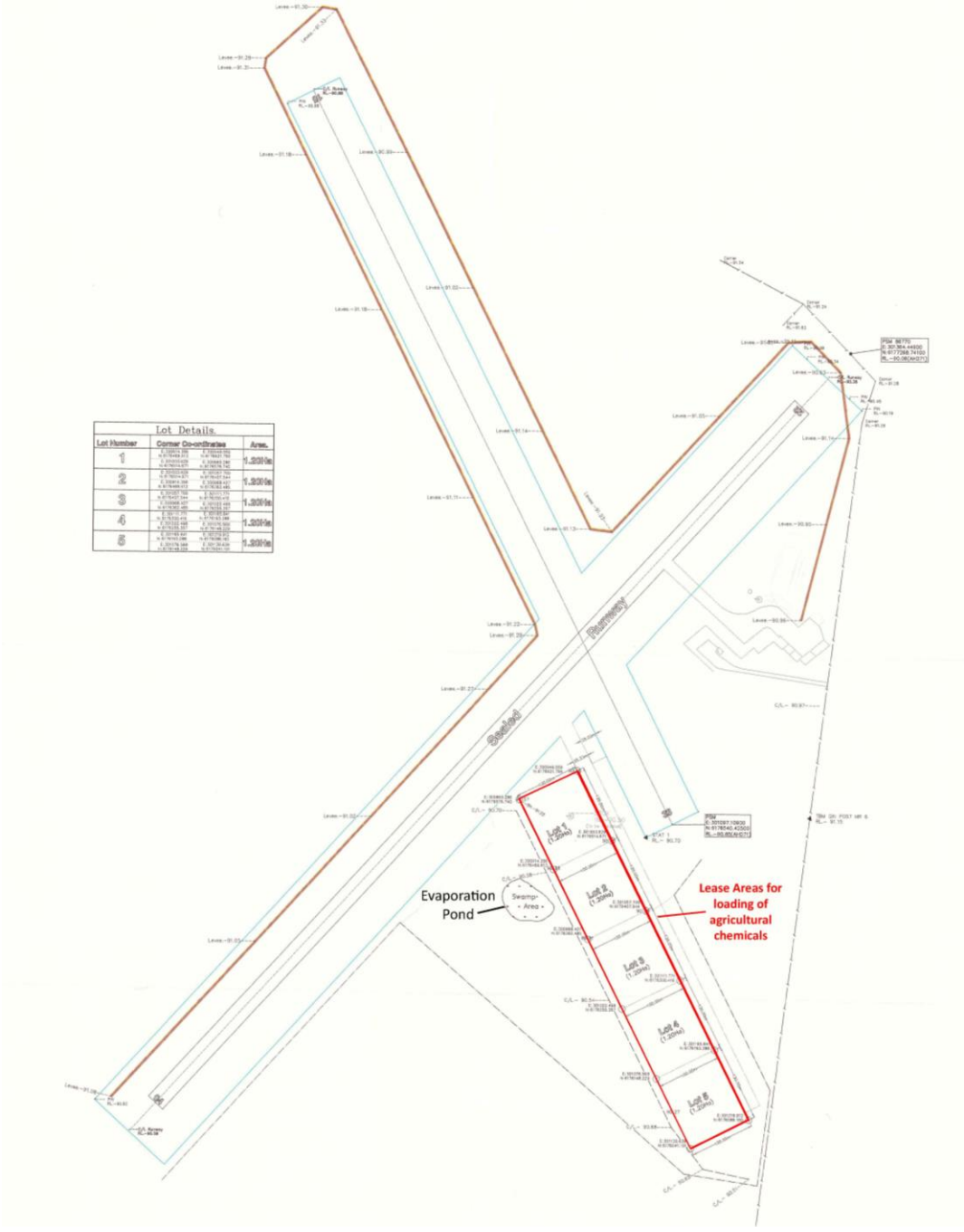
(i) Liquid chemicals can only be loaded on the lease areas marked on the map below. These loading areas must be contained, and all effluent must be conveyed to the detention pond as marked on the plan.

(ii) Solid chemicals can in certain events (such as rain events) be loaded on other areas, under the provisions that:

a. The permission of the Aerodrome Manager be obtained prior to loading.

b. The Aerodrome Manager be provided with the nature and amount of the product to be loaded.

(iii) Aerial application planes and vehicles can only be washed down on impervious surfaces in lease areas, the same as point (i).



2.15 PROTECTION OF RADAR AND NAVIGATIONAL AIDS

Particulars of the procedures for the protection of radars and navigational aids located on the aerodrome to ensure that their performance will not be degraded included the following:

Overview

Navigational Aids located within and nearby Council Aerodrome boundary area:

None

2.16 LOW VISIBILITY OPERATIONS

Particulars of the procedures for the measurement of visibility along a runway and the procedures for passing that information to Air Traffic control, including the following:

(a) persons responsible for measuring runway visual range;

Not applicable;

(b) arrangement for taking the measurement and for giving the result to Air Traffic Control;

Not applicable;

3. PART 3

3.1 PARTICULARS OF THE AERODROME THAT ARE REQUIRED FOR NOTIFICATION IN AIP

(a) As Aerodrome General Information:

(i)	name of aerodrome:	Hay
(ii)	state:	NSW
(iii)	co-ordinates:	34° 31.9 S 144° 49.8 E
(iv)	elevation	305 feet
(v)	aerodrome beacon	Nil
(vi)	aerodrome operator	Hay Shire Council PO Box 141 Hay NSW 2711 Phone: 02 6990 1100 Fax: 02 6993 1288 Email: mail@hay.nsw.gov.au

(b) Runway Information:

(i) magnetic bearing of runways & runway number:	04/22 - 42° 23′ 31″ 15/33 - 333° 17′ 08″
(ii) length, width and slope of runways:	04/22 1463 x 30 - level 15/33 1140 x 30 - level
(iii) length of clearway:	04/22 60m 15/33 60m
(iv) length of stopway:	04/22 Nil 15/33 Nil
(v) length and width of the graded and overall runway-strip:	04/22 1583 x 90 15/33 1260 x 90
(vi) pavement surface type and its strength rating:	04/22a PCN8/F/A/500(73PSI)/U 15/33c unrated red sandy clay

(vii) gradient from end of runway strip or clearway to the critical obstacle:	RWY **04**(6.2%); **22**(2%) **15**(4%); **33**(3.61%)
(viii) aerodrome obstacle chart type A (if applicable)	Not applicable for this standard aerodrome

(c) visual aid system information:

(i) runway lighting:	Permanent LIRL RWY 04/22, PAL 119.6Mhz
(ii) emergency lighting:	NIL
(iii) approach lighting:	not applicable for this standard aerodrome
(iv) visual approach deg: slope indicator system:	NIL

(d) as local information, any other matters that relate to the safety of aircraft using the aerodrome:

Refer ERSA details (Appendix 6) for wind indicator details, notices and obstacles.

APPENDIX 1
Performance Inspection

Conducted by reporting officer

Runway, taxiway apron and control lighting equipment:

Switch on PAL and observe that runway, taxiway, apron, hazard lights, the illuminated wind indicator, apron floodlighting are working.

When lights are turned on, check that the lights remain on for at least one hour. The illuminated wind indicator lights are to flash for at least 10 minutes before the lights turn off, the indicator lights should not start flashing until after at least 50 minutes. Inspect any light not working; blown lamps or broken lights are to be replaced. Any failures beyond the repair expertise of the reporting officer is reported to the aerodrome manager for action. Typically a checklist includes:

Light control building secure

Is the photo electric switch intact

Is the main switch on

Turn the runway light switch to test

Press the insulation test switch on, record the test result, is it acceptable

If the insulation test is in yellow or red detail maintenance action taken

.....

.....

Visual check of all aerodrome lighting:

runway side lights white
.....

runway threshold lights green
.....

taxiway lights blue
.....

taxiway holding point lights yellow
.....

obstacle lights in IWI red

.....

Obstacle lights on tower (TELSTRA).....

Apron Floodlights .....

IWI down lights .....

Faults repaired by .....

Maintenance completed at .....

Unable to effect repairs and following action taken (NOTAM?) .....

.....

APPENDIX 2
Technical Inspection

Technical inspection and maintenance schedule:

The bulk of this inspection and maintenance is done by the licensed electrician, the aerodrome reporting officer performs tasks such as painting and general maintenance as required at that particular time.

General inspection and maintenance runway, taxiway, and apron:

Reporting Officer:

lamps - inspect and replace lamp if burnt out or unduly blackened;

reflector - clean at lamp replacement;

filter - inspect and clean;

glassware - check and clean, replace if unduly milky in appearance;

adjustment of fitting - check focus, leveling and alignment; and

Electrician (every 12 months):

insulation - measure insulation resistance of cables and circuits including isolating transformers and light fittings. The minimum allowable resistance is calculated using the formula: 1 MegOhm divided by the number of lights in the circuit;

gaskets - check for deterioration;

terminations and wiring - observe condition;

contacts - inspect for signs of burning and pitting;

breakable coupling - inspect for corrosion; and

transformers - check and measure insulation resistance of secondary transformers.

Switch board and selector panel:

contactors - observe operation inspect for signs of burning and pitting;

relays - check operation;

indicators - check operation;

local control - check operation;

remote control - test PAALC control (use test sheet provided Appendix 3);

brightness control - check operation of local control;

terminations and wiring - observe condition rectify as required;

earthing - test main and equipment earthing;

fuses - check condition and amperage; and

instruments - check operation and zero settings.

Underground cables:

insulation - measure insulation resistance of circuits; and

terminations and wiring - observe condition.

Apron and security floodlighting:

glass ware and reflectors - examine and clean especially during lamp replacement;

terminations and wiring - observe condition;

control equipment - inspect and test; and

general - check condition of fittings, paintwork etc.;

Illuminated Wind indicator:

fittings - inspect lamp holder at lamp replacement;

insulation - measure insulation resistance of fittings and cable;

terminations and wiring - observe condition; and

general - check condition of windsock bearings, paintwork etc.

APPENDIX 3
Technical Inspection

COUNCIL

PAL Maintenance - Test sheet

Location: .....
Maintenance date: .....

PAL frequency: .....

PAL activates normally: .....

Cycle time: .....

TMTOL Time: .....

Operates after mains failure: .....

Comments:

.....

.....

.....

.....

.....

Electrical Contractor: Date:

....

Appendix 4

Aerodrome Serviceability Inspection Checklist

Aerodrome Serviceability inspection

Reporting officers use a white vehicle with an amber rotating beacon light on top when conducting the aerodrome serviceability inspection on the movement area. Reporting officers, as much as possible, will work towards the direction of aircraft approach during inspections, to facilitate visual contact with aircraft. Entry on the movement area is outside the times of scheduled RPT aircraft.

Inspection stage

What to look at/for

Movement area status

Current NOTAM's
Matters highlighted in log book from previous inspections

Runway

Debris
Markings and markers
Pavement condition
lights, and availability of spares
shoulder erosion (lip between runway and runway strip)

Runway strip

undue roughness
obstructions
grass height (especially around lights and markers)
gable markers

Taxiway and taxiway strip

debris
pavement condition
shoulder erosion
grass height
marking and markers
lights

Apron

debris
fuel or oil spillage's
pavement deterioration
markings and markers
lights
aircraft parking positions
ground equipment parking positions
refueling operations
vehicle control conduct

Wind indicators

condition,
flying freely
lighting,
spare wind socks available

Signal Circle

Condition
Availability of crosses and dumb bells

Fencing

security, indications of unauthorised entry,
restrictive signs placed at points of entry
gates locked
emergency gates unobstructed

Drainage

silting or vegetation in open drains
water ponding
blockages

Hazards

Birds or animals
indications of bird strikes
large numbers of birds near or at the aerodrome

Obstacle Limitation Surfaces

approach surfaces clear (new masts, crane jib etc.)
transitional surfaces clear
obstructions marked and lit

Specific Inspections

As requested. Looking at specific items, eg following abnormal weather or aircraft incident.

Appendix 5

ERSA Details

HAY ELEV 305
AVFAX CODE 2207

NSW UTC + 10 YHAY
S34 31.9 E144 49.8 VAR 10 DEG E REG
AD OPR Hay Shire Council, PO Box 141, Hay 2711.
Phone 02 6990 1100, Fax 02 6993 1288

REMARKS
AD Charges: Airline ACFT.

HANDLING SERVICES AND FACILITIES
Aero Refuellers: AVGAS, 24HR self service, Aero Refuellers card, VISA and Mastercard.

APRONS AND TAXIWAYS
RWY 04/22. Turning nodes each end 45M WID

AERODROME OBSTACLES
1. Unlit mast 605FT AMSL, 010 DEG MAG, 3980M from ARP.
2. RWY 15/33 – PWR pole 34FT ABV 432 NW or RWY 15 RWS end.

METEOROLOGICAL INFORMATION PROVIDED
1. METAR/SPECI.
2. AWIS PH 02 6993 4730 – Report faults to BoM.

PHYSICAL CHARACTERISTICS

04/22	033	48a	PCN 8 /F /A /500 (73PSI) /U Level	WID 30	RWS 90
15/33	144	37c	Unrated. Red sandy clay	WID 30	RWS 90

Transient OBST not accounted for in locating THR RWY 22.

AERODROME AND APPROACH LIGHTING
RWY 04/22 LIRL PAL 119.6

ATS COMMUNICATIONS FACILITIES
FIA MELBOURNE CENTRE 118.6 Circuit Area

CTAF 126.7

ADDITIONAL INFORMATION
Bird and animal hazard exists

CHARTS RELATED TO THE AERODROME
1. WAC 3457.
2. Also refer to AIP Departure & Approach Procedures.

Appendix 6

EPA Guidelines – Aerial Spraying Facilities

Environmental Guidelines
Aerial Spraying Facilities

www.epa.nsw.gov.au
Environment Protection Authority

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Email: info@environment.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.epa.nsw.gov.au

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Foreword

The NSW Environment Protection Authority (EPA) strives to ensure we have a healthy environment, healthy community and healthy business in NSW. We take our protection responsibilities for human health and the environment very seriously and this best practice guideline outlines what we expect from operators of aerial application facilities. As a leader and partner, we have prepared this environmental guideline in consultation with Cotton Australia Limited (CA), Local Government NSW, SafeWork NSW and the Aerial Application Association of Australia (AAAA). It is intended to assist the aerial spraying industry understand the regulations and their responsibilities in protecting human health and the environment in the operation of on-ground aerial spraying facilities in NSW.

This guide aims to promote good practice and assist operators to comply with the *Pesticides Act 1999* (NSW), Pesticides Regulation 2009 (NSW) and *Protection of the Environment Operations Act 1997* (NSW) (POEO Act). This guideline is intended for those in the industry seeking to construct new aerial spraying facilities and for operators who need to upgrade and manage existing facilities.

This guideline focuses on practical measures to prevent and minimise harm to human health and the environment that might result from undertaking an activity related to aerial spraying that could cause pollution. It supports risk assessment on a site-specific basis, because every site is likely to be different and have challenges requiring tailored approaches to design and planning.

My thanks to our partners for their commitment to protecting human health and the environment while undertaking aerial spraying activities.

Sarah Gardner
Executive Director, Hazardous Incidents & Environmental Health Branch, NSW EPA

Photo: John Spencer, EPA

Contents

List of figures

1 Introduction

Appropriate levels of environmental protection can be achieved by the proper siting, design, construction and management of aerial spraying facilities. Each aerial spraying facility may require a different approach to planning and designing to prevent and minimise harm to the environment and human health such as:

- appropriate siting of chemical and fuel storage
- appropriate siting of wash-down facilities for agrichemicals including types of sumps
- appropriate rinsate management
- emergency planning
- types of chemicals to be used
- potential risk to local hydrogeology from on-ground facilities to determine appropriate wastewater solutions such as in-ground evaporation ponds or above-ground tanks.

All these issues and potentially others should be considered through the risk management process. Further information on a risk management process can be found in AS/NZS ISO 31000:2009 *Risk Management – Principles and Guidelines*.

Aerial spraying facilities **must** be operated in a manner that does not present a risk of actual or potential pollution to surface or ground waters. In the event of decommissioning, no contaminated sites should remain as these are difficult to manage and expensive to remediate.

A number of useful information sources are included with this guideline; these sources are not exhaustive and other guidance may be available.

A note on terminology in this guideline:

- The term ***should*** is used where a particular course of action is considered by the EPA to be best practice.
- The term ***must*** is used where a failure to comply with the action stated in the guideline will, in the EPA's view, expose the environment to a risk of harm or may lead to a breach of the POEO Act.

2 Legal requirements

The POEO Act provides the statutory framework for managing pollution in NSW. It is an offence under section 120 of the POEO Act to pollute waters. However, sections 121 and 122 of the POEO Act provide defences against prosecution under section 120 where the pollution was regulated by an environment protection licence or regulation and the licence or regulation was complied with.

The definition of 'water pollution' in the POEO Act sets out general and specific circumstances that constitute pollution. At its broadest, water pollution means introducing any matter into waters which changes the physical, chemical or biological condition of the waters. The term 'waters' includes both surface water and groundwater.

The Protection of the Environment Operations (General) Regulation 2009 (POEO Regulation) also includes a list of specific substances (prescribed matter) which, if they are

introduced onto or into waters, are automatically taken to constitute pollution of waters (e.g. pesticides).

If you operate an aerial spraying facility and wish to upgrade an existing installation or construct a new one, you may need to consult with the EPA and/or local council for information on your obligations under the POEO Act. Also, any waste generated from the facility needs to be managed and disposed of in accordance with the POEO Act and the *Waste Avoidance and Resource Recovery Act 2001 (NSW)*.

Additionally, there are separate licensing and other regulatory requirements under the *Pesticides Act 1999* and Pesticides Regulation 2009 that apply to aerial operators, pilots and all users of pesticides, such as record keeping and licensing requirements. For more information on licensing requirements, notifications and record keeping, refer to the EPA's webpage for aerial applicators of pesticides.

Facilities dedicated to the storage of chemicals are subject to the requirements of the work health and safety (WHS) legislation that is administered by SafeWork NSW. For further information on the storage of workplace chemicals, please refer to the SafeWork NSW Hazardous chemicals webpage.

In addition, chemicals should always be used, handled or stored in accordance with the guidance in relevant Australian Standards such as Australian Standard AS 2507–1998 *The storage and handling of agricultural and veterinary chemicals.*

3 Siting of aerial spraying facilities

Aerial spraying facilities should be located away from rivers, creeks, any environmentally sensitive areas and separated from residential areas. They should not be located on floodways, or other land susceptible to flooding, unless adequately protected.

A good understanding of the local geology and hydrogeology is important when siting an aerial spraying facility and evaporation pond. Where possible, select a site with low infiltration rates, e.g. soil that has a high clay content. Establishing the vulnerability of the groundwater as a receptor is important, as well as the location of nearby groundwater bores, the direction of groundwater flow and baseline conditions. Potential impacts on sensitive receptors such as ground and surface waters, bores, animals and humans should be adequately considered and addressed. The volumes of wash-down collected and concentrations of contaminants collected should be considered to determine an appropriate solution.

4 Design and construction of chemical-handling and wash-down areas

Chemical-handling and plane wash-down facilities **must** be designed and constructed in such a way that chemicals do not pollute ground or surface waters. Each site may require different approaches to issues such as: the need for a pump from the pad to the evaporation pond; the size of the primary sump connected to the pad to remove debris; the need for a secondary sump if above-ground rinsate tanks are to be used; or the type of piping from the pad to the evaporation pond, e.g. closed piping or open covered with mesh. Figure 1 shows a typical design for a chemical handling and plane wash-down facility.

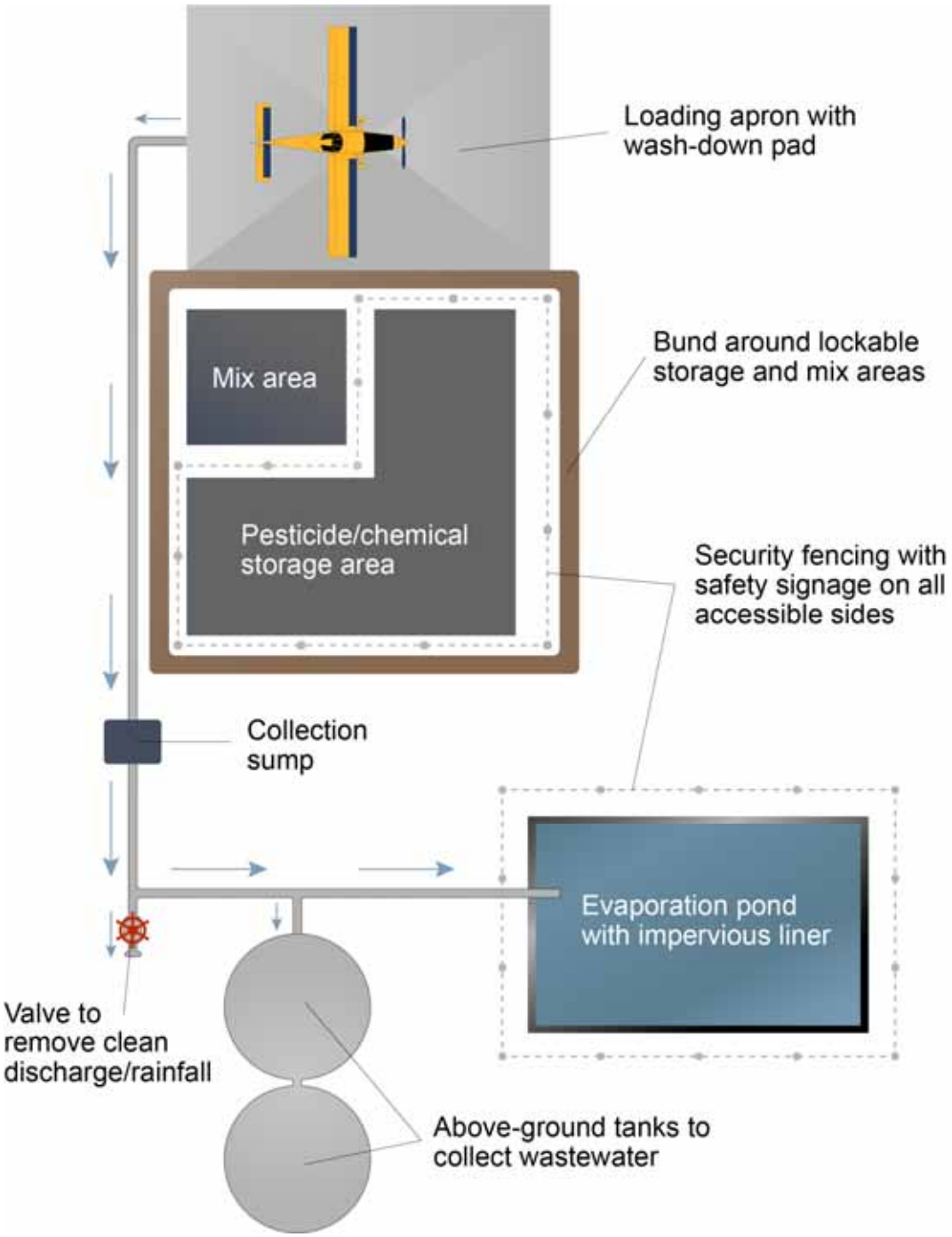

Figure 1: Diagram of an aerial spraying facility with the required design characteristics

The catchment for the disposal areas, the wash-down pad, the chemical storage area, the chemical mixing area, the loading aprons, storage tanks, drains, and any other area where chemical spillage is likely to occur **must** be constructed of impervious material and designed to contain potential chemical spillage within the immediate area.

The EPA's preferred management method for wastewaters is an above-ground tank so that wastewater can be safely contained and treated for reuse, disposed to sewer under a trade waste agreement, or removed from the site and disposed of at a lawful facility. Due to the location of aerial spraying facilities in rural and sometimes remote areas, in-ground evaporation ponds may be the only option and are often inherited by aerial spraying facilities. Evaporation ponds **must** be designed, built and maintained in accordance with this guideline to prevent risk of contamination of the groundwater and surrounding environment.

Figure 2: Appropriate wash-down area with culvert to collect run-off into a catchment area (Photo: Nina Sheer, EPA)

The wash-down pad should drain to a collection sump which should be equipped with scum baffles, partition walls, or both, to separate and remove solids that may be present in the wastewater. The wash-down pad needs to be large enough to contain any material that could be washed from the surface of the plane (that is, the whole plane should fit well within its boundaries). As a further precaution and to minimise the size of the sump required, the wash-down pad can be roofed to intercept rain which is either reused on-site or directed to stormwater. The sump **must** be sized to contain all wash-down water without overflowing.

Each bunded area should be provided with its own sump, which can be isolated from other areas if the need arises. Install suitable pipework so that any rainwater that collects in the bunded area can be transferred to the main collection sump.

Pumping systems, if required, that move wastewater from the collection sump to an above-ground tank have to be large enough to empty the collection sump as quickly as the collection sump can be filled. This allows the sump to be used as a first-flush system during rainfall. A standby pump or suitably fixed mobile submersible pump, if required, **must** be readily accessible.

Lighting for facilities involving night-time loading and washing must be adequate for efficient operation under night-time conditions and when natural light is poor.

Clean stormwater should be directed away from the catchment area.

The surface of the operational area of the facility (excluding any evaporation ponds) should be constructed of concrete and designed to withstand normal working loads. A layer of low-permeability material such as compacted clay should be placed immediately underneath the concrete. The edges of all concrete areas should incorporate a vertical cut-off wall, contiguous with the surface concrete and extending to a minimum depth of 300 millimetres below ground level. All expansion joints should be installed with conventional bitumen coated with a material that will not be corroded by chemicals.

All run-off from the concrete operational areas **must** be collected into open, mesh-covered, impervious drains (or sumps) or piping at appropriate locations. These drains or pipes must not connect to stormwater. While open construction allows for easy inspection and cleaning of the drains, consideration should be given to whether this creates an additional hazard for the particular site and layout.

Wherever possible, run-off from the concrete operational area should be directed to the disposal area in open drains or above-ground lines. Underground pipelines should only be used where open drains or above-ground pipelines are demonstrably impractical or considered to create an additional hazard, such as a risk of an uncontained spill if blocked.

All pipelines need to be properly designed and installed according to good engineering practice, and have impervious joints. Ensure that pipelines are laid on a suitable gradient that will prevent ponding, and cover pipes to protect them from damage. Install permanent signs that clearly indicate the location of pipelines.

During construction, erosion and sediment controls should be implemented consistent with the practices and principles of *Managing Urban Stormwater: Soils and Construction – Volume 1* (the Blue Book) and *Volume 2* where appropriate, see the OEH Stormwater publications webpage.

The run-off collection system should be designed to allow:

- clean water from within the catchment area to be diverted away from the operational areas of the facility and disposal areas (evaporation pond or above-ground tank) during periods of non-use. Water diverted **must** not be directed to waters (refer to definition in the POEO Act)
- petroleum products to be diverted away from the disposal facility. These liquids should be collected and appropriately disposed of
- sediment washed from the concrete catchment area to be trapped, collected and removed so it does not reach the disposal areas. This helps prevent damage to the pumps and a build-up of silt from reducing the capacity of drains and sumps.

5 Fuel storage

The Work Health and Safety Regulation 2011 (WHS Regulation 2011) requires that systems need to be in place to manage the risks associated with any leak or spill of hazardous chemicals such as fuels. The system needs to be designed such that incompatible chemicals are not mixed and any spill and associated waste can be safely disposed of. The Australian Standard AS 1940–2004 *The storage and handling of flammable and combustible liquids* sets out safety requirements for fuel handling and storage including tanks and fuel dispensers. The standard also provides recommendations for spill containment for fuel storage in above-ground tanks such as bund capacity and design to adequately contain any leakage or spillage to prevent contamination of surrounding soil or watercourses. SafeWork NSW can be contacted to clarify specific spill containment requirements.

Figure 3: Example of appropriate bunding, fencing and signage around above-ground fuel tanks (Photo: Nina Sheer, EPA)

Underground tanks also have the potential to leak and harm the environment. The EPA is the appropriate regulatory authority for implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014 (UPSS Regulation) until June 2019. The UPSS Regulation requires owners and operators to regularly check for leaks in fuel tanks and pipes used to store and handle petroleum products and aims to ensure best practice to prevent land and groundwater contamination caused by leaks.

Owners/operators are required to have in place:

- a system for detecting and monitoring leaks
- a secondary system such as groundwater monitoring wells
- an environmental protection plan or equivalent for the facility for ongoing monitoring and maintenance
- systems for record keeping, reporting of leaks and notifying the local council when an underground tank is decommissioned.

Information about the UPSS Regulation and guidance documents are available on the EPA Underground petroleum storage systems webpage. The UPSS Regulation does not apply to non-operational tanks. If tanks are decommissioned or abandoned, a report **must** be made to the local council. Environmental legislation *does* apply where used or disused tanks cause an environmental risk through leakage.

The WHS Regulation 2011 requires underground tanks that are no longer intended to be used to be removed or if this is not reasonably practical, made without risks to health and safety. Guidance on appropriate removal or decommissioning is available in the Australian Standard AS 4976–2008 *The removal and disposal of underground petroleum storage tanks*. It is a requirement that SafeWork NSW be notified when a tank has been decommissioned as there may be soil contamination under the tank and remediation may also be required in accordance with EPA and local council requirements.

6 Above-ground liquid waste tanks

Above-ground tanks for the collection of wastewater are considered a good option by the EPA for aerial spraying facilities where power is available for pumping and where there are no risks from aircraft manoeuvring and tanks satisfy CASA requirements for airport locations. However, due to the generally rural and remote location of aerial spraying facilities, the non-availability of treatment or disposal options may mitigate against their use.

Wastewater treatment options could be considered, such as air agitation or treating water with products to assist with the breakdown prior to disposal off-site. Where practicable, using above-ground tanks to contain wastewater prior to disposal or treatment is the preferred option for wastewater management for new aerial spraying facilities.

Reuse on-site may be appropriate if the treatment quality is suitable and an appropriate assessment is conducted. Water reuse could make a significant reduction to wastewater disposal and the EPA's Environmental Guidelines: Use of Effluent by Irrigation may provide information to safely irrigate wastewater.

Above-ground tanks **must** be made of a corrosion-resistant material that will not react with the chemicals to be stored in them.

Tanks must be adequately designed and constructed to prevent fracture or leakage. A layer of impervious material should be placed immediately underneath the base of the tank. The tank and any pipe fittings should be within a bunded area.

Access to the top of the tank (usually by ladder) needs to be restricted. Access ladders should be designed and built to the relevant industry safety standard AS 1657–2013 *Fixed platforms, walkways, stairways and ladders – Design, construction and installation.*

The tank should have clear signage indicating the purpose of the tank. Ensure that safety measures are adequate, for example, to facilitate easy inspection. For guidance refer to the NSW Government SafeWork NSW Falls webpage.

7 In-ground evaporation ponds

Poorly constructed evaporation ponds can lead to surface and groundwater pollution as well as odour and health impacts. Evaporation ponds are normally less than one metre in depth as they are designed to maximise the water surface area for evaporation.

One of the most important factors to consider when determining the appropriate type of pond lining is the 'reactivity' of wastewater. Wastewater containing hazardous substances may require a high level of lining and construction.

A collection sump should be installed upstream of any evaporation pond to intercept solids and oils that may interfere with the evaporation process.

The storage capacity of an evaporation pond will depend on a number of site-specific considerations, including for example, the potential for pollution of surface and/or groundwater. The EPA encourages operators (and consultants) to take a risk-based approach to designing an appropriate system and consult the EPA before finalising the lining and construction details if necessary.

To determine the capacity of the evaporation pond(s) you need, you will need to calculate a water balance, which is:

- the total hydraulic loading on a monthly basis (volume of wash-down and rainfall), balanced with
- total evaporation on a monthly basis.

The 'freeboard' depth of the pond (the depth between the top of the pond and the maximum annual water level under normal conditions) **must** be calculated on a site-specific basis to avoid overflow.

8 Treatment ponds

Treatment ponds are typically deeper and wider than evaporation ponds and have aeration equipment. Geosynthetic liner manufacturers and suppliers normally provide recommended engineering designs for equipment and pipe-work installations. The EPA recommends that operators engage a suitably qualified engineer experienced in geosynthetic lining systems. Liner failures are common in very large treatment ponds. Therefore, smaller pond sections are recommended to minimise impacts on groundwater.

Regular sampling and monitoring of wastewater quality are often necessary to assess ongoing effectiveness and suitability of effluent for the proposed disposal or reuse option. Safe access should be provided to enable these activities to be undertaken.

Enzymes have been used to break down pesticide residues in contaminated ponds. A trial has previously been carried out by CSIRO in Narrabri, NSW which established a 90% reduction in pesticides in irrigation wastewaters using an enzyme from a soil bacterium. Operators seeking to reduce contaminants in water by microbial treatment should engage a suitability qualified consultant for advice on treatment options and ongoing monitoring plans. The EPA recognises that products previously developed for this purpose may not be available at the current time.

Evaporation ponds and treatment ponds lined with synthetic liners could be very slippery when wet. You **must** ensure that safety provisions (e.g. access rope or stairs, inflatable safety gear) are available. The EPA recommends that proponents consult with SafeWork NSW for further information on this matter.

9 Volume and overflow

The capacity of an evaporation and treatment pond should be designed so that, in addition to the stored wastewater arising from a monthly water balance, it can deal with rainfall run-off without overflowing. The EPA requires adequate overflow outlets and freeboard, e.g. minimum of 1m freeboard designed up to a 1 in 25 year, one duration storm event in high risk situations, e.g. waterways, groundwater or stock watering supplies nearby. As consequences of overflow could vary depending on location and community sensitivities, it is recommended that a risk assessment be undertaken by an appropriately qualified specialist to determine the appropriate pond capacity or freeboard allowance for a particular scenario.

The EPA strongly recommends that overflow be minimised by raising pond embankments. Diverting clean stormwater from the pond minimises the volume of wastewater that needs treating or containing in the pond. Any overflow should be treated as contaminated wastewater and captured on-site. This overflow could be returned to the pond when capacity permits, or transported to an EPA licensed wastewater treatment facility capable of accepting the liquid waste.

10 Desludging

Desludging can help maintain pond capacity, as solid material will deposit at the base of the pond reducing the design capacity. Operators should periodically remove sludge to maintain design capacity and dispose of it at a lawful facility. When desludging, care **must** be taken to

avoid liner damage with desludging equipment and any damage sustained **must** be repaired immediately.

Guidance should be taken from the liner manufacturer or installer on appropriate desludging methods. Sludge sediments can accumulate toxic metals and other potentially hazardous substances over time, so spreading this material onto land is not permitted as it represents potential water pollution and potential human health impacts. Sludge **must** be characterised or tested before it is disposed of appropriately at a lawful facility. Alternatively, on-site containment or treatment methods **must** be approved by the EPA.

11 Pond liners

It is considered best practice to routinely check evaporation ponds and treatment ponds visually to ensure that they remain effective pollution barriers and leak detection systems are working effectively.

Evaporation and treatment ponds **must** be designed and constructed to prevent pollution of waters (including surface and groundwater). Seepage from these types of ponds can be controlled by a suitable liner. An appropriate risk assessment should be undertaken to determine a suitable liner system including appropriate hydraulic conductivity and liner thickness. The risk assessment should include consideration of:

- site conditions (including, but not limited to, geology, hydrogeology, surface hydrology and climate)
- wastewater characteristics
- nature/depth of the pond
- potential impacts on surface and groundwater.

The liner system **must** be able to resist degradation caused by specific contaminants, temperature, oxidation and stress cracking over the life of the liner.

A number of options for liner construction are available including clay and synthetic liners or a combination of both.

Figure 4: Lined evaporation pond with signage and fencing (Photo: John Spencer, EPA)

11.1 In-situ liners

Clay linings are generally considered unsuitable because the liner may shrink and crack if the pond dries out. However, in some lower risk situations, the natural soils (clay) or rock may be used as a low-permeability liner. An investigation **must** be conducted by a suitably qualified and experienced professional to prove the efficacy of the natural barrier. This assessment should confirm that the hydraulic conductivity of the in-situ material is less than 1×10^{-9} m/s to an appropriate depth at all elevations around the pond to ensure that the materials and method of construction will provide an adequate lining system. It should also show that there are no imperfections (e.g. root holes, cracks, gravel layers, fractures) or possible reactions between the liner and the wastewater to be stored that may compromise the effectiveness of the natural material as a barrier.

The top surface of the pond should be reworked to at least 300mm to remove any fissures, fractures or desiccated soil and clay compacted in-situ.

11.2 Constructed clay liners

The design of a constructed clay liner should be informed by the outcomes of a risk assessment. A compacted clay liner should have a minimum thickness of 300mm with an in-situ hydraulic conductivity of less than 1×10^{-9} m/s. In higher risk situations, a thicker liner and/or geomembrane may be required.

Compacted clay linings should be protected to minimise damage from drying and cracking until the pond contains sufficient wastewater. If ponds are subject to complete drying (such as in evaporation ponds), mechanisms to prevent desiccation of the clay liner should be included in the design or alternative liners should be used.

An investigation of the finished constructed liner **must** be conducted by a suitably qualified and experienced professional to prove the efficacy of the barrier, including a survey to confirm it meets the design specifications and testing to ensure it meets the specified hydraulic conductivity/permeability (Australian Standard AS 1289.0–2000 *Method of testing soils for engineering purposes*).

11.3 Geosynthetic clay liners

Geosynthetic clay liners (GCLs) may be used as an alternative or supplement to compacted clay liners. A GCL is a manufactured liner consisting of a thin layer of bentonite clay (or other very low-permeability materials), ‘sandwiched’ between layers of geotextiles and/or geomembranes held together by needle punching, stitching, or chemical adhesives.

The hydraulic conductivity and swell of a GCL can be affected by the presence of cations in the wastewater permeating through the liner due to the process of cation exchange. Therefore, GCLs are not suitable for reactive wastewater, subject to cation exchange capacity assessment.

Quality assurance measures **must** be implemented to make sure that all features of the GCLs are constructed according to the approved designs and specifications. Installation of the work should be supervised and signed off by a suitably qualified and experienced professional.

11.4 Geomembranes

Geomembranes, also known as flexible membrane liners, are manufactured from synthetic liner material made from various polymers. Commonly used geomembrane materials include:

- high density polyethylene (HDPE)
- polyvinyl chloride (PVC).

Each material has different characteristics which determine appropriate installation procedures, performance and lifespan. PVC geomembranes are very flexible and can be installed on uneven surfaces; however, PVC can crack from loss of plasticiser at high temperatures and under UV radiation exposure. HDPE is normally preferred due to its durability, however this material could also fail due to stress cracking and extended UV exposure.

In selecting a geomembrane liner, you should consider:

- results of risk assessments undertaken
- compatibility of the membrane with the wastewater to be stored
- factors that may cause deterioration while in service (such as resistance to UV solar radiation where the liner is exposed, chemical attack, temperature, oxidation and stress cracking)
- tensile strength and elasticity, taking into account potential shear forces that are likely to be encountered during the design life of the pond, typically associated with differential settlement, reactive soils (shrink–swell)
- tear resistance, puncture resistance, shear resistance, abrasion resistance and resistance to installation damage, and
- design life.

It should be noted that higher risk sites may also require the use of a secondary containment measure, such as additional geomembranes, constructed clay liners or geosynthetic clay liners.

Documentation should be kept confirming that the geomembrane liner complies with the specified requirements for the purpose and has been installed based on the specifications and manufacturer's requirements. After installation, geomembranes should be assessed for liner integrity.

11.5 Composite liner

A composite liner is a liner comprised of two or more low-permeability components made of different materials in contact with each other. For example, a geomembrane and a low-permeability clay layer placed in contact with each other constitute a composite liner. The purpose of a composite liner is to combine the advantages of two materials, such as geomembranes and clay, which have different hydraulic, physical and endurance properties.

11.6 Leak detection

The performance of the liner in existing ponds should be monitored by the installation of a shallow groundwater borehole down the hydraulic gradient to ensure the liner is an effective pollution barrier. Where the geomembrane is exposed to sunlight and weathering, it will have a shorter service life span than one which is submerged.

If you are constructing a new evaporation pond, you should install a leak detection system such as bores, leak collection systems and sensors or be able to justify why this is not necessary.

The manufacturer's product warranty and advice on the anticipated service life should be considered when undertaking repairs and scheduling replacements.

12 Embankments

The sides of evaporation and treatment ponds should generally have batter slopes not exceeding a gradient of one vertical to three horizontal (1:3) to enable proper access during compaction of the liner and embankment fill, and during subsequent sampling, testing and maintenance activities. The embankments **must** be constructed to prevent leakage and erosion beneath the wall.

The banks of the pond **must** be kept free of vegetation to prevent liner damage. Trees **must** not be allowed to grow in either the base or banks of the pond.

13 Health and safety

Evaporation or treatment ponds need to be fenced to an appropriate height to prevent access by domestic stock, animals and people, and to restrict access by wildlife which could damage the membrane liner or become entrapped in the pond.

Appropriate signage **must** be fitted to the enclosure around an evaporation pond, e.g. 'Water is contaminated by chemicals. Do not drink or swim in this water' or a visual sign that is appropriate for young children or people with lower literacy levels who may not be able to read.

A measuring device, such as a depth gauge or dip stick, should be installed in an evaporation pond to allow the depth of the liquid to be determined without someone having to enter the enclosure. The measuring device should be installed so that it does not pass through the impervious barrier.

Dust from dry clay-lined evaporation ponds may pose a risk to human health from pesticide residues within the dust. Appropriate management measures should be employed to minimise dust emissions from dry clay ponds.

Figure 5: Examples of appropriate safety signage for evaporation and treatment ponds (Photos: Nina Sheer, EPA)

14 Chemical storage facilities

A facility dedicated to the storage of chemicals is subject to the requirements of SafeWork NSW. Chemicals **must** always be stored in accordance with the Australian Standard AS 2507–1998 *The storage and handling of agricultural and veterinary chemicals.* Chemical storage areas should be self-contained to minimise risk from spillage or fire.

Chemicals on-site **must** be stored within a bunded facility capable of holding 120% of the volume of the largest container stored. Alternatively, where many small containers (such as 200 litre drums) are stored, the bund should be capable of holding 25% of the total volume stored within the bund, with a minimum of 100% of the volume of the largest container.

Guidelines on other aspects of chemicals storage facilities are as follows:

- Construct the bund of a material that is impervious to all chemicals stored in the bunded area, and grade it so that any spillage drains to the catchment sump.
- Direct all pipework from the enclosed tanks or pumps over the bund wall and not through it, and avoid burying pipework at any point along its entire length.
- Position the connection points in pipework so that any leakage (including spray) from connections will fall within the bunded area.
- Put up appropriate signs to indicate what chemicals are held within the storage area.
- Surround the chemical storage facility with a person-proof fence and secure all entrances by lock and key. Emergency exits should be provided.
- Ensure that facilities for disposing of any spillage or wastes (from clean-outs) are adequate and that spillages and wastes so disposed of do not pollute waters.
- A hazardous chemical register should be prepared that contains a list of all the hazardous chemicals on site and the current safety data sheet (SDS) for the product. This needs to be readily accessible to workers. For guidance refer to the Safe Work Australia Hazardous chemicals register fact sheet.
- Keep a register of the pesticides and copies of SDSs, as required by the WHS Regulation 2011.
- Where there are chemicals listed in schedule 11 of the WHS Regulation 2011 that exceed the relevant manifest quantity, a manifest must be prepared and the chemical storage details notified to SafeWork NSW. The manifest should be kept in a location that is in agreement with Fire and Rescue NSW (FRNSW) and easily accessible in a weatherproof container locked with an appropriate or approved lock. Guidance is available in the FRNSW Technical information sheet: Hazardous chemicals manifest.

If you only store a small quantity of chemicals, you should follow the minor storage conditions of Australian Standard AS 2507–1998, in a pesticides storage room which **must** be lockable. In some cases placarding may be required. Please refer to the SafeWork NSW placarding guide for more information.

Refer to SafeWork NSW Managing risks of hazardous chemicals in the workplace code of practice. This code provides guidance on appropriate personal protective equipment and appropriate chemical storage such as ensuring incompatible chemicals are not stored together and containers are not stacked.

It is illegal to possess, prepare for use or use a pesticide in NSW unless it is registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA) or covered by an APVMA permit. You can search for permits that allow off-label use of certain pesticide products on the Australian Government APVMA Permits search webpage.

To determine if a pesticide product is registered, search the APVMA database. If a product does not appear on this database it is not currently registered.

15 Management and operation of chemicals and related equipment

The following are some of the practices that are considered best practice to minimise the risk of pollution:

- Ensure there is a spill containment system (can include bunding) and spill kit to safely contain any spills and associated waste. Store all chemicals within a bunded area.
- Mix and load all chemicals within the facility's bunded area or catchment area.
- Wash-down of equipment and aircraft should be carried out on a wash-down pad within the facility's catchment area.
- Rinsate from chemical containers and spray equipment should be avoided or reused by adding it back into the spray tank for re-dispersal. If this is not possible, licensed waste disposal contractors should be contacted to collect it. Further information on appropriate rinsate disposal can be found on the EPA website.
- Unused pesticides have to be disposed of in an environmentally responsible manner. Labels contain a prohibition on disposing of concentrate on-site. ChemClear provides a reliable and responsible collection and disposal service for users of agricultural pesticides and chemicals. In the absence of ChemClear, there are licensed hazardous waste contractors who will remove pesticide waste.
- Empty used containers should be returned to the manufacturer (where appropriate), or to an available reuse/recycling scheme, or to the appropriate waste stream. DrumMuster is a national scheme for the collection and recycling of empty chemical containers, sponsored through local councils.

Figure 6: Appropriate bunding and a spill kit in chemical storage areas (Photos: Nina Sheer, EPA)

16 Drainage and run-off

The following are some of the practices that are considered best practice to minimise harmful environmental impacts from drainage and run-off:

- Cover open drains with mesh, and ensure drains are maintained in good order.
- Remove sediment collected in the catchment as often as necessary to ensure that the design capacity is available at all times to hold waste liquids and run-off from the catchment area.
- Keep the enclosure for the evaporation pond and any open drains free of vegetation.
- Liquid stored in an evaporation pond or tank may be suitable for reuse if treated to an appropriate quality.
- Check drains, silt traps and reception tank inlets and outlets at the start and end of each use period. Clear drains of any blockages and remove silt from closed drains and pipes.
- Pump out the collection sump regularly to ensure there is always sufficient storage capacity available in tanks and evaporation ponds.
- If you have an above-ground tank, operate the required agitating system whenever the facility is in use.

Figure 7: Open drain covered with mesh to prevent solids entering the culvert (Photo: John Spencer, EPA)

17 Decommissioning a site

Sites constructed with evaporation ponds are potentially contaminated sites. Prior to decommissioning an evaporation or treatment pond, an appropriate site assessment **must** be undertaken to ensure the site is suitable for the proposed new use. When an existing evaporation basin is to be decommissioned and the land put to another use, the site needs to be appropriately remediated in consultation with the relevant planning authority (usually the local authority) (and the EPA if required) in a manner consistent with planning legislation such as State Environmental Planning Policy 55 – Remediation of Land (SEPP55).

Until remediation and validation are completed, all evaporation basins no longer in use should be treated as potentially contaminated. Anyone whose activities have contaminated land and owners of land who become aware, or ought reasonably to be aware, that the land has been contaminated must notify the EPA as soon as practicable after becoming aware of the contamination, **if the contamination meets certain criteria**. The duty to notify is a requirement under *Contaminated Land Management Act 1997* (NSW) (CLM Act). Refer to the Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* for information on the notification triggers and how they should be used in determining whether the contamination should be reported to the EPA.

18 Spill reporting

Spills that discharge from the facility **must** be reported to the nearest office of the EPA as soon as possible by phoning 131 555. If the spill cannot be contained and it threatens public health, property or the environment, Fire and Rescue NSW, NSW Police and the NSW Ambulance Service **must** be contacted immediately for emergency assistance – phone 000.

19 AAAA Aerial Improvement Management System

The Aerial Application Association of Australia (AAAA) runs an operator accreditation program called the Aerial Improvement Management System (AIMS). The AIMS program is a risk-based integrated approach to managing an aerial application business. AIMS is based on a systematic assessment of risk with appropriate risk management tools such as policies, procedures, training and registers. AIMS accreditation can assist aerial operators with continuous improvement, regulatory compliance and environmental management through recognised standards and implementing policies. For example, AIMS accreditation ensures there are procedures in place for managing rinsate, keeping a chemical manifest and SDSs, providing an emergency procedure for chemicals spills and documenting applicable regulatory requirements.

Definitions

Aerial spraying facility: An on-ground facility for aerial application operations which may include evaporation or treatment ponds, above-ground treatment tanks, chemicals and pesticides storage areas, mixing area and wash-down areas for agrichemicals and equipment.

Composite liner: A liner comprised of two or more low-permeability components made of different materials in contact with each other, e.g. a geomembrane and a low-permeability clay layer placed in contact with each other constitute a composite liner.

Disposal area: The impervious catchment/containment area for one or all of the following: the wash-down pad, the chemical storage area, the chemical mixing area, the loading aprons, storage tanks, drains, rinsate and any other chemical spillage.

Environmentally sensitive area: An area that contains an environmentally sensitive receptor such as the habitat of a rare species, e.g. a national park, groundwater source, wetland, river, lake.

Fence-line: The fence around the evaporation or treatment ponds constructed to restrict unauthorised access.

Freeboard: The freeboard for a pond is the vertical distance between a specified water surface elevation and the top of the dam or spillway (if present).

Geomembrane: Flexible membrane liners manufactured from synthetic liner material made from various polymers including high density polyethylene (HDPE) and polyvinyl chloride (PVC).

Geosynthetic clay liner: Manufactured liner consisting of a thin layer of bentonite clay (or other very low-permeability materials), 'sandwiched' between layers of geotextiles and/or geomembranes held together by needle punching, stitching, or chemical adhesives.

Operational area of the facility: Chemical-handling areas, mixing areas, chemical storage areas and wash-down areas.

Sensitive receptors: Areas, humans or animals that may be susceptible to exposure to pesticides or other contaminants, e.g. humans, residential areas, wildlife, rivers, streams, surface water.

Waters: Any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including the sea) or any water stored in artificial works, any water in water mains, water pipes or water channels or any underground or artesian water.