



Precautionary Search and Landing

Pre-lesson Workbook

*CASA Recreational Pilot License (Aeroplane) – CASA Sample Syllabus
Lesson 24, Pre-lesson Workbook*

Complete this before your lesson – on your own, at your own pace. For each topic: watch a video, read an article, then answer the questions in the space provided. Print this out, or write your answers in a notebook. It should take about 45–60 minutes in total, and we'll check it together at the start of your pre-flight brief.

1. Why precautionary landings happen

Most precautionary landings have nothing to do with an engine failure – the aeroplane is still running. They happen because of *planning*: weather closing in, fuel running lower than expected, or becoming unsure of your position as daylight fades. They can also be for anything else you're not happy with, such as an oil pressure that's fluctuating or a passenger who is unwell. Recognising the situation early, while you're still in full control, is what makes the difference between a precautionary landing and an emergency.

Read (pick one – real ATSB occurrence briefs):

- [Weather-related precautionary landing – Cessna 182, near Port Augusta, SA, 25 May 2026](#) – a recent, real example: visibility deteriorating and light fading, the pilot landed on a road nearby with no injury or damage.
- [Precautionary landing – Piper PA-28, near Yass, NSW, 11 September 2018](#) – a different trigger: an engine-indication fault made the pilot suspect a power loss, so they diverted early and landed safely at a nearby aerodrome. An engineering inspection afterwards found no defect at all.

Answer:

1. Name three circumstances (other than engine failure) that might force a precautionary landing: _____
2. Why must the decision to land be made **early**, rather than waiting to see if things improve? _____
3. Food for thought: what pressures might tempt a pilot to keep pushing on rather than land early? _____

2. Turning illusions when flying low

Flying low over the ground – as you will be during the search and inspection – wind drift can trick you. Turning from a downwind heading onto an into-wind heading (or the other way round), your groundspeed genuinely changes – fastest downwind, slowest into wind. Low over the ground, that changing picture below can fool you into misjudging your bank angle, tempting you to roll out early or steepen the turn when nothing is actually wrong.

Read:

- FAA [Airplane Flying Handbook, Chapter 7 \(Ground Reference Maneuvers\)](#) – explains why groundspeed changes with your heading relative to the wind, and why the bank angle needed to hold a constant turn radius over the ground changes with it: steeper downwind, shallower into wind.

Answer:

1. Turning from a downwind heading onto an into-wind heading, low over the ground, how does the aeroplane *appear* to behave?

2. Turning the other way – into-wind onto downwind – how does it *appear* to behave? -----
3. Why is it a mistake to change your bank angle to match what the ground picture is telling you, rather than your attitude reference?

3. Fuel management – the fuel log, and best endurance

Once you suspect a precautionary landing might be needed, knowing exactly how much flying time you have left becomes critical. A fuel log tracks what you've used against what you planned; **best endurance** configuration stretches your remaining fuel into the most time in the air – buying you time to find and inspect a field properly.

Read (the AOPA article, plus at least one ATSB report below):

- [AOPA – In-Flight Fuel Management](#) – covers recalculating range and endurance in flight and adjusting for the unexpected. The case-study video at the end of the article is hard to watch and listen to but incredibly valuable to learn from – in particular, to get over our pride and call an emergency when you're low on fuel rather than waiting. Sadly, the pilot could have landed at a restricted airfield if they'd declared an emergency.
- [ATSB investigation AO-2026-076 – fuel starvation, Piper PA-32R-301, Bacchus Marsh, VIC, 1 May 2026](#) – a planned fuel-tank change was missed; when the engine began running rough the pilot switched tanks but didn't complete the emergency checklist, shut the engine down, and made a safe forced landing nearby with no injuries.
- ATSB [Avoidable Accidents No. 5 – Starved and Exhausted: Fuel Management Aviation Accidents](#) – the difference between fuel *starvation* (fuel on board, but not reaching the engine) and fuel *exhaustion* (no usable fuel left), and the procedures that prevent both.

Answer:

1. What's the difference between flying for **best range** and flying for **best endurance**? _____
2. Your last fuel check showed 60 minutes of usable fuel remaining, and you need to divert 30° off track to avoid a cloud build-up – 5 minutes off track, then 5 minutes back onto track. How many minutes of fuel will you have once you're back on track? _____
3. Why might you choose best-endurance configuration over best-range configuration once you've decided a precautionary landing is likely?

4. Pre-flight documents – maintenance release, MEL, NOTAM, ERSA, AIP

Before every flight you check a handful of documents that tell you what's serviceable, what's changed, and what rules apply along your route. Knowing what each one covers means you actually use them, rather than just ticking a box: the **maintenance release** records the aircraft's defects and when maintenance is due; the **Minimum Equipment List (MEL)**, where the aircraft has one, lists what can legally be unserviceable and still fly; a **NOTAM** (Notice to Airmen) flags something that's changed since the charts were printed; the **ERSA** and **AIP** hold aerodrome details and the rules for operating in Australian airspace.

Read:

- [Flight Safety Australia – NOTAMs: decoding the details](#) – CASA's own safety magazine on how to actually read a NOTAM, not just skim past it.

The **ERSA** (En Route Supplement Australia) and **AIP** (Aeronautical Information Publication) are Airservices Australia publications that apply to everyone. The ERSA gives aerodrome-specific details like runways, frequencies and local procedures, and the AIP holds the rules and procedures for operating in Australian airspace. Both are free at airservicesaustralia.com. Before every flight you check the aircraft's **maintenance release** for defects and serviceability. If the aircraft also has an **MEL**, which is specific to that aircraft and operator, it tells you whether an item recorded as unserviceable still allows the flight to go ahead. Many training aircraft don't have an MEL. Ask your instructor to show you where your aircraft's documents live.

Answer:

1. What do you check on the maintenance release before every flight, and when would you also need the MEL? _____
2. What is a NOTAM? Even if the aircraft and weather are fine, list three examples of the kind of NOTAM that could still affect today's flight:

3. Find one item in the ERSA and one in the AIP that you'd use when planning a flight from your home aerodrome. Name each one and where you found it:
 - **ERSA:** item _____ section _____ page _____
 - **AIP:** item _____ section _____ page _____

5. The PAN call

You already know the MAYDAY call from Lesson 17 – for a real emergency. A precautionary landing usually isn't that: the aeroplane is still flying normally, but you need help or you want ATC and other traffic aware of your situation. That's what the PAN call is for.

Read:

- [Airservices Australia – In-flight emergencies](#) – explains the difference between a PAN call and a MAYDAY call. Then look up the same distinction, and the actual PAN message structure, in your AIP GEN 3.4.
- [YouTube – a real PAN emergency call, handled well](#)

Answer:

1. Write out the structure of a PAN call, in order:

2. What's the key difference between a situation that warrants a **PAN** call and one that warrants a **MAYDAY** call? _____

3. Could a PAN situation turn into a MAYDAY situation during the same flight? What would you do if it did? _____

6. Landing distance from your POH

A precautionary landing is only safe if the field is long enough for the aeroplane on the day. Your aircraft's **Pilot's Operating Handbook (POH)** or flight manual gives landing distances, but they change with weight, **pressure altitude**, **temperature** and the **surface** – so the number you remember from a cool day at sea level may be well short of what a hot day at a high field needs. In the lesson you'll time a field's length from the air; this is how you'll know what length you actually need.

Read:

- The **performance** section of the POH or flight manual for the aeroplane you'll fly in the lesson – the landing distance chart or table, and the notes and conditions printed alongside it.

Answer – use **today's temperature** and the **area QNH**, and the elevation of the strip or area you'd use for a precautionary landing (for example the practice field; the ERSA lists aerodrome elevations):

1. What are the elevation, temperature and QNH you're using? Work out the **pressure altitude** (elevation plus 30 ft for every hPa that QNH is below 1013) and the **density altitude**: _____
2. From the POH, what **landing distance** do you need for those conditions at your planned landing weight? Give both the **ground roll** and the distance to land over a **50 ft obstacle**: _____
3. What corrections does the POH give for the wind, slope and surface, and what margin would you add on top? _____
4. How does your answer compare with the rule of thumb that most small aeroplanes want **at least 400 m**? How would a hotter day, or a higher field, change it – and what would you do if the field you've chosen is shorter than the distance you need? _____

7. Your precautionary search and landing checklist

The precautionary search and landing is a sequence you'll fly from memory, in order, while you're busy. A checklist you make yourself — in your own words, for your own aeroplane — is far easier to learn than one you're handed, and it's what you'll refine with your instructor at the pre-flight brief and then use as the plan for the flight.

The sequence is **Decide → Configure → Select → Communicate → Prepare → Inspect → Land**. The details are covered in the lesson, so for now build a first draft from what you already know: your Lesson 17 forced landing checklist and field-selection criteria, your POH, and your answers from the PAN call and landing distance topics above.

Do:

Draw up a one-page checklist, with a heading for each of the seven steps, and under each one the few actions and words you'd want in front of you. Aim for short prompts rather than sentences. At a minimum include:

- **Configure** — the precautionary cruise configuration for your aeroplane from the POH: the RPM or power, the speed (try 80 kt, a speed that gives you time to look), and the flap setting, plus gear if retractable. Write down the actual numbers:
RPM _____ KIAS _____ Flaps _____
- **Select** — the field-selection criteria you'd narrate (from Lesson 17)
- **Communicate** — your PAN call, in order
- **Prepare** — what you'd tell your passengers
- **Inspect** and **Land** — what you think you'll need to check, and the key numbers for a short-field landing in your aeroplane

Leave gaps where you aren't sure — those are the things to ask about in the lesson.

Bring this to your lesson

- Bring your completed answers, and your draft checklist (printed, or your notebook), to the pre-flight brief
- We'll check through them together and answer anything that didn't make sense
- From there, the live theory brief builds on this: configuring the aeroplane for the search, choosing and inspecting a field, the vital-actions sequence, and revising the short-field landing from Lesson 22

None of this is about memorising trivia for its own sake – it's about building the judgement to decide early, and the plan to act on that decision calmly.