USER MANUAL

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Contents

OzRunways User Manual

This guide covers all of the functionality in the OzRunways app. It is suggested that you have your iPad with you to follow along as you read this.

Introduction

Basics

Welcome to the OzRunways User Guide!

Firstly, we will cover some important aspects of the iPad as a source for your aviation maps and data. The iPad or iPhone is a **touch sensitive** device. If you are not sure what to do, touch the screen, especially the little buttons that are displayed at various places around the screen. You can not break the app by tapping.

<div align="center">When in doubt, tap the screen.</div>

OzRunways does not come with the maps preloaded. When you first start the app the maps are retrieved from an internet server which OzRunways can only reach if you have an internet connection. The app will attempt to load sections of the map as required on demand. That is, if you select a map and zoom and pan, the app attempts to download only the parts of the map you are trying to view. If you are **not** on a WiFi or 3G/4G network you will not have access to those maps. If you are seeing black patches on your map this is most likely due to not having downloaded the maps you require.

For this reason, it is important to download the maps you require for your flight because once airborne, you may not have reliable access to a 3G/4G network (despite how good these networks are in Australia). Wireless networks are good, but they are not perfect. When you have downloaded the maps to your device then they can be accessed any time without the need for an internet connection. Think of this as preflighting your iPad or iPhone.

> Seealso
>
> For more information on how to download maps and other data see the Downloads section on the Settings page.

The chapter on EFB Safety contains information on other issues of which to be wary when using EFBs in flight.

Finally, OzRunways is constantly evolving. If a screenshot does not quite match what you see in the app you can assume things have moved on. We apologise for any confusion that may arise. If you have any queries please get in touch with us at support@ozrunways.com

Starting Screens

Having downloaded OzRunways from the App Store, locate the OzRunways icon on the iPad home screen and tap on it. When starting up for the first time ensure you are connected to a WiFi or mobile network as the app will need to download a variety of information, including maps and other aviation data.

> # Warning
>
> You should not go flying until you have downloaded the maps you require in *Settings → Downloads*. For more information see the Downloads section in the Settings chapter

While at home on a good network, the app will seemingly function just fine. The fact is that it is loading the maps and other data on demand (i.e. from the internet) and only those map portions that you actually look at will be downloaded. If you do not download the maps or other data (ERSA pages for example) and you go flying where the mobile network coverage is poor (or you don't have a SIM card or sufficient mobile data available) you will not be able to download the maps. This will result in, at worst, the map displaying nothing and at best, patchy maps.

So the very important message is: always 'preflight' your OzRunways by making sure all maps, ERSA documents, IFR plates, and any other data you need for your flight are loaded. (If it sounds like we are repeating ourselves, we are. This is important!)

The app will start up after some introductory screens. These present the Licence Agreement (EULA), ask you to enter your existing Username if you have one (if not, select the 30 day free trial) and then prompt for permission for OzRunways to access your Location (answer yes to this or the GPS tracking features will not be enabled).

Databases

In OzRunways a lot of the magic is created by the use of databases. Often confusion may reign when we talk about 'the database', because there are quite a few. The database that users will frequently come across is the ERSA database, which is frequently seen loading when you start or restart the app. This is the database that takes care of waypoints and map metadata.

Startup

After going through the startup screens above, you will land on the Maps page where you will see the OpenStreetMap displayed. This map has been constructed using a standard OpenStreetMap (open source) with custom airspace added by OzRunways. Later you will learn how to change maps.

App Screens
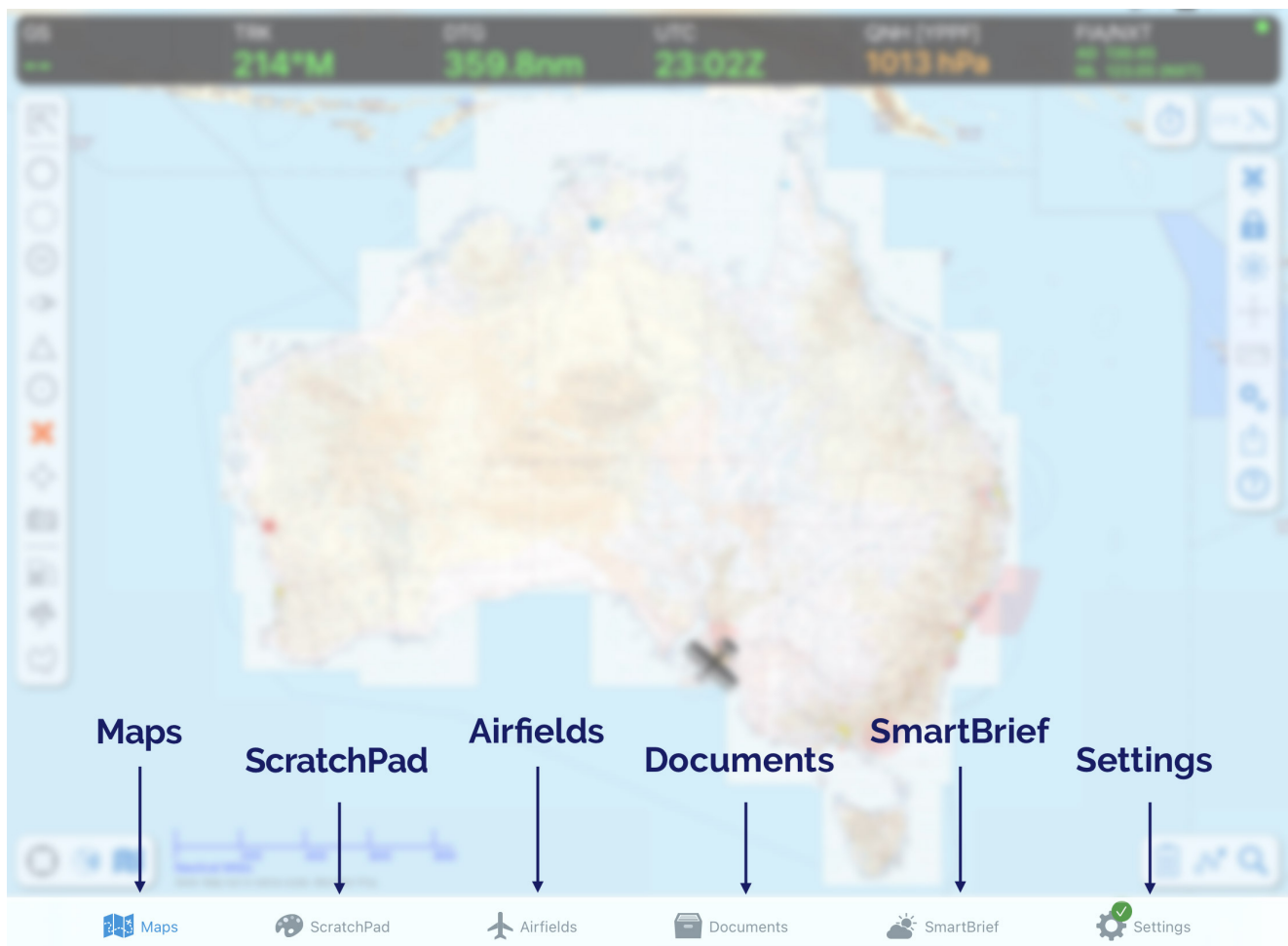
The 6 main pages (or 'App Screens') in OzRunways

Along the bottom of the iPad there are 6 buttons. These are used to switch between the main pages in the app. They are described below.

Map Page

The map page provides moving map functionality, planning, weather and a variety of other information.

ScratchPad Page

The ScratchPad page provides you with a free form entry page on which to take ATC notes, ATIS reports, etc.

Airfields Page

The Airfields Page provides ERSA airport data and, if you have subscriptions, Pilot's Touring Guide and OzRunways Airfield Guide data.

Documents Page

The Documents Page provides additional ERSA data (the front and rear matter), Australian CAOs, CARs, CASRs, CAAPs and the AIP. This page is described further in Section 4.

SmartBrief / Brief Page

The Brief and SmartBrief Pages contain various weather forecast products. If you have an Australian Standard subscription, or are outside Australia you will see the 'Brief' page. If you have an Australian Premium subscription you will see the SmartBrief Page.

Settings Page

The Settings page is where you can check up on your account information, setup aircraft profiles, and much more.

Map Page

Basic Interaction

Firstly, there are a number of things you can do on the map page and likely, while en-route flying, you will spend most of your time here. For this reason, it is important to familiarise yourself with the diverse capabilities provided on this page. Some functionality is available simply by tapping, swiping, pinching or pressing on the map. Other functionality is available via buttons at the top, side and bottom of the screen.

The operations available are:

Pan map

> Press, hold and drag your finger on the screen

Zoom

> 'Pinch zoom' is achieved by placing your thumb and forefinger on the screen at the same time and pressing, holding (briefly) and moving them apart (zoom in) or together (zoom out).

> One finger zoom can be achieved by tapping twice on the map, but on the second tap keep your finger in contact with the screen and swipe up or down to zoom in or out.

Measure

> The same as for zoom, but press and hold your thumb and forefinger until a ruler appears. Then while keeping your fingertips contacting the screen, manipulate them to adjust the position of the ruler. Tap and hold on the ruler to reveal more options: distance unit, course type (rhumb or great circle), and bearing type (ºT or ºM).

Enter a plan

> See Planning

Get the weather

> Tap near an aerodrome (AD). The Closest Points popup will appear, tap on the AD in this popup. Tap 'Wx/Notams' in the subsequent menu.

Create a User Waypoint

> Tap on the map where you want the waypoint. Tap on the '+' in the top left corner of the subsequent 'Closest Points' popup. Tap 'Add User Waypoint'.

Follow your progress as you fly (moving map mode)

> See Map Mode button later in this chapter.

View Grid LSALTs

Access various IFR aids

Find your GPS location

Map Interaction

Tap once anywhere on the map and the 'Closest Points' popup will appear (Image 2.1). This list shows the waypoints closest to where you tapped on the map. Below and beside each item in the list is some information about the waypoint. If you have tapped near an aerodrome then it will be prioritised and appear as the first entry in the list, and some more quick actions are associated with it.

For easy reference, the runway displayed on this page is appropriately coloured to reflect the surface type. The colours are: brown = dirt/gravel, green = grass, grey = tarmac. Where available, there is a small diagram of the runway layout and a windsock next to the airfield name. The windsock changes direction based on the current METAR wind to give you a quick indication of which runway might be in use.

Closest Points popup
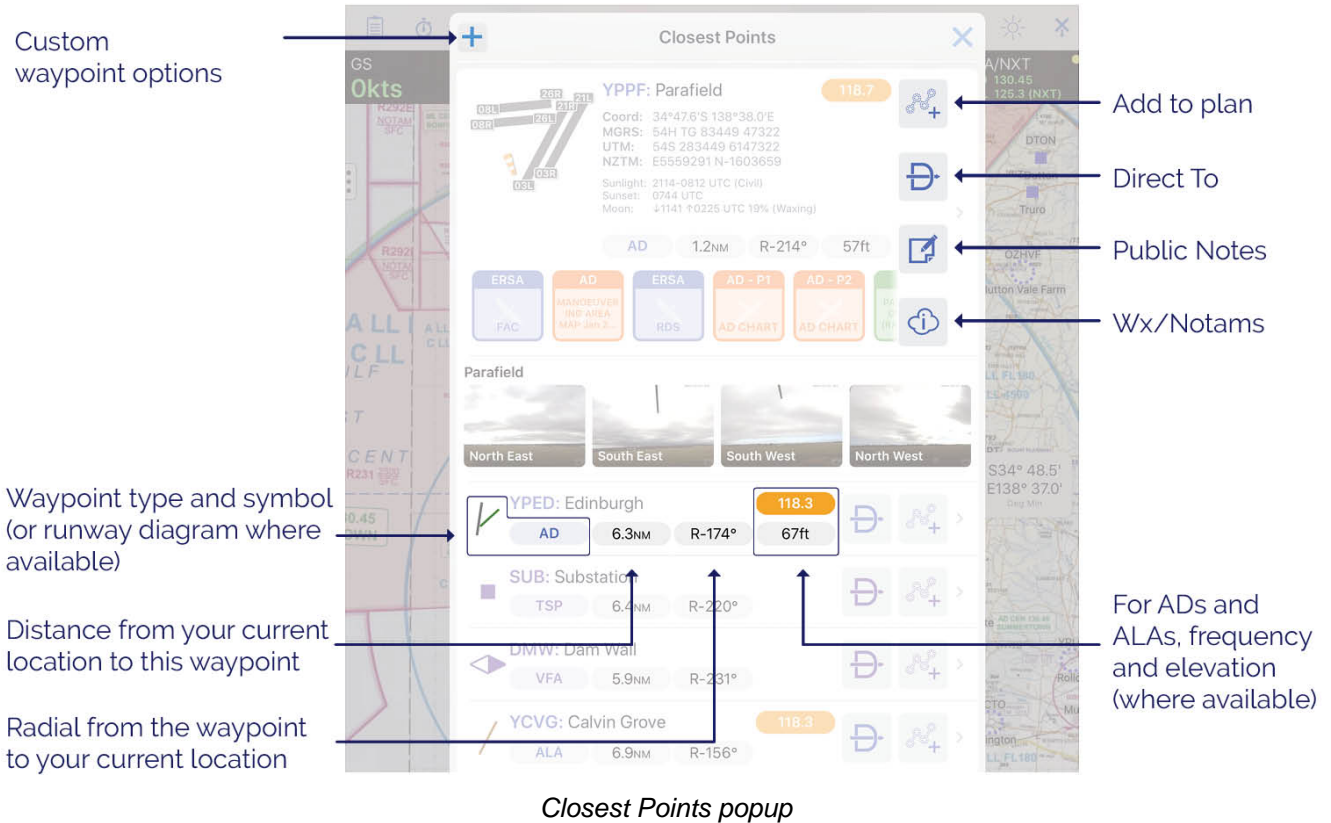
Note

You can choose the type of waypoints that appear in the 'Closest Points' popup in Settings → Preferences → Waypoint Sub-Types.

If you have tapped in an area with few waypoints you will see 'New Custom Waypoint' at the top of the list (Image 2.2). This item is used to create a User Waypoint. To learn more about creating & editing User Waypoints see the User Waypoints chapter. If the 'New Custom Waypoint' option does not appear in the list you can use the '+' symbol in the top left corner to create a User Waypoint.
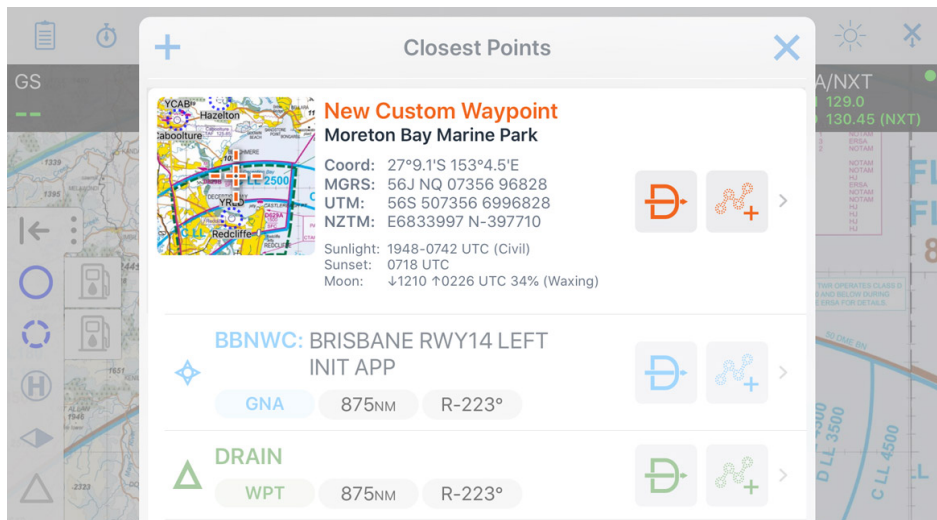
Closest Points popup showing 'New Custom Waypoint' option

Tap on a waypoint for more options (Image 2.3). The options are described below.
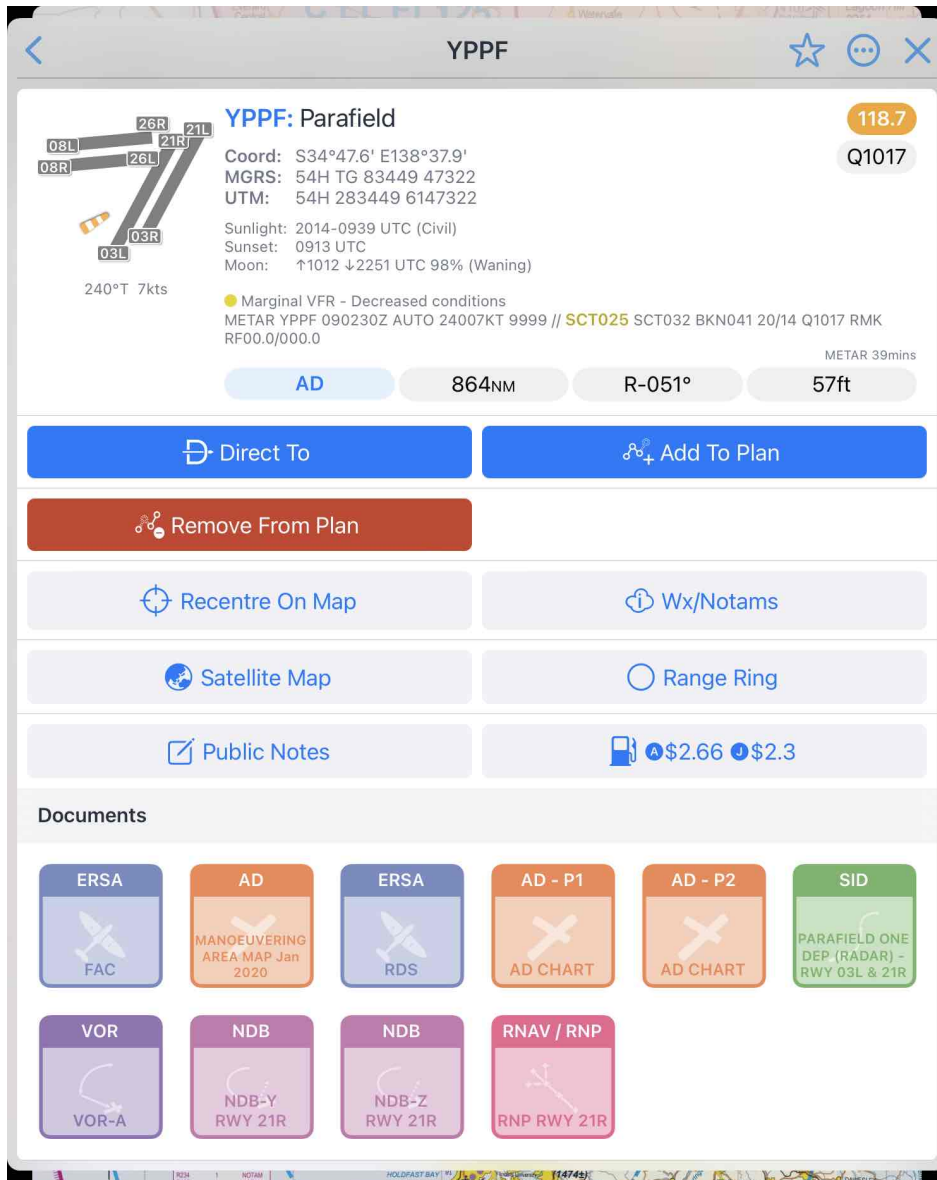
Waypoint Details view

Direct To

When you select 'Direct To', a User Waypoint is dropped at your current position and a plan is constructed from the newly created User Waypoint, to the selected waypoint. If you were already in a plan, that plan will continue after reaching the 'Direct To' point.

'Direct To' is a handy option for a quick change of plan, e.g. a diversion. There are better ways to create an actual flight plan, these methods are described in the chapter on Planning

Set As Origin of Plan / Add To Plan

Tapping 'Set As Origin of Plan' creates a flight plan with the selected waypoint as the initial point in the plan. (If you already have a plan active, the button will be labelled 'Add To Plan') This is one method you can use to create a flight plan. To add more waypoints to your plan: tap near the desired waypoint on the map → select the waypoint in the subsequent Closest Points Popup → tap 'Add To Plan'. For more information see the chapter on Planning.

Remove From Plan

(Only shown if this waypoint exists in the currently active plan) Removes the waypoint from the plan.

Recentre On Map

Positions the screen with the selected waypoint in the centre.

Wx/Notams

Tapping on 'Wx/Notams' results in a tabbed popup that provides access to various weather & NOTAM information.

The options here are covered in the Weather chapter.

Satellite Map

Opens a Satellite Map popup with the waypoint shown as a pin drop on the map.

Range Ring

The Range Ring feature is discussed in Special Features

Public Notes

Use the Public Notes system to share information about airfields with other OzRunways users. Before you can submit a Public Note you will need to set up a nickname in Settings → Subscriptions.

Fuel Prices

For waypoints that have associated fuel prices, these are shown here. Tap to edit or enter new fuel information.

Below these options a list of documents for the airfield is shown. Tap a document to view.

Toolbars

There are a number of toolbars around the edge of the map, the function of these toolbars and their buttons are described below.

Left Sidebar (Overlays)

The Left Sidebar (also known as the Overlays Bar) bar is accessed by tapping the show/hide button along the left hand edge of the map page. This bar controls the display of the waypoint overlay symbols, fuel prices, weather radar overlay, and graphic overlays/KMLs.

↖	**Show/Hide Toolbars** (Long press for options, adjust icon sizes)
◯	AD Waypoint
◌	ALA Waypoint
Ⓗ	HLS Waypoint
◆	VFR Waypoint
△	IFR Waypoint
⊙	Navaid Waypoint
✖	User Waypoint
✦	GPS Waypoint
📷	Weather Cams
⛽	Fuel Mode
☁	Windy/Radar/Satview
🗺	KML Overlays
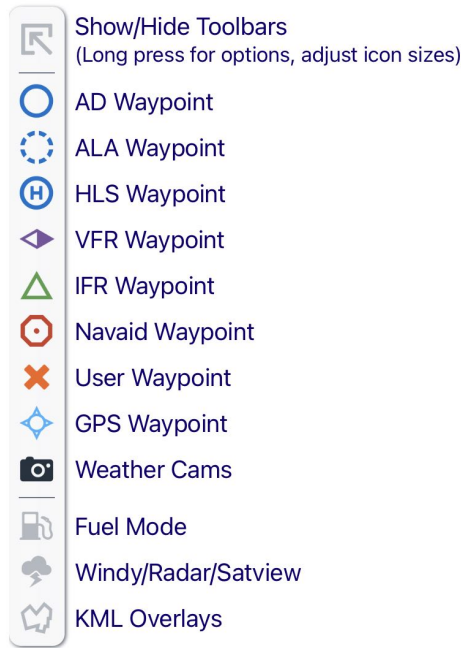
Tap a waypoint icon to turn the respective overlay on/off. The presence or absence of the waypoint overlay symbols also controls various other functionality e.g. if the AD or ALA overlays are switched on, they will appear in the Horizontal Terrain display.

By default, a single tap on **Show/Hide Toolbars** will hide the Left Sidebar. This behaviour can be configured with a long press on the **Show/Hide Toolbars** button. A popup will appear (as depicted in Image 2.4) allowing you to select which toolbars and screen elements will be shown or hidden when you tap the Show/Hide button. In this popup there is also an Icon Size slider used to adjust the size of all toolbars.

The very last option 'Show Help Button' is used to show or hide the '?' button on the Right Sidebar, regardless of Show/Hide selection.
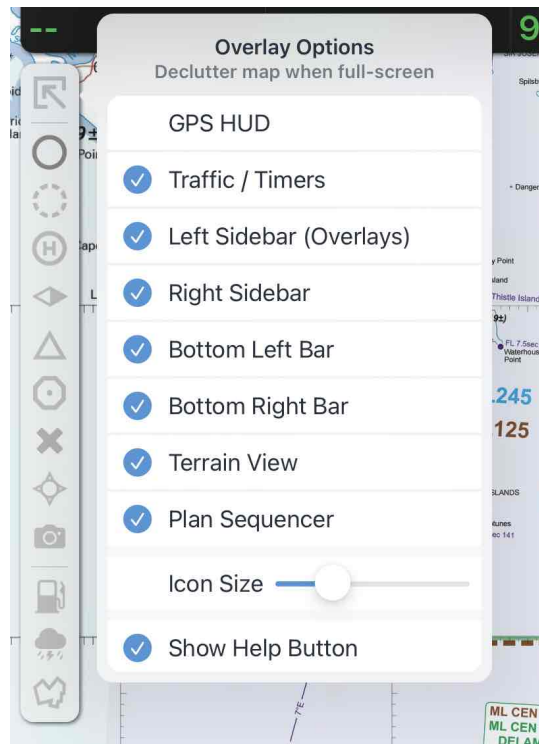
Resulting popup after a long press on the Show/Hide button.

Fuel mode

Tap the **Fuel Mode** button to turn on the fuel overlay. The icon is green when Fuel Mode is switched on, and grey when switched off. Image 2.5 is indicating that Orange (YORG) may have Avgas, Jet A1, and Mogas available and that Bathurst (YBTH) may have only Avgas and Jet A1 available.

Last reported fuel price (where available) is displayed underneath the waypoint, colour coded to the fuel type. The price shown reflects the fuel type for the Active Aircraft Profile as set in the Traffic popup. To view prices for other fuel types you can either change the aircraft profile in the Traffic popup, or, tap near the waypoint → tap the waypoint in the resulting Closest Points popup. Fuel information is displayed here in the waypoint details view.
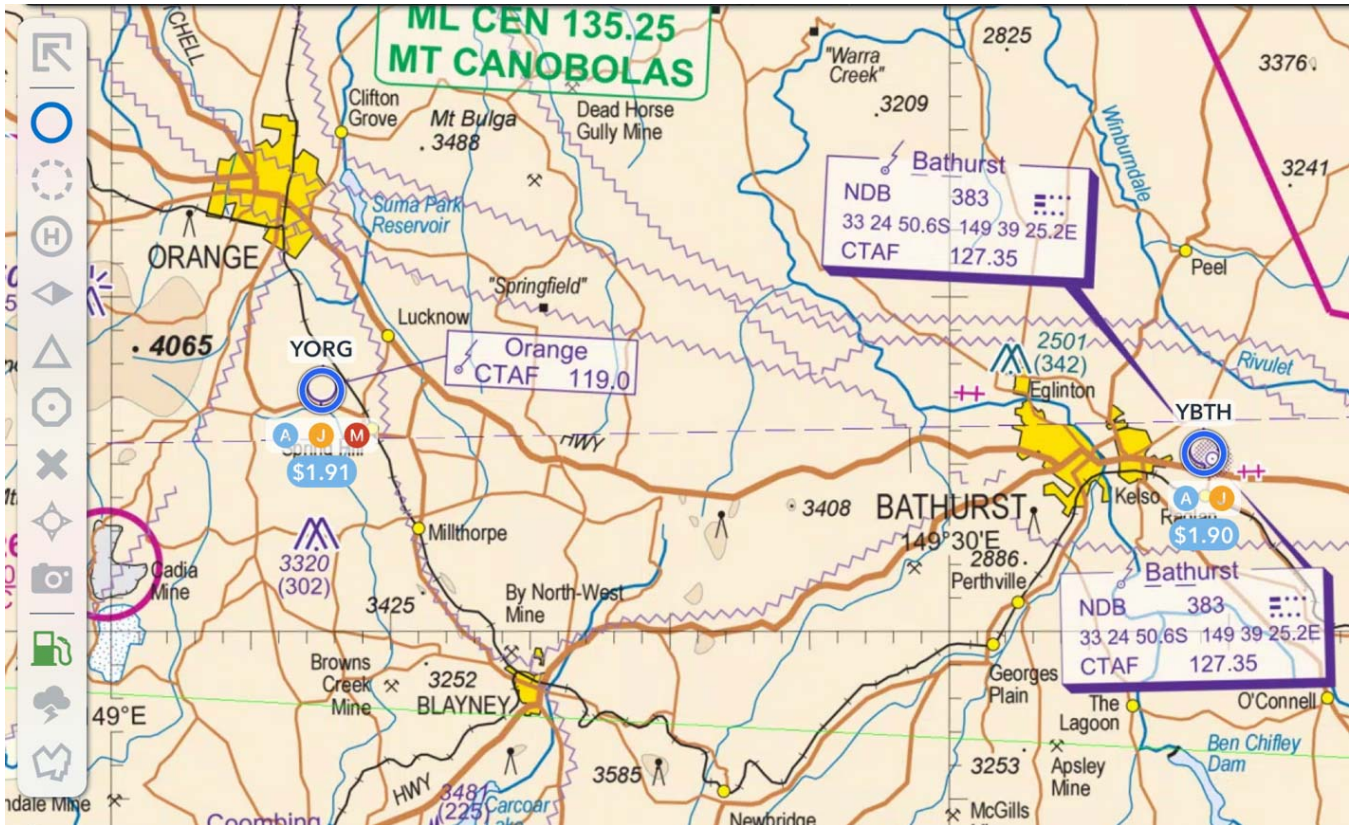
AD & ALA fuel prices

Weather Overlay

Tap the Weather Overlay button to switch the weather radar overlay on/off. The icon is green when the Weather Overlay is switched on, and grey when switched off. See the chapter on Weather for more information.

KML Overlays

This button is only shown if you have imported a KML overlay, or if you have regional KML overlays available with your subscription. For more information see Graphic Overlays. When any KML Overlay is turned on, the icon is green. When no KML Overlays are turned on the icon is grey.

Right Sidebar

Drop Marker

Lock Screen

Cursor

Artificial Horizon

LSALT Assistant

Horizontal Terrain

Plan Progress

Map View Options

Help
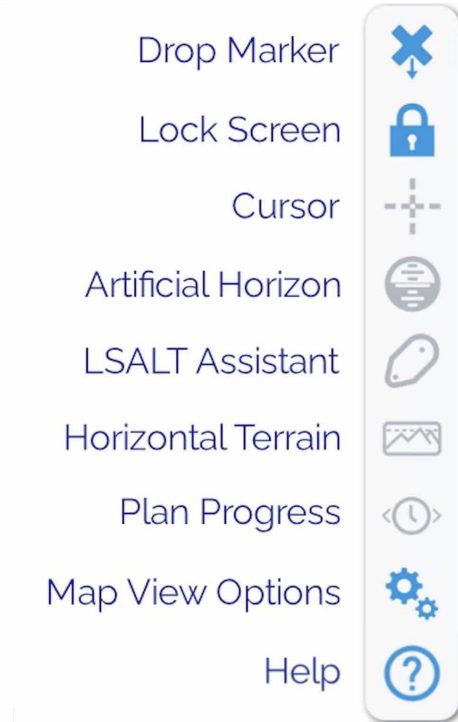
Drop Marker (Man Overboard)

Tap the Drop Marker button to drop a User Waypoint at your current GPS location. While User Waypoints can be added by tapping on the screen, the Drop Marker button gives the most accurate and fast way of adding a waypoint at your current location, and includes a timestamp (handy for recording visual position fixes!). Waypoints thus added are initially of group 'Dropped Marker'.

Screen Lock

Tapping Screen Lock will prevent any interaction with the map page and remove non-critical menu buttons. The padlock closes and turns green when the screen is locked. Tap again to unlock. This is useful in turbulence when you don't want extraneous taps being registered. If the screen lock is switched on and you try to tap the screen, a message will appear reminding you that the screen has been locked. Tap the padlock to unlock.

The Weather Overlay, Traffic, and Man Overboard buttons may still be used while the screen is locked.

Cursor

Switches the cursor on/off. The cursor is a horizontal and vertical dashed line intersecting in the middle of the map screen. When the cursor is switched on, the coordinates (and elevation, if you are a Premium subscriber) at the centre of the cursor appear in a box on the right hand edge of the screen. The cursor can be used as an aid to verify coordinates or to assist in adding accurate User Waypoints. Tap once on the coordinates box to change coordinate/elevation units, or tap and hold to copy the coordinates only to the clipboard. When creating a User

Waypoint with the cursor switched on, the waypoint location will be the centre of the cursor (otherwise it is added where you tap your finger).

The icon is green when the Cursor is switched on, and grey when switched off.

Artificial Horizon (only shown when a compatible AHRS device is connected)

When a compatible AHRS device (e.g. the Appareo Stratus 3) is connected, tapping this button opens an Artificial Horizon box. The box can be dragged around the screen. Tap this button again to dismiss the AH.

LSALT Assistant (only shown when in a plan and a route leg selected)

The LSALT Assistant is described in the Terrain and Airspace chapter.

Horizontal Terrain

The Horizontal Terrain feature is described in the Terrain and Airspace chapter.

Plan Progress (only shown when in a plan)

From left to right the Plan Progress box displays: the last passed waypoint & time, ETA to the active waypoint, and next landing point ETA. Tap the left arrow to sequence the plan back one waypoint, tap the right arrow to sequence the plan forward one waypoint. Press and drag the box to move it around the screen.
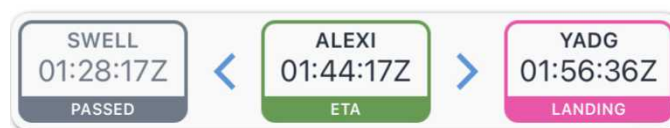
Map View Options (Cogs)

The Map View Options popup is accessed by tapping the 'Cogs' button. The popup is shown below in Image 2.6. Tap an item to switch it on or off. A blue tick, or an 'i' in a circle indicate the option is turned on. Items with blue ticks can only be switched off or on. For those items with an 'i', tap on the 'i' to access more settings.
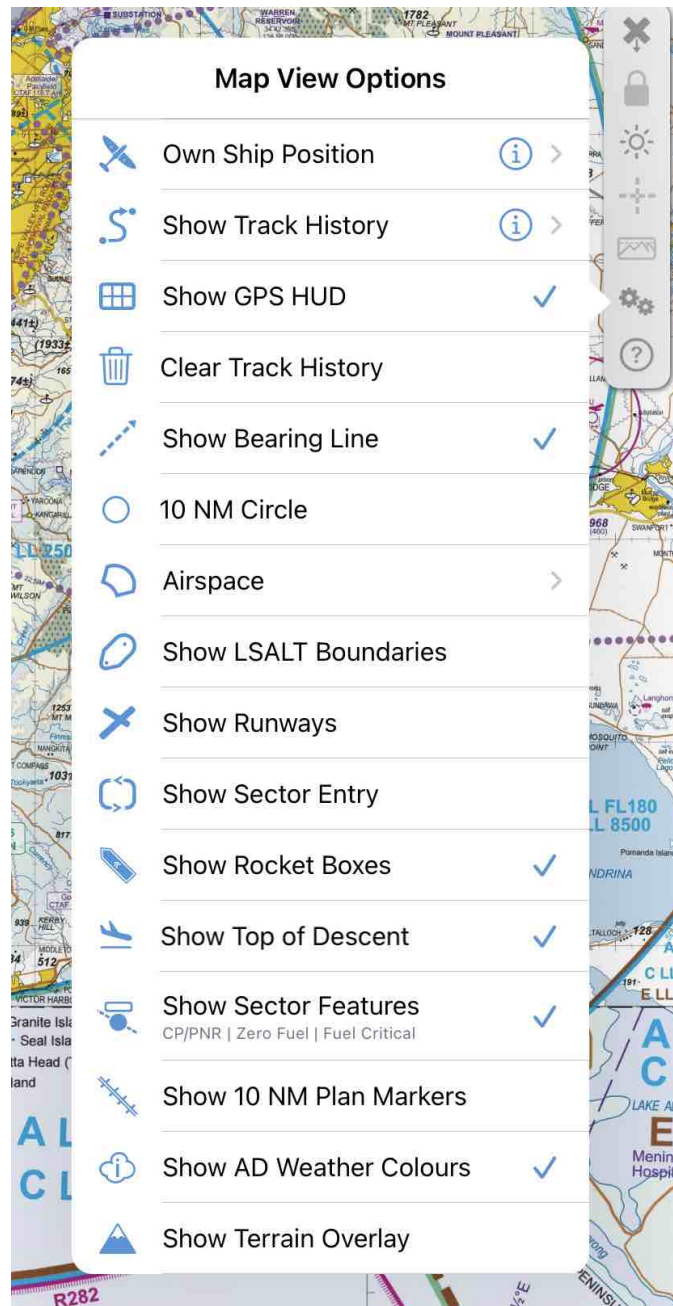
Map View Options.

The options are as follows:

Own Ship Position

This switches on/off the aircraft symbol which indicates your position. When switched on, tap the blue circle to access more settings - you can change the colour and size of the icon. When in North or Track up map mode, you can also select the extra option to turn on/off the Pulsating Blue Ring around the icon. When a flight plan is active, and you are moving, the track pointer automatically displays a 10nm line ahead of the aircraft. You can also adjust the colour and size here.

Show Track History

Controls the 'cookie crumbs' left behind your path across the map (as a set of coloured crosses). Tapping the blue circle to change the colour and size of the track history markers.

Show GPS HUD

Switches the GPS HUD on/off.

Clear Track History (This option only appears when there is track history to clear)

Clears the track history (cookie crumbs) from the map.

Show Bearing Line

Switches the bearing line on/off. The bearing line is a green dashed line that leads you to your next waypoint (when in an active flight plan).

10NM Circle

Switches on/off the 10NM circle around your aircraft symbol. Tap the blue circle to adjust the range of the circle (10NM by default).

Airspace

This list controls the types of airspace that appear in the list when you long-press on the map. For ops in Australia, you should turn on CTA, CTR, and PRD. It also dictates what types of airspace are displayed in the Horizontal Terrain view.

Show LSALT Boundaries

Turns the Grid LSALT display on for a selected segment in a plan. A plan must be loaded before the LSALTs will display. Tap on the segment you wish to examine either on the map or on the segment summary popup from the Plans button. The splay for calculating the LSALT is shown around the selected segment. Tap the blue circle to adjust the LSALT splay category.

Show Runways

Shows the runways (overlaid on the map) for the next destination of the selected segment in a plan. You need a plan selected for this to work. The AD has to have an ERSA entry for the runway(s). In other words, the data for these comes from Airservices Australia.

Show Sector Entry

An aid to an IFR aid approach. A plan must be loaded for this feature to work. Tap the blue circle and set the inbound track and whether it is a left or right entry. The sector entry pattern is then displayed on the map.

Show Rocket Boxes

Enables/disables the 'rocket boxes' i.e. the lozenge shaped boxes near the start of the planned track line that show bearing and distance.

Show Top of Descent

Show/hide the Top of Descent marker along the magenta track line.

Show Sector Features

Show/hide sector features such as CP/PNR, fuel critical point etc. along the magenta track line.

Show 10NM Plan Markers

Show/hide the 10NM markers along the magenta track line.

Show AD Weather Colours

eAWIS is created from unverified one-minute observation data from BoM. For situational awareness only.
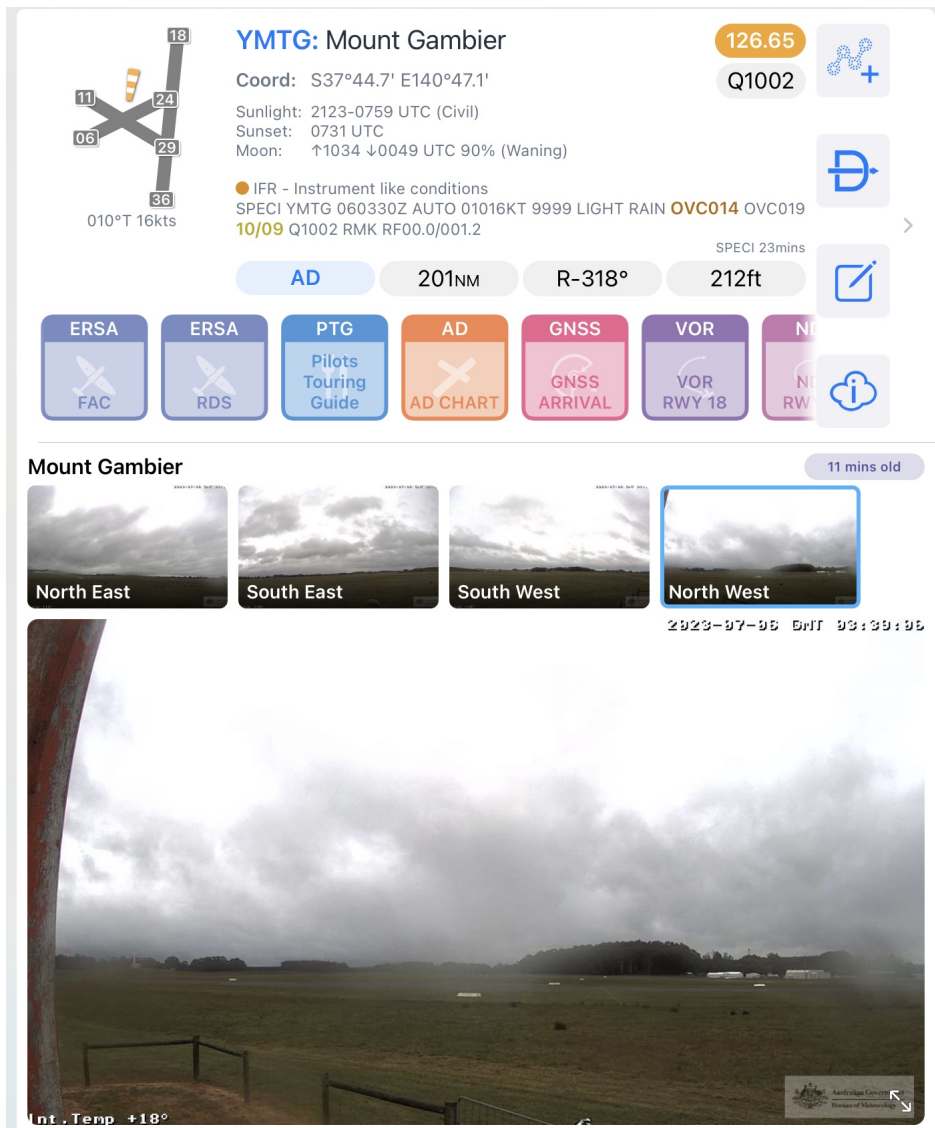
Show/hide the coloured dots inside waypoint symbols that indicate meteorological conditions based on METAR/eAWIS observations. The colour criteria is detailed in the image below.

VFR - Current Conditions Good
Visibility 9999, Wind <= 25kts
Cloud SCT > 3000 ft or FEW > 1500ft AGL

IFR - Instrument Like Conditions
Visibility < 5000m, cloud SCT < 1500 ft AGL

Marginal VFR - Decreased Conditions
Visibility >= 5km, Wind > 25kts
Coud SCT < 3000ft or FEW < 1500ft AGL

Adverse IFR - Current Conditions Poor
Visibility < 3500m, cloud FEW < 700 ft AGL

Colour Criteria

Temperature and Dew point text will display in yellow when they are within 1ºC of each other to alert the pilot to potential hazard of fog/ precipitation. This will not directly affect the the AD colour indication, as shown below in Image 2.8.

Any rainfall in the last 10 minutes will also be highlighted yellow and not affect the AD colour indication.

Temp/Dew Point

Show Terrain Overlay *(Australia/NZ Premium subscribers only)*

Turns the terrain overlay on/off. The Terrain Overlay feature is described in the Terrain and Airspace chapter.

Help

Tapping the Help button reveals labels for all buttons on the map screen. It also provides options for More Help, such as links to our user documentation and support website.

Bottom Left Bar

Map Mode

Static   North up   Track up

The Map Mode button toggles between static mode (where the map does not move) and moving map modes (where the map tracks your GPS position).

There are two moving map modes: North Up and Track Up. Cycle between the modes by tapping on the Map Mode button. Static → North Up → Track Up → Static … etc. etc. The current Map Mode is denoted by the colour of the Map Mode button. It is clear (grey) in static mode, green in North Up mode, and magenta (or purple) in Track Up mode.

In order for the moving map modes to work, the iPad needs to know your GPS position, which means you need to have the iPad's Location Services turned on. When you tap the Map Mode button and transition into one of the moving map modes, the map will recenter and place your aircraft symbol in the centre of the screen (North Up mode), or in the bottom third of the screen (Track Up mode).

In Track Up mode a North pointer appears inside the map mode button showing the direction of magnetic North. You may pan or zoom the screen to wherever you want and the tracking will continue with the offset and zoom you have selected.

Radar

The Radar Button brings up a popup with three options: a Windy.com weather display, the closest Bureau of Meteorology (BoM) radar to the middle of the screen, and the national Satview (satview.bom.gov.au).

The features in this popup are covered in depth in the chapter on Weather

Choose Map

The 'Choose Map' button lets you select the map you wish to display. The maps shown in the list are based on the current location you are viewing on screen.

Image 2.9 shows a typical Choose Map popup in the vicinity of Melbourne.
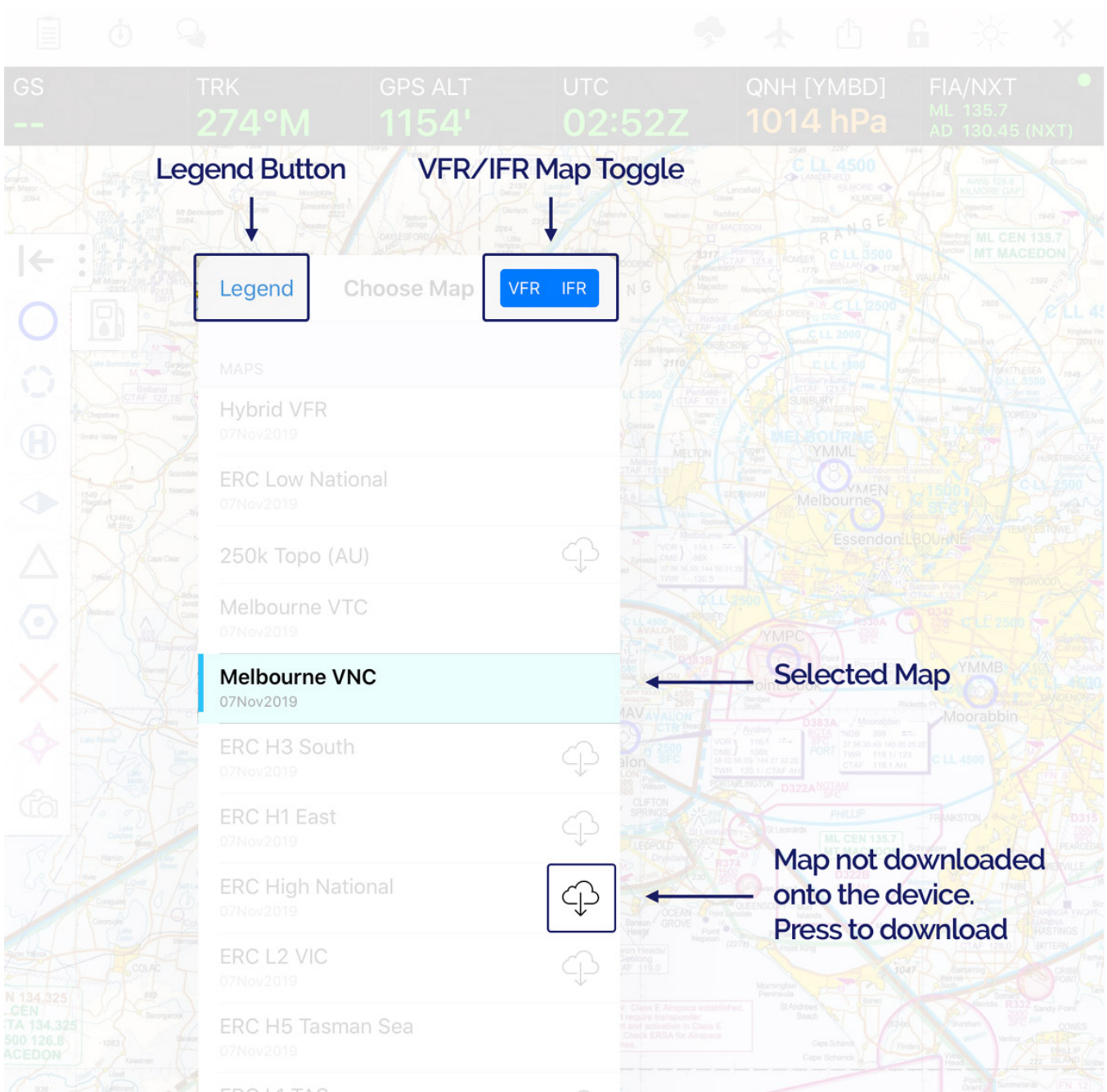
Choose Map popup

Tap on the VFR or IFR boxes to show/hide the VFR or IFR maps. In Image 2.9 both VFR and IFR are selected.

Maps are listed top to bottom in decreased order of detail (or scale). So, for instance, the National 250k Topographical map is listed at the top as it is the most detailed map for that area. As you get into more rural areas, only the WAC and perhaps the ERC (Low/High) will show. The Hybrid VFR and ERC Low National always appear at the top of the list as these are the most frequently used.

The currently selected map is highlighted blue (e.g. in Image 2.9 the Melbourne VNC is the selected map).

The WAC (AU) is a global map for Australia derived by combining all individual WACs. This means there is no need to select or know the particular WAC you need for a given area. We have similarly created a nation-wide ERC for both Low and High versions (named ERC Low National and ERC High National respectively). However, the individual ERCs are still selectable as on some occasions, the boundary of one ERC may overlay detail on an adjacent ERC that is required. In that case you can swap to the individual ERC in question.

There is also a Hybrid VFR map provided for Australia which when zoomed out shows the WAC. As you zoom in, and if they are available, you will see in sequence, the VNC, VTC and inset for the area at which you are looking.

If a legend is available for the selected map, the word 'Legend' will display in the top left corner of the popup on iPads. On iPhone it will also appear at the very bottom of the list of maps.

If you have not downloaded a particular map, a 'cloud' icon displays next to it on the right. You can tap the cloud to download the map here rather than going to Settings → Downloads. Once tapped, the download progress will be shown. If you want to delete a map, you still have to go to Settings → Downloads → (Country) and perform that action there.

Bottom Right Bar
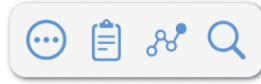
More Options

Note

This icon is only shown when a plan is open/active

The More Options button contains options for the currently active plan. If you have an appropriate subscription avionics export options for Avidyne and Dynon will appear in this menu.

Plan Sheet

Tap to open the Plan Sheet for the currently active plan. The function of the Plan Sheet is covered in Planning.

Plans (lines and dots)

The Plans screen is divided into two sections. The top section contains the Quick Planner and the bottom section contains the list of previously created plans. For more information on making a plan and accessing saved plans see the chapter on Planning

Tapping Plans when a flight plan is already active will result in the Plan Details view, as described in the Planning chapter.

Search

The Search button allows you to search for an airport or waypoint by name, partial name, ICAO code, or a distance and bearing (YBAF04015). It also provides you with the closest ADs, ALAs and other waypoints relative to your current GPS position. It is often useful if you have to do a quick diversion. For example: tap 'Airports' to view a list of AD, ALA, and HLS closest to your current GPS position. Or, type in the search box to search for a waypoint

manually. You can also perform an Apple Maps search e.g. try searching for 'The Big Rocking Horse'. This popup may be left open and distance and bearing information will continue to update (potentially useful if you are approaching a waypoint and want a quick view of the distance remaining).

Traffic / Timers

Traffic

The elements of the traffic icon gives a visual indication of the status of both the OzRunways traffic system, and any connected ADS-B device.

	Traffic disabled
	OzRunways Traffic Receiving
	OzRunways Traffic Broadcasting (receiving implied)
	ADS-B IN Receiving
	ADS-B OUT Broadcasting (receiving implied) *iOS 13 and above only*

Traffic icon legend

Single-tap the traffic icon to reveal more options. Tap and hold to momentarily enlarge *all* traffic. If you have a SkyEcho connected this is where you can configure the settings. *(iOS 13 or above required)*
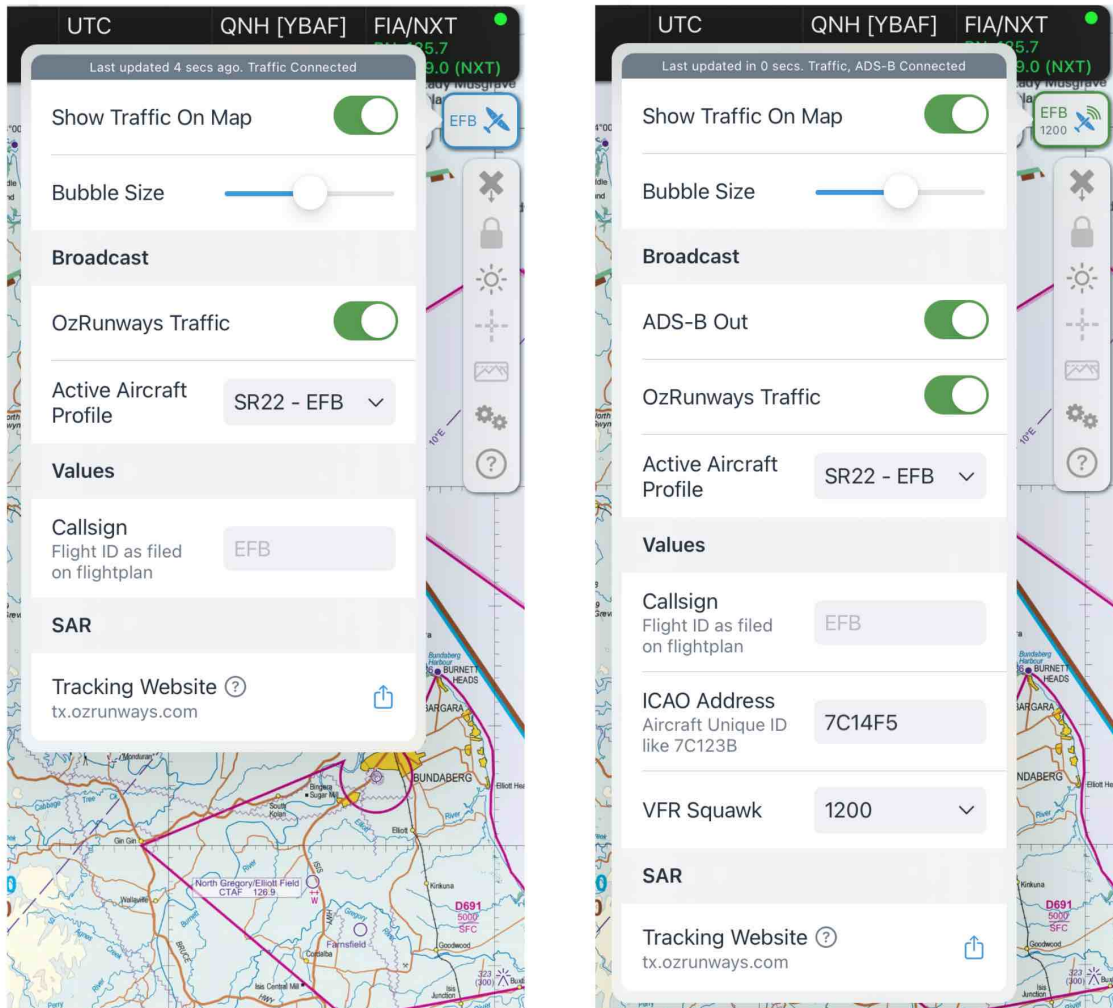
Left: Standard traffic popup Right: Popup with SkyEcho connected (iOS 13 or above required)

The image below demonstrates the appearance of the traffic icon under the following conditions:

- OzRunways traffic broadcasting
- SkyEcho ADS-B OUT broadcasting using callsign EFB, and squawk code 1200

Note

The OzRunways traffic system will only broadcast your position to other users when it detects you are flying. i.e. the aeroplane symbol won't be green unless you are flying.

Timers

Tapping the Timers button opens a menu where you can access the Flight & Engine Timer settings.

Engine Timer

There is an engine timer and a flight timer. You can start the timers manually, or have them automatically start. The engine timer may be started automatically by listening for ambient engine noise. This is setup by tapping the Volume Switch and then tapping 'Auto' and adjusting the volume control while you have your engine running. Adjust volume from highest to lowest so that the timer starts reliably. When the engine is stopped, the timer should automatically stop. You may have to experiment with the setting to get it right for your aircraft.

Flight Timer

The flight timer may be automatically set by tapping 'Air Switch' and selecting an air speed at which you wish to start the flight timer.

The respective timers may be reset at the bottom of the popup. If the timers are set and operating, their values are displayed to the right of the timers icon.

Airspace

The left screenshot in Image 2.12 shows the result of a long press near YPED (Edinburgh, SA). On releasing your finger after a long press a list appears detailing the airspace under your finger at the time you did the long press. The types of airspace that appear in this list can be selected in Map View Options (cogs). A tap on the bottom airspace listing (Edinburgh airspace R234) results in the display on the right in Image 2.12.
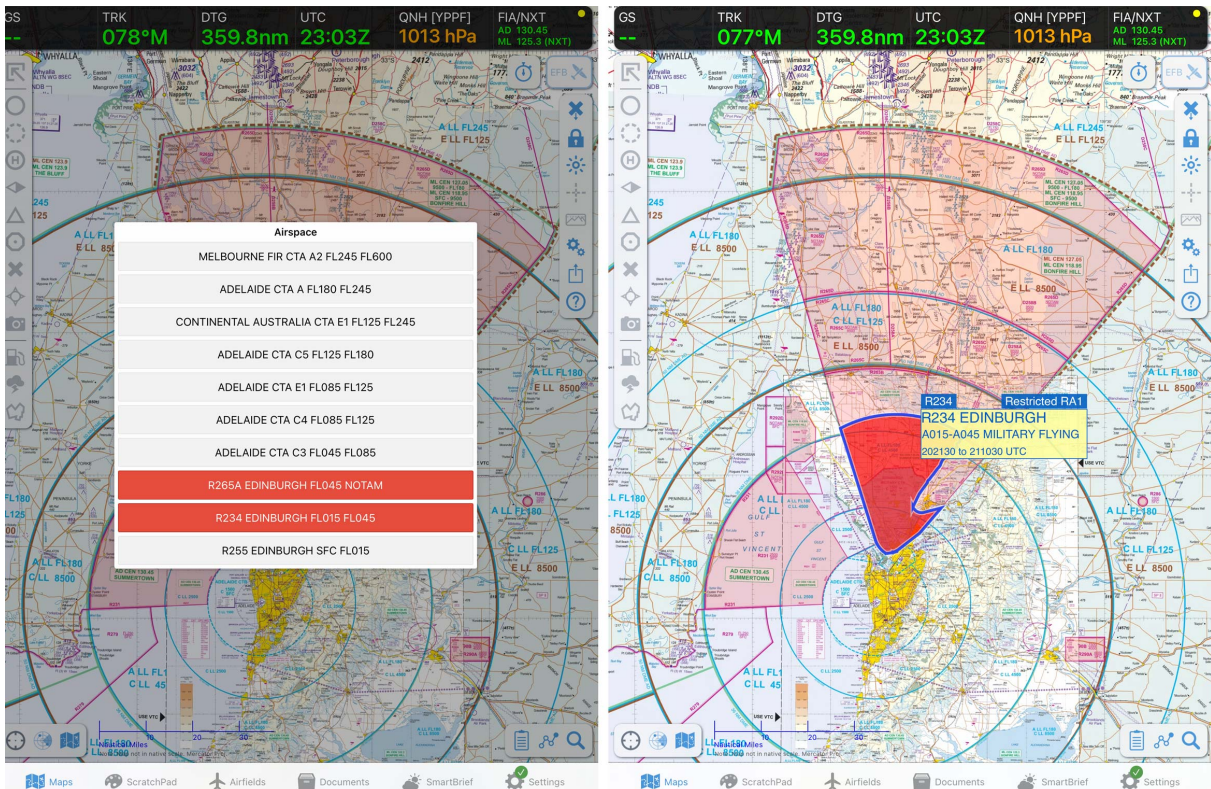
Airspace information

When viewing restricted airspace details in the above manner the information box will be coloured either yellow, orange or red. The orange colour indicates that clearances may be given to transit that airspace (i.e. RA2). A red colour indicates you are unlikely to get a clearance through the airspace (RA3) and yellow illustrates that clearances are routinely given (RA1). The active hours (where available) are shown in UTC.

GPS HUD

Below the title bar menu there are a number of dark boxes which display information. This is called the GPS HUD and is described in detail in the GPS HUD chapter.
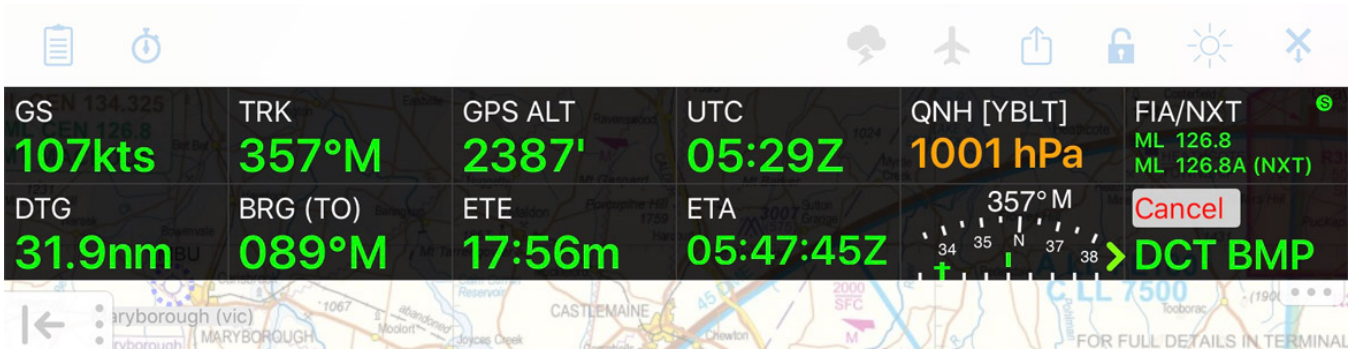
GPS HUD

ScratchPad Page

The ScratchPad page gives you a place on which to take ATC notes, ATIS reports, traffic information, etc.
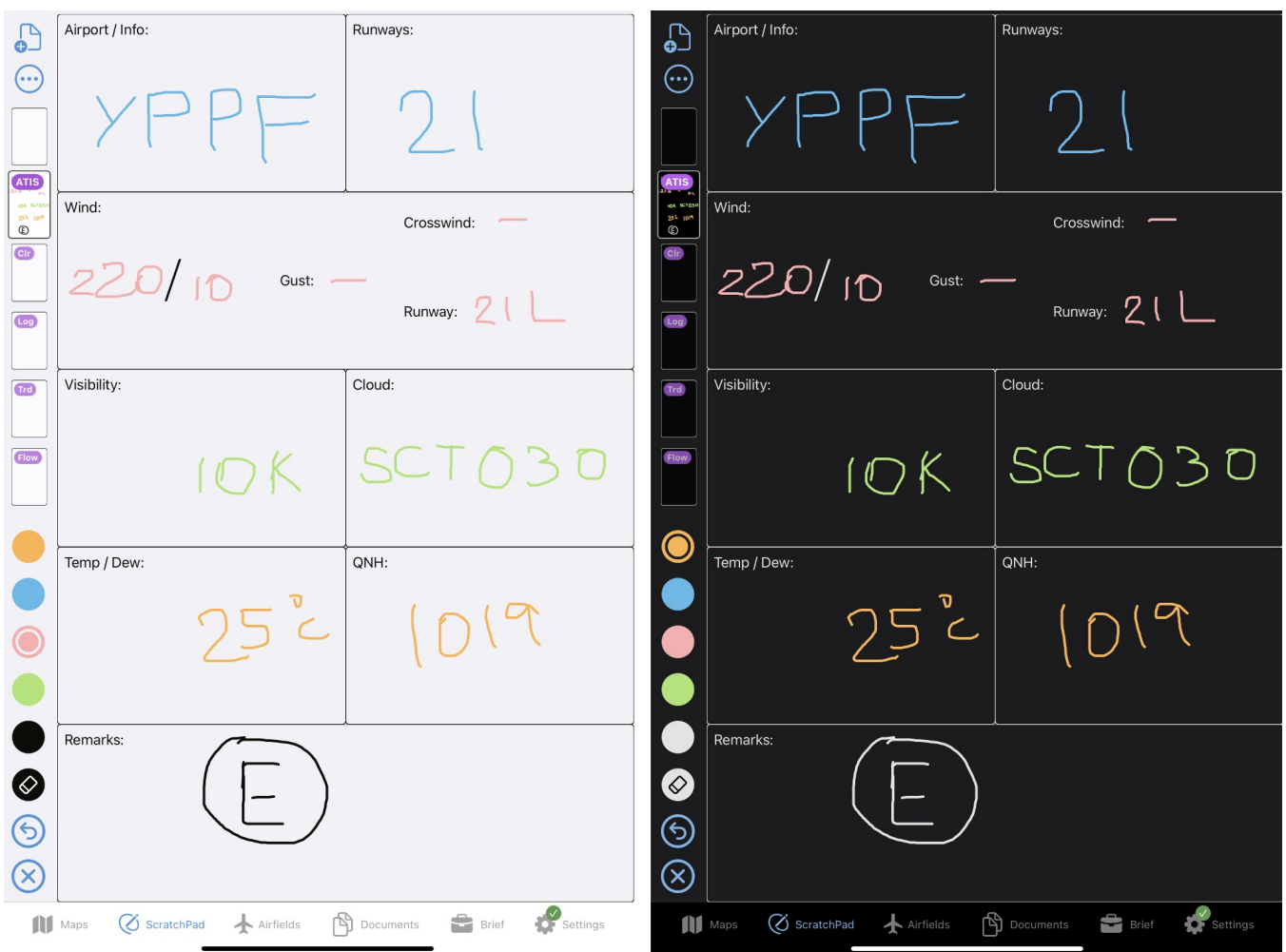
To add a ScratchPad, click on the top left icon that looks like a '+' on a paper icon. There are 6 templates to choose from:
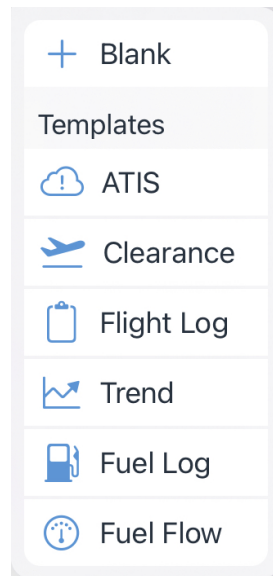
Use your finger as a pen. Use the colour selector at the bottom left side to change the pen colour. The selected colour can be identified by the inner circle.

Erase your strokes by clicking the eraser icon below the colours. The backward arrow is an undo button, it will undo the last stroke (defined as finger on, to finger off.) The red 'X' clears all content on the current page. Swipe right-to-left on a page preview icon to reveal a delete option.
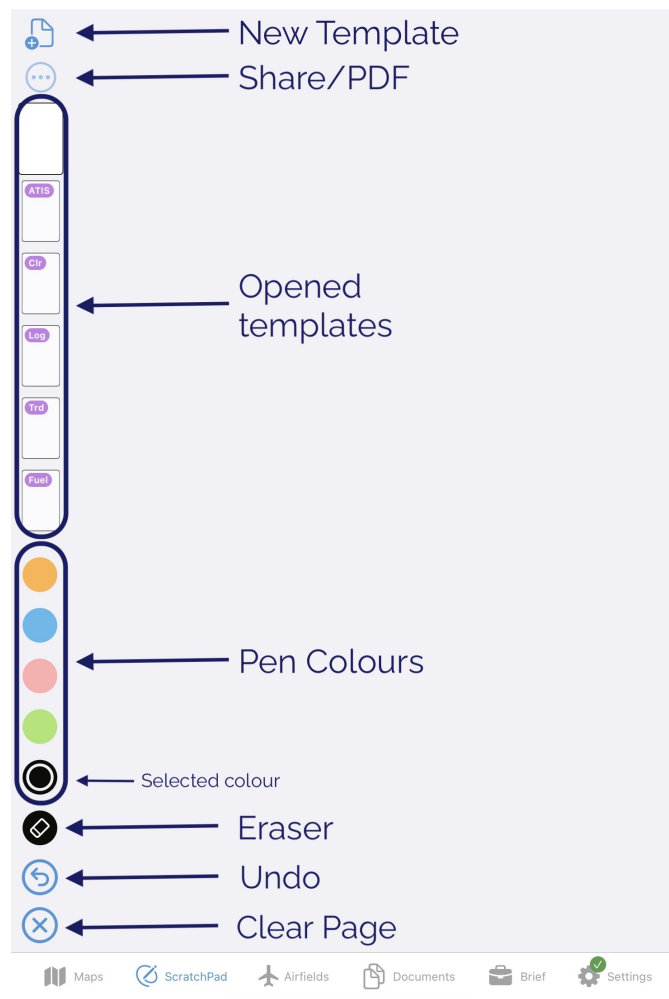
If you uninstall the app the ScratchPad content will also be removed.

Airfields Page

Depending on your subscription type you will see either Smart Airfields (Premium subscriptions) or the old style Airfield List (Standard subscriptions). If you have a Premium subscription you have the option to switch between the two.

Airfields List
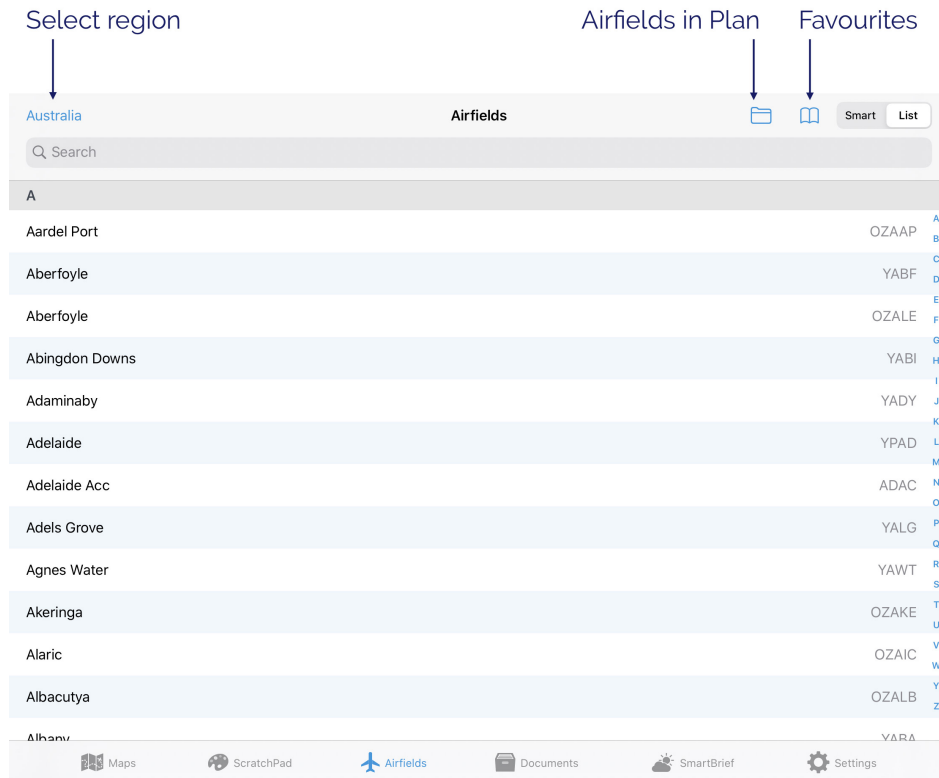
Airfields List

Tap an Airfield in the list to view the associated documents. To learn more about the functions when looking at a document see the Viewing aerodrome documents section later in this chapter.

In the top left corner of Image 4.1 we can see that the region is set to Australia. A tap on 'Australia' results in a popup that lists the possible regions. Set appropriately. Note: you can set to 'All' which will give you a very large set of airfields to search (so you probably don't want to do this).

Airfields in Plan

If you have a plan entered, those airfields with documents will appear in this list.

Favourites

Airfields you have previously added to favourites will appear here. To learn how to add a favourite to this list see 'Options' in the Viewing aerodrome documents section further down. Use the Edit button to reorder or delete items in the list.

Search

Image 4.2 demonstrates how to activate the search function. Just start typing into the search field and matching airfields will appear below in the popup. Here we have typed 'Parafield' and the popup shows a selection of matching entries. The search is not case sensitive.

You can use airfield names or codes, document types (FAC, RNAV, SID etc.) and more in the search box. e.g. searching for 'can ils' will show the ILS charts for Canberra. Searching for 'ypad star' will bring up all the STAR charts for Adelaide.
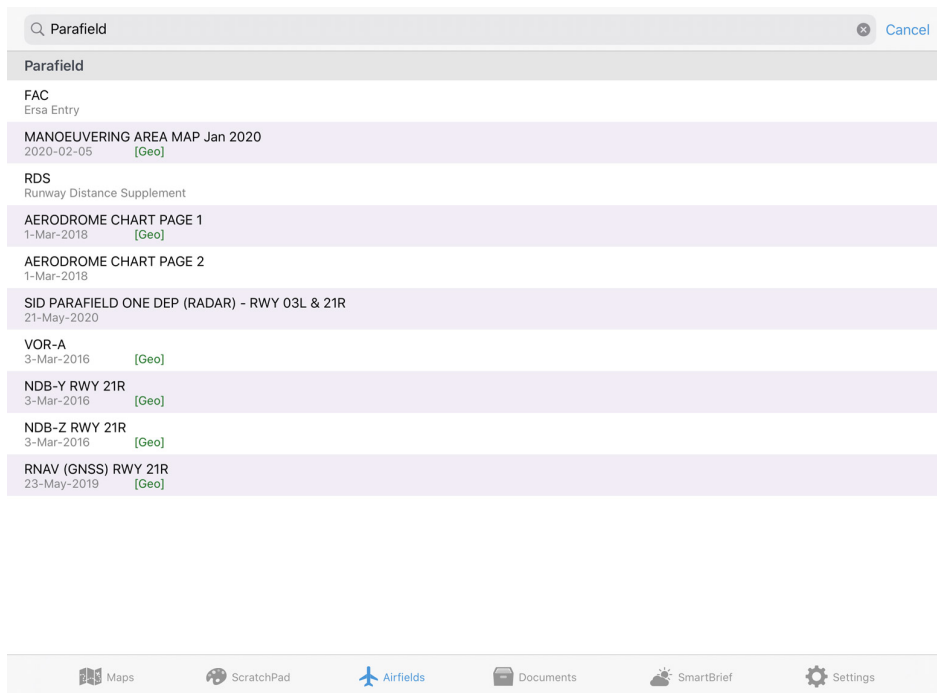
Search in the Airfields List

Smart Airfields

The Smart Airfields page (Image 4.3) is available with an Australian VFR Premium or Australian IFR Premium subscription. Use the 'Smart' and 'List' buttons to switch between the 'old style' list of airfields, and the new Smart Airfields Page.

Smart Airfields is designed to give you the information you need without having to scroll through a large list.For easy reference, the runway displayed on this page is appropriately coloured to reflect the surface type. The colours are: brown = dirt/gravel, green = grass, grey = tarmac. Where available, there is a small diagram of the runway layout and a windsock next to the airfield name. The windsock changes direction based on the current METAR wind to give you a quick indication of which runway might be in use. For airfields with a large amount of charts, the charts will be grouped into folders. Tap on a folder to reveal all charts of that kind.
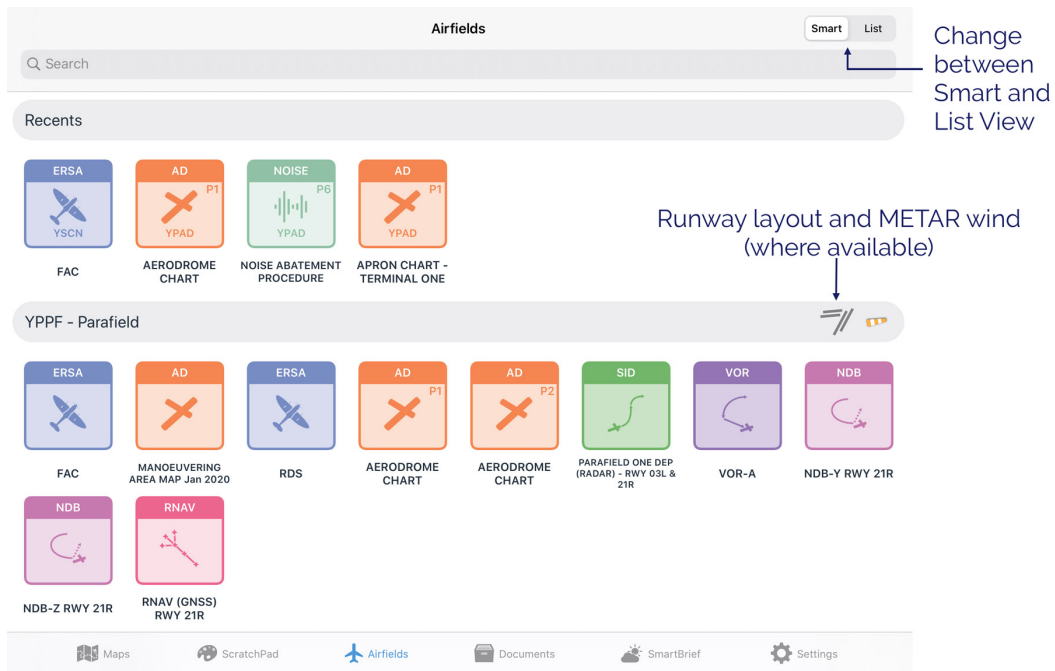
Smart Airfields

Search

There's an intelligent search bar which can be used to search by aerodrome codes, procedure types, procedure names and more. E.g. searching for 'CAN ILS' will display the ILS procedures for Canberra aerodrome. Searching for 'YPAD STAR' will bring up all the STAR charts for Adelaide.

Recents

The Recents section displays your most recently accessed charts & documents so that you can return to them quickly and easily. This section is always displayed at the top of the list.

Airfields in plan

After the 'Recents' section, the first airfield displayed is the airfield you are at now (nearest airfield within 2NM of your location) followed by a list of airfields in your plan (if you have a plan loaded).

Following the list of airfields in your plan, OzRunways will choose a few airfields in the general vicinity along your flight path that may be useful to you e.g. in case of diversion. Note: If your plan contains more than 10 airfields then no extra airfields will appear in the list, only those that are in your plan.

Outside of a plan

If you don't have a plan loaded the Smart Airfields page will display a list of airfields closest to your current location.

Viewing aerodrome documents

When viewing an aerodrome document, a new set of menu buttons appear across the top of the page. These are described subsequently.
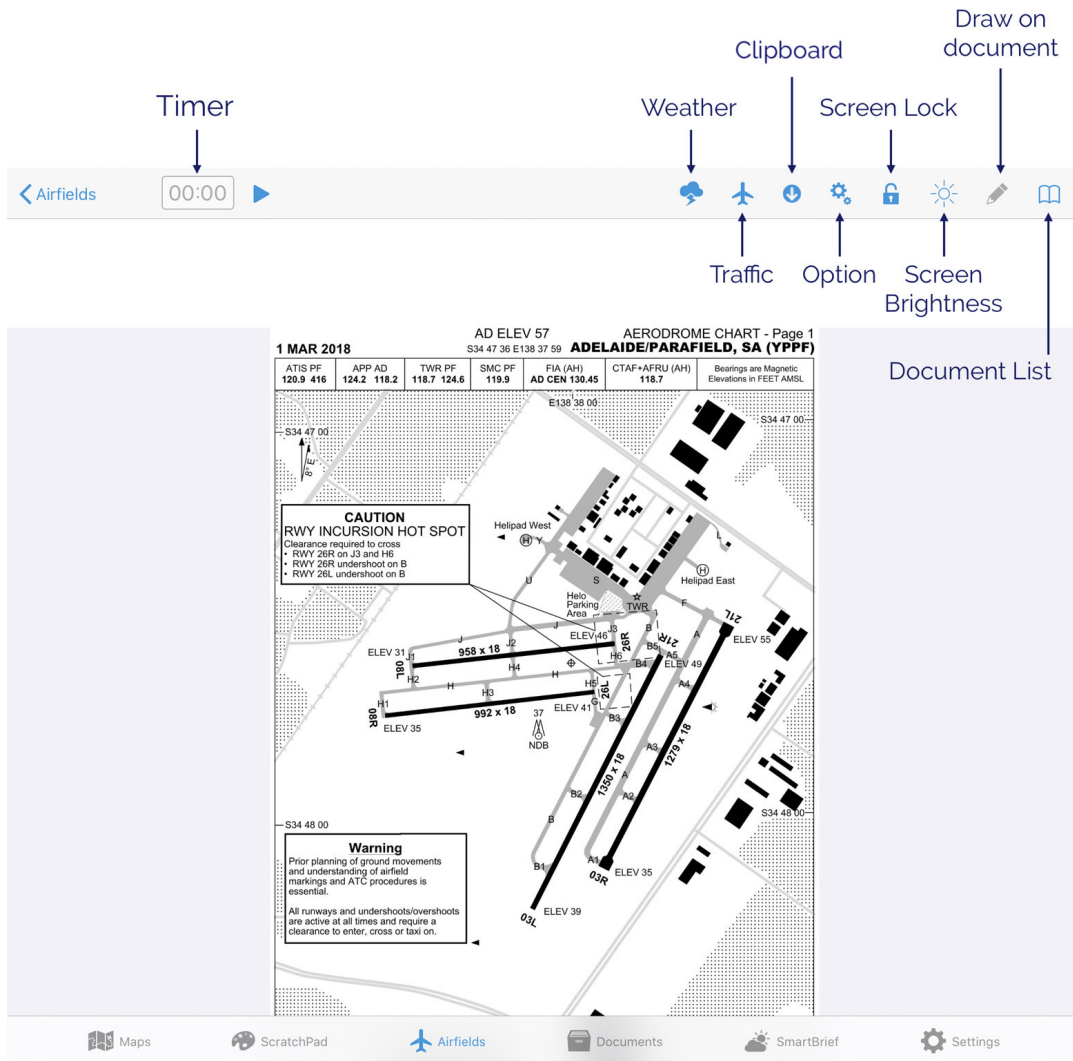
Aerodrome document view

Document List

Image 4.5 illustrates the result of tapping the 'Book' icon in the top right corner. This lists all documents and procedures available for the selected airfield. Here we can see Parafield has a FAC page, a runway distance supplement (RDS), a Manoeuvering Area Map, an Aerodrome Chart, and numerous approach and departure procedures *(if you have a VFR subscription you will not be able to access the departure & approach procedures)*.

If you have access to the OzRunways Airfield Guide, Pilots Touring Guide or any other additional subscriptions (or your own items from Dropbox), this is where entries will appear for those products.

Document list

Draw on documents

> **Note**
>
> This feature is only available for documents less than 5 pages long. It is not available for the OzRunways Airfield Guide.

Tap the Pencil icon to enter editing mode. Use the controls at the top of the page to select your desired colour and pen type (pen or highlighter.) There is an undo button to remove the last stroke, or a red 'X' which will clear all drawings on the document. When you have finished drawing, press the Done button to exit edit mode.

Any drawings you make will be retained until you delete them or a new version of the document is published, for example an update to the ERSA.
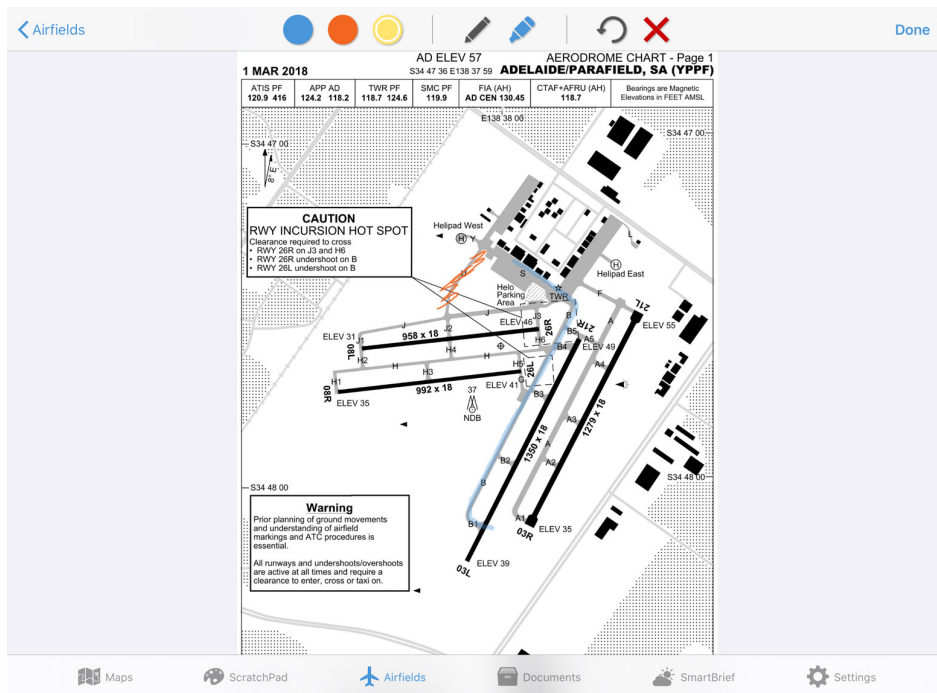
Drawing on the Parafield aerodrome chart

Screen Lock and Screen Brightness

These operate as per the Map page.

Options

Tapping the cogs symbol will bring up a list of more options. It depends on what type of document you are viewing as to what options appear in the list. The options are described below.

Add to favourites

Add this airfield to the favourites menu seen back on the main Airfields page.

Print

Print the document you are currently Viewing

Swipe to change plates

If this setting is enabled you can swipe between documents like reading a book. Swipe from the right edge of the page to the left to move forward one document. Swipe from the left edge of the page to the right to move back one document.

Show Timer Button

If this setting is enabled a timer will appear in the title bar as seen in Image 4.4 The timer works in 3 stages: Tap the Play icon to start the timer. Tap the Pause icon to pause the timer. Tap the 'X' to clear the timer and start again.

Own Ship Position *(only shown when viewing a georeferenced document)*

Enable this setting and your position will be shown on the document as a small red aircraft icon.

Show Magenta Track *(only shown when viewing a georeferenced document)*

When this option is enabled, your planned track will be displayed on the plate or runway diagram.

Annotations *(only shown when viewing certain document types)*

Used to add text to the plate or diagram you are currently viewing. The text can then be moved around the plate. An example use for this features is to have the text 'xxxxx' and use it to mark an unserviceable taxiway.

Show Circling Area *(only shown when viewing certain document types)*

You can display circling areas, as shown below in Image 4.7 Select the desired category (or categories) and the circling area will be displayed on the plate.
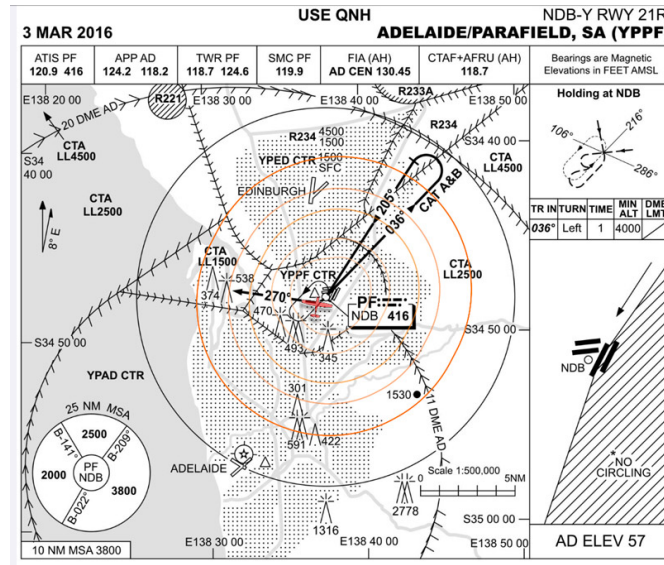
Circling areas at YPPF

Clipboard

Tapping this icon results in the view shown in Image 4.8 which adds a set of boxes across the top of the page. To add the current page to the clipboard, tap the blue '+' sign at the far right of the boxes, then tap the box that you wish to have as the quick reference for the page you are viewing.

Clipboard

When you have populated all the boxes you will have to choose one to eliminate if you want to add another. Usually, the way to use this is to populate the boxes with the FAC, runway diagram and any approach procedures you might need on approach to an airport (or departure procedures on departure). The clipboard works like an old car radio station select - you replace one page with another. Tap and hold any box on the clipboard and the option to 'Clear All' will pop up.

Traffic

This option is only shown when viewing a georeferenced document

Toggles traffic bubbles on/off. Blue = on and grey = off. When switched on, traffic bubbles will be displayed on the plate. The traffic bubble appearance is the same as that on the map page i.e. blue bubble with callsign and altitude information.

Weather

Tap the Weather button and if available, the NAIPS location briefing will de displayed e.g. TAF, METAR and NOTAMs.

Note: the weather button will not appear unless the appropriate weather files have been downloaded. If you have no network or a poor connection, it will not appear.

SmartPlates

Note

SmartPlates is currently available for Australian IFR Premium subscribers on supported RNP/RNAV approaches. Requires iOS/iPadOS 14 or above.

SmartPlates dynamically highlights areas of an approach plate as you fly so that you can quickly and easily identify which phase of the approach you are in, and the relevant MSAs and minimas.
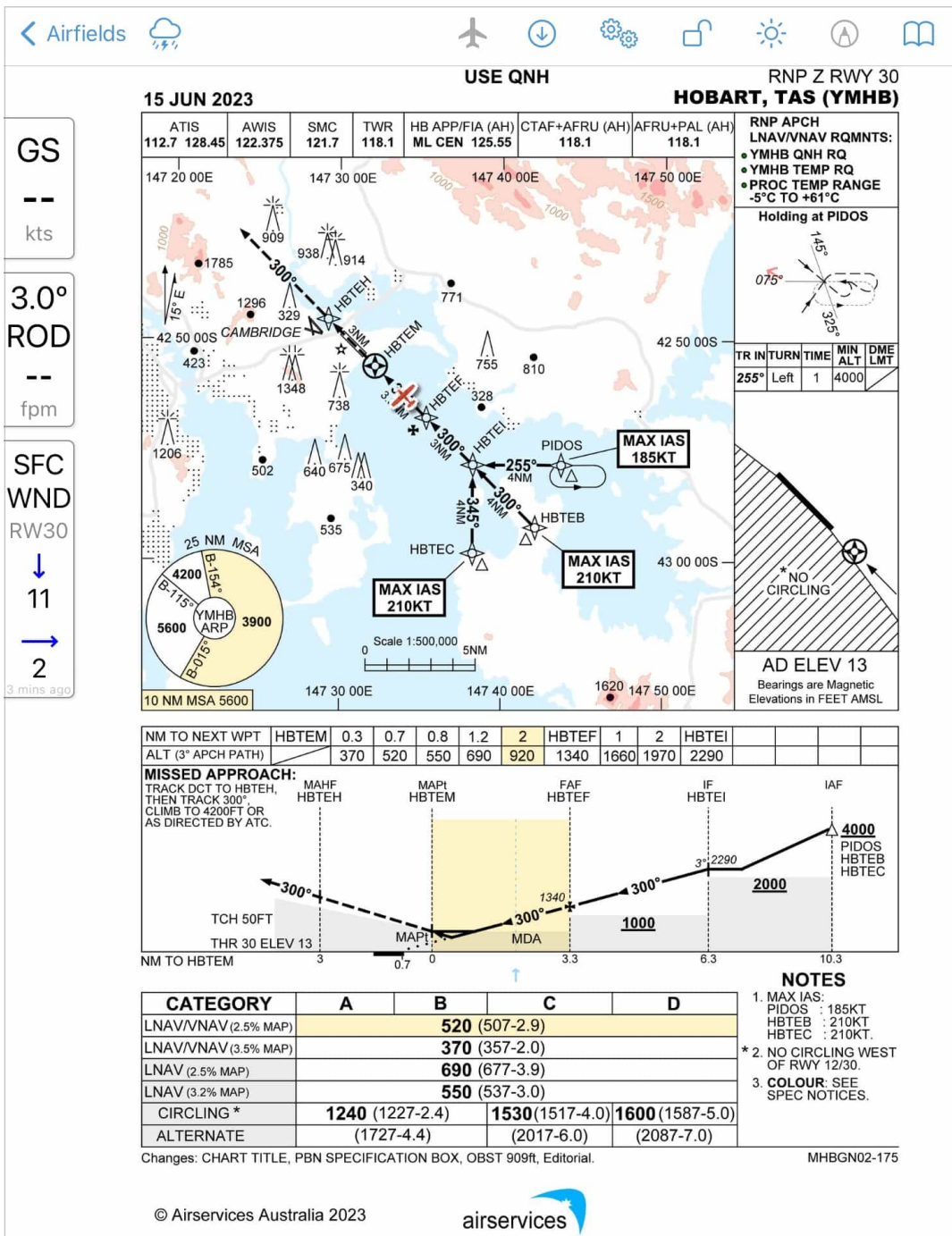
MSA Sector Highlighting
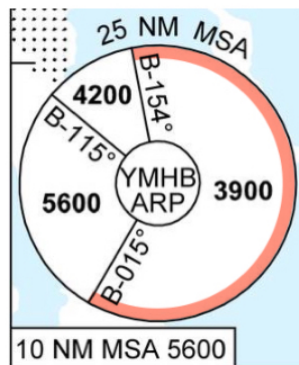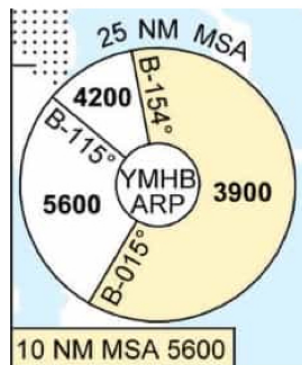
*Left: Inside 25NM MSA **Right:** Outside 25NM MSA*

When you are within 25NM, the current MSA sector you are occupying - based on your GPS location - is highlighted. When outside 25NM a red arc will be visible around the relevant segnment indicating the segment you are in but that you are outside 25NM, as shown in Image 4.9

The 10NM MSA field will also highlight when you are inside 10NM.

Sector Entry Assistant
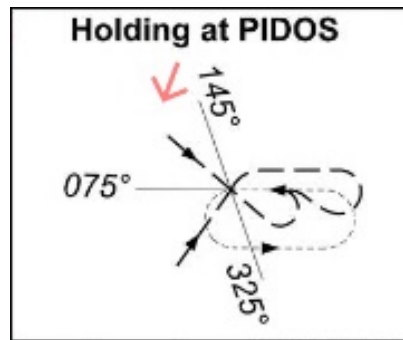
Where available, your current position and track are indicated by a red arrow in the holding box to aid in determining the approriate entry.

Vertical Information Boxes
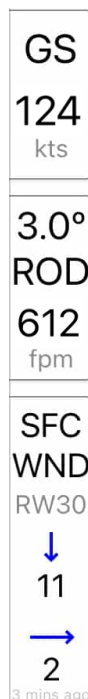
The vertical information boxes contain the following elements:

- Current groundspeed (GS)
- The rate of descent (ROD) required, at your current groundspeed, to meet the descent profile
- The surface wind (SFC WND) for the selected runway, based on the METAR or eAWIS

Surface wind is relative to the selected runway. In the image above runway 30 (RW30) is selected and is indicating a headwind of 11 knots and a crosswind of 2 knots. The runway will be automatically selected based on the procedure you are viewing however you can tap on the SFC WND box to select a different runway.

Descent Highlighting & Segment MSA Steps
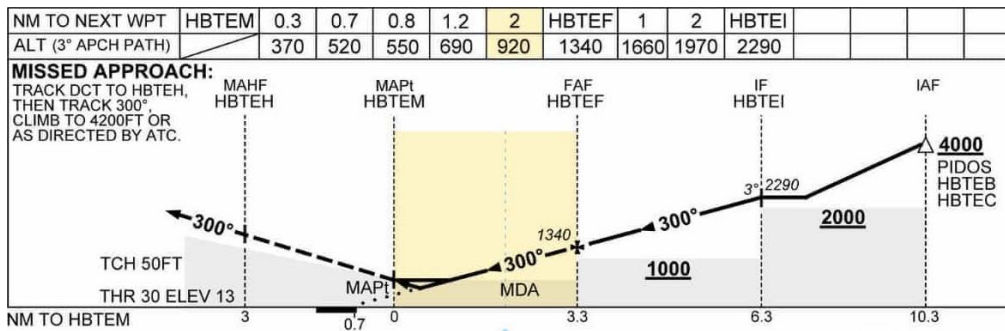
The segment MSA steps on the approach plate will dynamically highlight based on your current location in the approach. As you progress through the sector, a small dotted blue line visually tracks your progress.

The target altitudes for the specified profile angle will highlight the *next* relevant altitude.

For enhanced awareness, when you are more than 200 feet below the published step on approach, the segment will highlight red. This is based on GPS altitude and is for situational awareness only, to alert you to the *possibility* of something not being quite right.

Minima Box Highlighting

CATEGORY	A	B	C	D
LNAV/VNAV (2.5% MAP)		520 (507-2.9)		
LNAV/VNAV (3.5% MAP)		370 (357-2.0)		
LNAV (2.5% MAP)		690 (677-3.9)		
LNAV (3.2% MAP)		550 (537-3.0)		
CIRCLING *	1240 (1227-2.4)		1530 (1517-4.0)	1600 (1587-5.0)
ALTERNATE	(1727-4.4)		(2017-6.0)	(2087-7.0)

Tap your applicable minima box to highlight it, making it easy to find again at a glance.

Missed Approach Highlighting
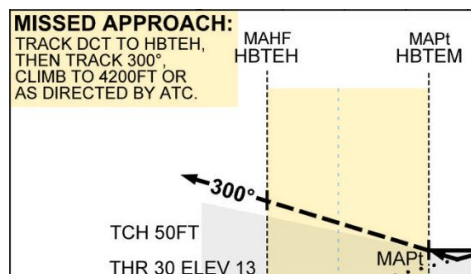
As you pass 3 mile final the missed approach text is automatically highlighted making it easy to quickly locate if you need to execute the missed approach.
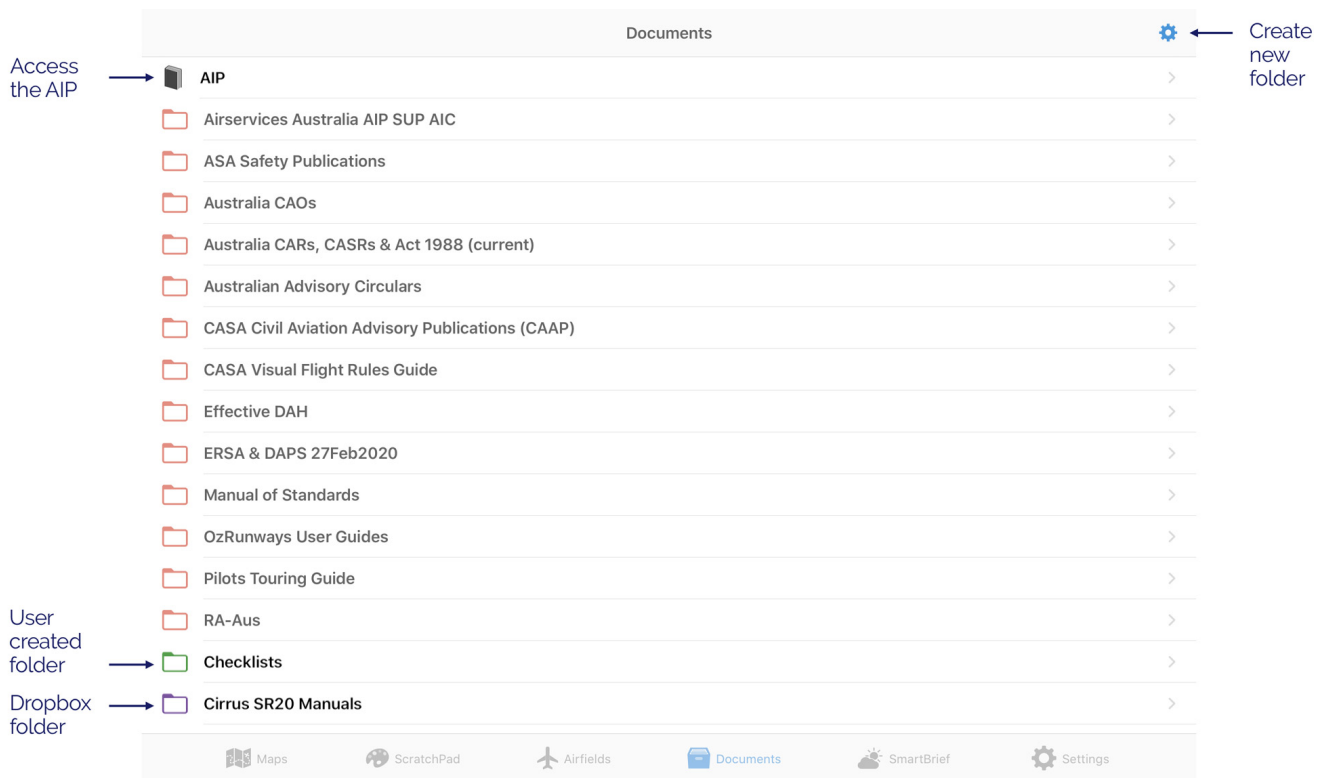
Documents Page

Documents Page

The documents page is shown above in Image 5.1. The documents shown here are region specific and will depend on your subscription type. In Australia this page provides access to the AIP, the front matter of the ERSA (conversions, special Procedures etc.) and a variety of other Airservices documents that you may require. See the Dropbox Integration section in the Settings Page chapter to learn how you may add your own documents to this page.

The cog symbol in the top right corner allows you to add your own folders to this page. You can add your own documents from other apps by invoking the share sheet on the document and selecting 'Copy to Oz RWY'. Any documents loaded in this manner will appear on the Documents page. From here you can move those documents into folders created using the cogs button. Folders created using the cogs button will have a green icon. Folders added using the Dropbox method will have a purple icon.

When inside a folder, use the cogs button in the top right corner to download all documents in that folder (includes documents in sub-folders), or to delete all downloads (Clear Cache). Using Clear Cache does not delete the documents from the folder, it simply removes the downloaded file from your device. This setting may be used, for example, if there is a corrupt download and you need to download a document again.

Documents Page

List of documents in a folder

When viewing a document, as shown in Image 5.3, you can search for text within the document using the search button, or you can quickly swipe/slide through pages using the index at the bottom. Use the share icon to send or save the document.
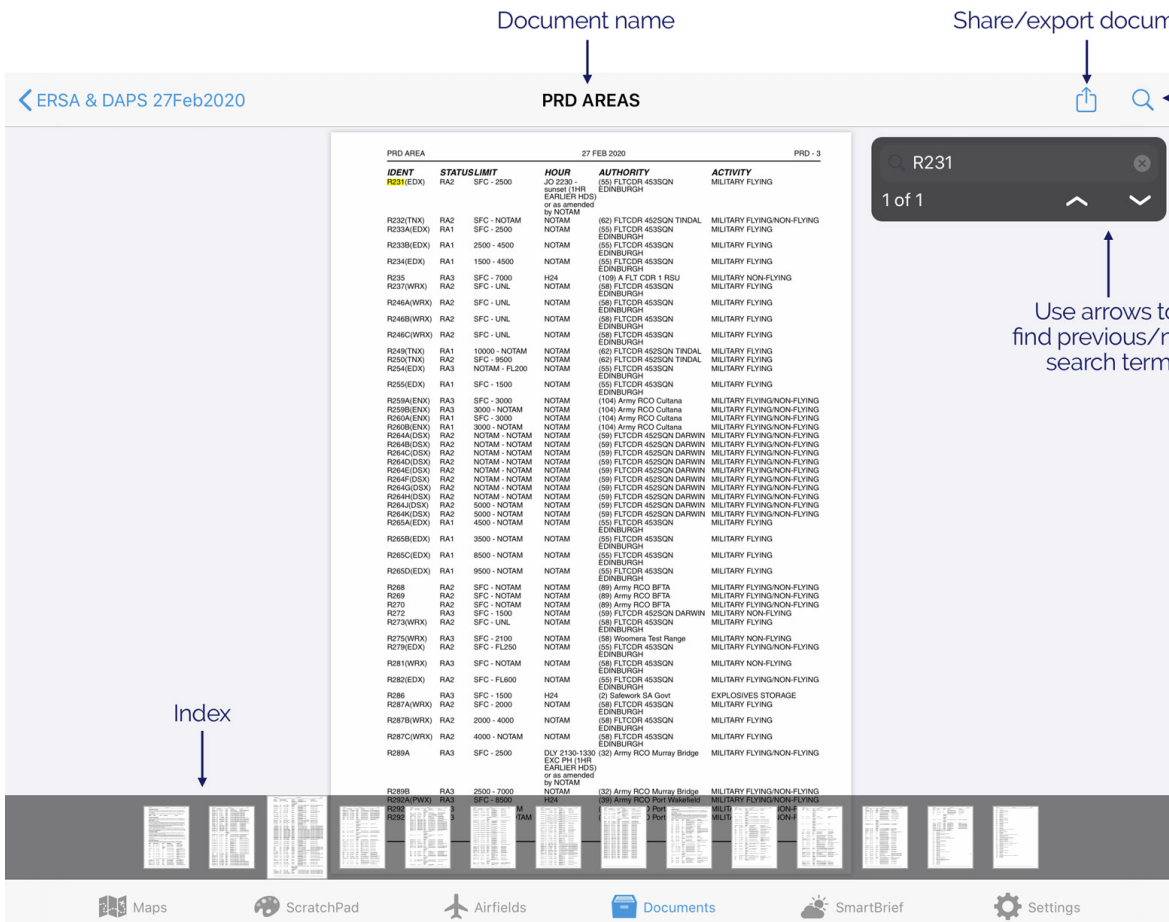
Viewing a document

AIP

The Aeronautical Information Publication is accessed by tapping 'AIP' on the Documents page. The AIP screen is shown below in Image 5.4
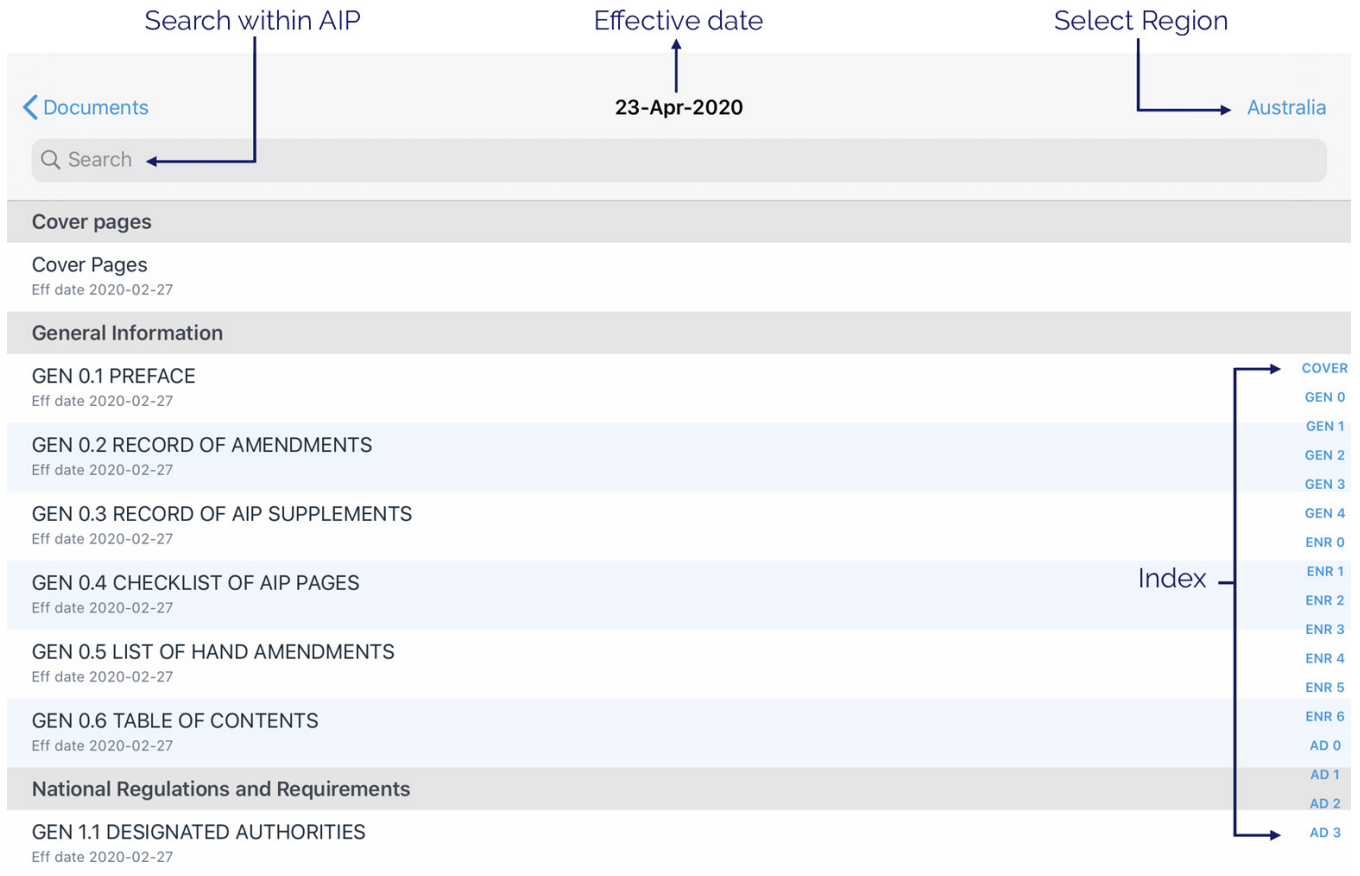
AIP

If you have subscriptions for multiple countries, use the region selector in the top right corner to select the applicable country. The effective date is displayed at the top centre of the screen. The search bar is very smart, type in some text and matching results will be displayed in context. If the search function is not working, ensure you have downloaded the entire AIP file in Settings → Downloads. For more information see the Downloads section on the Settings Page. Alternatively, you can use the index on the right hand side to quickly track to the section you want. Use your finger to swipe up and down the index.

When viewing a particular section of the AIP, you can search for text within the document using the search button, or you can quickly swipe/slide through pages using the index at the bottom. Use the share icon to send or save the document.

SmartBrief / Brief Page

> ## Note
>
> Access to SmartBrief requires an Australian or New Zealand Premium subscription. All other subscribers will see 'Brief'. The functionality of the Brief page is described below under Basic Brief

SmartBrief provides NOTAMs and various weather briefings in a graphical, interactive, and easy to use format.

In the lower left corner of the screen you will find 5 buttons. The top 3 buttons are used to navigate between the 3 main screens in SmartBrief, these are:

NOTAMs & Airspace

Graphical Area Forecasts (GAFs)

Graphical Winds

The remaining 2 buttons are used to open the Chart Directory, and the Help screen.

NOTAMs & Airspace
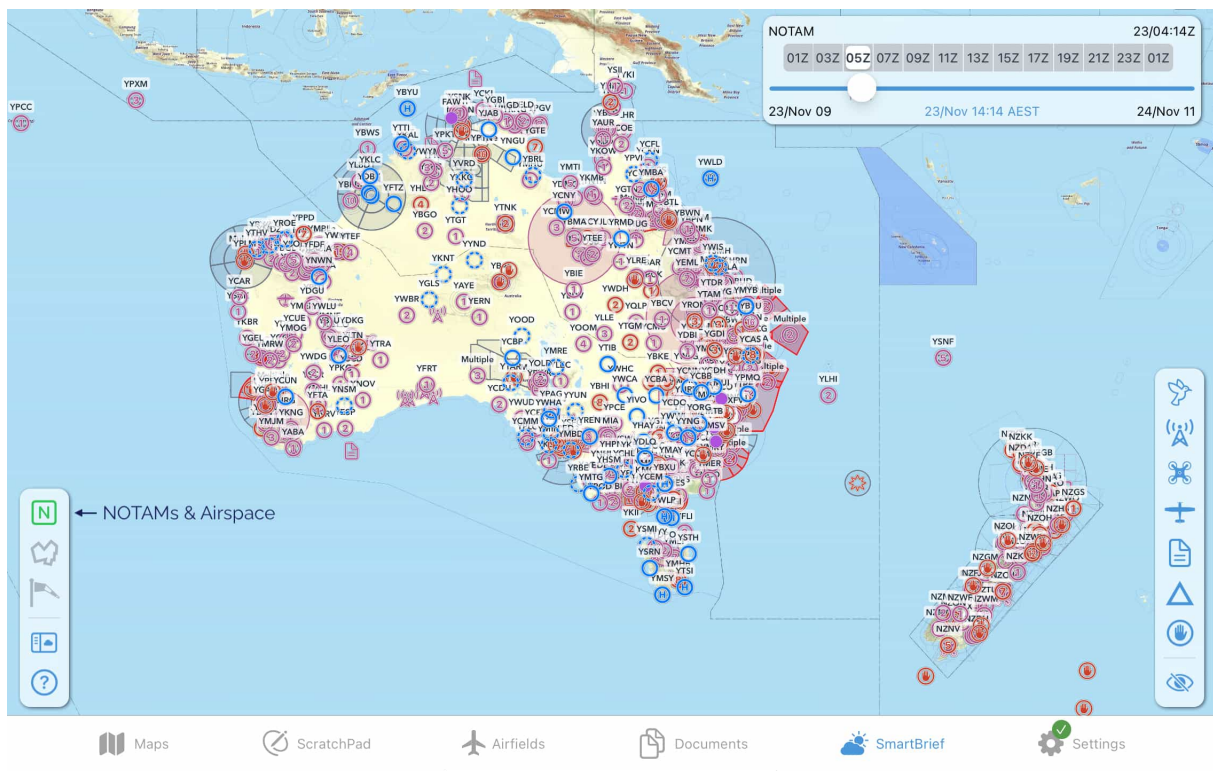
Where possible, NOTAMs are drawn geographically on the map and are sorted into categories, indicated by different symbols. These categories can be filtered (switched on/off) using the buttons on the right sidebar, as shown in Image 6.1 below.

Tap on a category symbol to show/hide the corresponding NOTAMs on the map.
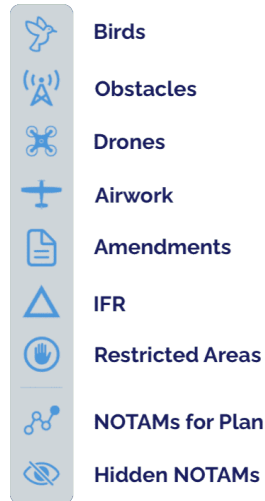
NOTAM categories

The function of the NOTAMs for Plan and Hidden NOTAMs buttons are described further down.

Tap on any NOTAM on the map to view the full details and reveal some further options. If the NOTAM encompasses a geographic area this is represented on the map, as is the case in Image 6.2 where a circle of 1km radius appears around Bordertown (YBOR) as per the content of the NOTAM.
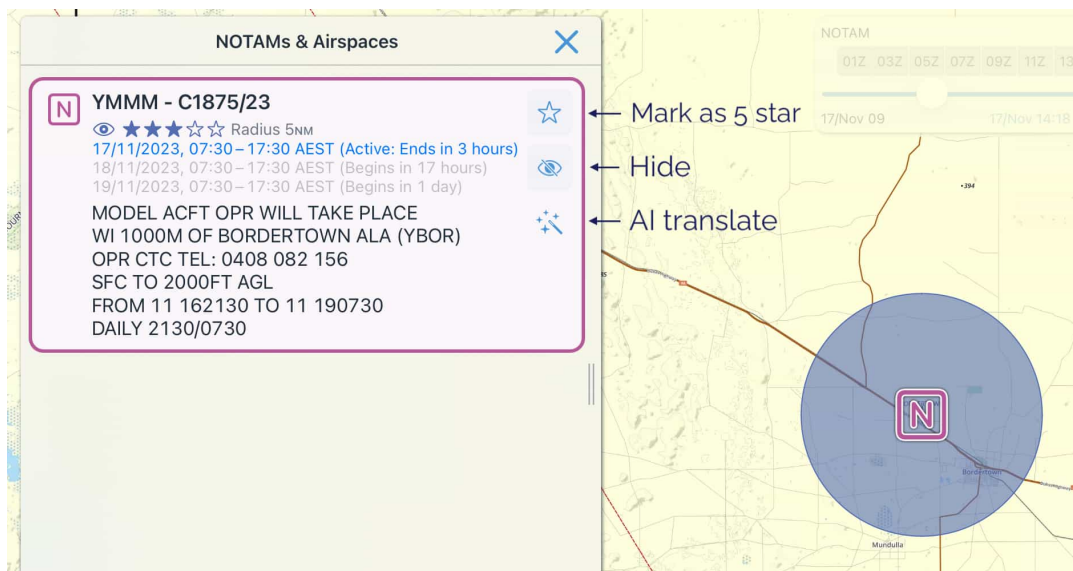
NOTAM options

Next to each NOTAM there are 3 options:

Mark as 5 star

Give this NOTAM a 5 star rating. 5 star rated NOTAMs are highlighted red on the map, annotated with 5 stars ■■■■■, and sorted to the top of any lists they appear in (with the exception of the NOTAMs for Plan and Route Segment Profile lists, which are sorted in order of occurrence, geographically, from origin to destination.)

Hide

Hiding a NOTAM removes it from the list and also from the map display. You can view and/or unhide NOTAMs in the Hidden NOTAMs list.

AI translate

Translate a NOTAM into plain English, powered by Artificial Intelligence (AI). In essence, the computer makes its best guess in translating the NOTAM. Use cautiously. If in doubt, verify with the NOTAM originator.

NOTAMs for airfields
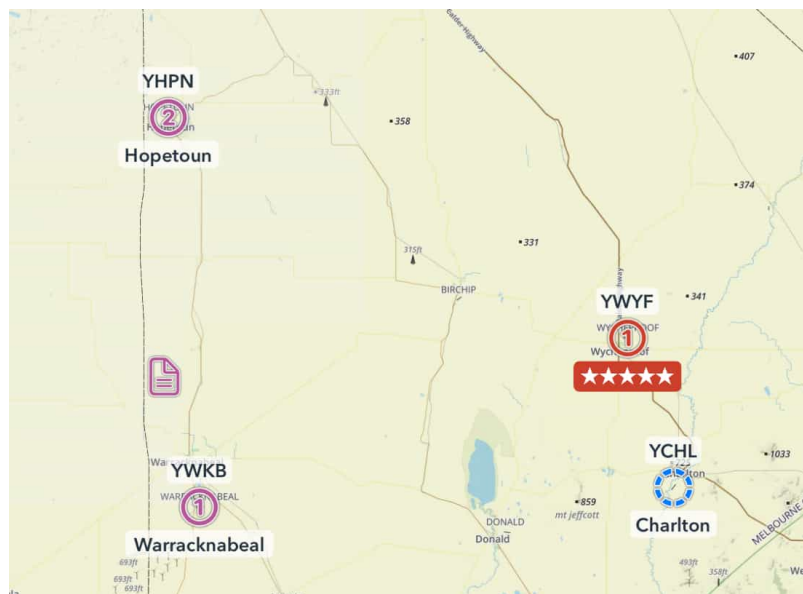
NOTAMs for airfields

Aerodromes/airfields that have associated NOTAMs are depicted by the NOTAM count appearing inside the airfield icon. Locations with one (or more) 5 star NOTAMs are highlighted red.

For example in Image 6.3 Charlton has 0 NOTAMs, Warracknabeal has 1, Hopetoun has 2, and Wycheproof (YWYF) has 1 NOTAM with a 5 star rating.

Tap on the airfield/aerodrome to view the NOTAMs.

NOTAMs for Plan

The 'NOTAMs for Plan' button is only shown when you have created/opened a flight plan in OzRunways. The list is populated with NOTAMs and airspace relevant to your plan. By default this is everything within 5NM either side of your planned track, unless you have selected a different splay type in the Map View Options (Cogs) → **Show LSALT Boundaries** list.

NOTAMs in this list are sorted in order of occurrence, geographically, from the start to the end of your plan. They are *not* sorted in order of importance/star rating.

For more information about the symbols/buttons next to each NOTAM see Image 6.2 above.

Route Segment Profile
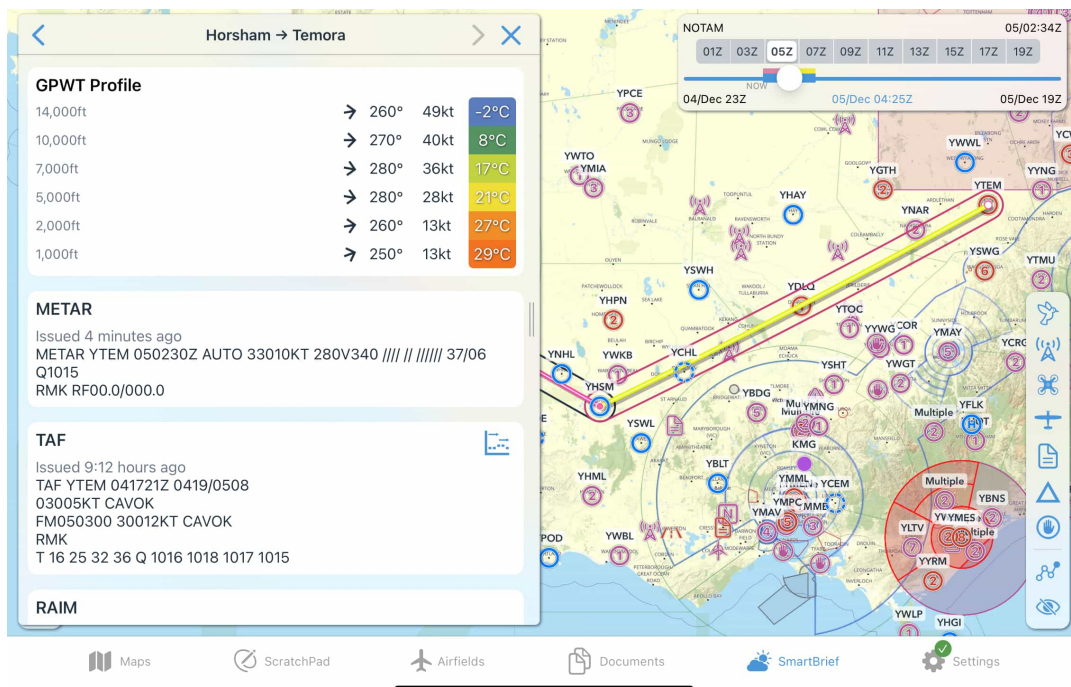
Tap on a route segment / leg to open a profile view which displays a number of items:

- GPWT profile for varying altitudes/flight levels, taken from the mid-point of the route segment

- Applicable ATIS / eAWIS / METAR / TAF / RAIM etc. briefings

- A list of NOTAMs that intersect the selected route segment and associated splay. As in NOTAMS for Plan this list is sorted in order of geographic occurrence, *not* importance/star rating.

Time slider
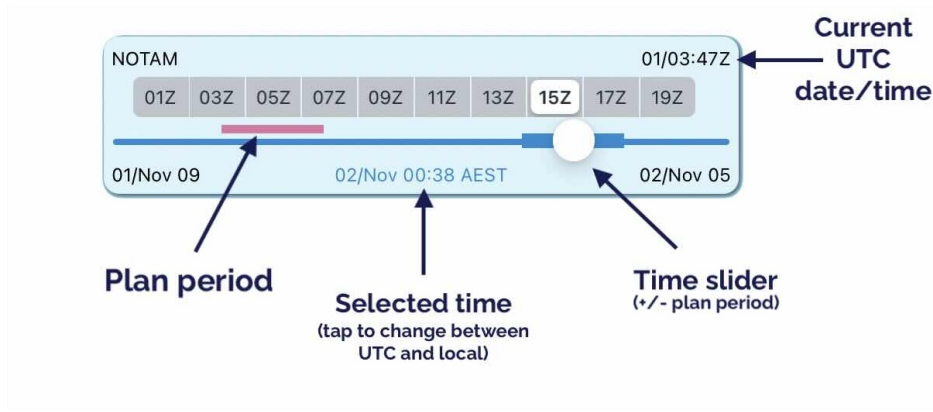
Use the time slider located in the top right corner to select the activity period you want to view. If you have entered or opened a plan you will see a magenta line above the slider indicating your total plan time (plan period), and a thick blue line either side of the slider also corresponding with your plan period.

As you move the slider you will notice different airspaces & NOTAMs becoming active/inactive corresponding with the selected time, including the plan period if applicable. If you have a list of NOTAMs open you will notice any *inactive* NOTAMs for the selected time will be greyed out.

The selected time is shown in the bottom middle of the time slider box, tap on the time *once* to switch to local time. Tap again to change back to UTC time.

Double tap anywhere inside the box to return the slider to the middle of your plan time (based on the ETD you have set for your plan). If no plan is loaded a double tap will return the slider to 'now'.

The current UTC date/time is always displayed in the top right corner of this box for your reference.

As mentioned before, if you have an active plan in OzRunways a magenta line is displayed above the slider to give you an indication of times relevant to you. For best results, ensure you have correctly set your ETD for your plan.

Hidden NOTAMs

The Hidden NOTAMs list contains any NOTAMs that cannot be drawn on the map (e.g. AIP amendments, FIR NOTAMs), or that have been manually hidden using the hide button shown in Image 6.2.

Graphical Area Forecasts (GAFs)

> ### Note
>
> The *Graphical Area Forecasts (GAFs)* screen is only available to Australian subscribers.

Graphical Area Forecasts (GAFs)

Significant Weather
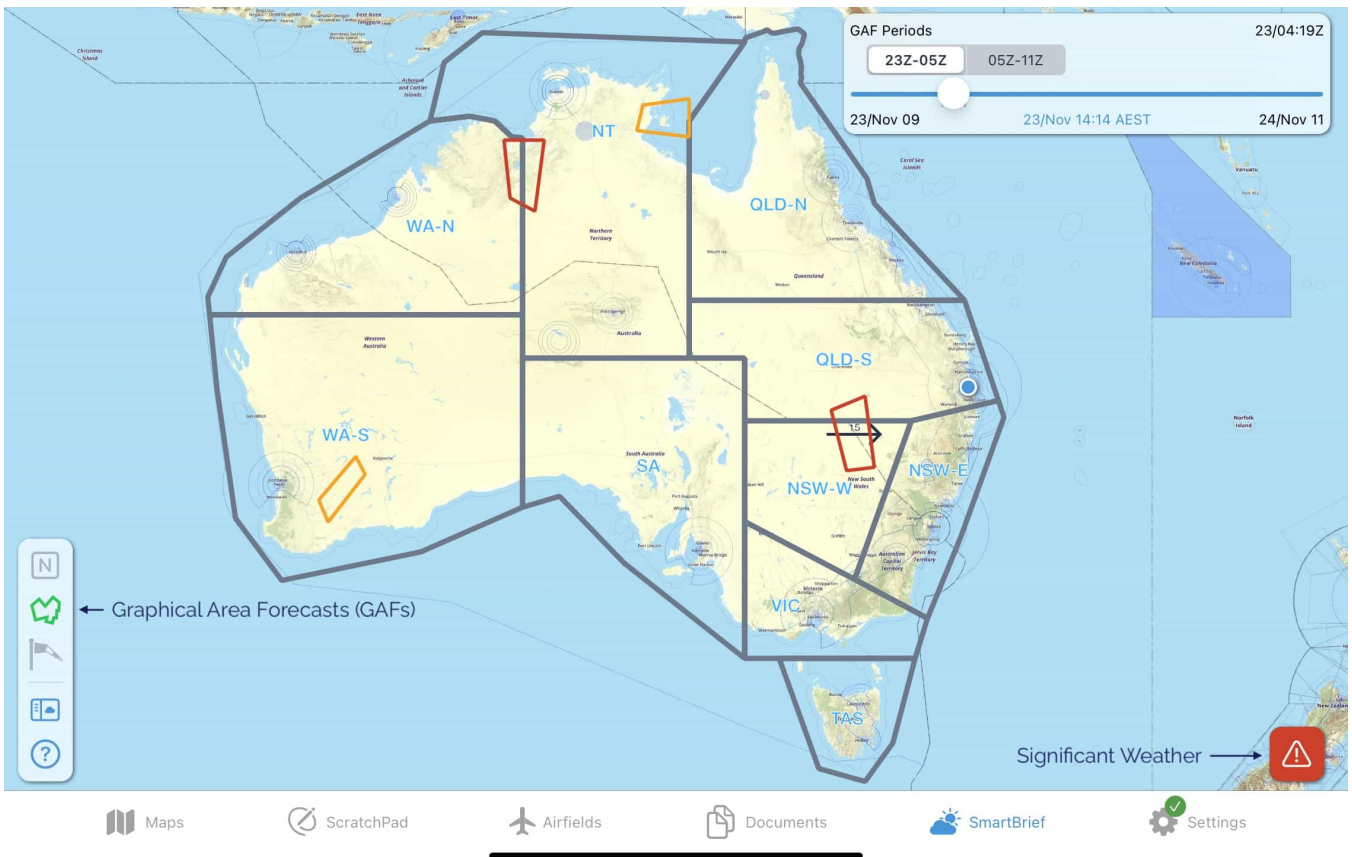
Zoom in to the map to see more detail. You will notice that the GAF regions and areas are drawn on the map. Tap on an area to bring up the forecast text, as shown in Image 6.4

View GAF PDF

Translate

Close

Freezing Level

Surface vis and wx

Associated cloud, Icing & turbulence

Grab handle (adjust window size)

VIC

8500FT

2000M ISOL BLDU **B2** FM 03Z

\>10KM NIL

SCT CU/SC 6000/ ABV10000FT W OF YMES/ YDLI

MOD TURB BLW 7000FT LAND, SEV BLW 5000FT B1

Remarks
CRITICAL LOCATIONS [HEIGHT AMSL]:
KMG [ELEV 1200FT]: CAVOK

Standard Inclusions
TS / CB / TCU imply SEV ICE and SEV TURB.
CU / SC / AC imply MOD TURB.
CLD ABV FZL implies MOD ICE.
All heights AMSL.
Speed of movement in KT.
Check AIRMETs, SIGMETs and

GAF in SmartBrief

Coloured items in the forecast text are tappable (for example, in the image above 'B2', 'YMES/YDLI' and 'B1' can be tapped on). When tapped, the text and the corresponding depiction on the map will turn orange to help you locate it. You can adjust the size of the text box by sliding the grab handle. Surface vis and wx, along with associated cloud, icing and turbulence is depicted. Use the 'X' to dismiss the text box. There is a PDF button to load the original GAF PDF.

The translate button converts the acronyms to plain text (as shown in Image 6.5)
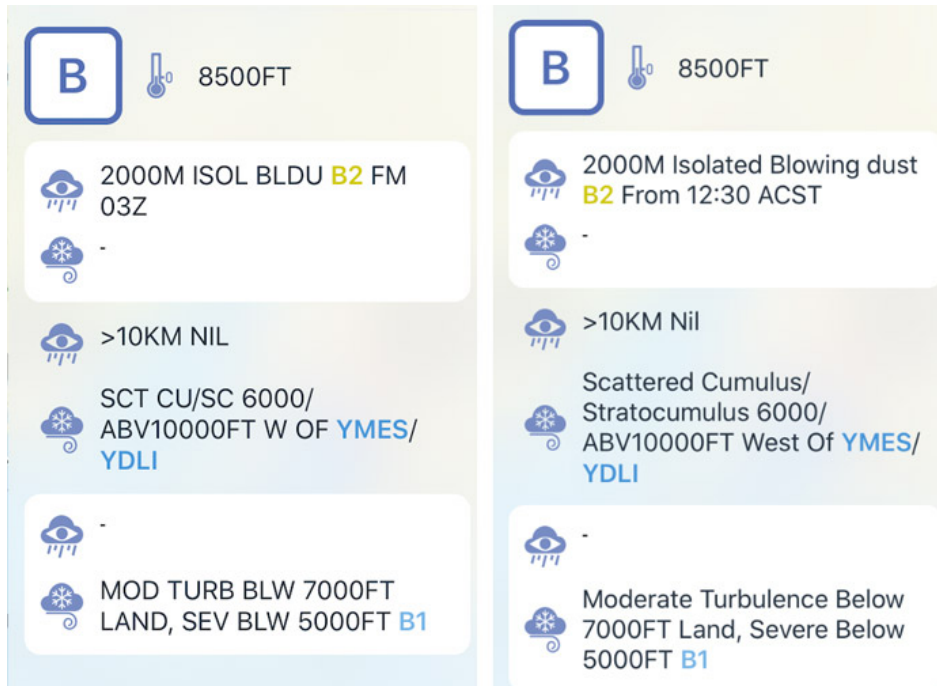
GAF text translated

In the top right corner of the page is the time slider box (Image 6.6)
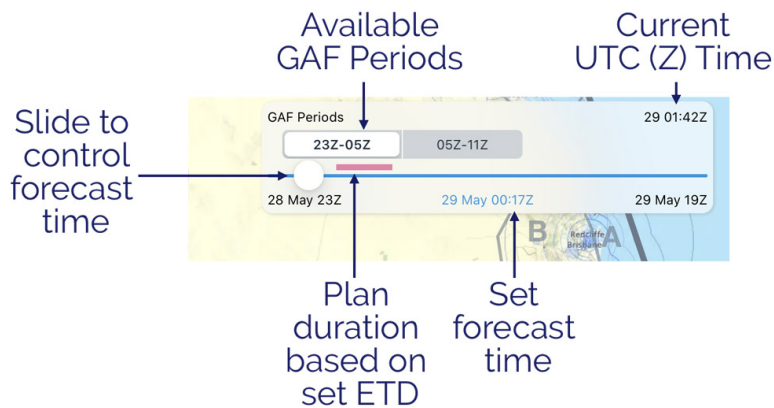
Time slider

Use this slider to control the forecast period you want to view. Periods where a GAF is available are shown as boxes, tap the boxes to automatically jump the slider to the relevant time period. Tap once in a blank section of the box to change to local time. Tap again to change back to UTC time. Double tap inside the box to return the slider to the middle of your plan (based on the ETD you have set for your plan). The current UTC time is always displayed in the top right corner of this box for your reference. If you have a plan loaded a magenta line is displayed above the slider to give you an indication of what forecast times are relevant to you. Make sure you have your ETD set correctly in the plan for this to work.

Significant Weather (SIGMETs & AIRMETs)

If there are any SIGMETs or AIRMETs valid for the selected time they will be drawn on the map in red (SIGMETs) or yellow (AIRMETs). Tap on a SIGMET or AIRMET to view more information.

Tap the Significant Weather button to see a list of all SIGMETs and AIRMETs valid within the set forecast time. You can tap a SIGMET or AIRMET in the list and it will become highlighted on the map. The Significant Weather button is not shown if there are no valid SIGMETs or AIRMETs for the set forecast time.

> ### Note
>
> If for any reason a SIGMET or AIRMET shape cannot be drawn on the SmartBrief map, a warning will appear prompting you to check the list.

Location Briefings

To access location briefings zoom in on the map until the location waypoints appear. Tap a location to bring up the briefing. Image 6.7 shows the location briefing for YORG (Orange). Once again there is a translate button but please note that at this stage only the TAFs can be translated.

Location Briefing in SmartBrief

eAWIS is created from unverified one-minute observation data from BoM. For situational awareness only.

Locations that have an eAWIS/METAR available will be colour coded according to the observed meteorological conditions. The criteria for the colours is shown in Image 6.8 below. Where wind data is available a wind indicator is also shown on the waypoint, with each full barb indicating 10kts and a half barb indicating 5kts.

VFR - Current Conditions Good
Visibility 9999, Wind <= 25kts
Cloud SCT > 3000 ft or FEW > 1500ft AGL

IFR - Instrument Like Conditions
Visibility < 5000m, cloud SCT < 1500 ft AGL

Marginal VFR - Decreased Conditions
Visibility >= 5km, Wind > 25kts
Coud SCT < 3000ft or FEW < 1500ft AGL

Adverse IFR - Current Conditions Poor
Visibility < 3500m, cloud FEW < 700 ft AGL

METAR/eAWIS colour coding

Graphical Winds

Switch to the Graphical Winds page by pressing the windsock in the bottom left corner.
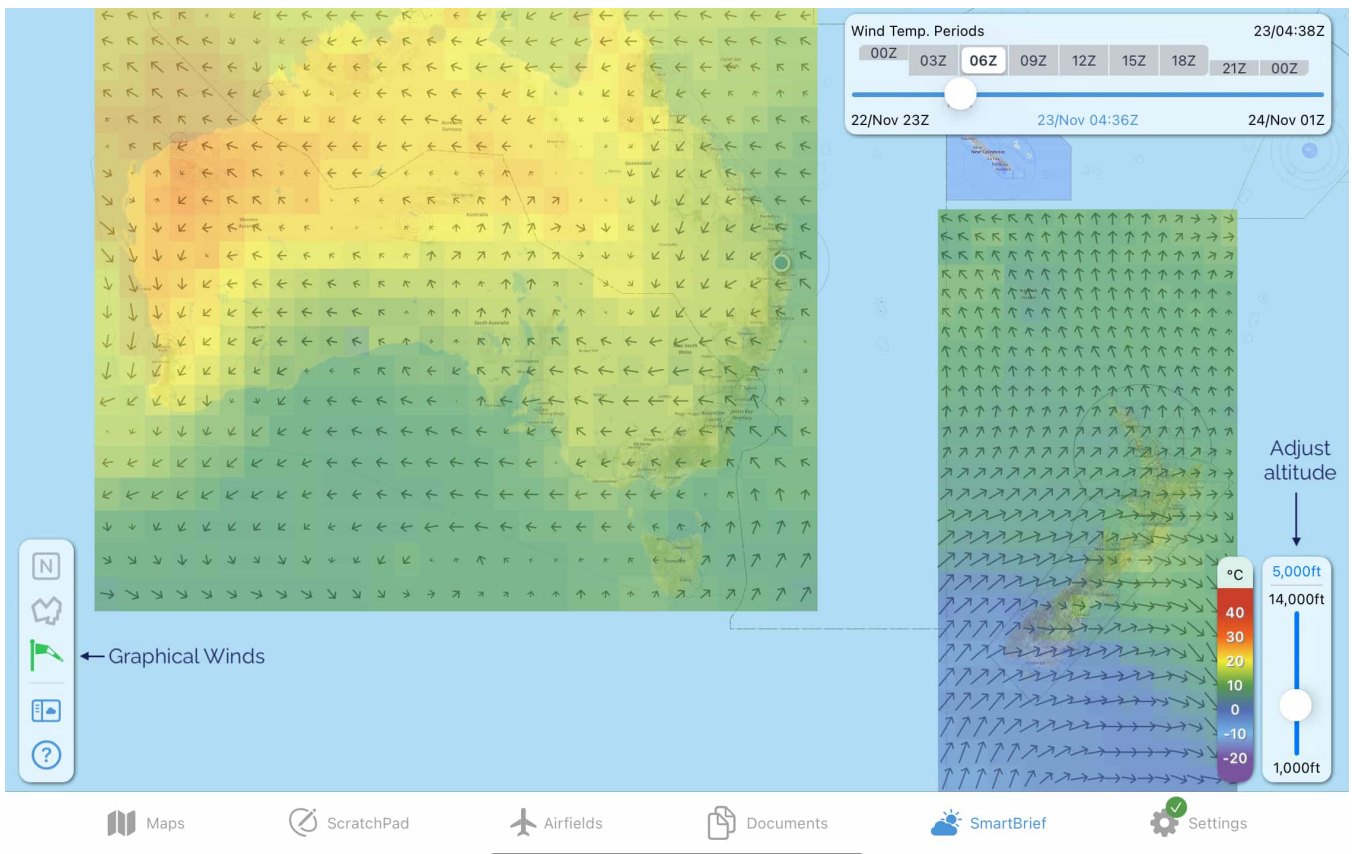
Graphical Winds overview

The coloured boxes give a graphical representation of the data from the Grid Point Wind & Temperature charts (Australia), or the Global Forecast System (GFS) data (New Zealand). The colour indicates temperature corresponding with the colour scale in bottom right corner, and the arrow represents wind direction and strength; the longer the arrow the stronger the wind. Zoom in to see the actual figures for each square, as shown in Image 6.10. The figures are interpolated for altitude and time.

Use the slider in the bottom right corner to adjust the altitude. The selected altitude in Image 6.10 is 5000ft. Use the time slider in the top right corner to adjust the forecast time you want to view. The available wind forecast periods are pre-filled in tappable boxes above the slider so that you can easily switch between them.
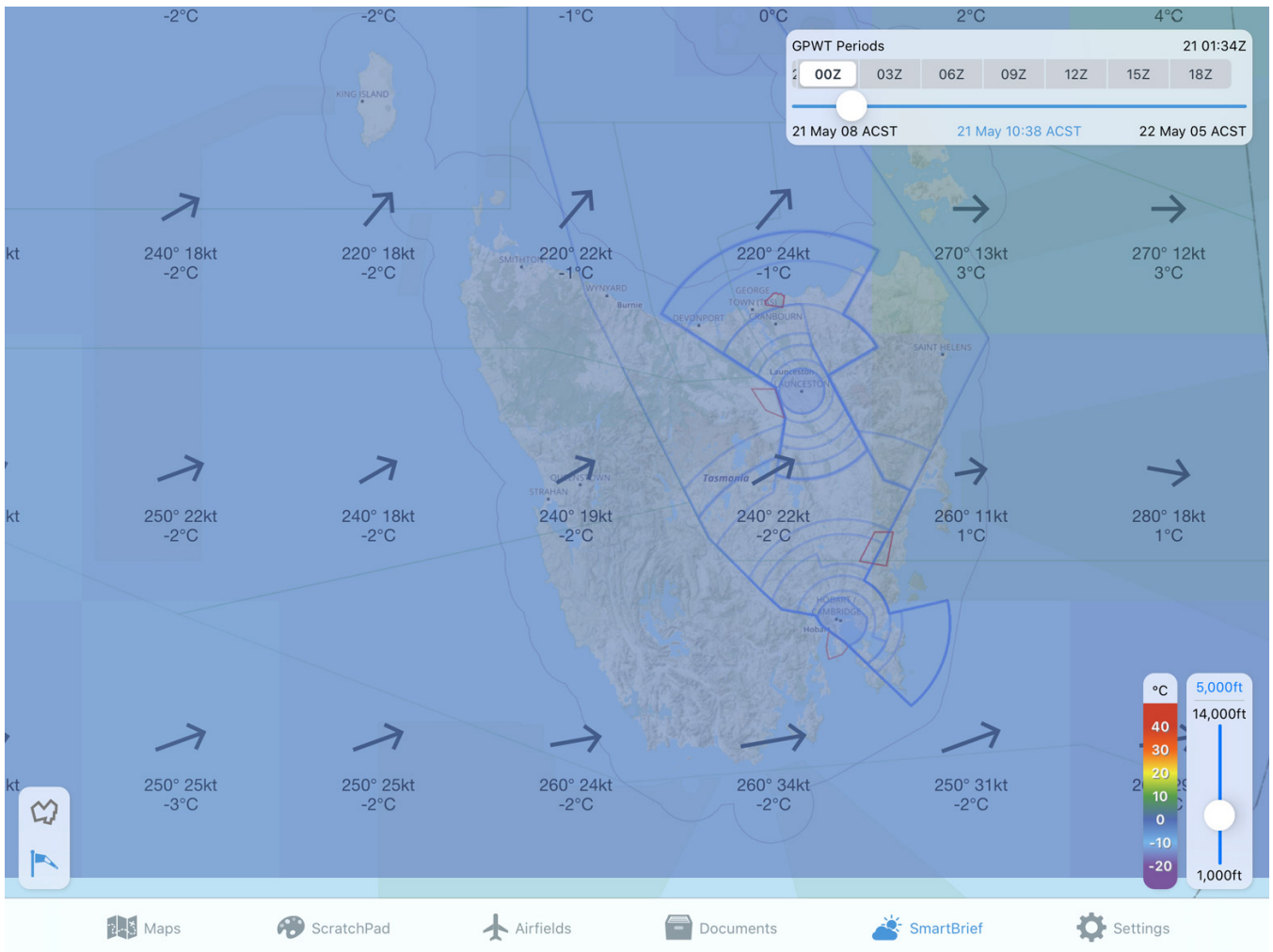
Graphical Winds in more detail

Chart Directory

In the Chart Directory you can find various charts produced by different meteorological authorities, along with the original PDF versions of the GAFs, GPWTs, and SIGWX charts.

New Zealand subscribers can access 'PreFlight' from here.

Basic Brief

🌤 ←— **Switch to SmartBrief**	**Brief**	**Chart Directory** —→	⛈

Favourites

YSBK: Bankstown
| AD | 619ɴᴍ | R-253° | › |

In Plan

YMMB: Moorabbin
| AD | 367ɴᴍ | R-290° | › |

YMER: Merimbula
| AD | 566ɴᴍ | R-271° | › |

YMRY: Moruya
| AD | 571ɴᴍ | R-264° | › |

YSCN: Camden
| AD | 603ɴᴍ | R-253° | › |

Weather in Plan

GAF NSW-E ›
GAF VIC ›
GPWT AUS ›
GPWT NSW ›
GPWT VT ›

| 🗺 Maps | 🎨 ScratchPad | ✈ Airfields | 🗄 Documents | 💼 Brief | ⚙ Settings |

Basic brief

Basic Brief provides easy to access weather and NOTAM information relevant to your route in one place.

Favourites

If you have set up any Favourites on the Airfields Page (see Favourites), then those airfields will be displayed at the top of the Basic Brief page for quick access to their location briefings.

In Plan

If you have a plan entered then all the airfields in your plan will be displayed in the list underneath the Favourites section. Tap an airfield to load the location briefing.

Weather in Plan

The Weather in Plan section is only displayed when you have a plan entered. This section provides Area Briefings, GAF, and GPWT charts relevant to the areas your plan crosses. Tap an item in the list to view the chart or briefing.

Other Weather Charts

The button in the top right corner opens the Chart Directory screen. Here you can find various charts produced by different meteorological authorities, along withs PDF versions of the GAFs, GPWTs, and SIGWX charts.

Troubleshooting

If you have an Australian Premium subscription but don't have access to SmartBrief, try pressing and holding the 'Brief' icon in the menu bar. The option to switch between Brief and SmartBrief will appear.
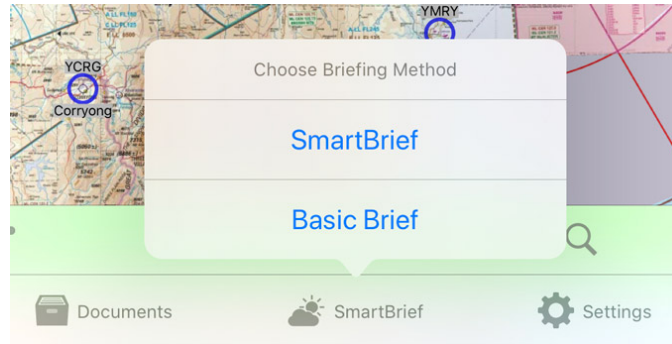
Switch between 'Brief' and 'SmartBrief'

Settings Page

The Settings page is accessed by tapping the bottom right Settings button.

On the iPad the screen is split into two views. A selection is made on the left pane and the resulting view is displayed on the right. The tabs are described subsequently. On an iPhone only the left selection field is shown and the view is replaced by the selected field.

Subscriptions

Settings → Subscriptions

The Subscriptions page provides infromation about your OzRunways username/email address, your current subscriptions, and also provides access to Emergency Mode. Your Username/email address and your nickname for the Public Notes feature are displayed at the top of the page. Use the edit button to add or update your email address, or to add or change the password for your account.

The Sign Out button in the top right corner is used to sign out of the app. You may need to do this if you are signed in to the incorrect account, or in order to sign in on another device.

Emergency Mode may be used if you are having account issues (i.e. the app doesn't recognise your subscription). It can be used once a year and lasts for 3 days so that you have a chance to get in touch with us and sort out any problems.

Database

The top section of the database screen lists the current active AIRAC cycle, and any pending cycle (if available). The current cycle should always be selected, however you are able to switch to the pending cycle in order to check on new upcoming data - just ensure that you switch back to the current cycle afterwards! The bottom section shows which regions are available to you based on your subscription/s. The database for each region contains various information such as the waypoints for that region, and the list of maps for that region (not the actual maps themselves though, these must be downloaded using the Downloads system). A tick on the right indicates a region database is active. If you are experiencing issues you can untick and re-tick a region to force a fresh download of the database.

Downloads

Settings → Downloads

The Downloads screen shows a list of regions as selected on the Database page, along with some options for the automatic downloads system.

Inaccessible Files

This option is only shown if there are downloaded files for a region you no longer have access to. This may be because you don't have a current subscription for that region, or you have deselected a region on the **Settings → Database** page. Tap the '?' to reveal the list of inaccessible files. Tap the broom icon to delete all inaccessible files.

Download on Startup

If this option is switched on OzRunways will attempt to download new data in enabled groups each time the app is opened.

Background Downloads

If this option is switched on OzRunways will attempt to download new or missing data overnight (only when your device is connected to WiFi). Background downloads is a 'best effort' service and there are situations where background downloads may not occur such as:

- If you are using a metered connection, e.g. hotspot to your phone

- If you have 'Low Data Mode' enabled on your WiFi connection

- If you force close OzRunways

Clear Expired Data

If this option is switched on, OzRunways will automatically delete out of date data 5 days after it expires.

Regions

Tap on a region to view and select the data groups you would like to download.
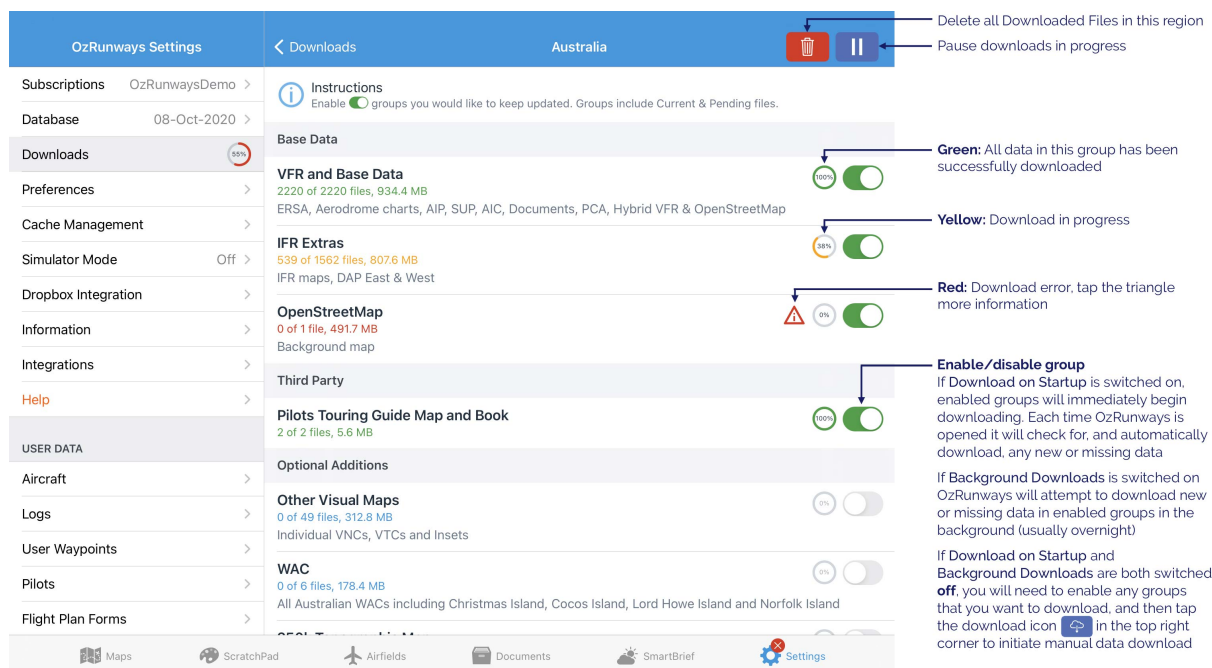
Settings → Downloads → Region

Download Status Indicator

The Settings icon doubles as a status indicator for quick visual confirmation on the status of your downloads.
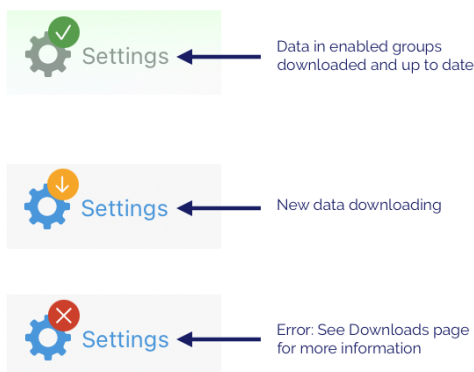
Settings icon shows status of downloads

> **Note**
>
> Watch the video below for a demonstration of the Downloads system

Local File Sharing

Local file sharing enables you to send or receive aeronautical data to/from OzRunways on another device. There are a few situations where this could be helpful, for example:

- You are unable to connect your iPad to the internet to download the latest aeronautical data, but there is someone nearby who has the latest aeronautical data on their OzRunways

- To save on internet data allowance/quota. One device can download the data as per usual from the internet, and then provide the data to any other nearby devices, minimising internet usage

Devices must be connected to the same network in order to share data, this could be a Wi-Fi network or you could hotspot one device to the other. The sending device must turn on **Share files from this device** and the receiving device must turn on **Download files from another device**. The receiving device must enter the Server IP address which is shown underneath the **Share files from this device** option on the sending device, as shown below in Image 7.5.

If a receiving device is unable to receive some or all files it will attempt to download them from the internet, if available.
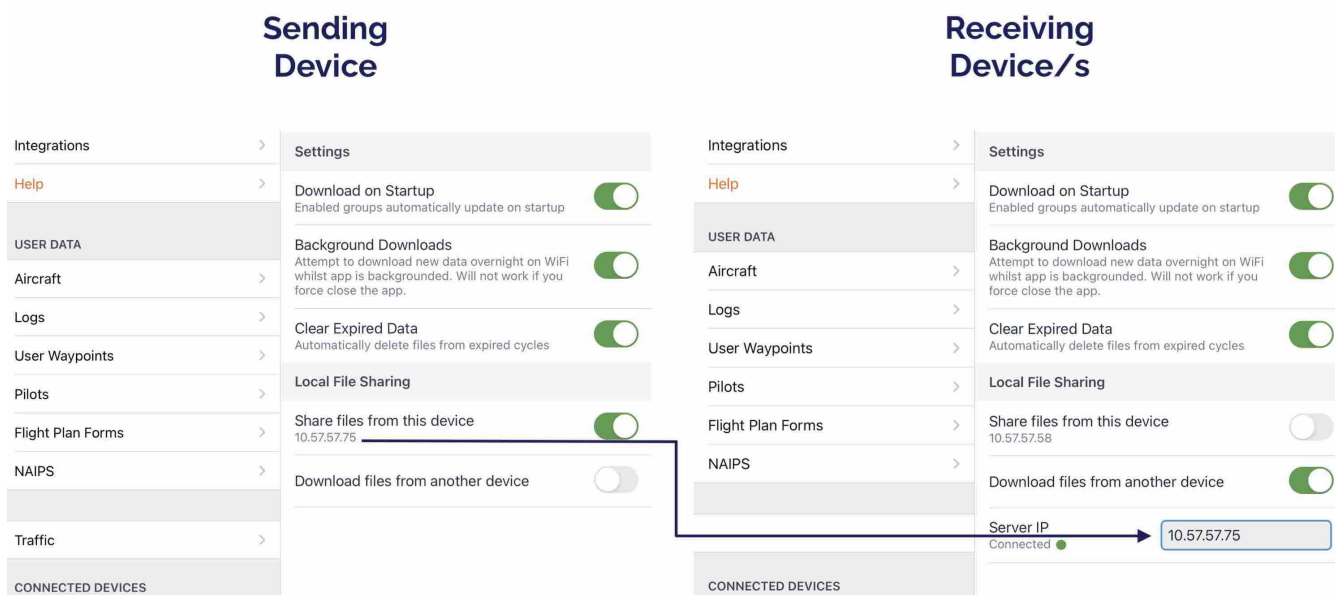
Local File Sharing options

Data Management

The Data Management tab allows the removal and backup of various files. Under normal circumstances you should not need to access this tab, but in certain situations you may be required to remove or reset things. If you have acquired a new device you can come here to export all your data which can then be imported into the new copy of OzRunways.

The Cache Management section provides the following operations:

- **Clear Map Tile Cache** - clears out downloaded map tiles
- **Clear Terrain Data** - delets all terrain data as used in the Horizontal Terrain Viewer and Smart Terrain/LSALT Assistant features

The User Data section provides the following operations:

- **Backup User Data** - Export your User Database: Aircraft profiles, plans, user waypoints, pilot profiles, and waypoint range rings
- **Destroy User Data** - Deletes all aircraft profiles, plans, user waypoints, pilot profiles, and waypoint range rings
- **Reset User Settings** - Resets any user selected settings back to default e.g. anything set in map view options, Settings > Preferences etc.. sometimes helps with weird problems
- **Delete All Range Rings** - delete any and all range rings associated with waypoints

Simulator Mode

OzRunways has a Simulator mode, which allows you to fly at home using your favourite flight simulator. The App interfaces with XPlane-11, Microsoft Flight Simulator (FSX) and ELITE. To enable, turn on the Simulator Mode button and for X-Plane 11, turn on the Use Broadcast button. For X-Plane 9 leave this off. You may also turn on a button that remembers your settings on startup of OzRunways - this eliminates the need to turn the simulator on every time you startup OzRunways. A Server IP Address should appear below the X-Plane 11 Broadcast Mode button if you are using that mode. More than one server may be listed. Choose the server you want.

On the machine that is running X-Plane 11, you must do the following: Tap the Settings bar, then Data Input & Output. Select the Data Set tab. Enable (tap for tick) the far left box (Internet via UDP) for fields 18, 20 and 21. Tap the top left X to exit that screen. Then tap Settings then Net Connections. Tap the iPhone/iPad tab. Tap "send AHRS data to Foreflight, Wing X Pro, or Sky Demon on All iPads or iPhones". Tap the top left X to exit that screen. For X-Plane 9, Elite and FSX (https://support.ozrunways.com/kb/en-gb/2-3rd-party-hardware-integrations/26-flight-simulators) outlines what you must do for non-broadcast mode. If the simulator does not work on your network, you may have to investigate any firewalls installed in your routers. Describing solutions to this is beyond the scope of this book. Call your local network guru.

Dropbox Integration
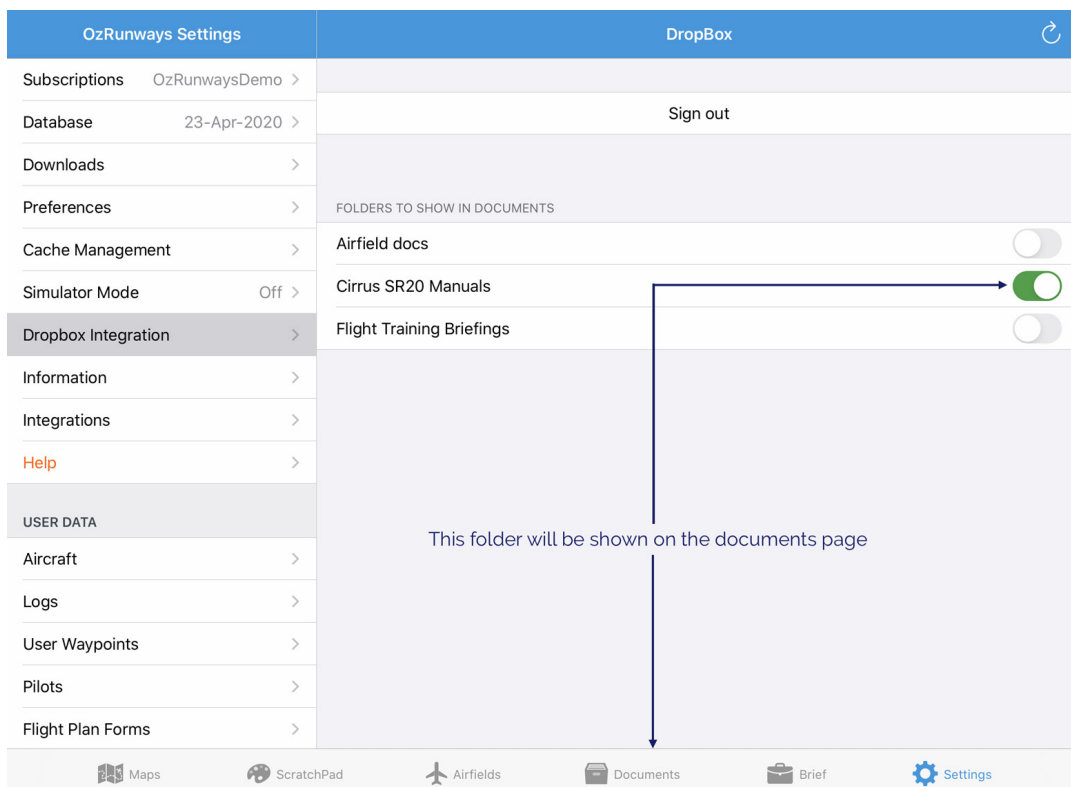
The Dropbox tab allows you to import PDF files via Dropbox. Dropbox is a cloud file sharing facility that provides you with a certain amount of shared filespace that you can access. You can choose to share access to certain files. For instance, businesses can share certain files of interest. (e.g. company specific approach procedures).

If you are not familiar with Dropbox go to their website (www.dropbox.com) and research.

Once logged in, you are presented with a list of your Dropbox directories (folders). When you enable a directory, it will then list the directory (and contents) under the main Documents tab. If the directories contain PDFs with file names starting with the airport ICAO code, those files will appear in any list of files available for that AD/ALA.

Information

The Information tab has a variety of information relating to the App. The most important field is the Version - you may be asked to check that you are running the latest version, especially if you are experiencing an issue. This is where to find this number.

Integrations

This is where you enter your credentials for various integrations throughout the app. e.g. NAIPS, MetFlight (NZ)…

Preferences

The preferences tab allows you to set a variety of options. These may change with time. Don't change them if you don't understand what the option does. (Or, change, investigate, and if you don't see a change, change back to the default state). At the time of writing the preferences are as follows:

- **Waypoint Sub-Types** – tapping the arrow takes you to a screen that allows you to select which waypoints are used in searches. GPS waypoints are typically turned off as they clutter up the search displays. If you are a fixed wing pilot for instance, you might turn off the helicopter landing sites.

- **Hide Tab Bar** – Hides the bottom tab bar when you are looking at airfield data.

- **Allow eAWIS weather where available** – Replaces METAR with one-minute AWS observations when viewing aerodrome weather briefings.

- **Double-tap or long-press HUD** – this is used when you are in a turbulent environment. When enabled, every interaction on the GPS HUD requires two taps (or a long-press on "Cancel") instead of the normal one tap. That way you don't exit a plan ahead of time in turbulence.

- **Retain Direct To Plans After Use** – keep DirectTo plans – normally they and their (temporary) waypoints are deleted as they clog up the plans menu and the user waypoints.

- **Double Tap on Map** – This enables or disables the double tap on an AD jumps to runway/FAC ERSA page functionality.

- **MGRS and UTM** - Display MGRS coordinates.

- **NZTM** - Display New Zealand NZTM format coordinates.

- **Send UserID in NAIPS/IFIS** - Used for AMSA or RCC to help find you for SAR.

- **Disable Background Tap to Dismiss** – Enabling this option prevents popup screens from being dismissed by tapping or swiping away.

- **Enable Single Finger Zoom** - Double tap and slide up or down to zoom in/out of map. Useful when using a stylus or when only one hand is available.

- **Allow Screenshots in Error Reports** - When enabled, a screenshot will be uploaded when an error occurs in the app. This helps us to diagnose and fix issues faster.

- **Enable Visual Touch Inidicator** - When enabled, a red dot appears on the screen wherever your finger makes contact. This is useful for live or recored demonstrations, for example.

- **Theme** - Choose between Light or Dark mode. 'Automatic' will follow the system (iOS / iPadOS) setting. Dark mode will invert the colours of documents, including DAPS, and certain maps: ERCs, TACs, OpenStreetMap, and PCA.

Help

The Help screen provides access to various support resources.

OzRunways User Documentation

This button will take you to a page where you can access the full OzRunways User Manual.

Frequently Asked Questions

This button will take you to the FAQ page on our support website.

Online Support Page

This button will take you to our website contact page with a direct link to send us an email.

Tutorial Videos

This button will take you to our YouTube page where you can access short tutorial videos covering various features and functions in OzRunways.

Email Support

Click here to automatically compose a new email to support@ozrunways.com The email will be pre-filled with information such as your OzRunways User ID and which version of OzRunways and iOS/iPadOS you are running. Please note that this requires that you have a mail account setup in the Apple default 'Mail' app.

Aircraft

The Aircraft tab provides access to your existing aircraft profiles, or to add new ones. At the bottom of the listing of aircraft there are tabs to do the following: The operation of the Aircraft Editor is covered in the Aircraft section

Logs

In OzRunways version 6.7 and onwards the Logs system has replaced the old Track History system. Operation of the Logs system is covered in the Logs chapter.

Track History

The Track History system has been superseded by Logs. Any track histories that were recorded before the Logs system was introduced will appear here. If there are no entries you won't see the Track History tab.

User Waypoints

Use of this tab is described in the User Waypoints chapter.

Pilots

The controls are at the top right. '+' adds a new pilot entry. Tap on the new entry to edit the details. Tapping 'Edit' allows you to select multiple pilots for deletion. When a default pilot is set, that pilot will be used in any newly created plans.

Personal Callsign

If a Personal Callsign is entered here, and the pilot is used in a plan, any flight notification submissions will default to using this callsign instead of the one set in the aircraft profile.

Remark

Text entered here will flow through to the RMK/ field on any flight plan submissions. Useful for PIFR strings.

Flight Plan Forms

Access saved flight plan forms. Currently only available for IFIS (New Zealand) flight plan forms

NAIPS

The NAIPS tab allows you to enter your Airservices Australia account login and password to allow submission of NAIPS flight notifications. Note that Airservices Australia occasionally requires you to reset your password(for security reasons) so, if your NAIPS submissions from OzRunways fail, first try to log into NAIPS on the Airservices Australia website. Once you have sorted that out, enter the username and password you have used there in this panel.

Device Options

Enable or disable connecting to various types of external devices (e.g. ADS-B receivers).

Planning

Plan Background

A typical plans popup is shown in Image 8.1.

Plans popup

The Plans popup is divided into two sections: the top section contains the Quick Planner, and the bottom section contains a list of previously created plans. Please note: if a plan is currently active, pressing the Plans button will display a summary of the plan as shown in Image 8.3

The Quick Plan section is used to make a plan by typing in codes or names of waypoints, coordinates, or bearings & ranges. That is described more in the Quick Planner section below.

The basis for flight planning calculations is shown in Image 8.2. The method of calculation of times and fuel consumed are illustrated. The figures primarily come from the values you have entered for the aircraft you are using in the plan. Fuel and time are calculated on a per leg basis. At the initial takeoff point you can set the fuel available on takeoff, and at each landing point you can select whether to add fuel or not.
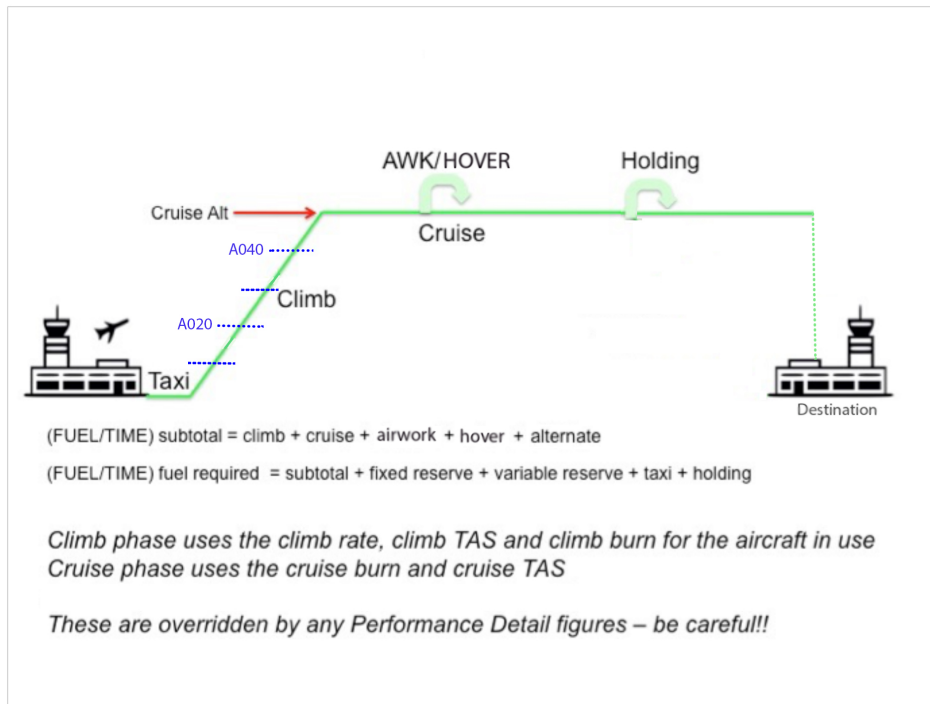
Planner calculation method

When using basic performance figures the calculations are straightforward. The fuel/time is calculated every 1000' by interpolation for climb, followed (if applicable) by a cruise segment. Descents are not calculated, instead a cruise leg is used. This produces more conservative results, albeit only marginally different for light aircraft. Anecdotally, the author has found that simple straightforward performance numbers yield quite accurate results for small aircraft (i.e. Cirrus SR22, Robinson R44). Image 8.2 shows a typical flight plan, with calculations for Time, Fuel, and Distance, made every 1000' for the climb. Then the remainder of the leg is calculated at Cruise Fuel Burn and TAS to the destination; no descent is calculated.

Alternate legs are calculated using a climb leg from the destination elevation to a nominated altitude, plus the remainder of the segment at cruise. Alternate fuel calculations do not include a variable reserve.

Initiating a plan

To start a plan you need a starting point. You can do this three ways on the Map page, namely:

- Enter a Quick Plan (described in next section)
- Tap near the starting point on the map, select the location in the resulting Closest Points popup, and then select 'Set waypoint As Origin of Plan' (covered below in Map Planning)
- Tap the 'Search' button on the map page, search for the waypoint textually, select it and then select 'Set waypoint As Origin of Plan'

A brief demonstration video on how to initiate a plan is available on our YouTube channel.

Quick Planner

The Quick Planner is perhaps the easiest way of entering a plan. To use the Quick Planner, first tap on the Plans button, then tap in the Quick Plan field and start typing a waypoint. The Quick Planner will show suggestions as you type. For example start typing 'Adelaide' and you will see YPAD at the top of the suggestion list. Use the toggle in the top left corner to switch between VFR or IFR. When IFR is selected the Quick planner will suggest IFR waypoints, and any applicable air routes. At any time press space to insert the top suggestion into the plan. Continue on until you have filled in all the waypoints you desire then press 'Go'. If only one point is entered into the Quick Planner the 'Go' button is replaced with 'DCT'. Pressing 'DCT' creates a Direct To plan from your current location, to the waypoint entered in the Quick Planner.

As well as names and codes the Quick Planner will accept coordinates in various formats, and also radial/distance type waypoints. e.g.

S3448E13837 (S34⁰ 48', E138⁰ 37')

YPAD04015 (040⁰M 15NM from YPAD)

The Quick Planner functionality is demonstrated in the following video:
https://www.youtube.com/watch?v=pPb1rHAgX6M

After pressing 'Go' (or 'DCT') the Plan Details screen is displayed. The Plan Details screen is described in the next section. To get back to the Plans List / Quick Planner screen, tap the top left button 'Plans'. Tap on a waypoint to reveal options for 'Direct To' and 'Activate Leg'. Alternatively, tap and hold a waypoint to activate that leg. Previous legs can be activated as necessary.

The GPS HUD on the map page will give you information to navigate to the active waypoint (the active waypoint is always shown in the bottom right GPS HUD box). For more information see the GPS HUD chapter.

Plan Details
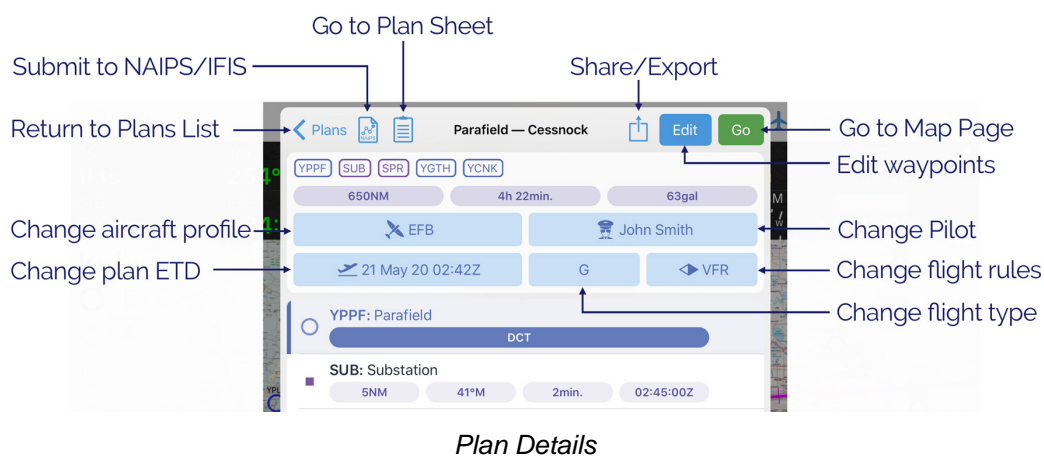
Plan Details

The Plan Detail screen has the following entries:

Back to Plans List / Quick Planner

Tap this button to return to the Quick Planner / Plans List.

NAIPS/IFIS

This button opens the NAIPS flight notification (AU) or IFIS flight plan (NZ) submission form.

Plan Sheet

This button opens the Plan Sheet (navigation log). For more information see the Plan Sheet section below.

Share / More Options

Duplicate: creates an exact copy of the plan. The new plan will have the same name with the word 'copy' appended.

New Inverted: creates a new plan with all the same waypoints in reverse order. Commonly used when you reach your destination, and want to fly back along the same route! The original plan is saved and can be accessed back in the Plans List.

Share: Used to share a plan with other OzRunways users. Tap to reveal options e.g. AirDrop, Mail etc.

Export: exports the plan in the given format.

Copy route to Clipboard: once the route is copied to the clipboard, you can paste the text into another app e.g. into an email. The original plan is saved and can be accessed back in the Plans List.

PDF Pack: generates a PDF document containing the user-selected items (plan sheet, weather, NOTAMs)

Copy to Quick Plan: pressing this will return you to the Quick Planner / Plans List screen with all the waypoints from the plan pre-filled into the Quick Plan section. Useful if you want to edit your plan using the Quick Planner.

Edit

After tapping the edit button you can do two things: change the plan name, or delete multiple waypoints. To delete waypoints in edit mode, tap on them and a checkmark will appear on the left hand side. Select all the waypoints you wish to delete and then press the red trash icon in the top bar. When you have finished editing press 'Done'.

Go

Pressing Go dismisses the Plan Detail screen and returns you to the map page ready to fly the plan!

Route overview and details

Below the title bar you will see the overview of your route, the total distance, the total time, and the total expected fuel burn (flight fuel only, excluding reserves). The calculations are based on which aircraft profile is selected for the plan (see below).

Aircraft

Select the aircraft profile to use in this plan.

Pilot

Select the pilot profile to use in this plan.

Departure Date / ETD

Set the ETD for the plan. If you are submitting a plan to NAIPS or IFIS, this ETD will automatically be filled into the plan.

Flight Type

Select the flight type (General Aviation, Scheduled, Non-scheduled, Military or Other)

Flight Rules

Select the flight rules (VFR or IFR). This is sticky in that once you set it, the next plan you create will be of the same type.

Route

All the waypoints in your route are shown in this list. If you have a waypoint set as a landing point this will be indicated by the Landing symbol. Tap on a waypoint to reveal more options: Activate Leg, Direct To, and View. Alternatively, long press on a waypoint to activate it. Below each waypoint are some calculations: distance from preceding waypoint, track from preceding waypoint, and ETA. These calculations are based on which aircraft profile you have selected, and the set ETD. When flying the calculations to the next waypoint are dynamic e.g. distance and time will count down as you get closer.

Plans List
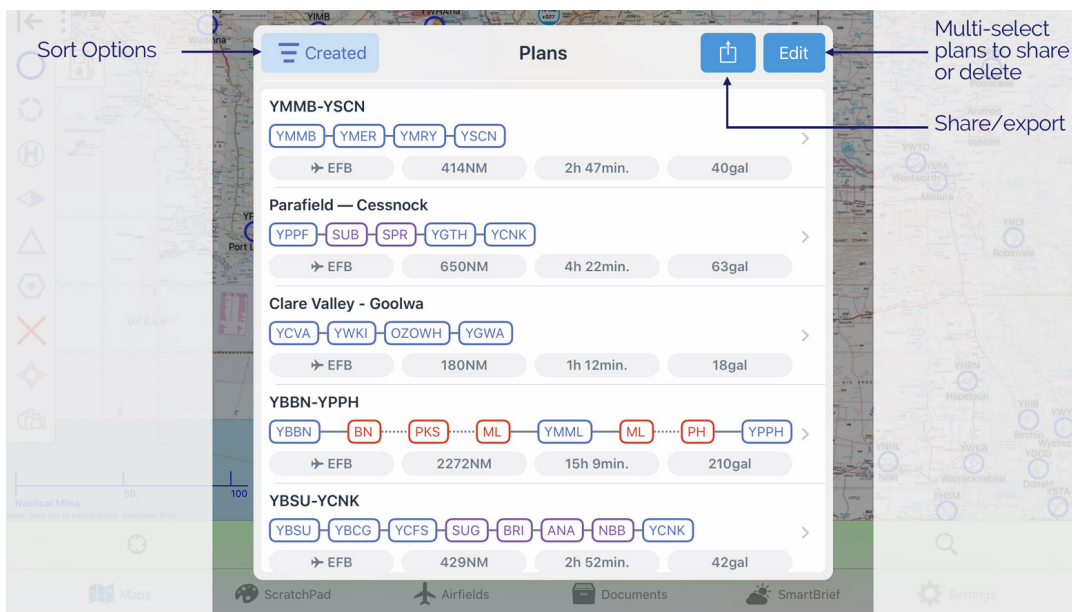
Plans List

A typical Plans List is shown in Image 8.4. Every time you create a plan it will automatically be stored in the Plans List and will stay there until you delete it. To delete a plan (or multiple plans), tap the 'Edit' button, select the plans you would like to delete, then press the red delete button. You can also 'swipe delete' individual plans. To 'swipe delete' you hold your finger on the right of the plan you wish to delete and swipe (move your finger while contacting the screen) to the left. A red 'Delete' (rubbish bin) icon will appear for that plan. Tap it to delete.

The Plans List can be sorted using control in the top left corner. The sort options are as follows:

Plan Name

Sort plans alphabetically.

Distance

Sort by total distance of the plan.

Departure

Sort by ETD set in the plan.

Created

Sort by date of creation.

Closest

Sort by distance from your location to the plan departure location.

Tap the sort button to select a sort option to sort in descending order. To sort in ascending order select the same option a second time.

Tap on a plan to activate it and enter the Plan Details view.

Map Planning

To create a flight plan on the map page, first tap near the waypoint that you would like to set as the origin of the plan. After tapping on the map the Closest Points popup will appear (Image 8.5). From here you can either use the 'Add to Plan' or 'Direct To' shortcut buttons, or, tap on the appropriate waypoint and select 'Set xxx as Origin of Plan'
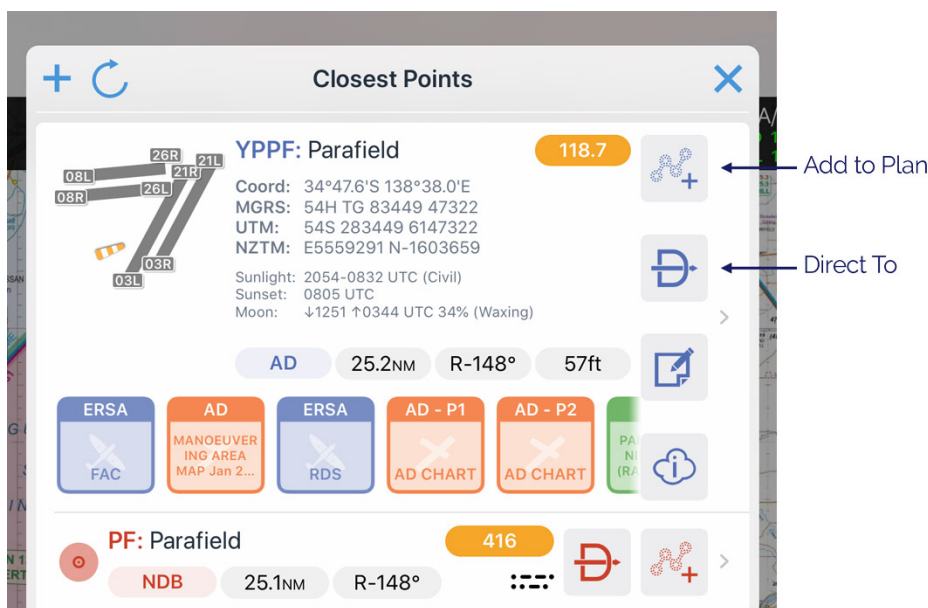
Planning shortcuts on the Closest Points popup

You can continue adding waypoints to the plan using the method described above.

You can also insert waypoints into the middle of a plan as described below using the rubber band method; image shown below in Image 8.6:

1. Identify the segment where you wish to insert a waypoint

2. Tap and hold the magenta track line until it turns yellow, and a pink ring appears

3. While keeping your finger on the screen, drag your finger to where you want to go.

5. The Closest Points popup will appear, listing nearby waypoints

6. Tap on the waypoint you wish to insert, or tap the '+' in the top left corner to create and insert a new User Waypoint

7. The plan will redisplay with the new waypoint inserted
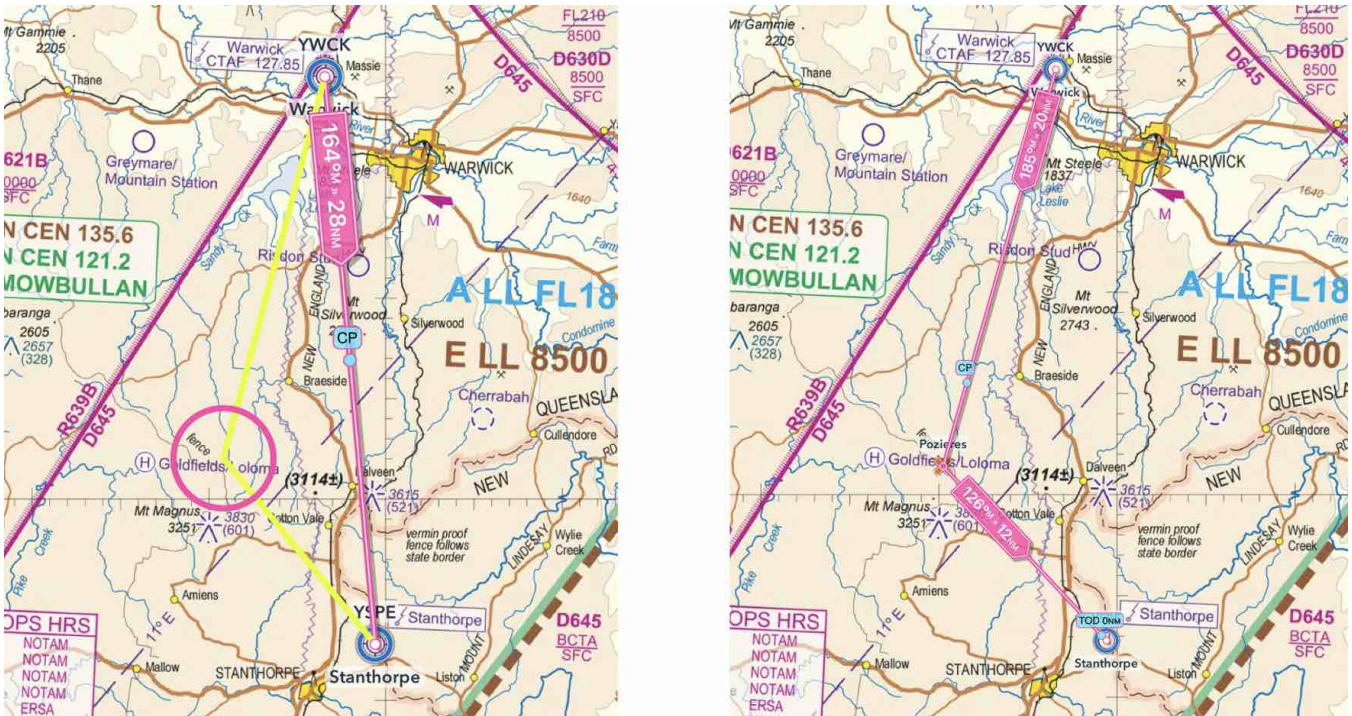
Rubber band method

Plan Sheet

The Plan Sheet, or navigation log, is accessed from the map page by tapping the Plan Sheet button in the top left corner. There is also a Plan Sheet button on the Plan Details window. The Plan Sheet is shown below in Image 8.7.

Plan Sheet

There is a set of buttons across the top. Waypoints are listed sequentially down the left of the page. Light blue fields are editable, as are the pale yellow/straw coloured fields. Additionally, there are two special boxes in the top 'origin

row'. If you tap on the 'ETA' box you can set the departure time. If you tap what is the Fuel Log box in the top row you can set the fuel you will have on Startup (Ramp Fuel) from the origin.

From left to right the buttons at the top of the Plan Sheet are:

- **Done** – go back to the map view

- **Plan options** – opens a menu that allows you to set values for the overall plan such as the name of the plan, aircraft, pilot and departure time

- **Charts viewer** - the Charts viewer is covered in more detail on the SmartBrief / Brief Page

- **Plan/Fuel/W&B** – use this control to switch between the planner page (Plan), the fuel planner (Fuel) or the Weight and Balance planner (W&B)

- **Print** – reveals options to print the plan sheet, fuel plan, or W&B

- **Windsock** - described below in 'Plan Winds'

- **Optimiser** – tap this to get an Optimiser which automatically calculates groundspeed, ETI, and Fuel Burn for each leg at different altitudes

- **Edit** – tap this to allow the insertion and deletion of waypoints in the plan.

You can scroll the planner horizontally as well as vertically. This is how the planner works on the iPhone. To aid entry in large plans, a 'fill down' option is available in the LSALT, ALT and WIND columns. Simply tap on an entry in these columns, enter the value, then tap the fill down arrow (initially it will be greyed out), then tap enter. Rows including the one you tapped and all those below will be filled in with the value you entered (Image 8.8).
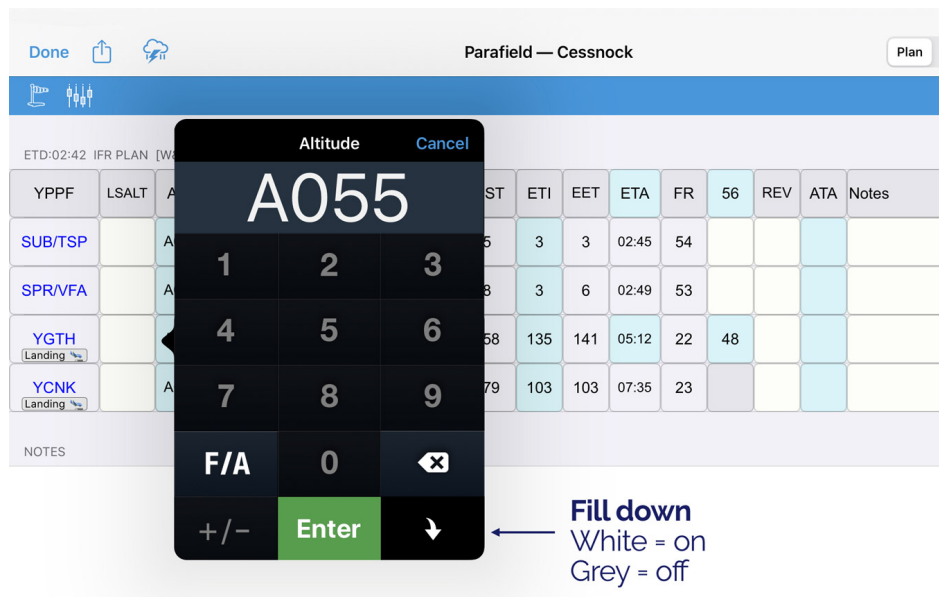
'Fill down' button

A 'Notes' column is available on the right hand side of each segment, and there is also a large block section at the bottom of the Planner that can be used for notes.

The columns in the Plan Sheet are described below.

Waypoints

The waypoints listed in the left hand column in blue capitalised text are as per the plan. You can edit these legs by tapping the 'Edit' button in the top bar, which will reveal '+' and '-'symbols. See Edit Mode for further details. Tapping on a waypoint will designate that waypoint as a landing and optional refuel point. The popup in Image 8.9 will result.
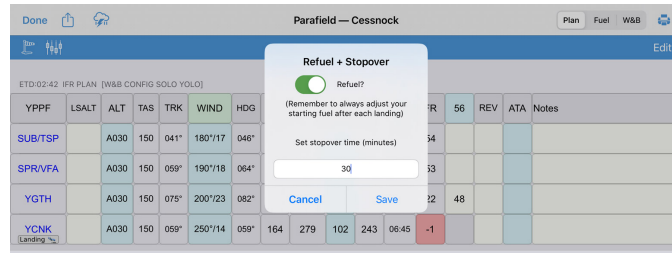
Setting & landing/refuel point

Use the toggle to choose between refuelling and not refuelling (green toggle = refuelling, grey toggle = not refuelling). You can also enter your expected stopover time in minutes. This time will be taken into account for calculating ETAs, and when pre-filling the NAIPS or IFIS flight plan submission form.

If you have designated the landing point as a refuel stop then a blue cell appears in the waypoint row, next to the Fuel Remaining (FR) column. The fuel amount in this cell comes from the 'Default Start/Refuel Amount' (or 'Fuel Capacity' if default amount is not set) as per the aircraft profile. You can change this amount by tapping on the blue cell.

> ## Note
>
> If you are not refuelling, you should adjust the fuel in the Fuel Log column after every landing.

All landing points will be indicated on the Plan Sheet with a 'Landing' label underneath the waypoint name. The final waypoint in your plan will be assumed to be a landing point and will automatically display the landing label.

Alternates

Tapping on the very last waypoint in the plan turns that waypoint into an alternate. The alternate label will appear underneath the waypoint name, and the landing label will move to the destination above, as shown in Image 8.10

Setting and alternate

The app will treat the alternate calculations as a new climb/cruise segment, starting at aerodrome elevation of the previous leg. The alternate will be added to the NAIPS flight notification 'Alternate' field. The alternate fuel will be shown in the fuel tab. Alternate fuel comprises of a climb from the previous waypoint altitude to the specified cruise altitude, cruise from TOC to overhead the destination plus variable for the route total.

LSALT (Lowest Safe Altitude)

> **Note**
>
> There is an **LSALT Assistant** feature in OzRunways that can help you calculate your LSALTs. See Terrain and Airspace for more information.

When planning by a recommended IFR route where an LSALT is available for a segment in the Airservices Australia dataset used by OzRunways, it will be automatically shown in the LSALT column. If there is no LSALT present, the user can enter the desired LSALT. The displayed LSALT can be overtyped by the user at any time by tapping on the cell.

Altitude

Altitude is entered in the FL format. For example, 5500 ft is entered as A055. Tapping on the bottom right 'fill down' tile in the number pad allows the altitude to be set for all legs, as shown in Image 8.8. A descent point is displayed for the last leg on the map, using the descent rate/TAS provided in the aircraft profile.

TAS (True Airspeed)

Cruise TAS is displayed as per the aircraft profile. This is for display purposes and does not include climb TAS, however climb TAS is used in the time/fuel calculations.

TRK (Track)

Track is displayed in degrees Magnetic (ºM) for the appropriate leg.

Wind

Winds are entered & displayed in degrees True (ºT). OzRunways converts to degrees Magnetic (ºM) for all calculations. Wind can be set for legs individually, or all legs using either the 'fill down' button from a leg entry, or the auto-fill winds. Auto-filling winds is described below in the Plan Winds section.

HDG (Heading)

HDG required to 'make good' planned track. Shown in degrees Magnetic (ºM).

GS (Groundspeed)

The groundspeed which has been calculated for a leg, including wind. For a leg which involves a climb, the GS shown is the average GS for that leg. Groundspeed is calculated at cruise altitude until destination.

Distance

Distance of the leg, in NM.

ETI (Estimated Time Interval)

Estimated Time Interval of the leg (i.e. the length of time the leg will take to fly). Display is in minutes. Where Airwork is desired at a waypoint, the waypoint ETI button (blue background) can be pressed to add a delay (DLA) in minutes. The entry can reflect either Airwork (AWK) or Hover (HVR), however the AWK/Hover toggle will only appear when the Hover Burn is present in the aircraft profile being used. Once a number of minutes is entered, press the AWK/HVR toggle to switch between the type of entry. The delays entered will use the appropriate fuel burns form the aircraft profile (AWK/Holding Burn and Hover burn respectively) however the DLA entered into the Flight Notification will be the cumulative amount of both delays. This ensures that for rotary wing operations, where fuel burn in the hold can vary markedly from the hover, that the calculation is accurate. No variable is calculated for AWK/HVR fuels. Once a AWK and/or HVR delay is entered, it will be shown as orange number(s) underneath the ETI. The delays will be added to the EET and ETA columns as well. For fixed wing aircraft, the hover fuel burn entry in the planner can be repurposed where a different burn rate is required during airwork.

EET (Estimated Elapsed Time)

The elapsed time of the plan to that waypoint in minutes. This field will be reset for waypoints after each landing point (i.e. it restarts at zero for a landing/refuel leg).

ETA (Estimated Time of Arrival)

Tapping on the blue word 'ETA' brings up some sliders you can use to set the plan Estimated Departure Time (ETD).

Where a waypoint is listed as a landing/refuel waypoint, the allocated stopover time in minutes will be added to the ETA at the point, with the resulting time serving as the subsequent Estimated Departure time. For example, if the ETA for an intermediate landing point is time 0135, and a stopover time of 30 minutes was set, then the planner will automatically set the departure time as 0205 for the next leg. If the ETI for the next leg is 20, the ETA for that next waypoint will be 0225 (0135 + 30min delay on the ground + 20 minute ETI to next waypoint).

FR (Fuel Remaining)

The Fuel Remaining Column displays the calculated fuel remaining based on the fuel burnt on a leg. The first leg will show a FR reflecting the subtraction of Taxi fuel. The fuel burn on a leg includes climb and cruise fuel ('flight fuel') plus the variable which has been set in the aircraft profile; any AWK and/or HVR fuel burn for that leg.

For example, on a leg which is the first leg of a plan: Start fuel 217L. Taxi fuel is 5L. Climb fuel is 10L. Cruise fuel of 15L. AWK of 30 minutes at 20L/hr. Variable 10%. Start Fuel – Taxi – Flight Fuel plus variable – AWK – HVR = Fuel Remaining, i.e.

217 − 5 − [(10+15)*1.10] − [0.5*20] ; 217 − 5 − 27.5 − 10 = 174.5

FR = 174.5, however only 174 will be displayed. The decimal value is still carried by the cell and applied to subsequent legs. This means even though the decimal is not visible, it is still being used for subsequent leg calculations.

Updating the wind during a flight will update the plan from that leg onward, including FR.

For the Alternate leg, the Fuel Remaining reflects a climb and cruise from the planned destination to the nominated cruise height. This leg is calculated using the normal cruise methodology, just as a first leg of a plan would.

See the Fuel Planner and Alternates sections for more detail on the fuel plan as well as how to add allowance for holding and approach fuels.

Fuel Log

The first field of the fuel log is the start fuel field (blue background). This is the ramp fuel. The ramp fuel is used in the calculation of the W&B, therefore it is important to ensure it is correct for the planning and the W&B, if it is used. Tap on this field to edit. The subsequent fuel log fields can be tapped on to enter fuel remaining at those waypoints for logging purposes. (Note that if the plan is edited, these entries may be lost.) Entries are stored even after a plan is exited, and must be cleared manually if you wish to use a plan again. The landing point does not have an editable fuel log field.

REV (Revised ETA)

Where desired, the pilot may enter a revised estimated time of arrival into this column. Note that if the plan is edited, the entries may be lost. Entries are stored even after a plan is exited, and must be cleared manually if you wish to use a plan again.

ATA (Actual Time Of Arrival)

This column is used to log the time of arrival at a waypoint. The time will be logged automatically when overflying the waypoint. This value can be overtyped, or a value manually entered if desired by the pilot.

Notes

This section may be used to add notes to a leg as required.

Plan Winds

To access the auto-fill wind, press the windsock button. Two options are presented as described below:

GPWT Forecasts Low-level (Australia only)

Selecting this option will use data from the Grid Point Wind & Temperature charts. The data is interpolated for both altitude and time. This data is valid from SFC - 14,000ft, and only in Australia. For operations outside these conditions, use the NAIPS Wind/Temp option or fill the winds in manually.

NAIPS Wind/Temp

Selecting this option will fetch the NAIPS Wind & Temperature profile, exactly as you would get if you were logged in to NAIPS on the Airservices Australia website.

GFS (NZ only)

Available for New Zealand users, select this option to import Global Forecast System model winds into your navigation log. This is generally more reliable for NZ (especially below 5000ft) than the NAIPS Wind/Temp option.

Optimiser

The Optimiser calculates the optimum Altitude or Flight Level to fly for each leg of your plan, given the forecast winds. The app calculates Groundspeed, ETI, and Fuel Burn for every 2000 feet. Upon entering the optimiser, the app will automatically select the optimum altitudes (based on time) for each leg based on the available results. Although the optimiser can calculate the results on any leg based on the wind profile, the pilot needs to analyse the information to ensure the results meet their needs; the app does not know whether an altitude change between legs is sensible or not. Tapping on an altitude for a leg in the optimiser will cause the subsequent optimiser values to recalculate based on your selection. If LSALTs are included, these are also taken into account (Altitudes below LSALT are greyed out - not selectable). To use the Optimizer first press the windsock button and obtain the winds. Then open the Optimiser by selecting the slider button on the Plan Sheet. Once selections are complete, tap the route name in the top left corner to return to the plan sheet. Image 8.11 shows the result of examining the detail of a run of the optimiser. The arrows at the top right are for progressing from one segment to the next (i.e. takeoff to landing). Within a page, each leg will be shown (i.e. waypoints between takeoff to landing).

Plan optimiser

Edit Mode

By tapping the 'Edit' button on the Plan Sheet you enter Edit mode as shown in Image 8.12

Editing the Plan Sheet

Additional rows are added between existing waypoints with green plus signs in them. Red minus signs appear to the left of each existing waypoints. Tapping the plus sign will allow you to insert a waypoint between the waypoint above and the waypoint below. Tapping the minus sign deletes the associated waypoint. Tap the '+' and a popup appears allowing you to search for a waypoint. You can either type in the desired waypoint in the search box, or tap one of the waypoint types to get a list of waypoints, waypoints closest to the centre of the segment in question will be displayed. This way, you simply define origin and destination and use this function to recursively select intermediate ADs/ALAs until you have all the waypoints you desire.

Fuel Planner

The Fuel Planner is accessed by tapping the 'Fuel' button at the top right of the Page Planner. A typical view is shown in Image 8.13

Fuel Calculation	Min	gal	Min	gal	Min	gal	Min	gal	Min	gal	
From/To	YPPF	YGTH	YGTH	YCNK							
Climb	3	1	3	1							
Cruise	128	23	96	18							
Hover	0	0	0	0							
AWK	0	0	0	0							
Sub Total	131	**24**	99	**19**							
Contingency	7	1	5	1							
Alternate	0	0	0	0							
Final Reserve	45	6	45	6							
Approach	0	0	0	0							Tap to add approach / additional / holding fuel
Additional	0	0	0	0							
Holding	0	0	0	0							
Taxi	0	2	0	2							
Fuel Rqd.	183	**33**	149	**28**							
Discretionary	0	0	0	0							Tap to add discretionary fuel
Fuel Margin	122	23	156	28							
Endurance	305	56	305	56							

FUEL [IFR] [[W&B CONFIG NORMAL]]

Done — YPPF-YCNK — Plan | Fuel | W&B

Fuel Planner

On this flight we land and refuel at YGTH.

If the number of segments exceeds five, two arrows appear in the top menu that can be used to move between segments. The light blue entries in the table may be edited. The Fuel Margin will turn red if you are burning into your reserve fuel or if the segment uses more fuel than is loaded at the start of the segment. Below is a breakdown of each item of the Fuel Planner, and explains how it is calculated.

From/To

Shows the origin and destination.

Climb

Calculated as per the aircraft profile, for the cumulative climbs across the plan.

Cruise

Calculated as per the burn rates specified in the aircraft profile.

Hover

As per the Hover times set in the plan, at the rate specified in the aircraft profile.

AWK (airwork)

As per the AWK times set in the plan, at the rate specified in the aircraft profile.

Sub Total

Sub total of climb, cruise, hover, and AWK fuel.

Contingency

Contigency fuel calculated as per the values specified in the aircraft profile, applied to the climb, cruise, airwork/hover, and approach total.

Alternate

Reflects the climb and cruise from the planned destination to the alternate at the altitude nominated in the plan.

Final Reserve

As specified in the aircraft profile.

Approach

Additional fuel for IFR approaches can be added. Time is automatically calculated according to AWK/Holding burn rate in aircraft profile.

Additional

Additional fuel can be added here where required.

Holding

User set, in minutes. Calculates at the AWK/Holding burn specified in the aircraft profile. For example, INTER/TEMPO holding.

Taxi

The amount of taxi fuel as set in the aircraft profile.

Fuel Required

Cumulative totals of all fields.

Discretionary

A place to add (or remove) fuel not otherwise required by legislation, at the pilots discretion.

Fuel Margin

Calculated by subtracting the Fuel Required figure from the Endurance fuel *or* the specified Margin Burn rate as set in the aircraft profile.

Endurance

Cumulative totals of Fuel Required and Fuel Margin. This time is used in the Flight Notification. Calculated at the AWK/Holding Burn Rate *or* the Cruise Burn rate, as specified in the aircraft profile.

Weight and Balance Planner

The Weight and Balance Planner may be accessed by tapping the 'W&B' button at the top right of the screen. A typical view is shown in Image 8.14
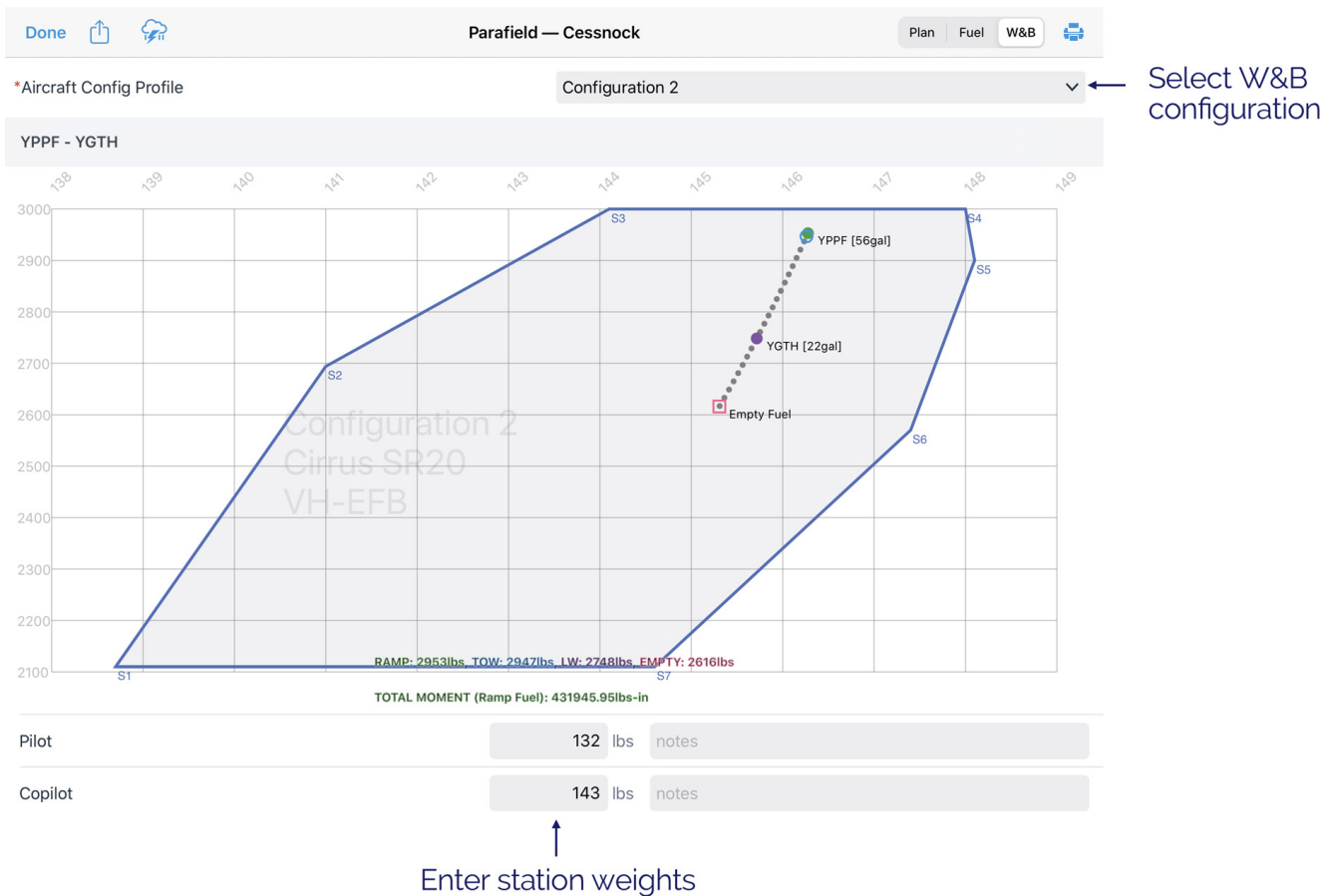
Weight & Balance Planner

The weight and balance tab uses the active W&B profile (set up in aircraft profile). Users MUST ensure they are using a correct profile before relying on the W&B sheet. Multiple W&B configurations can be defined in a singular aircraft profile. Where this is the case, you can select which profile to use using the dropdown box at the top of the W&B sheet. Individual station weights can be changed by tapping on them. Fuel displays based on the plan sheet start fuel, planned landing fuel (as per last FR on plan sheet), and critically Zero Fuel CG. Ramp weight, TOW, Landing Weight, and Zero Fuel Weight are shown at the bottom of the graph colour coded to the plots on the graph. Total Moment for the ramp weight is also displayed. Where a plot appears outside the envelope it will be shown in RED. Each segment of the plan (segment = takeoff to landing) has its own Weight & Balance sheet which can be found by scrolling down the page. Where an alternate is specified, the W&B profile shows the alternate as the landing point.

> # Warning
>
> The OzRunways W&B is simply a calculator that relies on accurate input of data - it has NO way of knowing if the data you enter is correct or not, compared to your aircraft. The system is not capable of warning you if inaccurate data is entered into the app. You must be proficient at W&B to use this system safely, and you must ensure the data you enter is correct.

Printing Plans

Tap the Printer icon to reveal some printing options as shown in Image 8.15
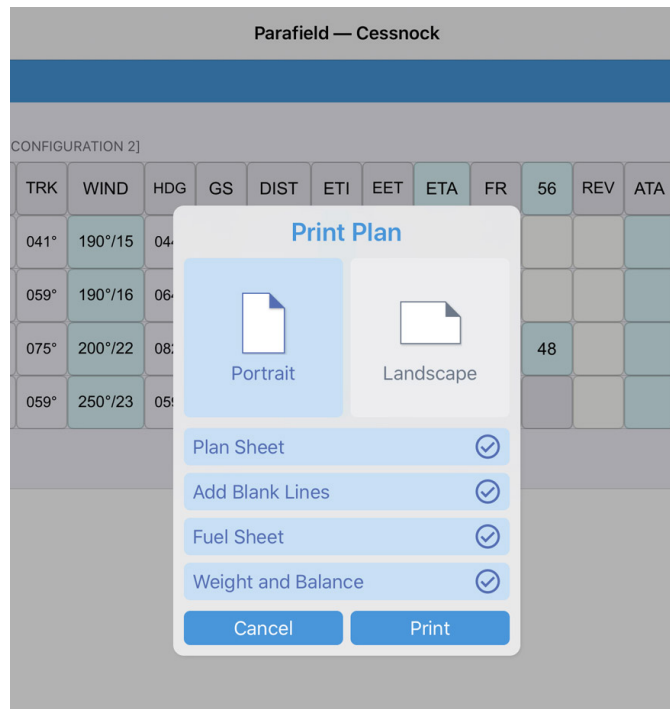
Print Plan

You can choose between Portrait or Landscape orientation. Use the check boxes to select which items you want to print. **Add Blank Lines** will add a blank row beneath each waypoint on the plan sheet, handy if you want to jot down your own notes after printing.

Devices running iOS 10 and above can also export to PDF by tapping the Printer icon and then tapping the 'Share' button in the top right corner as shown in Image 8.16
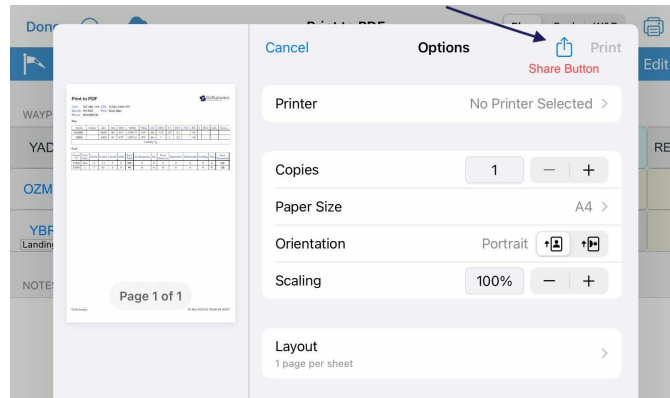
Share Button

Exporting Plans

Tap the Help button at the top of the Map Page and select 'Share Current Plan'

Alternatively, use the Share button on the Plan Details screen.

Weather

Wx/Notams

Weather for a specific AD may be accessed by tapping on the map near the waypoint of interest, tap on the waypoint in the resulting Closest Points popup, then tap Wx/Notmas (as illustrated in Image 2.3 on the Map Page). In some cases you may see a weather icon shortcut for the top result in the Closest Points popup. Tap this to achieve the same result.
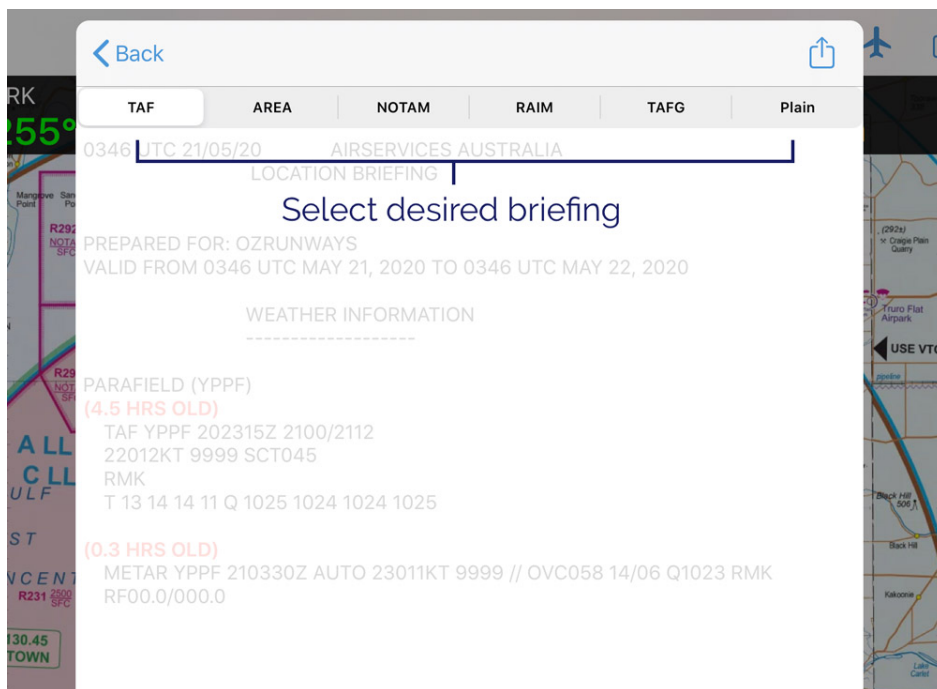
Wx/Notams view

eAWIS

Created from unverified one-minute observation data from BoM. For situational awareness only.

eAWIS by OzRunways uses the one-minute observation data from the Bureau of Meteorology, available at locations with an Aerodrome Weather Station. Presented similar to a METAR but updated every minute.

TAF

If available, the TAF from the NAIPS Location Briefing for the selected location is displayed.

Area Briefing

Displays the area briefing (including area NOTAMs) for the area which the selected waypoint is located within. This tab also has quick links to the GAF & GPWT charts for the area.

NOTAM

If available, NOTAMs from the NAIPS Location Briefing for the selected location are displayed.

RAIM

GPS RAIM prediction.

TAFG

If there is a TAF for the selected location then this tab will display a graphical version (TAFG or TAFGRAF). In the TAFG display, the textual TAF is displayed in a scrollable window above the graphical TAF. Tapping on a graphical element will highlight the corresponding text in the TAF and popup a plain text explanation momentarily at the top of the graphical TAF window.

2. The selection is highlighted in the text

3. A plain text description is also shown

1. Tap a section in the graph
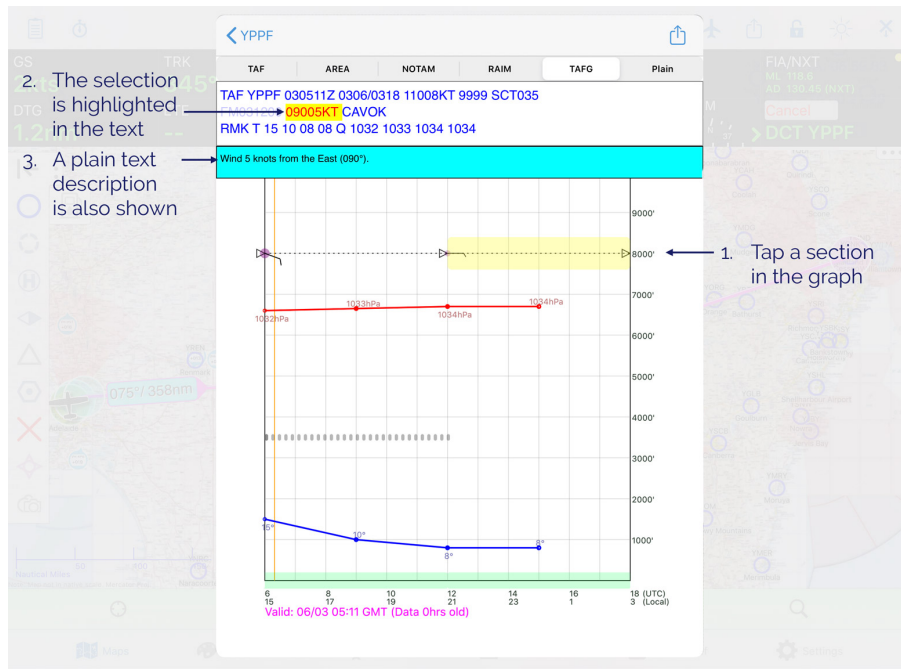
Plain

Where a TAF is available, this tab will display a 'Plain Text' version e.g. no abbreviations are used, and times are in local timezone (as per the set device timezone). This format is experimental and should be only used for educational purposes.

Naturally, TAFs or NOTAMs are not displayed when an AD/ALA has none.

Weather Radar Overlay
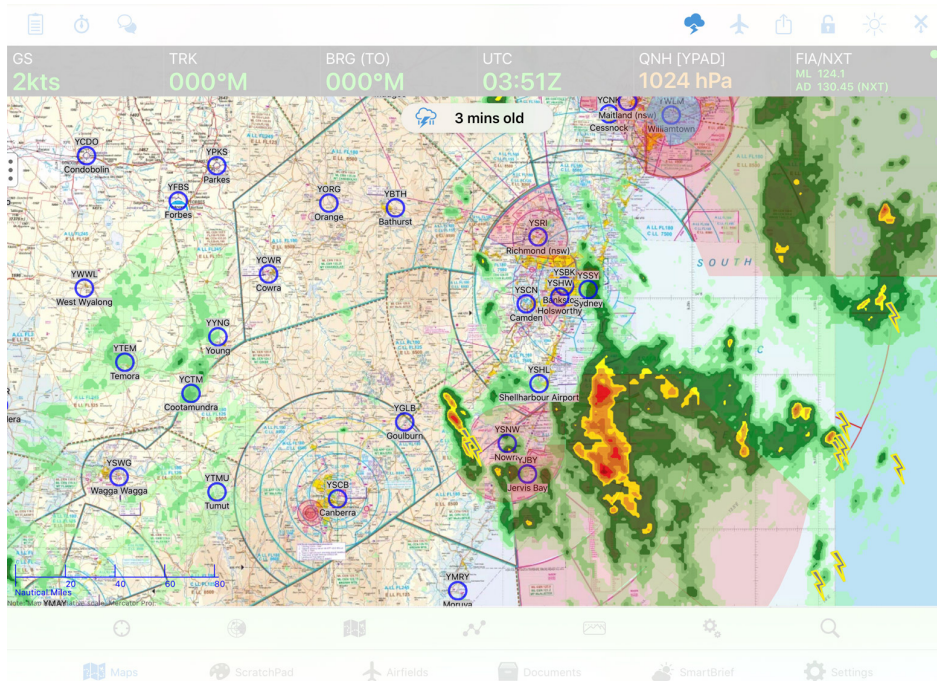
Weather Radar Overlay

The Weather Overlay is a weather radar feed that is overlaid on whichever map you are viewing. The overlay shows rain, clouds and lightning.

When switching on the Weather Radar Overlay, the radar data will be fetched on-demand from the internet. Until the data can be loaded a set of boxes with red crosses are shown. As the data downloads the boxes will disappear and be replaced with the radar data. This makes it easy to distinguish between areas that have no weather, and areas where the data has not been downloaded yet.

Image 9.2 shows a typical overlay with both lightning and rain. The intensity of the rain is graded from light green, through yellow, to red, purple and eventually, white. There are three cycles of animation to show the direction of weather. Significant cloud overlays are also shown in grey. A table that shows colour to rainfall rate may be found at https://en.wikipedia.org/wiki/DBZ_(meteorology).

Aerodrome Weather

The NAIPS Location Briefing for an aerodrome can also be viewed when looking at a document pertaining to that aerodrome. This is described in the Weather section of the Airfields chapter.

Windy / BoM Radars / Satellite View

These items are accessed by pressing the Radar button on the Map Page. Use the control in the top left corner to switch between Windy / BoM Radar / Satview

BoM is Bureau of Meteorology.

Windy.com
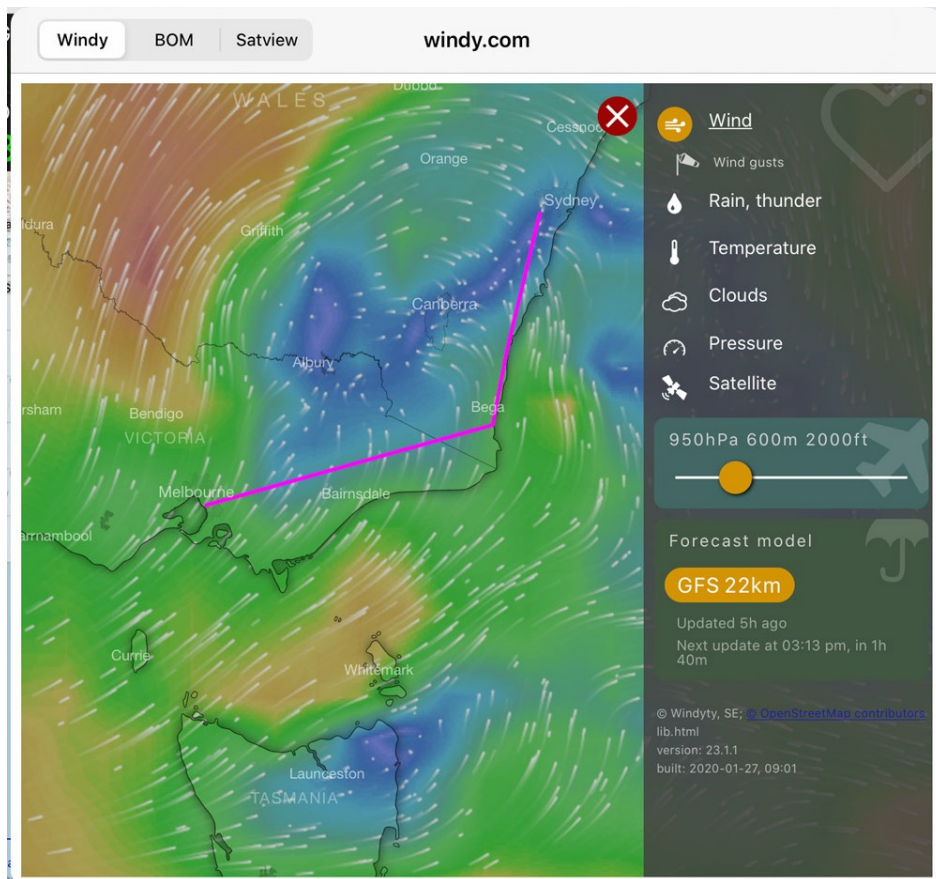
Windy.com view

Windy is a forecast tool. The time of the forecast can be advanced using a menu at the bottom of the display. Wind, cloud, temperature, rain (and snow), and atmospheric pressure may be displayed (and forecast). In addition, where appropriate, the altitude may be set. Windy is a private company that accesses a publicly available weather database produced by worldwide weather agencies (including the BoM) that provides forecasts into the future on a grid basis (i.e. one latitude degree by one longitude degree).

The label in the top right hand corner shows what information is currently being overlaid on the map. Tap on the label to reveal more options. Here you can choose from a variety of overlays, and also adjust the forecast altitude and other settings. Tap on the Windy map and a picker will appear. This picker will show the exact weather at this point, depending on the displayed overlay. For example if the Wind overlay is enabled, the picker will show the wind direction and speed at this point.

BoM Radars
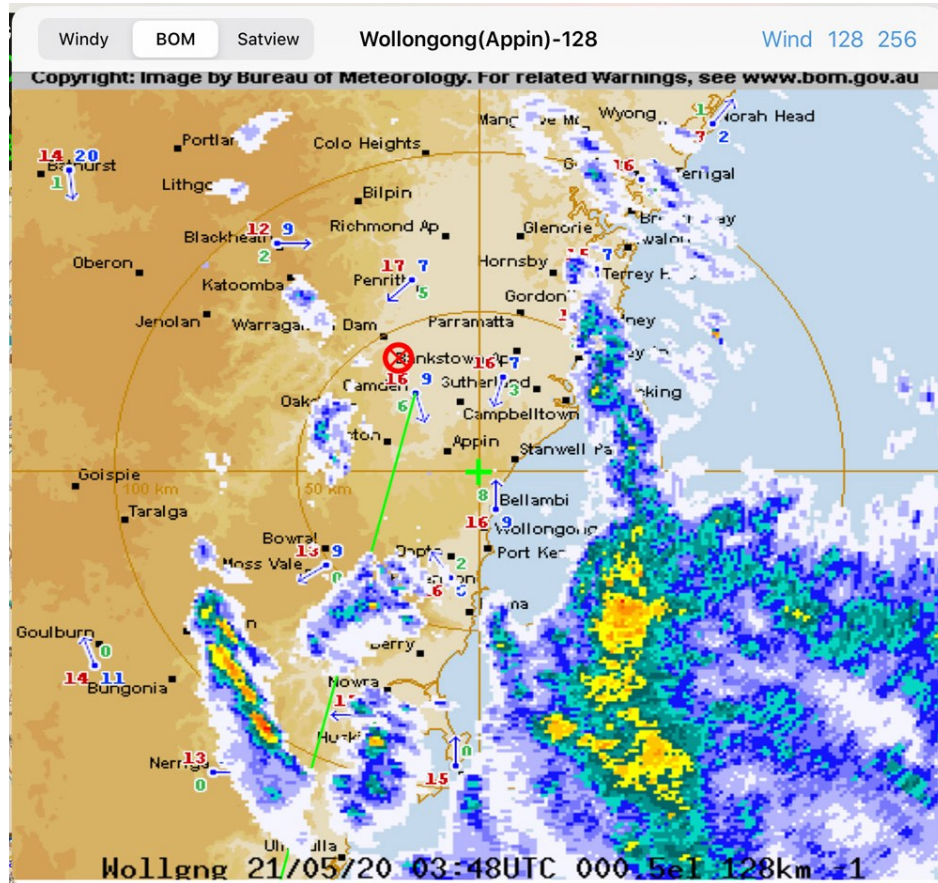
BoM radar view

Displays the BoM radar closest to the centre position of the map screen. e.g. if you scroll the map to Melbourne City and then come into the BoM Radar view, you will see the Melbourne radar. The name of the radar you are currently viewing is displayed in the centre at the top. Use the controls in the top right corner to change resolution, or see the Doppler Wind. (These options may not be available on all radars.)

A list of BoM radar sites is available here: http://www.bom.gov.au/australia/radar/ If you notice a BoM radar is missing from the app please get in touch with us and we can add it in.

Satellite View
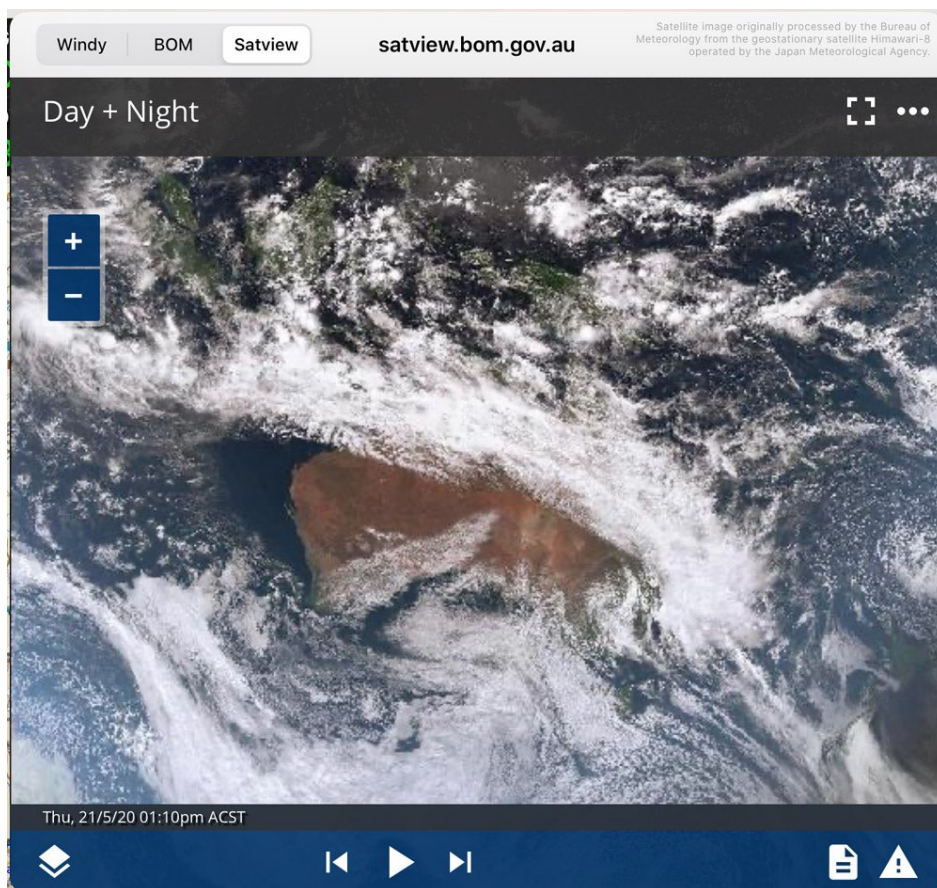
Satellite view

This satellite view is from the Bureau of Meteorology website: http://satview.bom.gov.au Press the Play button to see the time lapse images, spaced 10 minutes apart for 4 hours. Selecting the Layers button in the bottom left hand corner enables you to activate multiple features such as Lightning, Cities, Roads, and more.

SmartBrief / Brief

SmartBrief is an interactive map that combines a variety of different weather sources. You can access the Graphical Area Forecasts (GAF), NAIPS location briefings, SIGMETs, AIRMETs, Grid Point Wind & Temperature (GPWT) and more. For more information about SmartBrief see the SmartBrief / Brief Page

PDF Pack

For a given plan you can generate a single PDF document containing the plan sheet, fuel plan, weight & balance, NOTAMs, aerodrome weather briefing and other weather charts.

You can find the PDF Pack on the Plan Details view in the Share/Export menu.

Aircraft
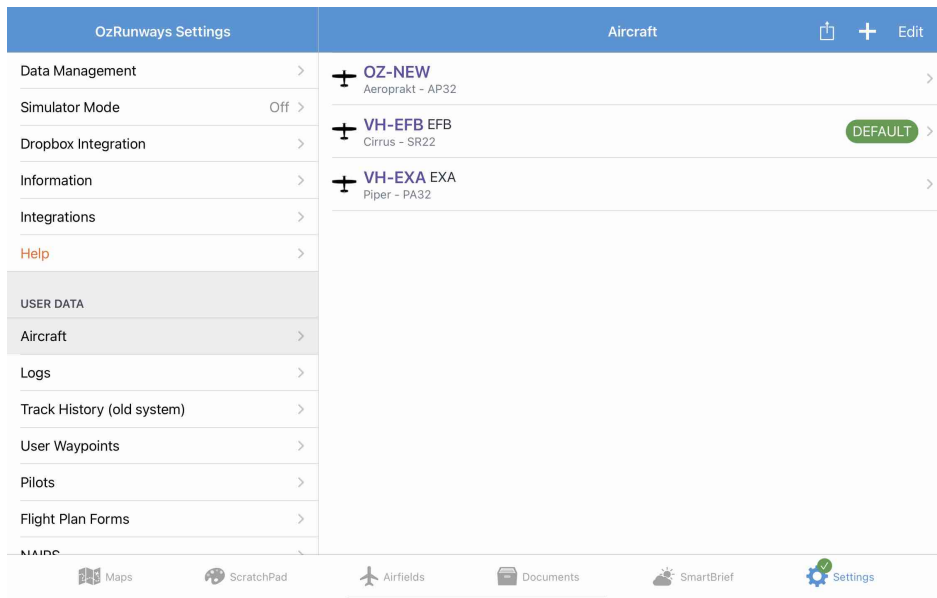
Settings → Aircraft

Any aircraft profiles you have setup appear here. Use the buttons in the top right corner to add new aircraft profiles, or duplicate or export existing ones. These options are described below.

If you are just starting out with OzRunways you will see one aircraft already in the list named OZ-RWY, a Cessna C172.

Creating a new Aircraft Profile

Tap the '+' to create a new aircraft profile using one of the following options:

1. **New Blank**

Create and setup an aircraft profile from scratch (i.e. all fields will be empty).

2. **New Aircraft From Library**

Our aircraft library contains profiles for many common aircraft types. Some of these profiles have been provided to us by OzRunways users, and some we have manually created using the POH for the aircraft type. It's important when using a profile from the library that you go through and make sure the details in the profile match your POH/AFM. To use this option, tap on *New from Library*, then tap on the profile you want to add in the resulting list, and finally tap *Import* in the top right corner You will be returned to the main Aircraft screen and the selected profile will appear in the list.

Viewing/Editing an existing Aircraft Profile

Tap on an aircraft profile in the list to view and/or edit the details. The following screen results (Image 10.2).
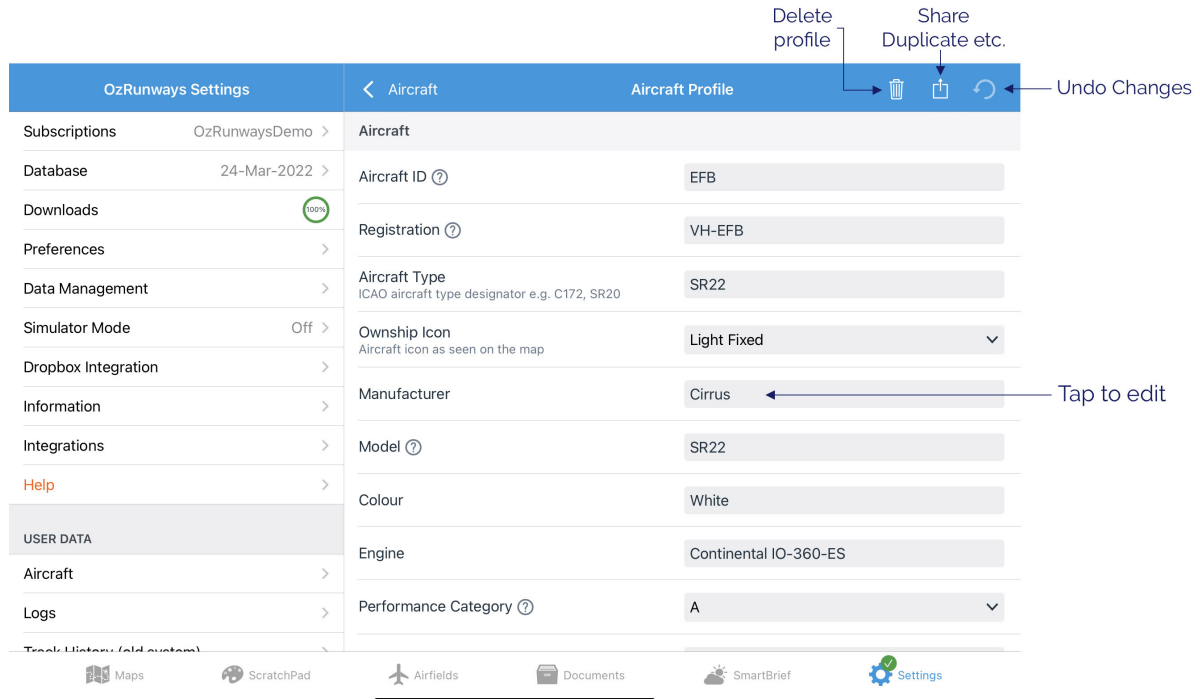
Aircraft

Aircraft edit view

For more information on a particular field tap the '?' icon next to the field name.

Tapping Undo will revert any changes that have been made since opening the aircraft profile.

When editing fuel and performance values further down the page (Image 10.3) you can tap the blue unit label to change the unit type, this will also perform a conversion to the newly selected unit.
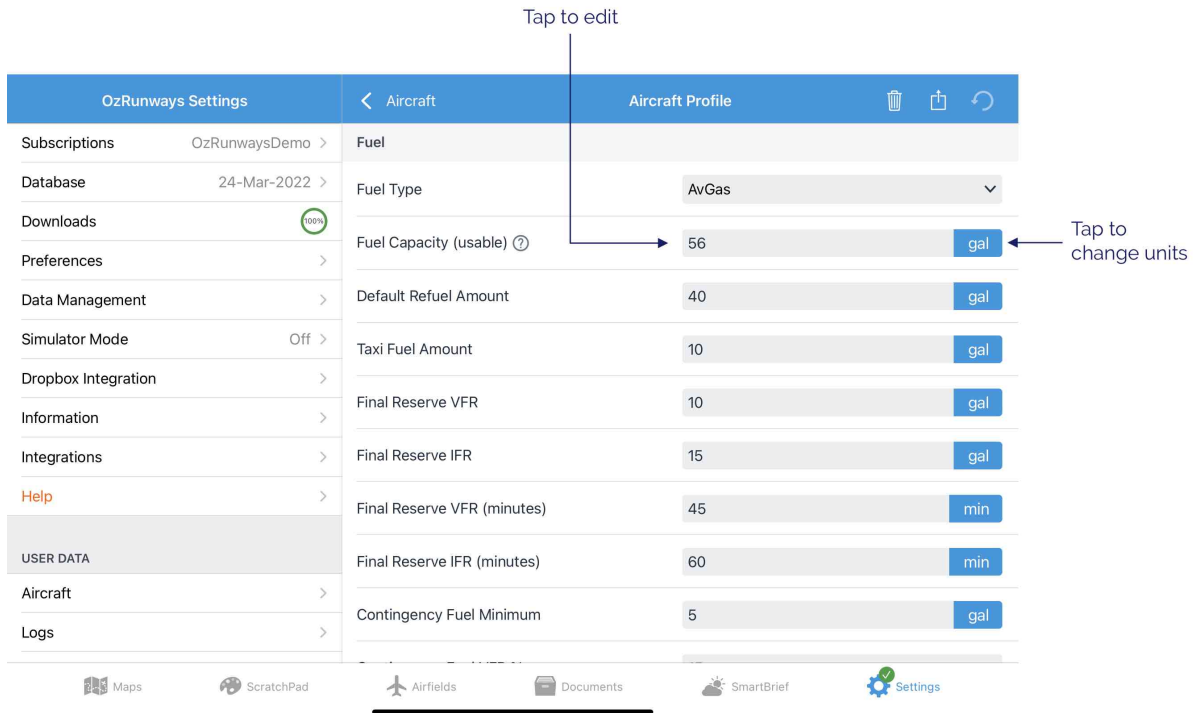
Aircraft edit view, changing units

Detailed Performance Editor

Be careful when setting Detailed Performance figures as they override any values you have entered back on the main aircraft setup page. Frequently users have 'played around' with Detailed Performance details and then forgotten they did this. With rubbish values in the Detailed Performance table, you get rubbish results. The easiest thing is to just enter the default values in the Performance section and leave Detailed Performance figures until you have mastered the app. Detailed Performance figures yield more accurate results for higher performance aircraft (e.g. Bombardier LR45).

The Detailed Performance Editor presents a table where you can enter performance details for your aircraft at specific altitudes. The performance at any altitude is then calculated by interpolation from the values you entered int he table. In the time and fuel calculations for any plan, during climb the values are calculated every 100 feet.

Tap Edit to add
or remove rows

Detailed performance table

Tap the top right 'Edit' button, then tap the green plus '+' at the left of the screen in the row that has just been created. If values have already been set back in the standard 'Performance' section then they will appear after pressing the '+'. Tap on a value to change it. Start at 0 ft. Make adjustments and then press the green plus again to add another row. The altitude will automatically increment by 5000 feet, which can be edited, and the previous values repeated. Edit the fields as necessary. When creating a new row the altitude will always increment by 5000' e.g. if you enter 1000' the next row created will be at 6000'. Tap to edit if necessary.

When you have finished entering all values, tap 'Done' in the top right corner

You now have a table of performance values for your aircraft. The performance at any intermediate altitude is interpolated.

To remove a row tap 'Edit', then the red minus '-' sign on any rows which you wish to delete. When finished tap 'Done' in the top right corner.

Note

Values in the Detailed Performance Table override any details entered in the standard Performance section. Incorrect details here will result in incorrect performance calculations (rubbish in = rubbish out). If you are not comfortable with using Detailed Performance, delete any values in the table and use the standard Performance section instead.

Weight and Balance Setup

First a word of explanation. This is where you create and setup the Weight and Balance (W&B) configuration for your aircraft. This includes details such as Basic Empty Weight (BEW), Moment & Arm, and defining the envelope and stations. Once the information has been entered here you should only need to return if there are any changes to the aircraft's basic basic information or stations. The actual W&B calculation is made during planning using the Weight and Balance Planner.

Multiple W&B configurations can be created for each aircraft. For example, if your aircraft has removable doors you might have one configuration for doors on, and another for doors off. Configuration is selected on a per plan basis in the Weight and Balance Planner.

> **Note**
>
> Be sure to set the correct units in the aircraft profile before you start editing W&B configurations.

Tap the '+' to create a new configuration, or tap on an existing configuration in the list to edit it as per Image 10.5 below.
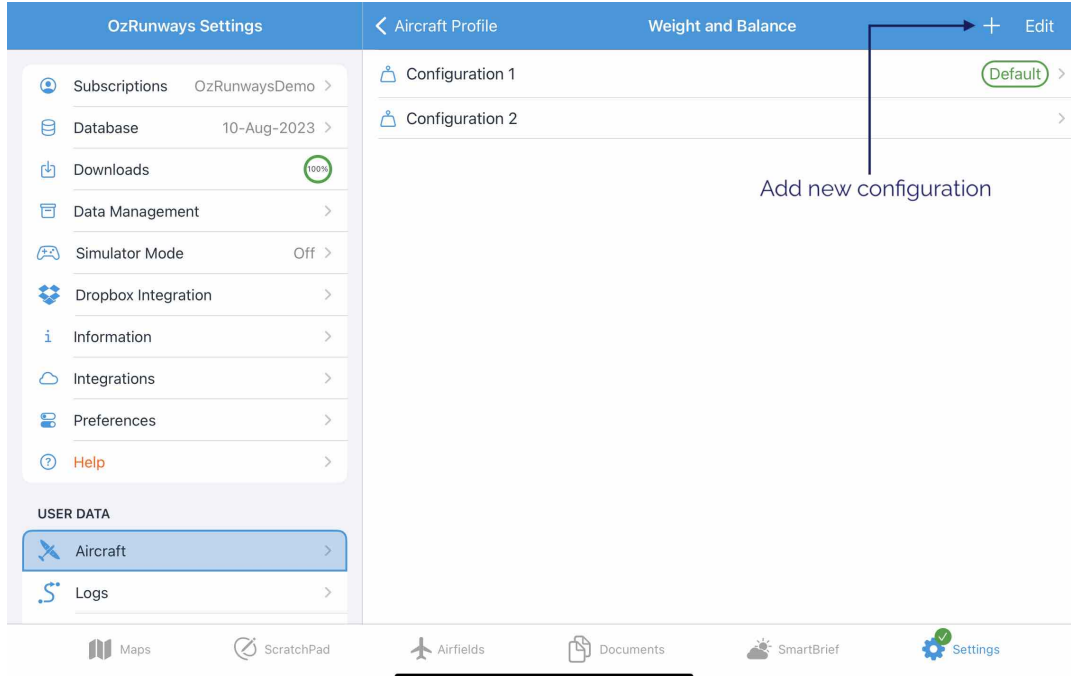
W&B setup - configuration selection

Base

Inside the configuration editor there are 3 section toggles at the top of the screen: **Base | Stations | Envelopes**, as shown in Image 10.6 below. Use these toggles to switch between sections to edit the respective data.

The anti-clockwise arrow in the top right corner is used to undo all changes since opening the configuration.

Enable Lateral Entry can be turned on if you need to define a lateral envelope and associated lateral arms. If you are unsure what this does, you probably don't need to enable it!

In the Base Data section you must enter your aircraft's Basic Empty Weight and either the **arm** *or* the **moment**. After entering BEW and either **arm** or **moment**, OzRunways will calculate the other value. Tap the blue unit lables to change units. When changing units OzRunways will automatically convert any entered value into the new unit.

Scroll down the page to enter aircraft weight limitations if desired. The limitation options are: Zero Fuel Weight (ZFW), Max Landing Weight, and Max Ramp Weight. These fields are optional. If limitation data is entered the Weight and Balance Planner will display these limitations as horizontal lines on top of the envelope/graph so that you can quickly see if the plot is exceeding these limitations at any point.
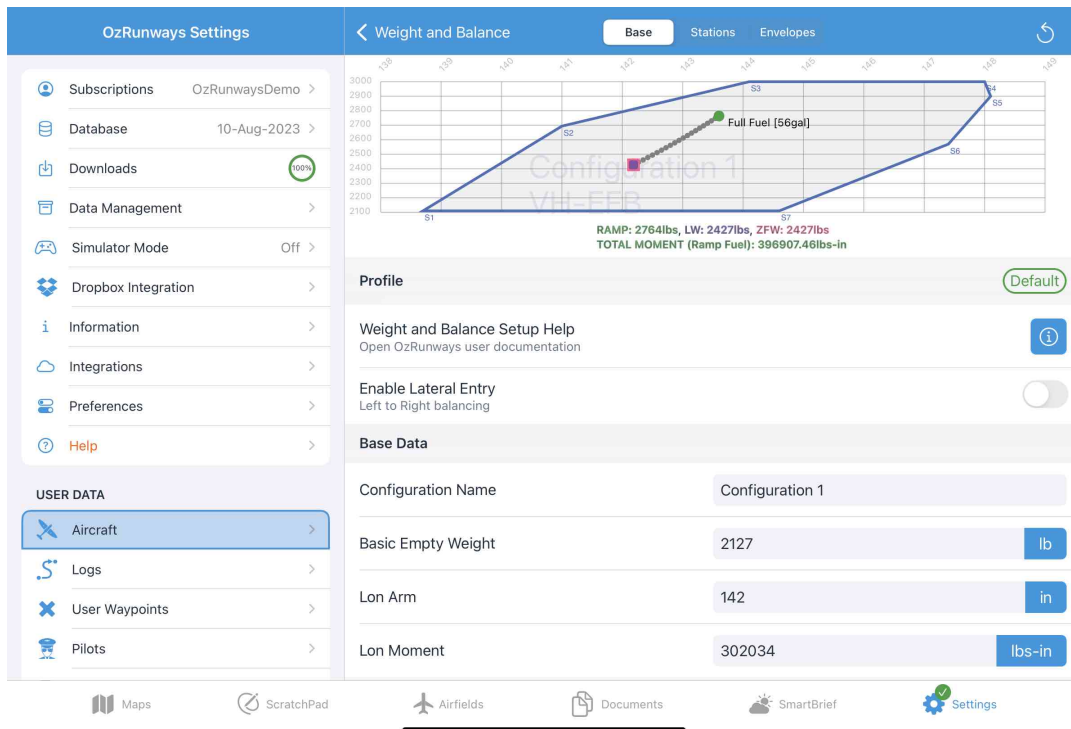
W&B setup - editing 'Base' data in a configuration

Stations

Stations (e.g. seats, baggage compartments, fuel tanks etc.) are defined in the **Stations** section, as shown in Image 10.7.

Any weights entered here will be used as the *default* weight for that station. For example if you are always the pilot you can enter your own weight next to the applicable station and the Weight and Balance Planner will always default that station to that weight. This can of course be changed on a case by case basis in the Weight and Balance Planner.

Any station entry with the word 'Fuel' in it is assumed to be a fuel tank. You cannot alter the weight for this station, it is based on the fuel capacity and specified fuel type back in the aircraft profile. For more complex fuel scenarios, such as multiple fuel tanks with different arms, you will need to use Fuel Tables.

The checkbox on the left of each station decides if the station is selected ON *by default* in the Weight and Balance Planner. Again, this can easily be changed on a case by case basis.

Defining a max weight for a station will cause a red message to appear in the Weight and Balance Planner should the entered weight exceed the defined max.

Tap the padlock to 'lock' a station. When a station is locked the weight *cannot* be changed in the Weight and Balance Planner.
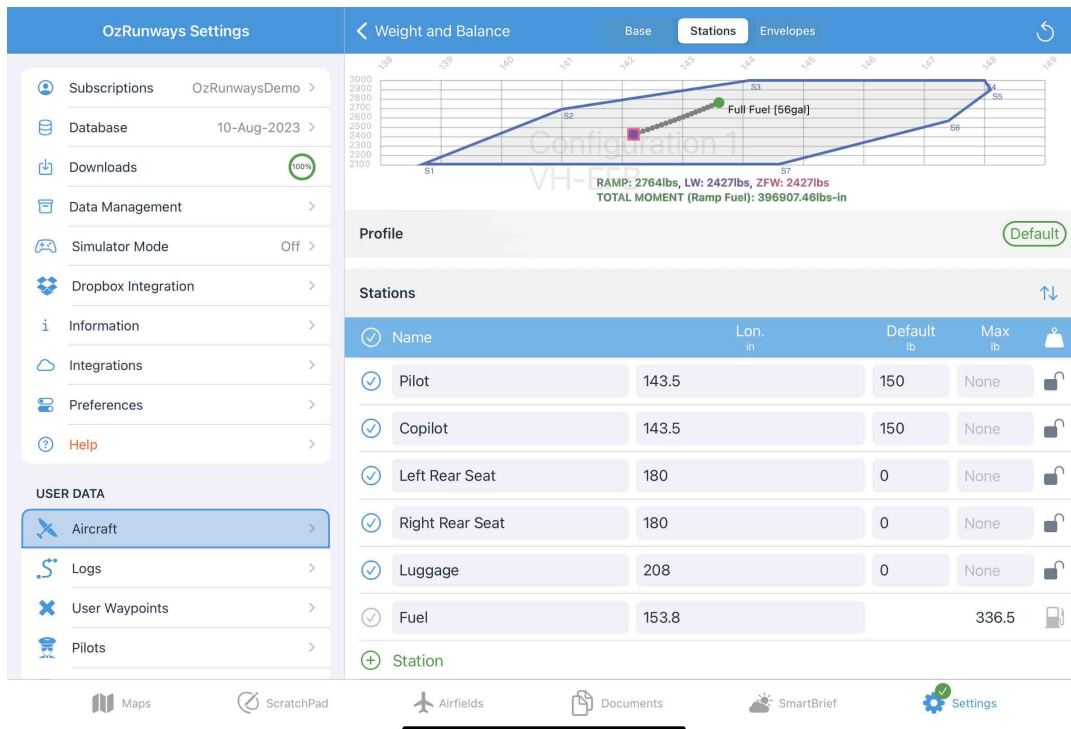
W&B setup - editing 'Stations' data in a configuration

Envelopes

Define the limitation envelope/s in the **Envelopes** section as per Image 10.8

The W&B envelope/graph is shown at the top of the screen. It plots **weight** on the vertical axis and **arm** on the horizontal axis, also known as a Charlie loading system.

> ### Note
>
> Some aircraft POH/AFM specify **moment** on the horizontal axis (loading system Bravo). To convert from a Bravo to Charlie loading system you must divide the **moment** by the **weight** for that data point to get the **arm** value to enter in OzRunways.

Take the values from the relevant section in your POH/AFM. It doesn't matter which point of the envelope you start at, but you must work sequentially clockwise or anti-clockwise thereafter.

You can define more than one envelope if desired. For example, many aircraft have a separate envelope for the 'utility' category, which can be defined by adding an extra envelope.
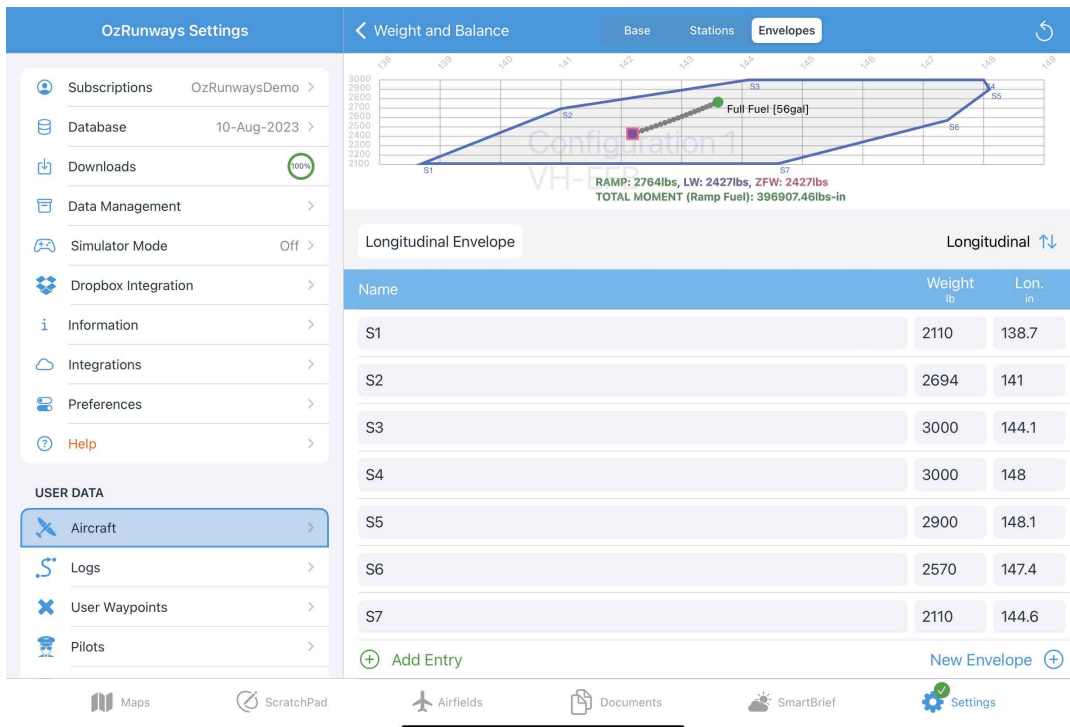
W&B setup - editing 'Envelopes' data in a configuration

Fuel Tables

Fuel tables provide a means of specifying the weight and corresponding movement of the fuel arm for complex aircraft - typically this will be aircraft with fuel tanks located at different arms. In essence a Fuel Table is used to specify the fuel arm for a particular weight and how this arm changed based on your burn profile. You *cannot* simply specify each individual tank and its arm, as OzRunways will not be able to calculate your W&B from this information alone.

The first step in using fuel tables is to turn the feature on. This is achieved by turning on **Use Fuel Tables** under the Weight and Balance heading in your aircraft profile.

> ## Warning
>
> If you inadvertently turn on Fuel Tables, you'll be in a world of hurt as your fuel calculations will cease to work unless you enter a fuel table. Only turn on fuel tables if you know what you are doing.

When 'Use Fuel Tables' is switched on the 'Fuel Capacity' for the aircraft back in the Fuel section will display [Table] next to the capacity. The capacity can no longer be changed there as it must be defined in the Fuel Table.

Image 10.9 shows a simple fuel table. It indicates full fuel of 56galat an arm of 153.8in, then from there fuel is burned down to 40gal where the arm is now 148.2in. The arm remains at 148.2in while the remainder of the fuel is burned down to 0gal.

Fuel table defined in W&B editor

> **Note**
>
> If you are having issues or are uncertain on how to create your fuel table, please get in touch with us and we can provide an explanatory document with a worked example.

Importing & Exporting

To export/share an aircraft, tap the profile in the list then tap the action button in the top right corner (square/arrow icon). The share sheet will appear and you can choose to export via a variety of options including AirDrop, Email, Dropbox, and others.

Aircraft Profiles can be imported in various ways. If somebody is sharing an Aircraft Profile with you via AirDrop then a prompt will appear with an option to 'Open with OzRunways'. If an Aircraft Profile file has been shared with you via some other method (email, dropbox etc.) tap and hold the file icon until the share sheet appears, then choose 'Copy to OzRunways'.

Duplicate

To copy/duplicate an aircraft profile, tap on the action button in the top right corner, then choose *Duplicate*. The new aircraft profile will appear in the list with '-1' appended to the registration.

GPS HUD

GPS HUD

The GPS HUD appears across the top of the Map Page. With no plan selected there is only one row of fields (6 on the iPad or 3 on the iPhone.)

When you begin to plan, the GPS HUD converts to a two row display. The plan is now active and if desired can track your position on the map and update the GPS HUD fields with information such as Track, Ground Speed, Distance To Go, etc. The far right bottom box is the 'Cancel' box which, if tapped, will exit the current plan. By default only a single tap is required, however there is an option in the Preferences section of the Settings page called 'Double-tap HUD' which when enabled requires a double tap on the Cancel button. This can be handy for turbulent conditions.

If you don't want the GPS HUD displayed tap the Map View Options button and turn off 'Show GPS HUD'. A long press on any of the GPS HUD boxes will bring up a list of available fields. Tap an item in the list to switch the GPS HUD box to the selected data option.

A single tap (or double tap if that setting is enabled) on one of the HUD boxes will open a larger popup showing that field on the main map display. That popup may be dragged around to reposition it, and is retired with a double tap or by tapping the red cross in the top right. These boxes remain on the map until dismissed even if the GPS HUD is turned off.

Some data requires an accurate GPS signal (think GS, ETA etc.), or an internet connection (QNH, TMP). If data is not available due to lack of GPS signal or internet connection then ` - - ` will be displayed.

In the top right corner of the GPS HUD there is a small coloured dot. This is explained below in GPS Accuracy Dot

HUD box options

Tap and hold (long press) on any GPS HUD field and a popup will result displaying various option as described below:

BRG (FROM)
> Bearing from the last waypoint

BRG(TO)
> Bearing to next waypoint

BULLSEYE
> Bullseye set on waypoints. The Bullseye feature is described in Special Features chapter

COM
> Compass. Note: Tapping the compass HUD box does not bring up a map overlay version

CRSR BRA

When the cursor is enabled, this will display the position of the cursor location in reference to your current position

CRSR BULL

When the cursor is enabled, this will display position of cursor in reference to the set Bullseye

CTA LL

Lowest Level CTA step for current GPS position (CTA must be ticked in Map View Options → Airspace)

CURSOR

Shows the coordinates of the cursor position in either Degrees Decimal Minutes (DD MM.M), or Degrees Minutes Second (DD MM SS) format

DA

Relative Density Altitude at nearest aerodrome

DFW

Distance from last Waypoint

DTG

Distance remaining until reaching next waypoint (great circle distance)

ETA

Estimated Time of Arrival at next waypoint

ETA(DEVICE)

Estimated Time of Arrival at next waypoint, displayed in local time (as per the device timezone)

ETA(LAST)

Estimated Time of Arrival for the final waypoint in the plan

ETE

Estimated Time Enroute

FIA

Area frequency (Class G) based on your current GPS position

FIA E

Class E airspace area frequency based on current GPS position

FIA NEXT

Next Class G area frequency based on your current heading

FIA/NXT

Current *and* next Class G area frequency combined into one box

FL

First Light at your current position

GCB(TO)

Great Circle Bearing to the next waypoint. When this option is selected the app will display the Great Circle (curved) track for your plan as a grey dotted line, in addition to the standard magenta track.

GPS ALT

Altitude according to the device GPS source

GPS Error

Displays the current GPS error as calculated by the device. The lower this is, the better fix you have. Normally it is around 10m. It can be used to give you an indication of the best place to position your iPad in the aircraft.

GS

Ground Speed in the units selected for the aircraft profile in use

HAG

Height Above Ground based on GPS altitude and the current terrain altitude to estimate your height rather like a synthetic ground radar. As the terrain data is on a 900 metre grid, this can be in error for rapidly changing terrain (i.e. a cliff face)

HSI

Horizontal Situation Indicator. A mini version of the HSI is displayed. At the bottom of the mini-HSI a 't' bar indicates deviation left or right of track. The arrow indicates the bearing to the waypoint to which you are tracking. Tap once to see full sized HSI display on map page which is described in further detail below.

LAT

Current GPS latitude

LAT/LON

Current GPS latitude/longitude consolidated in one box

LCL

Local Time (device timezone)

LL

Last Light for your current GPS position

LON

Current GPS longitude.

LSALT

Lowest Safe Altitude. Displays the Airservices Grid Lowest Safe Altitude for your current GPS position

NZ FREQ

Displays the relevant New Zealand OCTA MBZ/CFZ/FISCOM frequency for your current GPS position

NZ FREQ NXT

Displays the next relevant New Zealand OCTA MBZ/CFZ/FISCOM frequency based on your current heading

QNH

Displays the SmartBrief QNH for the nearest airport with a METAR service. If the SmartBrief database is more than 1 hour old '– –' will be displayed.

Warning

OzRunways HUD box QNH is **not** an approved source of actual QNH.

SELF BULL

Displays the bearing from your current position to the set Bullseye

SUNSET

Sunset time at your current GPS position

TDR

Total Distance remaining to the next landing point in your plan

TMP

Temperature at closest METAR location

TRK

Current GPS track

TRN

Turn Indicator

UTC

UTC (Zulu) Time

VS

Vertical Speed

XTK

Cross Track Error

Horizontal Situation Indicator (HSI)

The HSI is a special case, in that when selected as a GPS HUD field, a small display is shown. A single tap (or double tap if that setting is enabled) on a HUD box containing the HSI results in a fully fledged HSI being displayed on the map as shown on the left in Image 11.2
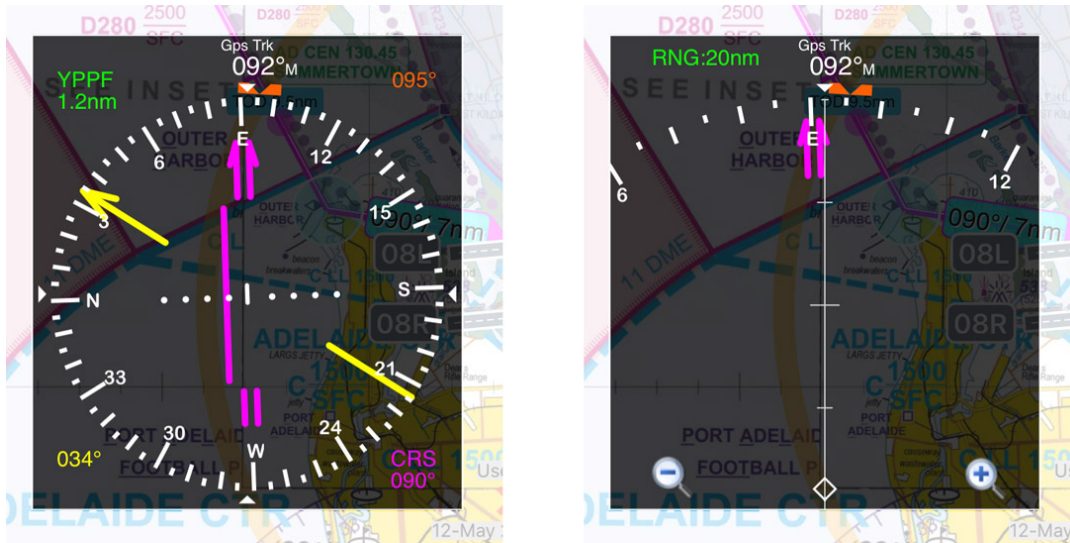
(Left) traditional HSI view (Right) HSI range view

The yellow arrow (and text) is the GPS track. The purple arrow is the course to the next waypoint. There is an orange bug that can be tapped, held and moved to set a direction (i.e. a runway direction for situational awareness). The green text is the destination name and distance. The figure above shows a view of the HSI where the aircraft has drifted right of track. This is indicated by the misalignment of the arrows and indeed the values reported on the HSI. The dots in the centre of the HSI represent 2 degrees per dot.

Tap three times on the HSI to see a 70 degree view ahead of your track (as shown on the right in Image 11.2). Range buttons in the bottom left and right (+/-) can be used to increase or decrease the range, which is shown in green at the top left. ADs and ALAs are shown in their relative position and distance. Three taps gets you back to the original HSI display.

GPS Accuracy Dot

In the top right corner of the GPS HUD there is a small coloured dot. The colour of the dot gives a quick visual indication of horizontal GPS accuracy as follows:

Green: Good accuracy, 50m or less

Yellow: Poor accuracy, between 50m and 200m

Magenta/purple: Very poor accuracy, between 200m and 5km

Red: No GPS signal

If horizontal GPS accuracy is worse than 200m (i.e. a magenta or red dot) OzRunways will no longer display your location on the map, other data in the HUD that relies on GPS position may no longer function. If this happens, check that OzRunways has the approproiate permissions to access location services in the device settings. You may need to move the device to a different location in the aircfaft away from any obstructions.

Terrain and Airspace

LSALT assistant

> ## Note
>
> *Available in OzRunways v10.3. Requires iOS / iPadOS 13 or above, and an Australia/NZ Premium subscription*
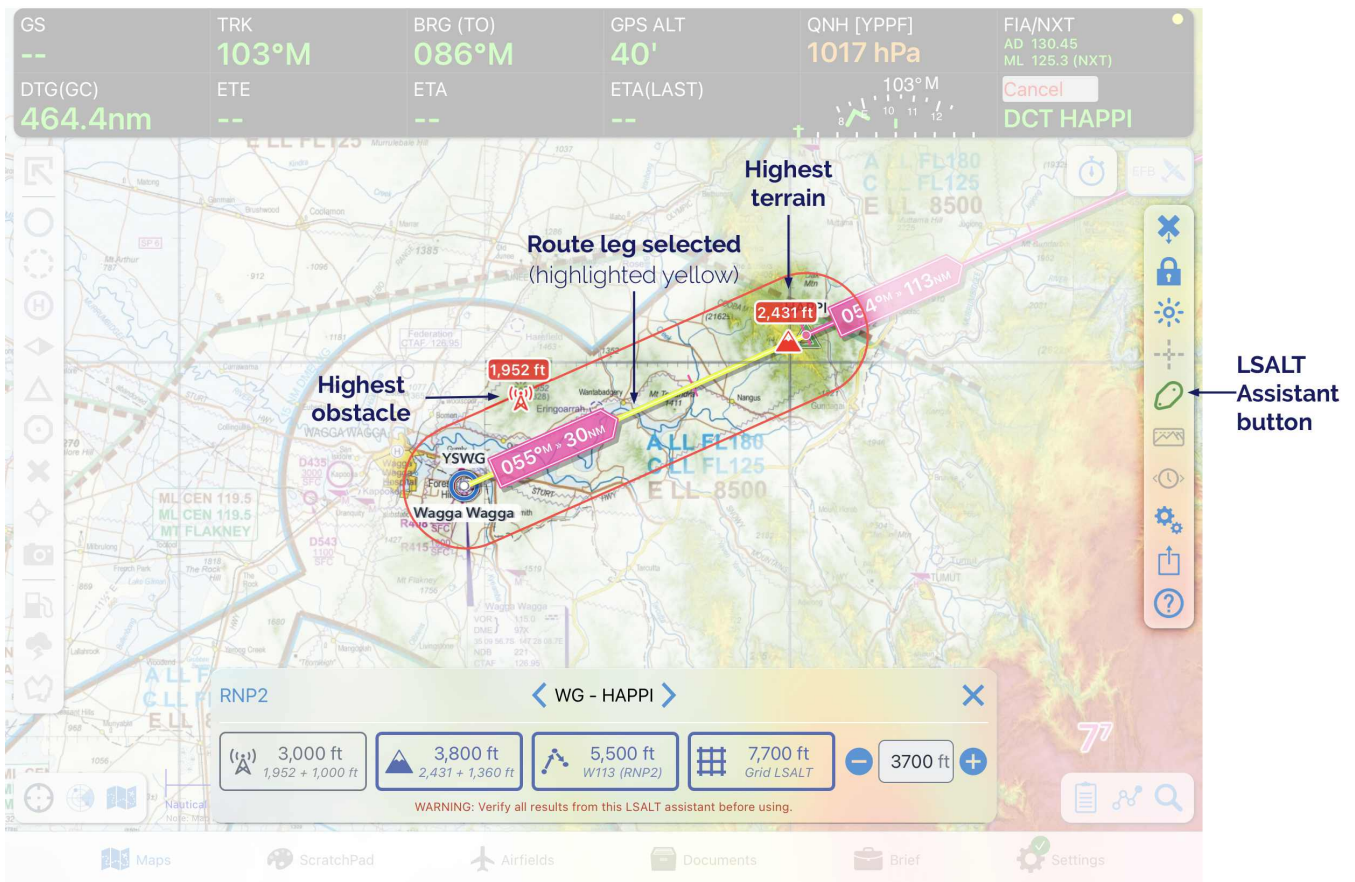
LSALT assistant

To open the LSALT assistant make a plan and select (tap) a leg, the leg will highlight yellow and the LSALT assistant button will appear on the Right Sidebar as in Image 12.1

The LSALT assistant uses the obstacle dataset from Airservices Australia, and terrain data from NASA. The assistant will find the highest obstacle and terrain, within the selected splay, for each leg of your plan and overlay these on the map. The assistant will then provide LSALT options based on this information with appropriate buffers, as well as route and grid LSALT options as applicable (as shown in Image 12.2). Opening the LSALT assistant also turns on the Terrain Overlay. The function of the Terrain Overlay when using the LSALT assistant is described below.
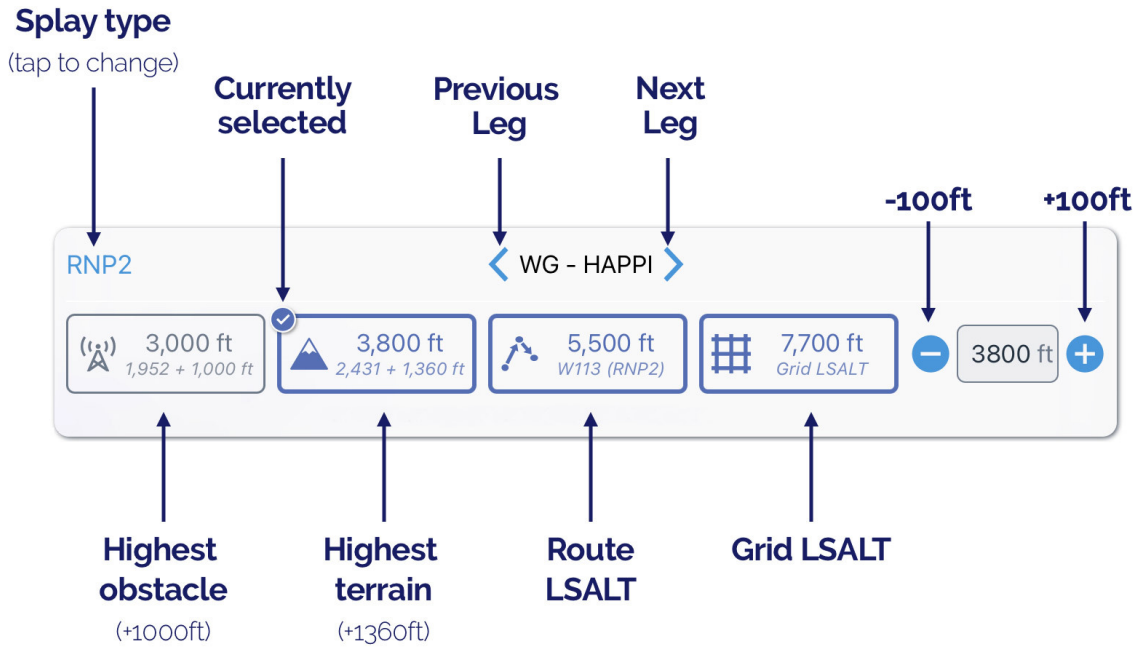
LSALT assistant legend

Tap on the desired LSALT option, or manually set the LSALT for that leg using the '−' and '+' buttons. You can also tap and type into the text field. The value set here will follow through into the plan sheet.

As you adjust the LSALT the Terrain Overlay updates to give you an indication of terrain height relative to the selected LSALT. Yellow shades show terrain that is approximately 1360ft below the selected LSALT. Anything red indicates less than 1360ft buffer between terrain and the selected LSALT. The Terrain Overlay is a tool to help you visualise terrain and should not be used for terrain avoidance.

A video demonstration of the LSALT assistant is available on our YouTube channel.

Terrain Overlay

Note

Available in OzRunways v10.3. Requires iOS / iPadOS 13 or above, and an Australia/NZ Premium subscription
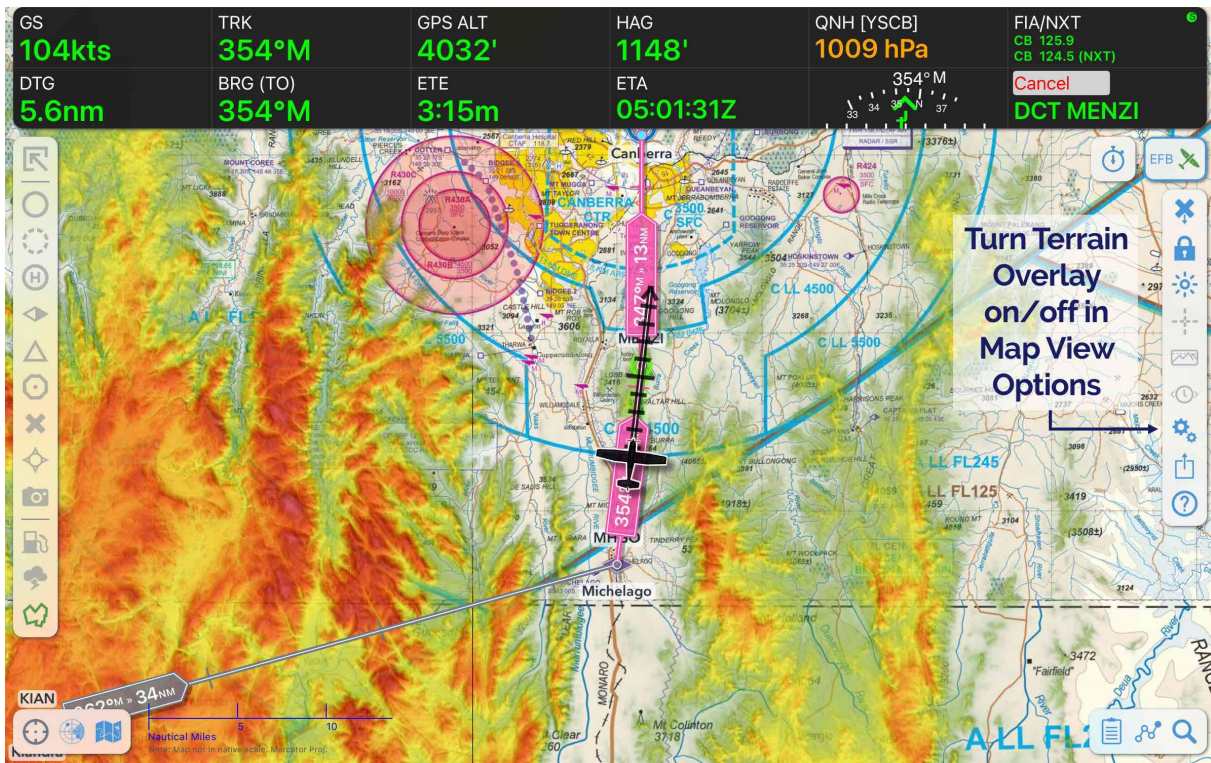
Terrain Overlay

The Terrain Overlay can be turned on/off in Map View Options (Cogs)

The Terrain Overlay is an aid to visualise surrounding terrain. In flight, yellow shades indicate terrain that is close to your altitude. Red is anything above you. When on the ground, and for 1 minute after takeoff, the Terrain Overlay will use airfield elevation + 1500ft to prevent you seeing a 'sea of red'. As you descend to land the Terrain Overlay will stop adjusting once it recognises you are 'on final' (i.e. passing 3NM straight-in, or lining up on 500ft). If a missed approach or go around is detected the Terrain Overlay will immediately resume until it detects you are on final again.

When used in combination with the LSALT assistant the function of the Terrain Overlay is slightly different, see LSALT assistant above.

The Terrain Overlay is a tool to help you visualise terrain and should not be used for terrain avoidance.

Horizontal Terrain

Prior to using the Horizontal Terrain feature you should check that your airspace display list is configured correctly. You will find this in Map View Options → Airspace. In general you will want CTA, CTR and PRD selected. This will result in the cleanest display and also show the most important airspace from the point of view of infringement. You should also ensure that you have the terrain data downloaded in Settings → Downloads.

The Terrain and Airspace display has two modes, Plan and Fly.

Plan Mode

Horizontal Terrain - Plan Mode

In Plan mode the terrain and airspace along the selected segment (a segment is defined as takeoff to landing) will be shown. You use this mode in conjunction with the map and by reference to the ground, to determine altitudes to avoid infringing airspace and terrain.

To enter Plan mode, tap on a track segment on the map (the magenta line). The selected track segment will turn yellow, and the terrain and airspace details will be displayed in the Terrain and Airspace viewer. In Image 12.4 we have selected the SPR to YMIA segment.

You can swipe your finger sideways to move between segments. The selected segment is reflected on the Map Page as a yellow track line. You can swipe your finger up and down to increase or decrease your altitude for that segment, the new altitude is then reflected on the Plan Sheet.

Double tap inside the Terrain and Airspace window and the mode will switch to an overview of all segments. You can still swipe your finger to change between segments and adjust altitudes in this view.

The wind (if wind is entered in the Plan Sheet) is depicted by wind arrows every 2000'. The arrows are red if the wind is a headwind and green if the wind is a tailwind. Wind barbs indicate wind speed with every full length barb representing 10 knots and the fractional barbs proportionately.

Flight levels are displayed across the entire width of the window. They are colour coded i.e. green if it conforms to the recommended hemispherical levels (for VFR or IFR) or orange otherwise.

Fly Mode

Horizontal Terrain - Fly Mode

When you are in Fly mode (no track segment selected) the display shows the terrain and airspace in front of you at a scalable range up to 80NM. Adjust the range by swiping left or right in the window.

The height of the highest point in front of the aircraft for the range shown is labelled. Your GPS altitude is shown at the top left of the display. Any ADs or ALAs in front of the aircraft are displayed along with their altitude and distance from the aircraft's track with an offset left or right.

If you tap somewhere within the display any airspace under the tap point will be displayed on the main map page and noted in the terrain/airspace display. For example, in Image 12.5 we can see 'Adelaide CTA C3' is highlighted on the map, and the corresponding tap point in the Terrain & Airspace viewer is denoted by an 'X'.

Active Restricted Airspace System
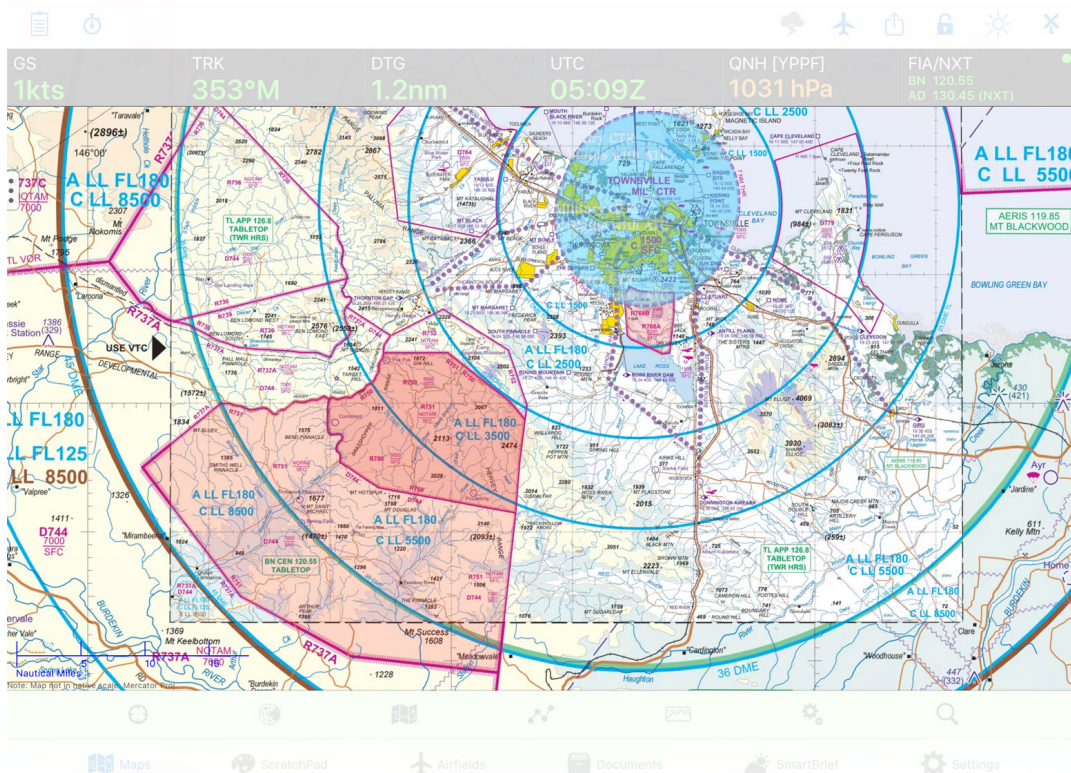
Active restricted airspace

The option to highlight active restricted areas is found in Map View Options → Airspace. When enabled, currently active restricted airspace is shaded **red**. Airspace that will be active soon (within 1 hour) is shaded **orange**.

The status of restricted airspace is determined using the NAIPS Restricted Area Briefing **and** by interpereting NOTAMs. OzRunways requests the NAIPS restricted area briefing every 10 minutes and updates the shading accordingly.

> ## Note
>
> Your device requires an internet connection in order to receive updated Restricted Area briefings

In some cases we may manually add Temporary Restricted Areas (TRAs) from AIP SUPs to the map. If activation times are clearly defined in the SUP, or triggered by a NOTAM, the area will be shaded red while active. If activation times aren't defined we may permanently shade the area red to bring it to the attention of pilots. In all cases, please confirm the status of airspace activation before entry.

Military CTRs (e.g. Townsville MIL CTR displayed in Image 12.6) are Class C airspace, not restricted areas, and so they are shaded **blue** when active.

User Waypoints

A User Waypoint is a custom waypoint that you can create anywhere on the map. They can be used in flight planning just like any other waypoint. User Waypoints can also be shared with other OzRunways users.

Creating a User Waypoint

User Waypoints can be created two ways:

1. Tap on the map where you would like to create the waypoint. The Closest Points popup will appear, tap the blue '+' in the top left corner. Tap 'Create User Waypoint'. The newly created User Waypoint will appear on the map as a red 'X'.

> **Note**
>
> If the Cursor is switched on, the waypoint will be created at the cursor location (crosshairs) instead of the tap point; a quick and easy way to accurately place waypoints.

2. Use the Search function on the Map Page to enter coordinates. Various formats are accepted: Decimal degrees, degrees decimal minutes, degrees minutes seconds, UTM… Enter the desired coordinates and then tap on the resulting entry in the list. Tap 'Create User Waypoint'. The waypoint will be created at the selected coordinates.

Editing a User Waypoint
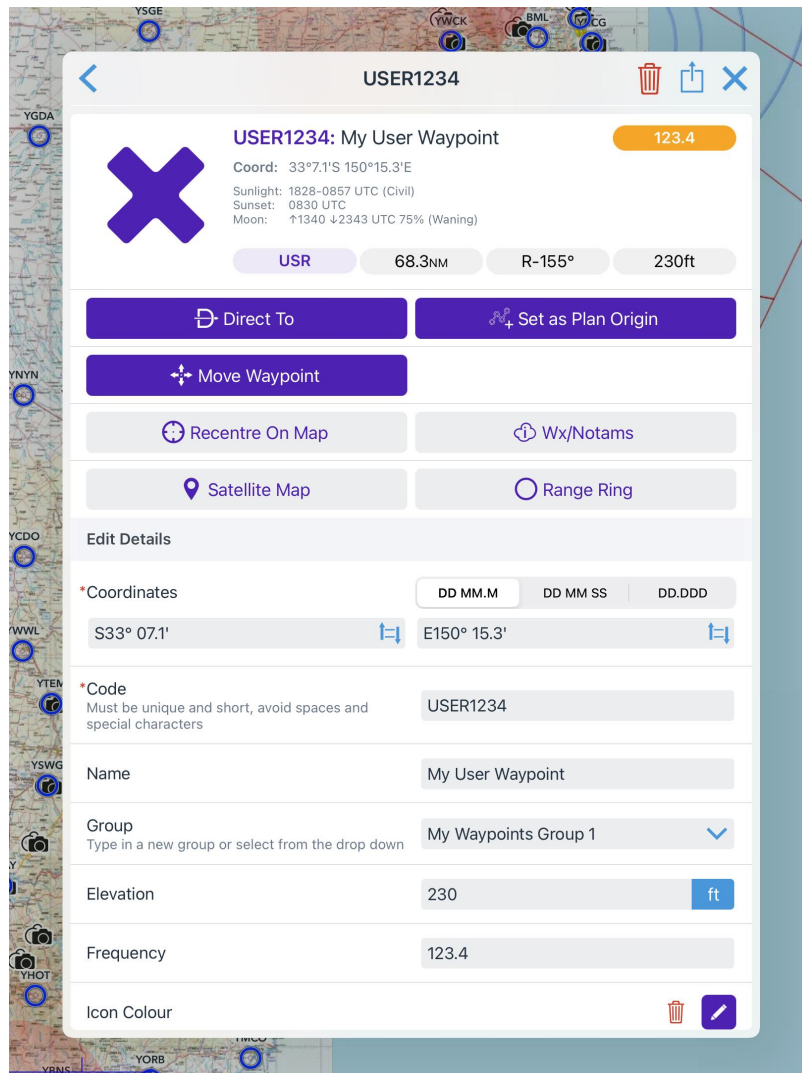
User Waypoint editor

To edit a user waypoint tap near it on the map, select it in the resulting Closest Points popup, then scroll down and edit the fields as required.

Alternatively, you can use the User Waypoint editor in Settings → User Waypoints as shown in Image 13.2.
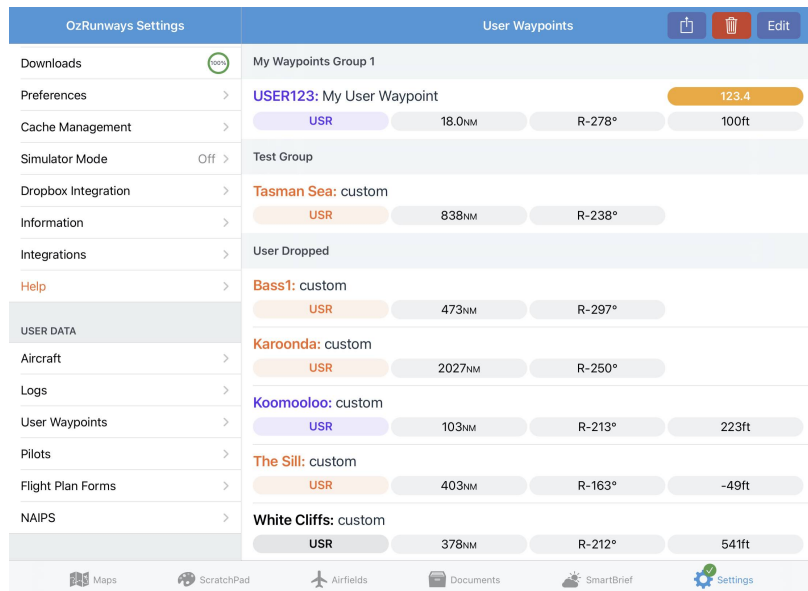
User Waypoints on the Settings page

Waypoints are shown in their respective groups. Tapping on a waypoint allows you to view and edit the information.

There are controls at the top right for Editing, Exporting and Deleting. Tapping the edit button allows you to multi-select waypoints which you can then delete or share using the respective icons. After tapping the Edit button, grab handles (three horizontal lines) appear at the right of each waypoint. Use these grab handles to rearrange waypoints or move them in to different groups. Tap and hold the grab handle and then slide the waypoint around to move it.

Tapping the share button allows you to export a single or multiple groups of waypoints in GPX, CSV, or URL format. Exporting via GPX or URL only includes the waypoint code, name, group and location. Exporting via CSV also includes elevation, frequency, colour and notes.

Tapping the delete button allows you to delete a single or multiple groups of waypoints.

Importing / Exporting User Waypoints
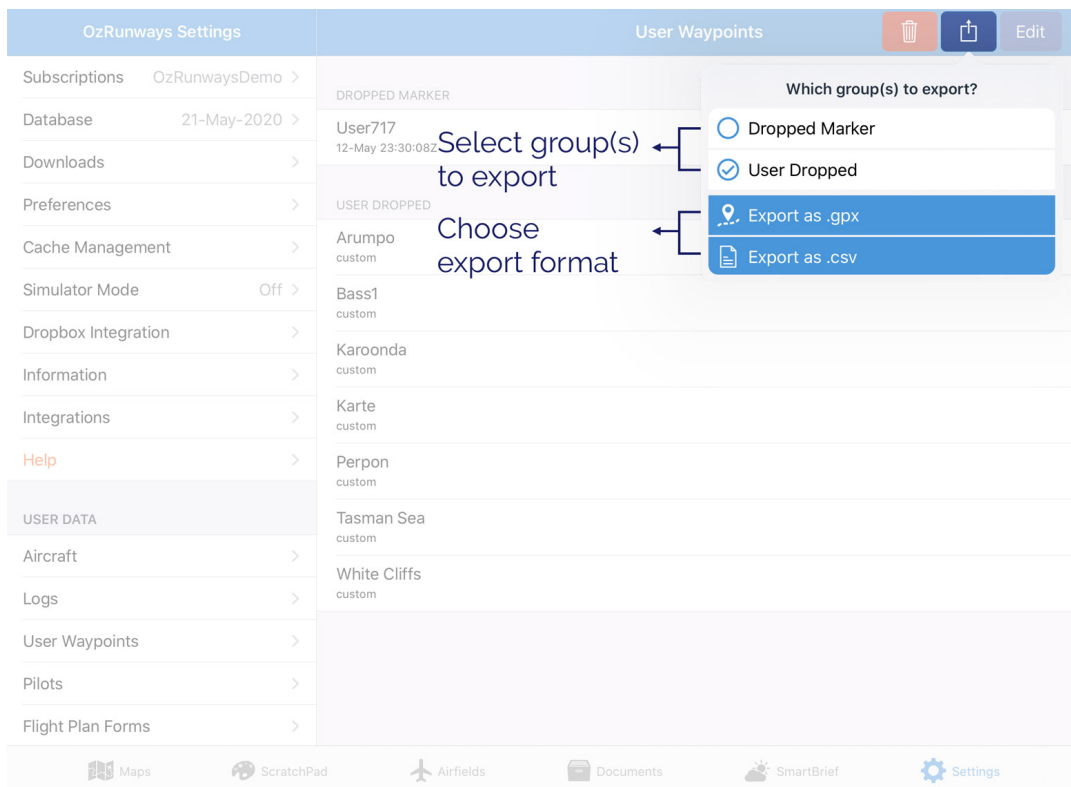
Exporting user waypoints

Exporting

Tap the Share icon in the top right corner (square/arrow). A popup will result allowing you to select groups of waypoints. Tap on a group and a checkmark will appear next to it. Select all groups that you would like to export and then choose either Export as .gpx, or Export as .csv The share sheet will appear allowing you to choose how to send the file.

Select the "Share as link" option to generate an "ozwpt://" URL. This method is described below in further detail.

Importing

User Waypoints can be imported in various ways. If somebody is sharing waypoints with you via AirDrop then a prompt will appear on your screen with the option to 'Open with Oz RWY'. If a User Waypoint file has been shared with you via some other method (email, dropbox etc.) tap and hold the file icon until the share sheet appears, then choose 'Copy to Oz RWY'.

Waypoint URLs (ozwpt://)

Waypoint URLs are automatically generated when selecting the "Share as link" option in the user Waypoint Export popup or the "Editing a User Waypoint" dialog, above. However, they can also be created manually following the format below:

`ozwpt://` *coordinate OR radial range OR ICAO code* `?code=` *waypoint code* `name=` *waypoint name* `group=` *waypoint group*

The `?` (question mark) and following parameters are optional.

For example: `ozwpt://YPAD040100` would be a radial range waypoint at 040⁰ 100NM from YPAD. To give it a name and code you would use `ozwpt://YPAD040100?code=ADRR&name=AdelaideRadialRange`

> ## Note
>
> URLs cannot directly contain spaces. In order to achieve a space you will need to use **%20**. This is known as URL encoding, if you need some help there is a handy tool available here: https://www.urlencoder.org

> As an example, the two **%20** parts of this name are replaced by spaces, so the waypoint would be named "Adelaide Radial Range":
>
> ```
> ozwpt://YPAD040100?code=ADRR&name=Adelaide%20Radial%20Range
> ```

The coordinates can be provided in degrees, minutes, seconds or decimal degrees, in the formats accepted by the search popup. For example:

- ozwpt://S345156E1383322?name=Sample%20DMS%20point is the point 34° 51' 56" S 138° 33' 22" E.

- ozwpt://S34.866E138.556?name=Sample%20DD%20point is the point 34.866° S 138.556° E (the same point expressed as decimal degrees).

Tap on an ozwpt:// URL and OzRunways will open and show a User Waypoint dialogue, as depicted in Image 13.4
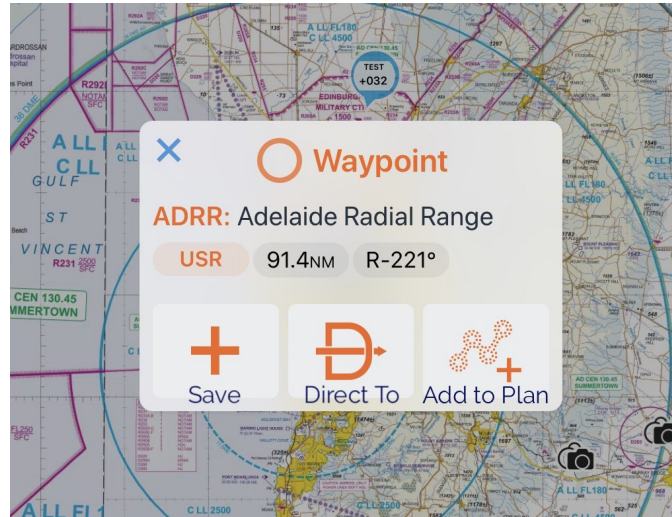
Import from ozwpt:// URL dialogue

Logs

Logs

All new flight logs will appear in Settings → Logs. Logs created prior to OzRunways v6.7 are still available in Settings → Track History (old system).

Your location will be logged while OzRunways is open or running in the background. After 15 minutes in the background (3 minutes on iPhone) without movement (speed stays below 11kts) OzRunways will stop logging.

If you've set your Air Switch speed to something sensible (Vs0 minus 10 kts is a good guide), we'll automatically detect and log your flights. These will then appear in Settings → Logs. (Note that you will only see your flight there AFTER you are below your air switch speed, not during your flight.) Landings, including touch & go's, are automatically logged. Departure and arrival aerodrome/ALA is automatically recorded if the aerodrome/ALA is in our database.

Tap on a log to view and edit the details. Below is a brief description of each field:

Trip Name

Enter a name for the log file. Exporting to GPX will use this name as the file name.

Start/End

Adjust the start and end time of the log file. The track log will update to show the flight path during the selected time frame.

Duration

Total flight duration including taxi time. Essentially, this is engine time.

From/To

Departure and arrival airport.

Aircraft ID / Aircraft type

If you are flying a plan, this will be filled automatically from your aircraft profile. Else, you can enter this yourself e.g. VH-EFB.

Flight Crew: PIC

The name of the PIC.

Flight Times: PIC

PIC flight hours.

Landings

The number of landings including touch & go's. This information is recorded automatically if your Air Switch is set to auto.

Exporting

Logs can be exported as a GPX file which can be opened in Google Earth or other mapping software. Tap on the log entry you would like to export, then tap the share icon in the top right corner (square/arrow). The GPX file name will mirror the 'Trip name' field. GPX files includes track, altitude and speed information. If you have a Premium subscription, you can export to LogTen Pro.

Troubleshooting

If your location is not being logged, or log entries aren't automatically being created, check the items below:

- Ensure location services are switched on for OzRunways in your devices' Settings app → Privacy → Location Services.

- OzRunways must be active for the duration of your flight in order for a Logs entry to be automatically created. If you close OzRunways (by double pressing the home button and 'swiping up') then a Log entry will not be automatically generated.

- Set your Air Switch (in the 'Timers' menu) to something sensible e.g. Vs0 minus 10kts.

- Use the 'Add Flight' button in Settings → Logs. Enter a start and end time for the log and your track history between those times will automatically populate.

Traffic

OzRunways Traffic **ADS-B Traffic**

OzRunways Traffic System (in-app)
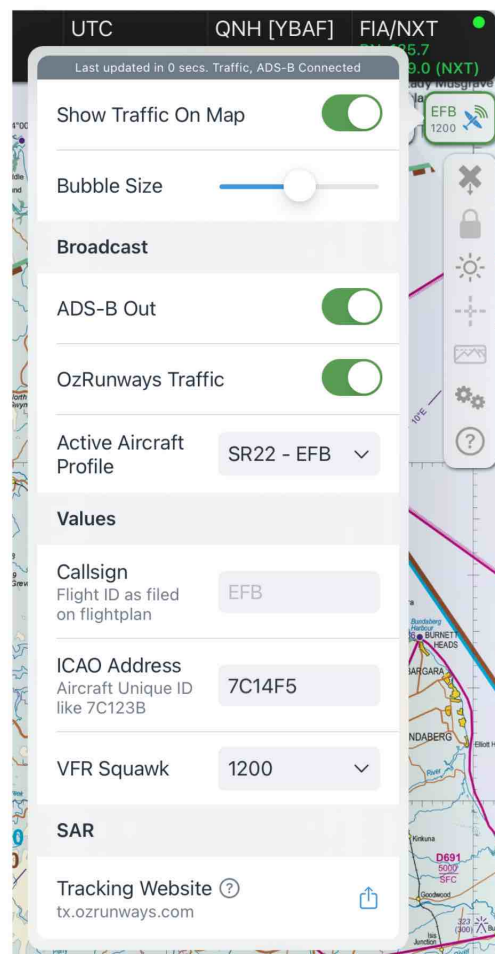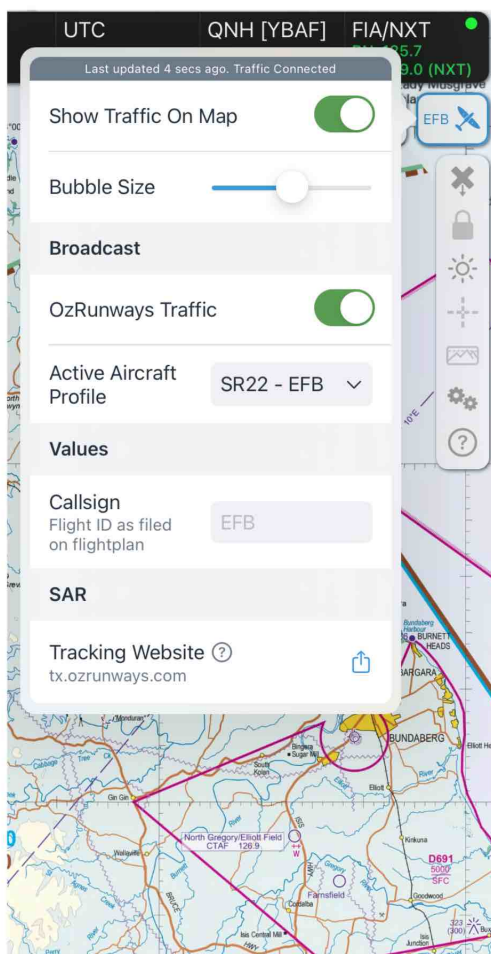
*Left: Standard traffic popup **Right:** Popup with SkyEcho connected (iOS 13 or above required)*

The image above shows a typical Traffic Popup as accessed from the Maps page (see Traffic / Timers).

OzRunways has implemented a traffic system based on the use of mobile (3G/4G) networks, we call this *OzRunways Traffic*. This is separate to ADS-B Traffic which is covered below. The way *OzRunways Traffic* works is as follows. If you opt in and are network connected, the App detects whether you are flying. If you are, it starts sending data packets to the OzRunways server via the mobile network. These packets hold your callsign, your position, heading and climb/descent rate. In addition, if you have an OzRunways plan open, that plan is also relayed to our server. The traffic system data usage is below 1 megabyte per hour (very minimal). The server receives the data and determines whether there are any aircraft in your vicinity and sends those aircraft back to your App, which

are then displayed on the Map Page. The traffic displayed is the closest 18 actively flying aircraft to your current location.

Each blue traffic icon / traffic bubble displays a callsign as specified in the Callsign field of the Traffic Popup. If no callsign is specified here, it will use the callsign from the aircraft profile in use. If neither of these options are available the dummy callsign 'Unknown' will appear. Below the callsign is the altitude relative to your current altitude in 100's of feet. For example in the image at the top of the page 'EFB' is approx. 10,200ft above us, and 'SYC' is approx. 900ft below. Additionally, the direction of travel is indicated by an arrow on the circumference of the circular icon. In the figure, 'EFB' is tracking west, and 'SYC' is tracking northeast. The '■' and 'V' symbols inside the circle indicate climbing or descending respectively. If you tap on a traffic icon it will momentarily enlarge, and if the user has an OzRunways plan active it will display that plan as a purple line.

> ## Note
>
> Relative traffic height is determined by comparing the reported GPS altitude of each device, therefore some margin of error is possible. This information is for situational awareness and should not be relied upon for traffic avoidance.

Setup & Options

The first time you start the app you are prompted to enable or disable the traffic system. You can turn the system on or off any time by tapping on the Traffic icon on the Maps page.

If you wish to see other OzRunways traffic on the map you must also broadcast your own position.

A single tap on the traffic icon reveals the traffic system options as shown above in Image 15.1. A 'tap and hold' on the traffic icon will momentarily enlarge all traffic bubbles on the map. Included in the traffic options is a slider to increase or decrease the size of all traffic bubbles.

The elements of the traffic icon gives a visual indication of the status of both the OzRunways traffic system, and any connected ADS-B device.

Traffic icon legend

Image 15.3 below demonstrates the appearance of the traffic icon under the following conditions:

- OzRunways traffic broadcasting

- SkyEcho ADS-B OUT broadcasting using callsign EFB, and squawk code 1200

*OzRunways **and** ADS-B OUT broadcasting*

> ## Note
>
> The OzRunways traffic system will only broadcast your position to other users when it detects you are flying. I.e. the aeroplane symbol won't be green unless you are flying.

tx.ozrunways.com (traffic wesbite)

OzRunways traffic is also displayed on the website https://tx.ozrunways.com This is displayed on a normal web browser (not the app) and there is no restriction to the number of traffic displayed. Aircraft are illustrated on the map as blue traffic bubbles. Tap on any of these bubbles for more information. If a plan is available for the selected aircraft it is displayed in blue. Use the menu bar on the left of the page to access more options such as restricted area overlays and and various map overlays.

The traffic website keeps a history previous flights you have completed (provided you had the traffic system switched on and working). Tap on 'My Flights' at the top of the website and log in with your OzRunways username to see your flight history. A list of flights is presented with some icons to the right of each entry. You have the option to share your flight via Twitter or Facebook, or you can preview the flight on the map or download it as a KML or GPX file.

ADS-B Traffic

OzRunways supports ABS-B receivers that connect via WiFi and use the GDL90 protocol.

ADS-B Receiver Setup

Connect your iPad or iPhone to the ADS-B receiver in iPad Settings → WiFi. (Note: The 'No Internet Connection' warning is normal)

The receiver should now be sending information to OzRunways. Check that the receiver appears in OzRunways → Settings.

Own Ship

If you are using an ADS-B receiver in an ADS-B OUT equipped aircraft, OzRunways can use the information from your ADS-B OUT signal for more accurate traffic height comparisons. OzRunways will first try to detect your 'own ship' signal by using the ICAO address entered in your aircraft profile. If this is not available then some logic is applied to nearby traffic to try and determine a match. When OzRunways identifies a suitable match it will indicate this by turning the traffic bubble green as shown in Image 15.4.

ADS-B Receiver Troubleshooting

If you have confirmed that you are connected to the ADS-B receiver via WiFi and it is still not working follow these steps:

Open OzRunways and go to Settings → Device Options. Ensure that 'Enable GDL90' is switched on.

The receiver should appear as a menu item in the Settings menu underneath 'Device Options'. Tap to view device statistics including the number of currently visible ADS-B aircraft.

Your iDevice can only be connected to one WiFi network at a time. If you usually 'hotspot' internet from another source (such as a phone) you may not be able to do this concurrently, unless you can connect to the hotspot using Bluetooth instead.

Check that you are using the latest version of OzRunways in the App Store app. OzRunways receives regular updates with new features, improvements, and bug fixes.

On the map page, ADS-B traffic is displayed just like regular OzRunways traffic but in a darker shade of blue (Image 15.4)

Traffic bubbles

Portable ADS-B Out

Low cost, portable ADS-B OUT devices are coming to VFR aircraft in Australia!

These portable devices allow all pilots to enjoy the benefits of increased situational awareness, with **ADS-B IN** receiver functionality to see other aircraft on your EFB, **and ADS-B OUT** functionality so these aircraft can now see you too.

For comprehensive information on ADS-B Out devices and how they work with OzRunways, see this article on our knowledgebase: https://support.ozrunways.com/kb/en-gb/2-3rd-party-hardware-integrations

The traffic system, including SkyEcho settings, can be configured directly on the Map Page as demonstrated above in Setup & Options.

EFB Safety

In many instances, EFBs have largely replaced their paper counterparts in the cockpit. They have graduated from oddity to full time flight critical components. As a result of their criticality to many flights, we must examine in detail their failure modes and plan for these potential failures. A failure in an EFB means an inability to access the data you require. There are three main failure modes:

- Power failure
- Failure due to heat
- Absence of data

Power

An EFB is a battery operated device. Batteries have limited capacity. Therefore, we must plan for the limited battery lifetime of an EFB. The easiest way of prolonging battery life in a portable EFB is to plug into the aircraft power supply via (usually) a USB power adapter. If this is not possible, you can carry one of the many USB power packs. These can dramatically extend the useful period of your EFB. Finally, you can practice a 'power up' minimisation strategy for your EFB. This might be to use it as takeoff and landing and only intermittently while enroute to check your current position by reference to the map and the ground.

One of the major battery drains is the screen backlight, therefore if you lower your screen brightness to the minimum usable level this can drastically reduce power consumption and increase battery life.

Heat

EFBs can rapidly heat up if placed on the black dashboard and an aeroplane in the midday (Australian) sun. If the device gets too hot it results in a shutdown of the iPad while it cools off. To alleviate this condition, avoid placing the device in direct sunlight, or if that is unavoidable, try to direct some air onto the back of the device. If you exit the aircraft (while refuelling for example) place the device somewhere out of direct sunlight.

Data

Arguably the most likely failure mode is lack of data. This could be because the app crashes unexpectedly or the data just isn't loaded into the app. Maps and aeronautical data are loaded in an on-demand scheme. If you have a good network (read - you are at home), then as you change maps or access ERSA pages, the data is loaded seamlessly and you hardly know it's happening. However, if you have 'gone bush' and you are sitting under the stars with no network and you have not downloaded your maps and data you will see nothing, nix, nada, zip, butkus, zero, zilch, diddly-squat. Or, at best, a 'holey' map. So, to avoid this embarrassment in front of your flying friends, always download your maps and data that are required for a given trip. That means going to Settings → Downloads → (your region) and downloading everything you need. Be especially careful when leaving for a long trip in which the AIRAC cycle will switch over. Look at the top of the country page in downloads and see if there are two date panels (one in the future). If the future date is during your trip, tap that and download the maps and any other data (e.g. ERSA) that you require for the duration of the trip. A good practice, while in the peace and quiet of your home, is to download all of the ERSA and Approach Plates - it's not that much data on a fast network. For basic VFR maps, download the WAC, Open Street Map, Hybrid VFR, Planning Chart and ERC Low National. Also download the required Terrain Data (at the bottom). Download all of the ERSA.

Backup

It is foolhardy not to carry some backup if you are using an EFB. This can be in the form of another EFB or paper. Don't rely on a single EFB.

Navigation

Remember, OzRunways can only be used as a situational awareness tool and an aid to primary navigation by reference to the map and to the ground. Do not 'contour fly' controlled areas and do not rely on the GPS in the iPad as your primary source of navigation. It goes without saying that you may not use the app for IFR navigation.

Graphic Overlays

Graphical overlays may be used for a variety of functions. For example, one application could be the display of power lines for safety or inspection reasons. Another application might be to indicate search and rescue patterns. Any time you need a semi-permanent geographically defined overlay on an OzRunways map, this functionality may be used. Overlays are specified in the KML (Keyhole Markup Language) language which is used by Google Earth for the specification of geographic data. It may be displayed and defined/entered in Google Earth. KML is summarised at the end of this chapter. The underlying KML language is not for the faint hearted and it is not expected that a pilot understand this format. Much of the information in the latter parts of this section is for IT types. The pilot should concentrate on how to access overlays (next section).

Opening and Displaying Graphic Overlays

The first step in the process is to get the KML file into OzRunways. This is achieved by emailing yourself a KML file. Open the email on the iPad and press and hold on the attachment icon. Then select the 'Copy to Oz RWY' option. This is the same for any other data you are importing into OzRunways. The KML file is copied into OzRunways and displayed. Tap on the KML Overlays icon (see KML Overlays in the Map Page section) to reveal a menu where you can switch the overlay on/off. When on, the KML file name will be highlighted in light green in the list, and white when off. Toggle the KML file off/on by tapping it.

Some subscriptions already include a pre-loaded list of KML files available to use. These appear in the KML Overlays menu underneath user imported KMLs (if any), for example in New Zealand the Department of Conservartion (DOC) Protected Areas.

Swipe (right-to-left) on any KML file in the list to reveal more options. You can delete the file, or share it with other users.
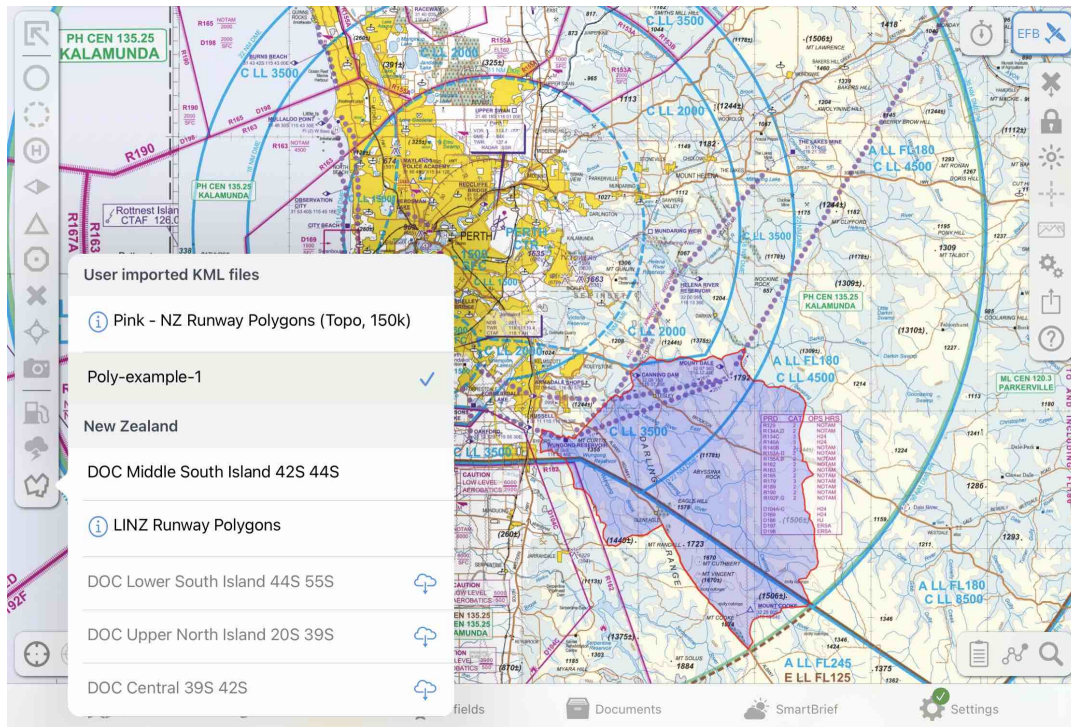
Example KML overlay

Intro to KML

KML is an extensive language and has many features. OzRunways implements a subset of KML that allows basic graphical overlays. Specifically, OzRunways can deal with:

- Placemarks (basically a location with a name)
- Polygons (a shape with a colour)
- Lines (an outline shape with colour and line thickness)

More complex shapes such as arcs and circles must be constructed from the above primitives. To review, in KML terms, currently, OzRunways deals with:

- Styles (including StyleUrls)
- LineStrings
- Points
- Polygons
- Placemarks

KML Examples

Simple KML Placemark

The first example is a KML Placemark. It looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
  <Placemark>
    <name>YSTW</name>
    <description>Tamworth</description>
    <Point>
```

```
      <coordinates>150.84833,-31.08333,0</coordinates>
    </Point>
  </Placemark>
</kml>
A Placemark is the simplest KML object. It has a name, description and position (Point). Poi
KML Placemark with Icon
A Placemark with an icon looks like this:
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
  <Placemark>
    <name>YSTW</name>
    <description>Tamworth</description>
    <Style>
    <IconStyle>
    <scale>1.3</scale>
    <Icon>
  <href>http://maps.google.com/mapfiles/kml/shapes/airports.png</href>
    </Icon>
    <hotSpot x="32" y="2" xunits="pixels" yunits="pixels"/>
    </IconStyle>
  </Style>
    <Point>
      <coordinates>150.84833,-31.08333,0</coordinates>
    </Point>
  </Placemark>
</kml>
```

The <Style> statement adds an icon which is scaled 1.3 times from it's base size. The icon comes from a Google collection although the web reference can be anywhere (i.e. you can define your own icons and use them). The 'hotSpot' parameter indicates where the icon may be tapped to display the name and description fields. The description field is HTML savvy so you can customise what information gets displayed when you tap on an icon (Placemark). This is extremely powerful and extensible and general purpose in nature. If you insert the description field then when you tap on the area, a popup will result. It has the side effect of shielding underlying waypoints. So if you have a large polygon but you wish to access waypoints underneath the polygon, omit the description field and place point items for identification (i.e. an icon).

KML Polygon

Next we show a KML Polygon. It looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
  <Document>
    <name>KmlFile</name>
    <Style id="transBluePoly">
      <LineStyle>
        <width>1.5</width>
      </LineStyle>
      <PolyStyle>
        <color>7dff0000</color>
      </PolyStyle>
    </Style>
    <Placemark>
      <name>YSTW Surround</name>
      <styleUrl>#transBluePoly</styleUrl>
      <Polygon>
        <outerBoundaryIs>
          <LinearRing>
            <coordinates>
              150.9,-31.1,0
              150.9,-31.2,0
```

```
               150.8,-31.2,0
               150.8,-31.1,0
               150.9,-31.1,0
            </coordinates>
          </LinearRing>
        </outerBoundaryIs>
      </Polygon>
    </Placemark>
  </Document>
</kml>
```

A polygon is defined as a list of coordinates as illustrated above. Styles can be defined at the start of the KML and referenced as 'StyeUrls' within particular polygons. The color field is a hex representation aaggbbrr where aa is transparency, gg is green, bb is blue and rr is red. A hex value of ff (255) would indicate full intensity (1.0 on a scale of 0 to 1.0). A hex value of 80 would indicate a value of 0.5 or half intensity. The color show (7dff0000) is a slightly transparent blue line. (We use the US spelling for color, as that is how Google defines it …. naturally).

KML LineStrings

Next we show a KML LineString (line). It looks like this:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://www.opengis.net/kml/2.2">
<Document>
<name>KmlFile</name>
<Style id="transPurpleLineGreenPoly">
    <LineStyle>
      <color>7fff00ff</color>
      <width>4</width>
    </LineStyle>
    <PolyStyle>
      <color>7f00ff00</color>
    </PolyStyle>
  </Style>
  <Placemark>
    <name>Absolute</name>
    <description>Transparent purple line</description>
    <styleUrl>#transPurpleLineGreenPoly</styleUrl>
    <LineString>
<coordinates>
150.9,-31.1,0
150.9,-31.2,0
150.8,-31.2,0
150.8,-31.1,0
150.9,-31.1,0
</coordinates>
    </LineString>
</Document>
</kml>
```

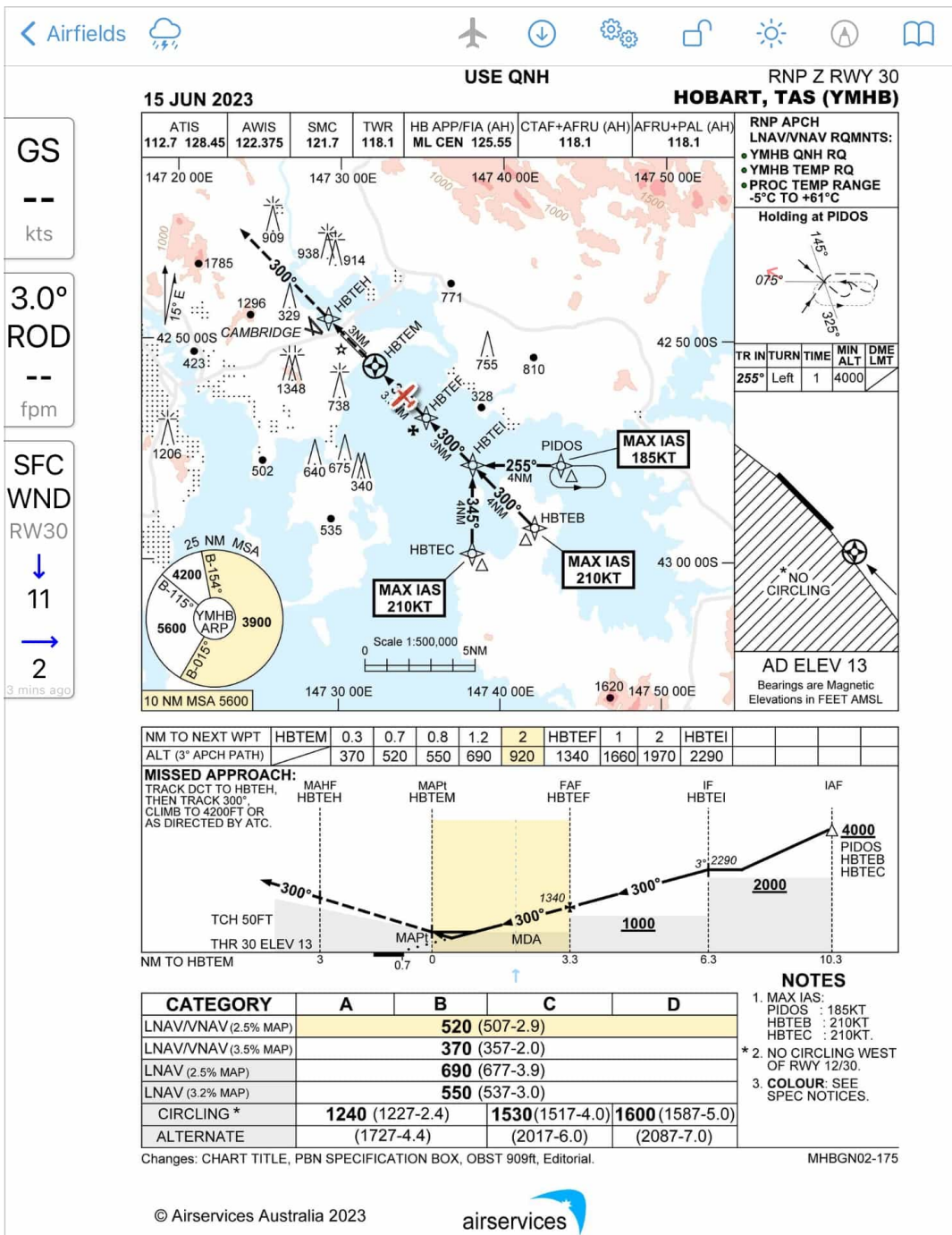LineStrings have a style and a list of coordinates. Through the style you can set the colour and thickness of the line.

Special Features

SmartPlates

SmartPlates dynamically highlights areas of an approach plate as you fly so that you can quickly and easily identify which phase of the approach you are in, and the relevant MSAs and minimas.

View the SmartPlates documentation on the Airfields Page to learn more!

USE QNH

RNP Z RWY 30
HOBART, TAS (YMHB)

15 JUN 2023

GS
--
kts

3.0°
ROD
--
fpm

SFC
WND
RW30
↓
11
→
2
3 mins ago

ATIS	AWIS	SMC	TWR	HB APP/FIA (AH)	CTAF+AFRU (AH)	AFRU+PAL (AH)
112.7 128.45	122.375	121.7	118.1	ML CEN 125.55	118.1	118.1

RNP APCH LNAV/VNAV RQMNTS:
- YMHB QNH RQ
- YMHB TEMP RQ
- PROC TEMP RANGE -5°C TO +61°C

Holding at PIDOS
145°
075°
325°

TR IN	TURN	TIME	MIN ALT	DME LMT
255°	Left	1	4000	

MAX IAS 185KT
MAX IAS 210KT
MAX IAS 210KT

* NO CIRCLING

AD ELEV 13
Bearings are Magnetic
Elevations in FEET AMSL

25 NM MSA
YMHB ARP
4200 / 5600 / 3900
B-154° / B-115° / B-015°
10 NM MSA 5600

Scale 1:500,000

NM TO NEXT WPT	HBTEM	0.3	0.7	0.8	1.2	2	HBTEF	1	2	HBTEI		
ALT (3° APCH PATH)			370	520	550	690	920	1340	1660	1970	2290	

MISSED APPROACH:
TRACK DCT TO HBTEH, THEN TRACK 300°, CLIMB TO 4200FT OR AS DIRECTED BY ATC.

MAHF HBTEH
MAPt HBTEM
FAF HBTEF
IF HBTEI
IAF

4000 PIDOS HBTEB HBTEC

300°
3° 2290
2000
1340
300°
1000
TCH 50FT
THR 30 ELEV 13
MAPt
MDA

NM TO HBTEM
3 / 0.7 / 0 / 3.3 / 6.3 / 10.3

NOTES

CATEGORY	A	B	C	D
LNAV/VNAV (2.5% MAP)		520 (507-2.9)		
LNAV/VNAV (3.5% MAP)		370 (357-2.0)		
LNAV (2.5% MAP)		690 (677-3.9)		
LNAV (3.2% MAP)		550 (537-3.0)		
CIRCLING *	1240 (1227-2.4)		1530 (1517-4.0)	1600 (1587-5.0)
ALTERNATE	(1727-4.4)		(2017-6.0)	(2087-7.0)

1. MAX IAS:
PIDOS : 185KT
HBTEB : 210KT
HBTEC : 210KT.

* 2. NO CIRCLING WEST OF RWY 12/30.

3. COLOUR: SEE SPEC NOTICES.

Changes: CHART TITLE, PBN SPECIFICATION BOX, OBST 909ft, Editorial.

MHBGN02-175

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airservices

Bullseye!

Setting a Bullseye

The Bullseye feature is useful to both Military and General Aviation pilots; when added to the GPS HUD the Bullseye provides bearing and range information from your current position to the set Bullseye (BULLSEYE option in the HUD), from the Screen Cursor to the Bullseye (CRSR BULL in the HUD), and from your current position to the Screen Cursor (CRSR BRA).

To activate Bullseye:

1. Press and hold on one of the GPS HUD boxes and select 'BULLSEYE' in the resulting menu. Repeat for CRSA BRA and CRSR BULL if desired.

2. Set the Bullseye position by tapping on the map → tap on the desired waypoint in the Closest Points popup → tap 'Set as Bullseye'.

Bullseye circles are scaled in 50NM increments, out to 500NM in degrees Magnetic (ºM). The circles correctly account for latitude scale variations at southern latitudes on Mercator projection maps. The Northern radial is darkened for reference. (NOAA worldwide magnetic model is used for calculating magnetic deviation - https://www.ngdc.noaa.gov/geomag/WMM/soft.shtml)

To disable Bullseye simply replace the BULLSEYE GPS HUD box with a different selection.

Range Rings

Range rings can be set on any waypoint. Tap near a waypoint on the map, select the waypoint in the resulting Closest Points popup, then tap 'Range Ring'. Turn on the Show / Hide Range Ring toggle and select your distance and colour options. An example is shown below in Image 18.2.
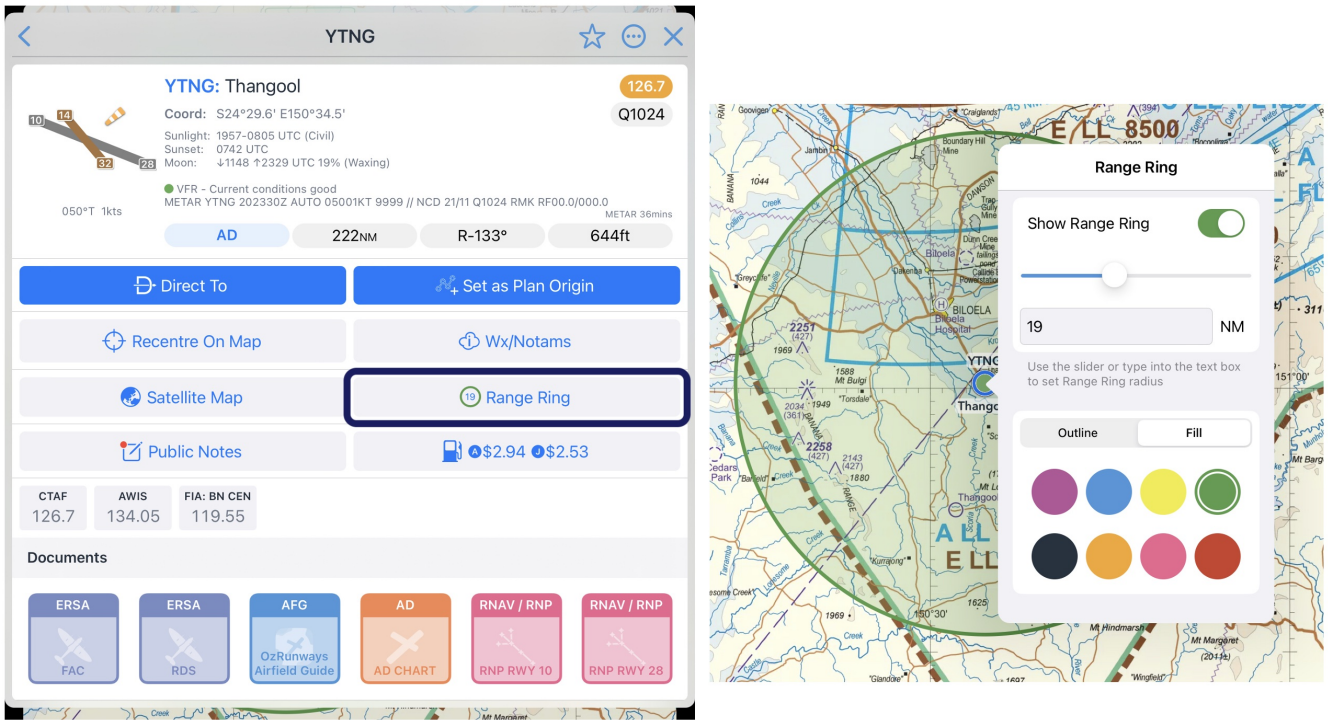
*Setting a Range Ring*

Offline Street Address Search

> **Note**
>
> Offline Street Address Search is available for Australia VFR & IFR Premium subscribers only.

This feature allows you to search for addresses or suburbs within Australia when you have no internet connection, within 300NM of your location.

Before using this feature you will first need to download the G-NAF (Geocoded National Address File) in **Settings** → **Downloads** → **Australia** → **G-NAF**
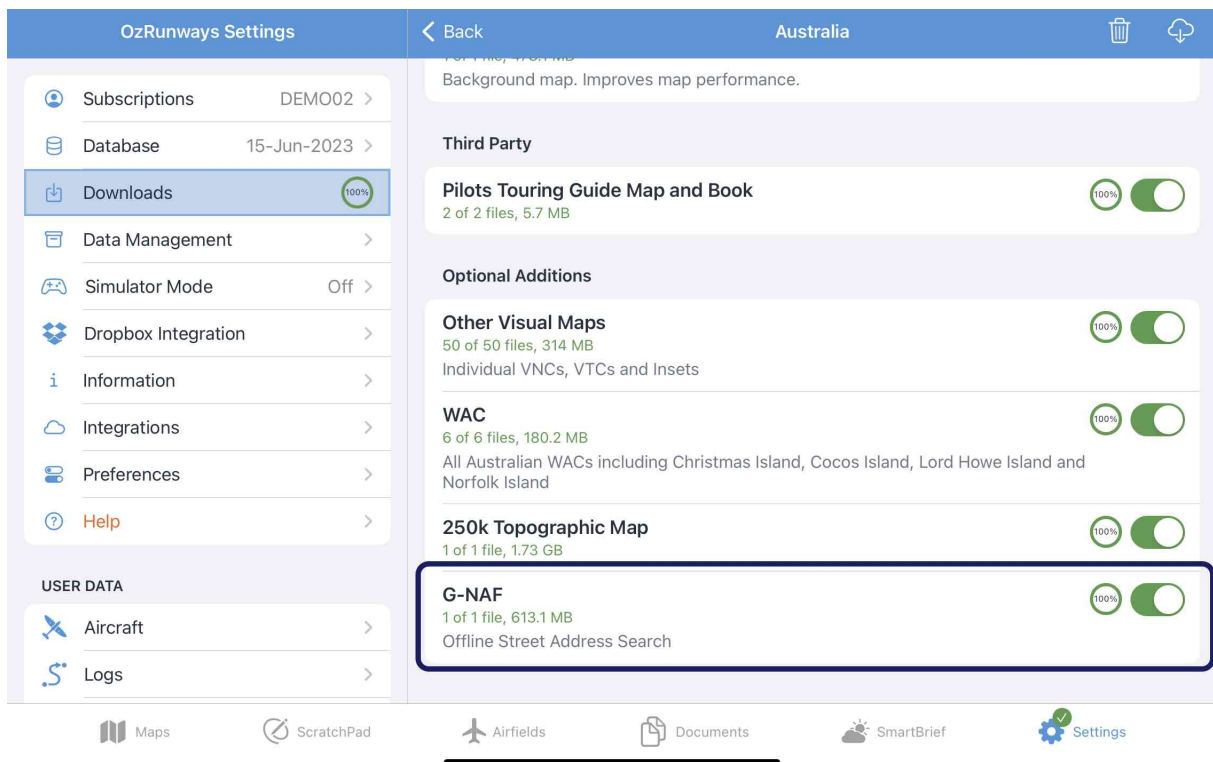
Once the G-NAF has finished downloading you can use the Search function on the Map Page to search for a street address, or suburb.
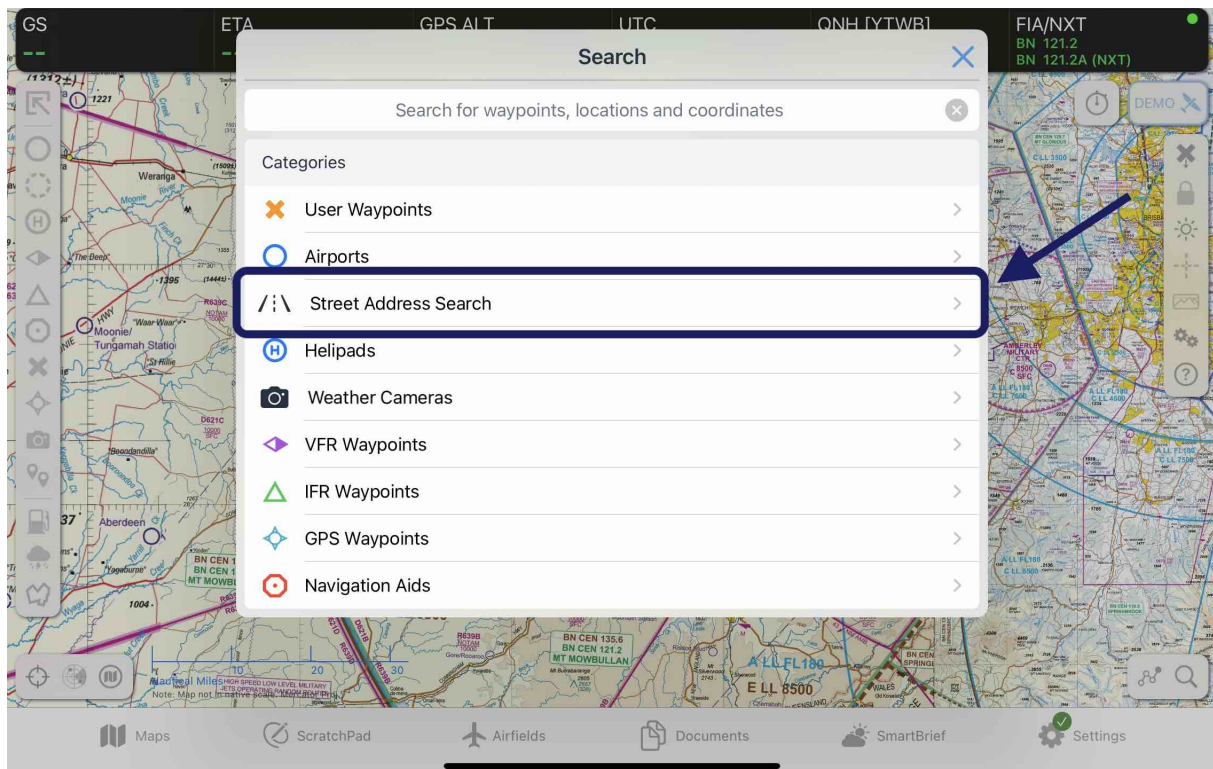
After tapping on **Street Address Search** type the desired suburb or select from the list, followed by street name, and finally number.

Glide Assistant

> ## Note
>
> This feature is in Beta and might not be available to you.

The Glide Assistant feature comprises of two features - a planning tool for PSEA (Australia) and SEIFR (New Zealand) operators, and a Real Time glide tool. This is enabled from the 'Map View Options'.


Real Time Glide Tool

The Real Time Glide Tool shows your glide range to ground level. It only activates when above 1,500 ft AGL and uses your current active Aircraft profile's Glide TAS and Glide Ratio figures. If you have any issues, first check Settings → Aircraft to ensure the correct figures are entered. Real Time glide range corrects for wind by using the GPWT profile wind half way to the ground. For example if you are cruising at 14,000 ft AGL it adjusts your range based on the winds at 7,000 ft.

> ## Warning
>
> The winds used are based on forecast winds. Actual conditions may differ, so use with caution.
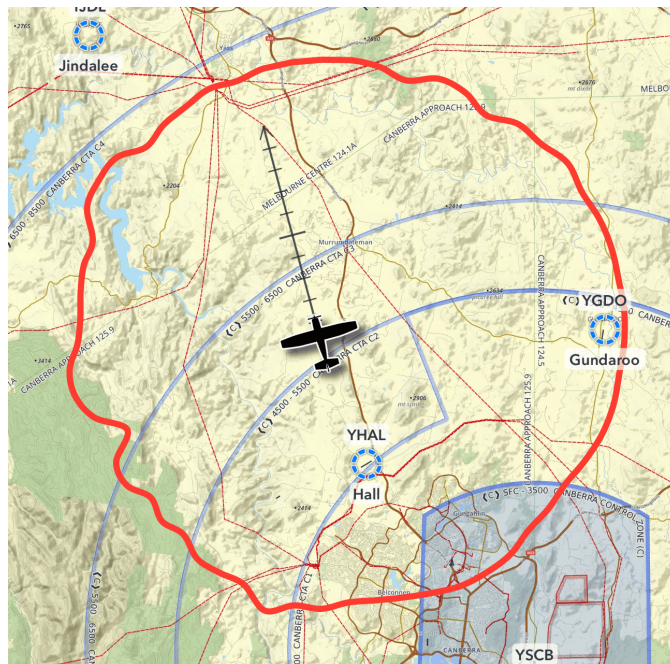
PSEA/SEIFR Planning Tool

The PSEA/SEIFR Planning tool shows the nil-wind planning range to suitable landing points along your route. The pilot can make adjustments to the figures. If the Enterprise Dashboard module is activated for your Organisation, some figures will use the company policy and not editable.
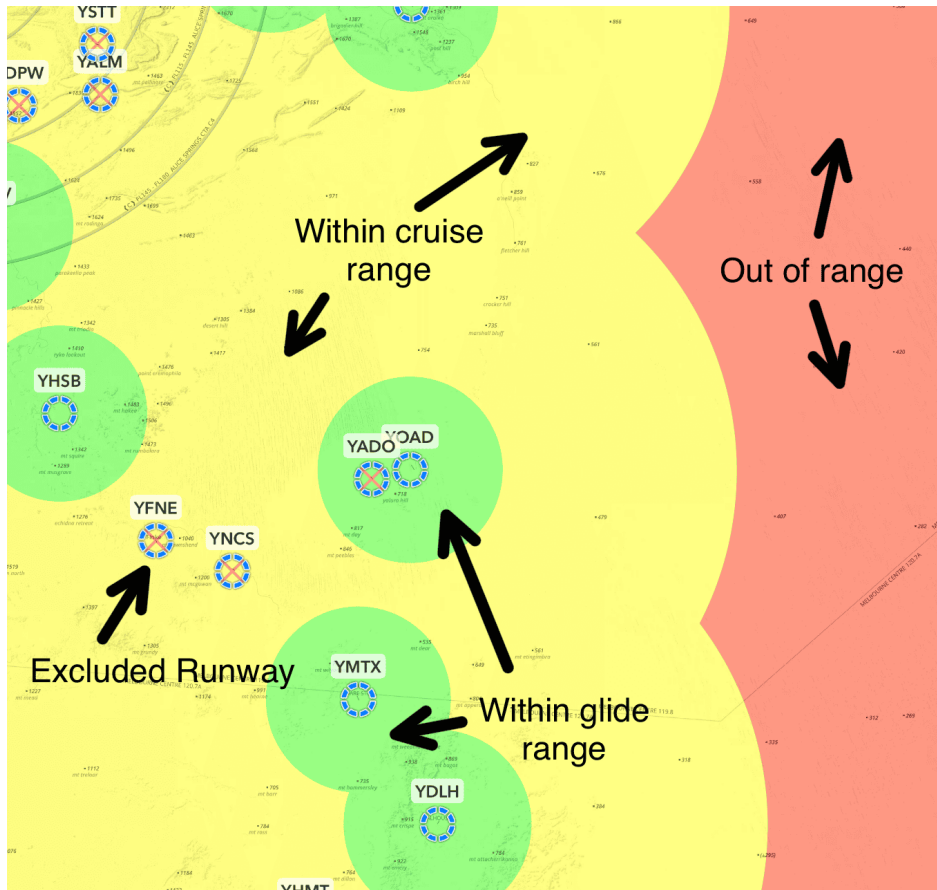
Device Requirements

Software Requirements

The latest version of OzRunways is compatible with devices running **iOS/iPadOS 14** (and above). If your device *is not* running iOS/iPadOS 14 or above you will not be able to get the latest version of OzRunways which includes critical fixes and updates.

To learn how to update your iOS/iPadOS version see this article: https://support.apple.com/en-au/HT204204

Be aware that if you have a vintage or obsolete iPad, it will say that the software is up to date, even though it is too old to support OzRunways. If you see iOS/iPadOS version 9 or 10 after following the software update instructions, then this is likely to be the case.

If your device does not support iOS/iPadOS 14 or above you will need to obtain one that does. Compared to hardware you install in your aircraft that is expected to last the 20+ year lifetime of the aircraft, iPads are consumer hardware that need to be replaced every so often (e.g. 5 years). The disadvantage is you need to get a new one every now and again, but the advantage is that you can have fast hardware with better battery life, screen brightness, and speed / responsiveness.

Hardware Requirements

Much of the functionality in OzRunways requires your GPS position and for this reason we recommend choosing a **Wi-Fi + Cellular** model iPad. The GPS is integrated with the cellular chip meaning the **Wi-Fi only** versions of the iPad *do not* have GPS.

> ### Note
>
> Hotspotting from another iOS device *will not* provide your Wi-Fi only iPad with a GPS position, except intermittently. Please, do not purchase a Wi-Fi only device expecting a phone to provide GPS position to the iPad, as this does not work.

If you do choose to purchase a Wi-Fi only iPad, OzRunways will work but you won't get all the awesome GPS functionality unless you buy an external GPS for around $120. You also won't have access to the internet driven features unless you mess around connecting the iPad to your iPhones internet. If you want GPS and the full OzRunways experience it is best to spend the little bit extra and get the **Wi-Fi + Cellular** version.

While you don't need to put a SIM card into the iPad for the GPS to work, there are many features in OzRunways that rely on a data connection. NOTAMs, met, radar and traffic all require a data connection. You can get data via hotspot from an iPhone, but setting that up can be fiddly and as mentioned above it won't give you a GPS position. The best combination is a **Wi-Fi + Cellular** model iPad and a data plan or pre-paid data SIM.