ENR 0.
ENR 0.1 PREFACE - Not Applicable
ENR 0.2 RECORD OF AIP AMENDMENTS - Not Applicable
ENR 0.3 RECORD OF AIP SUPPLEMENTS - Not Applicable
ENR 0.4 CHECKLIST OF AIP PAGES - Not Applicable
ENR 0.5 LIST OF HAND AMENDMENTS - Not Applicable

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ENR 1. GENERAL RULES AND PROCEDURES

ENR 1.1 GENERAL RULES

1. INTRODUCTION

The air traffic rules and procedures applicable to air traffic in Australia and its Territories conform to Annexes 2 and 11 to the Convention on International Civil Aviation and to those portions of the CASA Civil Aviation Regulations (CARs) and the Civil Aviation Orders (CAOs) applicable to aircraft, except for the differences listed in *GEN 1.7*

2. OPERATIONS IN CONTROLLED AIRSPACE

2.1 General

2.1.1 This section sets out the pilot action and related ATS activity in civil and military controlled airspace.

2.1.2 For flight in close proximity to the boundary of controlled airspace, separation is not provided with traffic operating outside controlled airspace.

2.2 Air Traffic Clearances and Instructions

2.2.1 Except in an emergency, a clearance is required for all flights in Classes A, C, and D airspace. In Class E airspace, a clearance is required for IFR flights unless operating in accordance with IFR Pick-up procedure. A clearance is not required for VFR flights in Class E airspace.

Note 1: Special requirements apply to Parachute Jumping Operations - refer ENR 5.5 Section 2.

Note 2: For entry into Class D airspace, establishment of two way communications between the aircraft and ATC constitutes a clearance for the pilot to enter the Class D airspace. See ENR 1.1 Section 2.11.3.

2.2.2 Where the airspace classification and flight rules require, an aircraft must not enter controlled airspace without a clearance. The pilot is responsible for obtaining a clearance and, once obtained, must not amend a planned route, deviate from the cleared track, or change level without obtaining ATC approval. When determining where the clearance request will be made, the pilot should consider aircraft performance, the possibility of frequency congestion if the airspace is known to be busy, the possibility of changes to route and/or level, and the possible delays that might be incurred when clearances have to be coordinated with adjacent ATC sectors.

2.2.3 When clearance has been issued to deviate from the cleared route, the pilot must advise ATC when the weather deviation is no longer required, or when the weather deviation has been completed and the aircraft has returned to its cleared route. Further deviations from route will require a new clearance.

2.2.4 All flights operating in classes E and G airspace requesting a clearance to operate in classes A, C, D or E airspace must advise position, level and tracking details when making first contact with ATC.

2.2.5 Within VHF radio coverage, pilots must maintain continuous communications with ATC when operating in classes A, C and D airspace, as must pilots of IFR flights in Class E airspace. Further, when in Class E airspace, pilots of VFR flights should monitor the ATS frequency appropriate to their area of operation.

2.2.6 When communication facilities permit, clearances will be passed direct to pilots by ATC.

2.2.7 The clearance authorises flight in the specified manner to the first point at which the flight leaves controlled airspace, or, if completely in controlled airspace, to the first landing point.

2.2.8 An air traffic clearance proposed by ATC does not relieve the pilot from complying with statutory requirements nor from the responsibility for the ultimate safety of the aircraft.

2.2.9 If considered necessary, a pilot should request a different clearance from that issued. In an emergency, a pilot may act without a clearance and immediately advise ATC.

2.2.10 A pilot must advise ATC immediately if issued a clearance which requires the use of navigation aids not available to the aircraft, or the pilot is not qualified to use.

2.2.11 ATC is responsible for issuing clearances that will enable an aircraft to remain within controlled airspace if the pilot has planned to do so. If a pilot is in doubt that the clearance will keep the aircraft in controlled airspace, ATC should be advised and an alternative clearance may be requested.

2.2.12 For operations within Class A, C, D or E airspace, maintaining 500FT above the lower limit of the CTA steps will provide a vertical buffer with aircraft operating in the adjoining airspace.

2.2.13 A control instruction issued after a clearance is obtained amends the appropriate item in the clearance. When there is any change in the clearance limit and/or route specified in the initial clearance, a completely new clearance will be issued.

2.2.14 When ATC issues a level clearance to an aircraft, any level restriction issued with an earlier clearance is automatically cancelled. ATC will issue (or re-issue) any required level restrictions with new level clearances.

Note: This procedure does not apply in relation to SID and STAR operations. For SID and STAR operations, aircraft must comply with level and speed restrictions published on STAR and SID charts unless ATC explicitly cancels the restrictions.

2.2.15 Whenever a restriction has been imposed, and, subsequently, a further restriction is imposed, the subsequent instruction will cancel all previous restrictions unless:

a. all restrictions are restated; or

b. the subsequent instruction is prefixed "FURTHER RESTRICTION".

2.2.16 At a controlled aerodrome, clearance for operation in an adjoining control area is given before departure.

2.2.17 If proposing to fly into a control area from an aerodrome located so close to the entry point that making a full position report before entry is not practicable, a clearance should be requested:

a. at a convenient time before entering the runway for take-off at an aerodrome where communication can readily be established before take-off; or

b. after take-off, if not available or obtainable before take-off, provided that the aircraft does not enter control area until cleared.

Note: Where the en route LSALT is in controlled airspace, the clearance request should be made prior to departure and include an estimated airborne time.

2.2.18 If landing at an aerodrome with the intention of departing for a control area shortly after landing, any revision of notified details relevant to the clearance, including EOBT, should be advised to ATC, and a clearance requested before landing.

2.2.19 Clearances provided to pilots may include a "CLEARANCE VOID TIME". When a void time is specified, the clearance is valid only if the flight enters controlled airspace in accordance with the clearance at or before that time.

2.2.20 Pilots should submit details required for flight in controlled airspace at least 30 minutes before the expected time of entry. Flight details submitted with less than the 30 minutes notification will be processed on a "controller workload permitting" basis, and may be subject to delay.

2.2.21 Within a Class D CTR, a clearance to take-off is a clearance to operate within the CTR or depart the CTR into Class G airspace.

2.2.22 **Airways Clearances**

2.2.22.1 Other than as specified for PDC operations in *para 2.2.25*, pilots in command must request an airways clearance:

a. on the clearance delivery frequency, preferably immediately before starting engines, otherwise as soon as possible thereafter; or

b. where a clearance delivery frequency is not available, before entering the departure runway; and

c. before entering controlled airspace.

2.2.22.2 Airways clearances normally contain the following items:

a. aircraft identification;

b. destination, area of operation, position or clearance limit;

c. route of flight;

d. cleared level;

e. for IFR flights, departure type;

f. SSR code; and

g. frequency requirements.

2.2.22.3 At night, or by day in IMC, the departure instructions for an IFR flight from an aerodrome within a CTR will be in the form of a SID. Where these are not published, not appropriate, or where aircraft or ground based navigation aid(s) are unavailable, tracking instructions will be specified by ATC.

2.2.22.4 Pilots of aircraft that have included PBN/T1 in Field 18 of the flight notification form should request an RNP AR departure at clearance delivery unless there is a standing agreement between the Operator and the ATS provider to automatically assign RNP AR departures for eligible flights.

2.2.22.5 Should a change of runway occur which affects an airways clearance previously issued, ATC will issue a new SID or tracking instructions as appropriate. A new clearance will not necessarily be issued where the same clearance applies to multiple runways.

2.2.22.6 If an aircraft is cleared only to an intermediate point, and flight beyond that point will be in controlled airspace, a pilot in command must obtain a further clearance before proceeding beyond the intermediate clearance point.

2.2.22.7 When an aircraft leaves controlled airspace, a further clearance must be obtained for any subsequent flight in controlled airspace.

2.2.23 Conditional Clearances

2.2.23.1 ATS may issue a conditional clearance for aircraft or vehicles to enter or cross a runway when the traffic situation precludes immediate access. Aircraft issued a conditional clearance to enter or cross a runway must identify the vehicle or aircraft causing the conditional clearance.

2.2.23.2 A conditional clearance will only be issued when:

a. the controller, the pilot, and/or the vehicle driver can see all aircraft or vehicles concerned; and

b. the controller can visually monitor this traffic until the condition is no longer applicable; and

c. the aircraft or vehicle causing the condition is the first to pass in front of the other traffic. (see *GEN 3.4 para 4.5.1*)

2.2.23.3 Even if the aircraft or vehicle causing the ‘condition’ has passed, an aircraft or vehicle must still stop and hold at all lighted stop bars and may only proceed further when the lights are switched off.

2.2.24 Airways Clearances - Volcanic Ash

2.2.24.1 Pilots transiting Australian administered airspace during the presence of volcanic ash clouds should make provision for sufficient fuel to meet possible diversions around the hazard.

2.2.24.2 ATC may suggest amended routing to avoid airways affected by volcanic ash.

2.2.25 **Pre-Departure Clearance (PDC)**

2.2.25.1 PDC delivery via airline host computer is available from selected Australian airports. Use of PDC is limited to operations authorised by Airservices Australia. Operators wishing to participate in PDC should submit such a request to Airservices Australia. Participating operators must not delete any component of the PDC message nor amend the order of the text.

2.2.25.2 PDC messages contain up to 11 lines of text depending on the length of the route field and whether or not ATC adds additional remarks or instructions following the transponder code.

Example:
PDC 060403
AAA123 B763 YPPH 0430
CLEARED TO VHHH VIA
NAMBU1 DEP: XXX
ROUTE: MRW R592 OLW R592 CEDAR R592
BLI B584 ELANG B584 GORPU T
CLIMB VIA SID TO: 6000
DEP FREQ: 118.700
SQUAWK 3462

2.2.25.3 PDCs may be decoded as follows:

EXAMPLE	DECODE
PDC 060403	Day and time message was issued.
AAA123 B763 YPPH 0430	Aircraft identification, aircraft type, departure airport and EOBT.
CLEARED TO VHHH VIA	Destination airport as the clearance limit. *Note: ATC will advise on initial contact if the clearance limit is changed.*
NAMBU1 DEP: XXX	Departure procedure name (SID)
ROUTE: MRW R592 OLW R592 CEDAR R592 BLI B584 ELANG B584 GORPU T	Route currently held by the ATC system.

EXAMPLE	DECODE
	Note: The route field contains all flight planned routes and points from the SID transition fix to the destination. However, if a route is truncated, the field will end with the ICAO route truncation indicator – the letter T. The route following the truncation indicator is via planned route.
CLIMB VIA SID TO: 6000	Initial altitude or flight level restriction.
DEP FREQ: 118.700	Initial control frequency on departure.
SQUAWK 3462	Assigned transponder code.
XXX CTC ACD 133.8 FOR START XXX	Optional additional instructions or remarks that can be added by ATC. *Note: XXX before and after a message component may be used to highlight special remarks.*

2.2.25.4 Currently, PDC does not include the delivery of PDC messages by Controller Pilot Data Link Communications (CPDLC). Pilots must not log on to any ATC facility until after the PDC is obtained.

2.2.25.5 When departing an airport participating in PDC, pilots must ensure that the PDC is obtained through the appropriate communications path no later than 15 minutes prior to EOBT. This could be via ACARS or hard copy message. If the PDC is not available by 15 minutes prior to EOBT, pilots must contact clearance delivery for a verbal airways clearance.

Note: ATC will not send amended route clearances via PDC.

2.2.25.6 Pilots must ensure that:

a. the PDC received is for the correct flight stage;

b. the aircraft identification, aircraft type, departure airport and EOBT specified are correct; and

c. the route matches the route provided by flight dispatch.

Note: Pilots must notify ATC if any of the above elements are incorrect.

2.2.25.7 ATC requires a readback of the SID, (including RWY and/or transition if issued), STAR (if issued) and transponder code, as shown on a PDC. In addition, readback any other requirements contained in the PDC message and state current parking position/bay. The PDC read back must be made on ACD frequency or on SMC frequency if ACD is not established, prior to a pushback or taxi request.

Example:

Pilot (location) DELIVERY, QANTAS ONE PDC READBACK

ATS; QANTAS ONE, (location) DELIVERY.

Pilot: QANTAS ONE, RWY 34L RICHMOND TWO DEPARTURE, RICHMOND TRANSITION, SQUAWK 3214, BAY 31.

ATC: QANTAS ONE.

2.2.25.8 In the case where there has been a late aircraft change and a pilot receives a PDC that was originally intended for another aircraft, then pilots must indicate the change of aircraft on initial contact with ATC.

2.2.26 Asymmetric Training Clearance

2.2.26.1 Pilots of multi-engined aircraft must obtain ATC approval before conducting asymmetric training within 5NM of a controlled aerodrome.

2.3 Engine Start, Pushback and Taxi

2.3.1 Engine Start

2.3.1.1 The pilot in command of an aircraft must request approval to start engines when the requirement is notified by ATIS, NOTAM, AIP Supplement, ATC, or listed in ERSA.

2.3.2 Pushback

2.3.2.1 The pilot in command must obtain an approval to pushback where this manoeuvre is necessary prior to taxiing. Information about other aircraft moving on the same apron will be provided by the apron service.

2.3.3 **Taxi Clearance**

2.3.3.1 When operating from a controlled aerodrome where ATIS is in operation, a pilot in command must obtain the ATIS prior to taxi, and advise ATC of the ATIS code when requesting taxi clearance.

2.3.3.2 For IFR flights operating as other than RPT, the pilot in command must provide ATC with the number of POB when requesting taxi clearance.

2.3.3.3 Pilots of civil VFR training flights should advise DUAL or SOLO, as appropriate, when requesting clearance.

2.3.3.4 The pilot in command must obtain a taxi clearance either prior to moving on the manoeuvring area, or in the case of *para 2.3.2*, at the completion of the pushback manoeuvre.

2.3.3.5 The taxi clearance regulates movement on the manoeuvring area. The separation of aircraft taxiing on the manoeuvring area is a joint pilot and controller responsibility. Taxi clearances shall contain concise instructions and adequate information so as to assist flight crew to follow the correct taxi routes, to avoid collision with other aircraft and objects and to minimise the potential for the aircraft inadvertently entering a runway. Pilots vacating a holding bay shall give way to aircraft on the taxiway.

2.3.3.6 Avoidance of collision on apron areas is a joint responsibility of the pilot in command and any assisting company ground personnel. Information about other aircraft moving on the same apron areas will be provided by ATC, or the apron service (where it exists as a discrete service).

2.3.3.7 An aircraft taxiing on the manoeuvring area must stop and hold at all lighted stop bars and may only proceed further when a clearance to enter or cross the runway has been received and the stop bar lights have been switched off. (See also *ENR 1.1 Section 2.4.3*)

2.3.3.8 A taxi instruction which contains a taxi limit beyond a runway must include a “CROSS RUNWAY (number)” instruction to cross that runway. When an aircraft is required to hold short of a runway intersecting the taxi route, ATC will issue a taxi instruction limit of the holding point associated with the intersecting runway.

2.3.3.9 An aircraft which has been issued with a taxi instruction limit of the holding point of a runway intersecting the taxi route, or which has been issued with an instruction to “HOLD SHORT” of that runway, must subsequently be issued with an instruction to “CROSS RUNWAY (number)”.

2.3.3.10 Aircraft required to hold short of a runway must hold at the appropriate holding point for that runway, or the runway strip edge at the intersection of a crossing runway.

2.3.3.11 A pilot wishing to use less than the full length of the runway available should nominate the intention when requesting the taxi clearance.

2.3.3.12 ATC may offer an intersection departure and will advise the remaining runway length of the runway if required.

2.3.3.13 A pilot in command unfamiliar with the aerodrome should “REQUEST DETAILED TAXI INSTRUCTIONS”.

2.3.3.14 VFR flights wishing to depart without submitting flight notification must provide the following information on first contact with ATC:

a. aircraft callsign and “DETAILS” (wait for a response from ATC);

b. destination and first tracking point;

c. preferred level; and

d. identification of ATIS code received.

2.3.4 **Provision of Operational Information**

ATC will supply the following information for take-off:

a. runway or direction;

b. wind direction and speed, QNH and, if required, temperature and/or dew point;

D c. the crosswind component on the runway to be used, if this equals or exceeds 8KT for single-engined aircraft or 12KT for multi-engined aircraft;

d. the tailwind component

e. aerodrome surface conditions significant to the operation;

f. known weather information;

g. birds that may be a hazard to the operation; and

h. maintenance work within 23M of the runway side stripe marking.

2.3.5 **Nomination of Runways**

ATC will nominate the runway, preferred runway or take-off direction. Where noise abatement procedures are prescribed, and ATC traffic management permits, the provisions of DAP NAP will be applied, except that ATC will not nominate a particular runway for use if an alternative runway is available (unless required by Noise Abatement legislation), when:

a. the alternative runway would be preferred due to low cloud, thunderstorms and/or poor visibility;

b. for runways that are completely dry:

(1) the crosswind component, including gusts, exceeds 20KT;

(2) the tailwind component, including gusts, exceeds 5KT.

c. for runways that are not completely dry:

(1) the crosswind component, including gusts, exceeds 20KT;

(2) there is a tailwind component.

d. wind shear has been reported.

Note: Notwithstanding the limitations detailed above, location specific crosswind/tailwind limitations may be detailed in AIP DAP East/West NAP

2.3.6 **Selection of Take-off Direction**

The pilot in command must ensure that the runway is suitable for the operation. If not suitable for an operational reason, ATC must be advised before taxiing or when requesting an airways clearance by using the phrase: “REQUIRE RUNWAY (number)”. Such a request will not result in a loss of priority, provided it is made on first contact with clearance delivery or before taxiing. The decision to take off rests solely with the pilot in command.

2.3.7 **Selection of Circuit Direction**

Circuit directions and turns will be specified or authorised by ATC but will not be specified in the take-off clearance when a SID has been authorised. A pilot in command must notify ATC if a particular turn or circuit is essential to the safe operation of the aircraft by use of the word “REQUIRE”.

2.3.8 **Departure Instructions**

2.3.8.1 Departure instructions may contain the following as required:

a. aircraft identification;

b. heading instructions;**

c. altitude restrictions;

d. direction of turn;

e. tracking points; and

f. any other instructions.

*** Note: A pilot assigned a heading (including runway heading) must not compensate for wind effect.*

2.3.8.2 When a heading is assigned as a departure instruction, the pilot in command must ensure that the heading and the direction of turn are read back. This requirement also applies to the initial heading assigned by ATC as part of a radar SID.

Note: When a direction of turn is not given, pilots must turn to the assigned heading by the shortest arc.

2.3.9 **Terrain and Obstacle Clearance**

Obstacle/terrain avoidance while below the LSALT or MSA, as applicable, is a pilot responsibility except in the circumstances described in *para 2.3.9.1.*

2.3.9.1 ATC is responsible for terrain clearance when an aircraft has been assigned a level using ATS surveillance service terrain clearance procedures until:

a. the pilot is assigned the responsibility for maintaining such clearance visually, or

b. a visual or instrument approach is commenced.

2.3.9.2 **NVG Operations**

CASA may approve suitably equipped aircraft/suitably qualified pilots to operate below LSALT in VMC at night using NVG. In accepting the clearance, the pilot accepts the responsibility for terrain clearance. Any such clearance must be expressly initiated by the pilot using one of the following phrases:

a. **Not above published/pilot calculated LSALT with NVG and visual.** The pilot will expressly initiate the request by the use of the phrase "REQUEST NOT ABOVE (altitude) [PILOT CALCULATED LOWEST SAFE], VISUAL" - ATC will clear the aircraft to operate not above the requested altitude or Pilot Calculated Lowest Safe, as applicable, visual; or

b. **VMC with NVG.** When requiring to operate at or not above a specific level which is below the published or pilot calculated LSALT. The pilot will expressly initiate the request by the use of the phrase “REQUEST [NOT ABOVE] (*altitude*) NVG”. ATC will clear the aircraft not above the pilot requested altitude NVG.

Note: For civil operations, the use of 2.3.9.2b. may only by applied with the crew compliment comprises of at least two aircrew operating on NVG; constituting at least one pilot approved and equipped to operate on NVG and the second aircrew member, being either a pilot or aircrewman also approved and equipped to operate on NVG.

2.3.9.3 If visual reference is lost, either through equipment failure or deteriorating weather conditions, crews must climb to the appropriate LSALT/MSA and advise ATC as soon as practicable. ATC will treat this as an emergency situation and may apply emergency separation services.

2.4 Take-off

2.4.1 Change to Tower Frequency

2.4.1.1 International aircraft will be instructed by ATC when to change to the tower frequency prior to take-off. Domestic aircraft should change to tower frequency:

a. in the holding bay, or

b. close to, or at, the holding point of the nominated runway, when ready for take-off.

2.4.1.2 At Class D aerodromes at which parallel runway operations are in progress, pilots must identify the departure runway when reporting ready. For example: ‘...(callsign) READY, RUNWAY RIGHT.’

2.4.1.3 For operations wholly within a Class D CTR the pilot must report ready with intentions (e.g. circuits, training area north etc). Additionally, for aircraft not in receipt of airways clearance that will depart the Class D CTR, advise tracking details (e.g. departing via... for...), departure procedure etc.

2.4.2 Runway Entry

2.4.2.1 A pilot in command must not enter any runway, whether or not it is in use, unless a specific clearance to:

a. take-off,

b. line up, or

c. backtrack, or

d. cross,

has been received, or a clearance to enter for other purposes has been received from ATC and the stop bar lights, where fitted, have been switched off (see also *ENR 1.1 Section 2.4.3*.).

2.4.2.2 An ATC clearance to line-up does not authorise the pilot in command to backtrack on the runway.

2.4.2.3 When a backtrack on the runway nominated for take-off is required, the pilot must indicate this intention to ATC and obtain a clearance to backtrack prior to entering the runway.

2.4.2.4 When a backtrack on the runway will involve crossing an intersecting runway, the backtrack instruction must include either a “CROSS RUNWAY (number)” instruction or an instruction to “HOLD SHORT” of that runway.

2.4.2.5 Aircraft required to hold short of a runway must hold at the appropriate holding point, or the runway strip edge at the intersection of a crossing runway.

2.4.2.6 An aircraft which has been issued with an instruction to “HOLD SHORT” of an intersecting runway must subsequently be issued with an instruction to “CROSS RUNWAY (number)”.

2.4.3 **Stop bar contingency procedures**

2.4.3.1 If stop bar lighting cannot be deselected, pilots and drivers may be authorised by ATC to cross an illuminated stop bar in accordance with the following procedure:

1. ATC will notify pilots and drivers of vehicles: “STOP BAR SWITCHING [AT HOLDING POINT(S) *(name of holding point(s))*] UNSERVICEABLE, STOP BAR CONTINGENCY PROCEDURES IN FORCE”.
   Notification may be by ATIS.

2. ATC will authorise individual pilots or drivers of vehicles to cross the illuminated stop bar using the phrase: "AT *(holding point)*, CROSS THE ILLUMINATED STOP BAR, LINE UP (*or* CLEARED FOR TAKE-OFF *or* ENTER *or* CROSS) RUNWAY *(number)*".

2.4.4 **Holding on Runway**

2.4.4.1 The pilot in command must not hold on the runway in use unless permission to do so has been obtained from ATC.

2.4.5 **Clearance Required**

2.4.5.1 A pilot in command must not take-off unless the specific clearance “CLEARED FOR TAKE-OFF” has been received.

2.4.5.2 A clearance for immediate take-off may be issued to an aircraft before it enters the runway. On acceptance of such clearance the aircraft shall taxi out to the runway and take off in one continuous movement.

2.4.6 **Separation Minima for Take-off**

2.4.6.1 An aircraft will not be permitted to commence take-off until:

a. a preceding departing aircraft using the same runway has:

(1) crossed the upwind end of the runway; or

(2) commenced a turn; or

(3) if the runway is longer than 1,800M, become airborne and is at least 1,800M ahead of the following aircraft; or

(4) if the preceding aircraft has a MTOW of 7,000KG or less and the following aircraft has a MTOW below 2,000KG and is slower, the preceding aircraft is airborne and is at least 600M ahead of the following aircraft; or

(5) if both aircraft have a MTOW below 2,000KG, the preceding aircraft is airborne and is at least 600M ahead of the following aircraft;

b. a preceding landing aircraft using the same runway has vacated it and is taxiing away from the runway; and

c. a preceding aircraft, using another runway, has crossed or stopped short of the take-off aircraft’s runway;

Note: Where reasonable to do so, ATC may issue a take-off clearance in anticipation that the prescribed separation will exist at the time that the take-off roll is commenced.

2.4.6.2 Other than as specified for LAHSO operations in *para 8.5.1*, exceptions to this application of separation standards are:

a. aircraft taking off in formation with respect to each other;

b. aircraft operating in different areas or lanes on aerodromes with runways or facilities suitable for simultaneous take-offs *(CAR 168)*; and

c. the avoidance of wake turbulence.

2.5 **Visual Departure - IFR Flights**

2.5.1 By day in VMC, the pilot of an IFR flight may request a visual departure, or ATC may issue a visual departure.

2.5.2 **ATC Responsibilities**

2.5.2.1 ATC will only issue a visual departure to an IFR flight when the cloud base is such that the pilot can maintain flight in VMC below the MVA (ATS surveillance services) or the MSA/LSALT.

2.5.2.2 When an IFR aircraft is issued heading instructions and/or required to maintain a level below the MVA or MSA/LSALT during a visual departure, “VISUAL” will be appended to the departure instruction.

2.5.3 **Pilot Responsibilities**

2.5.3.1 A pilot of an IFR flight may only request a visual departure when the cloud base will allow the aircraft to climb in VMC to the MSA/LSALT applicable to the departure. Additionally, if the intended cruising level is lower than route LSALT, the cloud base must permit flight in VMC at that level.

2.5.3.2 During the conduct of a visual departure, a pilot must:

a. maintain the track(s)/heading(s) authorised by ATC;

b. remain not less than 500FT above the lower limit of the CTA; and

c. visually maintain obstacle clearance.

2.6 **VFR Departure by an Aircraft Planned IFR**

2.6.1 The pilot of an IFR flight departing a Class D aerodrome may request a VFR departure with the expectation of obtaining an IFR clearance en route.

2.6.2 The pilot of an IFR flight conducting a VFR departure:

a. must comply with the VFR.

b. is responsible for separation with other aircraft within the Class D airspace.

c. must obtain ATC clearance prior to entering Class A or C airspace.

d. must obtain ATC clearance to resume IFR in Class A, C, D or E airspace.

e. must notify ATC when reverting to IFR once in Class G airspace.

2.6.3 When an IFR aircraft conducts a VFR departure, ATC will treat the aircraft as:

a. VFR for separation services in Classes C, D and E airspace until the pilot requests and is granted an IFR clearance.

b. VFR in Class C or D airspace and VFR in receipt of an SIS in Class E or G airspace for traffic information.

c. IFR for all other services, such as SAR, weather and NOTAM information, in all classes of airspace.

2.7 After Take-off

2.7.1 Airborne Report in airspace with ATS Surveillance

In Class C and Class D control zones where an ATS surveillance service is provided, on first contact with Centre, Approach or Departures, a pilot must report:

a. if assigned an initial heading - the direction of turn and assigned heading;

b. the altitude passing, to nearest 100FT; and

c. the last assigned level.

2.7.2 Departure Report - certain Class D aerodromes

2.7.2.1 At certain Class D aerodromes where the tower also provides a procedural approach control service (see *ERSA*), a pilot must report on the TWR frequency after take-off:

a. tracking information; and

b. the last assigned altitude

However, this report is not required:

a. for VFR aircraft departing the control zone directly into Class G airspace; or

b. for aircraft that have been instructed to contact Centre, Approach or Departures once airborne - in which case an airborne report will be made on the relevant frequency.

2.7.2.2 Tracking information must confirm the track established with reference to the appropriate navigation aid or, if tracking via a SID, confirm the SID designator.

2.7.3 Establishment on Track

Unless tracking via a SID or otherwise instructed by ATC, a pilot in command must remain within 5NM of the departure aerodrome to establish flight on the departure track as soon as practicable after take-off.

2.7.4 Frequency Change

2.7.4.1 When frequency change instructions are issued immediately preceding the take-off clearance, pilots must transfer automatically from Tower as soon as practicable after take-off, preferably within one mile of becoming airborne.

2.7.4.2 In all other situations, pilots of departing aircraft are required to remain on Tower frequency until specific frequency change instructions are issued. Pilots can generally expect an instruction to contact Departures Control prior to reaching 2,000FT and should, when advised, effect the change as soon as possible.

2.7.4.3 When contacting Area Control, pilots must advise the last assigned level and, if not maintaining the assigned level, the level maintaining or last vacated level.

Note: The "last vacated level" may be omitted by identified aircraft squawking pressure altitude derived level information.

2.8 VFR Climb and Descent - IFR Flights

2.8.1 General

2.8.1.1 A pilot of an IFR flight, operating in VMC, in classes D and E airspace, may request to climb/descend VFR.

2.8.1.2 When, in the controller's judgement, there is reason to believe that flight in VMC may become impracticable, the controller will issue an alternative clearance that ensures separation from all other aircraft for which he/she has separation responsibility.

2.8.1.3 The pilot of an IFR flight cleared to "Climb/Descend VFR" will receive a service in accordance with *para 2.8.3.2*.

2.8.1.4 An appropriate clearance must be obtained prior to entering a different class of controlled airspace.

2.8.2 Pilot Procedures

2.8.2.1 The pilot of an IFR flight requires a clearance to conduct a VFR climb/descent in VMC.

2.8.2.2 When operating in VMC with an ATC clearance to "Climb/ Descend VFR", pilots of IFR flights must:

a. comply with the VFR visibility and distance from cloud criteria stipulated in *ENR 1.2 Section 2.*;

b. comply with instrument flight rules that are applicable to the flight; i.e. position reporting, radio communications, cleared route, adherence to ATC clearance, etc; and

c. visually maintain obstacle clearance.

2.8.2.3 The pilot of an IFR flight operating VFR climb/descent must maintain vigilance so as to see and avoid other aircraft. Additionally, the pilot accepts the responsibility for wake turbulence separation.

2.8.3 ATC Procedures

2.8.3.1 On receiving a request for VFR climb/descent, ATC may instruct the pilot to "Climb/Descend VFR" for a specified portion of the flight.

2.8.3.2 When the pilot is cleared to "Climb/Descend VFR", ATC will provide:

a. mutual traffic information service on IFR flights;

b. traffic information service on known VFR flights as far as practicable; and

c. a flight information service.

Note: IFR separation is not provided.

2.9 VFR-On-Top - IFR Flights

2.9.1 General

2.9.1.1 In Class E airspace, a pilot of an IFR flight may request VFR-on-top in lieu of an assigned altitude. This permits a pilot to select a VFR altitude or flight level of his/her choice subject to any ATC restrictions.

2.9.1.2 Pilots desiring to climb through cloud, haze, smoke, or other meteorological formation may request a climb to VFR-on-top.

2.9.1.3 ATC clearance to "Maintain VFR-on-top" is not intended to restrict pilots so that they must operate only above an obscuring meteorological formation (layer). Instead, the clearance permits operation above, below, between layers, or in areas where there is no meteorological obscuration.

2.9.1.4 When, in the controller's judgement, there is reason to believe that flight in VMC may become impracticable, the controller must issue an alternative clearance that ensures separation from all other aircraft for which he/she has separation responsibility.

2.9.1.5 The pilot of an IFR flight cleared to "Maintain VFR-on-top" will receive a service in accordance with *para 2.9.3.2*.

2.9.1.6 An appropriate clearance must be obtained prior to entering a different class of controlled airspace.

2.9.1.7 ATC resumes separation responsibility when the aircraft is re-cleared to maintain an IFR level.

2.9.2 **Pilot Procedures**

2.9.2.1 The pilot of an IFR flight requires a clearance to operate VFR-on-top.

2.9.2.2 When operating with an ATC clearance to "Maintain VFR-on-top", pilots on IFR flight plans must:

a. fly at the appropriate VFR levels as prescribed in *ENR 1.7 Section 5.*;
b. comply with the VFR visibility and distance from cloud criteria stipulated in *ENR 1.2 Section 2.*;
c. comply with instrument flight rules that are applicable to the flight; i.e. minimum IFR altitudes, position reporting, radio communications, cleared route, adherence to ATC clearance, etc; and
d. advise ATC prior to any altitude change to ensure the exchange of accurate traffic information.

2.9.2.3 The pilot of an aircraft operating VFR-on-top must maintain vigilance so as to see and avoid other aircraft. Additionally, the pilot accepts the responsibility for wake turbulence separation.

2.9.3 **ATC Procedures**

2.9.3.1 On receiving a request for VFR-on-top, ATC may instruct the pilot to climb to "VFR-on-top". This instruction will include:

a. if required, a clearance limit, routing, and an alternative clearance if VFR-on-top is not reached by a specified altitude;

b. the requirement to report reaching VFR-on-top; and

c. the reported height of the tops or that no tops reports are available.

2.9.3.2 When the pilot reports reaching VFR-on-top, ATC re-clears the aircraft to “Maintain VFR-on-top” and will provide:

a. mutual traffic information service on IFR flights,

b. traffic information service on known VFR flights as far as practicable, and

c. a flight information service.

Note: IFR separation is not provided.

2.9.3.3 ATC will not clear an aircraft to “Maintain VFR-on-top” at night to separate holding aircraft from each other or from en route aircraft unless restrictions are applied to ensure the appropriate IFR vertical separation.

2.10 En Route

2.10.1 All levels flown in classes A, C and D airspace, and IFR levels flown in Class E airspace, must be assigned by ATC. Levels flown by VFR aircraft or IFR flights maintaining VFR-on-top in Class E airspace must be in accordance with the VFR Table of Cruising Levels.

2.10.2 Except when identified, position reports are required for all aircraft in classes A, C and D airspace, and for IFR flights or flights using the IFR Pick-up procedure after initial contact with ATC in classes E and G airspace.

2.10.3 Reports

2.10.3.1 The position report format appears at *GEN 3.4, APPENDIX 2*. Section 2 of the report should only be transmitted when required by the operator or when deemed necessary by the pilot. Section 3 of the report is required only for those designated flights operating over reporting points described in *GEN 3.5 Section 11.3*.

2.10.3.2 For operations in Australian domestic airspace, Section 1 of the report may be abbreviated by omitting the words “OVER”, “FEET”, and “NEXT POSITION”.

2.10.3.3 Aircraft operating area-type flights and nominating scheduled reporting times may limit the report to “level” and the “present position” or the sector of the survey area in which the aircraft is currently operating.

2.10.3.4 Pilots must give ATS notice of an impending position report by use of the word “POSITION”; e.g. “MELBOURNE CENTRE (callsign) POSITION”. Pilots must wait for the ATS instruction before reporting position.

2.10.3.5 Pilots must report maintaining an assigned level, unless ATC has advised IDENTIFIED. An IFR flight operating VFR-on-top or requesting IFR Pick-up must advise level maintaining.

2.10.3.6 After any frequency change, pilots must advise the last assigned level and, if not maintaining the assigned level, the level maintaining or last vacated level; e.g. “MELBOURNE CENTRE (CALLSIGN) CLEARED FLIGHT LEVEL TWO ONE ZERO, MAINTAINING FLIGHT LEVEL THREE ONE ZERO”.

Note: The “last vacated level” may be omitted by identified aircraft squawking pressure altitude derived level information.

2.10.3.7 Pilots should normally report ETA at the place of intended landing when at the last position report.

2.11 Descent and Entry

2.11.1 General

2.11.1.1 Most companies operating jet aircraft have agreed to a standard descent profile which is specified in the operations manual for the aircraft. Pilots must adhere to the profile unless operational reasons require, or ATC instructs or approves, otherwise. A sustained speed variation of more than ±10KT IAS or ±M0.02 must be advised to ATC.

2.11.1.2 Pilots are not required to nominate a descent point if identified.

2.11.1.3 Pilots of IFR flights leaving classes A, C, D or E airspace should, before entering Class G airspace, contact the ATS unit providing services in that airspace.

2.11.1.4 After any frequency change, pilots must advise the last assigned level and, if not maintaining the assigned level, the level maintaining or last vacated level; e.g. “MELBOURNE CENTRE (CALLSIGN) CLEARED FLIGHT LEVEL TWO ONE ZERO, LEAVING FLIGHT LEVEL TWO NINER ZERO”.

Note: The "last vacated level" may be omitted by identified aircraft squawking pressure altitude derived level information.

2.11.1.5 A clearance will be issued by ATC covering flight in controlled airspace. In addition, when appropriate, ATC will advise:

a. the type of instrument approach to be expected;

b. when a delay of more than five (5) minutes is expected, the time at which ATC expects that the aircraft will leave the holding fix to complete the expected instrument approach for landing; and

c. if instructions are issued to hold for an indefinite period at a point other than the holding fix referred to in b, the expected time of onward clearance.

2.11.1.6 When making first contact with Approach Control, the following apply:

a. Not Identified – report:

(i) DME or GNSS distance from aerodrome, if available;

(ii) VOR radial, GNSS track or compass quadrant from the aerodrome, or if issued a STAR clearance, the STAR designator;

(iii) assigned level;

(iv) flight conditions, if appropriate; and

(v) receipt of ATIS (code);

b. Identified – report:

(i) assigned level;

(ii) flight conditions, if appropriate; and

(iii) receipt of ATIS (code); and

c. Request clearance, if not previously issued.

2.11.1.7 Clearances will be issued direct to pilots by ATC. If the clearance involves a change of level or route, or if a delay is to be expected, pilots will be advised when first contacting ATC.

2.11.1.8 Approach Control will provide instructions for progressive descent and specify any change in route, clearance limits and holding instructions. Unless the acknowledged ATIS covers the information, Approach Control will also advise and update, as necessary, details of:

a. runway to be used,

b. landing information, and

c. type and expected time of approach.

2.11.1.9 Clearances to enter will specify the altitude, track and any holding instructions. Some of these items may be combined with the clearance “CLEARED VISUAL APPROACH.”

2.11.2 **Flights Entering Class C Airspace**

2.11.2.1 Before reaching the boundary of Class C airspace, the pilot must establish two way communications with ATC on the frequency notified on the chart, in *ERSA*, or AIP Supplement or NOTAM, and obtain a clearance.

2.11.2.2 When advance notification has not been provided, the pilot must advise the following to ATC before the point of intended entry:

a. aircraft callsign, “INBOUND/TRANSIT DETAILS” (wait for ATC to respond with your callsign), then advise:

(1) flight rules and aircraft type,

(2) position,

(3) route and next estimate, and

(4) preferred level.

2.11.2.3 If landing at an aerodrome where ATIS is provided, the pilot should obtain the ATIS before first contact on the approach/ tower frequency. On first contact advise ATIS received.

2.11.2.4 The clearance to enter will specify the altitude, track and any holding instructions. Some of these items may be combined with the clearance “CLEARED VISUAL APPROACH”.

2.11.3 **Clearance to Enter Class D Airspace**

2.11.3.1 Before entering Class D airspace, the pilot in command of an aircraft must establish two way radio communication with ATC on the Class D frequency notified on the chart, in *ERSA*, or AIP Supplement or NOTAM. Thereafter, the pilot in command must maintain those communications while in the Class D airspace.

2.11.3.2 In initiating two way communications, the pilot must advise current position, altitude, intention, and any request(s).

Note 1: Radio contact should be initiated far enough from the Class D airspace boundary to preclude entering the Class D airspace before two way radio communications are established.

Note 2: If the controller responds to a radio call with, '...(aircraft callsign) [...(instructions)]', radio communications have been established and the pilot may enter the Class D airspace.

Note 3: If workload or traffic conditions prevent immediate entry into Class D airspace, the controller will inform the pilot to remain outside the Class D airspace until conditions permit entry.

Example: '...(aircraft callsign) REMAIN OUTSIDE CLASS D AIRSPACE.'

Note 4: It is important to understand that if the controller responds to the initial radio call without using the aircraft callsign, radio communications have not been established and the pilot may not enter the Class D airspace.

Examples: 'AIRCRAFT CALLING ARCHER TOWER, STANDBY.'
'AIRCRAFT CALLING ROCKY TOWER, SAY AGAIN.'

2.11.3.3 If landing at an aerodrome where ATIS is provided, the pilot should obtain the ATIS before first contact on the ATC frequency. On first contact advise ATIS received.

2.11.3.4 In establishing two way communications, ATC may issue specific instructions that differ from altitude and intentions advised by the pilot. The pilot in command must comply with any such instructions issued by ATC.

2.11.3.5 The pilot in command must not deviate from the track, level and intentions stated during the establishment of two way communications or the instructions issued by ATC (if these instructions modify the stated track, level and intentions), unless authorised by ATC.

2.11.3.6 Unless ATC specifically instructs otherwise, establishment of two way communications permits a pilot, intending to land at an aerodrome within Class D airspace, to descend as necessary to join the aerodrome traffic circuit.

2.11.4 **Cancelling IFR Class D Aerodrome Arrivals**

2.11.4.1 To expedite arrival at a Class D aerodrome, the pilot of an IFR flight may elect to cancel IFR (provided the weather conditions permit VFR), and conduct the approach under VFR.

2.11.4.2 Pilot's must advise this intention by using the phrase "CANCEL IFR".

2.11.5 **Flights Entering Controlled Airspace from Class G Airspace**

2.11.5.1 When communication facilities exist and the controlled airspace and the non-controlled aerodrome are in close proximity, a clearance should be obtained direct on the ATC frequency. When this is not possible, clearances should be requested through the ATS unit providing services in Class G airspace.

2.11.6 **Approach Clearances**

2.11.6.1 Aircraft cleared for a visual approach or instrument approach procedure will not be assigned a level restriction.

2.11.7 **Instrument Approach**

2.11.7.1 **ATC Authorisation.** Unless authorised to make a visual approach, an IFR flight must conform to the published instrument approach procedure nominated by ATC.

2.11.7.2 A pilot request to conduct a specific approach should be made prior to STAR clearance issue, or prior to top of descent for arriving aircraft not on a STAR eligible route.

2.11.7.3 Authorisation for final approach will be in the form of a clearance for the type of approach as shown on the approach chart title. If visual at the minima, the nominated runway then becomes the clearance limit subject to any further ATC instructions and a clearance to land. In the event that the aircraft is unable to land from the instrument approach or loses visual reference whilst circling, the aircraft is cleared to carry out the published missed approach unless ATC directs otherwise. The pilot in command must seek further ATC instructions prior to reaching the end of the missed approach procedure.

2.11.7.4 Where an instrument approach results in the aircraft leaving controlled airspace, the clearance for the approach also provides clearance for the aircraft to re-enter overlying controlled airspace or restricted area in the event of a missed approach. ATC should be advised as soon as possible on the missed approach.

2.11.7.5 The full chart title of the instrument approach procedure, as described at the top of the relevant chart, must be used in all clearances, coordination and read-backs relating to the procedure, including entry procedures. However, with the exception of circling approaches, the suffix may be omitted if there is no possibility of confusion. Where multiple approach procedures are on the same chart, only the approach procedure being conducted shall be referred to.

2.11.7.6 Aircraft may be instructed to track via an instrument approach procedure and a level restriction assigned, if the aircraft is:

a. in VMC conducting instrument approach training; or

b. a military aircraft:

(1) conducting a non-precision approach; or

(2) conducting a precision approach provided that clearance for the approach is issued in sufficient time for the aircraft to maintain the required descent rate in accordance with the published procedure.

2.11.8 **Visual Approach**

2.11.8.1 **ATC Authorisation.** Except as detailed in *para 2.11.8.2,* the criteria under which visual approaches may be authorised by ATC are as follows:

a. For an IFR flight:

(1) By day when:

– the aircraft is within 30NM of the aerodrome; and

– the pilot has established and can continue flight to the aerodrome with continuous visual reference to the ground or water; and

– visibility along the flight path is not less than 5,000M, or for helicopters 800M, or the aerodrome is in sight.

(2) By night when:

– the pilot has established and can continue flight to the aerodrome with continuous visual reference to the ground or water; and

– visibility along the flight path is not less than 5,000M; and

– the aircraft is within 30NM of the aerodrome; or

– if being vectored, the flight has been assigned the MVA and given heading or tracking instructions to intercept final or to position the aircraft within the circling area of the aerodrome.

b. For a VFR flight by day and night, the aircraft is within 30NM of the aerodrome.

2.11.8.2 In addition to the requirements of *para 2.11.8.1*, with the exception of Australian and New Zealand operators and aircraft conducting independent visual approaches at Sydney, Super or Heavy jet aircraft will only be assigned a visual approach when:

a. specifically requested by the pilot, and the pilot has reported the landing runway in sight; or

b. the straight-in approach aid is unserviceable.

2.11.8.3 In the case of *sub-para 2.11.8.2b*. above, the aircraft will be:

a. vectored to intercept final no closer than 8NM from the runway threshold, at an altitude not less than 2,500FT Above Aerodrome Level (AAL); and

b. assigned a straight-in visual approach when:

(1) established on final or on a heading to intercept final course at an angle of not more than 30 degrees; and

(2) visual glideslope guidance (VASIS/PAPI) is available; and

(3) the pilot has reported the landing runway in sight.

2.11.8.4 **Tracking Requirements for visual approach.** Except when on a STAR, the pilot must maintain track/heading on the route progressively authorised by ATC until:

a. by day, within 5NM of the aerodrome; or

b. by night, the aerodrome is in sight and the aircraft is within:

(1) the prescribed circling area for an IFR flight; or

(2) 3NM of the aerodrome for a VFR flight

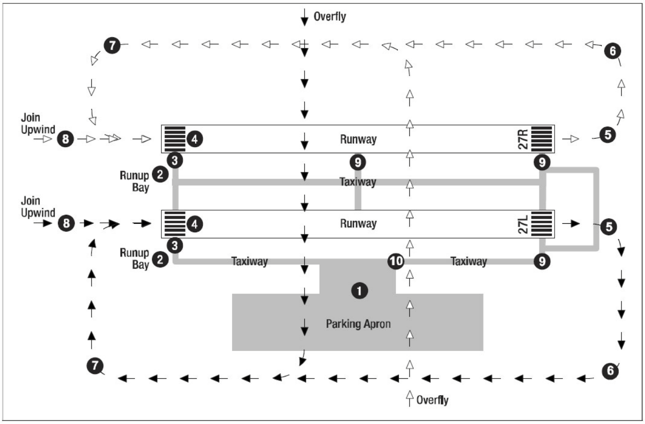
From this position the circuit must be joined as directed by ATC for an approach to the nominated runway.

2.11.8.5 When tracking via a STAR and subsequently cleared for visual approach, the pilot must continue to follow the lateral profile of the STAR, including any visual or instrument termination route.

2.11.8.6 **Circuit Joining.** ATC may issue an instruction to join on a leg of the circuit or via:

a. Upwind, which directs circuit entry tracking upwind over the nominated runway centreline at the specified altitude; or

b. Overfly, which directs circuit entry into the opposing circuit by overflying the nominated runway at the specified altitude.



Decode information for the above diagram:

1 Aircraft initiates call to taxi - clearance provided

2 Aircraft vacating the bay give way to aircraft on taxiway

3 Line up or take-off clearance issued here

4 Take-off clearance issued if not issued at position 3

5 Crosswind leg

6 Downwind leg

7 Base leg

8 Final (joining upwind) leg

Landing clearance issued here unless issued on downwind/base leg

9 Taxi instructions, if required

10 Parking information issued if necessary

2.11.8.7 **Minimum Altitude Requirements.** During the conduct of a visual approach, a pilot must descend as necessary to:

a. by day:

(1) for an IFR flight, remain not less than 500FT above the lower limit of the CTA; and

(2) for IFR and VFR flights, operate not below the lowest altitude permissible for VFR flight *(CAR 157)*.

b. by night:

(1) for an IFR flight:

– maintain an altitude not less than the route segment LSALT/MSA or the appropriate step of the DME/GNSS Arrival procedure, or 500FT above the lower limit of the CTA, if this is higher; or

– if being vectored, operate not below the last assigned altitude;

until the aircraft is:

– within the prescribed circling area for the category of aircraft or a higher category, where the limitations of the higher category are complied with, and the aerodrome is in sight; or

– within 5NM (7NM for a runway equipped with an ILS/GLS) of the aerodrome, aligned with the runway centreline and established not below "on slope" on the T-VASIS or PAPI; or

– within 10NM (14NM for Runways 16L and 34L at Sydney) of the aerodrome, established not below the ILS/GLS glide path with less than full scale azimuth deflection.

(2) for a VFR flight:

– maintain not less than the lowest altitude permissible for VFR flight *(CAR 174B)* until the aircraft is within 3NM of the aerodrome and the aerodrome is in sight.

2.11.8.8 When conducting a visual approach, a pilot in command must not climb above an altitude reported to ATC as having been reached or left, unless authorised to do so.

2.11.8.9 A pilot in command operating under the IFR who desires a visual approach and is satisfied that the visual conditions as per *para 2.11.8.1* can be met must report 'VISUAL'. A pilot who is unable to continue a visual approach which has been authorised by ATC must immediately advise ATC.

2.11.8.10 A pilot reporting VISUAL, may initially be given a clearance below the LSALT to a specific altitude in the following terms:

a. by day, "DESCEND TO (level) VISUAL"; or

b. by night, “WHEN ESTABLISHED IN THE CIRCLING AREA, DESCEND TO (level) VISUAL”.

2.11.8.11 A pilot descending to and maintaining a specific altitude visually below the LSALT must comply with the minimum altitude requirements detailed at *para 2.11.8.7*.

2.11.8.12 A pilot may be assigned the responsibility to follow another arriving aircraft which he/she has reported sighting. When assigned this responsibility, the pilot must maintain separation from and not overtake that aircraft. In this circumstance, the pilot is also responsible for providing his/her own wake turbulence separation. If sighting is subsequently lost, advise ATC immediately.

2.12 Landing

2.12.1 Provision of Operational Information

ATC will supply the following information for landing operations:

a. runway or direction;

b. wind direction and speed, QNH and, if required, temperature and/or dew point;

c. known significant weather information, including low cloud and visibility or runway visual range;

d. the crosswind component on the runway to be used, if this equals or exceeds 8KT for single-engined aircraft or 12KT for multi-engined aircraft;

e. the tailwind component

f. aerodrome surface conditions significant to the operation including maintenance work within 23M of the runway side stripe marking;

g. birds or other hazards to aircraft; and

h. cautionary advice of wake turbulence.

2.12.2 Selection of Landing Direction

The pilot in command must ensure that the nominated runway or direction is operationally suitable. If the nominated runway or direction is not suitable then ATC must be advised using the phrase “REQUIRE RUNWAY (number)”. Such a request will not result in loss of priority provided it is made:

a. before reaching 80NM (120NM for jets) from a capital city aerodrome (including Essendon) or 30NM from other controlled aerodromes, for arriving aircraft wholly within controlled airspace; or

b. on first contact with ATC for arriving aircraft entering controlled airspace within the distance specified above or a control area step or a control zone.

The decision to land rests solely with the pilot in command.

2.12.3 **Selection of Circuit Direction**

A pilot in command must notify ATC if a particular turn or circuit is essential to the safe operation of the aircraft. The word REQUIRE must be used to enable ATC to identify the safety requirement.

2.12.4 **Downwind Report to Tower**

Unless otherwise instructed by ATC, the pilot of an arriving or circuit training aircraft must report DOWNWIND when starting or entering the downwind leg of the traffic circuit.

If frequency congestion prevents the call being made when starting the downwind leg, the pilot must report MID-DOWNWIND or LATE-DOWNWIND as appropriate.

2.12.5 **Clearances**

A pilot in command must not land unless the specific clearance “CLEARED TO LAND” has been received.

Note: ATC approval must be obtained if asymmetric training is to be carried out within 5NM of a controlled aerodrome (see Section 2.2.26).

2.12.6 **Separation Minima for Landing**

2.12.6.1 The appropriate wake turbulence separation standard will be applied by ATC between landing aircraft, except when a pilot has been assigned responsibility to maintain separation with another aircraft.

2.12.6.2 A landing aircraft will not be permitted to cross the threshold of the runway on its final approach until:

a. a preceding departing aircraft using the same runway:

(1) is airborne, and

– has commenced a turn; or

- is beyond the point on the runway at which the landing aircraft could be expected to complete its landing roll and there is sufficient distance to manoeuvre safely in the event of a missed approach;

(2) is at least 1,000M from the runway threshold, and

- has commenced the take-off run, and
- in the opinion of the controller, no collision risk exists, and
- the aircraft taking off has a MTOW of 7,000KG or less, and
- the landing aircraft is performance Category A and has a MTOW below 3,000KG.

b. a preceding landing aircraft using the same runway:

(1) has vacated it and is taxiing away from the runway; or

(2) has landed and has passed a point at least 1,000M from the threshold of the runway and will vacate the runway without backtracking, and

- in the opinion of the tower controller, no collision risk exists, and
- the preceding landing aircraft has a MTOW of 7,000KG or less, and
- the following landing aircraft is performance Category A and has a MTOW below 3,000KG; or

(3) has landed and has passed a point at least 600M from the threshold of the runway, is in motion and will vacate the runway without backtracking; and

- the preceding landing aircraft has a MTOW of less than 7,000KG, and
- the following landing aircraft has a MTOW of 2,000KG or less, or

(4) in the case where the following landing aircraft is a helicopter, the preceding landing aircraft is at least 300M down the runway from the threshold and ATC is satisfied that no collision risk exists.

c. a preceding aircraft, using a different runway, has crossed or stopped short of the landing aircraft's runway.

In the above situations, a landing clearance may be issued if ATC expect that the required runway separation standard will exist.

2.12.6.3 Other than as specified in *para 8.5.1,* exceptions to separation minima are:

a. aircraft landing in formation with respect to each other; and

b. aircraft operating in different areas or lanes on aerodromes with runways or facilities suitable for simultaneous landings.

2.13 Circuit Operations

2.13.1 Sequencing

2.13.1.1 When appropriate, ATC will issue a sequencing instruction.

2.13.1.2 In sequencing aircraft ATC will indicate the position of the preceding aircraft by reference to a leg of the circuit or as a clock bearing, and describe it either as a specific type or in general terms (e.g. Cessna or Twin).

2.13.1.3 ATC may issue a sequence number. Sequence numbers specify the landing sequence position of an aircraft with respect to any preceding traffic.

2.13.1.4 When issued with a sequencing instruction, a pilot must follow the preceding aircraft *and continue to do so unless otherwise instructed by ATC.*

2.13.1.5 The instruction FOLLOW requires the pilot to sight the preceding aircraft, and regulate circuit speed and approach path to achieve longitudinal separation. If the preceding aircraft cannot be sighted and identified, the pilot must advise ATC.

2.13.2 Non-Standard Circuit Operations

2.13.2.1 Pilots must advise ATC of non-standard circuit operations, e.g. glide and flapless circuits, normally with the DOWNWIND report. This advice will also alert other circuit traffic. ATC must also be advised of single engined aircraft conducting simulated engine failures at the earliest opportunity.

2.13.2.2 Where appropriate, an ATC sequencing instruction will indicate that there are no traffic restrictions precluding the manoeuvre. Subject to traffic, ATC may deny, or apply parameters to such operations for traffic management purposes.

2.13.3 Parallel Runway Operations at Class D Aerodromes

2.13.3.1 Where a Class D aerodrome is equipped with parallel runways, ATC may sequence aircraft for simultaneous contra-circuits and may conduct these operations using separate Tower frequencies for each runway. Operations will be regulated independently in each circuit, with an ATC clearance required to enter the opposite circuit or airspace.

2.14 Go Around and Missed Approach Procedure in VMC

2.14.1 In the event that an aircraft is required to go around from a visual approach in VMC, the aircraft must initially climb on runway track, remain visual and await instructions from ATC. If the aircraft can not clear obstacles on runway track, the aircraft may turn.

2.14.2 The exception to the above procedure is that, at Sydney, visual go arounds must be carried out:

a. in accordance with the published ILS missed approach procedure for the runway the aircraft is using, or

b. as directed by ATC.

2.14.3 In the event that an aircraft is unable, or does not wish, to land from an instrument approach in VMC, the aircraft must carry out the published instrument missed approach procedure for the instrument approach being flown, unless ATC directs otherwise.

2.14.4 At Class D aerodromes with parallel runways where contra-rotating circuit operations are in progress, if ATC instructs, or a pilot initiates a go around, the pilot must:

a. commence climb to circuit altitude;

b. position the aircraft on the active side and parallel to the nominated duty runway, while maintaining separation from other aircraft; and

c. follow ATC instructions or re-enter the circuit from upwind.

2.15 Taxiing After Landing

2.15.1 A pilot in command must not hold on the runway in use unless ATC has so authorised.

2.15.2 After landing, unless specified otherwise by ATC, an aircraft must comply with the following:

a. Promptly vacate the runway without backtracking.

b. Change from the tower frequency to the ground frequency (where established) when vacating the runway strip, and obtain an ATC taxi instruction.

c. Not cross any runway that intersects the taxi route unless in receipt of a taxi instruction and a "CROSS RUNWAY (number)" instruction from ATC.

d. Taxi to the destination via the most direct taxiway(s) available.

e. Where an apron service is provided on a discrete frequency (see *ERSA*), change to that frequency on entering the apron.

2.15.3 A taxi instruction which contains a taxi limit beyond a runway must include a "CROSS RUNWAY (number)" instruction to cross that runway. When an aircraft is required to hold short of a runway intersecting the taxi route, ATC will issue a taxi instruction limit of the holding point associated with the intersecting runway.

2.15.4 An aircraft which has been issued with a taxi instruction limit of the holding point of a runway intersecting the taxi route, or which has been issued with an instruction to "HOLD SHORT" of that runway, must subsequently be issued with an instruction to "CROSS RUNWAY (number)".

2.15.5 Aircraft required to hold short of a runway must hold at the appropriate holding point for that runway, or the runway strip edge at the intersection of a crossing runway.

2.15.6 When separate frequencies for aerodrome control and surface movement control are in use, the pilot in command, on landing, must change from the aerodrome control frequency to the SMC frequency on vacating the runway strip, and then transmit the aircraft callsign and, if applicable, parking bay number. A pilot in command may "**REQUEST DETAILED TAXI INSTRUCTIONS TO (location)".**

2.15.7 The taxi clearance regulates movement on the manoeuvring area. The separation of aircraft taxiing on the manoeuvring area is a joint pilot and controller responsibility. Taxi clearance shall contain concise instructions and adequate information so as to assist flight crew to follow the correct taxi routes, to avoid collision with other aircraft and objects and to minimise the potential for the aircraft inadvertently entering a runway.

2.15.8 A taxi clearance will not relate to movement on the apron areas. However, available essential information referring to other aircraft entering or leaving the same apron area will be provided.

2.15.9 Radio watch must be maintained on the SMC or tower frequency (where no SMC frequency is provided) until parked.

3. OPERATIONS IN CLASS E AIRSPACE

3.1 ATC Traffic Services

3.1.1 In Class E airspace, IFR and VFR flights are permitted. IFR flights are provided with an ATC service, are separated from other IFR flights, and receive traffic information on VFR flights as far as is practicable. VFR flights receive a Surveillance Information Service (SIS), where available, on request.

3.1.2 Traffic information services provided by ATC do not relieve pilots of their responsibilities for continued vigilance to see-and-avoid other aircraft.

3.1.3 When vectors are provided to IFR flights in Class E airspace, terrain clearance will be provided by ATC. However, in VMC by day, pilots may be assigned responsibility for terrain clearance by use of the phrase “DESCEND TO (level) / CLIMB TO (level)/ TURN RIGHT / TURN LEFT (degrees) VISUAL”.

3.1.4 In Class E airspace, the following also apply:

a. Hazard Alerts will be directed to pilots of IFR flights, and to pilots of known VFR flights.

b. Unless operationally required by a pilot, ATC will only assign IFR levels.

3.2 VFR Flights in Class E Airspace

3.2.1 VFR flights entering Class E airspace do not require a clearance, but may receive a Surveillance Information Service (SIS), where available, on request (see *GEN 3.3 section 2.17*).

3.2.2 VFR flights entering and operating in Class E airspace should:

a. avoid published IFR routes, where possible;

b. monitor the appropriate Class E frequency and announce if in potential conflict; and

c. take appropriate action to avoid potential conflict.

3.2.3 Pilots of VFR flights should avoid IFR holding patterns.

4. NAVIGATION REQUIREMENTS

4.1 Flight under the IFR

4.1.1 An aircraft operating under the IFR must be navigated by:

a. an approved area navigation system that meets performance requirements of the intended airspace or route; or

b. use of a radio navigation system or systems on routes where, after making allowance for possible tracking errors of ±9° from the last positive fix, the aircraft will come within the rated coverage of a radio aid which can be used to fix the position of the aircraft. The maximum time interval between positive fixes must not exceed two (2) hours; or

c. visual reference to the ground or water by day, on route segments where suitable en route radio navigation aids are not available, provided that weather conditions permit flight in VMC and the visual position fixing requirements of *para 4.1.2.1b*. are able to be met.

4.1.2 Flight under the VFR

4.1.2.1 The following apply in respect of flight under the VFR:

a. The pilot in command must navigate the aircraft by visual reference to the ground or water, or by using any of the methods specified in *para 4.1.1*, except that when operating at or below 2,000FT above the ground or water, the pilot in command must be able to navigate by visual reference to the ground or water.

b. When navigating by visual reference to the ground or water, the pilot in command must positively fix the aircraft's position by visual reference to features shown on topographical charts at intervals not exceeding 30 minutes. When flying over the sea, visual reference features may include rocks and reefs and fixed man-made objects which are marked on suitable charts and are readily identifiable from the air.

Note: Flight above more than SCT cloud, or over featureless land areas, or over the sea, may preclude visual position fixing at the required intervals and may therefore make visual navigation impracticable.

c. When navigating by visual reference in controlled airspace the pilot must notify ATC if the aircraft's track diverges by more than one (1) nautical mile from the track approved by ATC, or, if navigating by reference to radio navigation aids, by more than the tolerances given in *para 4.1.6*.

d. VFR flight on top of more than SCT cloud is available provided that:

(1) VMC can be maintained during the entire flight, including climb, cruise and descent.

(2) For VFR flight on top of more than SCT cloud, the visual position fixing requirements of *sub-para b.*, or the other navigational requirements of *section 4.1* must be met.

(3) Prior to conducting a VFR flight on top of more than SCT cloud, the pilot in command must ensure that current forecasts and observations (including those available in-flight observations) indicate that conditions in the area of, and during the period of, the planned descent below the cloud layer will permit the descent to be conducted in VMC.

(4) The position at which descent below cloud is planned to occur must be such as to enable continuation of the flight to the destination and, if required, an alternate aerodrome in VMC (see *Notes 1 and 2*).

e. When navigating by reference to radio navigation aids or GNSS, the pilot in command must obtain positive radio fixes at the intervals and by the methods prescribed in *paras 4.1 and 4.1.5*.

f. The pilot in command of a VFR flight wishing to navigate by means of radio navigation systems or any other means must indicate in the flight notification only those radio navigation aids with which the aircraft is equipped and the pilot is competent to use under *CASR 61.385.*

g. VFR flights must not be conducted above FL200 unless:

(1) the pilot in command or, if more than one pilot is required, each pilot:

– is authorised under *Part 61* to conduct a flight under the IFR in that airspace; and

– complies with the recent experience requirements of Section *6.2.1 or 6.2.3* of CAOs as applicable to the particular flight; and

(2) the aircraft is equipped for flight under the IFR; and

(3) the aircraft is engaged in an ‘IFR pick up’, ‘VFR climb/descent’ or ‘VFR on top’ procedure as published in *AIP*; and

(4) the aircraft remains in Class E airspace.

Note 1: A pilot must not undertake a VFR flight on top of more than SCT cloud unless the aircraft is equipped with serviceable flight and navigation instruments as specified in CAO 20.18 Appendix IV.

Note 2: Pilots should not initiate VFR flight on top of more than SCT cloud when weather conditions are marginal. Before committing to operate VFR flight on top of more than SCT cloud, pilots should be confident that meteorological information used is reliable and current, and clearly indicates that the entire flight will be able to be conducted in VMC.

4.1.3 **Time**

4.1.3.1 During flight, pilots must maintain a time reference accurate to within ± 30 seconds.

4.1.4 **Track Keeping**

4.1.4.1 Tolerances are applied to tracks to assess containment areas for the purposes of ensuring navigational integrity, separation from other aircraft, terrain and obstacle clearance, and avoidance of specified airspaces. Although allowing for the errors inherent in the navigation systems used, these tolerances are based on the assumption that the pilot will maintain track as closely as possible.

4.1.4.2 The pilot in command must, at all times, take positive action to regain track as soon as a deviation from the correct track is recognised.

4.1.4.3 Aircraft must be navigated by the most precise means of track guidance with which the aircraft is equipped and the pilot is qualified to use.
The order of precision is Localiser, GNSS, VOR, then NDB.

4.1.5 **Position Fixing**

4.1.5.1 A positive fix is one determined by:

a. the passage of the aircraft over an NDB, VOR, TACAN, marker beacon or a DME site; or

b. the intersection of two or more position lines which intersect with angles of not less than 45° and which are obtained from NDBs, VORs, localisers or DMEs in any combination. For the purpose of this paragraph, a position line must be within the rated coverage of the aid with the exception that if a fix is determined entirely by position lines from NDBs, the position lines must be within a range of 30NM from each of the NDBs; or

c. GNSS meeting the equipment requirements of *GEN 1.5 Section 2.*

Note: GNSS is not a positive fix for separation purposes.

4.1.6 **Aircraft Deviations in Controlled Airspace - Advice to ATC**

4.1.6.1 In controlled airspace, separation standards are based on the pilot maintaining route or track as closely as possible at all times. Corrective action must be taken to regain route or track as soon as any deviation is observed.

4.1.6.2 Additionally, the pilot must immediately notify ATC for any of the deviations described below:

a. where route or track guidance is provided by a localiser or VOR - half scale deflection or more of the Course Deviation Indicator (CDI);

b. where route or track guidance is provided by NDB - ±5° or more from the specified bearing;

c. where route or track guidance is provided by DME - ±2NM or more from the required arc;

d. where route or track guidance is provided by an area navigation system - when Navigation System Error (ANP, EPE, HPL/HAL depending on the system in use) plus Flight Technical Error (FTE) exceed the RNAV or RNP value for the route, track or procedure being flown; and

e. when navigating by visual reference to the ground or water - more than 1NM from the cleared track.

Note: The values given above must not be interpreted as defining a sector within which the pilot is permitted to navigate.

4.1.7 **Deviation from Route or Track**

4.1.7.1 In controlled airspace, any deviation from route or track requires prior clearance from ATC, except in an emergency. The values given in *section 4.1.6* must not be interpreted as tolerances within which deviations from route or track without clearance are permitted.

4.1.8 **Deviations Due Weather**

4.1.8.1 In controlled airspace, any deviation from route or track due weather requires prior clearance from ATC. If unable to obtain a clearance, and the pilot in command considers the deviation necessary, a PAN call specifying details of the deviation must be broadcast on the appropriate frequencies. Pilots must be aware that the declaration of an emergency does not guarantee the aircraft safe passage, especially if the deviation is into an active restricted area.

4.1.9 **Deviations into Restricted Areas**

4.1.9.1 Any deviation from track into an active restricted area requires prior clearance from ATC.

If unable to obtain a clearance, and the pilot in command considers there is no safer alternative course of action, squawk emergency and declare a PAN specifying details of the deviation on the appropriate ATC and emergency frequencies. Aircraft entering active restricted areas without a clearance proceed at their own risk. Pilots must be aware that the declaration of an emergency does not guarantee the aircraft safe passage. Calls on emergency frequencies should be repeated at regular intervals during transit of the restricted area.

4.1.9.2 Prior to re-entering CTA, a clearance from ATC must be obtained.

4.1.10 **Long Over-Water Flights**

4.1.10.1 If an aircraft on a long over-water flight operating in oceanic Class A airspace has inadvertently deviated from the route specified in its ATC clearance, the pilot must take action to regain the cleared route within 200NM from the position at which the deviation was observed.

4.1.11 **GNSS - Operations Without RAIM**

Note: Systems for providing integrity, other than RAIM, may be approved for use by CASA. Where reference to RAIM occurs in this GNSS Section, it includes other approved equivalent integrity monitoring systems.

4.1.11.1 GNSS systems normally provide three modes of operation:

a. Navigation (NAV) Solution with RAIM;

b. 2D or 3D NAV Solution without RAIM; and

c. Dead Reckoning (DR), or Loss of NAV Solution.

4.1.11.2 ATS services, in particular aircraft separation, are predicated on accurate aircraft navigation and position fixing. If GNSS is unavailable due to loss of RAIM or RAIM ALERT, the accuracy is assumed not to meet the required standard for navigation and, consequently, for the application of area navigation separation standards by ATC. Accordingly, when GNSS is unavailable, the following procedures must be adopted:

a. Aircraft tracking must be closely monitored against other onboard navigation systems.

b. In controlled airspace, ATC must be advised if:

(1) GNSS is unavailable for periods greater than 5 minutes, even if it is still providing position information; or

(2) GNSS is unavailable when ATC requests GNSS distance, or if an ATC clearance or restriction based on GNSS distance is imposed; or

(3) the GNSS is in DR mode, or experiences loss of navigation function, for more than one minute; or

(4) indicated displacement from track centreline exceeds 2NM.

c. If valid position information is lost (2D or DR Mode), or non-RAIM operation exceeds 5 minutes, the GNSS information is to be considered unreliable and another means of navigation should be used until RAIM is restored and the aircraft is re-established on track.

d. Following re-establishment of RAIM, the appropriate ATS unit should be notified of RAIM restoration prior to using GNSS information. This will allow ATC to reassess the appropriate separation standards.

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On receipt of advice, ATC may adjust separation.

4.1.12 **Avoiding Controlled Airspace**

Unless an appropriate clearance has been obtained, the pilot in command of an aircraft operating in Class G airspace, or a VFR aircraft operating in Class E airspace, must not allow the aircraft to enter:

a. airspace for which ATC clearance is required; or

b. an active restricted area.

Note 1: Aircraft within controlled airspace or a restricted area may be operating up to the boundary of the airspace.

Note 2: For aircraft operating in close proximity to an airspace boundary where there is a risk of an airspace infringement, the pilot in command should consider obtaining a clearance to enter the airspace or altering track to remain well clear.

5. AIR ROUTE SPECIFICATIONS

5.1 When proposing to operate under the IFR on any route segments, or proposing flight in controlled airspace, the pilot in command must plan and conduct a flight in accordance with the:

a. route specifications published in *GEN 3.2* including the relevant en route chart; and

b. applicable flight planning requirements published in ERSA GEN; and

c. published accessibility of airspace such as restricted areas;

unless otherwise authorised by ATC.

5.1.1 The pilot in command is responsible for ensuring that the requirements of *Section 4.* can be met.

5.1.2 When planning an IFR flight, the pilot in command of a multi-engined aircraft must take into account the en route performance requirements of *CAO 20.7.1B, 20.7.2 or 20.7.4*, as appropriate.

5.1.3 Where no route specification has been published in the relevant en route chart, a route determined by the pilot in command, and, if in controlled airspace, approved by ATC, will be planned.

5.1.4 Prior ATC approval is required for area navigation tracking on routes other than those published in AIP and the Airservices *"Off Air Route Planning (OARP) Manual"*. Information and rules regarding OARP are available at:
www.airservicesaustralia.com/flight-briefing/off-air-route-flight-planning-options/

5.1.5 The position reporting points for a route should be separated by a distance approximately 30 minutes or 200NM apart, whichever is least, and, when practicable, should be selected from those shown on en route charts. Otherwise, the position reporting points should be places named on VTC or WAC, and identifiable by radio or visual means. To minimise confusion, when a position is reported over a town which has a nearby aerodrome of the same name, the word 'township' must be used after the name in the text of the report.

5.1.6 For an area-type flight as distinct from route flying, the pilot of an IFR flight or VFR flight in those circumstances identified in *ENR 1.10* may nominate scheduled reporting times. These should be at half-hourly intervals. The pilot must specify the area's boundaries by means of a map provided with the flight notification details.

5.1.7 A pilot in command must make sure, by reference to the forecast, that the route selected for a VFR flight will enable the aircraft to be flown with visual reference to the ground or water for significant portions of the route, and in the vicinity of the destination aerodrome.

6. RADIO COMMUNICATION AND NAVIGATION REQUIREMENTS

6.1 Summary of Report and Broadcast Requirements

6.1.1 In this section:

a. 'Report' means a mandatory radio report from an aircraft to the appropriate ATS unit.

b. 'Broadcast' means a radio broadcast from an aircraft on the appropriate frequency to provide advisory traffic information to other aircraft.

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6.1.2 Except in special circumstances (e.g. descent from CTA, formation flights, SAR, police/security), pilots of aircraft are required to comply with the radio communication requirements appropriate for the 'Classes of Airspace - Services and Requirements' table included in *ENR 1.4 Section 4.*

6.1.3 In special circumstances, a pilot may request to change frequency to meet operational report, broadcast, or communication requirements. ATC will facilitate a pilot request for approval to leave a control frequency to make such reports or broadcasts.

When impracticable to approve the frequency change at the time requested due to control requirements, ATC will accommodate the request as soon as possible. In determining when to make reports and broadcasts, pilots should consider the possibility of delays in being released from the ATC frequency.

Requests for frequency change should specify the expected duration when the change required is not permanent.

6.1.4 Whenever flight rules are changed during flight (i.e. VFR to IFR or IFR to VFR), the pilot must report to ATS at the time the change takes place.

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6.1.5 Pilots of aircraft engaged in parachute operations must broadcast their intentions on the appropriate area VHF, and/or CTAF, two (2) minutes prior to parachutists exiting the aircraft. In addition, when operations are conducted in, or parachutists will enter, a Restricted Area or Classes A, C or D airspace, a clearance to drop is required. Notification of clearance request must be made at least five (5) minutes before the proposed exit.

6.1.6 Unless otherwise authorised, gliding operations in controlled airspace (including Class E) must be conducted using the appropriate ATC frequency.

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6.1.7 Pilots of IFR flights operating outside controlled airspace who desire to establish communication with a non-ATS station and who will not be able to maintain a listening watch on the ATS frequency must advise ATS of their further SAR requirements before making the frequency change.

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SUMMARY OF REPORTS - ALL AIRCRAFT IN CLASSES A, C & D AIRSPACE, AND IFR AIRCRAFT IN CLASS E AIRSPACE		
Situation	**FREQ to Use**	**Remarks**
1. Airborne in Class C CTR 2. Airborne in Class D CTR and instructed to contact CEN/APP/DEP after take-off	Relevant CEN/ APP/DEP FREQ	Airborne report
IFR airborne at Class D aerodrome at which TWR also provides APP CTL service	TWR FREQ	Departure report
VFR airborne at Class D aerodrome at which TWR also provides APP CTL service, unless departing the CTR directly into Class G airspace	TWR FREQ	Departure report
Position report at prescribed points	ATC	Report
Previously notified position estimate > 2 minutes in error	ATC	Report
Speed reports: a. Sustained speed variations of ±10KT or ±M0.02 from the: i. flight plan speed; ii. previously notified speed; or iii. any agreed standard descent profile; and b. On entry to oceanic controlled airspace from outside Australian administered airspace, report the current sustained TAS or Mach number.	ATC	Report
Arrival	ATC	Report (if cancelling SARWATCH)

SUMMARY OF REPORTS - IFR AIRCRAFT IN CLASS G AIRSPACE (*Note: Requirements of para 10.1.13 apply*)		
Situation	**FREQ to Use**	**Remarks**
Taxiing	ATS	Report
Departure	ATS	Departure Report
Reaching cruising level	ATS	Report
Position report at prescribed and nominated points	ATS	Report
Previously notified position estimate > 2 minutes in error	ATC	Report
Before changing level	ATS	Report
Changing frequency	ATS	Report
For clearance into controlled airspace	ATC	Report
Before leaving controlled airspace on descent	ATS	Report
Changing to CTAF and not monitoring ATC FREQ on second COM system	ATS	Report
Joining circuit	ATS	Report *
After landing	ATS	Report *
* Report required only if cancelling SARWATCH at this time.		

SUMMARY OF REPORTS - VFR AIRCRAFT IN CLASSES E AND G AIRSPACE		
Situation	**FREQ to Use**	**Remarks**
For clearance into controlled airspace	ATC	Report
Before and on completion of overwater stage (see *Section 11.11*)	ATS	Report (if requesting schedules)

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6.2 Limited Radio and No Radio Procedures

6.2.1 Authorisation may be given to Australian registered aircraft to vary the requirements for the carriage of radio equipment as specified in Radio Communication and Navigation Requirements. Authorisations are given by the relevant Area or Airline Office of CASA.

6.2.2 A non-radio aircraft operating in Class G airspace may, due to stress of weather, operate above 5,000FT to the minimum extent necessary for the safe conduct of the flight, provided:

a. the aircraft cruises at a VFR level;

b. the cruise is conducted in VMC; and

c. as soon as is practicable, the aircraft descends in VMC to below 5,000FT to continue flight in VMC.

A pilot not able to comply with these requirements must proceed to the nearest suitable aerodrome and land.

6.2.3 A no-radio aircraft, other than a glider, may operate above 5,000FT within the confines of a published Danger area which is:

a. promulgated specifically for no-radio operations, or

b. identified as permitting no-radio operations.

6.2.4 Gliders may operate above FL200 only in accordance with an authorisation issued by CASA. The area of operation will be advised by NOTAM.

6.2.5 If total or partial failure of the required radio communications equipment occurs before flight commences and repair facilities are available, repairs must be made before the flight proceeds.

6.2.5.1 Where repair facilities are not available, and flight to the nearest appropriate repair facility entails flight in controlled airspace, the flight may proceed provided that ATS is advised of the radio failure and a clearance for the flight is obtained from ATC.

6.2.5.2 At non-controlled aerodromes where the carriage of radio is required, *CAR 166E* allows for continuation of a ‘no radio’ arrival or departure in certain circumstances. If a radio failure occurs either en route to or in the circuit of the aerodrome, the pilot may continue to land at that aerodrome provided:

a. where equipped - the aircraft displays its external lights, and its transponder is turned on; and

b. if en route - the pilot uses the overfly joining procedure (*Refer CAAP 166-01 Appendix 1, or the graphic at para 10.12.6*).

6.2.5.3 A pilot may depart the aerodrome with an unserviceable radio and fly to another aerodrome for repairs, provided that the aircraft - where equipped - displays its external lights and its transponder turned on.

6.2.5.4 A pilot should avoid planning to arrive or depart an aerodrome for radio repairs during the known hours of scheduled RPT operation. For aerodromes where there is a UNICOM or CA/GRS, pilots should by alternative means where possible make contact and advise their intentions before conducting operations.

6.2.5.5 In exceptional circumstances, *CAR 166E* makes a provision for a pilot who is not qualified to use an aircraft radio, or where the aircraft is not equipped with a radio, to operate at, or in the vicinity of a non-controlled certified, registered or military aerodrome. The aircraft must be operated:

a. in VMC by day; and

b. arrive or depart in the company of another radio-equipped aircraft that is flown by a radio-qualified pilot which will allow the latter to make radio calls on behalf of both aircraft. The radio-equipped aircraft should be manoeuvred to keep the no radio aircraft at a safe distance *(CAR 163)* and in sight at all times in order to accurately report its position.

6.2.6 Procedures to be adopted when total loss of radio occurs whilst in-flight and within Australian Domestic airspace are contained in *ERSA EMERG*. (For radio failure or no radio procedures at all non-controlled aerodromes refer *ERSA INTRO*).

6.2.7 Procedures to be adopted when total loss of radio occurs whilst in-flight and within Australian administered Oceanic airspace are as follows:

6.2.8 In the event of total loss of communication, an aircraft shall:

a. try to re-establish communication by all other means;

b. if all attempts to re-establish communication with ATC are unsuccessful:

(1) Squawk 7600;

(2) If able, broadcast in the blind at suitable intervals: aircraft identification, flight level, aircraft position (including the ATS route designator or the track code), and intentions on the frequency in use, as well as on frequency 121.5 MHz (or, as a back-up, the VHF inter-pilot air-to-air frequency 123.45 MHz);

(3) Watch for conflicting traffic both visually and by reference to airborne collision avoidance systems or traffic displays (if equipped);

(4) Turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

(5) Maintain the last assigned speed and level for a period of 60 minutes following the aircraft's failure to report its position over a compulsory reporting point (including ADS-C flights), and thereafter adjust speed and altitude in accordance with the filed flight plan;

Note: In OCA, aircraft experiencing communication failure may also initiate strategic lateral offset procedures (SLOP) in accordance with ENR 2.2 Section 2.2, including an offset of up to 2NM right of track.

(6) Upon exiting OCA, conform to the relevant State procedures and regulations.

6.2.9 In the event of lost communication, ATC shall maintain separation between the aircraft having the communication failure and other aircraft, based on the assumption that the aircraft having the communication failure will operate in accordance with the procedures in *6.2.8.*

6.3 GNSS Reporting Requirements and Procedures

6.3.1 GNSS systems used to provide distance information to ATS units by pilot reports must meet one of the GNSS equipment specifications mentioned in *GEN 1.5 section 2.*

6.3.2 ATC may apply some DME-based separation standards to approved aircraft providing GNSS distance information. Pilots must be familiar with and comply with GNSS reporting requirements and procedures.

6.3.3 When a DME distance is not specifically requested, or when the provision of a DME distance is not possible, distance information based on GNSS-derived information may be provided. When responding to ATC requests for distance information, pilots should:

a. provide either a DME distance or a GNSS distance unless RAIM is currently not available, and has been unavailable for the previous 5 minutes; and

b. include the source and point of reference; e.g. 115 GNSS Melbourne, 79 DME Newman, 257 GNSS BEEZA, etc.

6.3.4 Notwithstanding *para 6.3.3*, if an ATC unit has issued a clearance or restriction based upon GNSS distance (e.g. a restriction to reach a certain level by a GNSS distance), pilots must inform ATC if RAIM is not available.

6.3.5 If a GNSS distance is provided to an ATC unit, and RAIM is not currently available, but has been available in the preceding 5 minutes, the distance report should be suffixed “NEGATIVE RAIM” - e.g. 26 GNSS LT VOR, NEGATIVE RAIM.

6.3.6 Databases sometimes contain waypoint information which is not shown on published AIP charts and maps. Distance information must only be provided in relation to published waypoints unless specifically requested by an ATS unit.

6.3.7 Where GNSS distance is requested or provided from an NDB, VOR, DME, or published waypoint, the latitude and longitude of the navigation aid or waypoint must be derived from a validated database which cannot be modified by the operator or crew.

7. PARALLEL RUNWAY OPERATIONS AT CLASS C AERODROMES

7.1 Introduction

7.1.1 Simultaneous parallel runway operations may be used for:

a. independent parallel approaches and/or departures;

b. dependent parallel approaches and/or departures;

c. segregated parallel approaches and departures; or

d. simultaneous opposite direction operations (SODPROPS).

7.2 **Pilot Notification**

7.2.1 Whenever parallel runway operations are in progress, pilots will be notified by inclusion of that advice, and an expectation of the type of approach or departure, on the ATIS:

e.g. “EXPECT INDEPENDENT VISUAL APPROACH.
DO NOT PASS THROUGH ASSIGNED RUNWAY CENTRELINE.
PARALLEL RUNWAY OPERATIONS IN PROGRESS
INDEPENDENT DEPARTURES IN PROGRESS”, or

“EXPECT ILS PRM APPROACH
PARALLEL RUNWAY OPERATIONS IN PROGRESS
INDEPENDENT DEPARTURES IN PROGRESS”.

7.2.2 The use of Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) will be broadcast on the ATIS, including the runway configuration being used for the procedure:

e.g. “RUNWAY THREE FOUR LEFT FOR ARRIVALS, RUNWAY THREE FOUR LEFT AVAILABLE FOR DEPARTURES IF OPERATIONALLY REQUIRED OR AS DIRECTED BY ATC. RUNWAY ONE SIX LEFT FOR ALL OTHER DEPARTURES. SIMULTANEOUS OPPOSITE DIRECT PARALLEL RUNWAY OPERATIONS IN PROGRESS”.

7.2.3 Pilots will be advised of the runway expectation and localiser frequency as soon as practicable after first contact with Approach/Director.

7.2.4 During the application of independent visual approaches, ATC will provide limited traffic advice whenever aircraft will operate within 1NM of traffic on the adjacent final approach. Confirmation of visual contact is not required.

7.3 **Parallel Instrument Approaches**

7.3.1 **Dependent Parallel Approaches in IMC**

7.3.1.1 Dependent parallel approaches may be conducted to parallel runways with centrelines separated by more than 915M. ATC provides standard separation between aircraft on the same approach path and between aircraft on adjacent approach paths.

7.3.2 **Independent Approaches in IMC**

7.3.2.1 Independent parallel approaches may be conducted to parallel runways with centrelines separated by more than 1,035M. ATC provides standard separation between aircraft on the same approach path and monitors aircraft for deviation from the approach path. ATS is not required to provide separation between aircraft on adjacent approach paths.

7.3.2.2 Requirements for pilot participation in independent parallel (ILS PRM) approaches in IMC are detailed at DAP EAST Sydney (Kingsford-Smith) “ILS PRM USER INSTRUCTIONS” page and ERSA FAC S “Sydney Kingsford-Smith”. Pilots unable to participate in an ILS PRM approach must notify ATC prior to 120 DME SY (or, if departing within 120 DME SY, on first contact with ATC).

7.3.2.3 Independent parallel approaches in IMC require the use of ILS. GLS cannot be used for independent parallel approaches in IMC.

7.3.3 **Break-out Procedures**

7.3.3.1 When the PRM indicates that a track will penetrate the NTZ, ATC will advise the aircraft of the deviation. Pilots are not required to acknowledge this transmission.

7.3.3.2 When ATC observes that an aircraft has or will penetrate the NTZ, that aircraft, and affected aircraft on the adjacent final approach course, will be issued a break-out instruction. However, an aircraft that is 1NM or less from runway threshold may be given relevant traffic information and allowed to continue its approach and land.

7.3.3.3 When issued with break-out instructions, pilots must immediately disconnect the autopilot (if engaged) and hand-fly the procedure, including - as soon as possible - turning onto the assigned heading and climbing/descending to the assigned altitude. The break-out instruction should be read back as soon as practicable.

Note 1: Simulation studies of break-outs have shown that a hand-flown break-out can be initiated consistently faster than a break-out performed using the autopilot.

Note 2: A descending break-out will only be issued in exceptional circumstances.

7.3.4 TCAS Selection

7.3.4.1 Pilots should maintain TCAS selection in the RA mode.

7.3.4.2 The TCAS provides only vertical resolution of aircraft conflicts, while the ATC break-out instruction provides both vertical and horizontal guidance for conflict resolutions. Should a TCAS RA be received before, during, or after an ATC break-out instruction is issued, the pilot should follow the RA, even if it conflicts with the climb/descent portion of the break-out manoeuvre. While following an RA, it is still necessary for the pilot to comply with the turn portion of the ATC break-out instruction unless the pilot determines other safety considerations apply. If following an RA requires deviating from an ATC clearance, the pilot must advise ATC as soon as practical.

7.4 Parallel Visual Approaches

7.4.1 Dependent Visual Approaches

7.4.1.1 Dependent visual approaches to parallel runways may be conducted in accordance with the procedures and requirements for visual approaches detailed in *section 2.11.8*.

7.4.2 Independent Visual Approaches

7.4.2.1 Independent visual approaches may be conducted to parallel runways with centrelines separated by at least 760M.

7.4.2.2 Aircraft may be processed via a precision approach until visual, then cleared for an independent visual approach. Notification will be by the ATIS using the phrase "EXPECT ILS OR GLS APPROACH THEN INDEPENDENT VISUAL APPROACH WHEN VISUAL". When visual, the pilot will be cleared for a visual approach and will be required to comply with the pilot responsibilities listed in *section 7.4.3.*

7.4.2.3 Abbreviated mutual traffic information, including relative position (ahead, behind or adjacent), will be provided when aircraft are within 1NM of each other.

7.4.2.4 A pilot should report "VISUAL" and/or "RUNWAY (number) LEFT/RIGHT IN SIGHT" as soon as possible after first contact with Approach/Director. If a pilot does not report the runway in sight by a position 3NM from the centreline of the adjacent parallel runway, the controller may, if necessary, vector the aircraft away from the final approach for sequencing for a dependent approach.

7.4.2.5 The "VISUAL" report is the only report required when established on the localiser.

7.4.2.6 The "RUNWAY (number) LEFT/RIGHT IN SIGHT" report indicates that the pilot can maintain the runway in sight throughout the approach. If visual contact is lost, the pilot must advise ATC immediately.

7.4.3 **Pilot Responsibilities**

7.4.3.1 Pilots of aircraft conducting independent visual approaches are responsible for:

a. flying accurate headings when being vectored to final;

b. ensuring that the runway centreline is not crossed during intercept;

c. accurately tracking the extended runway centreline;

d. maintaining a visual lookout for aircraft approaching the parallel runway;

e. in the event of an aircraft not complying with a., b., or c. above, maintaining the necessary separation from aircraft on the other approach;

f. advising ATC immediately when avoiding action is initiated or visual contact with the runway is lost; and

g. meeting the obstacle clearance requirements for visual approaches.

7.4.4 **Change of Runway for Separation During Independent Visual Approaches**

7.4.4.1 To avoid a 'go around' and ensure the maintenance of separation, a controller may offer an aircraft already established on final a change of runway (right to left or left to right). An offer of a change of runway shall include the new localiser frequency and shall only be made when the aircraft is:

a. in visual conditions; and

b. outside 5NM from the aircraft's intended threshold.

7.5 **Segregated Operations in IMC**

7.5.1 Segregated parallel operations in instrument conditions may be conducted on parallel runways with centrelines separated by more than 760M provided the nominal departure track diverges immediately after take-off by at least 30° from the missed approach track of the adjacent approach.

7.5.2 The following types of approaches may be conducted in segregated parallel operations:

a. ILS/GLS;

b. radar; or

c. visual.

7.6 Independent Departures

7.6.1 Independent departures can be conducted provided that:

a. ATC instructions permit the courses of the respective aircraft to diverge by at least 15° immediately after take-off; and

b. the aircraft will be identified within 1NM of the upwind end of the departure runway.

7.7 Simultaneous Opposite Direction Operations

7.7.1 Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) may be conducted at selected locations.

7.7.2 Traffic information, which will include the runway and position of the traffic and may include aircraft type, will be passed to arriving and departing aircraft as follows:

a. Arriving aircraft will be advised of all departing aircraft that can be expected to depart off the opposite direction parallel runway and are likely to pass when within 10NM of touchdown.

e.g. “TRAFFIC (aircraft type) DEPARTING ON OPPOSITE DIRECTION PARALLEL RUNWAY, TURNING EAST”

b. Departing aircraft will be advised of all arriving aircraft that can be expected on final for the opposite direction parallel runway and are likely to pass when within 10NM of departure.

e.g. “TRAFFIC (aircraft type) EIGHT MILES FROM TOUCHDOWN FOR OPPOSITE DIRECTION PARALLEL RUNWAY”

Note 1: The distance of 10NM may be reduced if the divergence between tracks is greater than 15°.

Note 2: Pilots are not required to report traffic sighted.

8. LAND AND HOLD SHORT OPERATIONS (LAHSO)

8.1 Introduction

8.1.1 Notwithstanding the provisions of *paras 2.12.6.2 and 2.12.6.3*, operations by an aircraft landing on one runway and another aircraft either taking off or landing simultaneously on a crossing runway may be permitted subject to the provisions of this section.

8.2 Locations Where LAHSO are Used

8.2.1 LAHSO can be implemented at aerodromes controlled by ATC that have suitable runway configurations, together with taxi markings, signs, runway markings, and lights in accordance with the standards in *AD 1.1 paras 4.8.4, 4.12.1e, 4.13.1d and 5.10.9.*

8.2.2 LAHSO aerodromes are indicated in *ERSA Aerodrome and Facilities* section and/or *Runway Distance Supplement (RDS)* section by the inclusion in the aerodrome information of a table titled “LDA FOR LAHSO”.

8.3 A Dependent Procedures

8.3.1 LAHSO are to be considered dependent procedures, with participating aircraft classified as either:

a. active - when an aircraft is issued a hold short requirement and is alerted about traffic on a crossing runway; or

b. passive - when an aircraft has unrestricted use of the full runway length and is alerted about traffic on a crossing runway.

8.4 Participation

8.4.1 Active participation in LAHSO is available to pilots in each of the following categories:

a. pilots of Australian registered aircraft of performance categories A, B or C engaged in operations conducted under a training and checking organisation authorised under *CAR 217*, subject to the operator providing Operations Manual information and certifying participating pilots for LAHSO;

b. pilots of Australian registered aircraft of performance category A, B or C where the pilot has been assessed as competent to conduct LAHSO by a person authorised to conduct LAHSO training;

c. ATC will consider all Australian registered aircraft, operating on a flight number callsign, to be approved active participants, unless advised to ATS as not able to be an active and/or passive participant;

d. pilots of Australian military aircraft in performance categories A, B or C; and

e. pilots of foreign military aircraft in performance categories A, B or C subject to a Letter of Agreement between the relevant military authority and the ATS provider.

8.4.2 Passive participation in LAHSO is available to pilots in each of the following categories:

a. pilots of Australian civil and military aircraft categories A, B and C at pilot discretion;

b. pilots of other civil aircraft, including foreign operators, as approved by CASA;

c. pilots of RAAF Hawk, FA18 and other Australian military aircraft as by the relevant Operational Airworthiness Authority;

d. pilots of foreign military aircraft approved by Defence, operating at Defence aerodromes, subject to a Letter of Agreement; and

e. pilots of foreign military aircraft subject to a Letter of Agreement between the relevant military authority and the civil ATS provider.

(The Letter of Agreement will exclude foreign military aircraft of performance category D operating at civil aerodromes).

8.4.3 Notwithstanding the provisions of *sub-paras 8.4.1a and 8.4.2a* above, pilots of foreign registered civil aircraft and of Australian registered aircraft operating under foreign air carriers' flight number callsign are precluded from participation in either active or passive mode regardless of performance category.

8.4.4 A pilot must not accept a requirement to “HOLD SHORT” unless he or she is qualified, has situation awareness, and has determined that the LDA is adequate for the prevailing conditions and the status of the aircraft.

8.4.5 Operators of aircraft in any category may elect not to allow their pilots to participate in LAHSO. In these cases, ATS should be advised in writing, specifying the company's withdrawal from active, passive, or both modes of participation.

Note: This notification should be made to Airservices Airline Relations Branch and/or HQ44WG.

8.5 **Conditions for LAHSO**

8.5.1 LAHSO may be conducted subject to the following conditions:

a. The wind for either the active or passive runway, including gusts, does not exceed:
   (1) 20KT crosswind;
   (2) 5KT tailwind on a dry runway
   (3) no tailwind when the runway is not dry
b. A simultaneous take-off and landing is permitted by day only.
c. Simultaneous landings are permitted by day and night.
d. The ceiling is not less than the minimum vectoring altitude (MVA) for the location where LAHSO are being conducted and visibility is not less than 8KM.
e. Visibility may be reduced to 5,000M where ATC are assured of sighting the aircraft prior to a loss of the surveillance standard.
f. Advice to the departing aircraft may be given separately from the take-off clearance.
g. Instructions are issued to prevent a landing aircraft from crossing the Hold-Short Line when the intersecting runway is being used by another aircraft.
h. The distance from the landing threshold to the Hold-Short Line of the intersecting runway is adequate for the performance category of the aircraft being held short.
i. ERSA Aerodromes and Facilities (FAC) and/or Runway Distance Supplement (RDS) show “LDA for LAHSO” information. Pilots must ensure that the aircraft can land safely within the LDA for LAHSO.

j. When the runway conditions are damp or wet, the braking characteristics must be assessed as GOOD by the captain of an aircraft in the same performance category prior to the landing aircraft being instructed to hold short. ATC will request pilot assessments of the braking characteristics hourly where weather conditions are deteriorating or remain unchanged.

k. The landing aircraft will not be instructed to hold short when low level wind shear is reported.

l. For active participants ground based visual or electronic glide slope guidance must be available and utilised.

m. After landing, the pilot must inform ATC immediately of any difficulty in complying with the ATC requirement to hold short of a crossing runway strip.

Note to l) above: This requirement does not apply to performance category A and B non-jet aircraft of less than 5,700KG MTOW landing Runway 36 at Darwin.

8.6 **Pilot Advise of LAHSO Approval**

8.6.1 ATC will not intentionally issue, and a pilot must not accept, a clearance for a hold-short landing unless the pilot is LAHSO approved. Pilots who elect to participate actively in LAHSO must obtain the ATIS broadcast as early as possible and if within 200NM of a destination where LAHSO is in progress, immediately advise ATC “LAHSO APPROVED”.

e.g. “MELBOURNE CENTRE, (callsign) DESCENDING TO FLIGHT LEVEL TWO FIVE ZERO, LAHSO APPROVED”.

8.6.2 Pilots of civil aircraft operating under a flight number callsign as advised in flight notification, and pilots of Australian military aircraft, may omit the words “LAHSO APPROVED”. Aircraft of operators who have advised in writing an intention not to participate will not be intentionally sequenced for LAHSO.

Where an aircraft or crew that would normally participate actively or passively in LAHSO does not meet the criteria for participation, this must be communicated to ATC at the earliest opportunity.

8.6.3 Pilots of aircraft not operating under a flight number callsign who will be entering controlled airspace within 120NM of destination must advise ATC “LAHSO APPROVED”.

8.6.4 When crews experience wind shear early advice to ATC is essential to ensure timely information is passed to subsequent aircraft.

8.7 **ATIS Broadcast**

8.7.1 Pilots will be alerted that LAHSO are in progress by a statement on the ATIS;

e.g. "DARWIN TERMINAL INFORMATION BRAVO, RUNWAYS 29 AND 36, LAND AND HOLD SHORT OPERATIONS IN PROGRESS, (wind, temperature, etc)"

8.7.2 Both the active and passive runways will be nominated on the ATIS to aid in crew situational awareness.

Note: The acronym LAHSO may be used at ATC discretion.

8.8 **Directed Traffic Information**

8.8.1 ATC is required to issue directed traffic information to both aircraft participating in LAHSO.

8.9 **Read Back Requirements**

8.9.1 In all cases, pilots must read back an ATC-issued requirement to hold short.

8.10 **Landing Distance Assessments**

8.10.1 ATC will normally sequence an aircraft for a runway which requires LAHSO only when the landing distance available for the aircraft is likely to be adequate in accordance with aircraft landing category criteria held by ATC.

8.10.2 ATC may sequence non-jet Category B aircraft below 5,700KG MTOW for LAHSO using the landing distance available from *ERSA*. ATC may sequence an aircraft for LAHSO regardless of category of aircraft where the pilot in command has advised "LAHSO APPROVED". The pilot alone is responsible for ensuring that the LDA is equal to, or better than, that required for the prevailing circumstances.

8.10.3 Pilots should check the *ERSA* entry or ask ATC for landing distance available, and assess their landing distance requirements based on the landing weight and ambient weather conditions. The pilot must ensure that the LDA for LAHSO value for the runway meets or exceeds the relevant landing distance required, as calculated in accordance with *section 11 of CAO 20.7.1B*.

8.11 Go Around During LAHSO

8.11.1 It is important for pilots to plan for action in the event of a go around. If a go around does occur, pilots must maintain safe separation from other aircraft, as it may be impractical for ATC to provide standard separation. Nevertheless, ATC will issue traffic information and, if appropriate - based on the relative position of aircraft, instructions for avoiding other aircraft.

8.11.2 When issued with avoiding action instructions, pilots should fly the specified heading without delay.

8.11.3 Regardless of any avoiding action instructions, pilots should always defer to any TCAS RA.

9. VERTICAL SEPARATION IN THE AUSTRALIAN FIR

9.1 Reduced Vertical Separation Minimum (RVSM)

9.1.1 Application of RVSM

9.1.1.1 Australia applies a 1,000FT reduced vertical separation minimum between approved aircraft operating between FL290 and FL410 inclusive.

9.1.1.2 RVSM does not apply to formation flights and civil formation flights will not be issued clearance to operate between FL290 and FL410 inclusive.

9.2 RVSM Operations

9.2.1 Aircraft transiting from adjacent FIRs into Australian FIRs between FL290 and FL410 inclusive must plan from the waypoint on the FIR boundary using the table of cruising levels at *ENR 1.7 Section 5.*

9.2.2 Aircraft transiting from Australian FIRs between FL290 and FL410 inclusive to adjacent FIRs must plan until the waypoint on the FIR boundary using the table of cruising levels at *ENR 1.7 Section 5.*

9.2.3 Aircraft that will cross latitude 80°S between FL290 and FL410 inclusive must plan using the table of cruising levels at *ENR 1.7 Section 5.* for operations north of 80°S, and the table of cruising levels at *ENR 1.7 Section 6.* for operations south of 80°S.

9.2.4 To have RVSM applied to their aircraft, operators must be approved by the State of Registry or State of the Operator.

9.2.5 Approved operators must ensure that height-keeping monitoring is under taken at least every two years or within intervals of 1,000 flight hours per aircraft, whichever period is longer, in accordance with the aircraft categories as presented in the current version of the ICAO RVSM Minimum Monitoring Requirements table. The table and further information on monitoring can be obtained from the Australian Airspace Monitoring Agency (AAMA) at www.airservicesaustralia.com/organisations/aama/.

9.2.6 Pilots of aircraft that are not RVSM-approved may plan within the RVSM flight level band (FL290 to FL410 inclusive). However, clearance at RVSM levels is subject to disposition of traffic and RVSM aircraft priority. The conventional vertical separation minimum will be applied between aircraft that are not RVSM-approved and all other aircraft.

9.2.7 Pilots of non RVSM-approved State aircraft will be afforded equal priority with RVSM-approved aircraft. Pilots planning to operate non-RVSM within the RVSM level band must flight plan in accordance with *ENR 1.10.*

9.2.8 Pilots of aircraft that are not RVSM-approved must report "NEGATIVE RVSM" in accordance with the requirements of *GEN 3.4 Sub-section 5.6 Item 2.q*.

9.3 Operational Procedures Before Entering the RVSM Flight Level Band - RVSM Approved Aircraft

9.3.1 On each flight before entering the RVSM flight level band, pilots of RVSM-approved aircraft must check to ensure that all of the following minimum mandatory equipment is operating normally:

a. two independent primary altimetry systems,

b. a Mode C-capable SSR transponder,

c. an altitude alert system, and

d. an autopilot with height lock.

9.3.2 If any item of the minimum mandatory equipment listed in *para 9.3.1* is not operating normally, a pilot must notify ATC before entering the RVSM flight level band using the phraseology "NEGATIVE RVSM" (see *GEN 3.4 Sub-section 5.6 Item 2.q.*).

9.4 **Operational Procedures After Entering the RVSM Flight Level Band – RVSM Approved Aircraft**

9.4.1 During changes of level, an aircraft must not overshoot or undershoot its Cleared Flight Level (CFL) by more than 150FT (45M).

9.4.2 **Failure of One Primary Altimetry System.** If one of the primary altimetry systems fails, but the remaining altimetry system is functioning normally, the pilot must:

a. couple that system to the autopilot with height lock;

b. maintain increased vigilance of altitude-keeping; and

c. notify ATC of the failure using the phraseology, “FOR INFORMATION, OPERATING ON ONE PRIMARY ALTIMETER ONLY”.

9.4.3 **Failure of All Primary Altimetry Systems.** If all primary altimetry systems fail, or are considered unreliable, the pilot must:

a. maintain the flight level indicated on the standby altimeter (if the aircraft is so equipped) at the time of failure or when considered unreliable;

b. alert nearby aircraft by turning on all exterior lights and, if not in VHF contact with ATC, by broadcasting advice of the failure, position, flight level, and intentions on 121.5MHz;

c. notify ATC of the failure using the phraseology “NEGATIVE RVSM” (see *GEN 3.4 Sub-section 5.6 Item 2.q.*) and the intended course of action.

9.4.4 **In Oceanic Class A Airspace.** If unable to obtain ATC clearance in a timely manner following a failure of all primary altimetry systems in oceanic Class A airspace, the pilot must proceed as follows:

a. If operationally feasible to do so, leave the assigned route or track by turning at least 45° right or left, whenever this is possible, taking account of adjacent routes and descend below FL290.

b. If not operationally feasible to execute this contingency procedure, continue to alert nearby aircraft and coordinate with ATC.

9.4.5 **Divergence in Primary Altimetry Systems' Indication**. If the primary altimeters diverge by more than 200FT, the pilot must proceed as follows:

a. Attempt to determine the defective system through established "trouble shooting" procedures and/or comparing the primary altimeter displays to the standby altimeter (as corrected by correction card, if required).

b. If the defective system can be determined, couple the functioning altimetry system to the autopilot with height lock and proceed as in *para 9.4.2.*

c. If the defective system cannot be determined, proceed as in *para 9.4.3*.

9.4.6 **Failure of the Mode C-capable SSR Transponder.** If the mode C-capable transponder fails, the pilot must notify ATC of the failure using the phraseology "NEGATIVE RVSM" (see *GEN 3.4 Sub-section 5.6 Item 2.q.)*.

9.4.7 **Failure of the Altitude Alert System.** If the altitude alert system fails, the pilot must notify ATC of the failure using the phraseology "NEGATIVE RVSM" (see *GEN 3.4 Sub-section 5.6 Item 2.q*).

9.4.8 **Failure of the Autopilot with Height Lock.** If the autopilot with height lock fails, the pilot must initiate the following actions sequentially:

a. Maintain CFL.

b. Evaluate the aircraft's capability to maintain altitude through manual control.

c. Assess the situation regarding possible conflicting traffic.

d. Alert nearby aircraft by turning on all exterior lights and, if not in VHF contact with ATC, broadcast advice of failure, position, flight level, and intentions on 121.5MHz.

e. Notify ATC of the failure using the phraseology "NEGATIVE RVSM" (see *GEN 3.4 Sub-section 5.6* Item 2.q.) and the intended course of action.

9.4.9 **In Oceanic Class A Airspace.** Possible courses of action for the pilot following a failure of the autopilot with height lock in oceanic Class A airspace include the following:

a. Provided that the aircraft can maintain CFL, continue at that level.

b. If the aircraft cannot maintain CFL and is unable to obtain a revised ATC clearance, leave the assigned route or track by turning 90° right or left, whenever this is possible, taking account of adjacent routes.

9.5 **ATC Responsibilities**

9.5.1 ATC will apply alternative separation to any aircraft that has reported “NEGATIVE RVSM” in accordance with requirements specified in this Section.

9.6 **Weather and Wake Turbulence and System Alerts**

9.6.1 The pilot of an aircraft operating within the RVSM flight level band that encounters weather turbulence that affects aircraft capability to maintain CFL, or wake turbulence, or experiences distracting aircraft system alerts, must notify ATC and request a revised clearance before deviating from track or CFL.

9.6.2 **Oceanic Control Area (OCA) Only.** If a revised clearance is not possible or practicable, the pilot of an aircraft operating in OCA may initiate the following temporary lateral offset procedure with the intention of returning to the cleared route as soon as possible:

a. If possible, establish contact with other aircraft on the VHF inter-pilot air-to-air frequency 123.45MHz.

b. Initiate a lateral offset (one or both aircraft may initiate) not to exceed 2NM from the cleared route or track, provided that:

(1) as soon as practicable, the pilot(s) of the offsetting aircraft notify ATC that temporary lateral offset action has been taken and the reason for doing so; and

(2) the pilot(s) of the offsetting aircraft notify ATC when the aircraft is re-established on the assigned route(s) or tracks(s).

9.7 **Flight Level Deviation Reporting**

9.7.1 For operations in the Australian FIR, flight crews must report all flight level deviations of 300FT or more from the aircraft’s assigned level, irrespective of the cause of the deviation.

9.7.2 In reporting, crews must provide the information in the format detailed in *para 9.7.4*. Reports must be submitted as soon as possible after the occurrence and in writing to:

Australian Airspace Monitoring Agency (AAMA)
Safety & Assurance Group
Airservices Australia
GPO Box 367
CANBERRA ACT 2601
AUSTRALIA
Fax: +61 2 6268 5695
Email: aama@airservicesaustralia.com

9.7.3 Flight crew may send reports through the airline/operator using its normal reporting procedures.

9.7.4 A report of altitude deviations of 300FT or more, including those due to Traffic Alert and Collision Avoidance System (TCAS), turbulence, and contingency events must use the following format:

1. Reporting Agency:
2. Date and Time:
3. Location of Deviation: (Lat/Long) and indication of the area (e.g. Australian South Pacific airspace/Australian Continental airspace/Australian Indian Ocean airspace)
4. Aircraft Identification and Type:
5. Flight Level Assigned:
6. Observed/Reported (indicate one) Final Flight Level: and indicate whether controller or pilot report
7. Duration at Flight Level:
8. Cause of Deviation:
9. Other Traffic:
10. Crew Comments: (if provided)
11. Remarks: (If the event necessitated contingency action, indicate whether AIP contingency procedures were followed)

10. OPERATIONS IN CLASS G AIRSPACE

10.1 Communications

10.1.1 The pilot of an IFR aircraft operating from a non-controlled aerodrome must attempt to contact ATS on VHF or HF when taxiing. If the pilot is unable to establish contact, the flight may proceed on a broadcast basis provided contact is established as soon as possible after take-off, and

a. in the case of an RPT, CHTR or AWK flight, the pilot is assured of radio contact with his or her operator, or a representative of his or her operator who has immediate access to a serviceable telephone, until contact is made with ATS, or

b. for flights other than RPT, a SARTIME for departure has been established with a maximum of 30 minutes from EOBT.

Note: Pilots are reminded of their obligations to see and avoid other aircraft (CAR 163A). Refer also to CAAP 166-2(1) - Pilots' responsibility for collision avoidance in the vicinity of non-controlled (non-controlled) aerodromes using 'see-and-avoid'.

10.1.2 The pilot of an IFR flight departing from a non-controlled aerodrome must report "IFR" when making first contact with ATS.

10.1.3 A pilot of other than an IFR RPT flight may nominate a SARTIME for departure either as part of the arrival report or when submitting flight notification by the phrase "SARTIME FOR DEPARTURE". SAR alerting action will be initiated if a report is not received by the nominated SARTIME for departure.

Note: VFR RPT must comply with CAO 82.3 para 7.3 or as otherwise approved.

10.1.4 To achieve the greatest degree of safety *CAR 166C* requires pilots of aircraft carrying a serviceable radio which they are qualified to use, to make a broadcast whenever it is reasonably necessary to do so to avoid a collision, or the risk of a collision with another aircraft at a non-controlled aerodrome. In certain circumstances carriage of radio and being qualified to use it are mandatory - (Refer to *para 6.1* and *CAAP 166-01*).

Note: Pilots are reminded of their obligations to see and avoid other aircraft (CAR 163A). Refer also to CAAP 166-2(1) Pilots' responsibility for collision avoidance in the vicinity of non-controlled aerodromes using see-and-avoid'.

10.1.5 Only pilots of radio equipped aircraft, and who are qualified to use the radio, may operate at, or in the vicinity of, an aerodrome where radio carriage is required. Refer to *CAR 166E*, *GEN 1.5 Section 1.* and *CAAP 166-01*. D

10.1.6 In Class G airspace, pilots of radio-equipped VFR aircraft should monitor the appropriate VHF frequency and announce if in potential conflict. Pilots intercepting broadcasts from aircraft which are considered to be in potential conflict must acknowledge by transmitting own callsign and, as appropriate, aircraft type, position, actual level and intentions.

10.1.7 For *para 10.1.6*, the appropriate VHF frequency is:

a. when operating in the vicinity of an aerodrome published on aeronautical charts - the CTAF (MULTICOM 126.7MHz or the discrete frequency as published); or

b. when operating within a Broadcast Area - the Broadcast Area CTAF.

Otherwise, it is recommended pilots use the Area VHF. This frequency may provide the best means of gaining assistance from ATC or other pilots in the event of an emergency.

10.1.8 In the vicinity of uncharted aerodromes, pilots have discretion to use the most appropriate frequency that ensures safe operation. This may be MULTICOM 126.7MHz. However, pilots should be aware that transiting aircraft will be monitoring Area VHF. To ensure mutual traffic awareness, it is recommended that pilots using an alternative frequency also monitor Area VHF.

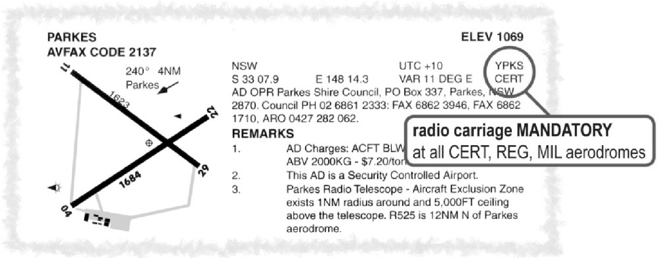
10.1.9 *GEN 1.5 Section 1.* specifies the VHF radio carriage requirements for all aircraft in Class G airspace.

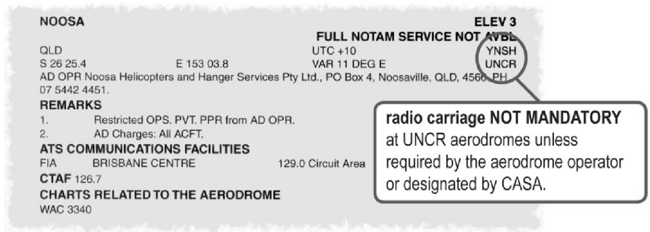
Note 1: CAR 166D permits CASA to specify certain non-controlled aerodromes by legislative instrument to be "Designated non-controlled aerodromes". Currently, no aerodromes are specified as such.

Note 2: CAR 166E allows for use of such aerodromes without serviceable radio subject to compliance with specified procedures (see ENR 1.1 Section 6.2.5 and *CAAP 166-01).*

10.1.10 Except where the use of a gliding frequency is operationally necessary, it is recommended that gliders operating above 5,000FT in Class G airspace monitor the Area VHF.

10.1.11 An aircraft is considered in the vicinity of a non-controlled aerodrome if it is within 10NM of the aerodrome and at a height above the aerodrome that could result in conflict with operations at the aerodrome.





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10.1.12 Pilots of aircraft transiting in the vicinity of a non-controlled aerodrome should avoid flying over the aerodrome at an altitude that could conflict with operations in the vicinity of the aerodrome.

10.1.13 When a report from an IFR aircraft is made to FLIGHTWATCH on HF, a broadcast on the appropriate CTAF or Area VHF is also required.

10.1.14 If calls are not made clearly and concisely using the standard phraseology, confusion can arise at aerodromes in close proximity that share the same CTAF.

10.1.15 The standard broadcast format is:

a. {Location} Traffic

b. {Aircraft type}

c. {Callsign}

d. {Position/level/intentions}

e. {Location}

10.1.16 *CAR 166C* requires a pilot to make a broadcast whenever it is reasonably necessary to avoid a collision, or the risk of a collision, with another aircraft at, or in the vicinity of a non-controlled aerodrome (charted or uncharted). Therefore, at other times, pilots should use their discretion in determining the number and type of broadcasts they make.

10.1.17 The tables below provide a summary of recommended broadcasts to be made when operating or arriving at, or departing from, a non-controlled aerodrome. Pilots should also observe local and published noise abatement procedures and curfews.

RECOMMENDED CALLS IN ALL CIRCUMSTANCES	
SITUATION	**BROADCAST**
The pilot intends to take-off	Immediately before, or during taxiing
The pilot is inbound to an aerodrome	10NM from the aerodrome, or earlier, commensurate with aeroplane performance and pilot workload, with an estimated time of arrival (ETA) for the aerodrome
The pilot intends to fly through the vicinity of, but not land at, a non-controlled aerodrome	10NM from the aerodrome, or earlier, commensurate with aeroplane performance and pilot workload, with an estimated time of arrival

RECOMMENDED CALLS DEPENDENT ON TRAFFIC	
SITUATION	**BROADCAST**
The pilot intends to enter a runway	Immediately before entering a runway
The pilot is ready to join the circuit	Immediately before joining the circuit
The pilot intends to make a straight-in approach	On final approach at not less than 3NM from the threshold (see note)
The pilot intends to join on base leg	Prior to joining on base

RECOMMENDED CALLS DEPENDENT ON TRAFFIC	
SITUATION	**BROADCAST**
During an Instrument Approach when: a. departing FAF or established on final approach segment inbound b. terminating the approach, commencing the missed approach	Including details of position and intentions that are clear to all pilots (both IFR and VFR)
The aircraft is clear of the active runway(s)	Once established outside the runway strip

Note: Some distances above refer to the runway threshold and others to the ARP. Pilots should be aware that a GNSS indication of 3NM from an aerodrome may not be 3NM to the runway threshold.

10.2 Circuit Information

10.2.1 Pilots should fly a circuit commensurate with the aircraft type they are operating. However the use of any circuit procedure does not alter the responsibility of each pilot to see and avoid other aircraft. Pilots operating in the circuit should manoeuvre to follow traffic ahead of them in the circuit.

10.2.2 Left-hand circuits is the standard traffic circuit that must normally be made. Right-hand circuit requirements are listed in *ERSA*.

10.2.3 Aircraft should not be operated in the circuit at an indicated airspeed of more than 200KT.

10.2.4 During the initial climb-out the turn onto crosswind should be made appropriate to the performance of the aircraft, but in any case not less than 500FT (*CAR 166A(2)(f)*), so as to be at circuit height when turning downwind.

10.2.5 Pilots may vary the size of the circuit depending on:

a. the performance of the aircraft;

b. safety reasons; or

c. in accordance with the Aircraft Flight Manual, Pilot's Operating Handbook, or company Standard Operating Procedures.

10.2.6 Pilots are encouraged to turn on aircraft landing lights, anti-collision lights and strobe lights, where fitted, when in the vicinity of a non-controlled aerodrome, until the aircraft has landed.

10.2.7 Transponders can be detected by aircraft equipped with ACAS (TCAS), allowing them to ‘see’ other aircraft and take evasive action. Pilots of transponder-equipped aircraft should at all times ensure their transponder is switched to ON/ALT (Mode C), including when operating in the vicinity of a non-controlled aerodrome. In the event of a radio failure it is important that pilots select 7600 on their transponder and continue squawking.

10.2.8 So as not to impede commercial aviation, pilots flying recreational or sport aircraft for their own enjoyment, or pilots flying GA aircraft for their own leisure, should consider giving way to aircraft being used for “commerce” provided that the inconvenience to their own operation is not great and it can be done safely. Operators of commercial aircraft should never expect a give way offer to be assumed or automatic. Any offer to give way must be explicit and its acceptance acknowledged.

10.3 Separation Minima for Take-off

10.3.1 An aircraft must not commence take-off until:

a. a preceding departing aircraft using the same runway has:
   (1) crossed the upwind end of the runway; or
   (2) commenced a turn; or
   (3) if the runway is longer than 1,800M, become airborne and is at least 1,800M ahead; or
   (4) if both aircraft have a MTOW below 2,000KG, the preceding aircraft is airborne and is at least 600M ahead;

b. a preceding landing aircraft using the same runway, has vacated it and is taxiing away from the runway; or

c. a preceding aircraft, using another runway, has crossed or stopped short of the take-off aircraft’s runway.

10.3.2 At aerodromes where gliders operate to a common circuit pattern from a parallel strip outside the runway strip, the above separation minima shall apply to aircraft landing or taking off on either runway as if they were a single runway, but aircraft taxiing or stationary on the runway must not affect operations on the other.

10.3.3 Where gliders and glider tugs operate to a contra-circuit, simultaneous operations are permitted.

10.4 **Circuit Height**

10.4.1 When operating at non controlled aerodromes, the following circuit heights are recommended:

a. High performance - includes jets and many turbo-prop aircraft, above approximately 150KT, 1,500FT AGL;

b. Medium performance - includes most piston engine aircraft, between approximately 55KT and 150KT, 1,000FT AGL;

c. Low performance - ultralights and rotary wing with a maximum speed of approximately 55KT, 500FT AGL (*Refer to diagram at 10.12.6*).

10.4.2 Circuit heights for aerodromes which have specific requirements are published in *ERSA*.

10.5 **Taxiing**

10.5.1 Pilots of IFR flights operating from non-controlled aerodromes must report to ATC on taxiing. If unable to establish contact, proceed in accordance with *para 10.1.1*.

10.5.2 Taxiing reports for IFR flights must include the following information:

a. aircraft type;

b. POB (for IFR flights other than RPT);

c. IFR;

d. location;

e. destination or departure quadrant or intentions; and

f. runway to be used.

10.5.3 Following the taxi report, a pilot of an IFR flight must report to ATC if changing to a CTAF or Broadcast Area CTAF when the ATS frequency will not, or cannot, be monitored. This report must include the aerodrome location and frequency.

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10.6 Departure Information

10.6.1 Pilots of departing aircraft should depart by extending one of the standard circuit legs. An aircraft should not execute a turn opposite to the circuit direction unless the aircraft is well outside the circuit area and no traffic conflict exists. This will normally be at least 3NM from the departure end of the runway. The distance may be less for aircraft with high climb performance. The distance should be based on pilots being aware of traffic and the ability of the aircraft to climb above and clear of the circuit area.

Note: Pilots of departing aircraft should be aware of traffic intending to join the circuit by the recommended overfly procedure, as they can be 2,000FT or higher above aerodrome elevation.

10.6.2 A pilot in command of an IFR flight must establish flight on the departure track as soon as practicable after take-off and within 5NM of the aerodrome, except that, at aerodromes which have published standard instrument departure procedures, an IFR aircraft may depart in accordance with those procedures. When established on the departure track, and clear of the circuit traffic, the pilot in command must report departure to ATC unless instructed otherwise.

10.6.3 This report must include the following information:

Non-surveillance	Surveillance
Departure time	Current position
Outbound track in degrees magnetic	Present level
Intended cruising level	Intended cruising level
Estimate for the first en route reporting point	Estimate for the first en route reporting point

10.6.3.1 The departure time must be reported as follows:

a. current time minus an adjustment for the distance from the aerodrome; or

b. when over or abeam the aerodrome.

10.6.4 If the pilot transmits the departure report before intercepting the departure track the report must include advice that the aircraft is manoeuvring to intercept departure track.

10.6.5 When circumstances dictate that flight notification details be submitted in-flight, the above items must be combined with the appropriate items of the flight notification, and prefixed with the words “FLIGHT PLAN”.

10.7 Climb and Cruise Procedures

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10.7.1 The pilot in command of an IFR flight must notify the intention to amend route, deviate from track or change level in sufficient time for ATS to advise traffic. When a position estimate changes by more than two (2) minutes, the pilot must advise ATS.

10.7.2 Pilots must give ATS notice of an impending position report by use of the word “POSITION”;
e.g. “MELBOURNE CENTRE (callsign) POSITION”.
Pilots must wait for the ATS instruction before reporting position.

10.7.3 Pilots must report maintaining an assigned level.

10.7.4 After any en route frequency change, a pilot in command of an IFR flight must advise present level. If the aircraft is not at its planned cruising level, the pilot must also provide advice of the level to which the aircraft is being climbed.

10.7.5 When operating in Class G airspace in proximity to a controlled aerodrome, pilots should consider monitoring the TWR frequency to enhance situational awareness of traffic entering and leaving the CTR.

10.7.6 A pilot of a flight intending to operate in the vicinity of a non-controlled aerodrome at altitudes used by arriving and departing aircraft should:

a. monitor the appropriate VHF, and broadcast by 10NM or earlier from the aerodrome commensurate with aircraft performance and pilot workload with an ETA (unless otherwise specified in ERSA); and

b. where possible, avoid the circuit area and arrival and departure tracks.

10.8 Position Reports

10.8.1 Except when identified, position reporting is mandatory when operating under the IFR and must normally be made at the positions or times notified on the flight notification
(See *ENR 1.10 para 3.6.4* for flight notification requirements).

10.8.2 The position report format is identified at *GEN 3.4, APPENDIX 2*.

10.8.3 When an aircraft is holding due weather, ATS will nominate scheduled reporting times which will normally be at 15 minute intervals.

10.8.4 IFR aircraft operating area-type flights and nominating schedules reporting times may limit the report to level and the present position or the sector of the survey area in which the aircraft is currently operating.

10.9 Descent from Controlled Airspace

10.9.1 Before descending from controlled into Class G airspace and before separation with any aircraft operating near the base of controlled airspace can be compromised, the pilot in command of an IFR flight must report position, level, intentions and estimate for next position/destination to the ATS unit providing services in Class G airspace. If the report is made using HF radio, a broadcast must be made on the appropriate area VHF frequency.

10.10 Arrival Information

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10.10.1 A pilot of an IFR flight must report when changing to the CTAF when the ATS frequency will not, or cannot be monitored. This report must include the aerodrome location and frequency.

10.10.2 Pilots of IFR flights conducting local training, an instrument approach, or a holding pattern, may extend their SARWATCH by an “OPERATIONS NORMAL” call at scheduled times.

10.11 Landing Manoeuvres

10.11.1 Prior to entering the circuit at non-controlled aerodrome, aircraft should avoid the flow of traffic until established in the circuit. The ‘standard aerodrome traffic circuit’ facilitates the orderly flow of traffic and is normally a left circuit pattern with all turns to the left (*CAR 166A*). Landings should be accomplished on the operational runway most closely aligned to the wind.

Wind and landing direction indicators can be checked while at an altitude of +500FT above the circuit height.

Note: If jet, turbo prop or high performance piston aircraft operate at the aerodrome, 2,000FT AGL is a safer height to remain clear of all circuit traffic.

10.11.2 An aircraft approaching a non-controlled aerodrome for a landing should join the circuit in accordance with *para 10.12* unless it is:

a. following an instrument approach procedure in IMC; or

b. conducting a visual circling procedure in IMC after completion of an instrument approach procedure; or

c. conducting a straight-in approach in accordance with *para 10.13*.

10.11.3 The runway to be used for landing should be:

a. the most closely aligned into-wind runway; or

b. when operational reasons justify, any other available landing direction provided the nominated circuit is executed without conflict to landing or take-off traffic using the most into wind runway; and

c. serviceable, and cleared of ground maintenance equipment and personnel.

10.11.4 Aircraft approaching a non-controlled aerodrome for landing must make all turns to the left except:

a. where right hand circuits are specified for the aerodrome; or

b. when entering the upwind, crosswind or downwind leg; or

c. when following an instrument approach procedure in IMC; or

d. when conducting a visual circling procedure in IMC after completion of an instrument approach procedure.

10.12 Circuit Entry

10.12.1 Where a pilot is unfamiliar with the aerodrome layout, or when its serviceability, wind direction, wind speed, or circuit direction cannot be ascertained without prior arrival, the overfly procedure should be used. The pilot should overfly or circle the aircraft at least 500FT above the circuit altitude, usually 2,000FT or more above the aerodrome elevation. When the circuit direction has been determined, the pilot should position the aircraft to a point well clear (normally the non-active side of the circuit) before descending to the circuit altitude that equates to the aircraft's performance. Pilots should not descend into the traffic circuit from directly above the aerodrome. Refer *CAAP 166-01*.

10.12.2 For low performance ultralight aircraft and rotorcraft with a maximum speed of approximately 55KT, it is recommended that the aircraft overfly midfield at 500FT above aerodrome elevation. This will minimise the risk of conflict with higher or faster traffic.

Note: Ultralight aircraft pilots who choose to use the overfly join procedure above the circuit altitude should be aware:

a. *Faster larger aircraft may not be able to see you easily.*

b. *Faster larger aircraft can create significant wake turbulence.*

c. *Faster larger aircraft will not be able to slow to the speeds of an ultralight aircraft and follow.*

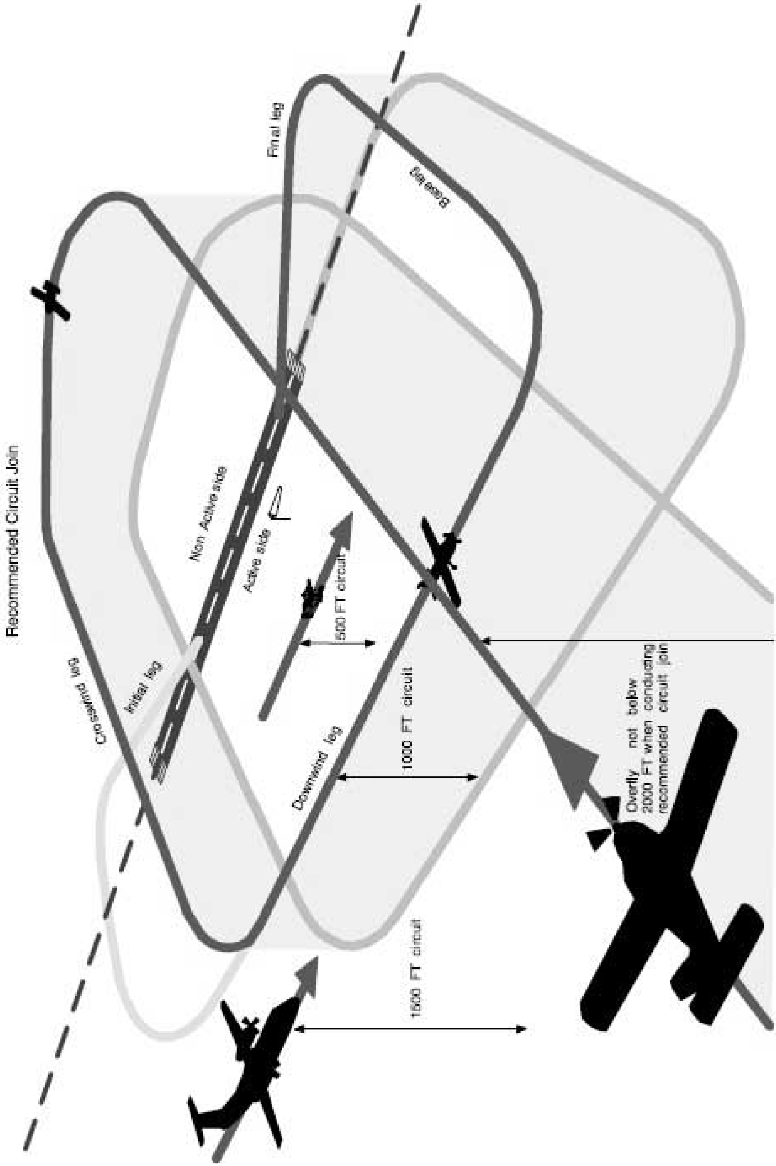
d. *Faster larger aircraft - prior to arriving in the circuit and when below 10,000FT - can be at speeds up to 250KT. Therefore although aircraft should be at 200KT maximum in the circuit, an aircraft reporting at 20NM from the aerodrome could be in the vicinity of the circuit within 5 minutes.*

10.12.3 For aircraft arriving and intending to join the circuit from overhead, the aircraft should descend on the non-active side of the circuit and be established at its circuit altitude as it crosses the runway centreline on crosswind, at between midfield and the departure end of the runway.

10.12.4 When arriving on the live side, the recommended method is to arrive at the circuit altitude entering midfield at approximately 45 degrees to the downwind leg while giving way to the aircraft already established in the circuit.

10.12.5 On downwind the applicable circuit altitude should be maintained until commencement of the base leg turn. The base leg position is normally when the aircraft is approximately 45 degrees from the reciprocal of the final approach path, measured from the runway threshold. Along the base leg continue to lookout and maintain traffic separation.

10.12.6 When on the final leg, confirm the runway is clear for landing. The turn onto final approach should be completed by a distance and height that is common to the operations at the particular aerodrome and commensurate with the speed flown in the circuit for the aircraft type. In any case, the turn onto final should be completed by not less than 500FT above aerodrome elevation. This should allow sufficient time for pilots to ensure the runway is clear for landing. It will also allow for the majority of aircraft to be stabilised for the approach and landing.


Recommended Circuit Join
Final leg
Base leg
Non Active side
Active side
500 FT circuit
Crosswind leg
Initial leg
Downwind leg
1000 FT circuit
1500 FT circuit
Overfly not below
2000 FT when conducting
recommended circuit join

10.13 **Straight-in Approach**

10.13.1 Straight-in approaches, whilst not prohibited, are not a recommended standard procedure. *CAR 166B* does not preclude pilots from conducting straight-in approaches provided certain conditions are met. Pilots who choose to adopt a straight-in approach should only do so when it does not disrupt or conflict with the flow of circuit traffic. *CAR 166B (2)(b)* requires the pilot when conducting a straight-in approach, to give way to any other aircraft established and flying in the circuit pattern at the aerodrome.

10.13.2 *CAR 166B (2)* requires pilots, before conducting a straight-in approach, to determine the wind direction and speed and the runway in use at the aerodrome.

10.13.3 There are several ways to determine the wind direction, speed and runway in use:

a. AWS, AWIS, AAIS, CA/GRS or UNICOM,

b. Radio contact with a ground-based radio communication service, company agent, approved observer *(CAR120)*, or aircraft operating at the aerodrome; or

c. Visual indications - if the information cannot be determined by the above means.

D 10.13.4 When conducting a straight-in approach, the aircraft must be established on final at not less than 3NM from the landing runway's threshold (*CAR 166B (2)(c)*).

10.13.5 Pilots of aircraft conducting a straight-in approach at a non-controlled aerodrome should observe the following procedures:

a. The pilot in command should not commence a straight-in approach to a runway when the reciprocal runway direction is being used by aircraft already established in the circuit.

b. All manoeuvring to establish the aircraft on final approach must be conducted outside a 3NM radius from the intended landing runway threshold.

Note: Within 3NM, pilots are expected to make only minor corrections to line up accurately on final approach. This will enable pilots conforming to the aerodrome traffic pattern to optimise their visual scan for traffic along the final approach path.

c. The aircraft's transponder should be squawking and its external lights, where fitted, should be illuminated when on final approach. They should remain on until the aircraft has landed and is clear of all runways.

d. An aircraft established on base leg or final approach for any runway has priority over an aircraft carrying out a straight-in approach.

10.14 Joining on Base

10.14.1 Joining on base leg, whilst not prohibited, is not a recommended standard procedure. CASA recommends pilots join the circuit on either the crosswind or downwind leg. However, pilots who choose to join on base leg should only do so if they:

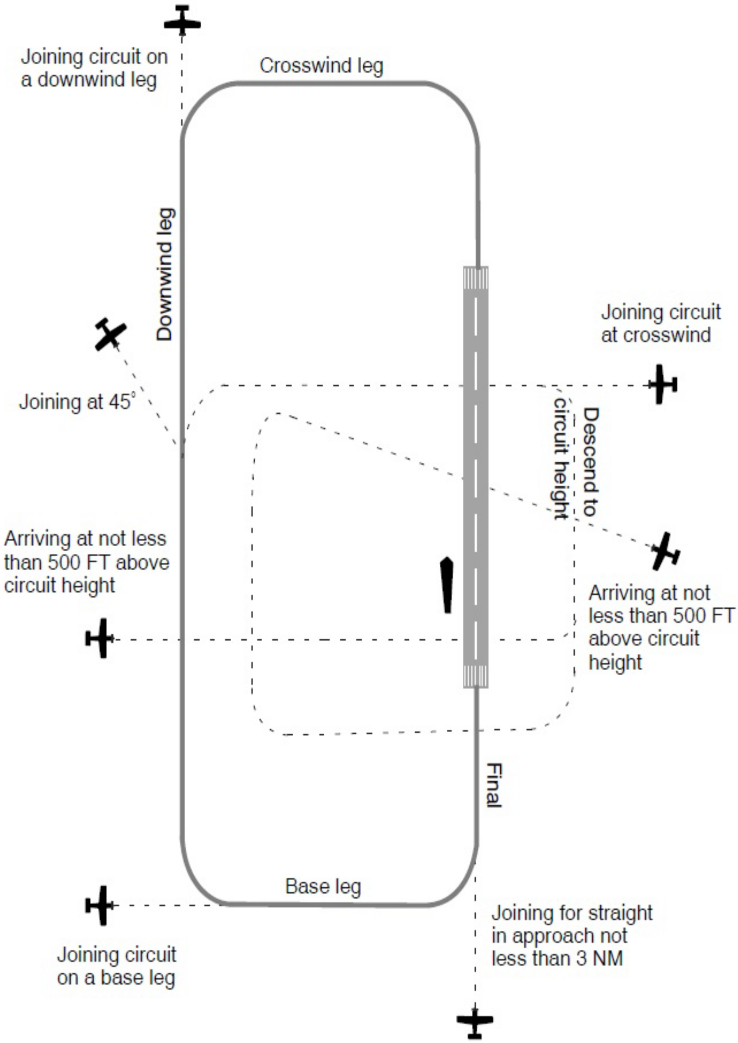
a. have determined the wind direction and speed;

b. have determined the runway in use;

c. give way to other circuit traffic and ensure the aircraft can safely (no traffic conflict likely) join the base leg applicable to the circuit direction in use at the standard height; and

d. broadcast their intentions.

Aerodrome traffic circuit



10.15 Military Initial and Pitch Circuit Procedures

10.15.1 For Military fast jet and training aircraft the preferred method of joining the circuit is via a procedure known as Initial and Pitch. The aircraft (or formation) will track to the Initial Point, a point at 5NM downwind of the runway in use displaced to the dead side, and track inbound at high speeds (see diagram below – not to scale).

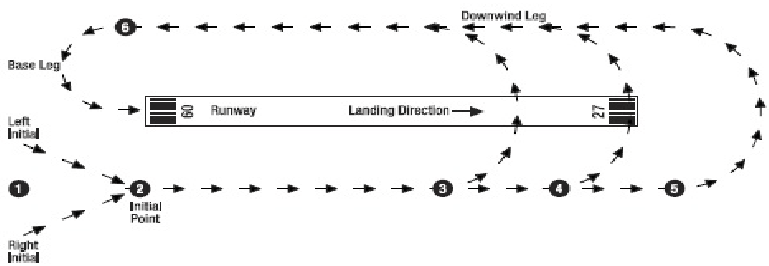
10.15.2 Traffic permitting, Initial and Pitch procedures may be conducted at military, joint user, controlled and non controlled aerodromes. At controlled aerodromes military pilots must comply with ATC circuit entry instructions unless approved for an Initial and Pitch entry.

10.15.3 When conducting this procedure, the height for fast jets is normally 1,500FT AGL and 1,000FT AGL for other aircraft. Aircraft on tactical missions can conduct the initial and pitch at below normal altitudes; this is referred to as a low Initial and Pitch.

10.15.4 At any stage once abeam the threshold of the runway in use, and safe to do so, the aircraft turns (“Pitches”) to join downwind and configures for landing.

10.15.5 Generally pilots conducting this manoeuvre will broadcast their position at the Initial Point and on the base turn.

Military Initial and Pitch



1. First call on run-in to Initial Point	4. Second aircraft in formation pitches out and positions Downwind behind first aircraft.
2. Commence Initial	5. Subsequent aircraft in formation pitch out and positions Downwind behind second aircraft.

3. First aircraft in formation pitches out and positions Downwind	6. First aircraft calls turning on Base leg for the entire formation. Clearances or instructions apply to entire formation. Subsequent aircraft in formation will make independent base calls.
Note: Aircraft conducting a low pitch will be at the low pitch altitude by position 3.	

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10.16 Separation Minima for Landing

10.16.1 An aircraft must not continue its approach to land beyond the threshold of the runway until:

a. a preceding departing aircraft using the same runway is airborne and:
   (1) has commenced a turn; or
   (2) is beyond the point on the runway at which the landing aircraft could be expected to complete its landing roll and there is sufficient distance to manoeuvre safely in the event of a missed approach;

b. a preceding landing aircraft using the same runway has vacated it and is taxiing away from the runway;

c. a preceding aircraft using another runway, has crossed or stopped short of the landing aircraft's runway.

10.16.2 At aerodromes where gliders operate to a common circuit pattern from a parallel strip outside the runway strip, the above separation minima shall apply to aircraft landing or taking off on both runways as if they were a single runway, but aircraft taxiing or stationary on one runway must not affect operations on the other. Where gliders and glider tugs operate to a contra-circuit, simultaneous operations are permitted.

Note: Pilots are reminded of their obligations to see and avoid other aircraft (CAR 163A).

10.17 The Traffic Mix and Other Hazards at Non-Controlled Aerodromes

10.17.1 At non-controlled aerodromes, there may be regular public transport and passenger charter, gliders, parachutists, helicopters, gyroplanes, ultralights, balloons, general aviation aircraft, and agricultural aircraft operations.

10.17.2 Pilots should consult *CAAP 166-01*: 'Operations in the vicinity of non-controlled aerodromes', (in conjunction with the *AIP*) for detailed operating procedures when operating in the vicinity of non-controlled aerodromes.

10.17.3 In addition pilots should consult *CAAP 166-2(1)*: 'Pilots' responsibility for collision avoidance in the vicinity of non-controlled aerodromes using see and avoid'.

10.17.4 The CAAPs mentioned above provide guidance on a code of conduct (good airmanship) which, when followed will provide improved situational awareness and safety for all pilots when flying at, or in the vicinity of, non-controlled aerodromes.

11. OPERATIONAL REQUIREMENTS - GENERAL

11.1 Taxiing After Landing

11.1.1 After landing, the runway strip should be vacated as soon as practicable. Aircraft should not stop until clear of the runway strip.

11.2 SARWATCH

11.2.1 Cancellation of SARWATCH other than SARTIME

11.2.1.1 Pilots wishing to cancel SARWATCH may do so by reporting to ATS.

11.2.1.2 When cancelling SARWATCH, pilots must include:

a. the aircraft radio callsign;

b. place of arrival or point from which SARWATCH services are no longer required;

c. the words "CANCEL SARWATCH"; and

d. when communicating with a unit other than that nominated, the name of the ATS unit to which the report shall be relayed.

11.2.1.3 SARWATCH may be cancelled in combination with a pilot report of changing to the CTAF, or in the circuit area, or after landing.

11.2.1.4 When the pilot of an IFR flight elects not to report in the circuit area to cancel SARWATCH and has not reported within 10 minutes of ETA, ATS will commence communications checks to obtain a landing report or an extension of SARWATCH.

11.2.1.5 ATS will acknowledge "CANCEL SARWATCH" reports with a read-back of the place of arrival, if appropriate, and the words "SARWATCH TERMINATED".

11.2.2 **Cancellation of SARTIME**

11.2.2.1 When operating on a SARTIME, the pilot must cancel SARTIME by the time nominated and, during the contact with ATS, include the words “CANCEL SARTIME”.

11.2.2.2 ATS will acknowledge “CANCEL SARTIME” reports with a readback of the place of arrival, if appropriate, and the words “SARTIME CANCELLED”.

11.2.2.3 The preferred method to cancel a SARTIME is via telephone to CENSAR on 1800 814 931. When telephone facilities are not available you may use ATS frequencies.

11.2.2.4 For SARTIME flights, pilots of single VHF radio-equipped aircraft must cancel SARTIME before changing to the CTAF, or after landing.

11.2.3 **SARTIME for Departure**

11.2.3.1 When submitting flight notification, a pilot may nominate a SARTIME for departure for the initial departure aerodrome only. For intermediate departure, it may be nominated by telephone after landing, or as part of the arrival report associated with that aerodrome. Only one SARTIME may be current at any time.

11.2.3.2 The nomination of a SARTIME for departure does not absolve the pilot from complying with the requirements for the carriage of serviceable radio equipment, nor from making the prescribed reports.

11.2.3.3 Pilots of other than IFR RPT flights, wishing to extend the SAR watch for the period of landing and subsequent take-off, may nominate a SARTIME for departure when arriving at an aerodrome where radio or ground communication cannot reasonably be assured. SAR alerting action will be initiated if a taxiing or departure report is not received by the nominated SARTIME.

11.2.3.4 An IFR departure report is not sufficient to cancel a SARTIME for Departure. Pilots who have nominated a SARTIME for Departure must use the phrase ‘CANCEL SARTIME’ with the departure report.

11.3 **Radio Telephony Requirements Outside Controlled Airspace**

11.3.1 The callsign of the station or service being called must be included at the beginning of each exchange on VHF and HF.

Note: The requirement of para 10.1.13 applies when reporting on HF.

11.3.2 All transmissions between aircraft or when broadcasting intentions must be prefixed with the aircraft callsign.

11.3.3 When requesting operational information on FIS frequencies, the pilot must use the service callsign "**FLIGHTWATCH**".

11.3.4 Use of the collective "ALL STATIONS" must precede a general information broadcast.

11.4 Diversion to an Alternate Aerodrome

11.4.1 The pilot in command is responsible for taking appropriate diversion action based on information received. The pilot must provide the latest diversion time from the destination or from a point en route and, if required, the time interval.

11.5 Operating Requirements for Transponders

11.5.1 Pilots of aircraft fitted with a serviceable Mode 3A or Mode S transponder must activate the transponder at all times during flight, and if the Mode 3A transponder is Mode C capable, that mode must also be operated continuously.

11.5.2 Aircraft equipped with a Mode S transponder having an aircraft identification feature shall transmit the aircraft identification as specified in Item 7 of the flight notification or, when no flight notification has been filed, the aircraft registration.

11.5.3 For further information on the operation of transponders, including normal and emergency codes, see *ENR 1.6 Section 7.*

11.6 Operating Requirements for ADS-B Transmitters

11.6.1 Pilots of aircraft fitted with a serviceable ADS-B transmitter which has been confirmed suitable to receive ADS-B derived ATS surveillance services in Australia should activate the transmitter at all times during flight.

Note 1: Some ADS-B installations may share controls with the SSR transponder, meaning that independent operation of the two systems is not possible.

Note 2: If it is not possible to comply with a particular instruction the pilot must advise ATC and request alternative instructions.

11.6.2 Aircraft equipped with ADS-B having an aircraft identification feature shall transmit the aircraft identification as specified in the flight notification or, when no flight notification has been filed, the aircraft registration.

11.6.3 For further information on the operation of ADS-B transmitters, including normal and emergency codes, see *ENR 1.6 Section 6.5*.

11.7 Alternate Aerodromes

11.7.1 General

11.7.1.1 A pilot in command must make provision for flight to an alternate aerodrome, when required, in accordance with the following paragraphs.

11.7.1.2 When a flight is required to provide for an alternate aerodrome, any aerodrome may be so nominated for that flight provided:

a. it is suitable as a destination for that flight; and

b. is not an aerodrome for which that flight would require to provide for an alternate aerodrome.

11.7.1.3 When an aerodrome forecast is not available or is "provisional", the pilot in command must make provision for a suitable alternate that has a firm forecast.

11.7.2 Weather Conditions

11.7.2.1 Except when operating an aircraft under the VFR by day within 50NM of the point of departure, the pilot in command must provide for a suitable alternate aerodrome when arrival at the destination will be during the currency of, or up to 30 minutes prior to the forecast commencement of, the following weather conditions:

a. cloud - more than SCT below the alternate minimum (see *paras 11.7.2.12 and 11.7.2.13*); or

Note: In determining requirements for alternate aerodromes, forecast amounts of cloud below the alternate minima are cumulative. For determining requirements, the cumulative cloud amount is interpreted as follows:

FEW plus FEW is equivalent to SCT,

FEW plus SCT is equivalent to BKN,

SCT plus SCT is equivalent to BKN or OVC.

b. visibility - less than the alternate minimum; or

c. visibility - greater than the alternate minimum, but the forecast is endorsed with a percentage probability of fog, mist, dust or any other phenomenon restricting visibility below the alternate minimum; or

d. wind - a crosswind or tailwind component more than the maximum for the aircraft.

Note: Wind gusts must be considered.

11.7.2.2 When operating a helicopter under the VFR, and the use of helicopter VMC is permissible at the destination, the pilot in command must provide for a suitable alternate aerodrome when either of the following conditions is forecast at the destination:

a. cloud - more than SCT below a ceiling of 1,000FT; or

b. visibility - less than 3,000M.

11.7.2.3 When weather conditions at the destination are forecast to be as specified at *para 11.7.2.1*, but are expected to improve at a specific time, provision for an alternate aerodrome need not be made if sufficient fuel is carried to allow the aircraft to hold until that specified time plus 30 minutes.

11.7.2.4 When weather conditions at the destination are forecast to be above the values specified at *para 11.7.2.1*, but, additionally, intermittent or temporary deteriorations in the weather below the values are forecast, provision of an alternate need not be made if sufficient fuel is carried to allow the aircraft to hold for:

a. 30 minutes for intermittent deterioration (INTER); and

b. 60 minutes for temporary deterioration (TEMPO).

11.7.2.5 When thunderstorms or their associated severe turbulence or their probability is forecast at the destination, sufficient fuel must be carried to permit the aircraft to proceed to a suitable alternate or to hold for:

a. 30 minutes when the forecast is endorsed INTER; or

b. 60 minutes when the forecast is endorsed TEMPO.

11.7.2.6 When a forecast has multiple INTER or TEMPO deteriorations and holding fuel will be carried, fuel must be carried to hold for only the most limiting requirement. INTER and TEMPO holding fuel requirements are not cumulative.

11.7.2.7 When TAFs include a FM or a BECMG, causing an operational requirement to either become effective or be removed, the timing for the change in operational requirement is as follows:

a. When the weather following the FM or BECMG is forecast to create an operational requirement, that operational requirement will become effective 30 minutes before the start of the FM time, or 30 minutes before the start of the BECMG period.

b. When the weather following the FM or BECMG is forecast to remove an operational requirement, that operational requirement will remain effective until 30 minutes after the FM time or 30 minutes after the end of the BECMG period.

11.7.2.8 The fuel required by *paras 11.7.2.4* or *11.7.2.5* must be carried when the ETA of the aircraft at its destination or alternate falls within the period 30 minutes before the forecast commencement time to 30 minutes after the expected time of cessation of these deteriorations. If the holding time required by *paras 11.7.2.4* or *11.7.2.5* extends past 30 minutes after the forecast cessation of these deteriorations, the aircraft need only carry sufficient fuel to hold until 30 minutes after the forecast cessation time.

11.7.2.9 Due to the continuous weather watch provided by TTF, the 30 minute buffers required by *paras 11.7.2.7 and 11.7.2.8* do not apply. Flights which will be completed within the time of validity of the TTF may be planned wholly with reference to the destination TTF.

11.7.2.10 TTF may have either one visibility or two visibilities included in the report. Operational requirements will apply when:

a. the sole visibility is less than the alternate minimum, or

b. the higher visibility is less than the alternate minimum.

11.7.2.11 Flights which cannot use TTF will plan the flight on the current TAF until such time as the destination ETA falls within the validity period of a TTF.

11.7.2.12 For IFR flights, the alternate minima are as follows:

a. For aerodromes with an instrument approach procedure, the alternate minima published on the chart (see *ENR 1.5, Section 6.*).

b. For aerodromes with an instrument approach procedure where an aerodrome forecast is unavailable or is “provisional”, the pilot in command must make provision for a suitable alternate.

c. For aerodromes without an instrument approach procedure, the alternate minima is the lowest safe altitude for the final route segment plus 500FT and a visibility of 8KM (also refer *ENR 1.10 Sub-section 1.4*).

11.7.2.13 For flight by aeroplanes under the VFR (day or night) and helicopters operating under the VFR at night, the alternate minima are a ceiling of 1,500FT and a visibility of 8KM.

11.7.2.14 For VFR helicopter operations by day, the alternate minima are the same as for night unless the additional conditions specified in *ENR 1.2 para 2.5* are met. When these additional conditions are met, the alternate minima requirements are as shown in *para 11.7.2.2*.

11.7.3 **Radio Navigation Aids**

11.7.3.1 A flight which is planned to be conducted under the IFR on the last route segment to its destination must provide for a suitable alternate aerodrome, unless:

a. **for Regular Public Transport and Charter operations**:

(1) the destination is served by a radio navigation aid for which an instrument approach procedure has been prescribed and the aircraft is fitted with two independent and separate radio navigation systems, each of which is capable of using the aid; or

(2) the destination is served by two radio navigation aids for which independent and separate instrument approach procedures have been prescribed and the aircraft is fitted with independent and separate radio navigation systems capable of using these aids;

b. **for Aerial Work and Private operations**:

the destination is served by a radio navigation aid for which an instrument approach procedure has been prescribed and the aircraft is fitted with the radio navigation system capable of using the aid.

11.7.3.2 Notwithstanding the above, a flight may be planned under the IFR by day to a destination aerodrome which is not served by a radio navigation aid without the requirement to provide for a suitable alternate aerodrome, provided that:

a. not more than SCT cloud is forecast below the final route segment LSALT plus 500FT and forecast visibility at the destination aerodrome is not less than 8KM; and

b. the aircraft can be navigated to the destination aerodrome in accordance with *para 4.1.*

11.7.3.3 A flight permitted to operate under the VFR at night (see *ENR 1.2, Section 1.1*) must provide an alternate aerodrome within one (1) hour flight time of the destination unless:

a. the destination is served by a radio navigation aid (NDB/VOR) and the aircraft is fitted with the appropriate radio navigation system capable of using the aid, or

b. the aircraft is fitted with a GNSS receiver, appropriate for an aircraft operated at night under the VFR (as summarised in *GEN 1.5 Section 2.),* and the pilot is appropriately qualified.

11.7.4 **Runway Lighting**

11.7.4.1 **Portable Lighting.** When a flight is planned to land at night at an aerodrome where the runway lighting is portable, provision must be made for flight to an alternate aerodrome unless arrangements are made for a responsible person to be in attendance during the period specified in *para 11.8.3.1,* to ensure that the runway lights are available during that period.

11.7.4.2 **Standby Power.** When a flight is planned to land at night at an aerodrome with electric runway lighting, whether pilot activated or otherwise, but without standby power, provision must be made for flight to an alternate aerodrome unless portable runway lights are available and arrangements have been made for a responsible person to be in attendance during the period specified in *para 11.8.3.1*, to display the portable lights in the event of a failure of the primary lighting.

11.7.4.3 **PAL.** When a flight is planned to land at night at an aerodrome with PAL and standby power, provision must be made for a flight to an alternate aerodrome equipped with runway lighting unless a responsible person is in attendance to manually switch on the aerodrome lighting.

11.7.4.4 **Alternate Aerodromes - PAL**. An aerodrome may be nominated as an alternate aerodrome provided that, where an aircraft is an RPT aircraft (excluding aircraft engaged in cargo-only operations or an aircraft below 3,500KG MTOW), or is an aircraft fitted with single VHF communication, the alternate aerodrome must be one which is:

a. served by a lighting system which is not pilot activated; or

b. served by PAL and there is a responsible person in attendance to manually switch on the aerodrome lighting.

In the case of a non-RPT aircraft, RPT aircraft engaged in cargo-only operations, and RPT aircraft below 3,500KG MTOW, where the alternate aerodrome is served by PAL, there is no requirement for a responsible person on the ground to be in attendance, but the aircraft must be equipped with:

a. dual VHF; or

b. single VHF and HF communications and carries 30 minutes holding fuel to allow for the alerting of ground staff in the event of a failure of the aircraft's VHF communication.

11.7.4.5 The alternate requirements of *paras 11.7.4.1 to 11.7.4.4* inclusive need not be applied if the aircraft carries holding fuel for first light plus 10 minutes at the destination.

11.7.4.6 An alternate aerodrome nominated in accordance with the requirements in *paras 11.7.4.2 and 11.7.4.3* need not have standby power or standby portable runway lighting.

11.7.4.7 A responsible person under *para 11.7.4.2* is one who has been instructed in, and is competent to display, the standard runway lighting with portable lights.

11.7.4.8 **Partial Runway Lighting Failure**. At a controlled aerodrome, in the event of failure of one electrical circuit on a runway equipped with interleaved circuitry lighting, pilots will be notified of a doubled spacing of runway edge lights; i.e. from 60M to 120M spacing. When such a failure occurs at night, pilots must apply the following requirements to an approach to land:

a. In VMC:

No restriction.

b. In Less Than VMC:

The prevailing visibility must be equal to, or greater than, the published minimum for the instrument approach procedure being used for an aircraft's arrival multiplied by a factor of 1.5.

11.8 **Suitability of Aerodromes**

11.8.1 **General**

A pilot in command must plan the flight to comply with the following conditions for the use of an aerodrome, including an alternate aerodrome:

a. an aircraft must not take off or land at a place not suitable for the purpose under Regulation 92(1) and, if engaged on an international flight, at a place not designated as an international aerodrome or international alternate aerodrome;

b. unless otherwise approved an aircraft must not take off or land at an aerodrome at night unless the following lighting is operating:

(1) for a PVT, AWK or CHTR aircraft: runway edge lighting, threshold lighting, illuminated wind direction indicator, obstacle lighting (when specified in local procedures);

(2) for a RPT aircraft: the aerodrome lighting specified in (1) above plus taxiway lighting and apron floodlighting, all lighting to be electric;

Note: In the event that an illuminated wind direction indicator is not available, aircraft may continue to operate if wind velocity information can be obtained from an approved observer or an Automatic Weather Station (AWS).

c. an aircraft must not take off or land at an aerodrome when the surface or strength of the manoeuvring area is unsuitable for operations of the aircraft type.

Note: For emergency landings 11.8.3.1 Note 2.

11.8.2 **Runway Width**

11.8.2.1 Regulation 235A of the Civil Aviation Regulations specifies, and the Civil Aviation Advisory Publication 235A-1(0) provides guidance material for, the minimum runway width required for aeroplanes, type certified on or after 1 March 1978, with a maximum certified take-off weight of more than 5,700KG for:

a. regular public transport operations; or

b. charter operations

11.8.2.2 For operations on narrow runways the pilot in command shall conduct operations in accordance with:

a. the runway width limitations found in Aeroplane Flight Manual (AFM); or

b. procedures and limitations found in the AFM narrow runway supplement; and

c. procedures and limitations found in the narrow runway section of the operator's Operations Manual.

Note: A "narrow runway" is a runway that is narrower than determined in accordance with the Aerodrome Reference Code (ARC) under Subsection 11.8.2.3.

11.8.2.3 For aeroplanes that do not have specific runway width limitations, AFM supplements or Operations Manual provisions, in accordance with *11.8.2.2a* through c above, the pilot in command shall determine the ARC in accordance with *11.8.2.4*, and the minimum runway width in accordance with *para 11.8.2.5.*

11.8.2.4 The ARC applicable to an aeroplane's characteristics is determined by:

a. An aeroplane's reference field length: the shortest unfactored Balanced Field Length required for take-off by the aeroplane, at its maximum certified take-off weight:

(1) on a level and dry runway; and

(2) in still air; and

(3) at sea level, and

(4) in International Standard Atmospheric conditions.

Note: The maximum certified take-off weight is the maximum take-off weight stated in the aeroplane's type certificate, foreign type certificate, supplemented type certificate or foreign supplemental type certificate.

b. An aeroplane's code number is the number set out in column 1 of Table 1 opposite column 2 of the Table that includes the aeroplane's reference field length.

c. To work out an aeroplane's code letter:

(1) determine its wing span and outer main gear wheel span;

(2) then determine:

(i) which letter in column 3 of Table 1 is opposite the range of wing spans in column 4 of the Table; and

(ii) which letter in column 3 of Table 1 is opposite the range of outer main gear wheel spans in column 5 of the Table.

d. If the same letter is determined under items (i) and (ii) of *subparagraph c (2)* above, that letter is the aeroplane's code letter.

e. If different letters result, the aeroplane's code letter is the one that occurs later in the alphabet, except for an aeroplane with the wing span mentioned in Column 4 for code letter A, B, C or D, and an outer main gear wheel span that is at least 9M but less than 14M, the code letter is D.

Note: The ARC applicable to particular aeroplane reference field length and physical characteristics is also available from the aeroplane manufacturer or ICAO. The aeroplane manufacturer is the recommended source of the ARC.

Table 1 - Aerodrome Reference Code

Column 1 Code Number	Column 2 Aeroplane Reference Field Length	Column 3 Code Letter	Column 4 Wing Span	Column 5 Outer Main Gear Wheel Span
1	Less than 800M	A	Less than 15M	Less than 4.5M
2	At least 800M, but less than 1,200M	B	At least 15M, but less than 24M	At least 4.5M, but less than 6M
3	At least 1,200M, but less than 1,800M	C	At least 24M, but less than 36M	At least 6M, but less than 9M

4	At least 1,800M	D	At least 36M, but less than 52M	At least 9M, but less than 14M
		E	At least 52M, but less than 65M	At least 9M, but less than 14M
		F	At least 65M, but less than 80M	At least 14M, but less than 16M

11.8.2.5 Minimum runway width for an aeroplane is the runway width specified in Table 2 at the intersection of:

a. the row in the Table that specifies the aeroplane's code number; and

b. the column in the Table that specifies its code letter.

Table 2 - Minimum Runway Width Under Para 11.8.2.3

	Code Letter					
Code Number	A	B	C	D	E	F
1	18M	18M	23M	-	-	-
2	23M	23M	30M	-	-	-
3	30M	30M	30M	45M	-	-
4	-	-	45M	45M	45M	60M

11.8.2.6 The performance of an aeroplane shall be predicted on the runway surface that is used for take-off or landing. Operations on unpaved surfaces such as gravel, grass or natural surfaces shall be carried out in accordance with the unpaved performance section of the AFM or AFM Supplement.

11.8.3 **Aerodrome Lighting**

11.8.3.1 When aerodrome lighting is required and PAL is not being used, the pilot in command or operator must ensure that arrangements have been made for the lighting to be operating during the following periods:

a. **departure**: from at least 10 minutes before departure to at least 30 minutes after take-off;

b. **arrival**: from at least 30 minutes before ETA to the time landing and taxiing has been completed.

The above shall apply to runway, obstacle and taxiway lighting.

Note 1: An operator planning a flight by an aircraft with tyre pressures and/or weight in excess of that permitted by AD1.1 Section 7. must ensure that a pavement concession is obtained.

*Note 2: **Emergency Landings.** When safety is involved, the nearest aerodrome which will permit a landing without danger to the aircraft may be used, irrespective of the damage that may be caused to the pavement.*

*Note 3: **Mercy Flights.** Decisions should be made in accordance with the degree of urgency involved. Severe overloading of pavements is acceptable if the safety of patients, crew and aircraft is not thereby jeopardised.*

Note 4: Aerodrome lighting at an aerodrome where a control tower is operating will be activated by ATC as necessary. Pilots requiring aerodrome lighting outside the control tower's published hours should use PAL, if available, or make appropriate arrangements with ATC. If ATC has already ceased duty, requests should be directed to the local aerodrome operator. Confirmation should be obtained that requests for lighting will be satisfied.

Note 5: A pilot having made arrangements with ATS for night lighting must notify any change in requirements.

Note 6: Aerodrome lighting at non-controlled aerodromes should be arranged direct with the aerodrome operator, or by using PAL facilities, if available.

Note 7: ERSA identifies locations where selected runway lighting is routinely left switched on during hours of darkness.

11.9 Fuel Requirements

11.9.1 General

11.9.1.1 Regulation 234 of CAR allows CASA to prescribe requirements relating to fuel for aircraft. Civil Aviation Advisory Publication 234-1(2) provides guidance material for those fuel requirements, including:

a. matters to be considered in determining sufficient fuel for flight; and

b. amounts of fuel that must be carried, and

c. procedures for monitoring amounts of fuel during a flight, and

d. procedures to be followed if fuel reaches specified amounts during a flight.

Note: CAAP 234-1, available from CanPrint Communications, AIP shop (see details GEN 0.1 Section 7.1) and online www.casa.gov.au/rules-and-regulations/standardpage/civil-aviation-advisory-publications (CASA website).

11.9.2 **Air Operator Certificate (AOC) Holders**

11.9.2.1 Fuel requirements for aircraft operated under an AOC are as contained in the company Operations Manual.

11.9.3 **Holding Fuel**

11.9.3.1 Weather holding fuel requirements are detailed at *section 11.7.2.*

11.9.3.2 In determining the quantity of useable fuel required for a flight, anticipated delays including traffic holding must be included as a consideration of the operating conditions for the planned flight.

11.9.3.3 Air traffic flow management procedures are contained in *ENR 1.9*.

Note: An aircraft arriving at the destination without sufficient fuel for holding will not be accorded priority unless the pilot in command declares an emergency.

11.9.4 **In-Flight Fuel Management**

11.9.4.1 The pilot in command shall continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the fixed fuel reserve remaining upon landing.

11.9.4.2 The pilot in command shall request delay information from ATC when unanticipated circumstances may result in landing at the destination aerodrome with less than the fixed fuel reserve plus any fuel to proceed to an alternate aerodrome (if required).

Note: There is no specific phraseology in this case as each situation may be different.

11.9.5 **Minimum Fuel**

11.9.5.1 The pilot in command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome, the pilot in command calculates that any change to the existing clearance to that aerodrome may result in landing with less than fixed fuel reserve.

Note 1: The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than fixed fuel reserve. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

Note 2: Pilots should not expect any form of priority handling as a result of a "MINIMUM FUEL" declaration. ATC will, however, advise the flight crew of any additional expected delays as well as coordinate when transferring control of the aircraft to ensure other ATC units are aware of the flight's fuel state.

11.9.6 **Emergency Fuel**

11.9.6.1 The pilot in command must declare a situation of emergency fuel by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the fixed fuel reserve.

Note: MAYDAY FUEL declaration is a distress message.

11.9.6.2 In any case where an aircraft lands with less than its fixed fuel reserve the pilot in command shall file the required report as described in *ENR 1.14*.

11.10 **Information by Pilots**

11.10.1 A pilot in command becoming aware of any irregularity of operation of any navigational or communications facility or service or other hazard to navigation must report the details as soon as practicable. Reports must be made to the appropriate ATS unit, except that defects, or hazards on a landing area must be reported to the person or authority granting use of the area.

11.10.2 When a landing is made on a water-affected runway, the pilot is requested to advise ATS of the extent of water on the runway and the braking characteristics experienced.

11.10.3 The following terms should be used to describe water on a runway:

DAMP – The surface shows a change of colour due to moisture.

WET – The surface is soaked but there is not standing water.

WATER PATCHES – Patches of standing water are visible.

FLOODED – Extensive standing water is visible.

11.10.4 The following terms should be used to describe braking characteristics experienced:

GOOD – Pilots should not expect to find the conditions as good as when operating on a dry runway, but should not experience any directional control or braking difficulties because of runway conditions.

MEDIUM – Braking action may be such that the achievement of a satisfactory landing or accelerate-stop performance, taking into account the prevailing circumstances, depends on precise handling techniques.

POOR – There may be a significant deterioration both in braking performance and directional control.

11.10.5 During the bush fire danger period, pilots in command of aircraft should notify the nearest ATS unit promptly of any evidence of bush fires observed which they believe have not been reported previously.

11.10.6 Australian Customs and Border Protection (Customs) is the government civil surveillance organisation which coordinates aerial patrols of border and off-shore areas to detect breaches of Customs, Fisheries, Quarantine and Immigration legislation.

11.10.7 Pilots are invited to assist Customs by reporting activities which appear to warrant recording or investigation. Reports should be made to the in-contact ATS unit. Observations warranting a report include:

a. observed marine pollution (including oil slicks);

b. shipping abnormalities;

c. other unusual activities within approximately 300NM of the coastline;

d. suspicious activities of unidentified itinerant aircraft, especially if there is a suggestion that they are travelling from or to an overseas destination;

e. aircraft signalling the ground or dropping objects;

f. aircraft operating at night without navigation lights;

g. aircraft operating from non-aerodrome sites, or unexplained or unusual activity at aerodromes or remote strips;

h. possible illegal fishing within the 200NM fishing zone;

i. possible smuggling of drugs or other prohibited goods;

j. possible illegal immigrants entering Australia;

k. unauthorised landings by sea or air;

l. threats to the well being of the Great Barrier Reef or other environmentally significant areas; and

m. unusual activities in remote areas.

11.10.7.1 Such reports should be elaborated on at debriefing.

11.10.8 Observed volcanic activity must be included in AIREP.

11.10.9 All air crews are to report immediately by radio to the appropriate ATC facility, any incidents of unauthorised laser illumination. Reports should include event position, altitude, colour of laser beam(s), originating direction and position, and any other relevant information deemed necessary for ATC and law enforcement action.

11.10.10 Air crews flying in Class G airspace are also requested to immediately broadcast a general laser illumination caution on the appropriate CTAF. This general caution should include the following elements:
Phrase “UNAUTHORISED LASER ILLUMINATION EVENT(s) HAS/HAVE BEEN REPORTED” (general positional information including location and altitude).

11.11 Flights Over Water

11.11.1 Aircraft engaged in PVT, AWK, or CHTR operations, and which are normally prohibited by *CAR 258* from over-water flights because of their inability to reach land in the event of engine failure, may fly over water subject to compliance with the conditions in this section. These conditions are additional to the requirements for flight over land.

11.11.2 In the case of passenger-carrying CHTR operations, the distance from land areas suitable for an emergency landing must not exceed 25NM. In the case of helicopters, a fixed platform or a vessel suitable for an emergency landing, or for seaplanes an area of water suitable for an emergency landing and located adjacent to land may be considered acceptable for this requirement.

11.11.3 There is no limitation for PVT, AWK or freight-only CHTR operations.

11.11.4 Each occupant of the aircraft must wear a life jacket during the flight over water unless exempted from doing so under the terms of *CAO 20.11.*

11.11.5 A meteorological forecast must be obtained.

11.11.6 **SAR Alerting:**

a. VFR flights may choose to operate on reporting schedules for the over-water stages of a flight. Schedules may be arranged before commencing the over-water stage and terminate on completion of the crossing.

b. VFR aircraft not equipped with radio which will enable continuous communication, or not radio equipped, must carry a survival beacon as prescribed in *CAO 20.11*, for the over-water stages of the flight.

11.11.7 Helicopters must be fitted with an approved flotation system unless exempted under the terms of *CAO 20.11*.

11.12 Procedures for Ground Operations of Turbo-Jet Aircraft

11.12.1 Whenever an engine, other than the APU, of a turbo-jet aircraft is operating on the ground, the aircraft's anti-collision light(s) must be displayed, thereby indicating to pilots of other aircraft to exercise caution. Military turbo-jet aircraft should always be treated with caution as their anti-collision light may not be displayed even though an engine is running.

11.13 Clearances - Pilot Responsibility

11.13.1 A clearance issued by an ATS unit is only an authorisation for the pilot in command to proceed in accordance with the terms of the clearance. The clearance is not an authorisation for a pilot to deviate from any regulation, order, operating standard or procedure, or minimum altitude, nor to conduct unsafe operations in his/her aircraft. Further, the issuance and acceptance of a clearance in no way abrogates or transfers to an ATS unit the responsibilities of the pilot in command.

11.14 Special Requirements

11.14.1 Mercy Flights

11.14.1.1 When an urgent medical, flood or fire relief or evacuation flight is proposed in order to relieve a person from grave and imminent danger and failure to do so is likely to result in loss of life or serious or permanent disability and the flight will involve irregular operation, a Mercy flight must be declared.

11.14.1.2 A Mercy flight must only be declared by the pilot in command and the factors/risks that the pilot in command must consider in the declaration, commencement and continuation of the flight are detailed in *para 11.14.1.5*.

11.14.1.3 A flight must not be declared a Mercy flight when:

a. it can comply with the applicable regulations and orders; or

b. operational concessions to permit the anticipated irregular operations can be obtained.

In these cases, the flight should be notified as Search and Rescue (SAR), Medical (MEDEVAC or HOSP), Flood or Fire Relief (FFR). Special consideration or priority will be granted by ATC if necessary.

11.14.1.4 A Mercy flight must not be undertaken when:

a. alternative means of achieving the same relief are available; or

b. the crew and other occupants of the aircraft involved will be exposed to undue hazard; or

c. relief or rescue can be delayed until a more suitable aircraft or more favorable operating conditions are available.

11.14.1.5 In assessing the justification of risks involved in a Mercy flight, the pilot must consider the following:

a. the availability of alternative transport or alternative medical aid;

b. the weather conditions en route and at the landing place(s);

c. the distance from which it should be possible to see the landing place(s);

d. the air distance and the type of terrain involved;

e. the navigation facilities usable and the reliability of those facilities (such facilities may include landmarks, etc);

f. the availability of suitable alternate aerodrome(s);

g. the availability and reliability of communications facilities;

h. the asymmetric performance of the aircraft;

i. whether the pilot's experience reasonably meets the requirements of the mercy flight;

j. the effect on the person requiring assistance if the flight is delayed until improved operating conditions exist;

k. whether the flight is to be made to the nearest or most suitable hospital; and

l. the competence of the authority requesting the Mercy flight.

11.14.1.6 The pilot in command of a Mercy flight must:

a. give flight notification as required for a charter flight and identify the flight by the term “MERCY FLIGHT”. This notification must include the reason for the Mercy flight and reference to any rule or regulation which will not be complied with;

b. specify reporting points or times when contact will be made;

c. specify the special procedures intended or special assistance required of the ground organisation; and

d. limit the operating crew and other persons carried in the aircraft to the minimum number required to conduct the flight.

11.14.1.7 If the Mercy flight applies only to a portion of the flight this must be stated in the flight notification. If a normal flight develops into a Mercy flight, the pilot in command must take appropriate action.

11.14.2 **Special Standby of Fire Services**

11.14.2.1 A pilot conducting training in take-offs and landings with a multi engined aircraft may request the airport RFFS to stand by on the field. The request must be made through ATS or direct to the responsible Fire Officer.

11.14.3 **Circuit Training Operations at Night**

11.14.3.1 Aeroplanes engaged in training operations at night in the circuit area must not, when below 1,500FT AGL, carry out any manoeuvres which involve:

a. the simulation of failure of an engine; or

b. flight in a simulated one-engine-inoperative condition; or

c. the intentional shut-down of a serviceable engine.

11.14.4 **Ab Initio Flying Training at an Aerodrome**

11.14.4.1 It is recommended that aerodromes at which ab initio flight training is conducted have the following characteristics:

a. The TODA and LDA for the runway are at least 120% of the distance required by the aeroplane’s flight manual or performance chart;

b. In the case of aeroplanes for which there is no flight manual or performance chart, the TODA and LDA for the runway are at least 120% of the distance specified in the aeroplane's certificate of airworthiness;

c. There are obstacle-clear approach and take-off slopes of no more than 3.33% to a distance of 1,600M from each end of the runway.

11.14.5 **Fuel Dumping in Flight**

11.14.5.1 *CAR 150(2)(d)* regulates the dropping of anything, including fuel, from an aircraft in flight. Additionally, Air Navigation (Fuel Spillage) Regulations prescribe penalties for the unauthorised release of fuel from an aircraft other than in an emergency.

11.14.5.2 When fuel dumping is required, the pilot in command should request authority from ATC before commencing a fuel dump, and must:

a. notify ATC immediately after an emergency fuel dump;

b. take reasonable precautions to ensure the safety of persons or property in the air and on the ground; and

c. where possible, conduct a controlled dump in clear air above 6,000FT and in an area nominated by ATC.

11.14.5.3 The pilot must advise ATC if radio silence is required during the fuel dumping operation.

11.14.6 **Areas Having Limitations on Access**

11.14.6.1 Although not involving a potential hazard to aircraft, operations over certain areas have limitations placed on them for environmental reasons. Refer to *ERSA GEN* for details.

11.14.7 **Aerial Photography and Survey Operations**

11.14.7.1 Pilots and operators intending to conduct aerial photography or survey operations in controlled airspace should liaise with the ATC unit responsible for the area(s) concerned prior to submitting flight plans. ATC clearance limitations and restrictions on times, tracks and/or levels, which could inhibit the proposed operation(s), may apply in the desired airspace. Preflight approval will enable pilots to plan tasks accordingly, thus minimising disruption to programs.

11.14.8 **Aerial Photography of Military Installations**

11.14.8.1 Pilots or operators intending to photograph military installations or areas which include military installations must contact the appropriate military authority as such photography may require prior approval or not be permissible.

11.14.9 **Police Operations**

11.14.9.1 An aircraft operated by police authorities which requires priority in situations where life is threatened must use the callsign “POLAIR RED” or “FEDPOL RED”. Police must call “POLAIR/ FEDPOL RED PRIORITY” on first contact.

11.14.10 **Military Authority Assumes Responsibility for Separation of Aircraft (MARSA)**

11.14.10.1 MARSA is a procedure which authorises pilots of military aircraft to assume responsibility for separation between their aircraft and other nominated military aircraft, or military contract civil aircraft, in controlled airspace. MARSA can only be used between participating aircraft using the same flight level or altitude, or manoeuvring within the same block of airspace.

11.14.10.2 Operators of foreign military aircraft wishing to participate in MARSA must refer to *RAAF AIP - Flight Information Handbook Australia (FIHA)* for details of the procedure.

11.14.11 **“Due Regard” Operations**

11.14.11.1 Certain operations by State aircraft (usually military), referred to as “Due Regard” operations, cannot be conducted in compliance with normal air traffic rules and procedures. Where these operations are necessary, Article 3 of the *Chicago Convention (1944)* requires contracting States to “have due regard for the safety of navigation of civil aircraft”. Safety mitigators may include operations in VMC and/or use of surface and airborne radar.

11.14.12 **Security Awareness**

11.14.12.1 All members of the aviation industry, including general aviation, charter, crop duster, helicopter and local airport operators should be particularly vigilant with regard to any suspicious activity relating to the use, training in, or acquisition of dangerous chemicals, including threats, unusual purchases, and/or unusual contacts with the public.

11.14.12.2 Any suspicious circumstances or unusual behaviour should be immediately reported to the police and the relevant aircraft, airline, or airport operator.

11.14.13 **Fire Operations**

An aircraft operated by fire authorities which requires priority should notify the flight as Fire or Flood Relief (FFR) and use the appropriate special task callsign as per *GEN 3.4 para 4.23*.

11.15 Helicopter Operations - At Aerodromes and Helicopter Access Corridors and Lanes

11.15.1 General

11.15.1.1 The procedures in this section apply to all helicopters operating in the vicinity of aerodromes and in helicopter access corridors and lanes, in accordance with the provisions of C*AR's 92, 157, 163 and 166*.

11.15.2 Taxiing

11.15.2.1 For all helicopters, maximum use of the "air transit" procedure should be made to expedite traffic movement and flow about an aerodrome.

11.15.2.2 All helicopters may use "air taxiing" procedures as required. However, wheeled helicopters, where practicable, are encouraged to "ground taxi" on prepared surfaces to minimise rotor wash and its effects.

11.15.2.3 At night a helicopter should not taxi via routes which do not meet the physical dimensions and lighting requirements specified in *CAAP 92-2(1)*.

11.15.3 Take-off/Departure

11.15.3.1 <u>At locations within controlled airspace</u>, helicopters may be granted a take-off clearance or instructed to report airborne, as appropriate, from any area nominated by ATC or the pilot, and assessed by the pilot as being suitable as a HLS.

11.15.3.2 Helicopters taking off/departing must proceed in accordance with ATC instructions.

11.15.3.3 Subject to clearance, a turn after take-off may be commenced when the pilot considers that the helicopter is at a safe height to do so.

11.15.3.4 Unless requested by the pilot, a take-off clearance will not be issued for a helicopter if the tailwind component exceeds 5KT.

11.15.3.5 Prescribed exit "gates" and associated standard routes and/or altitudes may be provided to facilitate the flow of helicopter traffic. Procedures for their use will be promulgated in *ERSA*. Use of these "gates" is not mandatory. Helicopters may, subject to an ATC clearance, revert to the standard traffic procedures applicable to aeroplanes. This option may be more appropriate when operating larger helicopters.

11.15.3.6 At night a helicopter should not take-off from other than a site which conforms with the requirements specified in *CAAP 92-2(0).* Any illuminated runway or illuminated taxiway of dimensions commensurate with the size of the helicopter landing site applicable to the helicopter, in accordance with *CAAP 92-2(1)*, is considered to meet the requirements of *CAAP 92-2(1)*.

11.15.3.7 At a non-controlled aerodrome a pilot may take-off from any area which is assessed as being suitable as a HLS.

11.15.3.8 When the pilot elects to conduct the take-off from outside the flight strip of the runway in use by aeroplanes, the helicopter take-off path must be outside that flight strip.

11.15.3.9 Before take-off, the helicopter is to be positioned to the appropriate side of the runway in use so that the turn after take-off does not cross the extended centre line of that runway. The pre-take-off positioning of the helicopter will be by air transit or by taxiing as appropriate.

11.15.3.10 The turn after take-off onto the desired departure track may be commenced when the pilot considers that the helicopter is at a safe height to do so. If the resultant departure track conflicts with the aeroplane traffic pattern, the helicopter should remain at 500FT above the surface until clear of that circuit pattern. Where this procedure is not practicable on environmental grounds, the helicopter is to adopt the standard departure procedure applicable to aeroplanes.

11.15.3.11 Pilots of radio equipped helicopters must broadcast intentions on the appropriate frequency before take-off.

11.15.4 Helicopter Access Corridors and Lanes

11.15.4.1 The following procedures for operations within promulgated helicopter access corridors and lanes apply:

a. maximum IAS of 120KT;

b. helicopters must operate under VFR, usually not below 500FT above the surface by day, subject to flight over populous area restrictions and the limitations published in *ERSA* for authorised corridors by night;

c. “see and avoid” procedures must be used;

d. formation flights are restricted to line astern with the lead aircraft responsible for maintaining separation from other traffic in accordance with *sub-para c.*;

e. a traffic advisory service is available in access corridors;

f. an ATS Surveillance System advisory service may be given at designated aerodromes;

g. a continuous listening watch on the appropriate ATS frequency in access corridors or broadcast frequency in lanes is mandatory;

h. two way operations are conducted with all traffic keeping to the right of the central geographical/topographical feature(s) as detailed in *ERSA*;

i. the pilot in command has the responsibility to ensure that operations are confined within the boundaries of the corridor or lane;

j. the limits of corridors and lanes must be adhered to, with any transitional altitude requirements maintained within an accuracy of ±100FT;

k. a helicopter not confining its operations to an access corridor will require ATC clearance and, while outside the corridor, will be subject to separation standards as applied by ATC.

Note: Subject to environmental noise considerations, the imposition of limitations on those types of helicopters which exceed the noise limits specified in ICAO Annex 16 Vol 1 may be necessary.

11.15.5 **Arrivals**

11.15.5.1 <u>At a controlled aerodrome</u>, prescribed entry “gates” and associated standard routes and/or altitudes may be provided to facilitate the flow of helicopter traffic. Procedures for their use will be promulgated in *ERSA*.

Use of these “gates” is not mandatory. Subject to the receipt of an ATC clearance, helicopters may, if required, conform to the standard traffic procedures applicable to aeroplanes. This option may be more appropriate when operating larger helicopters.

11.15.5.2 At locations within controlled airspace, helicopters may be granted a landing clearance or be instructed to report on the ground, as appropriate, at any area nominated by ATC or the pilot, and assessed by the pilot as being suitable as a HLS.

11.15.5.3 Unless requested by the pilot, a landing clearance will not be issued for a helicopter if the tailwind component exceeds 5KT.

11.15.5.4 At night a helicopter should not land at a site other than one which conforms with the requirements specified in the latest issue of *CAAP 92-2.* Any illuminated runway or illuminated taxiway of dimensions commensurate with the size of the helicopter landing site applicable to the helicopter, in accordance with *CAAP 92-2*, is considered to meet the requirements of *CAAP 92-2*.

11.15.5.5 At a non-controlled aerodrome in VMC by day applicable to the aircraft category, helicopters need not join the circuit via standard aeroplane entry procedures, at the pilots discretion.

As an alternative, under such conditions, helicopters may join the circuit area at 500FT above the surface from any direction subject to the normal restrictions of flight over populous areas. Helicopters must avoid other circuit traffic and descend to land at any location assessed by the pilot as being suitable for use as a HLS, provided:

a. the intended landing point is located outside the flight strip of the runway in use;
b. the final approach is clear of the extended centreline of the runway in use;
c. post-landing positioning of the helicopter is by air transit or by taxiing as appropriate.

11.15.5.6 Pilots of radio equipped helicopters must broadcast intentions on the appropriate frequency as specified in *Section 11.3.*

11.15.6 Circuit Procedures

11.15.6.1 At controlled aerodromes any specific operating procedures applicable to the helicopter traffic pattern will be detailed in *ERSA*. The following generally applies:

a. where possible, helicopter circuit traffic will be separated from the aeroplane traffic pattern by the use of contra-direction circuits, outside of and parallel to the flight strip of the runway in use, and at a lower altitude than other traffic, but not below 500FT above the aerodrome elevation; or

b. when separate circuit patterns are not practicable, helicopters may utilise the same traffic pattern direction as other traffic, and will normally operate inside and at a lower altitude than that traffic, but not below 500FT above the aerodrome elevation.

11.15.6.2 At non-controlled aerodromes the following circuit operating procedures apply:

a. helicopters may be operated on contra-direction circuits and parallel to the aeroplane traffic pattern at a lower altitude than that traffic, but not below 500FT above the aerodrome elevation. The landing site associated with the helicopter circuit is to be positioned outside the flight strip of the runway in use so that helicopter circuit traffic does not cross the extended centre line of that runway;

b. if the procedure outlined in *sub-para 11.15.6.2a*. is not practicable, the helicopter circuit patterns should be flown inside and parallel to the aeroplane traffic and at lower altitudes, but not below 500FT above the aerodrome elevation. The landing site associated with the helicopter circuit must be positioned outside the flight strip of the runway in use so that helicopter circuit traffic does not cross the extended centre line of that runway; or

c. the helicopter must follow the standard aeroplane traffic pattern and, in this case, may use the flight strip area of the runway in use;

d. the pilots of radio equipped helicopters must broadcast their intentions and listen out for other traffic on the appropriate frequency.

ENR 1.2 VISUAL FLIGHT RULES

1. FLIGHT RULES

1.1 The Visual Flight Rules (VFR)

1.1.1 VFR flight may only be conducted:

a. in VMC;

b. provided that, when operating at or below 2,000FT above the ground or water, the pilot is able to navigate by visual reference to the ground or water;

c. at sub-sonic speeds; and

d. in accordance with the airspace speed limitations specified in *ENR 1.4.*

1.1.2 Unless the pilot in command is authorised under *CASR Part 61* to conduct a flight under IFR or at night under VFR and the aircraft is appropriately equipped for flight at night or under the IFR, a VFR flight must not:

a. be conducted at night; and

b. depart from an aerodrome unless the ETA for the destination (or alternate) is at least 10 minutes before last light allowing for any required holding.

1.2 Special VFR

1.2.1 By day, when VMC do not exist, the ATC unit responsible for a CTR or CTA may issue, at pilot request, and provided an IFR flight will not be unduly delayed, a Special VFR clearance for flight:

a. in the CTR; or

b. in a CTA next to the CTR for the purpose of entering or leaving the CTR.

1.2.2 When operating under a Special VFR clearance, pilots are responsible for ensuring that:

a. the flight is conducted clear of cloud;

b. the visibility is not less than:

(1) for aeroplanes, 1,600M;

(2) for helicopters, 800M; or

(3) for balloons, 100M below 500FT AGL and 1,600M at and above 500FT AGL;

c. a helicopter is operated at such a speed that the pilot has adequate opportunity to observe any obstructions or other traffic in sufficient time to avoid a collision; and

d. the flight is conducted in accordance with the requirements of *CAR 157* with regard to low flying.

1.2.3 Special VFR is not permitted in Class E airspace.

2. VISUAL METEOROLOGICAL CONDITIONS (VMC) - TAKE-OFF, EN ROUTE AND LANDING

2.1 Controlled Airspace - Class A

IFR flights only are permitted.

2.2 Controlled Airspace - Class C

Type of Aircraft	**Height**	**Flight VIS**	**Distance from Cloud Horizontal/ Vertical**	**Additional Conditions**
Aeroplanes helicopters and balloons	At or above 10,000FT AMSL	8KM	1,500M horizontal 1,000FT vertical	
	Below 10,000FT AMSL	5,000M	1,500M horizontal 1,000FT vertical	ATC may permit operations in weather conditions that do not meet this criteria (Special VFR).

2.3 Controlled Airspace - Class D

Type of Aircraft	Height	Flight VIS	Distance from Cloud Horizontal/ Vertical	Additional Conditions
Aero-planes helicop-ters and balloons	Within Class D	5,000M	600M horizontal 1,000FT vertically above cloud or 500FT vertically below cloud	ATC may permit operations in weather conditions that do not meet these cri-teria (Special VFR).

2.4 Controlled Airspace - Class E

Type of Aircraft	Height	Flight VIS	Distance from Cloud Horizontal/ Vertical	Additional Conditions
Aero-planes helicop-ters and balloons	At or above 10,000 FT AMSL	8KM	1,500M horizontal 1,000FT vertical	
	Below 10,000 FT AMSL	5,000M	1,500M horizontal 1,000FT vertical	

2.5 **Non-Controlled Airspace - Class G**

Item	**Type of Aircraft**	**Height at which Applicable**	**Applicable Distance for Flight Visibility**	**Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility**	**Conditions**
1.	Aeroplanes, helicopters and balloons	At or above 10,000FT AMSL	8KM	1,000FT vertical 1,500M horizontal	
2.	Aeroplanes, helicopters and balloons	Below 10,000FT AMSL (Subject to Items *3, 4, 5, 6 and 7, below*)	5,000M	1,000FT vertical 1,500M horizontal	
3.	Aeroplanes, helicopters and balloons	At or below - whichever is the higher - of: (a) 3,000FT AMSL; (b) 1,000FT AGL (Subject to *Items 4, 5, 6 and 7 below*)	5,000M	Clear of cloud and in sight of ground or water	Radio must be carried and used on the appropriate frequency

Item	Type of Aircraft	Height at which Applicable	Applicable Distance for Flight Visibility	Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility	Conditions
4.	Helicopters	(a) Below 700FT above ground; or (b) Below 700FT above water when operating at a distance from land that allows compliance with *CAR 258* (1).	800M	Clear of cloud	(a) Day operation only; (b) At a speed that allows the pilot adequate opportunity to see any obstructions or air traffic in sufficient time to avoid collision; (c) if operating less than 10NM from an aerodrome with an approved instrument approach procedure, then: (i) in accordance with all requirements to report, broadcast and maintain a listening watch; and

Item	Type of Aircraft	Height at which Applicable	Applicable Distance for Flight Visibility	Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility	Conditions
					(ii) maintaining a separation of at least 500FT vertically from any aircraft conducting an IFR operation less than 10NM from the aerodrome.
5.	Helicopters	Below 700FT-above water when operating at a distance from land greater than that which allows compliance with *CAR 258* (1).	1. 5,000M if only condition 1 is complied with. OR 2. 800M if conditions 1 and 2 are both complied with.	1. 600M horizontal and 500FT vertical, if only condition 1 is complied with. OR 2. Clear of cloud, if conditions 1 and 2 are both complied with.	1. (a) Day operation only; (b) At a speed that allows the pilot adequate opportunity to see any obstructions or air traffic in sufficient time to avoid collision; (c) If operating less than 10 NM from an aerodrome with an approved instrument approach procedure, then:

Item	Type of Aircraft	Height at which Applicable	Applicable Distance for Flight Visibility	Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility	Conditions
	Helicopters (Cont)				(i) in accordance with all requirements to report, broadcast and maintain a listening watch; and (ii) maintaining a separation of at least 500 FT vertically from any aircraft conducting an IFR operation less than 10 NM from the aerodrome.
					2. The applicable distances for vertical and horizontal distances from cloud visibility do not apply if the helicopter:

Item	Type of Aircraft	Height at which Applicable	Applicable Distance for Flight Visibility	Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility	Conditions
	Helicopters (Cont)				(a) uses track guidance provided by an approved operating radio navigation aid; and (b) is equipped with a complementary radio navigation system.
6.	Balloons	Below 1,500FT above ground or water	5,000M	Clear of cloud	No vertical clearance from cloud below the balloon is required provided: (a) the top of the cloud is at or below 500FT above ground or water; and (b) the balloon is at least 10NM from an aerodrome with an approved instrument approach procedure.

Item	Type of Aircraft	Height at which Applicable	Applicable Distance for Flight Visibility	Applicable Distances for Vertical and Horizontal Distances from Cloud Visibility	Conditions
7.	Balloons	Below 500FT above ground or water	100M	Not Applicable	Day operation only provided the balloon is at least 10NM from an aerodrome with an approved instrument approach procedure.

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ENR 1.3 INSTRUMENT FLIGHT RULES

1. THE INSTRUMENT FLIGHT RULES (IFR)

1.1 IFR must be used by flights conducted in circumstances other than those specified in *ENR 1.2 para 1.1*, unless otherwise specifically authorised by CASA. In the case of single-engined aircraft, IFR flights are restricted to PVT, AWK and freight-only CHTR operations, unless otherwise specifically approved by the CASA. IFR flights must be conducted in accordance with the airspace speed limitations specified in *ENR 1.4*.

2. FLIGHT RULES NOMINATION

2.1 The nomination of a flight as IFR or VFR determines:

a. the flight notification requirements;

b. separation requirements in Classes A, C and D airspace;

c. separation requirements for aircraft in receipt of an airways clearance in Class E airspace; and

d. traffic information requirements in classes E and G airspace.

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ENR 1.4 ATS AIRSPACE CLASSIFICATION

1. CONTROLLED AIRSPACE

1.1 General

1.1.1 Controlled airspace is defined as “airspace of defined dimensions within which ATC services are provided to IFR flights and to VFR flights in accordance with the airspace classification”.

1.1.2 Controlled airspace is a generic term which, in Australia, covers ATS airspace classes A, C, D and E.

1.1.3 Controlled airspace is established generally on the basis of traffic density and substantial RPT turbo-jet operations and considerations of flight procedures. Such airspace does not necessarily cover routes to alternate aerodromes.

1.1.4 Controlled airspace within the Brisbane and Melbourne FIRs is generally established as follows:

Class of Airspace	Application
Class A	• within radar coverage - lower limit above FL180 and upper limit FL600; • outside radar coverage - lower limit FL245 and upper limit FL600; • an area extending from 90NM south of Melbourne to Launceston and Hobart, lower limit FL180 and upper limit FL600.
Class C	• within radar coverage south of Sydney, lower limit FL125 and upper limit FL180 under Class A airspace; • in the control area steps associated with controlled aerodromes, excluding control area steps classified as Class D airspace; • in control zones of defined dimensions.
Class D	Control zones of defined dimensions, and associated control area steps, upper limit 4,500FT.
Class E	• within radar coverage:

Class of Airspace	Application
	– south of Sydney, lower limit 8,500FT and upper limit FL125 under Class C airspace; – north of Sydney, lower limit 8,500FT and upper limit FL180 under Class A airspace; • in the vicinity of Williamtown/Newcastle: coincident with the lateral limits of R578A-E above A045 - when R578 is not active; • outside radar coverage within continental Australia, lower limit FL180 and upper limit FL245 under Class A airspace; • an area extending from 90NM south of Melbourne to Launceston and Hobart, lower limit FL125 and upper limit FL180 under Class A airspace; and • in two corridors: Sydney to Dubbo, lower limit FL125 and upper limit FL180; and Melbourne to Mildura, lower limit FL125 and upper limit FL180, under en route Class E airspace, and; • in the control area steps associated with Class D controlled aerodromes at Karratha, Broome, Avalon, Mackay and Rockhampton excluding control area steps classified as Class D or C airspace.

1.1.5 Operations in control areas and control zones must be conducted in accordance with the published procedures and requirements for that specific airspace and air traffic clearances. Special procedures may also be specified for an aerodrome within a control zone.

1.1.6 The extent of controlled airspace is promulgated in Airservices *Aeronautical Charts, NOTAM, AIP Supplements (SUPs), and the Designated Airspace Handbook (DAH).*

1.1.7 When ATS airspaces adjoin vertically (one above the other), flights at the common level must comply with the requirements of, and will be given services applicable to, the less restrictive class of airspace. In applying these criteria, Class C airspace is considered less restrictive than Class A airspace; Class D airspace is considered less restrictive than Class C airspace, etc.

Note: Super, Heavy or Medium Wake Turbulence category aircraft may be operating at the base and near the boundaries of controlled airspace. Aircraft operating in Class G airspace in the vicinity of controlled airspace may be affected by wake turbulence from aircraft operating within controlled airspace.

When airspace classes adjoin laterally, flights at the common boundary will be given services applicable to the lower class of airspace (where A is the highest and G is the lowest).

1.2 Control Areas

1.2.1 A control area (CTA) is defined as "a controlled airspace extending upwards from a specified limit above the earth." Control areas normally operate continuously. Areas identified by the word NOTAM may be activated, or additional areas may be established to meet temporary requirements, by the issuance of a NOTAM or SUP.

1.3 Control Zone

1.3.1 A control zone (CTR) is defined as "a controlled airspace extending upwards from the surface of the earth to a specified upper limit." CTRs surround controlled aerodromes and are designated as follows:

a. **Civil CTR**: A CTR administered by a civil air navigation service provider, other than a military CTR. Class C or Class D procedures and services apply.

b. **Military CTR**: A CTR administered by the Australian Defence Force. Class C procedures and services apply to civil flights.

1.3.2 CTRs are active during the hours of the operation of the control tower as published in *ERSA* or as varied by NOTAM.

Note: MIL CTRs may be activated at short notice. Pilots should plan their operations on the basis that CTRs are active unless advised to the contrary.

1.4 Authorisation of Civil Flights in Military CTRs and Other Military Administered Airspace

1.4.1 Civil flights in Military CTRs and other military administered airspace may be authorised subject to military activity, weather and any special procedures for the control of civil aircraft which have been published.

1.4.2 In accordance with *CAR 92 (1) (c)*, pilots must obtain prior permission from the appropriate military authority before landing at any military aerodrome (see *ERSA*). This does not apply to joint-user aerodromes; Darwin and Townsville.

1.5 Release of Control Areas, Control Zones and Military Restricted Areas

1.5.1 Control Areas and Control Zones (civil or military), either wholly or in part, may be released to another ATS unit (civil or military). The airspace remains active and a clearance is required to enter.

1.5.2 The responsibility for a Military Restricted Area, either wholly or in part, may be transferred to a civil ATS unit. The released airspace remains active and a clearance or approval, as appropriate, is required to enter.

1.5.3 The service provided to aircraft within released airspace will be:

a. for Restricted Areas - in accordance with the established airspace classification depicted on *AIP MAP or in DAH* (i.e. the airspace classification when the PRD is not active).

b. For control areas or control zones - in accordance with the airspace classification for the airspace when it is active.

1.5.4 ATC will advise pilots of the level of service they will receive when granting approval or clearance to enter a released area from Class E or G airspace, or if the level of service will be in accordance with Class E or G within the released area.

1.6 Deactivation of Control Zones, Restricted or Danger Areas

1.6.1 The published cessation time of a control zone, Restricted or Danger Area may be amended:

a. without issue of a NOTAM provided the new cessation time is within one hour prior to the original published cessation time, or

b. with subsequent issue of a NOTAM when the deactivation is one hour or more prior to the original published cessation time.

1.6.2 Any amendments to the published cessation time of a control zone, Restricted or Danger Area will be notified to affected pilots in accordance with *GEN 3.3 Section 2.5*.

1.6.3 Non controlled aerodrome procedures apply to all military aerodromes when the CTR is deactivated.

2. PROVISION OF SEPARATION IN CONTROLLED AIRSPACE

2.1 General

2.1.1 In Class A airspace, IFR flights only are permitted. All flights are provided with an ATC service and are separated from each other.

2.1.2 In Class C airspace, IFR and VFR flights are permitted. All flights are provided with an ATC service and IFR flights are separated from other IFR, Special VFR, and VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights. Special VFR flights are separated from other Special VFR flights when visibility is less than VMC.

2.1.3 In Class D airspace, IFR and VFR flights are permitted and all flights are provided with an ATC service. IFR flights are separated from other IFR and Special VFR flights, and receive traffic information in respect of VFR flights. VFR flights receive traffic information in respect of all other flights. Special VFR flights are separated from other Special VFR flights when visibility is less than VMC.

2.1.4 In Class E airspace, IFR and VFR flights are permitted. IFR flights are provided with an ATC service, are separated from other IFR flights, and receive traffic information on VFR flights as far as is practicable. VFR flights receive a Surveillance Information Service (SIS) on request.

2.1.5 At controlled aerodromes, ATC provides runway separation to all aircraft.

2.1.6 Flight at the common vertical or lateral boundary between airspace classes will receive services in accordance with the airspace of lower alphabetical categorisation (where Class A is the highest and Class G is the lowest).

2.2 **Special Provisions**

2.2.1 Not withstanding the general provisions of *section 2.1,* the following also apply:

a. The separation of aircraft taxiing on the manoeuvring area (which does not include apron and parking areas) is a joint pilot and controller responsibility. The pilot must maintain separation while complying with clearances and instructions.

b. In the traffic circuit, pilots are required to position their aircraft in such a manner that, while complying with clearances and instructions from ATC, they maintain the necessary separation from other traffic.

c. Separation is not normally provided within a training area in controlled airspace.

d. Under certain conditions, the pilot of one aircraft may be given the responsibility for separation with other aircraft. In this circumstance:

(1) the pilot is also responsible for the provision of wake turbulence separation;

(2) the pilot must advise ATC when he/she is unable to maintain, or has lost, sight of the other aircraft;

(3) where an aircraft has been instructed to maintain own separation from an IFR aircraft, ATC will issue traffic information to the pilot of the IFR aircraft, including advice that responsibility for separation has been assigned to the other aircraft; and

(4) aircraft flying in formation will not be provided with separation with respect to other aircraft of the same formation, including for take-off and landing.

(5) aircraft flying as part of an in-company flight will not be provided with separation with respect to other aircraft of the same in-company flight whilst airborne. Runway separation will continue to be provided.

e. ATC will consider a formation of aircraft broken and will therefore process aircraft individually from the time the formation aircraft are:

(1) cleared to carry out touch-and-go landings;

(2) required to go around; or

(3) cleared to carry out individual activities.

Note: A group of civil aircraft conducting the same flight (e.g. an air safari), which require the aircraft to operate at separation distances greater than those specified for formation flights will be considered to be separate aircraft when applying separation.

3. CLASS G AIRSPACE

3.1 Flight Information Areas

3.1.1 Non-controlled airspace in the Brisbane FIR and Melbourne FIR is classified as Class G airspace.

3.1.2 North of 65° South, Class G airspace is divided into designated Flight Information Areas (FIAs) within which a Flight Information Service (FIS) and SAR alerting services are provided by an ATS unit.

3.1.3 On and north of 65° South, in Class G airspace, IFR and VFR flights are permitted. IFR flights receive traffic information and a flight information service. VFR flights receive a flight information service and may receive a surveillance information service if requested (ATC workload permitting).

3.1.4 South of 65° South, in Class G airspace, IFR and VFR flights are permitted and all flights receive a flight information service on request.

3.2 Broadcast Areas

3.2.1 Broadcast Areas are defined airspace volumes that form part of a Flight Information Area and have a discrete frequency (CTAF).

Note: The conditions described at paras 3.1.2 and 3.1.3 apply.

3.2.2 The vertical boundaries of a Broadcast Area are:

a. Surface to 5,000FT AMSL (default); or

b. Surface to the base of CTA if 8,500FT or less; or

c. Surface to a nominated level.

3.2.3 The lateral and vertical boundaries are defined in *AIP MAP*.

4. CLASSES OF AIRSPACE-SERVICES AND REQUIREMENTS

4.1 The following table summarises the services and requirements for the various classes of airspace used in Australian FIRs.

Class	Type of Flight	Separation Provided	Service Provided	Airspace Speed Limitation	Radio COM RQMNTS	SUBJ ATC CLR
A	IFR	All aircraft	ATC service	N/A	Continuous two way	Yes
	VFR not permitted					
C	IFR	IFR from IFR, IFR from VFR IFR from Special VFR	ATC service	N/A	Continuous two way	Yes
	VFR	VFR from IFR	1. ATC service for separation from IFR 2. VFR/VFR traffic INFO (and traffic avoidance advice on request).	250KT IAS below 10,000FT AMSL	Continuous two way	Yes
	Special VFR	Special VFR from Special VFR, when VIS does not meet VMC	ATC service		Continuous two way	Yes
D	IFR	IFR from IFR IFR from Special VFR	ATC service, traffic information about VFR flights.	200KT IAS at or below 2,500FT AAL within 4NM of the primary Class D aerodrome (Note 3) 250KT IAS - in the remaining Class D airspace	Continuous two way	Yes
	VFR	Nil	ATC service, traffic INFO on all other flights.		Continuous two way	Yes
	Special VFR	Special VFR from Special VFR when visibility is less than VMC	ATC service		Continuous two way	Yes

Class	Type of Flight	Separation Provided	Service Provided	Airspace Speed Limitation	Radio COM RQMNTS	SUBJ ATC CLR
E	IFR	IFR from IFR	ATC service and traffic info on VFR flights as far as is practicable	250KT IAS below 10,000FT AMSL.	Continuous two way	Yes
	VFR	Nil	FIS SIS - flight following O/R, (ATC workload permit)	250KT IAS below 10,000FT AMSL.	Continuous two way	No
G On & North of 65° South	IFR	Nil	FIS	250KT IAS below 10,000FT AMSL.	Continuous two way	No
	VFR	Nil	FIS SIS - flight following O/R, (ATC workload permit)	250KT IAS below 10,000FT AMSL.	VHF radio required for OPS above 5,000FT AMSL and at aerodromes where carriage and use of radio is required.	No
				250KT IAS below 10,000FT AMSL.	VHF radio required for OPS in reduced VMC.	No
G South of 65° South	IFR	Nil	FIS O/R	250KT IAS below 10,000FT AMSL.	Continuous two way	No
	VFR	Nil	FIS O/R	250KT IAS below 10,000FT AMSL.	Nil	No

Note 1: Pilots must comply with airspace speed limitation unless specifically cancelled by ATC.

Note 2: Speed limitations are not applicable to military aircraft, except as specified in ERSA.

Note 3: If traffic conditions permit, ATC may approve a pilot's request to exceed the 200KT speed limit to a maximum limit of 250KT unless the pilot informs ATC a higher minimum speed is required.

Note 4: VMC minima are detailed at ENR 1.2, Section 2.

5. AIRSPACE RESERVATION, PROHIBITED, RESTRICTED AND DANGER AREAS

5.1 Airspace Reservation

5.1.1 A designated airspace or portion thereof under the control of another authority may be reserved to allow the following:

a. flights of special military significance requiring the use of controlled airspace, which would be subject to unacceptable restrictions if normal operations applied;

b. civil flights requiring passage through a military airspace when weather conditions or other factors make flight on the normal air route inadvisable, or impossible, and when other routes are unavailable, or the use of such routes would impose severe economic penalties on the operation of the aircraft.

5.1.2 There are two types of airspace reservations: fixed defined areas and "mobile" (e.g. aerial refuelling, en route formation flights, etc). Such reservations are normally only applied during limited periods. A designated airspace or portion thereof under the control of a military ATC authority may also be reserved to confine particular activities. In such airspace, RAAF ATC shall be responsible for the provision of separation for transiting civil or military aircraft from areas reserved or restricted for current air defence operations.

5.2 General

5.2.1 Airspace in which a potential hazard to aircraft operations may exist, and all areas over which the operation of civil aircraft may be restricted are promulgated as follows:

a. **Prohibited Area.** Airspace within which the flight of aircraft is prohibited.

b. **Restricted Area.** Airspace within which the flight of aircraft is restricted in accordance with specified conditions.

c. **Danger Area.** Airspace within which activities dangerous to the flight of aircraft may exist at specified times.

5.2.2 These areas are promulgated in the *DAH* and are shown on *AIP aeronautical charts* by boundaries outlined in magenta and containing the identification of the area as a letter and a number.

The letters allocated are:

P = Prohibited area

R = Restricted area

D = Danger area, and the number identifies the area.

When used internationally, the identification of these areas is preceded by a FIR identifier as follows:

Brisbane	=	YB
Melbourne	=	YM

Details are shown in *ERSA* or NOTAM.

Prohibited, Restricted and Danger Area numbers in the 900 series are allocated for temporary special use airspace such as military exercises, air shows and special events.

These areas are promulgated by AIP SUP or NOTAM as Brisbane FIR (YBBB) or Melbourne FIR (YMMM) as appropriate for the location.

5.2.3 Unless otherwise specified, vertical limits are promulgated as AMSL when at or below the transition altitude, or as a flight level when above the transition altitude. The abbreviation “SFC” means the surface of the ground or water. “NOTAM” indicates that the vertical limits or hours of activation will be notified by *NOTAM*.

5.2.4 The promulgated vertical limits of prohibited and restricted areas include all the buffers necessary for the protection of aircraft operating outside these areas. Therefore, the promulgated levels may be used by aircraft avoiding the areas, except where the vertical limit abuts controlled airspace, in which case, a clearance is required.

5.3 Flight within PRD Areas

5.3.1 Flight within a prohibited area is not permitted in any circumstances.

5.3.2 Flight within active Restricted Areas is subject to the conditions published in *AIP (ERSA & DAH)* and *NOTAM.* To obtain access to a restricted area or airspace pilots must request approval from the Controlling Authority (see *ERSA PRD*). When an ATC service is available within that airspace, approval may be requested from ATC directly, in the same manner as a clearance request to enter controlled airspace.

Note: Clearances may be withheld when activities hazardous to the aircraft are taking place, or when those activities require absolute priority.

5.3.2.1 In order to assist with shared use of airspace, all restricted areas have been allocated an RA conditional status. This status will give an indication as to the likelihood of obtaining a clearance to fly through restricted airspace. *NOTAMs* may be issued to indicate changes to the RA conditional status; which should be checked prior to flight planning.

5.3.2.2 RA CONDITIONAL STATUS LEGEND:
Conditional Status RA1: Pilots may flight plan through the Restricted Area and under normal circumstances expect a clearance from ATC.

Conditional Status RA2: Pilots must not flight plan through the Restricted Area unless on a route specified in *ERSA GEN FPR* or under agreement with the Department of Defence, however a clearance from ATC is not assured. Other tracking may be offered through the Restricted Area on a tactical basis.

Conditional Status RA3: Pilots must not flight plan through the Restricted Area and clearances will not be available.

Note: In a declared emergency, every effort will be made to obtain approval to transit a Restricted Area, irrespective of its conditional status.

5.3.2.3 If the conditional status is uncertain, treat the airspace as conditional status RA3 and avoid the area.

5.3.3 Civil aircraft operating in military Restricted areas or airspace in which a military service is provided will receive a service equivalent to that of Class C airspace unless specified otherwise in *ERSA FAC*.

5.3.4 When compliance with an air traffic clearance requires flight:

a. from controlled airspace into an adjoining active restricted area or airspace, or

b. through an active restricted area or airspace into adjoining controlled airspace, or

c. through an active restricted area or airspace within controlled airspace,

the pilot in command may assume that ATC has obtained approval for the flight.

5.3.5 Approval for flight within an active Danger Area outside controlled airspace is not required. However it is the responsibility of the pilot in command to be aware of the dangerous activity and take appropriate precautions.

5.3.6 PRD areas may be activated or deactivated at short notice. Access to a Restricted area may be available if the activity for which it has been activated has ceased (early deactivation). It is a pilot responsibility to check current status with ATS.

6. LANES OF ENTRY

6.1 Lanes of entry are established to permit passage to and from specified Class D CTR without entering an adjacent Class C or military CTR. The vertical limits provide separation from overlying control or restricted areas.

6.1.1 When using these lanes, pilots must:

a. operate under the VFR;

b. conform with the general flight rules regarding terrain clearance, flight over populous areas, and low level restricted areas;

c. operate not higher than the altitude specified as the upper limit in the section being flown; and

d. keep to the right.

7. FLYING TRAINING AREAS IN CONTROLLED AIRSPACE

7.1 ATC may approve flying training activities within controlled airspace. Approval may be granted on a short-term hour-to-hour basis or, in some cases, on a more regular basis. The approval will be in the form of an airways clearance. ATC services will be provided in accordance with the classification of the airspace.

7.2 ATC will route IFR traffic clear of the areas except that, when training aircraft have been required to maintain a listening watch on the appropriate ATC frequency, ATC may reserve a level for transit of IFR traffic which provides vertical separation from non-controlled training movements.

8. AIR DISPLAY

An RPT or CHTR flight is not permitted to participate in an air display or carry out any low level operations at an aerodrome at which an air display is in progress except for a normal take-off or landing.

9. WAKE TURBULENCE SEPARATION STANDARDS

9.1 Categories

9.1.1 For the purpose of wake turbulence separation, aircraft are divided into the following weight categories:

a. SUPER (H) – A380 and AN225 aircraft;

b. HEAVY (H) – All other aircraft types of 136,000KG maximum take-off weight or more;

c. MEDIUM (M) – Aircraft types of less than 136,000KG maximum take-off weight but more than 7,000KG maximum take-off weight;

d. LIGHT (L) – Aircraft types of 7,000KG maximum take-off weight or less.

Note: B757 and H47 (Chinook) and H53 (Stallion) are categorised Heavy (H) when the following aircraft is categorised either Medium (M) or Light (L) and categorised Medium (M) when the preceding aircraft is categorised Heavy (H).

9.2 Application of Standards

9.2.1 In controlled airspace, unless the pilot has accepted responsibility for separation, ATC will apply wake turbulence separation to:

a. aircraft in the approach and departure phases of flight when both aircraft are using parallel runways separated by less than 760M; or

b. when an aircraft is operating directly behind another aircraft at the same level or less than 1,000 FT below.

Note: Directly behind means an aircraft is operating within 760M laterally of the track of the leading aircraft.

9.2.2 ATC applies the following time based wake turbulence separation minima between the relevant categories of aircraft:

Aircraft Categories		**Time Separation Minima**				
Leading Aircraft	Following Aircraft	ARRIVAL	DISPLACED LANDING THRESHOLD	OPPOSITE DIRECTION	DEPARTURE - Full Length	DEPARTURE - Intermediate (*Note*)
		MIN	MIN	MIN	MIN	MIN
SUPER	HEAVY MEDIUM LIGHT	3 3 4	3 3 3	3 3 3	2 3 3	4 4 4
HEAVY	MEDIUM LIGHT	2 3	2 2	2 2	2 2	3 3
MEDIUM (fixed wing with MTOW of 25,000 KG or more, and all MEDIUM helicopters)	LIGHT	3	2	2	2	3

** Note1. Intermediate standards will be applied when the following aircraft will depart from the same runway, or a parallel runway separated by less than 760M from a point more than 150M after the take-off commencement point of the preceding aircraft.*

Note 2. Distance standards cannot be used in lieu of time for intermediate departures.

D

9.2.3 ATC applies the following distance wake turbulence separation minima between the relevant categories of aircraft:

Aircraft Categories		**Distance Separation Minima**
Leading Aircraft	Following Aircraft	NM
SUPER	HEAVY MEDIUM LIGHT	6 7 8
HEAVY	HEAVY MEDIUM LIGHT	4 5 6

Aircraft Categories		**Distance Separation Minima**
Leading Aircraft	Following Aircraft	NM
MEDIUM (fixed wing with MTOW of 25,000KG or more, and all MEDIUM helicopters)	LIGHT	5

9.2.4 Where the required separation can be determined by distance using an aircraft report or ATS Surveillance System, ATC need not apply the time standard to an affected:

a. arriving aircraft

b. departing aircraft, unless it is departing from an intermediate point as described in *para 9.2.2*.

9.2.5 ATC is not required to apply wake turbulence separation in the following situations:

a. when a MEDIUM fixed-wing aircraft of less than 25,000KG MTOW precedes a LIGHT aircraft;

b. when an aircraft is landing behind another aircraft that is taking off on the same runway;

c. subject to *para 9.3*, if a pilot has initiated a waiver of the relevant departure wake turbulence separation minimum;

d. when a VFR aircraft is in flight and is:

(1) operating directly behind a preceding HEAVY or MEDIUM aircraft; or

(2) landing on the same runway as a preceding HEAVY or MEDIUM aircraft; or

(3) landing on a parallel runway separated by less than 760M from the runway of a preceding HEAVY or MEDIUM aircraft;

e. when an IFR aircraft is in flight and the pilot has:

(1) reported the preceding aircraft in sight; and

(2) accepted responsibility to follow, or maintain his or her own separation with, that aircraft.

Note: For paragraphs (d) and (e), the pilot in command of the aircraft is responsible for ensuring that the spacing from a preceding aircraft of a heavier wake turbulence category is acceptable. If it is determined that additional spacing is required, the flight crew may inform ATC accordingly, stating their requirements.

9.2.6 No specific separation is applied on account of wake turbulence between an aircraft landing behind an aircraft taking off on the same runway.

9.2.7 Appropriate wake turbulence separation standards will be applied when an aircraft taking off behind a landing heavier weight category aircraft is expected to become airborne before the touchdown point of the landing aircraft.

Note: Super, Heavy or Medium Wake Turbulence category aircraft may be operating at the base and near the boundaries of controlled airspace. Aircraft operating in Class G airspace in the vicinity of controlled airspace may be affected by wake turbulence from aircraft operating within controlled airspace.

9.2.8 For aircraft in the Super or Heavy wake turbulence categories, the word ‘SUPER’ or ‘HEAVY’ respectively must be included immediately after the aircraft callsign in the initial radiotelephony contact between such aircraft and each approach, departures, director, ground and tower controller.

9.3 Pilot Waivers

9.3.1 Pilots may, in VMC by day only, advise ATC that they wish the application of the departure standards to be waived. When a pilot so advises, this indicates to ATC that the pilot accepts total responsibility for providing his or her own wake turbulence separation.

Waiving of these separation standards is not permitted when the aircraft concerned will follow a Heavy or Super aircraft.

9.3.2 ATC is not permitted to ask pilots to accept waivers.

9.3.3 Since wake vortices are not visible, waivers against relevant separation standards should only be initiated after careful consideration of prevailing atmospheric conditions and the intended (or permissible) flight path relative to the leading aircraft. This is particularly important when the following aircraft is a Light aircraft.

10. REGULATION OF FLIGHT - ASSESSMENT OF PRIORITIES

10.1 Subject to the duty to facilitate and maintain the safe, orderly and expeditious flow of air traffic, ATC will apply priorities in the following order:

a. An aircraft in an emergency, including being subjected to unlawful interference, will be given priority in all circumstances.

b. A multi-engined aircraft which has suffered the loss of an engine and has not been subject to a SAR phase, or has not been considered under the provision of *sub-para a*. above, shall be granted priority for landing.

c. An aircraft which has suffered radio communications failure will be granted priority for landing.

d. An aircraft which has declared a Mercy flight.

e. An aircraft participating in a Search and Rescue (SAR), Medical (MEDEVAC), or Fire and Flood Relief (FFR) flights shall be granted priority as necessary.

f. An aircraft operating under police callsign “POLAIR RED” or “FEDPOL RED” engaged in operations where life is at risk.

g. An aircraft engaged in the personal transport of Heads of State or of Government, or other selected dignitaries on official visits to Australia, or the personal transport of the Governor-General or the Prime Minister.

h. State aircraft special requirements flights where clearance has been prearranged.

10.2 Subject to the priorities of *para 10.1*, an aircraft first able to use the manoeuvring area or desired airspace in the normal course of its operations will be given priority except:

a. an aircraft landing or taking off will be given priority over taxiing aircraft;

b. a landing aircraft will have priority over a departing aircraft if the latter cannot take off with prescribed separation standards;

c. for flights in Class C terminal control areas associated with Brisbane, Melbourne, Perth and Sydney, ATC will apply priorities in the following order;

(i) with equal priority, flights compliant with their ATFM requirements, flights exempt from ATFM measures and Medical Aircraft (HOSP) operations; and

(ii) flights not compliant with their ATFM requirements;

(iii) all other aircraft.

Note: Further information about ATFM procedures at Australian airports is available at ENR 1.9.

d. for flights in other Class C terminal control areas, ATC will apply priorities in the following order:

(i) with equal priority flights with a Calculated Off Blocks TIme (COBT), regular public transport operations, State aircraft (other than training flights) and Medical Aircraft (HOSP) operations; and

(ii) all other aircraft

e. RVSM-approved aircraft will be given priority for level requests between FL290 and FL410 inclusive over aircraft not RSVM-approved;

f. within ATS surveillance system coverage, identified aircraft may be given priority over non-identified aircraft;

g. inside military Restricted Areas and in terminal area or control zone surrounding a military aerodrome, priorities will be determined by the controlling authority published in DAH. Military aerodromes do not include Darwin or Townsville;

h. for training flights;

(i) training flights operating in the traffic pattern in general use will be given priority over other training flights desiring to operate in conflicting patterns for training purposes; and

(ii) when a training instrument approach is approved, priority will be given to that aircraft from the time it commences its final approach until the approach is completed.

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ENR 1.5 HOLDING, APPROACH AND DEPARTURE PROCEDURES

1. HOLDING AND INSTRUMENT APPROACH TO LAND (IAL) PROCEDURES

1.1 General

The provisions of this IAL section apply to aircraft operating under the IFR, unless otherwise approved by CASA.

1.2 Aircraft Performance Category

1.2.1 The following categories, based upon V_{at} (except for CAT H), determine landing minima for aircraft:

CAT: A speeds up to 90KT IAS.

B speeds from 91KT to 120KT IAS.

C speeds from 121KT to 140KT IAS.

D speeds from 141KT to 165KT IAS.

E speeds from 166KT to 210KT IAS.

H (helicopters) see *section 1.3*.

Note: V_{at} is the indicated airspeed at the threshold which is equal to the stalling speed V_{so} multiplied by 1.3 or the stalling speed V_{s1g} multiplied by 1.23. Both V_{so} and V_{s1g} apply to aircraft in the landing configuration at the maximum certificated landing weight. If both V_{so} and V_{s1g} are available for an aircraft, the higher resulting V_{at} must be used.

1.2.2 An aircraft must fit into and be operated in accordance with the requirements of only one category. An aircraft:

a. may not reduce category because of reduced operating weight, but

b. must increase category when actual handling speeds are in-excess of those for category (based on V_{at}) detailed at *section 1.16*.

1.2.3 Provided an aircraft can be operated within the limits of the handling speeds (detailed at *section 1.16*) for a lower category than the category determined by V_{at}, and subject to approval by CASA, an operator whose crew(s) operate under a *CAR 217* training and checking organisation may operate that aircraft type at the lower category. When such an approval is granted, all company operations of the aircraft type must be in accordance with the requirements of the revised category.

1.3 **Helicopters**

1.3.1 The following criteria apply to helicopter-specific instrument approach procedures and operations:

a. the stall speed method of calculating aircraft category does not apply to helicopters;

b. where helicopters are operated similarly to aeroplanes, they may be classified as CAT A;

c. procedures developed for the specific use of helicopters are:

(1) designated “CAT H”, and

(2) promulgated on separate charts; i.e. they are not included on charts containing procedures for other aircraft categories.

1.4 **Minimum Route Altitudes**

Except when complying with the requirements for a visual approach, when conforming to a published DME or GNSS Arrival Procedure, or when identified and assigned an altitude by ATC, an aircraft approaching an aerodrome must not descend below the LSALT or the MSA for the route segment being flown (see *para 2.2*) until it has arrived over the IAF or facility.

1.5 **Procedure Entry**

Having arrived over the IAF or facility, and except as provided for in *para 2.4*, further descent must be made in accordance with the entry and holding procedures to the specified altitude for commencing the approach and, subsequently, in accordance with the approved instrument approach procedure.

1.6 Meteorological Minima

Except in an emergency, an aircraft must not land or continue an approach below the approved DA, MDA or RA Height, as corrected for below-ISA temperature per *para 4.7.4*, at any aerodrome when any element constituting the meteorological minima is continuously less than that prescribed for that aerodrome and the particular operation (*CAR 257*).

1.7 Circling Approaches and Visual Circling

1.7.1 A circling approach is an instrument approach to the circling minima with the intent or requirement from the minima to visually manoeuvre the aircraft to align with the runway for a landing. Each circling situation is different because of variables such as runway layout, final approach track, wind velocity and meteorological conditions. Therefore, there can be no single procedure designed that will cater for the conduct of a circling approach in every situation.

1.7.2 **Restrictions on Visual Circling**

a. Where a prominent obstacle or obstacles within the circling area prevent visual circling the sector in which the obstacles are located may be eliminated from the visual circling area. Sectors which have been eliminated from the visual circling area are annotated ‘No Circling’.

b. Visual circling is prohibited in ‘no circling’ sectors by day in less than VMC and at night.

1.7.3 After initial visual contact, the basic assumption is that the runway environment (i.e. the runway threshold or approach lighting aids or other markings identifiable with the runway) will be kept in sight while at the MDA for circling (Reference: *ICAO Doc 8168*).

1.7.4 The visual circling procedure conducted at or above the circling MDA will provide protection from obstacles within the circling area (see *Note 1 (3) and Note 3*).

1.7.5 The information provided by spot heights on IAL charts must be treated with caution. Spot heights on IAL charts do not necessarily indicate the highest terrain, or all obstacles in the circling area. In addition, the charts may not cover all of the circling area. Before commencing an instrument approach, pilots should familiarise themselves with the location and altitude of obstacles in the circling area by studying an appropriate topographic map.

1.7.6 During visual circling, descent below the circling MDA may only occur when the pilot:

a. maintains the aircraft within the circling area; and

b. maintains a visibility, along the intended flight path, not less than the minimum specified on the chart for the procedure; and

c. maintains visual contact with the landing runway environment (i.e. the runway threshold or approach lighting or other markings identifiable with the runway); and either

d. by night or day, while complying with a., b. and c. and from a position within the circling area on the downwind, base or final leg of the landing traffic pattern at an altitude not less than the MDA, can complete a continuous descent to the landing threshold using rates of descent and flight manoeuvres which are normal for the aircraft type and, during this descent, maintains an obstacle clearance along the flight path not less than the minimum for the aircraft performance category until the aircraft is aligned with the landing runway; or

e. in daylight only, while complying with a., b. and c., maintains visual contact with obstacles along the intended flight path and an obstacle clearance not less than the minimum for the aircraft performance category until the aircraft is aligned with the landing runway.

Note 1: The concept is as follows:

(1) The pilot maintains visual contact with the landing runway while the aircraft is circled at MDA to a position within the traffic pattern that intercepts a normal downwind, base or final approach. If the MDA is above the downwind height, the pilot maintains MDA and downwind spacing until he/she reaches a position from which descent at normal approach rates to join base can be made (see Figure 1).

(2) When daylight exists and obstacles can be seen, the pilot has the option of descending from MDA from any position within the circling area while maintaining an obstacle clearance not less than that required for the aircraft performance category.

(3) Once the pilot initiates descent below circling MDA, the obstacle protection offered by visual circling at the MDA ends and he/she is responsible for ensuring the required clearance from obstacles is maintained visually.

Note 2. The pilot should maintain the maximum practical obstacle clearance. The minimum obstacle clearance requirements are:

Categories A and B - 300FT;

Categories C and D - 400FT; and

Category E - 500FT.

Note 3. The circling area is determined by drawing an arc centred on the threshold of each usable runway and joining these arcs by tangents. The radii are1.68NM for Category A, 2.66NM for Category B, 4.20NM for Category C, 5.28NM for Category D and 6.94NM for Category E. Runways less than 1,000M long are not considered usable for Categories C, D and E.

1.68NM = 3,111M

2.66NM = 4,926M

4.20NM = 7,778M

5.28NM = 9,779M

6.94NM = 12,853M.

1.8 Visual Manoeuvring (non-Circling) Subsequent to Non-Precision Approaches (NPA) and Approaches with Vertical Guidance (APV)

1.8.1 Straight-in NPAs and APVs do not normally require visual circling. In those circumstances where the NPA or APV does not serve the landing runway, the provisions of *para 1.7* apply.

1.8.2 **Descent Below the Straight-in MDA.** Descent below the straight-in MDA or continuation of the approach below the DA during APVs, may only occur when:

- visual reference can be maintained;
- all elements of the meteorological minima are equal to or greater than those published for the aircraft performance category (see *para 5.1.1*); and
- the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal flight manoeuvres that will allow touchdown to occur within the touchdown zone of the runway of intended landing.

1.8.3 **NPA and APV Alignment.** APVs are aligned with the runway centreline. Straight-in NPAs may be aligned with the runway centreline or may be offset by up to 15°(Category C & D) or 30° (Category A & B) (see *Note 1*).

1.8.4 **Alignment with the Runway Centreline.** Manoeuvring to align the aircraft with the runway centreline can be undertaken when:

- within the circling area,
- visual reference can be maintained,
- continuously in sight of ground or water.

Note 1: Procedures with offset angles greater than 5° are designed such that aircraft cross the runway centreline no closer than 1,400M to the threshold.

For offset angles equal to or less than 5°, the final approach track is designed to be within 150 metres of the runway centreline at 1,400M. Some older procedures may use 900M in place of 1,400M.

Note 2: For the purpose of this section 'visual reference' means the runway threshold, or approach lights or other markings identifiable with the landing runway clearly visible to the pilot and a flight visibility not less than that specified for the procedure.

1.9 Visual Approach Area - Helicopter

1.9.1 Helicopter GNSS instrument approach procedures may include a Visual Approach Area–Helicopter (VAA–H). These procedures are annotated in the minima box with the term 'VAA'. The VAA-H extends from the Missed Approach Waypoint (MAWP) to the Helicopter Landing Site (HLS). Obstacle clearance at MDA is assured within a VAA–H.

1.9.2 The VAA–H comprises a 1NM wide corridor centred on the track from the MAWP to the HLS, plus the area beyond the HLS contained within a 0.5NM radius centred on the HLS.

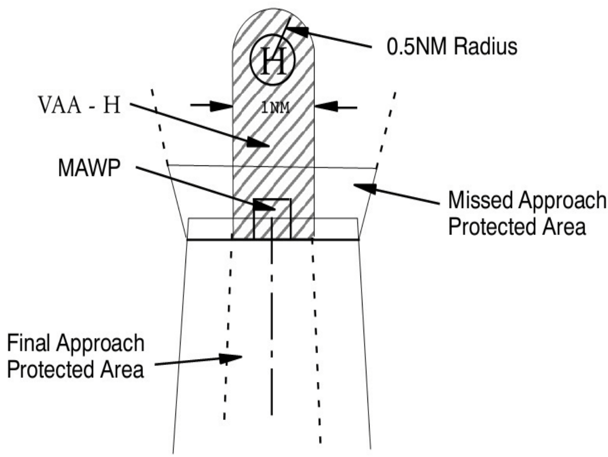


Figure 1.1 Visual Approach Area - Helicopter

1.9.3 Flight within a VAA–H is a visual flight manoeuvre. After visual contact is established, and after passing the MAWP, the helicopter is manoeuvred within the VAA–H, at an altitude not below the MDA, utilising key lead-in points until the HLS is sighted.

1.9.4 Descent below MDA may only occur when the pilot:

a. maintains the helicopter within the VAA–H; and

b. maintains visibility along the intended flight path:

(1) by day, not less than that specified for helicopter VMC, and

(2) at night, not less than the published minimum visibility for the procedure; and

c. maintains visual contact with key lead-in points (i.e. lighting or other prominent identifiable features) or the HLS; and

d. while complying with a, b, and c, intercepts a normal approach path to the HLS for the particular helicopter and a landing is assured.

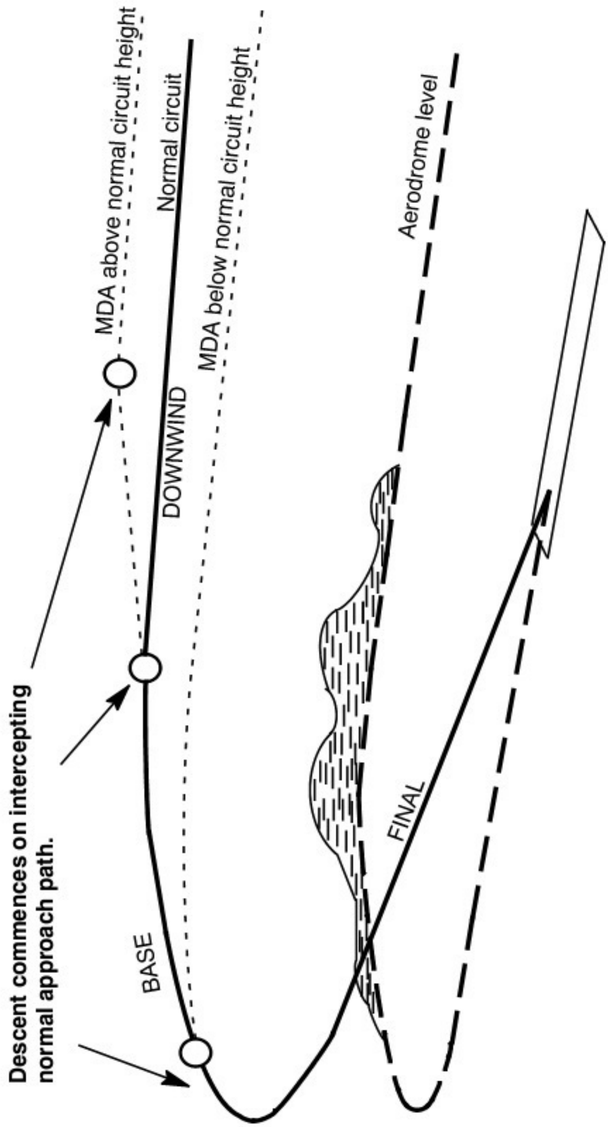


Figure 1: Visual Circling at Night

1.10 Missed Approach - Standard Procedures

1.10.1 A missed approach must be executed if:

a. during the final segment of an instrument approach, the aircraft is not maintained within the applicable navigation tolerance for the aid in use; or

b. during an instrument approach and below MSA (as specified on the IAL chart) the performance of the radio aid becomes suspect, or the radio aid fails; or

c. visual reference is not established at or before reaching the MAPT or DA/RA Height from which the missed approach procedure commences; or

d. a landing cannot be effected from a runway approach, unless a circling approach can be conducted in weather conditions equal to or better than those specified for circling; or

e. visual reference is lost while circling to land from an instrument approach.

Note 1: For the purpose of this paragraph "visual reference" means the runway threshold, or approach lights or other markings identifiable with the landing runway clearly visible to the pilot, and either:

a. for circling approaches, clear of cloud, in sight of the ground or water and with a flight visibility not less than the minimum specified for circling; or

b. for runway approaches, a flight visibility not less than that specified for the procedure.

Note 2: In IAL procedures, the missed approach is designed to provide a minimum obstacle clearance of 100FT to an aircraft climbing along the specified missed approach path at a gradient of 2.5% (152FT/NM) from the MAPT or DA/RA Height from which the missed approach procedure commences. If this missed approach climb gradient cannot be achieved the DA, MDA or RA Height should be increased, or other action taken to achieve the required obstacle clearance along the specified missed approach flight path.

1.10.2 In executing a missed approach, pilots must follow the missed approach procedure specified for the instrument approach flown. In the event that a missed approach is initiated prior to arriving at the MAPT, pilots must fly the aircraft to the MAPT and then follow the missed approach procedure. The MAPT in a procedure may be:

a. the point of intersection of an electronic glide path with the applicable DA; or

b. a navigation facility; or

c. a fix; or

d. a specified distance from the Final Approach Fix (FAF).

1.10.3 When a missed approach is required from visual circling, the expectation is that the pilot will make an initial climbing turn toward the landing runway and overhead the aerodrome where the pilot will establish the aircraft climbing on the missed approach track. In as much as the circling manoeuvre may be accomplished in more than one direction, different patterns will be required to establish the aircraft on the prescribed missed approach course depending on its position at the time visual reference is lost.

1.11 Missed Approach Tracking

1.11.1 A missed approach procedure may, or may not, specify lateral guidance. In either situation the expectations of the pilot will vary as follows depending whether the procedure is based on a radio navaid or GNSS.

a. When lateral guidance is specified with reference to a radio navaid (i.e. a VOR radial, an NDB bearing) the expectation is that the pilot will intercept the nominated track. Where an intercept is required it will be both stated in the missed approach procedure's text and shown in the plan view on the procedure plate. The text will take the form of: *"At the NDB (or VOR), Turn Left (or Right) to intercept xxx° (ZZ NDB or VOR). Climb to..."*

b. When lateral guidance is specified based on GNSS the expectation of the pilot will take one of two forms:

- For a straight missed approach or a turn at the MAPt, the pilot is expected to follow the GNSS navigation commands to the next waypoint. The text will take the form of: *'Turn Left (or Right), Track DCT XXXXX. Climb to...'*
- For a turn after the MAPt where there is not a subsequent waypoint the pilot is expected to make-good the nominated track on the chart using the GNSS for navigation. The text will take the form of: *'Turn Left (or Right), Track xxx°. Climb to...'*

c. When the instrument procedure is based on a radio navaid but the missed approach does not specify lateral guidance the expectation is that the pilot will use DR to achieve the nominated track. Allowance for wind must be made to make-good this nominated track. The radio navaid may be used to supplement track keeping during the missed approach when it is a straight continuation of the final track, however guidance is not mandatory. The missed approach procedure's text will take the form of: *'Turn Left (or Right), Track xxx°. Climb to...'*

1.12 **Missed Approach Requirements - GNSS**

1.12.1 If a loss of RAIM or RAIM warning is indicated at any time after passing the Initial Approach Fix, the pilot must immediately carry out a missed approach in accordance with published procedures.

1.12.2 Provided the RAIM warning ceases when the missed approach is selected on the GNSS equipment, it may be used for missed approach guidance.

1.12.3 Should the RAIM warning remain when the missed approach is selected, or should there be any doubt about the accuracy of the GNSS, then an alternative means of guidance or dead reckoning must be used to fly the missed approach.

1.13 **Missed Approach - Helicopter Procedures**

1.13.1 Pilots flying a helicopter instrument approach procedure, or flying visually within a VAA–H, must execute a missed approach if:

a. during the instrument approach and below MSA (as specified on the IAL chart) the performance of the navigation aid becomes suspect, or the navigation aid fails; or

b. visual reference is not established at or before reaching the MAWP from which the published missed approach procedure commences; or

c. visual reference is lost within the VAA–H; or

d. a landing at the HLS is not assured.

Note 1: For the purpose of this paragraph "visual reference" means:

a. the key lead-in points or HLS are clearly visible to the pilot; and

b. clear of cloud, in sight of ground or water and with a flight visibility:

(1) by day, not less than that specified for Helicopter VMC, and

(2) at night, not less than the published minimum visibility for the procedure.

Note 2: The missed approach is designed to provide a minimum obstacle clearance of 100FT to a helicopter climbing at a gradient of 4.2% (255FT/NM) from the MDA at, or before, the MAWP or from any point within the VAA–H, to the Missed Approach Turning Waypoint (MATWP) or Missed Approach Holding Waypoint (MAHWP), as applicable. If this missed approach climb gradient cannot be achieved, the MDA should be increased, or other action taken, to achieve the required obstacle clearance along the missed approach flight path.

1.13.2 If executing a missed approach from within the VAA–H of a helicopter GNSS approach, pilots must immediately track towards the MATWP or the MAHWP, as required by the particular procedure.

1.14 Visual Segments

When an instrument approach procedure specifies a visual segment from the point where the MDA is reached to the circling area of the aerodrome, a missed approach shall be executed unless the visual segment can be flown clear of cloud and in sight of the ground or water in accordance with the altitude and visibility specified for circling.

1.15 **Visual Approaches**

Subject to the requirements of *paras 1.7, 1.10 and 1.14*, the pilot need not commence or may discontinue the approved instrument approach procedure to that aerodrome when:

a. **By Day.** Within 30NM of that aerodrome at an altitude not below the LSALT/MSA for the route segment, the appropriate step of the DME or GNSS Arrival Procedure, or the MDA for the procedure being flown, the aircraft is established;

(1) clear of cloud;

(2) in sight of ground or water;

(3) with a flight visibility not less than 5,000M or, in the case of a helicopter, is able to proceed under helicopter VMC, or the aerodrome is in sight; and

(4) subsequently can maintain (1), (2) and (3) at an altitude not less than the minimum prescribed for VFR flight (*CAR 157*), to within the circling area or, in the case of a helicopter, can subsequently maintain helicopter VMC to the HLS.

b. **By Night.** At an altitude not below the LSALT/MSA for the route segment, the appropriate step of the DME or GNSS Arrival Procedure, or the MDA for the procedure being flown, the aircraft is established:

(1) clear of cloud;

(2) in sight of ground or water;

(3) with a flight visibility not less than 5,000M; and

(4) within the circling area or VAA–H, as applicable; or

(5) within 5NM (7NM for a runway equipped with an ILS) of that aerodrome aligned with the runway centreline and established not below “on slope” on the T-VASIS or PAPI; or

(6) within 10NM (14NM for Runways 16L and 34L at Sydney) of that aerodrome, established not below the ILS glide path with less than full scale azimuth deflection.

Note: Reference to circling area in this section includes the circling area for the category of aircraft or a higher category where the limitations of the higher category are complied with.

1.16 **Handling Speeds**

1.16.1 The handling speeds for aircraft categories during IAL procedures are as follows:

SPEEDS FOR PROCEDURE IN KNOTS IAS					
ACFT CAT	**V_{at}**	**Range of Speeds for Initial and Intermediate Approach**	**Range of Final Approach Speeds**	**Max Speeds for Visual Manoeuvring (Circling)**	**Max Speeds for Missed Approach**
A	< 91	90 – 150 (110*)	70 – 100	100	110
B	91 – 120	120 – 180 (140*)	85 – 130	135	150
C	121 – 140	160 – 240	115 –160	180	240
D	141 – 165	185 – 250	130 – 185	205	265
E	166 – 210	185 – 250	155 – 230	240	275
H	N/A	70 – 120	60 – 90	N/A	90
* Max speed for reversal procedures					

Table 1.1

Note 1: On reversal procedures (see section 2.7) for which a FAF is not published, final approach speed should be obtained before descending on the inbound track.

Note 2: Speed reduction below the initial segment speed range is permitted to enable the final approach speed to be achieved prior to the commencement of the final segment.

1.17 **Speed Restrictions**

1.17.1 Where speeds are restricted to values less than the maximums shown in *Table 1.1* above, the restriction and applicable segment will be identified on the approach chart.

1.17.2 The following may amend the ATC APCH speed depicted on a STAR or IAL chart without approval or notification to ATC:

a. Aircraft complying with IAL procedure handling speeds;

b. Performance Category B aircraft may fly at 145KT-160KT at 5NM from THR; or

c. Performance Category A and H aircraft may fly a lower speed than required.

1.18 **Obstacle Clearance Altitude (OCA)**

1.18.1 Obstacle clearance altitude is:

a. in a precision approach procedure, the lowest altitude at which a missed approach must be initiated to ensure compliance with the appropriate obstacle clearance criteria; or

b. in a non-precision runway approach procedure, the lowest altitude below which the aircraft can not descend without infringing the appropriate obstacle clearance criteria; or

c. in a visual (circling) procedure, the lowest altitude above the aerodrome elevation in accordance with obstacle clearance criteria.

1.19 **Aerodrome Operating Minima (AOM)**

1.19.1 Landing minima are published on Australian approach charts as MDA/H or DA/H. Obstacle Clearance Altitude/Height is not published. Landing minima are the basis for determining AOM.

1.19.2 Operators must establish AOM for each aerodrome to be used for operations. After consideration of the factors listed below, operators may determine that their AOM should be higher than the published landing minima:

a. The type, performance and handling characteristics of the aeroplane.

b. The composition, experience and competence of the flight crew.

c. The means used to determine and report meteorological conditions.

1.19.3 In any event, all DA must be adjusted to determine an AOM which accounts for aircraft pressure error. Operators may apply aircraft Pressure Error Correction (PEC) or, alternatively, add at least 50FT to the published DA. Compensation for aircraft pressure error is not required when determining AOM for non-precision approaches.

1.20 **Descent Gradients**

1.20.1 Procedures are designed with the following descent gradients:

SEGMENT	GRADIENT	
	NORMAL	**MAXIMUM**
Arrival	As required	As required
Initial	4%	8%
Intermediate	Level	5%
Final: non-precision	5.2%	6.5%
precision	3°	Not applicable

Table 1.2

Note 1: The chart will indicate when other than a normal gradient is used in the final segment.

Note 2: For procedures published with a distance/altitude scale, a 3° glideslope is used in calculating the descent data.

1.20.2 Aircraft may commence a segment in excess of the specified commencement altitude provided that any upper altitude limitation is observed. However, rate of descent after the FAF should not normally exceed 1,000FT per minute.

1.21 **Descent**

1.21.1 For a straight approach (no reversal procedure), the aircraft must:

a. for a radio navaid-based approach, cross the fix or facility, or

b. for an area navigation-based approach, pass the waypoint, and when established on the specified track, descend to not below the specified altitude.

1.21.2 For an approach which incorporates a reversal procedure, if an outbound descent is specified, the descent to the specified altitude may be commenced after the aircraft has crossed the fix or facility and is established on the specified track or has turned to a heading to intercept the specified outbound track. The reversal procedure must be completed, again descending to any lower altitude specified. Further descent, after the reversal procedure, must not be started until established on the inbound track. For approaches without a FAF, the final segment commences at the completion of the reversal procedure.

Note: "Established" means being within half full scale deflection for the ILS, VOR and GNSS, within ±5° of the required bearing for the NDB, or within ±2NM of the DME arc.

1.22 **Wind Effect**

1.22.1 Allowance should be made in heading and timing to compensate for the effects of wind.Full use should be made of indications available from the aid and estimated or known winds.

1.23 **Bank Angle**

1.23.1 Procedures are based on a bank angle of 25°, or a bank angle which will produce a Rate One turn, whichever is less.

2. APPROACH PROCEDURES

2.1 **Use of Navigation Aids**

2.1.1 Instrument approach procedures are based on specific navigation aids, with the applicable navigation tolerances associated with the aids being used in the development of the procedure's obstacle protection surfaces. The navigation aid, or aids, upon which the procedure is based is/are identified on each instrument approach chart. Only the navigation aid, or aids, included in the chart title or identified on the instrument approach chart as suitable may be used to fly the procedure. Use of a non-specified aid (e.g. another DME located on the aerodrome) is prohibited as it may jeopardise the integrity of the instrument approach procedure.

2.2 **Minimum Sector Altitude**

2.2.1 25NM and 10NM MSAs provide 1,000FT obstacle clearance. An aircraft within the applicable Sector MSA and within 25NM or 10NM of the nominated significant point, the ARP or the HRP may use the applicable MSA, and deviation from the track being flown is permitted to facilitate entry to the instrument approach. In instances where the 25NM MSA has been divided into sectors, and the appropriate 25NM Sector MSA is lower than the 10NM MSA, then the 25NM Sector MSA may be used for tracking to the nominated significant point, ARP or HRP provided aircraft tracking can be maintained within the sector.

2.3 **Approach Design Concept**

2.3.1 **Definitions.** "Segment Minimum Safe Altitude" and "Procedure Altitude" are defined at *GEN 2.2 - Definitions and Abbreviations.*

2.3.2 Approach procedures are designed to facilitate descent from a Procedure Altitude to an altitude from which either a straight-in landing or a circling procedure can be conducted. Approach procedures are classified as PA, APV or NPA. NPA fall into two categories: those with distance measuring information (e.g. VOR/DME, LOC/DME, GNSS) and those without (e.g. NDB and VOR).

2.3.3 **Vertical Profile - NPA <u>with</u> Distance Measuring.** NPAs with distance measurement are designed to provide a Constant Descent Final Approach (CDFA) path from the procedure altitude to a point 50FT above the threshold (or to the circling altitude for circling-only procedures). The CDFA path is shown on the profile diagram with the descent angle annotated in degrees and an altitude/distance scale. At each fix on approach, an advisory crossing altitude is shown on the profile diagram to assist in maintaining the descent path.

Each segment of an NPA also specifies a Segment Minimum Safe Altitude identified by shading on the profile diagram. In conducting a CDFA, the pilot should follow the descent profile but must always ensure that the aircraft remains at or above each Segment Minimum Safe Altitude. Descent below the CDFA profile to the Segment Minimum Safe Altitude (sometimes called “dive and drive”) is permitted at pilot’s discretion, but is not recommended.

2.3.4 **NPA as a 2D or 3D operation.** An NPA procedure flown using the charted altitude/distance scale to determine the aircraft’s rate of descent is considered a 2D instrument approach operation. Where the advisory vertical guidance is calculated and provided by onboard navigation equipment, the approach can be flown as a 3D instrument approach operation. Advisory vertical guidance is generated by aircraft navigation systems to assist pilots in managing vertical navigation but provides no assurance of compliance with the descent limitations specified for the NPA procedure. Accordingly, it is vital that pilots conform with Segment Minimum Safe Altitude and MDA requirements regardless of any advisory vertical guidance information provided by the aircraft’s system. NPA procedures using advisory vertical guidance will not be charted as VNAV capable.

When flying an NPA as a 3D operation (e.g. CDFA), pilots should initiate any missed approach at an altitude above the MDA to ensure the aircraft does not descend below the published MDA.

2.3.5 **Vertical Profile - NPA Without Distance Measuring.** As these types of procedures are time based, a 3° profile cannot be published. Accordingly, a Procedure Altitude will be published to establish the top of descent at the beginning of the inbound leg. This altitude will provide the necessary obstacle clearance in addition to keeping the outbound and inbound rates of descent within the PANS-OPS limits.

2.4 Procedure Entry

2.4.1 An aircraft which is not required to hold or to lose height in a holding pattern may commence the approach without entering the holding pattern if:

a. in controlled airspace, ATC has cleared the aircraft for the approach;

b. in any airspace, for procedures using navaids:

(1) the reversal procedure entry requirements of *para 2.7* are satisfied; or

(2) the DME arc entry requirements of *para 2.8* are satisfied; or

(3) the en route track to the procedure's commencement fix or facility is within 30° either side of the first track of the procedure.

c. for procedures using GNSS:

(1) in any airspace, the aircraft is tracking to an initial approach waypoint from within the capture region (see *Figure 2.1 and Figure 2.2)* for that waypoint; or

(2) in controlled airspace, the aircraft is being vectored to intercept the initial approach segment or is tracking direct to the intermediate fix.

Note to c.(1): The first track of a GNSS procedure must be joined using the tracking guidance provided by the GNSS receiver.

Note to c.(2): "direct to" clearances may be requested to the intermediate fix (IF) provided that the resultant track change at the IF does not exceed 45°.

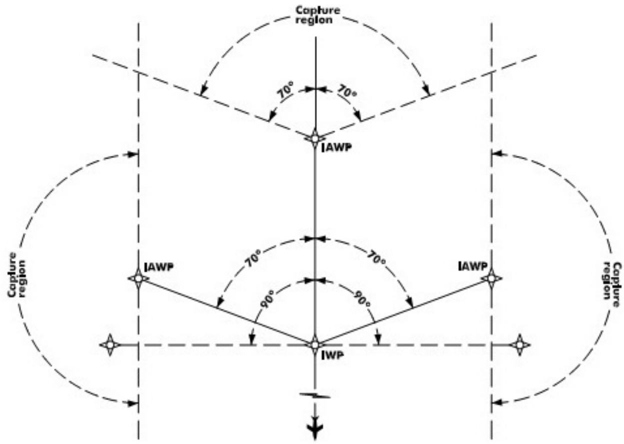


Figure 2.1 - RNAV GNSS (or RNP APCH) Approach Capture Regions (Three Initial Approach Waypoints)

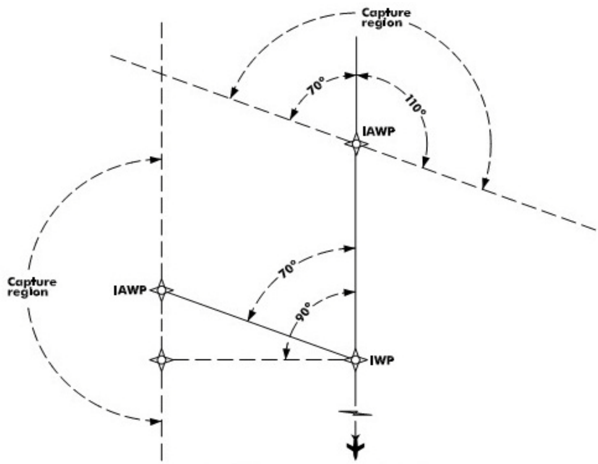


Figure 2.2 - RNAV GNSS (or RNP APCH) Capture Regions (Two Initial Approach Waypoints)

2.5 **Approach Segments and Fixes**

2.5.1 Fixes associated with segments occur at the beginning of their segment.The initial, final and missed approach fixes are shown. In addition, an area for circling the aerodrome in visual conditions is considered.

2.5.2 **Segment Parameters.**Segment parameters are defined in *ICAO PANS OPS.* Parameters significant to flight handling are as follows:

SEGMENT	PARAMETER	VALUE/COMMENT
Arrival	**As for en route flight**	**Nil**
Initial	Descent Gradient and Rate	See *para 1.20*
Intermediate	Bank Angle	See *para 1.23*
Final	Speed Navigation Aid Tracking	See *Table 1.1* See *para 1.21*
Missed Approach	Nominal Path Gradient	2.5%
	Average Achieved Bank Angle	15°
	Speed	See *Table 1.1*

Table 2.1

2.6 **Missed Approach Procedure**

2.6.1 The MAPT in a procedure may be:

a. the point of intersection of an electronic glide path with the applicable DA/RA Height; or

b. a navigational facility; or

c. a fix; or

d. a specified distance from the FAF, or

e. a waypoint.

Note: If the MAPT is defined by distance, a distance/ groundspeed/time table will be provided to enable pilots to establish the MAPT by DR from the FAF.

2.6.2 If on reaching the MAPT, the required visual reference is not established, the pilot must immediately initiate the published missed approach procedure or, where applicable, comply with alternative ATC instructions. The phrase ‘or as directed by ATC’ is included in published missed approach instructions for applicable instrument approach procedures.

2.6.3 A published missed approach procedure must not be flown unless commenced at the MAPT. If a missed approach climb is initiated before the MAPT, the aircraft must track to the MAPT before commencing the missed approach procedure.

2.7 **Reversal Procedures**

2.7.1 **General.** Reversal procedures are used to establish the aircraft inbound on an intermediate or final approach track at the desired altitude. A reversal procedure consists of an outbound track followed by a turning manoeuvre in order to reverse direction onto the inbound track. The procedure can be a procedure turn or a base turn

2.7.2 **Types.** Reversal procedures are illustrated at *Figure 2.3* and described below:

a. **Procedure Turn** (45°/180°), consisting of a specified outbound track and timing from the facility or fix, a 45° turn away from the outbound track for 1 minute from the start of turn for categories A and B aircraft (1 minute 15 seconds from the start of turn for categories C, D and E aircraft), followed by a 180° turn in the opposite direction to intercept the inbound track [see *Figure 2.3* (a)]. The 45°/180° procedure turn is an alternative to the 80°/260° procedure turn [paragraph (b) below] unless specifically excluded.

Note: Some instrument approach procedures require a procedure turn after passing over a navigation aid or fix. Where this requirement exists, the turn must be initiated immediately after passing over the navigation aid or fix.

b. **Procedure Turn** (80°/260°), consisting of a specified outbound track and timing from the facility or fix, an 80° turn away from the outbound track, followed by a turn of 260° in the opposite direction to intercept the inbound track [see *Figure 2.3* (b)].The 80°/260° procedure turn is an alternative to the 45°/180° procedure turn unless specifically excluded.

Note: Some instrument approach procedures require a procedure turn after passing over a navigation aid or fix. Where this requirement exists, the turn must be initiated immediately after passing over the navigation aid or fix

c. **Base Turn**, consisting of a specified outbound track and timing or DME distance from a facility, followed by a turn to intercept the inbound track (see *Figure 2.3* (c)). The outbound track and/or time may be different for differing aircraft performance categories.

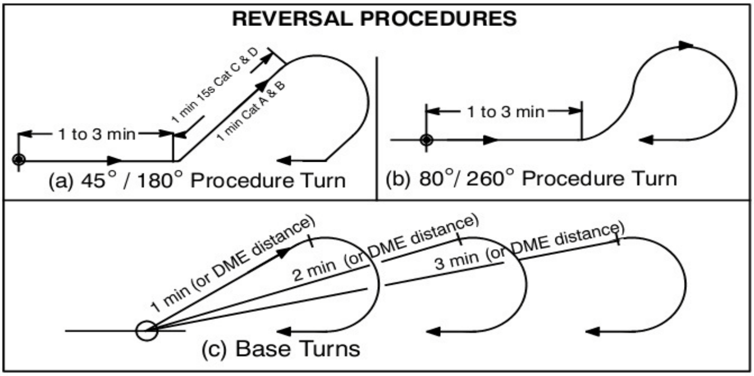


Figure 2.3

2.7.3 **Entry.** Reversal procedures must be entered from a track within ±30° of the outbound track of the reversal procedure (see Figure 2.4). However, for base turns, where the ±30° direct entry sector does not include the reciprocal of the inbound track, the entry sector is expanded to include it (see *Figure 2.5*). Where entry is required from tracks outside these limits, manoeuvring to establish the aircraft onto the outbound track must be in accordance with the entry procedures associated with the holding pattern

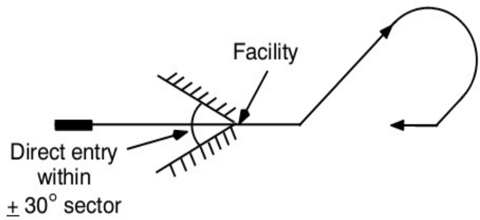


Figure 2.4 - Direct Entry to Procedure Turn

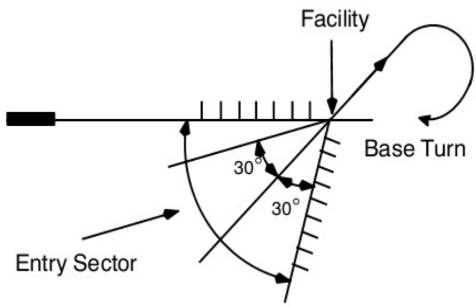


Figure 2.5 - Direct Entry to Base Turn

2.8 **DME Arcs**

2.8.1 DME arcs must be joined at or before an IAF and at an altitude not below the relevant MSA or the appropriate sector DME Arrival step.

3. HOLDING PROCEDURES

3.1 **General**

3.1.1 When holding is required in a specified pattern the procedures set out in this section must be used.

3.1.2 Shape and terminology associated with a standard holding pattern are given in *Figure 3.1*.

3.1.3 Right turns holding patterns are standard holding patterns and must be flown unless the AIP chart depicts, or ATC directs, otherwise.

3.1.4 Some area navigation systems are unable to fly non-area navigation holding patterns with strict compliance with the *PANS-OPS, Volume II,* assumptions. These systems may not be used operationally unless the operator has obtained approval in writing that CASA is satisfied that the area navigation system commands will contain the aircraft within the basic holding area defined by *PANS-OPS, Volume II*, for the environmental conditions assumed by those criteria. Where approval has been given, the pilot must verify over flight of the stipulated fixes by means of the reference facility.

3.2 **Holding in controlled airspace**

3.2.1 Pilots instructed to hold by ATC must hold at the designated location until further cleared.

3.2.2 ATC will normally assign aircraft estimated to arrive first over a holding fix, or first able to commence an approach, the lowest available level for assignment.

3.2.3 Where a delay of six minutes or more is expected, ATC will advise an expected approach time or expected landing time.

3.2.4 When operationally necessary, a pilot holding must advise ATC of the latest divert time.

3.2.5 When an aircraft is holding because weather conditions are worse than the prescribed landing minima, ATC will nominate scheduled reporting times, normally at 15 minute intervals.

3.2.6 At the time or position advised, the pilot must depart from the hold. A pilot should leave the holding fix on time, or up to one (1) minute ahead of time, and unless identified, report leaving the holding fix.

3.3 **Limitations**

3.3.1 Unless otherwise specified, holding procedures are subject to the following limitations:

a. **Speed.** Indicated speed must not exceed

(1) up to and including FL140

– 230KT, or

– 170KT for holding where the approach is limited to Cat A and B aircraft only;

(2) above FL140 up to and including FL200, 240KT; and

(3) above FL200, 265KT.

Note: Above the highest MSA in turbulent conditions, speeds may be increased to the lesser of 280KT or M0.8 subject to ATC approval in CTA.

b. **Outbound timing** begins abeam the fix or on attaining the outbound heading, whichever comes later.

c. **Time/Distance outbound.** The outbound leg must be no longer than:

   (1) up to and including FL 140 – 1 minute or the time or distance limit specified on the chart;

   (2) above FL 140 – 1.5 minutes or the time or distance limit specified on the chart.

d. **Turns.** All turns in nil wind should be at a bank angle of 25° or Rate One, whichever requires the lesser bank.

e. **Wind allowance.** Allowance should be made in heading and timing to compensate for the effects of wind to ensure the inbound track is regained before passing the holding fix inbound. Full use should be made of indications available from the aid and estimated or known winds.

f. **Exiting.** For ATC traffic management, jet aircraft in CTA must leave an en route holding pattern at 250KT IAS, unless otherwise published or advised by ATC. Pilots may request a variation to this requirement.

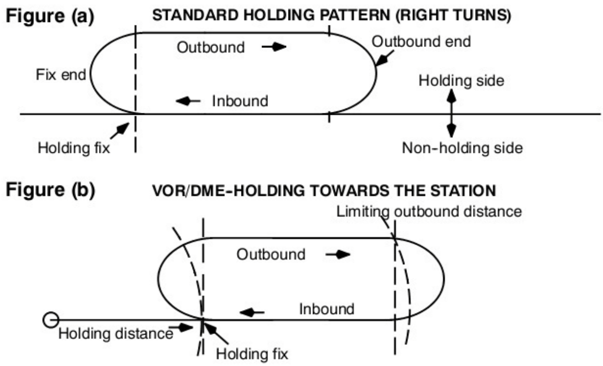


Figure 3.1 - Shape and Terminology Associated With Right Turn Holding Patterns.

3.4 Entry Into the Holding Pattern

3.4.1 The entry into the holding pattern must be according to heading in relation to the three entry sectors shown in *Figure 3.2 a and b,* recognising a zone of flexibility of 5° on either side of the sector boundaries. For holding on a VOR intersection, the entry track is limited to the radials forming the intersection. For holding on a VOR/DME fix the entry track is limited to either the VOR radial, DME arc or alternatively along the entry radial to a VOR/DME fix at the end of the outbound leg, as published.

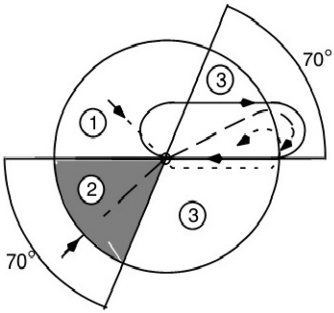


Figure 3.2 a Right Turn Holding Procedure

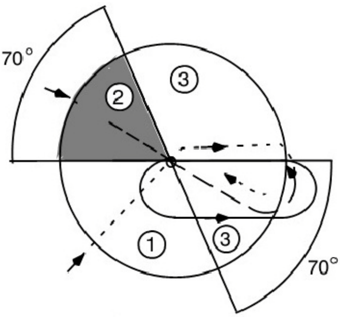


Figure 3.2 b Left Turn Holding Procedure

3.4.2 **Entry from Sector 1 (Parallel entry):**

a. On reaching the holding fix, the aircraft is turned onto an outbound heading (to track parallel with the inbound track) for the appropriate period of time (taken from over or abeam the holding fix whichever is later), or until reaching the limiting DME distance if earlier; then

b. the aircraft is turned onto the holding side to intercept the inbound track or to return to the fix; and then

c. on the second arrival over the holding fix, the aircraft is turned to follow the holding pattern.

3.4.3 **Entry from Sector 2 (Offset entry):**

a. On reaching the holding fix, the aircraft is turned onto a heading to make good a track making an angle of 30° from the reciprocal of the inbound track on the holding side; then

b. flown outbound:

(1) for the appropriate period of time from the holding fix, where timing is specified, up to a maximum of 1 minute 30 seconds; or, if earlier,

(2) until the appropriate limiting DME distance is attained, where distance is specified; then

c. the aircraft is turned in the direction of the holding pattern to intercept the inbound holding track; then

d. on second arrival over the holding fix, the aircraft is turned to follow the holding pattern.

3.4.4 **Entry from Sector 3 (Direct entry).** On reaching the holding fix, the aircraft is turned to follow the holding pattern. Outbound timing begins abeam the fix or, when the abeam position cannot be determined, from completion of the outbound turn.

3.4.5 **DME Arc Entry.** Having reached the fix, the aircraft must enter the holding pattern in accordance with either the Sector 1 or Sector 3 entry procedure.

3.5 **Standard Holding Pattern**

3.5.1 When flying the standard holding pattern, an aircraft must:

a. follow the prescribed track inbound to the holding fix;

b. execute a 180° turn in the direction specified, so as to fly outbound a track parallel to the inbound track;

c. continue outbound to the earlier of the time, or the DME limit specified; and

d. execute a 180° turn to realign the aircraft on the inbound track.

3.6 DME limit

3.6.1 The “DME Limit”, where prescribed for holding patterns, is the DME distance at which the outbound leg of the holding pattern must be terminated and the turn to the reciprocal track commenced.

3.7 Shortening

3.7.1 The pilot may shorten the holding pattern to leave the holding fix at a specified time. For prolonged holding at a level not limited by obstacles, the length of the pattern maybe increased, subject to ATC approval where appropriate.

3.8 Descent in Holding Pattern

3.8.1 Subject to ATC approval, where appropriate, aircraft may descend as required.

4. AERODROME METEOROLOGICAL MINIMA

4.1 Ceiling and Visibility Minima

4.1.1 The ceiling and visibility minima prescribed in this part are the meteorological conditions under which an aircraft may take off or land at an aerodrome. The meteorological conditions for a particular aerodrome are below the minima for the aerodrome when, in the airspace encompassing the intended flight path:

a. the total cloud amount below the ceiling minimum specified is continuously greater than SCT; or

b. the visibility is continuously below the visibility specified.

Note: MDA equals ceiling minimum plus the elevation of the aerodrome.

4.2 Runway Visual Range and Runway Visibility

4.2.1 In Australia, Runway Visual Range (RVR) observations are based solely on the information provided by instrumented systems such as transmissometers. RVR observations representative of the touchdown, midpoint and rollout/stop end zones are automatically displayed in the local ATC unit. At locations where RVR information is accessible to the Bureau of Meteorology, the RVR is included in METAR and SPECI reports.

4.2.2 At places not equipped with RVR sensors or where one or more RVR sensors are unserviceable, a Runway Visibility (RV) assessment may be provided instead. An RV assessment is a report on the visibility in the touchdown and midpoint zones of a runway, and is assessed by a ground observer counting visible runway lights or visibility markers.

4.2.3 An RV assessment is NOT a substitute for a required RVR observation and CANNOT be used:

a. for SA CAT I, SA CAT II, CAT II and CAT III precision approaches, or

b. for CAT I approaches when the visibility is less than 800M, or

c. for low visibility take-offs where the visibility is less than 350M.

An RV assessment is a subset of a general visibility observation and is intended to provide visibility information specific to a particular runway; which may be more useful to a pilot than the overall ground visibility.

4.2.4 Pilots will be notified by ATIS broadcast or directed transmission if RVR/RV is not available when visibility is less than 800M.

4.2.5 See *GEN 3.4 para 5.9 Meteorological Information* for the relevant RVR/RV phraseologies.

4.3 Take-off minima for qualifying multi-engine IFR aeroplanes

4.3.1 The take-off minima in *Section 4.3* applies to a multi-engine IFR aeroplane that meets each of the following requirements (a ***qualifying multi-engine aeroplane***):

a. the aeroplane is:

(1) 2 pilot operated; or

(2) a single pilot operated jet aeroplane; or

(3) a single pilot operated propeller aeroplane with operative auto feather; and

b. for an aeroplane with a MTOW exceeding 5,700KG - the aeroplane is able to meet the relevant obstacle clearance requirements of *CAO 20.7.1B*; and

c. for an aeroplane with a MTOW not exceeding 5,700KG:

(1) the gross climb gradient performance is at least 1.9% under ambient conditions with the loss of the most critical engine; and

(2) the aeroplane engine-out climb gradient under ambient conditions specified in the manufacturer's data is at least 0.3% greater than the obstacle free gradient for the runway length required; and

(3) the pilot in command uses published obstacle free gradients only if such gradients are surveyed to at least a distance of 7,500M from end of TODA; and

Note: All runways with strip widths of 150M or greater are surveyed to 7,500M unless otherwise annotated in the AIP.

(4) an operator-established obstacle free gradient is used only if:

– the gradient (having a 150M baseline at the end of TODA), 12.5% splays, and 7,500M distance) is established not more than 30° from runway heading; and

– the procedures involve not more than 15° of bank to track within the splay; and

d. for a two pilot operation – each pilot is:

(1) endorsed on type; and

(2) multi-crew trained on type; and

(3) multi-crew proficiency checked within the previous 13 months; and

(4) instrument rated.

4.3.2 The take-off minima for a qualifying multi-engine aeroplane are:

a. a ceiling of zero feet; and

b. visibility of:

(1) 550M – but only if the following conditions are complied with:

– the runway must have illuminated edge lighting at spacing intervals not exceeding 60M, and centreline lighting or centreline markings; and

– as prescribed in *Part 139 Manual of Standards – Aerodromes*; the aerodrome has secondary power supply for runway lighting with a switchover capability of one second or less for runway centreline lights or runway edge lights where centreline lighting is not provided, and

– if the aerodrome is an non-controlled aerodrome, or a controlled aerodrome without ATC in operation the take-off must be conducted by day only, and the aerodrome must be one at which carriage of radio is mandatory; or

(2) 800M.

4.3.3 It is a condition of the use of the take-off minima in *Section 4.3* that the pilot in command of the aeroplane must ensure that:

a. if a return to land at the departure aerodrome will be necessary in the event of an engine failure - the meteorological conditions must be at or above instrument approach and landing minima for the aerodrome or such as to allow a visual approach; and

b. if engine failure occurs at any time after V1, lift-off, or encountering non - visual conditions, terrain clearance is assured until reaching either en route LSALT or departure aerodrome MSA; and

c. if a return to the departure aerodrome is not possible - the aeroplane's performance and fuel availability must each be adequate to enable the aeroplane to proceed to a suitable aerodrome, having regard to terrain, obstacles and route distance limitations.

4.4 **Take-off minima for other IFR aeroplanes**

4.4.1 The take-off minima in *Section 4.4* applies to an IFR aeroplane that is NOT a qualifying multi-engine aeroplane within the meaning of *Section 4.3*.

4.4.2 The take-off minima for the aeroplane are:

a. a ceiling of 300FT; and

b. visibility of 2,000M.

4.4.3 It is a condition of the use of the minima in *Section 4.4* that the pilot in command of the aeroplane must ensure that:

a. terrain clearance is assured until reaching either en route LSALT or departure aerodrome MSA; and

b. if a return to the departure aerodrome is not possible - the aeroplane's performance and fuel availability are each adequate to enable the aeroplane to proceed to a suitable aerodrome, having regard to terrain, obstacles and route distance limitations.

4.4.4 It is a condition of the use of the minima in *Section 4.4* by a multi engine aeroplane that:

a. if a return to land at the departure aerodrome will be necessary in the event of an engine failure, the meteorological conditions must be at or above instrument approach and landing minima for the aerodrome or such as to allow a visual approach; and

b. if engine failure occurs at any time after V1, lift-off, or encountering non-visual conditions terrain clearance must be assured until reaching either en route LSALT or departure aerodrome MSA.

4.5 Take-off minima for qualifying multi-engine IFR helicopters

4.5.1 The take-off minima in *Section 4.5* applies to a multi-engine IFR helicopter operating in PC1 or PC2 (a ***qualifying multi-engine helicopter)***.

4.5.2 The minima for a qualifying multi-engine helicopter are:

a. clear of cloud:

(1) for helicopters operating in PC1 - until attaining the greater of V_{yse} or V_{min} IMC; or

(2) for helicopters operating in PC2 - until attaining the greater of V_{yse} or V_{min} IMC, and passing the defined point after take-off; and

b. visibility of:

(1) 800M; or

(2) 550M, but only if the relevant runway or helicopter landing site has:

– illuminated edge lighting at spacing intervals not exceeding 60M; and

– centreline lighting or centreline markings; and

– as prescribed in *Part 139 Manual of Standards – Aerodromes*; the aerodrome has secondary power supply for runway lighting with a switchover capability of one second or less for runway centreline lights or runway edge lights where centreline lighting is not provided.

4.5.3 It is a condition of the use of the minima in *Section 4.5* that after entering instrument meteorological conditions the take-off must be conducted:

a. either:

(1) in accordance with published IFR departure procedures; or

(2) if there are no published procedures - such that terrain clearance is assured; and

b. in the event of an engine failure:

(1) after encountering non-visual conditions, terrain clearance is assured until reaching either the en route LSALT or departure aerodrome MSA; and

(2) if a return to land at the departure aerodrome is required - the meteorological conditions must be at, or above, instrument approach and landing minima for the aerodrome or such as to allow a visual approach; and

(3) if a return to the departure aerodrome is not possible - the helicopter's performance and fuel availability must each be adequate to enable the helicopter to proceed to a suitable aerodrome, having regard to terrain, obstacles and route distance limitations.

4.6 **Take-off minima for other IFR helicopters**

4.6.1 The take-off minima in *Section 4.6* applies to an IFR helicopter that is NOT a qualifying multi-engine helicopter within the meaning of *Section 4.5*.

4.6.2 The minima for the helicopter are:

a. a ceiling of 500FT; and

b. visibility of 800M.

4.6.3 It is a condition of the use of the minima in *Section 4.6* that after entering instrument meteorological conditions the take-off must be conducted either:

a. in accordance with published IFR departure procedures; or

b. if there are no published procedures - such that terrain clearance is assured, until reaching either en route LSALT or departure aerodrome MSA and safe flight to a suitable destination or alternate, or a return to land can be made.

4.6.4 For non-qualifying multi-engined helicopter, it is a condition of the use of the minima in *Section 4.6* that if a return to land at the departure aerodrome will be necessary in the event of an engine failure, that:

a. the meteorological conditions must be at or above instrument approach and landing minima for the aerodrome or such as to allow a visual approach; or

b. if a return to the departure aerodrome is not possible - the helicopter's performance and fuel availability must each be adequate to enable the helicopter to proceed to a suitable aerodrome, having regard to terrain, obstacles and route distance limitations.

4.7 **Landing Minima**

4.7.1 **Aerodromes without approved instrument approach procedures**

IFR Day - visual approach requirements.

IFR Night - VMC from LSALT within 3NM.

4.7.2 **Aerodromes with approved non-precision approach procedures**

IFR Day and Night - minima specified in the relevant Instrument Approach Chart. However if the installed HIAL on a runway is not available, the landing visibility minima for a Localiser (LOC) approach must be increased by 900M.

4.7.3 **Aerodromes with approved precision approach CAT I procedures**

Published precision approach CAT I DA and visibility minima may be used, except that:

a. minimum visibility 1.5KM is required when precision approach CAT I lighting system (also known as HIAL) is not available

b. minimum visibility 1.2KM is required unless:

(1) the aircraft is manually flown at least to the CAT I DA using a flight director or approved HUD; or the aircraft is flown to the CAT I DA with an autopilot coupled (LOC and GP or GLS); and

(2) the aircraft is equipped with a serviceable failure warning system for the primary attitude and heading reference systems; and

(3) high intensity runway edge lighting is available.

c. minimum visibility 0.8KM is required if instrumented RVR information in the threshold zone is not available.

d. A380 operators must use CAT I DA at Darwin, Sydney, Brisbane, Melbourne, Alice Springs, Perth, Adelaide and Townsville only where specific calculations have been confirmed. Otherwise and for other locations, A380 operators must use the LOC MDA.

4.7.4 **Correction of Instrument Procedure Minima for non-standard temperatures**

Pressure altimeters are calibrated to indicate true altitude under ISA standard conditions. Any deviation from ISA will result in an erroneous altimeter reading. In cold conditions the true altitude will be lower than the indicated altitude and will reduce the obstacle clearance margins incorporated into instrument procedures. Published landing minima do not make any allowance for non-standard temperatures at the QNH source (usually the aerodrome of destination).

This effect, and various methods to address it, is discussed in *ICAO Doc 8168, Vol I (PANSOPS), Part III, Section 1, Chapter 4*. A correction must be added to the published MDA or DA and procedure altitudes when the temperature at the aerodrome of landing is less than ISA -15° C. Altitude corrections can be determined by charts *DAP 2-2* and 2-3 and the worked example at *DAP 1-1, para 1.5* as detailed in the *Departure and Approach Procedures (DAP)* publications.

5. APPLICATION OF AERODROME METEOROLOGICAL MINIMA

5.1 Pilot Responsibilities

5.1.1 Prior to take-off and when an aircraft reaches the DA, MDA or RA Height, the pilot in command is responsible for assessing whether the meteorological conditions are equal to or better than the minimum prescribed for take-off or landing as applicable. A pilot must not take-off or, except in an emergency, land or continue an approach below the prescribed DA, MDA or RA Height for the approach being conducted when any element of the prescribed meteorological criteria is continuously less than the minima for the aircraft performance category (*CAR 257*).

5.2 **ATC Assessment**

5.2.1 Whilst the decision to operate is solely that of the pilot in command, ATC will provide the pilot in command with an assessment of ceiling and/or visibility as follows:

a. **Take-off.** Ceiling and visibility will be assessed in the airspace enclosing the expected path of the aircraft during take-off and initial climb.

b. **Landing.** Ceiling and visibility will be assessed in the airspace enclosing the expected final approach path and runway to be used.

5.3 **QNH Sources**

5.3.1 Prior to passing the IAF, pilots are required to set either:

a. the actual aerodrome QNH from an approved source, or

b. the Aerodrome Forecast (TAF) QNH, or

c. the forecast area QNH

5.3.2 Where instrument approach charts are identified by a shaded background to either the minima titles for IAL charts or the published minima for DME or GNSS Arrival Procedures, landing, circling and alternate minima have been calculated assuming the use of Aerodrome Forecast (TAF) QNH. These minima may be reduced by 100FT whenever an actual aerodrome QNH is set. Approved sources of actual QNH are ATC and ATIS except when the aerodrome forecast QNH is provided, AWIS and CASA approved meteorological observers. An actual aerodrome QNH obtained from an approved source is valid for a period of 15 minutes from the time of receipt.

Note: METAR QNH does not meet this requirement.

5.3.3 When the actual aerodrome QNH is not available, ATC will report the Aerodrome Forecast (TAF) QNH on the ATIS. The ATIS will include information in the format “ACTUAL QNH NOT AVAILABLE, AERODROME FORECAST QNH...”

Note: Forecast QNH reported by ATC or on the ATIS is not an approved source of actual QNH.

5.3.4 Where the forecast area QNH is used, the minima used must be increased by 50FT.

6. ALTERNATE WEATHER MINIMA

6.1 IFR Flights

6.1.1 Each approach chart shows the ceiling and visibility minima to be compared with the meteorological forecasts and reports to determine both the need to provide for an alternate aerodrome and the suitability of an aerodrome as an alternate.

Note: Requirements for an aerodrome without an instrument approach procedure are detailed at ENR 1.1 sub-para 11.7.2.12c.

6.2 Special Alternate Weather Minima

6.2.1 Special alternate weather minima are available for specified approaches at some aerodromes for use by aircraft with dual ILS/VOR approach capability; i.e. with duplicated LOC, G/P, marker and VOR receivers. The requirement for duplicated marker receivers may be satisfied by one marker receiver and DME. (The assumption is that such aircraft will also have two ADF systems, when an NDB is used for the ILS).

6.2.2 Special alternate weather minima are identified on applicable instrument approach charts by a double asterisk adjacent to the ALTERNATE title and a note detailing the special minima.These special alternate minima will not be available (minima will revert to the standard alternate minima) during periods when:

a. local METAR/SPECI or forecasting services are not available; or

b. an aerodrome control service is not provided.

The non-availability of MET or ATS services will be notified by NOTAM.

6.2.3 Where:

a. there is a protracted unserviceability (i.e. more than seven days) of any one VHF approach aid, or

b. facilities required for the conduct of a VHF-based instrument approach and landing are unserviceable or not available,

Airservices Australia will, if necessary, advise the non-availability of, or any revision to, special alternate minima by NOTAM.

7. PRECISION APPROACH OPERATIONS

7.1 General

7.1.1 Precision approach operations involve the use of either ILS or GLS facilities.

7.1.2 An ILS supports all types of precision approach operations. The ground facilities comprise localiser equipment, glide path equipment and marker beacons, usually supported by an NDB or dedicated DME.

7.1.3 A GLS currently supports precision approach operations with minima as low as CAT I, but with the future potential for supporting CAT II and III operations. A GLS consists of a GBAS ground station located on or in the vicinity of one or more aerodromes and an aircraft subsystem. The GBAS provides data and corrections for the GNSS ranging signals over a digital VHF data broadcast to the aircraft subsystem. The aircraft subsystem translates the position signal into flight guidance similar to that provided for an ILS.

ILS Caution:

1. False courses may exist or course reversals may occur outside the sector 35° (or 20° at certain aerodromes specified in ERSA) either side of an ILS localiser course.

2. Back beam radiation of a ILS LOC can be received and displayed on aircraft navigation instrumentation. Pilots should be alert to this possibility at locations providing ILS/LOC approaches on reciprocal runways.

3. A severe and sudden pitch-up upset can occur in cases when the aircraft:

a. intercepts an ILS glidepath from above; or

b. during an ILS approach, deviates significantly above the normal glidepath angle.

Caution should be exercised in such situations particularly for autopilot coupled approaches. See AIC 14/14.

7.2 Failures

a. **NDB.** In the event of failure of an associated NDB, aircraft must join the ILS outside the outer marker as directed by NOTAM or ATC.

b. **Glide path.** For ILS operations where the glide path fails, only the localiser procedure is available.

c. **Markers.** Where marker beacons are not available, aircraft may use the ILS if the alternate fixes nominated on the IAL chart or by NOTAM are used for altimeter checks.

d. **GBAS.** If GBAS fails, GLS approaches are not available.

7.3 **Altimeter Checks and Flight Tolerances**

7.3.1 The final approach segment contains a fix at which the glide path/altimeter relationship should be verified. If the check indicates an unexplained discrepancy, the ILS/GLS approach should be discontinued. Pilots must conform to the following flight tolerances:

a. To ensure obstacle clearance, both LOC/GLS final approach course and glideslope should be maintained within half scale deflection (or equivalent on expanded scale).

b. If, at any time during the approach after the FAP, the LOC/GLS final approach or glideslope indicates full scale deflection a missed approach should be commenced.

7.4 **Protection of GLS Critical and Sensitive Areas**

7.4.1 There are no GLS critical and sensitive areas.

Note: A CAT I GLS is not required to support autoland operations. Pilots are responsible for obtaining information necessary to make operational decisions to conduct a GLS autoland.

8. STANDARD INSTRUMENT DEPARTURES

8.1 **General**

8.1.1 The pilot must advise ATC if cleared via a SID which requires the use of navigation aids not available to the aircraft.

8.1.2 SID procedures assume that pilots will not compensate for wind effects when being radar vectored, but will compensate for known or estimated wind effects when flying departure routes which are expressed as tracks.

8.1.3 SID procedures may be flown by aircraft already airborne provided that, before commencing a SID, the pilot visually positions the aircraft over the runway centre line so that all tracking and altitude restrictions can be met.

8.1.4 Each SID procedure specifies the minimum design climb gradient that ensures obstacle clearance. Where the initial required climb gradient exceeds 3.3%, the altitude at which a 3.3% climb gradient may be flown is also shown. A gradient shown in brackets specifies the climb gradient required to remain inside controlled airspace.

8.1.5 The climb gradient shown on a Radar SID chart provides obstacle clearance up to the MSA/LSALT. ATC will assign a departure heading to be flown after the initial take-off phase. The pilot is not to commence the take-off without having obtained the assigned departure heading and should advise ATC if the heading is unacceptable.

8.1.6 If a SID chart has multiple climb gradient sectors, ATC will not issue heading instructions to an airborne aircraft that would require the pilot to adopt a higher climb gradient than the gradient specified for the initial departure heading.

8.1.7 When the aircraft is above the MVA, any subsequent changes of headings are ATC vectors and ATC will issue instructions that ensure prescribed obstacle clearance will exist at all times.

8.1.8 The climb gradient requirements of a Radar SID cease when the aircraft reaches the MSA/LSALT as applicable.

8.2 **SID Procedures**

8.2.1 Unless explicitly cancelled or amended by ATC, the pilot must follow the vertical and lateral profile of the SID and comply with any published speed restrictions.

8.2.2 The use of a SID designator without a cleared level does not authorise the pilot to climb on the SID vertical profile.

8.2.3 A level restriction depicted on a SID chart does not authorise a pilot to climb to meet that restriction. ATC will assign climb to permit compliance with vertical navigation restrictions. Pilots must inform ATC if a level restriction cannot be met.

8.2.4 ATC level change instructions to aircraft on a SID will indicate if published level and/or speed restrictions are to be followed or are cancelled.

8.2.5 When conducting a SID, the priority is to meet the vertical navigation restrictions of the SID. When speed restrictions do not enable the aircraft to meet a SID level restriction, the pilot must advise ATC of any speed deviation requirement at ACD stage or as soon as the situation is identified. Pilots must advise ATC when able to resume the SID speed restrictions.

8.2.6 For ATC traffic management: unless varied by ATC, DAP or ERSA, at or before 3,000FT AGL or at the completion of a noise abatement procedure, jet aircraft departing Class C aerodromes must:

a. commence acceleration to 250KT IAS; and

b. maintain 250KT until leaving 10,000FT AMSL

The pilot must advise ATC, preferably at ACD stage, if the aircraft will be unable to comply.

8.2.7 Cancellation of 'published speed restrictions' cancels all speeds published on the SID chart. Cancellation of 'ATC-issued speed control instructions' cancels any speed control instructions issued by ATC. Airspace speed limitations must be compiled with unless specifically cancelled.

8.2.8 When a departing aircraft is cleared to proceed direct to a published waypoint on the SID, the speed and level restrictions associated with the bypassed waypoints are cancelled. The pilot must comply with any published SID speed and level restrictions, at and after the waypoint where the SID is rejoined. An aircraft cleared to bypass one or more waypoints on a SID will not receive a specific instruction to rejoin the SID.

8.2.9 When a departing aircraft is vectored or cleared to proceed away from the SID, all the published speed and level restrictions of the SID are cancelled. ATC will notify the pilot if there is an expectation the aircraft will subsequently rejoin the SID.

Note: Unless specifically cancelled by ATC, any ATC traffic management speed specified in ERSA will apply to aircraft when vectored or cleared away from a SID.

8.2.10 ATC instructions to rejoin a SID will specify any transition restrictions that must be complied with up to, but not including the waypoint where the SID is rejoined. The pilot must comply with any published SID speed and level restrictions, at and after the waypoint where the SID is rejoined.

8.2.11 In a surveillance environment prior to take-off, ATC may cancel a procedural SID and:

a. issue a radar SID; or

b. require the aircraft to depart on runway track using the climb gradient specified in the cancelled SID. In this case, ATC will use the phrase “CANCEL SID, MAINTAIN RUNWAY TRACK *(three digits)* DEGREES”.

Note: For the application of this procedure, the runway and radar SID tracks must be coincident up to the MVA.

8.2.12 In VMC by day, the pilot may request, or ATC may offer a visual departure.

8.2.13 When a departure report is required during a SID, the SID designator must be included in the report.

8.2.14 For a Radar SID, the direction of turn and assigned heading must be advised in the airborne report.

9. NOISE ABATEMENT PROCEDURES

9.1 Application

9.1.1 Noise Abatement Procedures (NAPs) normally apply to all jet-propelled aircraft and other aircraft having a MTOW exceeding 5,700KG.

Note: A subsonic jet-propelled aircraft will not be permitted to operate in Australia unless it meets the requirement of ICAO ANNEX 16, VOL 1, Chapter 3.

9.1.2 Where noise abatement procedures are prescribed, and ATC traffic management permits, the runway nomination provisions of DAP NAP will be applied. Not withstanding this, noise abatement will not be a determining factor in runway selection under the following circumstances (unless required by Noise Abatement legislation):

a. in conditions of low cloud, thunderstorms and/or poor visibility;

b. for runway conditions that are completely dry:

(1) when the crosswind component, including gusts, exceeds 20KT;

(2) when the tailwind component, including gusts, exceeds 5KT;

c. for runway conditions that are not completely dry:

(1) when the crosswind component, including gusts, exceeds 20KT;

(2) when there is a tailwind component;

d. when wind shear has been reported;

e. when, in the opinion of the pilot in command, safety would be prejudiced by runway conditions or any other operational consideration.

9.1.3 Preferred flight paths for arriving and departing aircraft have been determined for particular locations. For departing aircraft they may be in the form of a SID. Arriving aircraft must not make approaches to land below the visual or electronic glide paths for the runway in use. The requirement to follow the noise abatement flight paths shall be subject to a specific ATC clearance or instruction, and may be varied by ATC for operational reasons, e.g. weather, traffic complexity.

9.1.4 Aircraft operating outside tower hours of operation (at locations which do not have continuous tower services) must comply with relevant noise abatement procedures only where they do not conflict with circuit direction requirements detailed in the *ERSA* entry for that location.

9.1.5 Noise abatement departure procedures will be developed by the operator for each aeroplane type in accordance with the requirements of *ICAO Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS) Vol. I, Part V, Chapter 3*, and are subject to approval by CASA.

9.1.6 Noise abatement departure procedures must be used by jet-propelled aircraft from the locations and runways identified under the NAPs published in *DAP East and West*. The departure procedure to be used on a specific departure should satisfy the noise abatement objectives of the aerodrome operator in alleviating noise either close to the aerodrome or distant from the aerodrome. Examples of such procedures are given in *PANS - OPS Vol. I, Part 1, Section 7, Chapter 3 (NADP 1 and NADP 2*).

Note 1: NADP 1 and NADP 2 are EXAMPLES only. The actual procedures developed by the operator for a specific aircraft type may vary from these examples provided the minimum requirements of the procedures are met.

Note 2: The power settings to be used subsequent to the failure or shutdown of an engine or any other apparent loss of performance, at any stage in the take-off or noise abatement climb, are at the discretion of the pilot in command, and noise abatement considerations no longer apply.

9.1.7 As an alternative to the procedures detailed in *para 9.1.6*, operators of aircraft which have engines with a by-pass ratio greater than 3.5 may use the procedure detailed below:

a. climb at V_2 +10KT to V_2 +20KT – or body angle limit speed; and

b. maintain take-off power to a height above the aerodrome of 1,000FT:

c. then maintaining a positive rate of climb, accelerate to zero flap minimum safe manoeuvring speed (V_{ZF}) retracting flap on schedule;

d. then reduce to normal climb power/thrust; and

Note: For aeroplanes with slow flap retraction, reduce power/ thrust at an intermediate flap setting.

e. continue climb at not greater than V_{ZF} +10KT to a height above the aerodrome of 3,000FT:

f. accelerate smoothly to en route climb speed; and

g. maintain runway heading unless required to do otherwise in accordance with a SID or specific ATC instruction.

9.2 **Curfews**

9.2.1 There are curfews on some operations at Adelaide, Gold Coast, Essendon and Sydney airports. For details, see *DAP East/West NAP* for those airports.

10. STANDARD INSTRUMENT ARRIVALS (STARs)

10.1 **General**

10.1.1 The pilot must advise ATC if cleared via a STAR which requires the use of navigation aids not available to the aircraft.

10.1.2 When a STAR includes more than one instrument termination procedure, pilots must plan to fly the procedure listed first on the chart, for that runway. If the listed termination procedure is not available, e.g. the ILS is not available, pilots must plan for the next listed procedure.

10.1.3 An operational requirement or pilot request for an alternative instrument termination procedure should be made prior to the STAR being issued.

10.1.4 Unless the pilot requests an alternative approach, flights that have included PBN/T1 in Field 18 of the flight notification form will normally be issued a STAR with an RNP AR termination (where published) or an expectation of an RNP AR approach.

Note: At some locations traffic complexity may prevent allocation.

10.1.5 When a clearance for the termination procedure is authorised e.g. visual approach, the published STAR speed restrictions still apply unless specifically cancelled.

10.2 STAR Procedures

10.2.1 Unless explicitly cancelled or amended by ATC, the pilot must follow the vertical and lateral profile of the STAR and comply with any published speed restrictions.

10.2.2 The use of a STAR designator without a cleared level does not authorise the pilot to descend on the STAR vertical profile.

10.2.3 A level restriction depicted on a STAR chart does not authorise a pilot to descend to meet that restriction. ATC will assign descent to permit compliance with vertical navigation restrictions. Pilots must inform ATC if a level restriction cannot be met.

10.2.4 ATC level change instructions to aircraft on a STAR will indicate if published level and/or speed restrictions are to be followed or are cancelled.

10.2.5 Cancellation of ‘published speed restrictions’ cancels all speeds published on the STAR chart. Cancellation of ‘ATC-issued speed control instruction’ cancels any speed control instructions issued by ATC. Airspace speed limitation must be complied with unless specifically cancelled.

10.2.6 When an arriving aircraft is cleared to proceed direct to a published waypoint on the STAR, the speed and level restrictions associated with the bypassed waypoints are cancelled. The pilot must comply with any published STAR speed and level restrictions at and after the waypoint where the STAR is rejoined. An aircraft cleared to bypass one or more waypoints on a STAR will not receive a specific instruction to rejoin the STAR.

10.2.7 When an arriving aircraft is vectored or cleared to proceed away from the STAR, all the published speed and level restriction of the STAR are cancelled. ATC will notify the pilot if there is an expectation the aircraft will subsequently rejoin the STAR.

Note: Unless specifically cancelled by ATC, any ATC traffic management speed specified in ERSA will apply to aircraft when vectored or cleared away from a STAR.

10.2.8 ATC instructions to rejoin a STAR will specify any transition restrictions that must be complied with up to, but not including the waypoint where the STAR is rejoined. The pilot must comply with any published STAR speed and level restrictions, at and after the waypoint where the STAR is rejoined.

10.2.9 Following holding, pilots can expect to continue the previously issued STAR. ATC will indicate if published level and/or speed restrictions are to be followed or are cancelled.

10.2.10 Where a STAR incorporates circuit legs to a runway, pilots of aircraft not equipped with a flight management system may accept the STAR clearance and request vectors when contacting Approach Control.

11. DME OR GNSS ARRIVAL PROCEDURES

11.1 General

11.1.1 The DME or GNSS Arrival Procedure is an instrument approach procedure that provides descent guidance along a specified track or sector, to the visual circling area of an aerodrome. Azimuth guidance is required from the specified radio navigation aid. The requirements of *subsections 1.7, 1.10 and 1.14* apply (refer to *CAAP 178-1*).

11.1.2 Descent is not permitted until the aircraft is established within the appropriate sector or on the specified inbound track.

11.1.3 If manoeuvring within a sector is required, the pilot must ensure that the aircraft is contained within the sector, at or above the appropriate segment minimum safe altitude. Manoeuvring within a sector after passing the final approach fix is prohibited.

11.2 Use of GNSS

11.2.1 Subject to the restrictions in *para 11.2.2*, GNSS meeting one GNSS equipment specifications mentioned in *GEN 1.5 Section 2.* may be used for distance measurement during the conduct of a DME or GNSS Arrival.

11.2.2 The following specific restrictions apply to the conduct of a GNSS Arrival:

a. The database medium (card, chip, etc) must be current and of a kind endorsed by the receiver manufacturer.

b. The coordinates of the destination VOR or NDB, to which the descent procedure relates, must not be capable of modification by the operator or crew.

c. GNSS integrity (e.g. RAIM) must be available before descending below the LSALT/MSA.

d. The nominated azimuth aid (VOR or NDB) must be used to provide track guidance during the arrival procedure.

e. If at any time during the approach, there is cause to doubt the validity of the GNSS information (e.g. RAIM warning), or if GNSS integrity is lost (e.g. RAIM not available), the pilot must conduct a missed approach.

11.3 **Operations in Controlled Airspace**

11.3.1 The clearance “CLEARED DME (or GNSS) ARRIVAL” constitutes a clearance for final approach and authorises an aircraft to descend to the minimum altitude specified in the appropriate DME or GNSS Arrival Procedure. ATC is not permitted to impose any altitude restriction on such a clearance.

11.3.2 When cleared for a DME or GNSS Arrival in controlled airspace an aircraft must not orbit, enter a holding pattern, or use holding pattern entry procedures. ATC will not issue a clearance for a DME or GNSS Arrival that involves the use of a holding pattern entry procedure.

11.3.3 When ATC cannot issue a clearance for an unrestricted DME or GNSS Arrival, the phrase “DESCEND TO (level) NOT BELOW DME (or GNSS) STEPS” may be used. Such an instruction authorises descent in accordance with the DME or GNSS steps only to the specified altitude.

11.3.4 ATC may clear an aircraft to intercept the final approach segment of another instrument approach procedure. When clearing an aircraft for such a procedure, ATC will use the phrase “DESCEND TO (level) NOT BELOW DME (or GNSS) STEPS” and will issue further instructions prior to the aircraft’s reaching the cleared level.

11.3.5 Nothing in these procedures absolves the pilot in command from his/her responsibilities to maintain the aircraft on the authorised track or within the defined sector.

Note 1: Where the track being flown is not aligned with the landing runway, a clearance for a DME or GNSS Arrival includes a clearance to manoeuvre within the circling area to position the aircraft on final for landing.

Note 2: Where possible, DME and GNSS Arrival Procedures are designed to contain the aircraft within controlled airspace and provide 500FT separation from the CTA lower limit. However, there are locations where the procedure commences in Class G airspace, or which can take aircraft into Class G airspace on descent. Pilots should check procedures to ensure that aircraft are contained in CTA where required.

12. SIGNALS FOR THE CONTROL OF AERODROME TRAFFIC

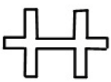
12.1 Light Signals to Aircraft

Light Signal	**Meaning in Flight**	**Meaning on Aerodrome**
Steady Green	Authorised to land if pilot satisfied no collision risk exists.	Authorised to take-off if pilot satisfied no collision risk exists.
Steady Red	Give way to other aircraft and continue circling.	Stop.
Green Flashes	Return for landing.	Authorised to taxi if pilot satisfied that no collision risk exists.
Red Flashes	Aerodrome unsafe - do **not** land.	Taxi clear of landing area in use.
White Flashes	No Significance	Return to starting point on Aerodrome.

12.2 **Light Signals to Vehicles and Pedestrians**

Light Signal	**Meaning**
Green Flashes	Permission to cross landing area or to move onto taxiway.
Steady Red	Stop.
Red Flashes	Move off the landing area or taxiway and watch out for aircraft.
White Flashes	Vacate the manoeuvring area in accordance with local instructions.
Note: In emergency conditions or if the above signals are not observed, the following meaning will be indicated by the use of the runway or taxiway lighting:	
Flashing runway or taxiway lighting	Vacate the runway or taxiway and observe the tower for light signal.

12.3 Ground Signals to Aircraft

GROUND SIGNAL	DESCRIPTION	WHERE DISPLAYED	MEANING
	Horizontal white dumb-bell	Adjacent to wind direction indicator.	Use only hard surface movement areas. Where there are sealed and gravel manoeuvring areas, use only the sealed surfaces. Where there are constructed gravel and natural surface manoeuvring areas, use only the gravel surfaces. (see *ERSA FAC* for any local information relating to the dumb-bell signal).
	White Cross	(i) Adjacent to wind direction indicator. (ii) On manoeuvring area.	(i) Aerodrome completely unserviceable. (ii) An area marked by a cross or crosses with the limit delineated by markers is unfit for use by aircraft.
	White Double Cross.	Adjacent to wind direction indicator	Gliding operations in progress.

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ENR 1.6 ATS SURVEILLANCE SERVICES AND PROCEDURES

1. RADIO COMMUNICATIONS PROCEDURES

1.1 Pilots requesting an ATS surveillance service should address their request to the ATS unit with which they are communicating.

1.2 Where an Area Approach Control Centre (AACC) is not established, the pilot will be advised the time or place to transfer to a control frequency.

1.3 Where an AACC is established, procedural and ATS surveillance services may be provided on a common frequency. The call sign identifies the service being provided – e.g. ...CENTRE... APPROACH...DEPARTURES.

2. IDENTIFICATION PROCEDURES

2.1 Before providing an ATS surveillance service there will be positive identification of the aircraft concerned. However, control services will not be provided until the aircraft is within controlled airspace.

3. VECTORING PROCEDURES

3.1 On receipt of heading instructions the pilot must, unless otherwise instructed, immediately commence a rate 1 turn, or the standard rate of turn for the aircraft type, and then maintain the heading given.

3.2 Aircraft will normally be vectored on routes along which the pilot can monitor navigation.

3.3 ATC are not permitted to vector Special VFR flights, unless warranted by emergency conditions.

3.4 When an aircraft is given a vector which will take it off an established route, the pilot will be advised of the reason for the vector, unless it is self-evident.

3.5 When an aircraft reports unreliable directional instruments, the pilot will be requested, prior to the issuance of manoeuvring instructions, to make all turns at an agreed rate and to carry out the instructions immediately on receipt.

3.6 When aircraft are being vectored, the controller will assign altitudes which allow for terrain clearance. However, in VMC by day, an aircraft may be permitted to arrange its own terrain clearance. In such instances, the aircraft will be instructed to [TURN LEFT (*or* RIGHT) HEADING (*heading*)] [CLIMB (or DESCEND) TO (level)] VISUAL.

3.7 Pilots being vectored will be routinely advised of their position to enable pilot navigation in the event of communication or ATS surveillance system failure.

3.8 The interval between ATC transmissions will be kept short to enable the pilot to quickly recognise a communication failure. When aircraft are on headings that could infringe terrain clearance or separation standards, the interval between transmissions will not exceed 30 seconds.

3.9 Before takeoff, ATC may assign a heading for a departing aircraft to assume after takeoff, followed by frequency change instructions if appropriate. Headings, other than those assigned for a radar SID, will only be issued for a visual departure by day in VMC.

3.10 Arriving aircraft may be vectored to:

a. establish for a radar or pilot-interpreted approach;

b. a position from which a visual approach can be made;

c. avoid areas of hazardous weather or severe turbulence;

d. expedite traffic flow or conform to noise abatement requirements.

3.11 For a pilot-interpreted approach, aircraft will be vectored to be established on final track at least two (2) miles prior to commencement of final approach. The final intercept heading will normally intercept the final approach track at an angle of 45 ° or less. When an aircraft is vectored for a shortened instrument approach, the final approach point is the interception of the prescribed descent profile.

3.12 Should the aircraft have to be vectored through the final approach track, the controller will advise the pilot.

3.13 When the aircraft is provided with the vector to intercept final for a pilot-interpreted approach, the pilot will be:

a. advised of range from the aerodrome, or position reference the final approach point;

b. informed that the vector is to intercept the approach aid;

c. provided with a clearance for the approach, when such a clearance has been authorised; and

d. instructed to report when established on the final approach track.

Note: When ILS/GLS is used for final approach, pilots should report when established on the localiser or final approach course and not delay this report until the glide path is intercepted.

3.14 When the pilot reports established on final, she/he shall be instructed when to transfer to the tower frequency.

3.15 Unless otherwise instructed, the pilot in command should change automatically to tower frequency, provided that:

a. the aircraft is established on the final approach track and has been cleared for final approach; and

b. air-ground communications congestion or failure has not allowed the pilot to report ESTABLISHED, or obtain a clearance to transfer to tower; and

c. transfer to tower shall not be prior to 4NM from touchdown.

3.16 A vectoring service will not normally be terminated until the aircraft is established within the navigation tolerance of its cleared route, except on transfer to tower. However, subject to identification, a vectoring service will be continued, if requested.

3.17 When a vectoring service is terminated, the pilot will be:

a. provided with position information including, if applicable, displacement from the nominated track; and

b. provided with a heading or track clearance to intercept the nominated track for the pilot-interpreted navigation aid; or

c. provided with a track clearance direct to a waypoint to intercept the nominated track (for an RNAV or RNP approved aircraft).

3.18 Position information will be passed to aircraft in one of the following forms:

a. a bearing and distance (using points of the compass) from the ARP, a navigation aid, or a known position;

b. a heading and distance to the appropriate reporting point, en route navigation aid, or approach aid;

c. over a well known geographical position; or

d. a distance to the runway touchdown (as track miles to run).

3.19 An aircraft under ATS surveillance service control will be advised of its position in the following circumstances:

a. on identification, unless the identification is established:

(1) based on the pilot's report of the aircraft position, or within 1NM of the runway on departure, if the observed position on the situation display is consistent with the aircraft's time of departure; or

(2) by use of ADS-B aircraft identification, SSR Mode S aircraft identification or assigned discrete SSR codes if the location of the observed position indication is consistent with the current flight plan of the aircraft; or

(3) by transfer of identification;

b. when pilot requests position information;

c. when the pilot's position or estimate differs significantly from the controller's estimate based on the observed position;

d. when the pilot is instructed to resume own navigation after vectoring, if the current instructions had diverted the aircraft from a previously assigned route;

e. immediately before termination of ATS surveillance service, if the aircraft is observed to deviate from its intended route;

f. as soon, after first contact with approach radar control, as a distance to run to touchdown becomes evident;

g. when a regular circuit pattern is used to vector on to the final approach path (at least once on each leg);

h. when a straight-in approach is provided.

4. ATC RESPONSIBILITIES IN RESPECT OF UNIDENTIFIED AIRCRAFT

4.1 ATC has no responsibility to initiate avoiding action for aircraft in controlled airspace in respect of unidentified aircraft which can reasonably be assumed to be outside controlled airspace.

4.2 If an aircraft is likely to be a hazard to controlled aircraft receiving an ATS surveillance service, the controller will take appropriate action to preserve the safety of the controlled aircraft.

4.3 Where there is an ATS surveillance service in non-controlled airspace, identified IFR aircraft and VFR aircraft receiving a SIS will be provided with traffic information about known conflicting air craft, unless it is impracticable. If requested by the pilot and if possible, a course of avoiding action will be suggested.

4.4 Traffic information in respect of an unidentified aircraft will normally take the following form:

a. relative position of the unidentified aircraft to aircraft track in terms of the 12 hour clock except that, if the identified aircraft is turning, relative position will be specified by reference to compass points;

b. distance from the unidentified aircraft in miles;

c. direction in which the unidentified aircraft appears to be proceeding.

5. SPEED CONTROL (ARRIVING AIRCRAFT)

5.1 To facilitate the provision of ATS surveillance services in controlled airspace, a pilot of a controlled flight may expect the application of speed control. ATC-issued speed control instructions refer to indicated airspeed or Mach number.

5.2 The pilot must request an alternative when an ATC-issued speed control instruction is unacceptable on operational grounds.

5.3 When the application of speed control can be foreseen, a pilot will be advised of future intentions.

5.4 A pilot will be advised when a specific ATC-issued speed control instruction is no longer necessary. Unless otherwise stated, an ATC-issued speed control instruction applies until the aircraft reaches the point in the descent profile where the speed would normally be reduced below that assigned by ATC. Except for a STAR, a DME arrival, or unless otherwise specified, a clearance for final approach or a clearance for a visual approach terminates speed control.

6. EMERGENCY PROCEDURES

6.1 General

All possible assistance will be given to aircraft in distress.

6.2 **Radio Failure Procedure**

6.2.1 When an aircraft is being vectored the interval between radio transmission is short. Pilots should make a radio check if no transmission is heard after a reasonable interval.

6.2.2 In the event of failure of two way communications while receiving an ATS surveillance service, the pilot must change to the alternative frequency and request instructions.

6.2.3 If unable to make contact on the alternative frequency, the pilot must comply with standard radio failure procedures.

6.2.4 If able to receive but not transmit, the pilot must remain on the assigned frequency and comply with instructions issued which are designed to establish that the aircraft is receiving. If this is established, further instructions will be issued.

6.3 **ATS Surveillance System - Failure Procedure**

In the event of ATS surveillance system failure, or loss of identification, appropriate instructions will be issued.

6.4 **SSR Emergency Codes**

6.4.1 The pilot of an aircraft encountering an emergency in flight, other than loss of two way communications, should select code 7700 unless he/she has specific reason to believe that maintaining the assigned code would be the better course of action.

6.4.2 The pilot of an aircraft subject to unlawful interference should select code 7500. On receipt of this code the controller will:

a. request confirmation of the setting of the assigned code as follows: “CONFIRM SQUAWKING ASSIGNED CODE”. (The absence of a reply in these circumstances shall be regarded as positive evidence of the emergency);

b. provide the aircraft with priority in all respects;

c. transmit all useful information pertinent to the conduct of the flight without expecting a reply from the aircraft;

d. avoid references to the nature of the emergency except if it is first referred to by the pilot;

e. monitor and plot the progress of the flight;

f. coordinate transfer of control, as appropriate, without requiring responses from the aircraft, unless communication remains normal; and

g. relay messages as required between the aircraft and appropriate authorities.

6.4.3 The pilot of an aircraft losing two way communication must set the transponder to code 7600.

6.4.4 A controller observing a 7600 code shall request the pilot to operate the identification (SPI) function. If the identification signal is received, further control of the aircraft will be continued using the identification transmission to acknowledge receipt of instructions issued.

6.4.5 If the identification signal is not received, the aircraft must continue with the transponder on code 7600 and follow radio failure procedures.

6.4.6 When an RPAS experiences a lost link between the RP and the RPA, the SSR code to be selected or automatically enabled is 7400.

6.5 ADS-B Emergency Codes

6.5.1 Due to the ADS-B emergency processing limitations, if a generic ADS-B emergency indication is received from an aircraft outside of radar coverage and the flight crew does not verbally communicate the nature of the emergency, the controller will use the procedures detailed in *para 6.4.2 a*.

7. AIRCRAFT TRANSPONDER

7.1 Operation of SSR Transponders

7.1.1 Except as indicated below, ATS will assign a temporary discrete code for each flight sector for aircraft operating in controlled airspace, and for aircraft participating in Surveillance Information Service (SIS).

7.1.2 Unless advised otherwise by ATC, pilots of Mode 3A or Mode S transponder equipped aircraft operating in Australian airspace must activate their transponders, and where a Mode C capability is also available it must be activated simultaneously with Mode 3A.

Note: Pilots must ensure that transponders and ADS-B transmitters are activated and the altitude function is selected as:

a. primary radar coverage only exists within 50NM of major airports and the remainder of the ATS surveillance system relies on SSR transponder and ADS-B transmitter information, and *b. TCAS relies on transponder information for its pilot alerting and collision avoidance functions.*

7.1.3 Consistent with ICAO Regional (Asia & Pacific – APAC) SSR code management code continuity objectives, Australia's ATM system has been configured to maximise retention of the discrete code assigned on departure to international flights inbound to, or overflying, Australia. This retention normally relies on code assignment notified via the DEP message, and is principally enabled for departures from other APAC Region States. When a departure or other code assigned to a flight cannot be retained in Australian airspace, pilots will be assigned a new SSR code. ATC procedures may also require that pilots be asked to squawk the code being retained.

7.1.4 When operating in Australian airspace, or on reaching the Australian FIR boundary if inbound to Australia, pilots of Mode 3A transponder equipped aircraft must squawk the assigned temporary discrete code for that flight sector, or if not assigned a temporary discrete code, the appropriate non-discrete code from the following listing, unless advised otherwise by ATS:

a. Civil flights in classes A, C and D airspace, or IFR flights in Class E airspace	3000
b. Civil IFR flights in Class G airspace	2000
c. Civil VFR flights in classes E or G airspace	1200
d. Military flights in classes A, C, D or E airspace	5000
e. Military flights in Class G airspace	6000
f. Civil flights not involved in special operations or SAR, operating in Class G airspace in excess of 15NM offshore	4000
g. Civil flights engaged in littoral surveillance	7615
h. Ground testing by aircraft maintenance staff	2100
i. Flights operating at aerodromes (in lieu of a., b., or c. when assigned by ATC)	0100
j. RPAS in all classes of airspace and when instructed to enable transponder.	7000

7.1.5 Pilots of flights that will require a SIS and/or a clearance into controlled airspace, and for which a discrete code has already been coordinated, must select that code immediately prior to making their SIS/clearance request.

7.1.6 A pilot must not operate the identification function (SPI) unless requested by ATC.

7.1.7 Flights assigned a temporary discrete SSR code by ATS must squawk that code until termination of the flight sector, unless advised otherwise by ATS. If not assigned a discrete code, the appropriate generic code must be used.

7.1.8 A pilot operating a Mode 3A/C transponder at a radar controlled aerodrome must:

a. on departure, leave the transponder selected to STANDBY until entering the departure runway; and

b. on arrival, select the transponder to STANDBY or OFF as soon as practicable after landing.

7.1.9 A pilot operating a Mode S transponder must:

a. Enter the aircraft's identification that corresponds exactly to the Aircraft Identification shown in Item 7 of the flight notification filed with ATC for the flight; for those aircraft that are capable of reporting Aircraft Identification. The ICAO defined format for entry of the Aircraft Identification shall be used except for domestic operations when VH is not to be entered on the flight notification. (e.g. VOZ123D, REX638, QFA842, VHQFO (international), FDA...)

b. On receipt of ATC clearance, or requesting the earlier of Push Back or Taxi, select TA/RA/XPDR/ON AUTO as applicable.

Note 1: If AUTO mode is not available Select ON (e.g. XPDR) and assigned Mode A code.

Note 2: Australia does not require TA/RA to be de-selected while aircraft is on ground.

c. When parked and shutting down engines, select STANDBY.

d. For Mode S equipped aircraft taxiing without flight plan, the appropriate Mode A code according to *para 7.1.4* should be selected and the aircraft identification entered exactly as the call sign used in flight.

7.1.10 Pilots must select the transponder to STANDBY before effecting an SSR code change and returning the transponder to ON/ALT.

Note: This action is required to prevent possible loss of displayed aircraft position/label information and possible misidentification of aircraft in automated Australian ATC systems due to temporary selection (while effecting the change) of a code already in use.

7.1.11 When acknowledging code setting instructions or changes to settings, the pilot must read back the code to be set.

7.1.12 To facilitate harmonisation with the air traffic management systems used in the FIRs of adjacent ICAO states (other than the Mauritius FIR), ATC will allocate civil international flights a discrete code from Australia's ICAO international reservation for use from the time of their departure.

7.1.13 Unless instructed otherwise by ATS, pilots of military international flights are required to set code 5000 before departure from an Australian airport.

ENR 1.7 ALTIMETER SETTING PROCEDURES

1. PRE-FLIGHT ALTIMETER CHECK

1.1 General

1.1.1 Whenever an accurate QNH is available and the aircraft is at a known elevation, pilots must conduct an accuracy check of the aircraft altimeter(s) at some point prior to takeoff.

Note: Where the first check indicates that an altimeter is unserviceable, the pilot is permitted to conduct a further check at another location on the same airfield; for example, the first on the tarmac and the second at the runway threshold (to determine altimeter serviceability).

1.2 IFR Altimeters

1.2.1 With an accurate QNH set, the altimeter(s) should read the nominated elevation to within 60FT. If an altimeter has an error in excess of ± 75FT, the altimeter must be considered unserviceable.

1.2.2 When two altimeters are required for the category of operation, one of the altimeters must read the nominated elevation to within 60FT. When the remaining altimeter has an error between 60FT and 75FT, flight under the IFR to the first point of landing, where the accuracy of the altimeter can be re-checked, is approved. In the event that the altimeter shows an error in excess of 60FT on the second check, the altimeter must be considered unserviceable for flight under the IFR.

1.2.3 An aircraft fitted with two altimeters but requiring only one for the category of operation may continue to operate under the IFR provided one altimeter reads the nominated elevation to within 60FT. Should the remaining altimeter have an error in excess of 75FT that altimeter must be placarded unserviceable and the maintenance release appropriately endorsed.

1.2.4 When an aircraft is fitted with only one altimeter and that altimeter has an error between 60FT and 75FT, flight under the IFR to the first point of landing, where the accuracy of the altimeter can be re-checked, is approved. In the event that the altimeter shows an error in excess of 60FT on the second check the altimeter is to be considered unserviceable for flight under the IFR.

1.3 **VFR Altimeters**

1.3.1 With an accurate QNH set, a VFR altimeter(s) should read site elevation to within 100FT (110FT at test sites above 3,300FT) to be accepted as serviceable by the pilot. If an aircraft fitted with two VFR altimeters continues to fly with one altimeter reading 100FT (110FT) or more in error, the faulty altimeter must be placarded unserviceable and the error noted in the maintenance release.

1.3.2 VFR altimeters are not permitted for aeroplane operations above FL200. VFR flights operating above FL200 must be equipped with an altimeter calibrated to IFR standards.

1.4 **Accurate QNH and Site Elevation**

1.4.1 A QNH can be considered accurate if it is provided by ATIS, Tower or an automatic remote-reporting aerodrome sensor. Area or forecast QNH must not be used for the test.

1.4.2 Site elevation must be derived from aerodrome survey data published by Airservices or supplied by the aerodrome owner.

2. ALTIMETER SETTING RULES

2.1 **Transition Layer, Altitude and Level**

2.1.1 The system of altimetry used in Australia makes use of a transition layer between the Transition Altitude which is always 10,000FT and the Transition Level of FL110 to FL125 depending on QNH (see *Figure 1*) to separate aircraft using QNH from those using 1013.2HPA as a datum.

2.1.2 For all operations at or below the Transition Altitude (in the Altimeter Setting region), the altimeter reference setting will be:

a. the current Local QNH of a station along the route within 100NM of the aircraft; or

b. the current Area QNH forecast if the current Local QNH is not known.

2.1.3 For cruising in the Standard Pressure Region, the altimeter reference must be 1013.2HPA.

2.1.4 The position to change between QNH and 1013.2HPA shall always be in the Standard Pressure Region on climb after passing 10,000FT and prior to levelling off, or on descent to a level in the Altimeter Setting Region prior to entering the Transition Layer and is shown in *Figure 1*.

2.1.5 QNH is available from a reporting station, the ATIS, the Terminal Area Forecast, Area QNH forecast, AERIS, or from ATS.

2.1.6 Cruising within the Transition Layer is not permitted.

2.2 Area QNH

2.2.1 Area QNH is a forecast value which is valid for a period of 3 hours and normally applies throughout an Area QNH Zone (AQZ).

2.2.2 Area QNH Zones will be subdivided, if necessary, to meet the following standards of accuracy:

a. Area QNH forecasts are to be within ± 5HPA of the actual QNH at any low-level point (below 1,000FT AMSL) within or on, the boundary of the appropriate area during the period of validity of the forecasts.

b. Area QNH must not differ from an adjoining Area QNH by more than 5HPA.

2.3 Local QNH

2.3.1 Local QNH, whether provided by ATS, AWS or Aerodrome Forecast (TAF) or by using the altimeter subscale to indicate airfield elevation AMSL, is used as shown at *Figure 1*.

2.4 Limitations

2.4.1 To retain a minimum buffer of 1,000FT above the transition altitude, FL110 must not be used for cruising when the Area QNH is less than 1013HPA. With a progressive decrease in the value of the Area QNH, FL115 and FL120 must not be used when the Area QNH is below 997HPA and 980HPA respectively.

2.4.2 At the oceanic limits of Australian FIRs, a pilot may fly a level different from those set out in the tables of cruising levels due to area QNH conflicting with the standard pressure setting.

2.5 General

2.5.1 Heights measured from a QNH or Area QNH datum must be expressed in full, e.g. 3,000FT as “THREE THOUSAND” and 1,800FT as “ONE THOUSAND EIGHT HUNDRED”, adding, if necessary, “ON...(QNH)”.

2.5.2 Expressions of height measured from the 1013.2HPA datum must always include the words “FLIGHT LEVEL”.

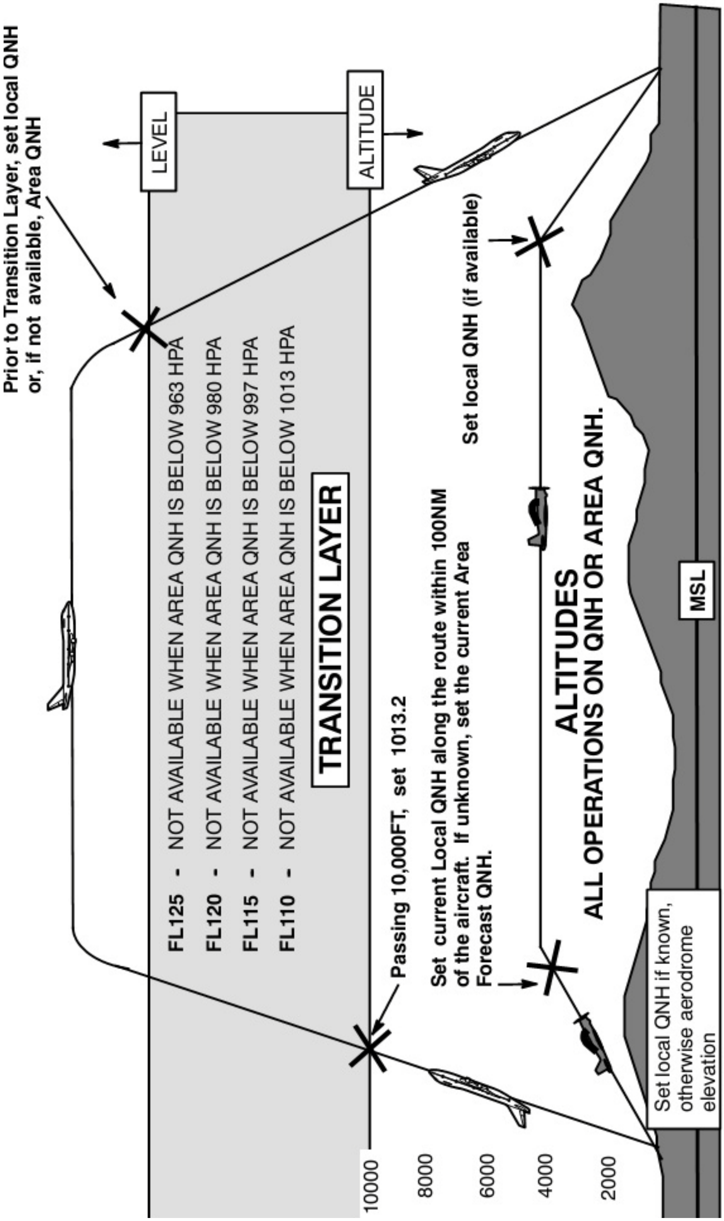

Figure 1 - Altimeter Settings

3. CRUISING LEVELS

3.1 Selection of Levels

3.1.1 Flights must be planned in accordance with levels selected from the tables at *Section 5.* Any part of a flight that will take place south of 80°S must be planned in accordance with levels selected from the tables at *Section 6.*

3.1.2 Within controlled airspace, ATC may assign and pilots may request a level that does not accord with the tables in *Section 5.*

3.1.2.1 Pilots must only request a level not conforming to the table of cruising levels when it is determined by the pilot in command to be essential to the safety of the flight and its occupants. In such circumstances, the phrase “DUE OPERATIONAL REQUIREMENT” must be included with the level change request.

3.1.3 ATC will only assign cruising levels not conforming to these tables when traffic or other operational circumstances require.

3.1.4 Subject to ATC instructions, a VFR flight must be flown at a cruising level appropriate to its magnetic track according to *Section 5. Table B* or *Section 6. Table B*:

a. whenever the flight is conducted at a height of 5,000FT AMSL or more; or

b. if the flight is conducted at a height of less than 5,000FT AMSL whenever practicable *(CAR 173)*.

3.2 An IFR flight must be flown:

a. within controlled airspace at a cruising level authorised for the flight by ATC; or

b. outside controlled airspace at a cruising level appropriate to its magnetic track according to *Section 5, Table A* or *Section 6, Table A (CAR 180)*.

3.2.1 When an IFR flight operating outside controlled airspace is unable to comply with the Table of Cruising Levels, the pilot must:

a. notify the appropriate ATS unit of the intended change in operating level, and any subsequent changes; and

b. in the event of conflict with another aircraft complying with the Table of Cruising Levels, give way to that aircraft or assume a cruising level in accordance with the Table of Cruising Levels until the aircraft with which it is in conflict is past and clear *(CAR 181).*

Note: At pilot request, ATC may assign to aircraft a level for cruise within a control area which does not provide the prescribed separation from the lower or upper limit of the control area.

3.3 **Block Levels**

3.3.1 On request from the pilot, a flight may be cleared to operate within controlled airspace within a Block Level provided that other aircraft are not denied the use of that airspace contained within that block.

3.3.2 Civil IFR flights will not be allocated block levels in Class E airspace.

3.3.3 The pilot shall have complete freedom to change levels within the block, provided that the upper and lower limits are not exceeded. However, a clearance to operate within a Block Level shall be cancelled or amended if another aircraft requests the use of a level within the block.

3.3.4 When cancelling or amending a Block Level clearance, the aircraft operating in a Block Level shall be instructed to climb or descend to an appropriate level or block level in order to provide vertical separation from the other aircraft requesting one of the levels.

3.3.5 Aircraft at standard flight levels will be afforded priority over aircraft using non-standard flight levels.

3.3.6 Mach number technique separation will not be applied to aircraft using block level clearances.

3.3.7 Aircraft operating within a block level must report the upper and lower block levels in all positions and frequency change reports.

Note: As most altitude alerting systems do not provide protection for both upper and lower assigned levels, flight crews are reminded to be vigilant in monitoring the aircraft altitude when operating within a Block Level.

4. CHANGE OF LEVELS

4.1 ATC Approval Required

4.1.1 The pilot in command must commence a change of level as soon as possible, but not later than one (1) minute after receiving that instruction from ATC, unless that instruction specifies a later time or place.

4.1.2 ATC may require that an assigned level must be reached by a specific time, distance or place. If a pilot in command doubts that the restriction can be met, ATC must be advised immediately.

4.1.3 ATS advised expectation of a level restriction does not authorise a pilot to climb or descend to meet that restriction.

4.1.4 An expectation of a level restriction is not required to be read back.

4.1.5 A requirement to report at a time or place given in the same clearance as a descent/climb instruction does not require the new level to be reached by the specified time or place.

4.1.6 The pilot in command of an aircraft, receiving an instruction from ATC to change level, must report:

a. when the aircraft has left a level at which level flight has been conducted in the course of climb, cruise or descent; and

b. when the aircraft leaves a level for which ATC has requested a report.

4.1.7 ATC may provide vertical separation between two climbing aircraft, not otherwise separated, by means of a step-climb. Pilots in command, who are subjected to a step-climb, must adopt the following procedure:

a. The pilot in command of the lower aircraft must report approaching each assigned level in the sequence.

b. The pilot in command of the higher aircraft, on hearing the lower aircraft report approaching each assigned level, must report the last vacated level.

4.1.8 Step-descents reverse the above *para 4.1.7* procedure.

4.1.9 ATC may specify a rate of climb or descent. Other considerations are as follows:

a. The phrase “STANDARD RATE”, when included in a clearance, specifies a rate of climb or descent of not less than 500FT per minute, except that the last 1,000FT to an assigned level must be made at 500FT per minute.

b. In the case of a step-climb or descent, the specified rate will be applicable to all level clearances issued in the course of the step climb or descent. If unable to comply with the prescribed rate, the pilot in command must advise ATC.

4.1.10 Cruise Climb is not used in Australian administered airspace. Where possible, block level clearances will be issued upon request.

4.2 ATC Approval Not Required

4.2.1 In airspace where ATC approval is not required to change level, the pilot of an IFR flight must report present position and intention to ATC approximately one (1) minute prior to making any change.

5. TABLES OF CRUISING LEVELS (NORTH OF 80° S)

TABLE A - IFR				
Magnetic Tracks	**From 000° through East to 179°**		**From 180° through West to 359°**	
Cruising Altitudes (Area QNH)	3,000	7,000	2,000	8,000
	5,000	9,000	4,000	10,000
			6,000	
Cruising Flight Levels (1013HPA)	110*	290	120*	300
	130	310	140	320
	150	330	160	340
	170	350	180	360
	190	370	200	380
	210	390	220	400
	230	410	240	430
	250	450	260	470
	270	490	280	510

Note FL110 is not available for level flight when the Area QNH is less than 1013HPA.*
FL120 is not available for level flight when the Area QNH is less than 980HPA.

TABLE B - VFR				
Magnetic Tracks	**From 000° through East to 179°**		**From 180° through West to 359°**	
Cruising Altitudes (Area QNH)	1,500 3,500 5,500	7,500 9,500	2,500 4,500 6,500	8,500
Cruising Flight Levels (1013HPA)	115* 135 155 175	195 215 235	125* 145 165 185	205 225 245
Note FL115 is not available for level flight when the Area QNH is less than 997 HPA.* *FL125 is not available for level flight when the Area QNH is less than 963 HPA.*				

Note 1: Pilots should be aware that VFR aircraft outside controlled airspace maybe operating at random levels below 5,000FT AMSL (see para 3.1.4).

6. TABLES OF CRUISING LEVELS (SOUTH OF 80° S)

TABLE A - IFR				
Magnetic Tracks	**From 000° through East to 179°**		**From 180° through West to 359°**	
Cruising Altitudes (Area QNH)	3,000 5,000	7,000 9,000	2,000 4,000 6,000	8,000 10,000
Cruising Flight Levels (1013HPA)	110* 130 150 170 190 210 230	250 270 290 330 370 410 etc.	120* 140 160 180 200 220 240	260 280 310 350 390 430 etc.
Note FL110 is not available for level flight when the Area QNH is less than 1013HPA.* *FL120 is not available for level flight when the Area QNH is less than 980HPA.*				

TABLE B - VFR				
Magnetic Tracks	**From 000° through East to 179°**		**From 180° through West to 359°**	
Cruising Altitudes (Area QNH)	1,500	7,500	2,500	8,500
	3,500	9,500	4,500	
	5,500		6,500	
Cruising Flight Levels (1013HPA)	115*	255	125*	265
	135	275	145	285
	155	300	165	320
	175	340	185	360
	195	380	205	400
	215	420	225	440
	235	460	245	480
Note FL115 is not available for level flight when the Area QNH is less than 997HPA. FL125 is not available for level flight when the Area QNH is less than 963HPA.*				

ENR 1.8 REGIONAL SUPPLEMENTARY PROCEDURES

1. There are no notifiable regional supplementary procedures applicable to Australia.

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ENR 1.9 AIR TRAFFIC FLOW MANAGEMENT

1. FLOW MANAGEMENT STAGES

1.1 At major airports within Australia, Air Traffic Flow Management procedures are applied to manage demand and capacity at specific airports. These procedures are defined in three stages:

a. **Strategic** - Generally occurs more than one day prior to the day of operation. This is known as schedule coordination and is managed by the specific airport operator, who may use an independent coordinator to manage the scheme.

b. **Pre tactical** - Occurs on the day prior to operation through the implementation of traffic management initiatives such as a Ground Delay Program (GDP). Airservices Australia Network Coordination Centre (NCC) manages this service.

c. **Tactical** - Occurs on the day of operation and uses real time traffic information to sequence traffic to the destination airport. ATC manage this service.

1.2 Tactical flow management takes precedence over pre tactical air traffic flow management which in turn takes precedence over strategic air traffic flow management.

2. STRATEGIC - SCHEDULE COORDINATION

2.1 An airline has the responsibility to obtain permission to operate services from the airport owner and/or operator.

2.2 In addition, all aircraft operators (excluding emergency and state aircraft) must obtain time-slots (slots) in advance of the operation from Airport Coordination Australia (ACA) in accordance with the following table:

Airport	Type of operation
Sydney, Brisbane and Perth	All arrivals and departures
Adelaide and Darwin	All international and scheduled domestic flights
Cairns, Gold Coast and Melbourne	All international flights

2.3 ACA slots may be obtained from ACA MON-FRI 2200-0600 UTC as follows:

Fax:	+61 2 9313 4210
Ph:	+61 2 9313 5469
Mobile Ph:	+61 417 494 670
SITA:	HQDACXH
Email:	slots@airportcoordination.org
Web:	www.airportcoordination.org
Mail:	PO Box 3047 Sydney International Airport NSW 2020 AUSTRALIA, or
Calling at the office:	Level 3, Suite 1227, International Terminal, Sydney Airport.

2.4 Notification of changes to slots allocated to existing scheduled flights should be advised to ACA in accordance with the requirements of the appropriate traffic management scheme.

2.5 ACA slots may be obtained outside ACA office hours for short notice non-scheduled flights from the NCC on 1800 020 626. These slots will be allocated from the available pool.

2.6 Allocated ACA slots may be subject to change by ATFM due to operational constraints.

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3. PRE-TACTICAL - GROUND DELAY PROGRAM

3.1 General

3.1.1 The NCC publishes GDP for:

a. arrivals into Sydney, Brisbane, Melbourne and Perth Airports; and

b. departures from Perth Airport

Note: Additional operating procedures are contained in ERSA FAC for the specified airport.

3.1.2 Unless instructed by ATC, pilots should maintain normal or specified climb, cruise and descent profiles.

3.2 **Calculated Off Blocks Time (COBT)**

3.2.1 Pilots must obtain an Air Traffic Flow Management COBT for operations at a GDP airport. Pilots of scheduled flights will receive their COBT through their company. Other flights may obtain a COBT through the NCC by email: atfmu@airservicesaustralia.com or Ph: 1800 020 626^ H24.

3.2.2 Flights from all Australian airports should operate in accordance with the COBT except that COBT generated by the Perth Departure Management Program will take precedence over COBT generated by Brisbane, Melbourne and Sydney GDP.

3.2.3 Aircraft operators may swap their allocated COBT until 20 minutes prior to Calculated Take Off Time. When a COBT has been swapped after receiving airways clearance, pilots must advise ATC of the amended COBT when calling for a start/pushback/taxi clearance.

3.2.4 All aircraft should operate within the compliance window for their allocated COBT. Pilots unable to operate within the compliance window should contact their company or the NCC to obtain a new COBT. ATC are not able to provide new or amended COBT.

Type of COBT	COBT compliance window
Arrivals (SY, BN, ML, PH)	-5min to +15min
Departure (PH)	-5min to +10min

Note: Failure to obtain a COBT and/or submit a flight plan for a flight to a program airport will result in the flight being considered early non-compliant.

3.2.5 For early non-compliant flights, Towers will only issue a clearance to push back or taxi for a significant operational requirement or if there is a reasonable expectation that, due to taxi or holding point delays, the required amount of ground delay will be achieved.

3.2.6 Flights departing non-compliant can expect delays en route. Non-compliant flights will be allocated the next available slot time up to a maximum delay as follows:

a. Early non-compliant - 60min; or

b. Late non-compliant - standard traffic holding delay.

3.3 Non-scheduled flights

3.3.1 Prior to submitting a flight plan, pilots of non-scheduled flights intending to operate into a GDP airport during the hours of program operation:

a. should, if required, obtain an ACA slot from ACA prior to contacting the NCC; and

b. must contact the NCC for a COBT and, if unable to obtain prior, an ACA slot.

3.3.2 Where possible pilots should contact the NCC prior to 0800 UTC the day before to ensure their flight in included in the GDP run for the following day. Operators who contact the NCC after the GDPs have been run will be allocated the next available COBT.

3.3.3 Pilots must provide the following information to the NCC at least one hour prior to the proposed operation. Any changes must be notified to the NCC prior to departure.

(1) Aircraft call sign

(2) Aircraft registration

(3) Aircraft type

(4) Departure aerodrome

(5) Destination aerodrome

(6) ETD (UTC time only)

(7) ETA (UTC time only)

(8) COBT notification email/mobile phone number

3.3.4 Notification of flight details to the NCC is additional to all existing flight plan notification requirements.

3.3.5 Pilots of non-scheduled flights must check their COBT for any amendments prior to flight by:

a. being able to receive a message from the NCC via their mobile phone/email; or

b. contacting the NCC within one of the flight; or

c. where no communication facilities are available, contacting the domestic HF frequency.

3.4 **GDP Run Times**

3.4.1 GDPs for the following day's operations are normally run at the following times:

Location	Time (UTC)
Perth (Departures Only)	0815
Perth (Arrivals Only)	0845
Melbourne	0915
Brisbane	1000
Sydney	1100
Sydney (Revision)	1800 (1700 during HDS)

3.5 **GDP revision**

3.5.1 When unforeseen circumstances significantly reduce the capacity of an airport, a GDP revision may be initiated and pilots must obtain a new COBT. Tower ATC may stop departures to the GDP airport to facilitate the revision.

3.5.2 There are three levels of revision:

a. Level 1 – compliance with the new COBT will commence in 30min; or

b. Level 2 – immediate compliance with the new COBT should be observed, however flights that have already manoeuvred to depart may continue; or

c. Level 3 – immediate compliance with the new COBT should be observed by all flights.

Note: Level 2 and 3 revisions will not be applied to flights departing Perth, Darwin, Karratha, Port Hedland or Broome, for Brisbane, Sydney or Melbourne.

3.5.3 The NCC will advise pilots and operators when a revision occurs. This advice may be provided through ATS when required. When a level 2 or 3 GDP revision occurs, ATS will advise pilots subject to immediate compliance.

4. TACTICAL

4.1 **Aircraft sequencing near ATFM Airports**

4.1.1 Due to terminal area traffic density, pilots may expect airborne traffic delays for arrival at locations adjacent to or within Class C control zones.

4.1.2 When sequencing arriving aircraft to controlled aerodromes, ATC may apply one or more of the following:

a. Enroute holding procedures;

b. Allocate a waypoint crossing time to the pilot; or

c. Tactically apply delaying action such as speed control or vectoring.

4.1.3 When ATC allocates a waypoint crossing time, aircraft must adjust speed to cross the waypoint at the specified time or up to 30 seconds early. Speed adjustment to meet a waypoint crossing time only applies to the specified waypoint. Unless otherwise published or instructed by ATC, pilots must cross the waypoint at the lesser of 250KT or profile speed.

4.1.4 Aircraft unable to meet the waypoint crossing time must inform ATC as early as possible.

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ENR 1.10 FLIGHT PLANNING

1. FLIGHT PLAN PREPARATION

1.1 Before beginning a flight, a pilot in command must study all available information appropriate to the intended operation and, in the cases of flights away from the vicinity of an aerodrome, flights over water (see *ENR 1.1 Section 11.11*) and all IFR flights, must make a careful study of:

a. current weather reports and forecasts for the route to be flown and the aerodromes to be used;

b. the airways facilities available on the route to be flown and the condition of those facilities;

c. the condition of aerodromes to be used and their suitability for the aircraft to be used;

d. the ATC rules and procedures appertaining to the particular flight; and

e. all Head Office and FIR NOTAM applicable to the en route phase of flight, and location-specific NOTAM for aerodromes.

The pilot must then plan the flight in relation to the information obtained.

Note: Full details on the services provided by the briefing office(s) are available in ERSA GEN.

1.2 Forecasts

1.2.1 Forecast information must include:

a. an aerodrome forecast for the:

(i) destination; and

(ii) when required, alternate aerodrome; and

b. one of the following:

(i) a flight forecast; or

(ii) a GAF (at and below A100); or

(iii) a SIGWX forecast (above A100); and

c. a wind and temperature forecast

For a flight to a destination for which a prescribed instrument approach procedure does not exist, the minimum requirement is a GAF.

Note: A wind and temperature forecast may be obtained from Wind and Temperature Charts, Grid Point Wind and Temperature Charts, Route Sector Winds and Temperatures Forecasts, a NAIPS Wind and Temperature Profile (applicable for the flight), as well as from approved flight planning systems that derive data from the Bureau of Meteorology or the WAFS.

1.2.2 For flights for which a forecast is required and cannot be obtained, the flight is permitted to depart provided the pilot is satisfied that the weather at the departure point will permit the safe return of the flight within one hour of departure. The flight is permitted to continue provided a suitable forecast is obtained for the intended destination within 30 minutes after departure.

1.2.3 For flights to a destination for which an aerodrome forecast is required and cannot be obtained or is “provisional”, the flight is permitted to depart provided an alternate aerodrome meeting all the requirements specified in *ENR 1.1 Section 11.7* is provided.

1.2.4 CHTR, AWK and PVT operations under the VFR at night must not be conducted unless the forecast indicates that the flight can be conducted in VMC at not less than 1,000FT above the highest obstacle within 10NM either side of track.

1.2.5 A pilot in command must ensure that the forecasts cover the period of the flight and that the aerodrome forecasts for the destination and alternate aerodromes, to be nominated in the flight plan, are valid for a period of not less than 30 minutes before and 60 minutes after the planned ETA.

1.2.6 When a flight is delayed so that the meteorological and operational information does not cover the period of flight, updates must be obtained as necessary, to allow the flight to be concluded safely.

1.2.7 A series of flights may be included on the one flight plan provided that:

a. the meteorological forecast will cover all the flights; and

b. relevant AIS information is available at flight planning.

1.2.8 When preflight briefing is obtained more than one hour prior to EOBT, pilots should obtain an update before each departure to ensure that the latest information available can be used for the flight. The update should be obtained by NAIPS pilot access, telephone, or, when this is impracticable, by radio.

1.3 GNSS Prediction Analysis - Flight in Oceanic and Remote Areas

1.3.1 A requirement for flight in oceanic and remote areas using GNSS is that an appropriate en route GNSS prediction analysis be conducted prior to each flight. For details see *ENR 2.2 Section 3.*

1.4 Non-instrument Procedure Destination

1.4.1 A flight operating under the IFR by day may be planned to a non-instrument procedure destination provided that the aircraft can be navigated in accordance with *ENR 1.1 Section 4.1* When the forecast for the destination is below the alternate minima specified in *ENR 1.1 para 11.7.2.12*, the pilot in command must ensure that a suitable alternate has been nominated.

1.4.2 An aircraft operating under the IFR by night having a MTOW not greater than 5,700KG may be planned to a destination not served by a radio navigation aid, or not having an approved instrument approach procedure, subject to the following requirements:

a. Sufficient fuel must be carried to permit flight to an alternate aerodrome meeting all the requirements specified in *ENR 1.1 Section 11.7*

b. The aircraft must be able to be navigated to the destination and then, if necessary, to the alternate aerodrome in accordance with the navigation requirements of *ENR 1.1 Section 4.1*

c. Descent below LSALT for the route sector to be flown must not be commenced until the aircraft is positively fixed within 3NM of the destination aerodrome and the aerodrome lighting has been visually identified. Subsequent manoeuvring for descent and landing must be in VMC and confined within 3NM of the destination aerodrome while operating below the LSALT.

d. The pilot is responsible for ensuring that he or she is familiar with all terrain and obstacles surrounding the aerodrome within the specified circling area of 3NM and that the aircraft is manoeuvred for landing at a height sufficient to maintain the obstacle clearance specified for circling in *ENR 1.5 para 1.7.6 Note 2.*

e. Aerodrome lighting must comply with the requirements of *ENR 1.1 para 11.8.3* as applicable. Recommended minimum lighting requirements for landing areas are outlined in *CAAP 92-1(0)*.

1.5 **Instrument Approach Requirements**

1.5.1 An aircraft operating under the IFR by night having a MTOW greater than 5,700KG may only be planned to a destination which has an approved instrument approach procedure for which the aircraft is appropriately equipped and the pilot is qualified.

1.5.2 Notwithstanding the requirements of *para 1.5.1*, such an aircraft may plan to an instrument approach procedure destination when the navigation aid(s) required for the instrument approach procedure has/have failed, subject to the following requirements:

a. Sufficient fuel must be carried to permit flight to an alternate aerodrome meeting all the requirements specified in *ENR 1.1 Section 11.7*

b. The aircraft must be able to be navigated to the destination and then, if necessary, to the alternate aerodrome in accordance with the navigation requirements of *ENR 1.1 Sub-section 4.1.*

c. Descent below the LSALT/MSA must be in accordance with the requirements for visual approaches by night specified in *ENR 1.5 section 1.15.*

2. FLIGHT NOTIFICATION

2.1 Flight notification requirements are divided into two specific categories:

a. those affecting IFR flights, and

b. those affecting VFR flights.

2.2 IFR flights require the submission of comprehensive flight notification and the transmission of in-flight progress reports at regular intervals. SARWATCH is based primarily on the receipt of these reports by ATS.

2.3 Pilots of VFR flights nominating a SARTIME to ATS, and those intending to operate in controlled airspace (except for VFR flights in Class E airspace) must submit flight details to ATS.

2.4 The order of preference for pilots to submit a comprehensive flight notification is:

a. via pilot access to NAIPS (via the Internet),

b. in writing,

c. by telephone, or

d. by radio to ATS.

2.5 Pilots submitting SARTIME flight notifications by fax must confirm receipt of the notification with the briefing office. Further, Airservices strongly recommends that when any flight notification is submitted by fax, the pilot or operator telephones the briefing office before departure to confirm that the fax has been received.

2.6 Abbreviated details for operations in controlled airspace may be advised by radio if the flight is to operate locally, or operations will be for a brief duration. However, prior contact with ATC may avoid delays. Pilots may submit details by radio to ATS when associated with a clearance request, or to nominate a SARTIME.

2.7 When submitting flight notification by radio, pilots should be mindful of the need to minimise frequency congestion and transmit only that information required by ATS for the current flight stage. Acceptance is subject to ATS workload and may be delayed.

2.8 Submission of comprehensive travel flight notification by radio is not a preferred method of notification and should not be used when submission by some other means is available. Flight notification by radio for travel flights requiring the submission of comprehensive details will not be accepted at controlled aerodromes.

2.9 Pilots of VFR flights wishing to operate in other than classes C or D airspace, and who wish to nominate a SARTIME, may submit details in the NAIPS SARTIME flight notification format (via the internet). If submitting the flight notification by fax or via telephone, the only form available is the Australian Domestic Flight Notification form.

2.10 Pilots of aircraft equipped only with VHF must not nominate IFR for those stages of the flight where they will be beyond ATS VHF cover.

2.11 VFR flights in the following categories are required to submit a SARTIME flight notification to ATS, or, as an alternative, to leave a Flight Note with a responsible person:

a. RPT and CHTR flights;

b. over-water flights;

c. flights in Designated Remote Areas;

d. flights at night proceeding beyond 120NM from the aerodrome of departure.

2.12 VFR flights which are required to, or wish to, use a SARTIME may do so by providing ATS with the following details:

a. callsign;

b. aircraft type;

c. departure point;

d. route to be flown;

e. destination;

f. POB; and

g. SARTIME.

Note: Only one SARTIME may be current at any time. To prevent the existence of multiple SARTIMEs for aircraft used by more than one pilot, SARTIMEs should be nominated immediately before the start of each flight.

2.13 VFR flights operating on SARTIME are requested to include contact telephone details for the pilot or company at the destination where available.

2.14 VFR flights may operate on reporting schedules in the following circumstances:

a. mercy flights;

b. flood, fire or famine relief flights;

c. search and rescue flights;

d. overwater flights; and

e. military flights.

2.15 When the pilot of a flight wishes to indicate a variation of SAR requirements, this must be indicated in Item 8 - Flight Rules, amplified in Item 15 (Route) by the position at which the change will occur, followed by the new Flight Rules.

2.16 Submission of flight details at least 30 minutes before EOBT is recommended.

2.17 Where notification of flight details, or changes to details, are submitted less than 30 minutes before EOBT, delays will be encountered when an ATC unit requires that the data be programmed into the computerised SSR Code/Callsign Management System.

2.18 The preferred method to cancel a SARTIME is via telephone to CENSAR on 1800 814 931. When telephone facilities are not available you may use ATS frequencies.

2.19 SARTIMEs are managed on a national basis by the central SARTIME management database, CENSAR.

2.20 The following table identifies flight notification options for the various classes and types of operations when flying IFR or VFR:

Flight Category	**Class of Operation**	**Type of Operation**	**Summary of Flight Notification Options**
IFR	All Classes	All Operations	FULL FLIGHT DETAILS
VFR	RPT & CHTR	All Other Operations	SARTIME or FLIGHT NOTE
VFR	AWK & PVT	Over-water flights	SARTIME or FLIGHT NOTE
		In Designated Remote Areas	SARTIME or FLIGHT NOTE
		At night proceeding beyond 120NM from the aerodrome of departure	SARTIME or FLIGHT NOTE
VFR	AWK & PVT	All Other Operations	SARTIME, FLIGHT NOTE or NO NOTIFI-CATION

2.21 Pilots not formally required to submit flight notification, or leave a flight note as defined in the preceding paragraphs, are nevertheless encouraged to leave a flight note as defined in *AIP GEN.*

3. FLIGHT NOTIFICATION/NOTE CONTENTS

3.1 Forms

3.1.1 An example of the Australian Domestic Flight Notification form is at *APPENDIX 1*. Instructions for completion of the Australian Domestic flight notification form for both IFR and VFR flights are contained at *APPENDIX 2*. In a number of cases, particularly in Item 19, completion is recommended as good practice. If mandatory Items are left incomplete, delays may occur.

Note: The reverse side of the Australian Flight Notification Form contains a "flight log/template" to assist pilots in planning and navigation. It is not intended to be mandatory or prescriptive, and pilots may use any template, or other device, of their choice.

3.1.2 The flight notification forms are available from the Airservices website (www.airservicesaustralia.com/flight-briefing/.

3.1.3 The suggested format for a Flight Note is at *APPENDIX 3.* This form is available from the Airservices website (www.airservice saustralia.com) (Pilot Centre) or from the Australian Maritime Safety Authority website (www.amsa.gov.au).

3.2 Flight Rules

3.2.1 Flight rules must be indicated in any flight notification, except for VFR flights operating wholly outside controlled airspace nominating a SARTIME.

3.2.2 An RPT flight capable of compliance with the IFR must indicate "IFR" on all flight notification.

3.2.3 Flights which, within a single stage, will be flown under both the IFR and VFR must indicate:

a. in the Flight Rules section of the flight notification, the flight rules applicable to the first route segment of the flight plan, Y to indicate IFR first followed by one or more changes of flight rules, or Z to indicate VFR first followed by one or more changes of flight rules;

b. in Field 15 of the flight notification, the position at which the change of flight rules will occur; and

c. for each subsequent stage, the flight rules applicable to that stage, with a change in Field 15 if applicable.

Note: The use of Y or Z must not be used to indicate a variation of flight rules between individual stages. Where the flight rules field is left blank on a multistage flight, the previous flight rule will apply.

3.3 **PBN Notification**

3.3.1 No indication on the flight notification form is required for Visual Navigation or DR Substitute applications of GNSS.

3.3.2 Notification of PBN capabilities requires a combination of entries in Item 10 (Equipment and Capabilities) and Item 18 of the ATS Flight Notification form. Guidance is provided in *Appendix 2* to this section.

3.3.3 Prior to conducting RNP AR operations in Australian administered airspace, foreign operators must apply to CASA (International Operations) for an “Authorisation: RNP-AR operations”. Foreign operators should not include any RNP AR capability in flight plan notification until so authorised by CASA.

3.4 **Military Flights**

3.4.1 Aircraft operating on LJR for any part of a flight must submit flight notification to ATS, regardless of flight rules.

3.4.2 LJR notification is required for flights planned below 5,000FT AGL within Class G airspace for aircraft that:

a. operate with a TAS above 250KT

b. have nominated NOCOM for any portion of the flight; or

c. are unable to meet reporting requirements.

Note: LJR notification is not required if the MLJ is operating within a danger area established for that purpose.

3.4.3 Military flights with an LJR component are required to provide EETs for all points nominated in Item 15 of their flight notification to enable ATS units to provide an effective service.

3.4.4 Military flights carrying out specific operations notified in the remarks section of the flight notification form, together with a level at or below 1,000FT will be operating with reference to ground level.

3.4.5 Pilots of military aircraft that are not RVSM-approved, but require priority in the RVSM flight level band for operational reasons, must enter STS/NONRVSM and RMK/MIL SPEC REQ in Item 18.

3.4.6 Formation flights of State aircraft must not insert the letter W in Item 10 of the ICAO flight plan form, regardless of the RVSM approval status of the aircraft concerned.

3.5 **POB**

3.5.1 In addition to including POB numbers with the flight notification, pilots of IFR flights operating as other than RPT must notify ATS, on first contact, of the number of persons on board for each flight stage.

3.5.2 Pilots of flights operating as RPT must ensure that a suitable passenger manifest is held by the company, detailing POB for each flight stage. Notification of changes may be made to ATS where it is impracticable for the pilot to provide notification of amendments to the company.

3.5.3 Pilots of VFR flights must include POB when submitting flight notification or when leaving a flight note and are encouraged to notify ATS of any subsequent changes.

3.6 **General**

3.6.1 In instances where NAVAID training is required, but diversion to an alternative aerodrome for that training is likely, and when procedures at the alternative location require the submission of flight notification, the pilot will be required to provide details of both locations in Item 15 (Route), expanded in Item 18. For example, for an aircraft requiring PILS at either Sydney, or alternatively Richmond:

DCT BK PEC MQD SY RIC BK DCT

Item 18 will show SY PILS or RIC PILS.

3.6.2 A Flight Note provided by an RPT or CHTR pilot must show aircraft callsign, EOBT for each departure point, ETA for each landing point, endurance, pilot's name, POB and destination contact facility. It should also show the proposed route, type of ELT and details of any survival equipment carried. The Flight Note must be left with a company representative who is instructed how to contact JRCC Australia in the event of the aircraft becoming overdue.

3.6.3 Pilots of flights operating IFR under a Private IFR rating must include this advice when submitting flight notification. Flight procedure Authorisations (FPAs) applicable to flight within controlled airspace must also be included.

3.6.4 For flights not operating along an ATS route, reporting points should be provided in Item 15 for locations approximately 30 minutes or 200NM apart.

3.7 Location data

3.7.1 Any location abbreviations used should be authorised abbreviations (e.g. published in *AIP*).

3.7.2 If a common name is entered into NAIPS in lieu of an aerodrome abbreviation or navigational air/waypoint, the flight notification output will assume that the aircraft is tracking over a navigational aid/waypoint and not aerodrome; e.g. the location HOLBROOK will translate to HBK, not YHBK.

3.7.3 Some locations with abbreviations may not have fixed positions e.g. HLS associated with a mobile oil platform or ship. These location codes are linked to a fixed latitude and longitude coordinate in systems and datasets. To ensure correct provision of ATS, in the event a platform is relocated or is in the process of relocating the NOTAM office must be immediately advised. A NOTAM will be issued to suspend use of the four (4) letter location code in flights plans. Pilots must then use “ZZZZ” procedure as specified in *Appendix 2 Item 13 and Item 16.*

When the NOTAM office is notified that the mobile oil platform/ ship is back in its original position the NOTAM will be cancelled, and use of the four (4) letter location code in flight plans may resume.

3.7.4 Pilots entering details in terms of latitude and longitude or by the use of polar coordinates must adhere to the correct format e.g. 2730S15327E.

4. FLIGHT NOTIFICATION AMENDMENT

4.1 When flight notification details have been submitted and amendment is necessary, advise ATS of the following items as soon as possible:

Item	Details	1. All IFR 2. VFR in CTR/CTA	VFR wholly OCTA nominating a SARTIME
7	Aircraft ident and/or registration	X	X
8	Flight rules to which flight will be operating	X	
10	Serviceability of equipment carried	X	
13	DEP aerodrome and EOBT if the change exceeds 30 minutes	X	X (DEP aerodrome only)
15 16	Route, landing points or alternates	X	X
15	Cruising level	X	
15	Speed and estimated total elapsed time	X	
18	Any change to: STS/PBN/NAV/ RMY/(includes SARTIME)	X	X
19	POB	X	

4.2 If advising ATS of a change of aircraft ident and/or registration, pilots of SARTIME flights must also advise, prior to take-off, that the flight is subject to a SARTIME.

4.3 To assist in managing the airways system, pilots should always warn ATS of any flight notification amendments by utilising appropriate alerting phraseologies; e.g.

“MELBOURNE CENTRE, DELTA MIKE GOLF, IFR FLIGHT PLAN AMENDMENT”
or
“FLIGHTWATCH, DELTA MIKE GOLF, SARTIME FLIGHT PLAN AMENDMENT”.

5. CARRIAGE OF FLIGHT DOCUMENTATION

5.1 Pilots are required to carry, and have readily accessible in the aircraft, the latest editions of the aeronautical maps, charts and other aeronautical information and instructions, published:

a. in AIP, or

b. by an organisation approved by CASA, that are applicable to the route to be flown, and any alternative route that may be flown, on that flight *(CAR 233)*.

APPENDIX 1

Australian – Domestic Flight Notification Form

airservices

7. Aircraft Identification	8. Flight Rules: I V Y Z	Type of Flight: S N G M X	
9. No / Type / Wake Turb Cat: H M L	10. Equipment: N or S; And / Or: A B C D E1 E2 E3 F G H I J1 J2 J3 J4 J5 J6 J7 K L M1 M2 M3 O R T U V W X Y Z	SSR: L E H S I P X C A N; ADS-B: B1 B2 V1 V2 U1 U2; ADS-C: D1 G1	

13. DEP Aerodrome	EOBT	15. Cruising Speed (N / M)	Level (A / F)	16. DEST Aerodrome	Total EET (HR / MIN)	ALTN Aerodrome

15. Route

18.

(Stage 2) 8. I V Y Z	13. DEP Aerodrome	EOBT	15. Cruising Speed (N / M)	Level (A / F)	16. DEST Aerodrome	Total EET (HR / MIN)	ALTN Aerodrome

15. Route

18. (Info relevant to Stage 2)

(Stage 3) 8. I V Y Z	13. DEP Aerodrome	EOBT	15. Cruising Speed (N / M)	Level (A / F)	16. DEST Aerodrome	Total EET (HR / MIN)	ALTN Aerodrome

15. Route

18. (Info relevant to Stage 3)

18. (Information relevant to all stages)

DOF/ REG/VH

PER/

RMK / SARTIME		To ATS Unit	Location	DEST Tel No:
Date/Time	Arr / Dep			ORGN/

Supplementary Information

19. Endurance (HR MIN)

E/

E/

E/

Aircraft colour / markings

S/ P D M J E

Dinghies D/ Cover C Colour

Persons on Board P/ P/ P/

N/ Remarks

C/ Pilot - in - command | Phone | Mobile | FAX | Company

Briefing 1800 805 150 FAX 1800 805 150 CENSAR 1800 814 931

PSN	LSALT	FL or ALT	TAS	TR(M)	WIND	HDG (M)	G/S	DIST	ETI	EET	PLN EST	REV EST	ATA ATD

Item	Fuel Calculation	Min	lbs, L or kg	Min	lbs, L or kg
a	Taxi fuel				
b	Trip fuel				
c	Variable fuel reserve (______% of b)				
d	Alternate fuel				
e	Fixed fuel reserve				
f	Additional fuel				
g	Holding fuel				
h	Fuel required (a+b+c+d+e+f+g)				
i	Discretionary fuel				
j	Margin fuel				
k	Endurance (h+i+j)				
	From				

Pilot Notes

CALLSIGN:	PHONE NO:	FAX NO:

BRIEFING 1800 805 150 FAX 1800 805 150 CENSAR 1800 814 931

APPENDIX 2

ATS FLIGHT NOTIFICATION - USER GUIDE

The Australian Domestic Flight Notification Form provides a modified ICAO flight plan form for Australian requirements and to allow entry of multiple stages of flight.

Item 7 – Aircraft Identification

Enter	Aircraft registration/flight number. ZZZZ and TBA cannot be accepted.
Requirements	For VH registered aircraft, enter the three letters after the prefix only; e.g. for VH-ZFR enter ZFR. For flight numbers, and other approved callsigns, enter a mixture of figures and letters that do not exceed seven alphanumeric characters and without hyphens or symbols; e.g. QFA611. For unmanned aircraft: a. enter the prefix UX then at least two characters of the aircraft model e.g. UXSCE4 b. enter the full radiotelephony callsign in Item 18 after RMK/RTF e.g. UNMANNED SCAN EAGLE FOUR One callsign per flight notification.

Item 8 (a) – Flight Rules

Circle	I	if the entire flight will be operated under the Instrument Flight Rules (IFR)
	V	if the entire flight will be operated under the Visual Flight Rules (VFR)
	Y	if the flight will be operated initially under the IFR followed by one or more changes of flight rules
	Z	if the flight will be operated initially under the VFR followed by one or more changes of flight rules
Requirements	If Y or Z is circled, an entry in Item 15 must specify where the change of flight rules will occur; e.g. YBAF VFR.	

Type of Flight

Circle	S	for scheduled air service
	N	for non-scheduled air service
	G	for general aviation

	M	for military
	X	if other than any of the defined categories above

Item 9 – Number of Aircraft

Enter	Number of aircraft where there are more than one, otherwise leave blank.

Type

Enter	Aircraft type. Where more than one aircraft type is included in a formation, enter the type of the lowest performance aircraft. Additional details regarding the formation must be inserted at Item 18.
Requirements	Use the two to four letter ICAO approved aircraft type abbreviation. For aircraft type abbreviations not approved by ICAO, enter ZZZZ and specify the type of aircraft in Item 18 preceded by TYP/.

Wake Turbulence Category

Circle	H	for aircraft 136,000KG MTOW or more
	M	for aircraft between 7,000 and 136,000KG MTOW
	L	for aircraft 7,000KG MTOW or less.

Item 10 – Equipment and Capabilities

Circle to indicate the presence of serviceable equipment that the pilot is qualified to use and where applicable, has authorisations from the State of Registry:

N	no COM/NAV/Approach Aid equipment for the route to be flown or the equipment is unserviceable.
S	standard COM/NAV/Approach Aid equipment of VHF/ILS/VOR.
A	GBAS Landing System
B	LPV (APV with SBAS)
C	LORAN C
D	DME
E1	FMC WPR ACARS
E2	D-FIS ACARS

E3	PDC ACARS
F	ADF
G	GNSS
H	HF RTF
I	Inertial NAV
J1	CPDLC ATN VDL Mode 2
J2	CPDLC FANS 1/A HFDL
J3	CPDLC FANS 1/A VDL Mode A
J4	CPDLC FANS 1/A VDL Mode 2
J5	CPDLC FANS 1/A SATCOM (INMARSAT)
J6	CPDLC FANS 1/A SATCOM (MTSAT)
J7	CPDLC FANS 1/A SATCOM (Iridium)
K	MLS
L	ILS
M1	ATC SATVOICE (INMARSAT)
M2	ATC SATVOICE (MTSAT)
M3	ATC SATVOICE (Iridium)
O	VOR
P1	CPDLC RCP 400
P2	CPDLC RCP 240
P3	SATVOICE RCP 400
P4-P9	Reserved for RCP
R	PBN Approved
T	TACAN
U	UHF RTF
V	VHF RTF
W	RVSM Approved
X	MNPS
Y	VHF with 8.33 kHz channel spacing capability
Z	other equipment or capabilities (see Note 1).

Note 1: If the letter Z is used, specify the other equipment carried or other capabilities in Item 18, preceded by COM/, NAV/, and/or DAT/, as appropriate.

Note 2: If the letter R is used, specify the performance based navigation levels that can be met in Item 18 following the indicator PBN/.

Note 3: The NAIPS interface does not currently support the use of P1, P2 and P3. Operators may only have to declare the RCP capability for flights that will operate in airspace administrated by States that require it.

Enter ‘G’ (GNSS) and ‘R’ (PBN capability) in Item 10 for aircraft equipped with a GNSS enabled area navigation system with additional entries as appropriate. The correlation between Item 10 and Item 18 entries for common PBN approvals is summarised below:

	PBN Capability	**Item 10**	**Item 18**
Oceanic	RNAV10 (RNP10)	GR and I (if appropriate)	PBN/A1
	RNP4	GR	PBN/L1
Continental	RNP2	GZ	NAV/RNP2
Terminal	RNP1, all permitted sensors	GRDI	PBN/O1
	RNP1, GNSS	GR	PBN/O2
Approach	RNP APCH	GR	PBN/S1
	RNP APCH with Baro-VNAV	GR	PBN/S2
	RNP AR APCH with RF	GRI	PBN/T1 OPR/ (name)
Precision Approach	GLS	AGZ	NAV/GLS

For the majority of Australian IFR operations the appropriate field 10 navigation entries will be:

S Standard COM/NAV/Approach Aid combination of VHF/VOR/ILS, and

R PBN capable, and

G GNSS, and

Z other equipment or capabilities (required to enable nomination of NAV/RNP2 in Item 18.

Surveillance Equipment

Circle N for Nil, or

Aircraft with ADS-B capability:

Enter up to two ADS-B codes: either ‘L’ or ‘E’ and ‘B1’ or ‘B2’.

L SSR Transponder Mode S, including aircraft identification, pressure altitude, ADS-B Out and enhanced surveillance capability.

E SSR Transponder Mode S, including aircraft identification, pressure altitude and ADS-B Out capability.

B1 ADS-B “Out” capability using 1090MHz extended squitter

B2 ADS-B “Out” and “In” capability using 1090MHz extended squitter

Note: Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via a Mode S transponder.

Use the following table to determine the Field 10b entries for ADS-B transponder (use only one entry)

Transponder with ADS-B Extended Squitter Capability

Field 10b Entry	Transponder Capability					
	Mode S (ADS-B)	Aircraft ID	Pressure Altitude	Enhanced Surveillance	ADS-B 1090 OUT	ADS-B 1090 IN
LB2	X	X	X	X	X	X
EB2	X	X	X		X	X
LB1	X	X	X	X	X	
EB1	X	X	X		X	
L	X	X	X	X		
E	X	X	X			

Aircraft without ADS-B capability:

Enter one SSR code representing the highest level of non-ADS-B surveillance capability available (in order highest is H then S, I, P, X, C and A is lowest).

H SSR Transponder Mode S, including aircraft identification, pressure altitude and enhanced surveillance capability.

S	SSR Transponder Mode S, including both pressure altitude and aircraft identification capability.
I	SSR Transponder Mode S, including aircraft identification, but no pressure altitude capability.
P	SSR Transponder Mode S, including pressure altitude, but no aircraft identification capability.
X	SSR Transponder Mode S with neither aircraft identification nor pressure altitude capability.
C	SSR Transponder Mode C
A	SSR Transponder Mode A

Note: Enhanced surveillance capability is the ability of the aircraft to down-link aircraft derived data via a Mode S transponder.

Use the following table (listed in order of highest to lowest capability) to determine to correct Field 10b entry for non-ADS-B transponder (use only one entry).

Non-ADS-B Transponder

Field 10b Entry	Transponder Capability					
	Mode A	Mode C	Mode S (non-ADS-B)	Aircraft ID	Pressure Altitude	Enhanced Surveillance
H			X	X	X	X
S			X	X	X	
I			X	X		
P			X		X	
X			X			
C	X	X			X	
A	X					

ADS-C

Enter up to two ADS-C codes: 'D1' and/or 'G1'

D1	ADS-C with FANS 1/A capabilities
G1	ADS-C with ATN capabilities

Note: The RSP specification(s), if applicable, will be listed in Item 18 following the indicator SUR/. Operators may only have to declare the RSP capability for flights that will operate in airspace administered by State that require it.

Item 13 – Departure Aerodrome

Item 16 – Destination Aerodrome and Total Estimated Elapsed Time

– Alternate Aerodrome

Enter	Aerodrome abbreviation in four letters.
Requirements	Enter the four letter authorised abbreviation then, without a space, the total estimated elapsed time as four figures in hours and minutes; e.g. 0340. Include any aerial work delay noted as DLE in Item 18. For aerodromes without an authorised abbreviation, enter ZZZZ. In Item 18 write DEP/ (or as applicable "DEST/ ALTN/") followed by either the latitude and longitude of the aerodrome or bearing and distance from a location with an authorised abbreviation or, the first point of the route or the marker radio beacon if the aircraft has not taken off from the aerodrome. In Item 18, enter the common name of the alternate location after RMK/.

Note 1: For bearing and distance, enter the designator of the location followed by three figures in degrees magnetic followed by three figures in nautical miles; e.g. BN270120 is a position 120NM, 270 degrees from Brisbane.

Note 2: Use of authorised aerodrome abbreviations for mobile locations may be suspended by NOTAM when not in the normal location. Pilots must use ZZZZ and provide location details when the aerodrome abbreviation is suspended.

Total EET

Enter	Total estimated elapsed time of the flight as four figures in hours and minutes; e.g. 0340 and include any aerial work delay noted as DLE in Item 18.

AFIL

	AFIL (Flight Notification Filed in the Air) can be used instead of the departure aerodrome abbreviation when ATS services are only required for entry to, or to cross controlled airspace. (Estimated Off Blocks Time becomes the estimate for the point where the ATS service is to commence).

Note: For a flight plan received from an aircraft in flight, the total estimated elapsed time is the estimated time from the first point of the route to which the flight plan applies to the termination point of the flight plan.

Estimated Off Blocks Time

Enter	Estimated off blocks time (EOBT), or the estimate for the point where the ATS service is to commence (applicable for use with AFIL - as referred to above in the departure aerodrome section), in four figure UTC.
Requirements	Provide an EOBT for every flight stage as HHMM. All flights must also include DOF/ followed by the date of flight as YYMMDD at Item 18, even if the date of flight is the current day. EOBT/DOF more than 120 hours (5 days) in advance of the time of notification cannot be accepted. A change more than 30 minutes to a submitted EOBT should be advised to ATS or through NAIPS.

Item 15 – Cruising Speed

Enter	Enter TAS in knots or enter Mach number.
Requirements	Circle N, then enter zero and three figures for knots; e.g. 0180. Circle M, then enter zero and two figures for mach number to the nearest hundredth of a unit; e.g. 082.

Level

Enter	First planned cruising level.

Requirements	Enter either “A” followed by three figures to indicate altitude in hundreds of feet up to and including 10,000FT; e.g. A085; or, “F” followed by three figures to indicate flight levels above 10,000FT; e.g, F350.

Item 15 – Route

Enter	Details of the planned route, change of level, flight rules, and cruise climb.
Requirements for locations/ waypoints	For an aerodrome, use authorised abbreviation; e.g. YMBL for Marble Bar. For a navaid identifier, use published two or three letter abbreviation; e.g. CDU for Ceduna NDB. For a latitude and longitude identification, use degrees and minutes in an eleven character group; e.g. 2730S15327E. For a waypoint use assigned designator; e.g. CANTY. For bearing and distance, enter the identification of the significant point followed by three figures in degrees magnetic followed by three figures in nautical miles; e.g. BN270120 is a position 120NM, 270° from Brisbane.
Requirements for route	Check *AIP charts* and *DAH* for full route details and *ERSA Flight Planning Requirements* for specific route requirements/restrictions and city pair options. Where specific route requirements/restrictions are not specified, route details may be entered according to the following rules: a. Route details must start and end with DCT (direct); b. DCT must be following or preceded by one of the following points: (i) Navaid (ii) Waypoint; or (iii) ARP, that is not the departure or destination location (unless a DLE is planned at the location). c. Subsequent points should be described by ATS route designators where defined.

ROUTE TYPE	EXAMPLE ENTRY
Flights outside designated ATS routes:	
Direct from departure point to destination without the use of navaids.	*For YAUR-YPMP:* DCT
Direct from departure point to destination with the use of navaids	*For YROM-YCMU* DCT ROM CMU DCT
From departure point to destination via published or non-published points	*For YBDV-YLRE* DCT BDV BDV062150 LRE DCT *or* DCT BDV 2440S14147E LRE DCT *or* DCT BDV YMOO LRE DCT
For survey work, include the points where the aircraft will enter and exit the survey area. *(See Note 2)*	*For YGLA-YGLA (via survey area):* DCT GLA BUD YGYM 2500S15100E GLA DCT
Flights on designated ATS routes:	
To or from locations with or without navigation aids.	*For YPAD-YLLE:* DCT AD H246 OOM DCT *For YSSY-YLHI:* DCT TESAT B450 LHI DCT
Via the SID or STAR transition point of the route. (*See Note 3*)	*For YBBN-YSSY* DCT LAV H62 CORKY H12 BOREE DCT *Where LAV is the SID transition point from Brisbane and BOREE is the STAR transition point to Sydney* *For YSSY-YLHI:* DCT NOBAR B450 LHI DCT

Note 1: Pilots should refer to ENR 1.1 para 5., “Air Route Specifications” and ENR 1.1 para 4. “Navigation Requirements” when planning a route.

Note 2: When planning to conduct survey work, a map of the survey area must be provided to ATS with the flight notification.

	When planning survey work, include in Item 18 the expected delay en route (DLE) at the commencement of survey; e.g. DLE/GYM0130 indicates a delay at Gympie for 90 minutes. *Note 3: SID/STAR designators and instrument approach fixes/waypoints for Australian airports must not be entered. Designated ATS routes and published location identifiers or waypoints must be used instead.*
Requirements for change of speed/level	Enter the significant point at which a change of speed (5% TAS or 0.01 Mach or more) or a change of level is planned to commence, followed by an oblique stroke and both the cruise speed and the level without a space between them; e.g. AYE/N0130A080, AS/M082F350. Both cruise speed and level must be entered even when only one of these quantities will be changed.
Requirements for change of flight rules	Enter details of a change to flight rules following the entry in Item 8 of Y or Z. Enter the location where the change will occur followed by a space and VFR or IFR; e.g. YBAF VFR. A change in level may also be included; e.g. ROM/N0180A090 IFR.
Requirements for cruise climb/ block level reservation	Enter the letter C followed by an oblique stroke, the point at which the cruise climb or block level is planned to start, an oblique stroke, the speed to be maintained during the cruise climb or block level, AND the two levels defining the layer to be occupied during the cruise climb or block level, OR one level and the word PLUS; e.g. C/FERET/N0380F370F390, or C/FERET/N0380F370PLUS.

Note: Cruise Climb is not used in Australian administered airspace. Where possible, block level clearances will be issued upon request.

Item 18

Enter	Other information such as navaid training, block surveys and other plain language remarks of significance. *Note: ACARS and TCAS or ACAS are not required to be included in the flight notification.*

Enter information in the sequence shown below:

STS/

Use for special aircraft handling, followed by one or more of the indicators below separated by a space e.g. STS/ MEDEVAC NONRVSM;

ALTRV – flight operated in accordance with an altitude reservation

ATFMX - flight approved for exemption from ATFM measures by ATC

FFR – fire-fighting

FLTCK – flight check for calibration of navaids

HAZMAT – flight carrying hazardous material

HEAD – flight engaged in, or positioning for, the transport of dignitaries with Head of State status

HOSP – medical flight declared by medical authorities

HUM – flight operating on a humanitarian mission

MARSA – flight for which a military entity assumes responsibility for separation of military aircraft

MEDEVAC – life critical medical emergency evacuation

NONRVSM – non RVSM-capable flight intending to operate in RVSM airspace

SAR – flight engaged in a search and rescue mission; and

STATE – for a flight engaged in domestic or international military services; or international customs or police services.

Note: Other reasons for special handling by ATS may be denoted under the designator RMK/.

PBN/

Followed by PBN capabilities. R must have been entered in Item 10. Include as many of the descriptors below, as apply to the flight without spaces e.g. PBN/A1L1T1. The field capacity is 16 characters only i.e. 8 entries. In order to make efficient use of the available capacity to present relevant aircraft capability use the following guidance:

- Only include one of the RNP APCH entries S1 or S2, not both

- Only include one of the RNP AR APCH entries T1 or T2, not both
- If RNAV 5 and B2, B3, B4 and B5 are applicable use B1, All Sensors. LORAN C (B6) is not required in Australia to qualify for B1.
- If a DME/DME/IRU specification is filed (C3, D4 or O4) do not file DME/DME (C3, D3 or O3) as well.

Descriptor	**RNAV SPECIFICATION**
A1	RNAV 10 (or RNP 10)
B1	RNAV 5 all permitted sensors
B2	RNAV 5 GNSS
B3	RNAV 5 DME/DME
B4	RNAV 5 VOR/DME
B5	RNAV 5 INS or IRS
B6	RNAV 5 LORANC
C1	RNAV 2 all permitted sensors
C2	RNAV 2 GNSS
C3	RNAV 2 DME/DME
C4	RNAV 2 DME/DME/IRU
D1	RNAV 1 all permitted sensors
D2	RNAV 1 GNSS
D3	RNAV 1 DME/DME
D4	RNAV 1 DME/DME/IRU
	RNP SPECIFICATION
L1	RNP 4
O1	Basic RNP 1 all permitted sensors
O2	Basic RNP 1 GNSS

Descriptor	RNAV SPECIFICATION
O3	Basic RNP 1 DME/DME
O4	Basic RNP 1 DME/DME/IRU
S1	RNP APCH
S2	RNP APCH with BARO-VNAV
T1	RNP AR APCH with RF
T2	RNP AR APCH without RF

Note: RNP2 has not yet been allocated a PBN code. Enter RNP2 in NAV/ with G, R and Z in Field 10.

NAV/	Followed by navigation equipment or capabilities other than those listed for Item 10 or under PBN/ e.g. NAV/ RNP2. Z must have been entered in Item 10.
COM/	Followed by communication equipment and capabilities other than those listed for Item 10a. Use when Z has also been entered in Item 10a; e.g. COM/HF3452.
DAT/	Followed by data communication equipment and capabilities not specified in 10a. Use when Z has also been entered in Item 10a.
SUR/	Indicate surveillance equipment and capabilities not specified in 10b. Indicate as many RSP specification(s) as apply to the flight, using designator(s) with no space. Multiple RSP specifications are separated by a space. Example: RSP180 RSP400.
DEP/	when ZZZZ has been entered in Item 13 followed by latitude and longitude or bearing and distance from a location with an authorised abbreviation; e.g. DEP/ BN090120.
DEST/	when ZZZZ has been entered in Item 16 followed by latitude and longitude or bearing and distance from a location with an authorised abbreviation; e.g. DEST/ 2730S15327E.
DOF/	Followed by YYMMDD to indicate the date of flight. e.g. DOF/121115
REG/	Followed by the full aircraft registration; e.g. REG/ VHZFR.

EET/	For international flights that enter or leave the Australian FIR use EET/ to indicate the estimated elapsed time to the FIR boundary. Enter EET/ followed by the FIR boundary indicator and the estimated elapsed time in hours and minutes; e.g. EET/YMMM0130.
SEL/	Followed by the SELCAL Code, for aircraft so equipped.
TYP/	When an approved aircraft type designator has not been assigned and ZZZZ has been entered in Item 9, enter TYP/ followed by the aircraft type; e.g. TYP/Echo Mk1.
CODE/	Aircraft address (optional). Expressed in the form of an alphanumerical code of six hexadecimal characters e.g. CODE/7C0001.
DLE/	followed by the point where the aircraft will be operating and the estimated time in hours and minutes as a four figure group; e.g. DLE/MDG0030 RMK/MDG NDB indicates that the aircraft will be delayed at Mudgee for 30 minutes training on the NDB.
OPR/	Followed by the name of operator. For RNP AR operations use of OPR/ alerts ATC to issue relevant RNP AR clearances.
ORGN/	Followed by the originator’s 8 letter AFTN address or other appropriate contact details such as a contact phone number when submitting a SARTIME.
PER/	Followed by the aircraft performance category as described in ENR 1.5 para 1.2; e.g. PER/B. IFR aircraft arriving at a controlled aerodrome must insert their performance category.
ALTN/	when ZZZZ has been entered in Item 16 followed by latitude and longitude or bearing and distance from a location with an approved abbreviation; e.g. ALTN/ 2700S15320E.
RMK/	When any other plain language remarks are required or deemed necessary. Where applicable, followed by one or more of the indicators below:

SARTIME, followed by FOR ARR (for arrival) or FOR DEP (for departure), date/time as a six figure group, the authority (TO CENSAR) and location as an authorised aerodrome abbreviation, navaid identifier or latitude/ longitude. ZZZZ cannot be accepted for the location. Only one SARTIME per flight notification may be entered. If more than one SARTIME is required, then TBA can be entered, e.g. RMK/SARTIME FOR ARR 080430 TO CENSAR YROM or RMK/SARTIME FOR DEP TBA TO CENSAR YBMV. Pilots are also requested to submit contact telephone details under ORGN/ when available.

ATC APPROVED NIL ADSB, insert if in receipt of an approval issued by Airservices in accordance with *GEN 1.5*, *para 6.1.4 - Flight with unserviceable ADS-B equipment.*

NIL ADSB AUTH, if authorised by the applicable instrument.

ADSB EXEMPT, if in receipt of an individual CASA exemption or authorisation.

MERCY FLIGHT, followed by the reason for the Mercy flight, reference to any rule or regulation that will not be complied with and details of the portions of flight affected as necessary.

FLT Insert if flight numbers are used either in RTF phraseologies or for traffic sequencing, and are not entered in Item 7.

FORM Insert details of the aircraft taking part in a formation flight if more than one aircraft type or different RVSM approval is included in the formation. The number, type and wake turbulence category and RVSM approval of the second and subsequent types of aircraft are entered, separated by a plus sign; e.g. RMK/FORM 2PC9+4F18 M OPS IN R577, or RMK/FORM 2F18+2F18 W.

PIFR Insert PIFR as the first element of RMK/ to indicate that the pilot is rated to Private IFR. Include relevant FPAs applicable to flight within controlled airspace as per the table below:

FPA	Abbreviation		Example/Notes
	Prefix	Suffix	
Navigation Only	NAV		Enter equipment as per item 10 and RMK/PIFR NAV in item 18.
Night Flying	NGT		RMK/PIFR NGT
Instrument Departures	IDEP	SID	RMK/PIFR IDEP RMK/PIFR IDEP SID
Instrument Approaches (Single or Multi-engine as applicable to the aircraft being flown)	IAL	NDB, VOR, DME, DMEGNSS, RNAVGNSS, ILS, LOC	RMK/PIFR IAL NDB RMK/PIFR IAL DMEGNSS RMK/PIFR IAL RNAVGNSS RMK/PIFR IAL VOR, ILS
Visual circling approach	VSA		RMK/PIFR VSA Not required where other IAL FPA are also listed.
STAR	STAR	NDB, VOR, GNSS, DME	RMK/PIFR STAR GNSS
Holding	HLDG	NDB, VOR, GNSS, DME	RMK/PIFR HLDG VOR
Multiple FPA			RMK/PIFR NAV IAL RNAVGNSS HLDG VOR GNSS

Item 19 - Supplementary Information

Enter	Additional information relevant to the flight for search and rescue purposes (optional).
Requirements	Fuel endurance to be entered for each stage of flight in hours and minutes after E/; e.g. 0430 hours.
	Aircraft Colour and Markings is used to record predominate colour and significant markings of the aircraft.
	Survival equipment to be circled as follows:

P	First aid
D	Emergency rations
M	Water

J	Jackets
E	ELT 406 MHz

Under “dinghies”, enter number of dinghies carries, the total capacity of ALL dinghies and colour.

Persons on board to be entered as the total number (passengers and crew) carried for each flight. Enter TBN if the number is to be advised after time of filing flight notification.

“Remarks” is provided for any additional survival equipment carried.

Enter additional capabilities of life jackets and ELT beacon transmit frequencies as relevant:

L	Lights
F	Fluorescein
U	UHR radio on 243.0MHz
V	VHF radio on 121.5MHz

Pilot in command should include telephone, mobile and fax number, and company name.

Military Supplement

Item 18

Enter	The following list of abbreviations shows those approved for use by the Military. These abbreviations must be used to indicate the type of flying activity to be conducted. No other abbreviations are to be used. All levels specified with these abbreviations indicate operations at or below that level. Levels below 1,000FT are to be treated as AGL.
EET/	All fighter/strike operations must enter EET/ for the LJR component of the flight. EET/is followed by the designator and the elapsed time in hours and minutes from the departure point to the significant point; e.g. EET/ CG0108 2726S15333E0116 BN0120 indicates an elapsed time to Gold Coast of 68 minutes, Point Lookout 76 minutes and Brisbane 80 minutes.

	Any en route delay time (DLE) must be accumulated with the estimated elapsed time associated with the route segment from the airwork position; e.g. EET/CG0108 2726S15333E0116 BN0140 DLE/2726S15333E 0020 indicates an estimated elapsed time to Gold Coast of 68 minutes, Point Lookout 76 minutes and Brisbane 100 minutes (including the 20 minutes airwork).
RMK/	followed by one or more of the indicators below:

TFR followed by a level to indicate Terrain Following Radar; e.g. RMK/TFR003.

LLN followed by a level to indicate Low Level Navigation; e.g. RMK/LLN010.

LLO followed by a level to indicate Low Level Operations; e.g. RMK/LLO030.

SVY followed by a level to indicate Aerial Survey; e.g. RMK/SVY050.

NVG followed by a level to indicate Night Vision Goggle exercise; e.g. RMK/NVG008.

AVM followed by a significant point and upper level of operation to indicate Abrupt Vertical Manoeuvres; e.g. RMK/AVM2515S14330EA090.

NOCOM followed by (time after ATD) + (time after ATD) CNL (agency) (frequency), to indicate that communications will be non-continuous for the specified period: e.g. RMK/NOCOM 10+34 CNL WLM APP 135.7, indicates that the aircraft will be NOCOM from 10 minutes after ATD until 34 minutes after ATD and will cancel NOCOM with Williamtown Approach on 135.7 MHz.

Note: There may be more than one NOCOM period annotated.

MILSPECREQ To indicate special requirements flights for military aircraft.

Pilots must include the reason for MILSPECREQ in:

a. STS/ for NONRVSM

b. RMK/ for:

(1) LTD COMNAV;

(2) LTD FUEL ENDCE;

(3) TO LAND BY TIME;

(4) AAR MARSA; or

(5) other purpose as decided by the military authority.

MARSA followed by the callsign of the aircraft or formation with whom MARSA will apply e.g. RMK/ MARSA PSTL. Use when STS/MARSA has also been entered in Item 18.

AAR followed by RVCP or anchor point, track designator or MAAA (as applicable) and MARSA callsign e.g. RMK/ AAR AMX100 MARSA BUCK4; or RMK/AAR CARBN W946 MARSA COLT.

APPENDIX 3

FLIGHT NOTE

Note: All times are local at that location (PRINT NEATLY)

Latest Cancellation Time at Final Destination: (Local Time)				**Date:**
Call-sign:	**Type:**	**Navaids:** (Carried & used; include GNSS)		
Pilot's Name:	**Mobile Tel No:**	**Home Contact:** (Name/Tel No)	**TAS:** KT	

Complete a separate line for each flight sector.

DEP AD / Point & Tel No	EOBT (Local Time)	Route (Turning Points)	DEST & Tel No	POB	Endurance HR	Endurance MIN

Remarks: (Mobile phone number of passengers / registration if different from call-sign / any other useful information to aid Search and Rescue)

Emergency Equipment: (Tick box as appropriate)

ELT: fixed ☐ portable ☐ Insert frequency if known: ________

First Aid ☐ **EMERG Rations** ☐ **Water** ☐ **Lifejackets** ☐ **Liferaft** ☐ capacity/colour: /

Other Signalling / Life-saving Devices:

Aircraft Colour / Markings:	**Operating Company Name / Contact No:**

The holder of this Flight Note should contact JRCC Australia if the pilot has not arrived at the destination by the cancellation time above. Any delay could be crucial to the safety of the occupants of the aircraft.

JRCC Australia: 1800 815 257 (freecall)

ENR 1.11 ADDRESSING OF FLIGHT PLAN MESSAGES

1. General

1.1 Flight plans are submitted to the briefing office in Canberra, or transmitted directly via NAIPS or the AFTN (see AFTN address list at *GEN 3.4, APPENDIX 1*.)

1.2 Flight movement messages relating to traffic into or via the Brisbane and Melbourne FIRs should be addressed in accordance with the following table:

FIR or controlled aerodrome	Message address
Brisbane FIR	YBBBZQZX
Melbourne FIR	YMMMZQZX
Departure or destination aerodrome	[ICAO location code] ZTZX (see *GEN 3.4 APPENDIX 1* controlled aerodrome location codes)

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ENR 1.12 INTERCEPTION OF CIVIL AIRCRAFT

1. INTERCEPTION PROCEDURES

The following procedures and visual signals apply over the territory and territorial waters of Australia in the event of interception of an aircraft.

1.1 Action by intercepted aircraft

1.1.1 An aircraft which is intercepted by another aircraft must immediately:

a. follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the tables in *Sections 1.3 and 1.4;*

b. notify, if possible, the appropriate ATS unit;

c. attempt to establish radio communication with the intercepting aircraft, or with the appropriate intercept control unit, by making a general call on the emergency VHF frequency 121.5MHz and repeating this call on the emergency UHF frequency 243.0MHz, if practicable, giving the identity and position of the aircraft and nature of the flight;

d. if equipped with SSR transponder, select code 7700, unless otherwise instructed by the appropriate ATS unit; and

e. if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate ATS unit.

1.2 Radio communications during interception

1.2.1 If radio contact is established during interception but communication in a common language is not possible, attempts must be made to convey instructions, acknowledgment of instructions and essential information by using the following phrases and pronunciations and transmitting each phrase twice.

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Phrases for use by INTERCEPTED aircraft		
Phrase	**Pronunciation**[1]	**Meaning**
CALLSIGN (callsign)[2]	**KOL** SA-IN (callsign)	My callsign is (callsign)
WILCO	**VILL**-KO	Understood. Will comply.
CAN NOT	**KANN** NOTT	Unable to comply.
REPEAT	REE-**PEET**	Repeat your instruction.
AM LOST	**AM LOSST**	Position unknown.
MAYDAY	**MAYDAY**	I am in distress.
HIJACK[3]	**HI-JACK**	I have been hijacked.
LAND (place name)	**LAAND** (place name)	I request to land at (place name).
DESCEND	DEE-**SEND**	I require descent.

1. *Syllables to be emphasized are printed in bold letters.*
2. *The callsign required to be given is that used in radiotelephony communications with ATS units and corresponding to the aircraft identification in the flight notification.*
3. *Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".*

1.2.2 The phrases shown in the table below should be used by the intercepting aircraft and transmitted twice in the circumstances described in *para 1.2.1.*

1.2.3 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft should request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

1.2.4 If instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft should request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

1.2.5 The visual signals for use in the event of interception are detailed in *Sections 1.3 and 1.4*.

Phrases for use by INTERCEPTING aircraft		
Phrase	**Pronunciation**[1]	**Meaning**
CALLSIGN	**KOL** SA-IN	What is your callsign?
FOLLOW	**FOL**-LO	Follow me.
DESCEND	DEE-**SEND**	Descend for landing.
YOU LAND	**YOU LAAND**	Land at this aerodrome.
PROCEED	PRO-**SEED**	You may proceed.

1. *Syllables to be emphasized are printed in bold letters.*

1.3 Signals initiated by intercepting aircraft and responses by intercepted aircraft

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Response	Meaning
1	**DAY or NIGHT**- Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading. *Notes:* *1. Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Serial 1.* *2. If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.*	You have been intercepted. Follow me.	**DAY or NIGHT** - Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Response	Meaning
2	**DAY or NIGHT** - An abrupt break-away manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	**DAY or NIGHT -** Rocking the aircraft.	Understood, will comply.
3	**DAY or NIGHT**- Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use, or if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.	Land at this aerodrome	**DAY or NIGHT** - Lowering landing gear, (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing area, landing is considered safe, proceeding to land.	Understood, will comply.

1.4 **Signals initiated by intercepted aircraft and responses by intercepting aircraft**

Series	INTERCEPTED Aircraft Signals	Meaning	INTERCEPTING Aircraft Response	Meaning
4	**DAY or NIGHT** - Raising landing gear (if fitted) and flashing landing lights while passing over runway in use of helicopter landing area at a height exceeding 300M (1,000FT) but not exceeding 600M (2,000FT) (in the case of a helicopter, at a height exceeding 50M (170FT) but not exceeding 100M (330FT)) above the aerodrome level, and continuing to circle runway in use of helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate	**DAY or NIGHT** - If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the *Series 1* signals prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the *Series 2* signals prescribed for intercepting aircraft.	Understood, follow me. Understood, you may proceed.
5	**DAY or NIGHT -** Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply	**DAY or NIGHT** - Use *Series 2* signals prescribed for intercepting aircraft.	Understood.
6	**DAY or NIGHT** - Irregular flashing of all available lights.	In distress.	**DAY OR NIGHT**- Use *Series 2* signals prescribed for intercepting aircraft.	Understood.

2. PROCEDURES FOR AIRCRAFT OPERATING IN AN AIR DEFENCE IDENTIFICATION ZONE

2.1 General

2.1.1 The following general rules and procedures apply to enable identification of air traffic entering any designated Air Defence Identification Zone (ADIZ) under the control of Australia.

2.1.2 An ADIZ is airspace of defined dimensions within which identification of all aircraft is required.

2.1.3 When a flight is intended to operate within an ADIZ, the pilot, unless exempted in accordance with *para 2.1.4*, must:

a. lodge a flight notification covering flight within the ADIZ with the appropriate ATS unit at least 60 minutes before entry into the ADIZ;

b. report position to ATS when passing each position reporting point within the ADIZ;

c. report position to ATS at ADIZ boundary with a geographical reference (e.g. 15NM east of...) or, if the departure point is within 100NM of the ADIZ boundary, report departure;

d. report departure if departing from a point in the ADIZ;

e. maintain a continuous listening watch on the communications frequency of the appropriate ATS unit or on another frequency as directed until the flight is through the ADIZ;

f. not deliberately deviate from tracks and altitudes filed in the flight notification unless prior ATC clearance is obtained, or, outside controlled airspace, notification is given to the appropriate ATS unit; and

g. activate the aircraft transponder when within 100NM of the ADIZ and when operating within the ADIZ.

2.1.4 The following flights over Australia and its territorial waters are exempted from compliance with the requirements of *para 2.1.3:*

a. a flight originating within an ADIZ which maintains a steady outbound track;

b. a flight which remains within 10NM of the point of departure;

c. aircraft performing published approach, holding or recovery procedures; and

d. a flight conducted in accordance with special procedures arranged with the Regional Air Defence Commander.

2.1.5 Flight notifications lodged in accordance with *para 2.1.3* must include details of:

a. tracks and altitudes to be flown while operating in the ADIZ;

b. estimated elapsed times for each route segment in the ADIZ, including the segment in which the ADIZ boundary is crossed;

c. position reporting points, departure and landing points; and

d. estimated time at the commencing point of the first route segment for which details are required in accordance with *sub-para b.*

2.1.6 Reporting points published in aeronautical charts must be used plus those required by the Regional Air Defence Commander.

2.1.7 Pilots must immediately notify ATS of any deviation from flight notification beyond the following tolerances:

a. estimated time of commencing the ADIZ route segments – ± 5 minutes;

b. over land area – ± 10NM from track;

c. over oceanic areas - ± 20NM from track.

Note: The 5 minutes expressed in sub-para a. will be used in considering an appropriate response, but pilots must report predicted deviations of greater than two (2) minutes.

2.1.8 In the event of failure of two way radio communication, the pilot must proceed in accordance with the normal radio failure procedures.

2.2 Special Requirements

2.2.1 Special requirements may be published relative to a particular ADIZ. Flights exempted in accordance with *para 2.1.4* will not be exempted from the special requirements unless so specified.

2.3 Non-Compliance

2.3.1 Significant deviations from the requirements for flight in an ADIZ must be reported immediately to ATS and details and reasons for the deviation must be reported at the first point of landing, for transmission to the Regional Air Defence Commander.

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2.4 Diversion of Aircraft for Defence Operations

2.4.1 The Regional Air Defence Commander may, through ATS, direct the flight of aircraft in the interests of national security. Messages initiating such requirements will be prefaced by ‘MILITARY OPERATIONS REQUIRE...’

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ENR 1.13 UNLAWFUL INTERFERENCE

1. PILOT ACTIONS

1.1 An aircraft which is being subjected to unlawful interference must endeavour to inform ATS of this fact, along with any deviation from the current flight plan and any other significant factors affecting the operation. SSR-equipped aircraft should use an appropriate code. Information pertinent to the safe conduct of the flight will continue to be transmitted by ATS and appropriate action taken to expedite the conduct of the flight.

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ENR 1.14 AIR TRAFFIC INCIDENTS

1. ACCIDENTS AND INCIDENTS

1.1 Introduction

1.1.1 The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The Bureau is managed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB is established by the *Transport Safety Investigation Act 2003* (TSI Act) and conducts its investigations in accordance with the provisions of the Act. The TSI Act provides guidance for the investigation of all civil aviation occurrences within Australian Territory and for all occurrences involving civil registered Australian aircraft outside Australian Territory.

1.1.2 The fundamental objective of air safety investigations is the prevention of accidents and incidents. The ATSB's investigations are independent and do not assign blame. The aim of the investigations is to determine all the factors involved and to use this information as the basis for enhancing safety in aviation.

1.1.3 The results of an investigation are required to be made known through a report which may constitute:

a. a formal report,

b. safety action statements, or

c. safety recommendations.

Publication of the report may occur on the ATSB website (www.atsb.gov.au) and in ATSB publications.

1.1.4 Contact details for the ATSB are:

PO Box 967,
Civic Square,
CANBERRA ACT 2608
Ph: 1800 011 034, or 61 2 6230 4408
Fax: 61 2 6274 6434.

1.2 Immediately and Routine Reportable Matters

1.2.1 Regulation 2.5 of the *Transport Safety Investigation Regulations 2003* (TSI Regulations) contains a list of "responsible persons" for reporting aviation occurrences to the ATSB. A "responsible person" is listed as:

a. a crew member of the aircraft concerned;

b. the owner or operator of the aircraft;

c. a person performing an ATC service in relation to the aircraft;

d. a person performing a dedicated aerodrome rescue or fire fighting service in relation to the aircraft;

e. a person who:

(1) is licensed as an aircraft maintenance engineer under the *Civil Aviation Regulations 1988* or the *Civil Aviation Safety Regulations 1998,* and

(2) does any work in relation to the aircraft;

f. a member of the ground handling crew in relation to the aircraft;

g. a member of the staff of CASA; and

h. the operator of an aerodrome.

1.2.2 A responsible person is not required to report if he/she has reasonable grounds to believe another responsible person has reported the occurrence.

1.2.3 The occurrences which a "responsible person" is required to report are listed as either Immediately Reportable Matters (IRM) or Routine Reportable Matters (RRM). IRM must be reported as soon as reasonably practicable by telephone on 1800 011 034, and then a follow-up written report must be made within 72 hours. RRM require only a written report within 72 hours.

1.2.4 Listed below are the IRM and RRM that must be reported by:

a. all aircraft operations,

b. air transport operations, and

c. aircraft operations other than air transport operations.

Note: An "air transport operation" is a regular public transport operation or a charter operation. The TSI Regulations contain a more comprehensive definition for the term as well as definitions for other terms used in the list of reportable matters below. Refer to the ATSB website (www.atsb.gov.au) for a complete copy of the TSI Act, TSI Regulations and explanatory material.

2. REPORTING - ALL AIRCRAFT OPERATIONS

2.1 IRM

2.1.1 IRM for all aircraft operations are:

a. subject to the exclusions in the note below, the death of, or a serious injury to:

(1) a person on board the aircraft or in contact with the aircraft, or anything attached to the aircraft, or anything that has become detached from the aircraft; or

(2) a person who has been directly exposed to jet blast;

Note: "The death of, or a serious injury to, a person" does not include:

(i) death or serious injury resulting from natural causes (except to a flight crew member); or

(ii) death or serious injury that is intentionally self-inflicted; or

(iii) death or serious injury that is intentionally caused by another person; or

(iv) death or serious injury suffered by a stowaway in a part of the aircraft that is not usually accessible to crew members or passengers after takeoff; or

(v) death occurring more than 30 days after the occurrence that caused the death, unless the death was caused by an injury that required admission to hospital within 30 days after the occurrence.

b. the aircraft believed "missing";

c. the aircraft suffering serious damage, or the existence of reasonable grounds for believing that the aircraft has suffered serious damage;

d. the aircraft being inaccessible and the existence of reasonable grounds for believing that the aircraft has been seriously damaged;

e. breakdown of separation standards, being a failure to maintain a recognised separation standard (vertical, lateral or longitudinal) between aircraft that are being provided with an ATC separation service.

Note: This may result from ATC, pilot or other actions, and may occur even if only one (1) of the aircraft involved is under control of an ATC service.

3. REPORTING - ALL AIR TRANSPORT OPERATIONS

3.1 IRM

3.1.1 IRM for all air transport operations include:

a. airprox*;

b. violation of controlled airspace;

c. a near-collision involving aircraft manoeuvring on the ground;

d. an occurrence in which flight into terrain is narrowly avoided;

e. the rejection of a takeoff from a closed or occupied runway;

f. a takeoff from a closed or occupied runway with marginal separation from an obstacle or obstacles;

g. a landing on a closed or occupied runway;

h. a significant failure to achieve predicted performance during takeoff or initial climb;

i. a fire (even if subsequently extinguished), smoke, fumes or an explosion on, or in, any part of the aircraft;

j. an uncontained engine failure;

k. a mechanical failure resulting in the shutdown of an engine;

l. the use of any procedure for overcoming an emergency;

m. an event requiring the use of oxygen by a flight crew member;

n. malfunction of an aircraft system that seriously affects the operation of the aircraft;

o. a flight crew member becoming incapacitated during flight;

p. fuel exhaustion;

q. the aircraft's supply of useable fuel becoming so low (whether or not as a result of fuel starvation) that the pilot declares an emergency in flight;

r. undershooting, over-running or running off the side of a runway during takeoff or landing, or any other similar occurrence;

s. any of the following occurrences, if the occurrence causes difficulty controlling the aircraft:

(1) a weather phenomenon; or

(2) operation outside the aircraft's approved envelope;

t. the failure of two (2) or more related redundant systems for flight guidance and navigation; and

u. serious damage to, or destruction of, any property outside the aircraft caused by contact with the aircraft or anything that has become detached from the aircraft.

** **airprox** means an occurrence in which two (2) or more aircraft come into such close proximity that a threat to the safety of the aircraft exists or may exist, in airspace where the aircraft are not subject to an air traffic separation standard or where separation is a pilot responsibility.*

3.2 **RRM**

3.2.1 RRM for all air transport operations include:

a. an injury, other than a serious injury, to:

(1) a person on board the aircraft or in contact with the aircraft or anything attached to the aircraft or anything that has become detached from the aircraft; or

(2) a person who has been directly exposed to jet blast;

b. the aircraft suffering damage that compromises, or has the potential to compromise, the safety of the flight, but is not serious damage;

c. flight below the minimum altitude, except in accordance with a normal arrival or departure procedure;

d. a ground proximity warning system alert;

e. a critical rejected takeoff, except on a closed or occupied runway;

f. a runway incursion;

g. any of the following occurrences, if the occurrence compromises, or has the potential to compromise, the safety of the flight:

(1) a failure to achieve predicted performance during takeoff or initial climb;

(2) malfunction of an aircraft system, if the malfunction does not seriously affect the operation of the aircraft;

Note: Aircraft systems include flight guidance and navigation systems.

(3) fuel starvation that does not require the declaration of an emergency;

h. any of the following occurrences, if the occurrence compromises or has the potential to compromise the safety of the flight, but does not cause difficulty controlling the aircraft:

(1) a weather phenomenon;

(2) operation outside the aircraft's approved flight envelope;

i. failure or inadequacy of a facility used in connection with the air transport operation, such as:

(1) a navigation or communication aid; or

(2) an ATC service or general operational service; or

(3) an airfield facility, including lighting or a manoeuvring, taxiing or takeoff surface;

j. misinterpretation by a flight crew member of information or instructions, including:

(1) the incorrect setting of a transponder code; or

(2) flight on a level or route different to the level or route allocated for the flight; or

(3) the incorrect receipt or interpretation of a significant radio, telephone or electronic text message;

k. breakdown of coordination, being an occurrence in which traffic related information flow within the ATS system is late, incorrect, incomplete or absent;

l. failure of air traffic services to provide adequate traffic information to a pilot in relation to other aircraft;

Note: The information may have been incomplete, incorrect, late or absent.

m. a traffic collision avoidance system resolution advisory being given to the pilot of the aircraft;

n. an occurrence arising from the loading or carriage of passengers, cargo or fuel, such as:

(1) the loading of an incorrect quantity of fuel, if the loading of the incorrect quantity is likely to have a significant effect on aircraft endurance, performance, balance or structural integrity; or

(2) the loading of an incorrect type of fuel or other essential fluid, or contaminated fuel or other essential fluid; or

(3) the incorrect loading of passengers, baggage or cargo, if the incorrect loading has a significant effect on the mass or balance of the aircraft; or

(4) the carriage of dangerous goods in contravention of Commonwealth, State or Territory legislation; or

(5) the incorrect securing of cargo containers or significant items of cargo; or

(6) the incorrect stowage of baggage or cargo, if the incorrect stowage is likely to cause a hazard to the aircraft or its equipment or occupants, or to impede emergency evacuation; or

(7) a significant contamination of the aircraft structure, systems or equipment, arising from the carriage of baggage or cargo; or

(8) the presence of a violent or armed passenger;

o. a collision with an animal, including a bird.

4. REPORTING - ALL AIRCRAFT OPERATIONS OTHER THAN AIR TRANSPORT OPERATIONS

4.1 RRM

4.1.1 RRM for all aircraft other than air transport operations include:

a. an injury, other than a serious injury, to a person on board the aircraft;

b. a flight crew member becoming incapacitated while operating the aircraft;

c. airprox

d. an occurrence in which flight into terrain is narrowly avoided;

e. the use of any procedure for overcoming an emergency;

f. an occurrence that results in difficulty controlling the aircraft, including any of the following occurrences:
   (1) an aircraft system failure;
   (2) a weather phenomenon;
   (3) operation outside the aircraft's approved flight envelope;

g. fuel exhaustion;

h. the aircraft's supply of useable fuel becoming so low (whether or not as a result of fuel starvation) that the safety of the aircraft is compromised;

i. a collision with an animal, including a bird, on a certified or registered aerodrome.

5. WRITTEN REPORT

5.1 The written report required to be submitted under Section 19 of the Act should preferably use the Air Safety Accident or Incident Report (ASAIR) format. For a reportable matter other than for a collision with an animal or bird, a requirement of Regulation 2.6 of the TSI Regulations is that the report should contain as much of the following information as is within the person's knowledge:

a. the name and contact details of the person making the report;

b. the person's role in relation to the aircraft concerned;

c. the type, model, nationality, registration marks and flight number (if any) of the aircraft;

d. the name of the owner of the aircraft;

e. the name and contact details of the operator of the aircraft;

f. if the aircraft was under hire when the reportable matter occurred, the name of the hirer;

g. the name and nationality of the pilot, and the type and licence number of the licence held by the pilot;

h. the name and nationality of each other flight crew member (if any), and the type and licence number of the licence held by each member;

i. the day and local time when the reportable matter occurred;

j. if, when the reportable matter occurred, the aircraft was inflight:

(1) the place where the flight started; and

(2) the place where the flight ended, or was intended to end; and

(3) the purpose of the flight;

k. unless the reportable matter occurred at an airport, the location of the aircraft immediately after the occurrence of the reportable matter, including the geographical coordinates of that location;

l. the number of persons on board the aircraft when the reportable matter occurred;

m. the nature of the reportable matter, including:

(1) its outcome or effect on the flight of the aircraft;

(2) the phase of the aircraft's flight when the matter occurred;

(3) the weather conditions;

(4) the airspace designation;

(5) the altitude at which the matter occurred;

(6) if the matter occurred at, or in relation to, an airport, the name of the airport, and, if it occurred on, or in relation to, a runway, the runway number;

(7) if the matter involved a collision with an animal, including a bird, the nature of the collision;

(8) the causes of the occurrence (if known), including any human performance issues;

(9) any safety action carried out to prevent a recurrence of the matter; and

(10) the nature and extent of any damage to the aircraft;

n. the physical characteristics of the area where the reportable matter occurred (e.g. the terrain, vegetation cover, and existence and location of any buildings, runways or aerodromes);

o. the flight rules under which the aircraft was operating at the time of the reportable matter;

p. the type of aircraft operation the aircraft was engaged in at the time of the reportable matter;

q. if the matter resulted in a fatality or serious injury, and the aircraft carried an emergency locator transmitter:

(1) the manufacturer and model of the emergency locator transmitter;

(2) whether it was fixed or portable;

(3) its location in the aircraft; and

(4) whether it was activated;

r. if the aircraft's pilot has died:

(1) the pilot's date of birth; and

(2) the pilot's total flying hours on all aircraft and flying hours on the same type of aircraft;

s. if any crew members have died or been seriously injured as a result of the reportable matter, how many, and their names and nationalities;

t. if any passengers have died or been seriously injured as a result of the reportable matter, how many, and their names and nationalities; and

u. if any other persons have died or been seriously injured as a result of the reportable matter, how many, and their names and nationalities.

5.2 For a reportable matter that amounts to a *collision with an animal or bird* only the report must contain as much of the following information as is within the knowledge of the person making the report:

a. the name and contact details of the person making the report;

b. the day and local time when the reportable matter occurred;

c. the nature of the reportable matter, including:

(1) if the matter occurred at, or in relation to, an airport, the name of the airport, and if it occurred on, or in relation to, a runway, the runway number; and

(2) the nature and extent of any damage to the aircraft; and

d. any other information that the person making the report considers appropriate.

5.3 The completed ASAIR should be forwarded directly by mail, facsimile, or via the online website (www.atsb.gov.au) notification form to the ATSB central office in Canberra.

5.4 An ASAIR form may be obtained online at www.atsb.gov.au or by contacting the ATSB on free-call phone number 1800 011 034 (primary notification number) or 1800 020 616 (safety information number and secondary notification number).

6. INVESTIGATION

6.1 The transport safety investigator of an IRM or an RRM has the capacity to obtain such information as is necessary to conduct the investigation through the powers delegated to him or her under *Part 5* of the *TSI Act*.

However, the investigator will always seek, where possible, to obtain information in cooperation with an owner or occupier. Copies of flight plans, logs and briefing documents should be retained by the pilot for 14 days after a flight in case they may be required by the investigator.

6.2 *Section 24 of the TSI Act* makes a person guilty of an offence for reckless conduct that adversely affects an investigation. For an IRM, this may be conduct that occurs before the investigation is commenced. The offence does not apply if the conduct is authorised by the Executive Director of the ATSB or a delegate, or if the conduct was necessary to:

a. ensure the safety of persons, animals or property; or

b. remove deceased persons or animals from an accident site; or

c. move a transport vehicle, or the wreckage of a transport vehicle, to a safe place; or

d. protect the environment from significant damage or pollution.

6.3 Under *Section 43 of the TSI Act*, the Executive Director of the ATSB, or a delegate, may impose a ‘Protection Order’ on evidence relevant to the investigation. For example, aircraft wreckage, maintenance records or cockpit voice recorders. Where such evidence is under a ‘Protection Order’, the removal or interference with that evidence is an offence. However, the same exceptions listed above for Section 24 apply for ‘Protection Orders’.

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ENR 2. AIR TRAFFIC SERVICES AIRSPACE

ENR 2.1 FIR, UIR, TMA

1. A full description of Australia's FIRs and TMAs is contained in AIP DAH. Further, diagrammatic presentation of Australia's TMAs is contained in aeronautical charts.

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ENR 2.2 OTHER REGULATED AIRSPACE

1. OPERATIONS IN OCEANIC CONTROLLED AIRSPACE

1.1 Clearance Requirements

1.1.1 Aircraft not in receipt of an airways clearance in another FIR are required to obtain an airways clearance prior to entering Australian administered Class A airspace. Clearances may be issued by the primary guard station prior to FIR entry. If a clearance is not received 15 minutes prior to entry, it may be obtained directly by one of the following methods:

a. Voice clearances may be obtained from Brisbane on INO-1, SEA-3, SP-6 or other advised frequencies as appropriate.

b. CPDLC clearances may be obtained from Brisbane (YBBB) or Melbourne (YMMM), as appropriate.

1.2 Mach Number Technique

1.2.1 Mach Number Technique (MNT) is the term used to describe the method of clearing successive jet aircraft, operating along the same track, to maintain specified mach numbers in order to maintain longitudinal separation.

1.2.2 The MNT may be used by ATC in the application of longitudinal separation standards on routes within oceanic controlled airspace. Pilots of jet aircraft must include the planned true Mach Number in their flight plans.

1.2.3 Pilots are required to read back and maintain an assigned Mach Number. ATC approval must be obtained before making any change. If an immediate temporary Mach Number change is essential (e.g. due to turbulence), ATC must be notified as soon as possible that such a change has been made.

1.2.4 MNT may also be applied by ATC in other Australian airspace.

1.3 Weather Deviations – General

1.3.1 The following procedures provide guidance for pilot action when weather deviations are required in oceanic controlled airspace. As all possible circumstances cannot be covered, the pilot’s judgement must ultimately determine the sequence of actions to be taken.

1.3.2 If the aircraft is required to deviate from route or track to avoid weather, and prior clearance cannot be obtained, an ATC clearance must be obtained at the earliest possible time. In the meantime, the aircraft must follow the procedures detailed in *section 1.6.*

1.3.3 The pilot must advise ATC when a weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route or track. Further deviations from route or track will require a new clearance.

1.4 Weather Deviations – Obtaining Priority From ATC

1.4.1 When a pilot initiates communications with ATC, the requirement for frequency priority and a rapid response may be indicated by use of the phrase, “WEATHER DEVIATION REQUIRED”.

1.4.2 A pilot retains the option of initiating communications using the urgency call “PAN PAN” (preferably spoken three times) to alert all listening parties of a special handling condition which requires ATC priority for issuance of a clearance or assistance.

1.5 Weather Deviations – Pilot-Controller Communications Established

1.5.1 When communications between the pilot and controller (via third party) is available, the pilot must request clearance to deviate from route or track advising, where possible, the extent of the expected deviation. The controller will then initiate the following:

a. if there is no conflicting traffic in the lateral dimension, issue a clearance to deviate from route or track; or

b. if there is conflicting traffic in the lateral dimension, establish vertical separation and issue a clearance to deviate from route or track; or

c. if unable to establish vertical separation, and there is conflicting traffic in the lateral dimension:

   (1) advise the pilot that clearance for the requested deviation is not available;

   (2) provide traffic information about, and to, all affected aircraft; and

   (3) request pilot’s intentions.

Example Phraseology:

"UNABLE (requested deviation), TRAFFIC IS (callsign, position, altitude, direction), ADVISE INTENTIONS."

1.5.2 The pilot must:

a. comply with the ATC clearance issued; or

b. advise ATC of intentions and execute the procedures detailed in *section 1.6* below; and

c. if necessary, establish voice communications with ATC to expedite dialogue on the situation.

1.6 Weather Deviations – Revised ATC Clearance Not Obtained

1.6.1 Under the provisions of the rules of the air, and in the interests of safety to do so, the pilot may deviate from the route or track as necessary.

1.6.2 If a revised ATC clearance cannot be obtained and deviation from track is required to avoid weather, the pilot must conform with the following:

a. If possible, deviate away from an organised track or route system.

b. Broadcast the following at suitable intervals on the frequency in use and on121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used):

(1) aircraft identification (operator callsign),

(2) flight level,

(3) aircraft position including track code or ATS route designator, and

(4) intentions, including the extent of deviation expected.

c. Watch for conflicting traffic both visually and by reference to TCAS/ACAS (if equipped).

d. Turn on all exterior lights (commensurate with appropriate operating limitations).

e. When the deviations are less than 10NM, remain at the level assigned by ATC.

f. For deviations greater than 10NM, when the aircraft is approximately 10NM from track, initiate a level change based on the following criteria:

Route Centreline Track	Deviations >10 NM	Level Change
EAST 000 – 179° magnetic	LEFT RIGHT	DESCEND 300 FT CLIMB 300 FT
WEST 180 – 359° magnetic	LEFT RIGHT	CLIMB 300 FT DESCEND 300 FT

g. If contact was not established prior to deviating, continue trying to contact ATC to obtain clearance. If contact was established, continue to keep ATC advised of intentions and obtain traffic information.

h. When returning to track and within approximately 10NM of track, be at the assigned flight level.

1.7 Aircraft Deviations - Greater Than Moderate Turbulence

1.7.1 If greater than moderate turbulence is experienced, and the pilot believes it will impact on the aircraft's capability to maintain the Cleared Flight Level (CFL), the pilot should proceed as follows:

a. Watch for possible conflicting traffic and make maximum use of exterior lights.

b. Broadcast callsign, position, level, nature and severity of turbulence and intentions on 121.5MHz (inter-pilot frequency may be used as a back-up).

c. Notify ATC as soon as possible and request level change if necessary.

d. If the CFL cannot be maintained, execute established contingency procedures to leave assigned track or route.

Note: Based on pilot advice and traffic assessment, the ATS provider may suspend RVSM operations.

1.8 Aircraft Deviations - Other Than Weather

1.8.1 The following procedures are applicable primarily when sub-sonic aircraft require rapid descent and/or turn-back or diversion to an alternate airport. The pilot must take actions as necessary to ensure the safety of the aircraft. The pilot's judgment will determine the sequence of actions to be taken, taking into account specific circumstances.

1.8.2 If an aircraft is unable to continue flight in accordance with its ATC clearance, a revised clearance must, whenever possible, be obtained prior to initiating any action, using the radiotelephony distress or urgency signal as appropriate.

1.8.3 If prior clearance cannot be obtained, the pilot must advise ATC as soon as practicable, advising the type of aircraft and nature of the problem. The aircraft should be flown at a flight level and on an offset track where other aircraft are least likely to be encountered. Until a revised clearance is received, the pilot must comply with the following:

a. If possible, deviate away from an organised track or route system.

b. Broadcast the following at suitable intervals on the frequency in use and on frequency 121.5MHz (as a back-up, the VHF inter-pilot air-to-air frequency 123.45MHz may be used):

   (1) aircraft identification (operator callsign),

   (2) flight level,

   (3) aircraft position including track code or ATS route designator, and

   (4) intentions, including the extent of deviation expected.

c. Watch for conflicting traffic both visually and by reference to TCAS/ACAS (if equipped).

d. Turn on all aircraft exterior lights (commensurate with appropriate operating limitations).

1.8.4 If unable to obtain a revised ATC clearance, the aircraft should leave its assigned route or track by turning at least 45° right or left in order to acquire a same or opposite direction track offset 15NM from the assigned track centreline. When possible, the direction of turn should be determined by the position of the aircraft relative to any organised route or track system (e.g. whether the aircraft is outside, at the edge of, or within the system). Other factors to consider are the direction to an alternate airport, terrain clearance, any strategic lateral offset being flown and the levels allocated to adjacent routes or tracks.

1.8.4.1 When leaving assigned track:

a. if the intention is to acquire a same direction offset track, the pilot should consider limiting the turn to a 45° heading change, in order not to overshoot the offset contingency track; or

b. if the intention is to acquire and maintain an opposite direction offset track, then:

(1) operational limitations on bank angles at cruising altitudes will normally result in overshooting the track to be acquired. In such cases a continuous turn should be extended beyond 180° heading change, in order to re-intercept the offset contingency track as soon as operationally feasible; and

(2) whilst executing a turnback extreme caution pertaining to opposite direction traffic on adjacent routes must be exercised and any climb or descent specified in *para 1.8.5* should be completed before approaching within 10NM of any adjacent ATS route.

1.8.5 **Subsequent Actions.** The following actions should be followed subsequent to an aircraft deviation in OCA:

a. <u>Aircraft Able to Maintain Level:</u>
Once the aircraft has deviated 10NM from the assigned track centreline, climb or descend to select a final level which differs from those normally used by 500FT if at or below FL410, or 1000FT if above FL410.

b. <u>Aircraft Unable to Maintain Level</u>:
An aircraft NOT able to maintain its assigned level should, whenever possible, minimise its rate of descent and select a level which differs from those normally used by 500FT if at or below FL410 or 1000FT if above FL410. Pilots should consider the possibility that aircraft below on the same track may be flying a 1 or 2NM strategic lateral offset procedure.

c. <u>Diversion Across the Flow of Adjacent Traffic</u>:
Before commencing a diversion across the flow of adjacent traffic, the aircraft should, while maintaining the 15NM offset, expedite climb above or descent below levels where the majority of oceanic traffic operate (e.g. to a level at or above FL410 or below FL285) and then maintain a level which differs by 500FT from those normally used.

1.8.6 If the pilot is unable or unwilling to carry out a major climb or descent, the aircraft should be flown at a level 500FT (150M) above or below levels normally used, until a new ATC clearance is obtained.

2. STRATEGIC LATERAL OFFSET PROCEDURES (SLOP) IN OCA

2.1 Aircraft operating in OCA within Australian administered airspace are authorised to use strategic lateral offset procedures (SLOP) in accordance with the requirements detailed in *para 2.2.*

2.2 The following requirements apply to the use of SLOP:

a. The offset must only be applied by aircraft with automatic offset tracking capability.

b. The offset must be established in tenths of a nautical mile up to a maximum of 2NM to the RIGHT of track relative to the direction of flight.

Note: Offsets to the left of track are not permitted.

c. The offset must only be applied during the en route phase of flight.

d. The offset may only be used in OCA. Pilots must fly the route centreline for any portion of their route within CTA. Pilots must return to centreline before leaving OCA or, where the subsequent state does not allow SLOP, prior to leaving Australian administered airspace.

e. The offset must not be used in addition to diversions or other offsets; e.g. weather or wake turbulence.

f. The offset must not be applied at levels where obstacle clearance would be affected.

g. Identified aircraft:

(1) may continue an offset in OCA; and

(2) must advise ATC prior to initiating or changing an offset.

2.3 The decision to apply SLOP is the responsibility of the pilot in command - a clearance is not required. Except when an identified aircraft initiates or changes a lateral offset, pilots are not required to notify ATC that SLOP are being applied.

2.4 The use of SLOP is recommended in OCA for aircraft cruising at levels not in compliance with the table of cruising levels specified at *ENR 1.7 Section 5.*

2.5 OCA is depicted on Australian AIP charts as follows:

a. From 150NM SSE of YBBN south to 200NM NNE of YSSY – the blue line depicting the Class C airspace boundary.

b. South of 150NM SE of YSSY – the FIR boundary.

c. Remainder – the brown line depicting the Class E airspace boundary.

3. USE OF GNSS IN OCEANIC AND REMOTE AREAS

3.1 Australia has approved the use of GNSS as a primary means of navigation for oceanic/remote areas. Aircraft operators intending to utilise GNSS as a primary means of navigation in these areas must be approved by the State of Registry or State of the Operator, as appropriate.

3.2 To ensure navigation integrity, an appropriate en route GNSS prediction analysis, using the software provided by the GNSS manufacturer, must be conducted prior to each flight. For this analysis, the following parameters, or equivalents, must be used:

a. the route or airspace RNP, where published; or

b. a centreline space of:

(1) 20NM for flight in CTA, and

(2) 50NM for flight in OCA.

3.3 Aircraft meeting the requirements for the use of GNSS as a primary means of navigation in oceanic/remote continental airspace must indicate the approval in the flight notification. Such aircraft may flight plan on designated Area Navigation routes within Australian FIRs.

4. OPERATIONS IN OCEANIC AIRSPACE REQUIRING PERFORMANCE-BASED COMMUNICATION AND SURVEILLANCE (PBCS) AUTHORISATION

4.1 ICAO have introduced new provisions on PBCS calling for States to prescribe Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specifications in their airspace as appropriate to the level of air traffic services provided. RCP 240 and RSP 180 are being applied in addition to Required Navigation Performance (RNP) specifications to certain separation minima in oceanic airspace by some States.

4.2 Australia has filed a difference with ICAO and has not yet implemented RCP or RSP.

4.3 Flights proceeding outside Australia should be aware that some States have prescribed RCP 240 and RSP 180 specifications in their administered airspace. Those States may require operators to be authorised by CASA to declare their RCP and RSP capabilities and for entering the respective descriptors in their flight plans.

4.4 CASA has issued an Instrument, number CASA 33/18 - *Required Communication Performance and Required Surveillance Performance (RCP 240 and RSP 180) Capability Declarations - Direction 2018*, which states the requirements for Australian operators to assess their compliance to RCP 240 and RSP 180 specifications and declare their readiness by entering the respective RCP and RSP descriptors in their flight plans.

4.5 Guidance on PBCS and the subject CASA Instrument is provided in Advisory Circular (AC) 91-06 V1.0.

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ENR 3. ATS ROUTES

ENR 3.1 LOWER ATS ROUTES

1. Lower ATS routes are identified in the AIP document - *Designated Airspace Handbook (DAH)*, which is revised and issued on a six monthly basis. The *DAH* may be purchased through CanPrint Communications, AIP Shop at the address shown at *GEN 0.1 para 7.1.*

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ENR 3.2 UPPER ATS ROUTES

1. Details regarding upper ATS routes in Australian FIRs can be found in *AIP DAH*.

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ENR 3.3 AREA NAVIGATION ROUTES

1. Details regarding Area Navigation routes in Australian FIRs can be found in *AIP DAH*.

2. PERFORMANCE BASED NAVIGATION (PBN)

2.1 *CAO 20.91* provides for approved stand alone GNSS installations to be deemed to have an operational authorisation when the installation meets certain requirements. The pilot must also be authorised to conduct a flight under the IFR using GNSS and competent in the use of the radio navigation aids, according to *CASR Part 61* requirements. A summary of the *CAO 20.91* deeming provisions are shown below:

PBN deeming provisions for GNSS equipped aircraft according to *CAO 20.91*	
Aircraft GNSS Equipment	**Authorised for**
TSO C129() Class A1 or A2 TSO C146() Class Gamma Operational Class 1, 2 or 3 ETSO C146() Class Gamma Operational Class 1, 2 or 3 *Note: If a TSO-C129 receiver is used, and if an alternate is required to be nominated, an instrument approach utilising ground-based navigation aids must be available at the alternate.*	RNAV 5 RNAV 1 and RNAV 2 RNP 2 RNP 1
TSO C129a Class A1 TSO C129a Class A1 *Note: If a TSO-C129a receiver is used, and if an alternate is required to be nominated, and instrument approach utilising ground-based navigation aids must be available at the alternate.*	RNAV 5 RNAV 1 and RNAV 2 RNP 2 RNP 1 RNP APCH LNAV
TSO C146() Class Gamma Operational Class 1, 2 or 3 ETSO C146() Class Gamma Operational Class 1, 2 or 3 *Note: RNP APCH LP or LPV operational approvals are valid only when the aircraft is operating within the service volume of a SBAS.*	RNAV 5 RNAV 1 and RNAV 2 RNP 2 RNP1 RNP APCH LNAV RNP LP and LPV

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ENR 3.4 HELICOPTER ROUTES

1. Details regarding helicopter routes and lanes-of-entry to specified airports can be found in *ERSA FAC*.

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ENR 3.5 OTHER ROUTES

1. Details of all routes in Australian FIRs can be found in *AIP DAH*. Information concerning flight planning restrictions can be found in *ERSA GEN*.

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ENR 3.6 EN ROUTE HOLDING

1. En route holding positions are identified on AIP aeronautical charts.

2. Further details regarding:

   a. En route holding may be found in *ENR 1.5 Section 3.*

   b. Holding Fuel requirements are contained in *ENR 1.1 Section 11.*

   c. ATFM procedures are contained in *ENR 1.9*.

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ENR 4. RADIO NAVIGATION AIDS/SYSTEMS

ENR 4.1 RADIO NAVIGATION AIDS - EN ROUTE

1. En route radio navigation aids for all ATS routes are identified in *AIP DAH* and on aeronautical charts.

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ENR 4.2 SPECIAL NAVIGATION SYSTEMS

1. There are no special navigation systems in existence in Australian FIRs.

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ENR 4.3 NAME-CODE DESIGNATORS FOR SIGNIFICANT POINTS

1. The five-letter codes and respective coordinates for IFR waypoints in Australian FIRs are listed in *ERSA GEN* and identified on en route charts.

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ENR 4.4 AERONAUTICAL GROUND LIGHTS – EN ROUTE

1. Aeronautical ground lights may indicate visual lanes of entry at some Class D aerodromes. If present, these lights are identified on Visual Terminal Charts (VTCs).
2. Aerodrome beacons and hazard beacons for particular locations are identified in *ERSA FAC*.

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ENR 5. NAVIGATION WARNINGS

ENR 5.1 PROHIBITED, RESTRICTED AND DANGER AREAS

1. PRD areas are identified in the *DAH* and *ERSA (PRD)*. The boundaries of PRD areas are also identified on *AIP aeronautical charts.*

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ENR 5.2 MILITARY EXERCISE AND TRAINING AREAS

1. In Australia, permanent military exercise and training areas are identified as Restricted areas, generally activated by NOTAM. Non-permanent Military exercise areas, which are required to be activated temporarily, are identified by NOTAM or AIP Supplement.

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ENR 5.3 OTHER ACTIVITIES OF A DANGEROUS NATURE AND OTHER POTENTIAL HAZARDS

1. In Australia, any activities of a dangerous or hazardous nature which require notice to aviation are identified by NOTAM or AIP Supplement.

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ENR 5.4 AIR NAVIGATION OBSTACLES - EN ROUTE

1. MAN-MADE OBSTACLES GREATER THAN 360 FEET

1.1 In Australia, man-made obstacles greater than 360FT are required to be reported. Where required for navigation purposes, these obstacles are identified on aeronautical maps and charts, including WAC. Unreported obstacles up to 360FT may exist in navigation tolerance areas. Pilots are, therefore, required to take this into account when calculating LSALT (see *GEN 3.2 Section 2.2*).

2. MARKING OF POWER LINES AND OTHER OVERHEAD CABLES

2.1 The standards for marking power lines and other overhead cables with long spans are addressed by Standards Australia in the following documents:

a. AS3891.1 – 1991, Air navigation – Cables and their supporting structures – Mapping and marking – Permanent marking of overhead cables and their supporting structures; and

b. AS3891.2 – 1992, Air navigation – Cables and their supporting structures – Mapping and marking – Marking of overhead cables for low flying.

3. NIGHT VISION GOGGLES AND OBSTACLE LIGHTING

3.1 Some LED lighting systems, clearly visible to the naked eye, fall outside the combined visible and near-infrared spectrum of night-vision goggles. This means that those obstacles will not be visible to operating crew using NVG.

3.2 Current aircraft standards allow the “Aviation Red” light wavelength to range from about 610–700 nm. NVGs approved for operations in Australia are Class B, which are only sensitive to energy in the wavelengths ranging from 665 to 930 nm.

3.3 As the current number and distribution of LED lighting systems is unknown and will increase in the future, operating crew using NVGs are warned to use extra caution when flight planning into unknown areas as well as operating near obstacle areas.

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ENR 5.5 AERIAL SPORTING AND RECREATIONAL ACTIVITIES

1. GLIDING OPERATIONS

1.1 General

1.1.1 Pilots should take extra care when operating at an aerodrome where gliding operations are in progress. Gliding operations are indicated by the “gliding operations in progress” ground signal displayed next to the primary wind direction indicator. Pilots should also establish whether the gliders are being launched by wire or aerotow, or both.

1.1.2 Where aerotowing is in progress, pilots should remain well clear of gliders under tow. If wire launching is used, pilots should establish the locations of either the winch or tow car and the cable, and remain well clear. Over-flying the runway below 2,000FT AGL is not advised, nor is landing without first ascertaining that the cable is on the ground and not across the landing path. Aerotow and winch launching are possible up to 4,000FT AGL, but launches to 1,500FT or 2,000FT AGL are normal.

1.1.3 In Class G airspace, gliders may be operating no-radio, on Area VHF or on frequencies 122.5, 122.7 or 122.9MHz.
Radio-equipped gliders at, or in the vicinity of, non-controlled aerodromes operate in accordance with the table at
ENR 1.1 para 10.1.17.

1.2 Operations at Certified or Registered Aerodromes

1.2.1 Gliding operations may be conducted from:

a. a glider runway strip within the runway strip (single runway), using a common circuit direction;

b. a glider runway strip adjacent to the existing runway strip (dual runways), using a common circuit direction; or

c. a separate glider runway strip parallel to and spaced away from the existing runway strip (parallel runways), using contra-circuit procedures.

1.2.2 Details of the gliding operation are published in the ERSA entry for the aerodrome. When procedures are changed for intensive short-term gliding activity, a NOTAM will be issued.

1.2.3 Where dual or parallel runways are established, the glider runway strip will conform to normal movement area standards, but will be marked by conspicuous markers of a colour other than white. Glider runway strips must not be used except by gliders, tug aircraft and other authorised aircraft.

1.2.4 Where a single runway is established and gliders operate within the runway strip, the runway strip markers may be moved outwards to incorporate the glider runway strip. Glider movement and parking areas are established outside of the runway strips. When the glider runway strip is occupied by a tug aircraft or glider, the runway is deemed to be occupied. Aircraft using the runway may, however, commence their take-off run from a position ahead of a stationary glider or tug aircraft.

1.2.5 Except for gliders approaching to land, powered aircraft have priority in the use of runways, taxiways and aprons where a single runway or dual runway operation is established.

1.2.6 At the locations where parallel runways exist and contra-circuit procedures apply, operations on the two parallel runways by aircraft below 5,700KG MTOW may be conducted independently in VMC by day. Aircraft must not operate within the opposing circuit area below 1,500FT AGL. Pilots should ascertain the runways in use as early as possible and conform to that circuit. A crossing runway should only be used when operationally necessary, and traffic using the crossing runway should avoid conflicting with the established circuit.

1.2.7 At aerodromes other than for which contra-circuits are prescribed, gliders are generally required to conform to the established circuit direction. However, unforeseen circumstances may occasionally compel a glider to execute a non-standard pattern, including use of the opposite circuit direction in extreme cases.

1.2.8 A listening watch on the appropriate VHF frequency must be maintained while operating at or in the vicinity of non-controlled aerodromes by the tug pilot. The winch or tow-vehicle driver should also maintain a listening watch during wire launching. The tug pilot or winch/car driver may be able to advise glider traffic information to inbound or taxiing aircraft.

Note: The appropriate VHF frequency is as described at ENR 1.1 subsection 10.1.

1.2.9 Where wire launching is used, launching will cease and the wire will be retracted or moved off the strip when another aircraft joins the circuit or taxies, or a radio call is received indicating this. A white strobe light is displayed by a winch, or a yellow rotating beacon by a tow-car or associated vehicle, whenever the cable is deployed.

1.2.10 Gliders are not permitted to perform aerobatics, including spin training, within 2NM of a certified or registered aerodrome below 2,000FT AGL. Gliders are not permitted to perform continuous 360° turns nor to use thermal lift on the live side of a common circuit area (including the circuit area being used by known traffic on a crossing runway) unless they monitor the CTAF and give way to maintain adequate separation from other traffic in the circuit area.

2. PARACHUTING OPERATIONS

2.1 General

2.1.1 The pilot in command of an aircraft engaged in parachuting operations must take all reasonable measures to ensure that parachutists exit the aircraft only if:

a. there is no risk of any part of the aircraft being fouled by parachutists or their equipment when they exit;

b. the operation does not impose adverse stress on any part of the aircraft structure;

c. the descent is able to be made in meteorological conditions where the target is clearly visible and the parachutist does not enter cloud, unless CASA specifies otherwise in writing; and

d. loose objects that, if dropped, could create a hazard to persons or property on the ground or the water, are not carried by parachutists when exiting the aircraft.

Note: In relation to sub-para c. above, the parachutist, the pilot and the parachute operator are jointly responsible for ensuring that this requirement is met.

2.1.2 The pilot in command must take all reasonable measures to ensure that parachutists exit the aircraft so as to reach the intended target.

2.1.3 A broadcast advising the intention to drop parachutists must be made from the drop aircraft not less than two (2) minutes prior to parachutists exiting the aircraft. This requirement applies to all relevant frequencies for airspace through which the parachutists may descend, including:

a. the appropriate ATC frequency or frequencies depending upon the airspace type(s) descended through; and

b. if the parachutists descend from controlled airspace into Class G airspace, a broadcast must be made on each specified frequency; and

c. where the landing area is located in the vicinity of a non-controlled aerodrome, the appropriate VHF frequency is as described in *ENR 1.1 subsection 10.1.*

2.1.4 A broadcast made under *para 2.1.3* must give notice that parachutists intend to exit the aircraft at the location specified in the broadcast, the position of the drop zone, exit altitude and the number of parachute canopies to be dropped.

2.1.5 The pilot in command must not allow parachutists to exit the aircraft unless he or she has made a broadcast in accordance with *paras 2.1.3 and 2.1.4*.

2.2 Conflicting Traffic

2.2.1 ATC will provide separation between parachutists and non-parachuting aircraft in Class A, C and D airspace, and provide traffic information to pilots of aircraft engaged in parachuting operations on known or observed traffic in Class E airspace.

2.2.2 The pilot in command must not allow parachutists to exit the aircraft if he or she is notified, or becomes aware, that there is conflicting traffic in the airspace in which the descents will be conducted.

2.2.2.1 The pilot in command must not allow parachutists to exit the aircraft in Class E airspace until in receipt of traffic information from ATC.

2.3 Additional Requirements in Controlled Airspace

2.3.1 The pilot in command must not allow parachutists to exit the aircraft when the parachutists will transit Restricted Area(s) or Classes A, C or D airspace until in receipt of an ATC clearance.

2.3.2 An aircraft engaged in parachuting operations must not engage in an operation in which parachutists exit the aircraft in controlled airspace and leave, transit or enter controlled airspace during their descent, unless the aircraft is equipped with two (2) VHF radio transceivers to communicate with ATC and to monitor and advise air traffic outside the controlled airspace.

2.3.3 ATC base separation on the assumption that the parachutist will be dropped within 1NM of the target. If an extension of this area is necessary, the pilot must advise ATC of the direction and distance required.

2.3.4 For parachutists that have been cleared to transit Restricted Area(s) or Classes A, C and D airspace pilots must advise ATC when all parachutists are on the ground. Primary communication should be by radio; however, if this is not possible, detail alternative arrangements in letters of agreement between local operators and the ATC unit(s) concerned.

2.4 **Additional Requirements at Non-controlled Aerodromes where Radio Carriage is Required**

2.4.1 An aircraft engaged in parachute operations must not engage in an operation involving parachute descents in the vicinity of an aerodrome where radio carriage is required, unless it is equipped with two (2) VHF radio transceivers to monitor and advise air traffic in the vicinity of the aerodrome, and in the surrounding area.

2.4.2 In addition to the broadcast required under *para 2.1.3* the pilot in command must make a broadcast not less than four (4) minutes before the descents occur to give notice that parachutists intend to exit the aircraft at the location specified in the broadcast.

2.4.3 A broadcast under *para 2.4.2* must be made on the CTAF and appropriate ATC frequencies.

2.4.4 The pilot in command must not allow parachutists to exit the aircraft in the vicinity of an aerodrome where radio carriage is required within the 15 minutes before the estimated time of arrival at an aerodrome of a Regular Public Transport (RPT) aircraft unless:

a. the two aircraft are in direct radio communication with each other; and

b. all parachutists can exit the aircraft and land before the RPT aircraft arrives within the circling area of the aerodrome.

2.4.5 After an RPT aircraft arrives at an aerodrome where carriage of radio is required the pilot in command of a aircraft engaged in parachuting operations at that aerodrome must not allow parachutists to exit the aircraft until the RPT aircraft has landed and taxied clear of the runway.

2.4.6 After an RPT aircraft has broadcast that it is taxiing for departure from an aerodrome where carriage of radio is required, the pilot in command of a aircraft engaged in parachuting operations must not allow parachutists to exit the aircraft until the RPT aircraft is clear of the circling area of the aerodrome.

2.5 Additional Requirements at Certified and Registered Aerodromes

2.5.1 The pilot in command of a aircraft engaged in parachuting operations must not engage in an operation involving parachute descents at a certified or registered aerodrome unless:

a. the aerodrome operator has approved parachute descents at the aerodrome;

b. regular and local users of the aerodrome have been notified of the intended descents;

c. the target for parachutists is separated from the movement area by a distance equal to the applicable minimum drop zone radius for the parachutists using it; and

d. the descents do not conflict with any aircraft that are:

(1) on the live side of any circuit known to be in use, or that could reasonably expected to be used by known traffic in prevailing conditions; or

(2) using any runway, taxiway or apron.

2.5.2 *Para 2.5.1* does not apply to an operation involving parachute descents at a certified or registered aerodrome to the extent that written specifications issued under Regulation 152 of the Regulations require or allow the descents to be conducted differently.

2.5.3 The pilot in command must not allow parachutists to conduct descents at a certified or registered aerodrome if the pilot in command of another aircraft:

a. is carrying out an instrument approach procedure at the aerodrome; or

b. is expected to commence an instrument approach procedure within five (5) minutes.

2.6 **Additional Requirements for Operations Above 10,000FT AMSL**

2.6.1 A flight crew member who is on flight deck duty in an unpressurised aircraft engaged in parachuting operations must be provided with, and continuously use, supplemental oxygen:

a. if the aircraft operates above FL120; or

b. if the aircraft operates above 10,000FT AMSL:

(1) for more than 15 minutes during a sortie; or

(2) at night; or

(3) in IMC.

3. BALLOON OPERATIONS

3.1 **Types of Operation**

3.1.1 Balloons are permitted to operate in private, aerial work and charter operations. Aerial work and charter operations are flown under an Air Operator Certificate (AOC) – the pilot in command holds a commercial pilot (balloon) licence and is responsible to a chief pilot in accordance with *CAO 82.7*. Private operations are conducted by pilots who hold a pilot certificate issued by the Australian Ballooning Federation Inc.

3.1.2 Unless authorised by the CASA, pilots of balloons engaged in private operations must not operate:

a. in controlled airspace; or

b. below 2,000FT above aerodrome level within 3NM of a certified or registered aerodrome, or

c. below 1,000FT above ground level over a populous area.

Permission to fly in these areas, either for a specified event or for suitably qualified pilots, may be sought from CASA Area Offices. When permissions are issued, they usually contain directions to operate in the same manner as balloons in aerial work or charter operations.

3.1.3 Pilots of balloons engaged in aerial work or charter operations may:

a. operate within controlled airspace subject to an ATC clearance;

b. operate from certified or registered aerodromes; and

c. take-off from, and land at, adequate open spaces within populous areas. When doing this, they must ensure that the balloon reaches the minimum overflight height of 1,000FTAGL within a reasonable time following take-off, and minimise the time spent flying at low level whilst approaching to land in or within 300 metres of a populous area.

3.1.4 Balloon pilots are not required to observe a minimum height whilst flying over other than populous areas. However, this does not absolve pilots from any responsibility in respect of landholders, stock or property. The Australian Ballooning Federation Inc maintains a register of sensitive areas where landholders have requested that pilots not land, or observe a minimum overflight height.

3.2 **Carriage and Use of Radio**

3.2.1 Pilots of balloons engaged in aerial work or charter operations are required to carry and use VHF radio for communication, as necessary, with other aircraft and with ATS. However, the operators are authorised to maintain their own SARWATCH, and no flight notification is required for flights outside controlled airspace.

3.2.2 Pilots of balloons who have been permitted to operate in the airspace described in *sub-paras 3.1.2a. and b*. are required to carry and use radio as described in *para 3.2.1*. Where a number of balloons are permitted to operate together in the vicinity of an uncontrolled certified or registered aerodrome, one balloon in each group may maintain radio communication for the group.

3.2.3 Pilots of balloons engaged in private operations are required to carry radio and use it in accordance with the procedures described in *ENR 1.1 Section 6.* whilst they are operating:

a. within the vicinity of a non-controlled aerodrome where radio carriage and use is required;

b. at or above 5,000FT above mean sea level;

c. within 10NM of an aerodrome with a published instrument approach procedure; or

d. at night.

3.2.4 The holder of a private pilot certificate issued by the Australian Ballooning Federation Inc may have that certificate endorsed to permit radio communication on VHF frequencies only, without being the holder of a flight radiotelephone operator licence.

3.3 **Operations in the Vicinity of Aerodromes**

3.3.1 Within 3NM of an aerodrome, the pilot in command of a balloon is required to give way to other traffic operating in the traffic pattern of the aerodrome which is applicable to the runway in use at the time.

3.3.2 The pilot in command of a balloon who intends to overfly an aerodrome within 3NM should do so at a height greater than 1,500FT above the aerodrome. In the case of a private balloon flight which is not specifically authorised by CASA, overflight must be con-ducted more than 2,000FT above the aerodrome.

3.3.3 The pilot of a balloon which is taking off within 3NM of an aerodrome must give way to aircraft which are landing or on final approach to land, by delaying their take-off or, if airborne, by climbing or descending to remain clear of the other aircraft's flight path.

3.4 **Meteorological Conditions**

3.4.1 *ENR 1.2 Section 2.* prescribes VMC for balloons. Operations in other than prescribed VMC are not permitted.

3.5 **Night Balloon Operations**

3.5.1 Aerial work and charter operations by pilots who hold a NVFR (balloon) rating, and private operations with specific permission from CASA, may be conducted at night. In the case of aerial work and charter operations, these are restricted to the period of one (1) hour prior to first light.

3.6 **Operations in Controlled Airspace**

3.6.1 Prior to a proposed flight in controlled airspace, a balloon operator or pilot in command must liaise with ATS as follows:

a. contact ATC by telephone or radio prior to inflating the balloon to advise the planned launch site and likely direction or area of flight, and ascertain the availability of an ATC clearance; and

b. call to obtain a clearance before becoming airborne.

3.6.2 The balloon pilot must maintain a continuous listening watch on the appropriate frequency during flight within controlled airspace, and report flight progress as required by ATC. The pilot must report changes in the direction of drift, which will cause the balloon to diverge from its nominated track or area of operations, as soon as possible, and, in any case, before the track error exceeds one (1) nautical mile.

3.6.3 For operations in an area of controlled airspace within radar coverage, a service able SSR transponder must be carried unless ATC has advised otherwise.

3.6.4 In the event of a radio failure or other emergency, the relevant procedures as listed elsewhere in *AIP* must be followed. Particular attention should be given to notifying the termination of a flight where radio contact is not able to confirm this.

ENR 5.6 BIRD MIGRATION AND AREAS WITH SENSITIVE FAUNA

1. In Australia, bird migration areas are not identified. However, at locations where birds may pose a particular hazard, a note describing the hazard at a particular location will be contained in *ERSA FAC*.
2. Some areas which may have special significance because of sensitive fauna or other ecological considerations are identified as a “Fly Neighbourly Advice” area. Details on these areas are contained in *ERSA GEN* under the heading SPECIAL PROCEDURES (NOT ASSOCIATED WITH AN AERODROME).

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ENR 6. EN ROUTE CHARTS

ENR 6.1 AUSTRALIAN AIP AERONAUTICAL CHARTS

1. Details on all aeronautical charts produced in Australia are contained in *GEN 3.2.*

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