USER MANUAL

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Contents

RWY User Guide

This guide covers all of the functionality of the RWY Android EFB. It is suggested that you have your device with you to follow along as you read this.

Introduction

Basics

Welcome to the RWY User Guide!

Firstly, we will cover some important aspects of the device as a source for your aviation maps and data. Tablets and smartphones are **touch sensitive** devices. 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>

RWY does not come with the maps preloaded. When you first start the app the maps are retrieved from an internet server which RWY 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, they can be accessed any time without the need for an internet connection. Think of this as 'preflighting' your device.

> 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, RWY 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 RWY from the Play Store, locate the RWY icon on your device's 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 Settings Page chapter.

While at home, on a good network, the app will seemingly function just fine. RWY is loading the maps and other data on demand, from the internet, and only the map portions that you actually look at will be displayed. 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 view the maps properly. This will result in, at worst, the map displaying nothing and at best, patchy maps.

So the very important message is: always 'preflight' RWY 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 RWY to access your Location (answer yes to this or the GPS tracking features will not be enabled).

Databases

In RWY 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 RWY. Later you will learn how to change maps.

App Screens
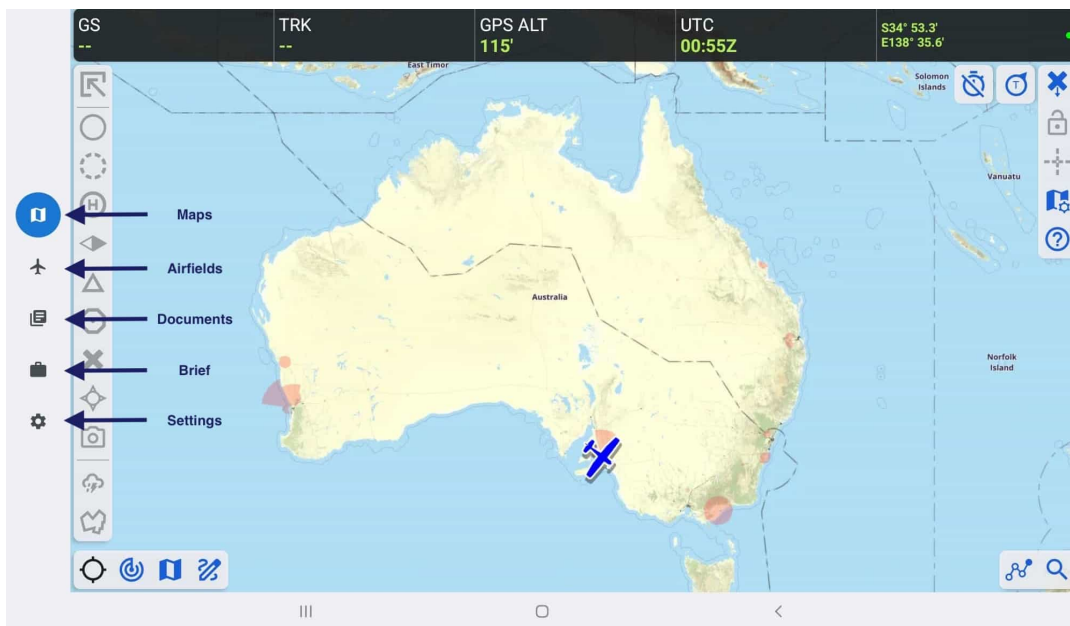
The 5 main pages (or 'App Screens') in RWY

Along the bottom of the device (in portrait orientation) or along the left hand side (in landscape orientation) there are 5 buttons. These are used to switch between the main pages in the app. They are described below.

Maps Page

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

Airfields Page

The Airfields Page provides ERSA airport data and, if you have a Premium subscription, the 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, AIC/SUPs and the AIP, and other region appropriate documents. Some documents require a Premium subscription to access.

Brief (or SmartBrief) Page

The Brief Page contains various weather forecast products.

Settings Page

The Settings page is where you can check up on your account information, manage aeronautical data downloads, and much more.

Maps 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).

OR

Double tap to zoom: tap twice and on the second tap leave your finger in contact with the screen, then move your finger down to zoom out or up to zoom in.

Measure

As for zoom but press and hold your thumb and forefinger until a ruler appears. Then while keeping your finger tips contacting the screen manipulate them to adjust the position of the ruler.

Enter a plan

See the Planning chapter.

Get the weather

Tap near an airfield → tap on the airfield in the subsequent popup → tap Quick Briefing (more on this below).

Enter a Custom or User Waypoint

Tap on the location where you want to create a waypoint → tap on the '+' in the top right corner in the subsequent popup → enter the required details then tap 'Save'.

Find your GPS location

Follow your progress as you fly (moving map mode) – see GPS button later in this chapter.

Map Interaction

Tap once on the map and the 'Closest Waypoints' 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.
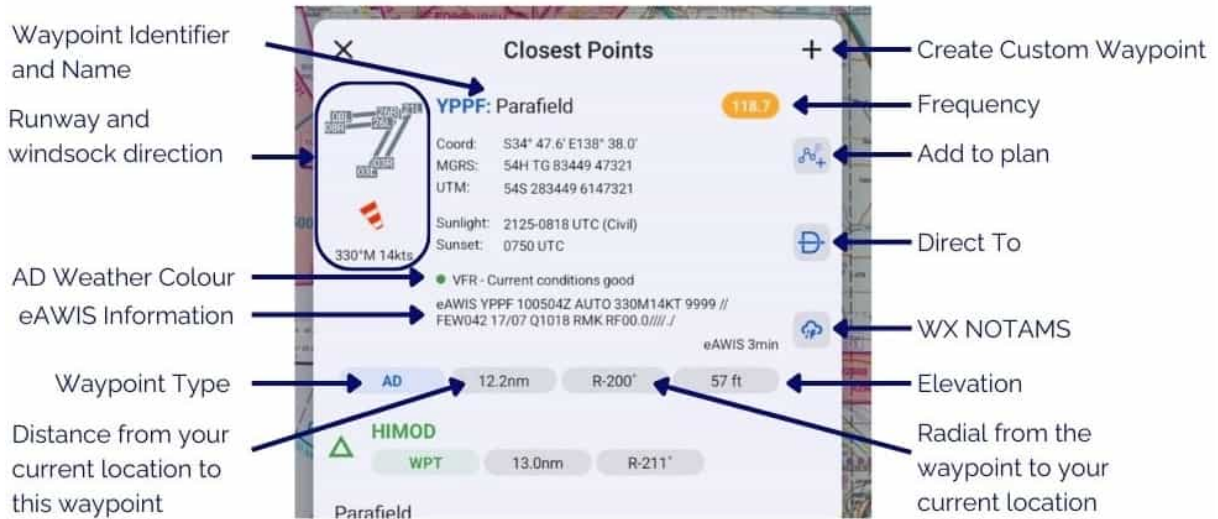
Closest Waypoints popup

> **Note**
>
> You can control which types of waypoints that appear in the Closest Waypoints popup in **Settings** → **Preferences** → **Waypoint Sub-Types**.

Tap on a waypoint for more options (as shown in Image 2.2). The options are described below.
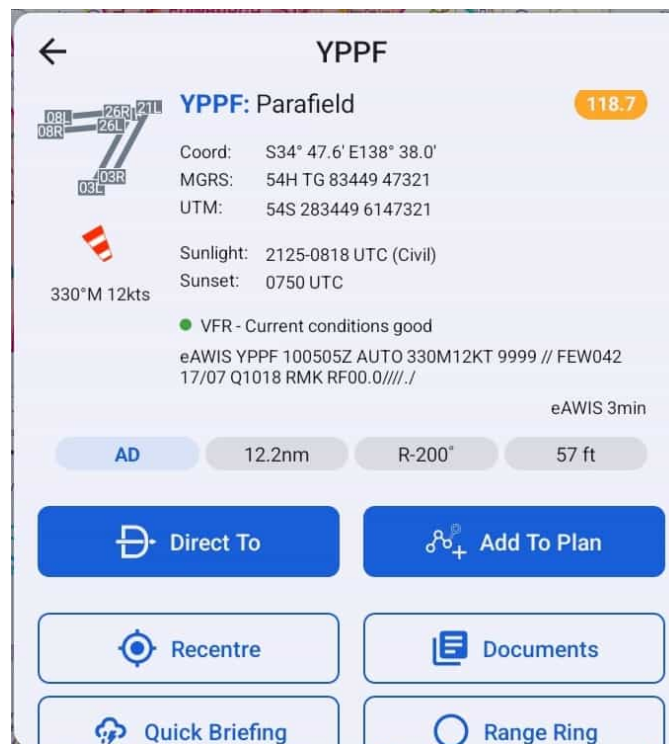
Parafield (YPPF) waypoint options

Direct To

When you select 'Direct To' the app immediately drops a user waypoint at your current position and then constructs a plan from that position to the selected waypoint. If you were already in a plan, that plan is terminated and the Direct To plan initiated. Direct To plans will not be saved after use.

If you want to resume your previous plan, cancel the Direct To plan → Open the plan popup → Select the previous plan. You can of course insert a waypoint into your current plan to effect a Direct To without terminating your current plan. For more details see Planning.

'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

Add To Plan

Tapping 'Add To Plan' creates a flight plan with the selected waypoint as the initial point in the plan, or, if you have an existing plan open it will add this waypoint to the end of that plan.

Recentre

Positions the screen with the selected waypoint in the centre.

Documents

Tapping on 'Documents' will take you straight to the relevant airfield documents on the Airfields page.

Quick Briefing

Tapping on 'Quick Briefing' results in a screen showing the NAIPS Location Briefing, this includes the aerodrome TAF, METAR, Area QNH, and NOTAMs (if available) A Charts button is available on this page to access the GAF and GPWT charts.

Edit *(only shown on Custom/User Waypoints)*

'Edit' is used to change the details of a User Waypoint (custom waypoint).

Range Ring

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 2.3).
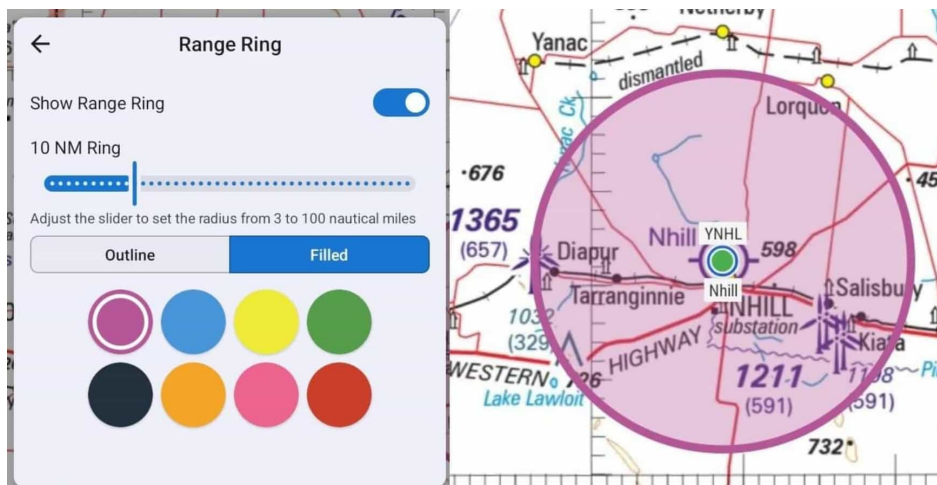
Range Ring

Left Sidebar (Overlays)

The Left Sidebar (also known as the Overlays Bar) controls the display of the waypoint overlay symbols, weather radar overlay, and graphic overlays/KMLs.

↖	Fullscreen On/Off
○	AD Waypoint
⬭	ALA Waypoint
Ⓗ	HLS Waypoint
◄►	VFR Waypoint
△	IFR Waypoint
⊙	Navaid Waypoint
✖	User Waypoint
◈	GPS Waypoint
▢	Weather Cams
☁	Weather Overlay
▱	KML Overlay
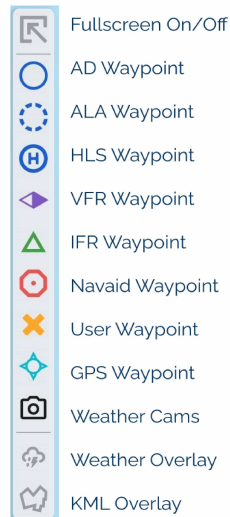
Tap the Fullscreen On/Off button to enter or exit full screen mode. To select which screen elements remain visible in Full Screen mode see Map View Options

Tap an icon to turn the respective overlay on/off.

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.

Further infromation about the Weather Overlay is available in the Weather chapter.

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 (Man Overboard)

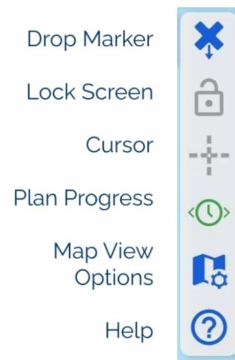Tap the Drop Marker button to drop a User Waypoint at your current GPS location. While User Waypoints can be added by tapping on the screen, the Drop Marker button gives the most accurate and fast way of adding a waypoint at your current location, and includes a timestamp (handy for recording visual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

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.

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

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

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

Map View Options contains settings and controls for various elements around the map screen, as described below.
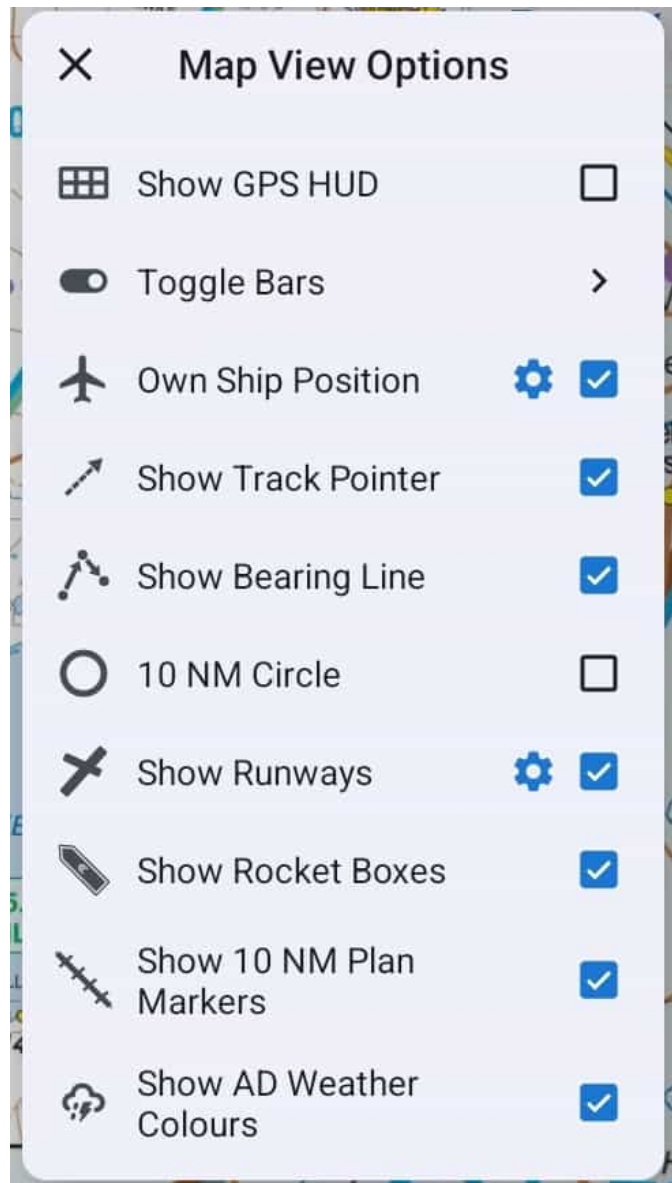
Show GPS HUD

Switches the GPS HUD on/off. The cog takes you to the settings for the GPS HUD appearance such as size and number of columns.

Toggle Bars

Settings to adjust the size and transparency of the menu bars around the screen. Select which bars and other screen elements are hidden when pressing the show/hide button (at the top of the Left Sidebar).

Own Ship Position

This switches on/off the aircraft symbol which indicates your position. Tap the cog to access more settings - you can change the colour and size of the icon, and switch between different icon images e.g. rotary wing, turboprop, jet…

Show Track Pointer

The track pointer automatically displays a 10nm line ahead of the aircraft.

Show Bearing Line

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

10NM Circle

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

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 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 10NM Plan Markers

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

Show AD Weather Colours

Show/hide the coloured dots inside waypoint symbols that indicate meteorological conditions based on METAR. 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

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

The Map Mode button toggles between static mode (where the map does not move along with you) and moving map modes (where the map tracks along with 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 black 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, RWY needs to know your GPS position, which means you need to have your device'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, 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: the Bureau of Meteorology 'MetEye', the national Satview (satview.bom.gov.au), and a Windy.com weather display.

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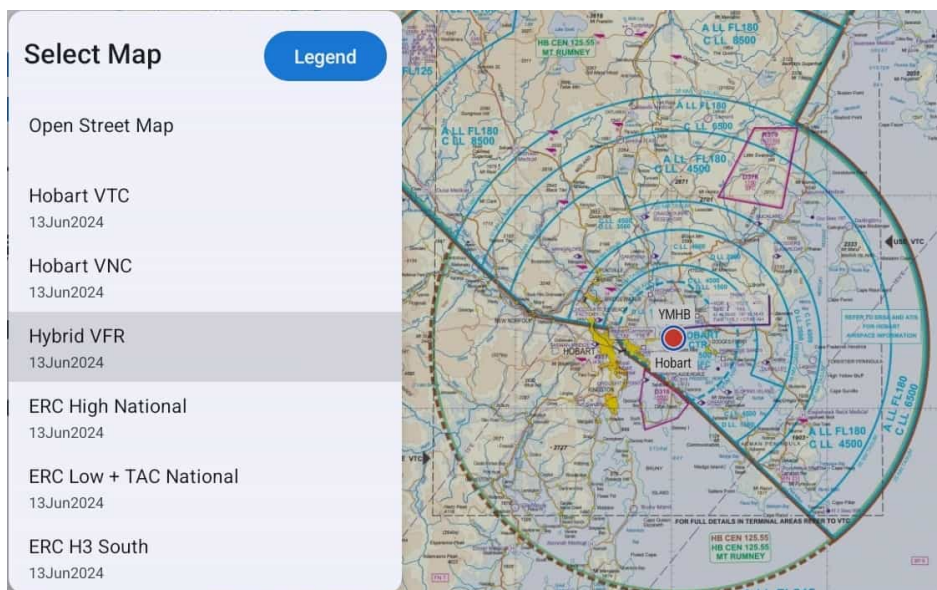
Choose Map popup

The currently selected map is highlighted blue (e.g. in Image 2.4 the Hybrid VFR is the selected map).

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

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.

If a legend is available for the selected map, the word 'Legend' will display at the top of the popup, tap to view.

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.

ScratchPad

The ScratchPad page gives you a place on which to take ATC notes, ATIS reports, traffic information, etc.
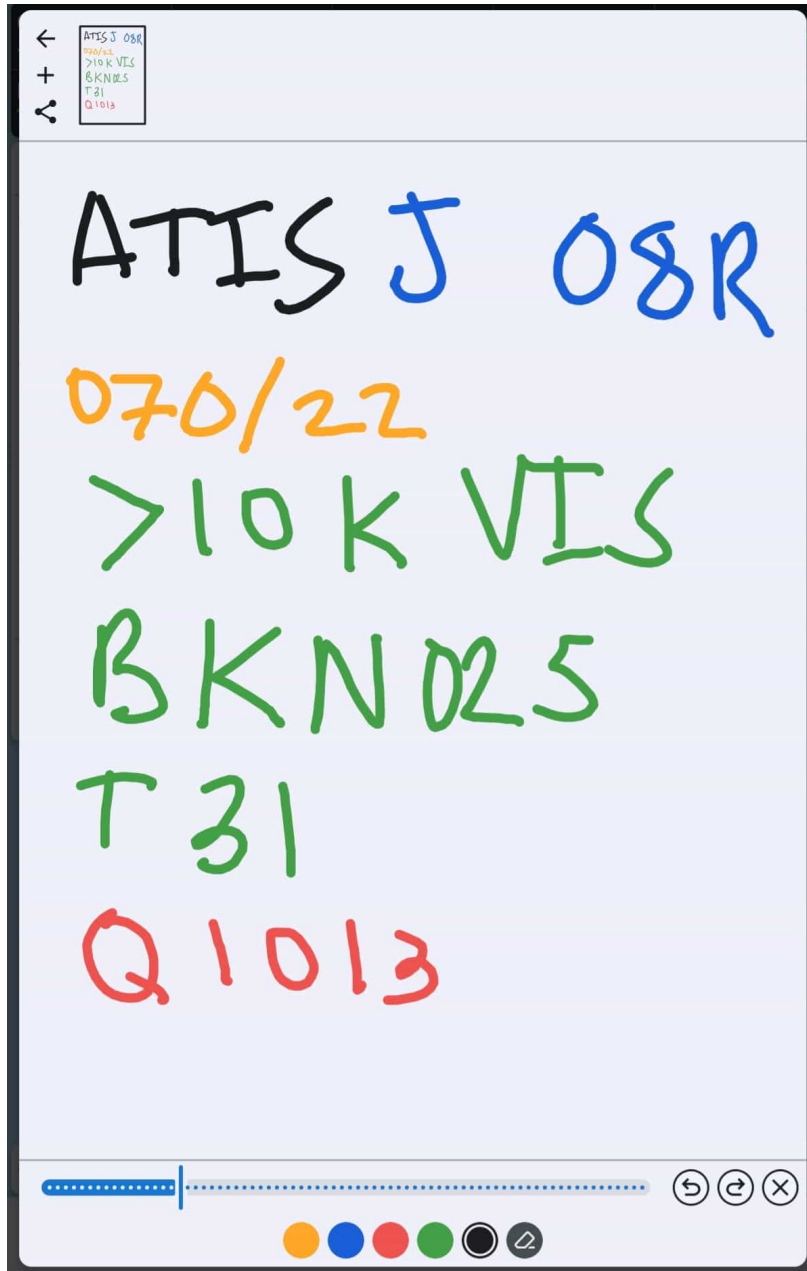
To add a ScratchPad, click on the top left '+' icon.

Use your finger as a pen. Use the colour selector on the bottom of the screen to change the pen colour. The selected colour can be identified by the inner circle. The sliding bar will change the size of the pen strokes.

Erase your strokes by clicking the eraser icon to the right of the colours. The backward arrow is an undo button, it will undo the last stroke (defined as finger on, to finger off.) The forward arrow is a redo button and will redo the last stroke (in case you accidentally hit the undo button.) The 'X' clears all content on the current page. Tap and hold on a page in the top bar to either 'print' the selected page, or 'delete' the selected page.

Tap the backwards arrow in the top left corner to return to the map screen.
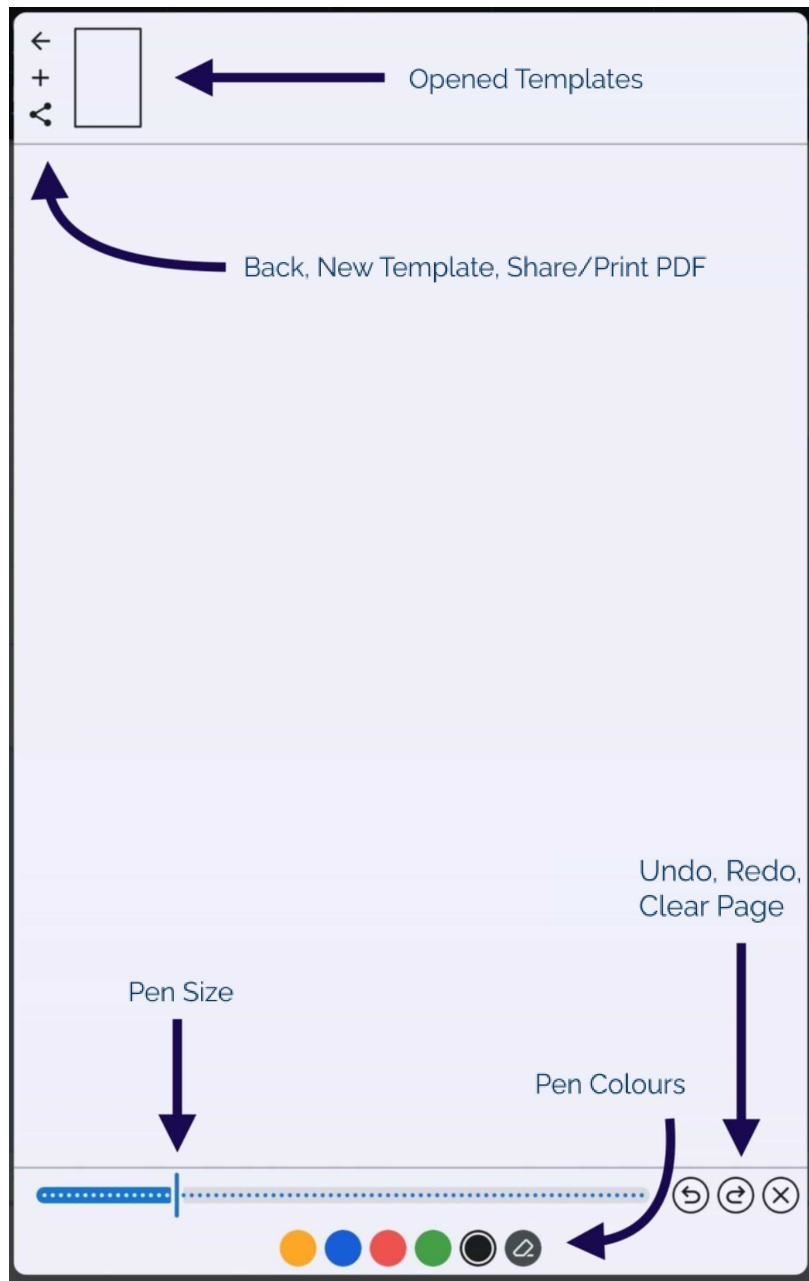
Bottom Right Bar

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)

Tapping the Plans button will do one of two things:

1. If no plan is active/open then tapping the Plans button will open a list of previously created plans and provide access to Quick Plan, or

2. If a plan *is* active, tapping the Plans button will open the Plan Details

For more information on making a plan and accessing saved plans see the chapter on Planning

Search

The Search function allows to search for an aerodrome or any other waypoint by name, partial name or ICAO code.

Traffic/ Flight Timer

Traffic

Single tap on the traffic icon to reveal more options.

When traffic if not turned on, the icon will turn grey in colour and have a diagonal line through it.
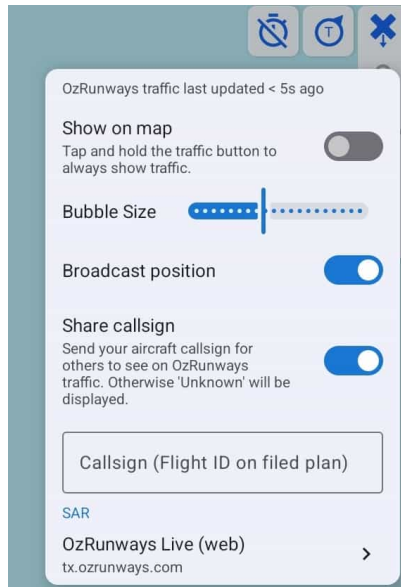
Turn on the traffic bubbles by pressing on the toggle next to Show on map. You can adjust the size of the traffic bubbles on your map screen by sliding the slider next to 'Bubble size'. Slide to the right to increase and left to decrease. The callsign you add in the box at the bottom will display to other OzRunway users when they have traffic shown on map.

Flight Timer

Tap on the Timer icon to set your Air Switch speed, or select Manual activation.

Once RWY detects that you are travelling faster than your Air Switch speed, the flight timer will automatically begin. When you drop below your Air Switch speed the timer will pause/stop. If you have selected 'Manual' you will need to manually activate and deactivate the timer by tapping the Timer icon and selecting 'Start Flight Timer' or 'Stop Flight Timer' as applicable.

User Waypoints (Custom Waypoints)

To create a User Waypoint, tap on '+' in the Closest Waypoints Popup as shown above in Image 2.1**, the resulting screen allows you to do one of three things:**

1. Save the new waypoint as a User Waypoint

2. Initiate a 'Direct To' to the new waypoint location

3. Add the new waypoint to the end of the current plan

A 'Direct To' cancels any current plan and automatically builds a new plan from your current position to the newly created User Waypoint.

Give the waypoint a code and a name. The code appears above the waypoint and is generally just a short identifier e.g. the code for Parafield is 'YPPF' and the name is 'Parafield'

To delete the waypoint, click the rubbish bin icon at the top right corner of the user waypoint popup tab.

User Waypoints can also be created and managed in **Settings → User Waypoints**.

Airspace

Image 2.5 shows the result of a long press near YPED. After a long press, an Airspace popup will display in the centre of the screen, with the airspaces in the location of your finger press. A tap on the 'R234 EDINBURGH' listing results in the display as shown in Image 2.6. If the 'Highlight active restricted airspace' option is enabled, and the device has an internet connection, active restricted airspace (as per the NAIPS RA Briefing) will be coloured red. The red active shading is for situational awareness and the status of airspace should always be verified.

Long press near YPED

Selected airspace details
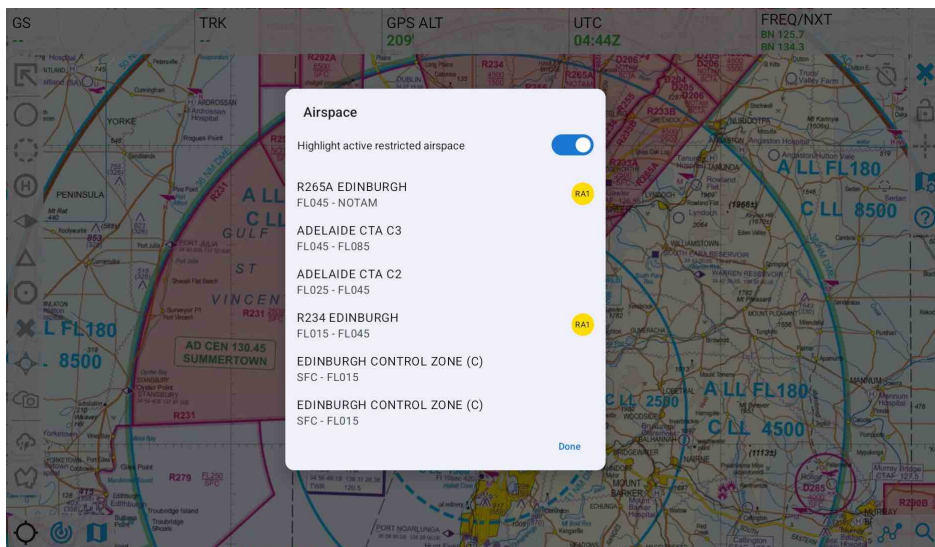
Airfields Page

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 right corner we can see that the region is set to Australia (AU). A tap on 'AU' results in a popup that lists the possible regions. Set appropriately. While you can select "All", it will give you a very large set of airfields to search (so you probably don't want to do this). If you have a plan active, one of the filter options will be 'In current plan', use this to display only those airfields that are in your plan.

Search

Press the Search icon and start typing into the search field. Matching airfields will appear in a list below. You can use airfield names or codes, e.g. a search for "YPPF" will return Parafield.

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.
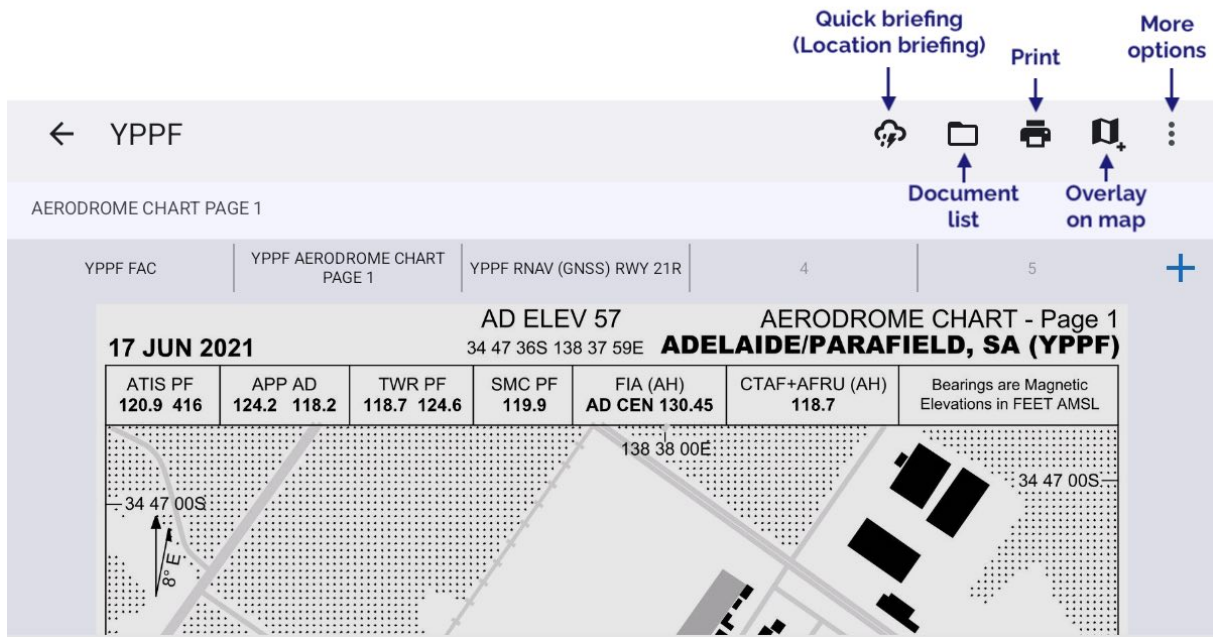
Aerodrome document view

Quick Briefing

Tapping on 'Quick Briefing' results in a screen showing the NAIPS Location Briefing, this includes the aerodrome TAF, METAR, Area QNH, and NOTAMs (if available). A Charts button is available on this page to access the GAF and GPWT charts.

Document List

Tap the folder icon to reveal a list of documents for the airfield you are viewing.

If you have access to the OzRunways Airfield Guide, Pilots Touring Guide or any other additional subscriptions, this is where entries will appear for those products.

The blue 'Geo' tag that appears underneath the name of some documents indicates that the document is georeferenced, i.e. you will be able to see your position, magenta track line, and traffic on that document.

Print

Tap to print the document that you are currently viewing.

Overlay on map

When tapped, this button will overlay the chart you are currently viewing on to the main map screen. Only available for georeferenced charts.

More Options

Depending on the type of document you are viewing, the options available are:

Presets

Tapping the Presets button reveals the presets bar, a set of 5 boxes across the top of the page. To add the current page as a preset, tap the '+' 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. You can add documents from different airfields and then use the presets bar to switch quickly between them. In Image 3.2 above, the *YPPF FAC*, *YPPF Aerodrome Chart*, and *YPPF RNAV RWY 21R* have been added to the presets bar.

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 presets bar works like an old car radio station selection - you replace one page with another.

Show traffic *(only shown when viewing a georeferenced document)*

Display traffic bubbles on georeferenced charts. Both OzRunways/RWY traffic and traffic from a connected ADS-B receiver will be displayed.

Show magenta track *(only shown when viewing a georeferenced document)*

If you have a made a flight plan in RWY your magenta planned track line will display on georeferenced charts.

Documents Page
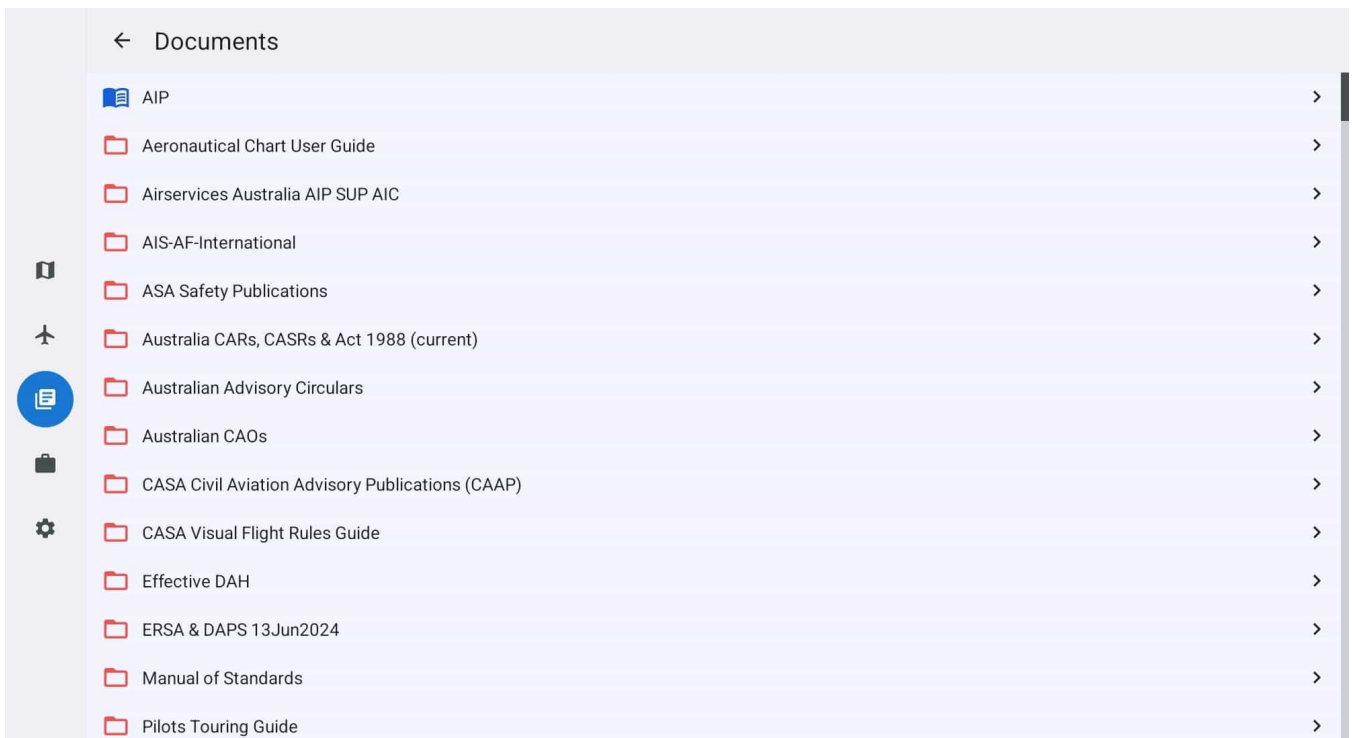
Documents Page

The documents shown on the Documents page are region specific and will depend on your subscription type. In Australia this page provides access to the AIP, SUPs and AICs, the front matter of the ERSA (conversions, special procedures etc.) and a variety of other documents that you may require. When viewing a document, you can search for text within the document using the search button located in the top right corner.

AIP
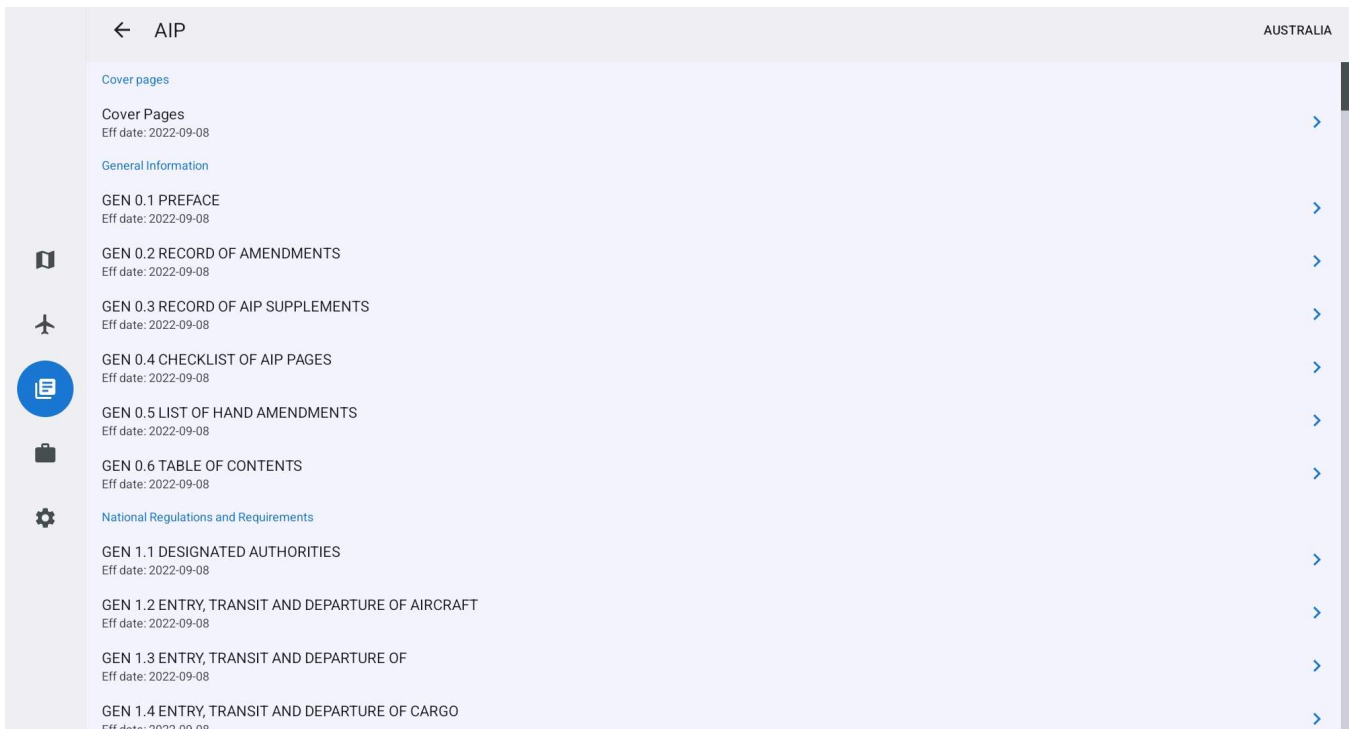
AIP

The Aeronautical Information Publication is accessed by tapping 'AIP' on the Documents page.

If you have subscriptions for multiple countries, use the region selector in the top right corner to select the desired country. The effective date is displayed underneath the title of each section.

Brief (or SmartBrief) Page

SmartBrief is available with an Australian Premium subscription. If you have an Australian Premium subscription and can't see SmartBrief, tap the Brief icon a second time to reveal the option to switch.

For Australian VFR Standard subscribers see Basic Brief at the bottom of this page.

SmartBrief
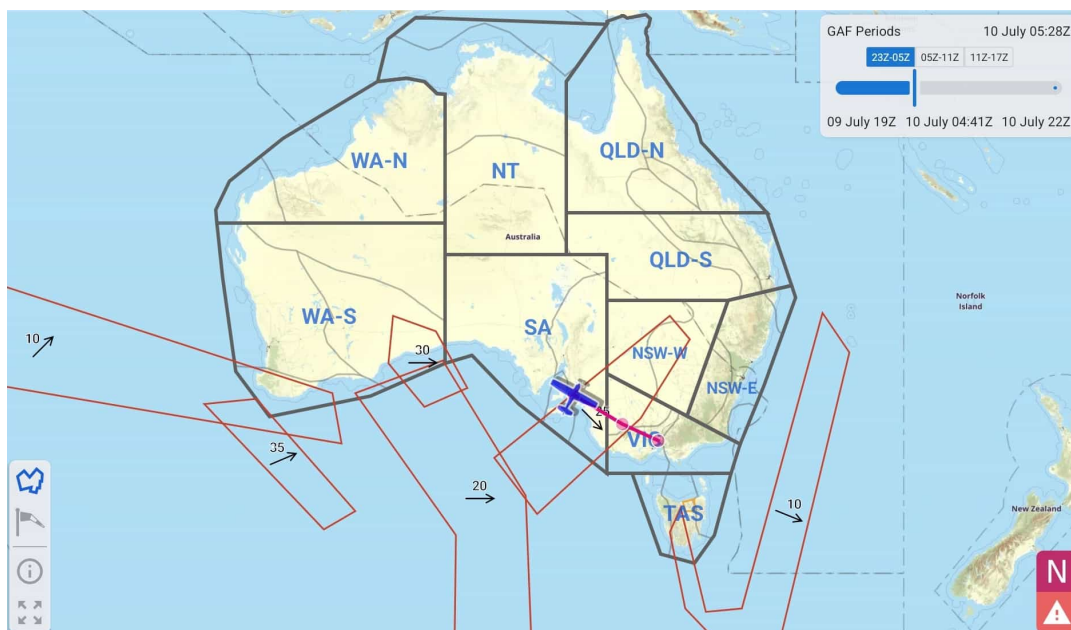
SmartBrief overview

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. Access SmartBrief from the Brief page by tapping "SmartBrief" in the top right corner. When you first open SmartBrief you will see a map of Australia with the GAF regions overlaid. There is a 'full screen' button in the bottom left corner which hides the top and bottom menu bars. If you have a plan active your route is displayed as a magenta line.

The sections below describe how to interact with the various elements of SmartBrief.

Graphical Area Forecasts (GAF)

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 5.2
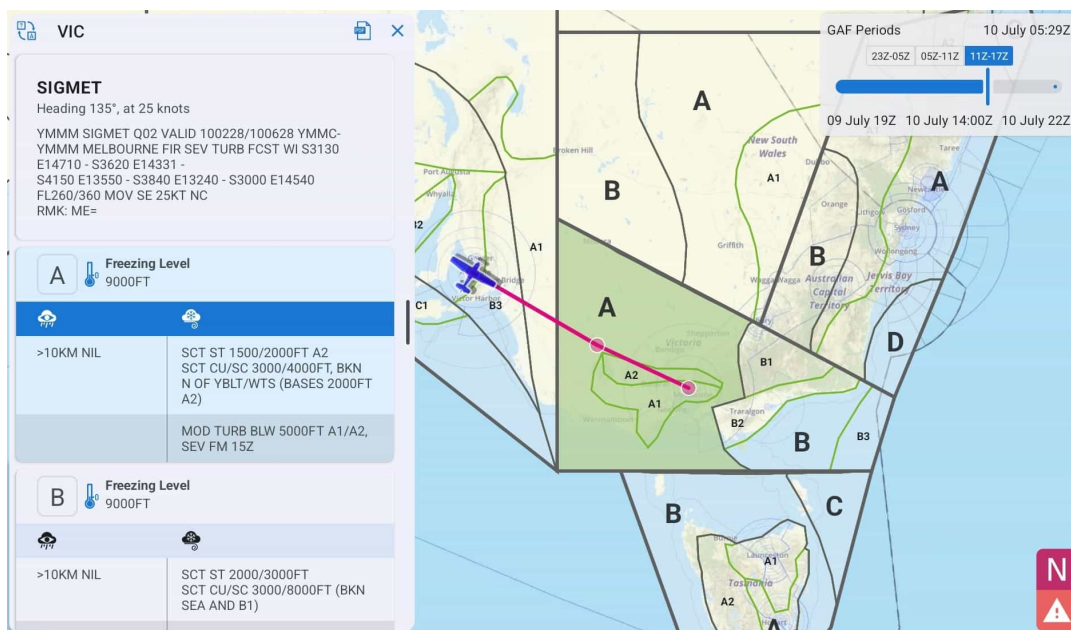

Viewing a GAF in SmartBrief

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.

In the top right corner of the page is the time slider box (Image 5.3)
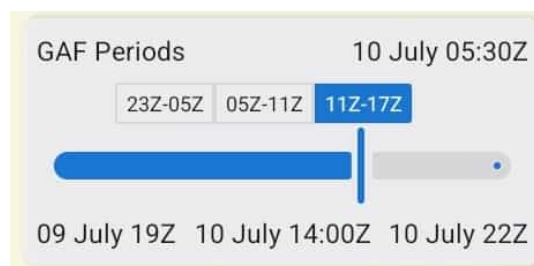
Timeslider

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

Translate Airfield Weather Text

Zoom into the map in SmartBrief to view ALA. Tap an airfield to view the weather (METAR, TAF, RAIM, NOTAM) specific to that airfield. The translate button located on to top left corner of the popup converts the acronyms to plain text as shown in (Image 5.4)

NCD 23/08 Q1012 RMK

Grafton

METAR

Issued 32 minutes ago

METAR for YGFN at 31 Mar at 12:00am GMT
Observation method: AUTO
Surface Wind: 1 knots from the West South West (250°T)
Visibility: 9999m

Cloud:
   Nil cloud detected , Cloud type not available
Temperature 23°C / Dew Point 08°C
QNH: 1012

Remarks:
   Rainfall: 0.0mm last 10 minutes
   / 0.0mm since 9am local time

TAF

Issued 7 hours ago

Aerodrome Forecast for YGFN
Issued 30 March at 17:32 (UTC) (03:03 GMT+10:00) - subsequent ti

Valid from 05:00 today to 18:00 today.
   Wind 9 knots from the South South West (220°T)
   Visibility: 9999m
   Shallow fog
   Nil significant cloud at , Cloud type not available

Translated Text

NOTAMs for Plan

The 'NOTAMs for Plan' button (magenta circle with the letter 'N', bottom right corner) is only shown when you have a plan loaded. Tap to see a list of NOTAMs relevant to the airfields and areas contained in your plan. For more information about the symbols next to the NOTAMs see NOTAM grading system further down.

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. 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 squares appear. Tap a location to bring up the briefing. Image 5.5 shows the location briefing for YORG (Orange).
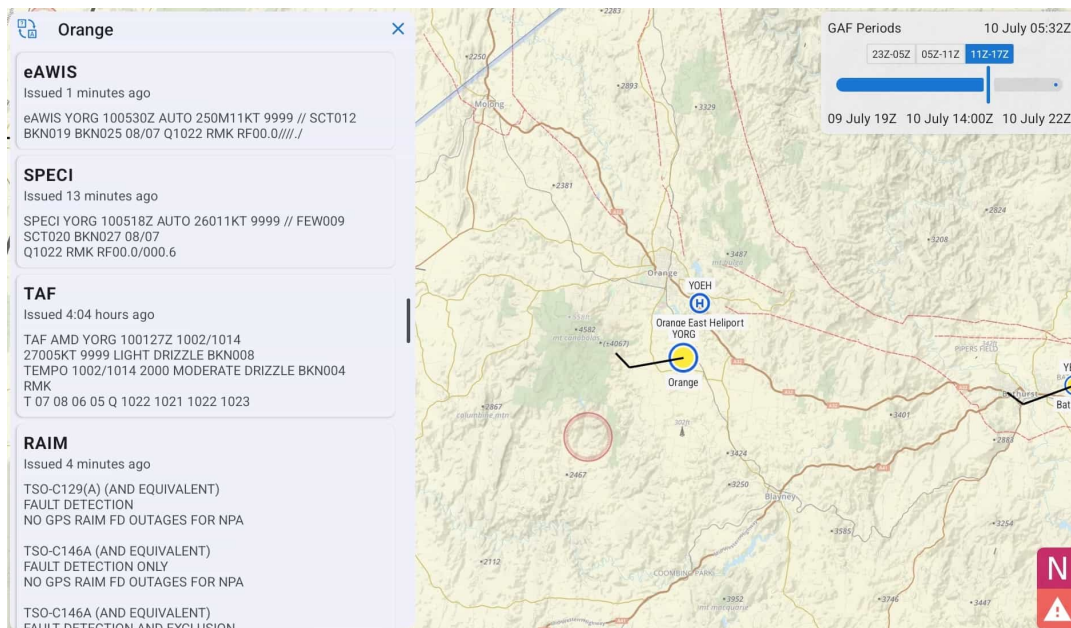
Location Briefing in SmartBrief

NOTAM grading system

There are two symbols next to each NOTAM: a star and a thumbs down. Use these symbols to sort the NOTAMs. Press the star to mark the NOTAM as important. Press the thumbs down to mark the NOTAM as junk. The list of NOTAMs is sorted as follows:

1. Unread
2. Important
3. Junk

The idea of this system is that it's easier to read through a bunch of NOTAMs, as those that you have already read and marked as junk go to the bottom, new NTOAMs always appear first, and NOTAMs marked as important after those.

Grid Point Wind/Temperature (GPWT)

Switch to the GPWT view by pressing the windsock in the bottom left corner. The GPWT overview shows different coloured squares overlaid across Australia as shown in Image 5.6.
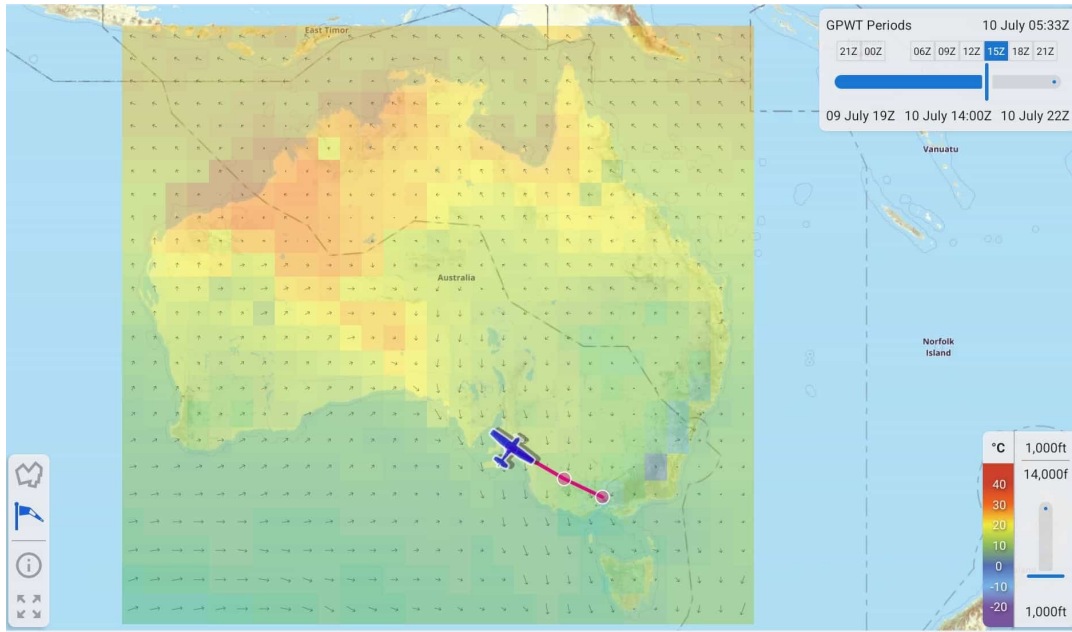
GPWT in SmartBrief

These boxes give a graphical representation of the data from the GPWT charts. The colour indicates temperature (see colour scale in bottom left 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 grid square. The figures are interpolated for altitude and time.

Use the slider in the bottom right corner to adjust the altitude. As with the GAF, use the time slider in the top right corner to adjust the forecast time you want to view. The available GPWT periods are pre-filled in boxes so that you can easily switch between them.

Basic Brief

Basic Brief

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

Aerodromes in plan

If you have a plan entered then all the airfields in your plan will be displayed at the top of the page. 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.

Settings Page

Subscriptions

The Subscriptions page provides information about your RWY/OzRunways User ID & email address, and your current subscriptions and their expiry dates.

To edit/amend your User ID, email address, or nickname tap on the respective field.

You can set up a password by tapping on 'Secure Account'. You will recieve a confirmation email, which you need to verify to finalise adding the password to your account.

The Sign Out button in the top left corner will sign you out of the app and take you back to the login screen. You may need to do this if you are signed in to the incorrect account, or in order to sign in on another device.

Database

The Active database screen lists the current active AIRAC cycle, and any pending cycle (note: there is not always a pending cycle). 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!

Active Regions

Select which regions you want to use. You must have a subscription to the respective region before you can access the data. The region selection downloads database for a given region. The region database contains the list of maps for that region (not the actual maps themselves!) and the waypoints for that region. Maps and other data for the region must be downloaded on the Downloads page.

Active Database

Select which AIRAC cycle to use. Useful to view upcoming/pending aeronautical data. Don't forget to change back to the current cycle before flying!

Downloads
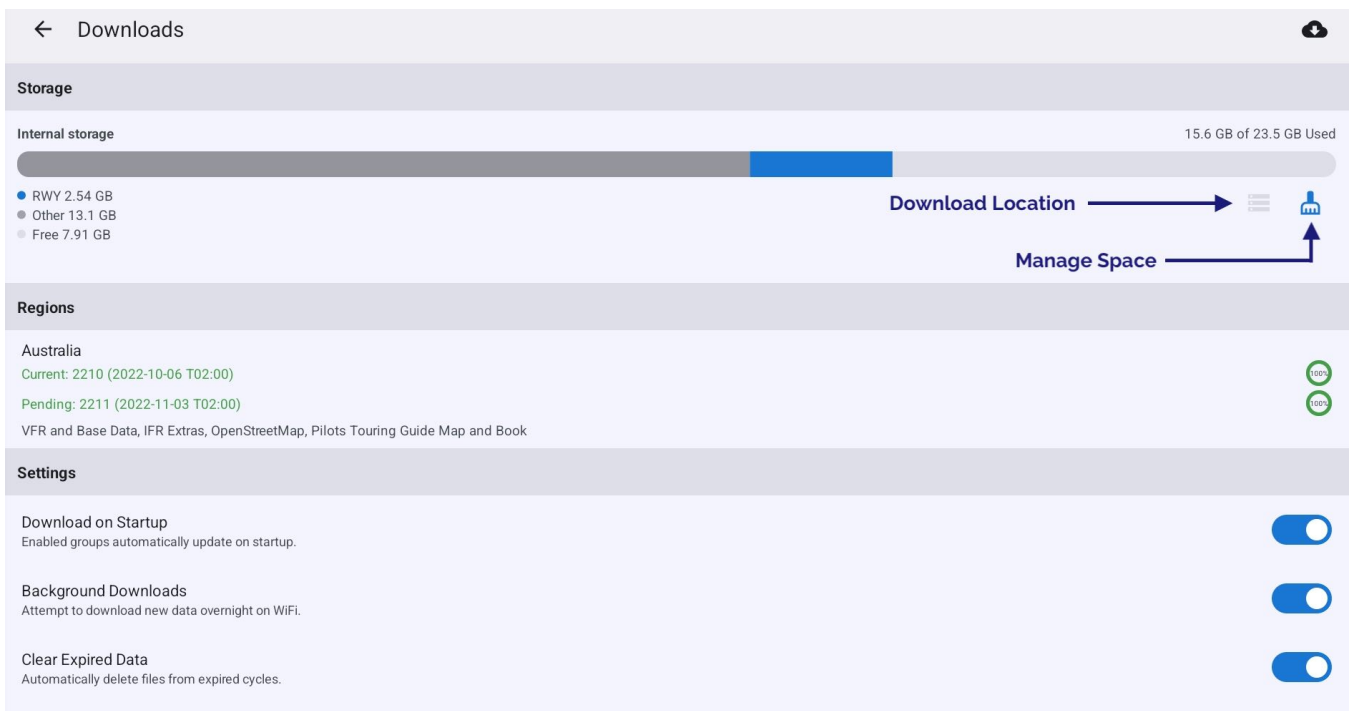
Settings → Downloads

The Downloads screen shows a list of regions as selected on the Database page, along with some options for the automatic downloads system. Tap on a region to view the available data / data groups to download.

Download Location

Select between internal/external storage for storage of downloads. This option is only avaialble if you have external storage attached to the device, e.g. an SD card

Manage Space

Contains options to delete cached map tiles, all downloaded files, or all RWY data.

Delete 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 in the Database settings.

Download on Startup

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

Background Downloads

When this option is switched on RWY 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 or a battery saving mode enabled

- If you force close RWY

Clear Expired Data

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

Data Management

Contains options to delete various forms of data such as map tiles, downlaoded aeronautical data, or all RWY data entirely.

Information

Contains infomration about the RWY software version/build along with the currently active database version.

Integrations

NAIPS or IFIS Sign In

Enter your Airservices Australia NAIPS 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.

If you have a New Zealand subscription you will also see options for IFIS and PreFlight Sign In.

Preferences

Theme

Choose to use a light or dark theme. Selecting automatic will follow the system theme as set in your device settings.

Dark Mode Filter

Having this set to on will add a dark filter to the map screen and the documents screen. This is useful if you fly at night as it reduces a lot of screen brightness while keeping everything easily readable.

Waypoint Sub-Types

Allows you to select which waypoints are used in searches and the Closest Points popup. 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.

Allow eAWIS weather where available

Replaces METAR with one-minute AWS observations when viewing aerodrome weather briefings.

Double Tap on Map

This enables or disables the double tap on an AD jumps to runway/FAC ERSA page functionality.

Simulator Mode

From RWY v4.3 you can use RWY as you fly in your simulator on your computer. This feature works with X-Plane's EFB connection protocol (UDP port 49002), which can be enabled in X-Plane → Settings → Network → iPhone & iPad → "Broadcast to all copies of …". It should also work with Microsoft Flight Simulator using xmapsy in "X-Plane/Simulator mode". When a simulator is connected you'll notice the GPS HUD boxes go purple. You'll even see purple traffic bubbles for other traffic in the sim! You can use RWY with a flight simulator (such as X-Plane). RWY listens on Wi-Fi on UDP port 49002 for X-Plane formatted messages. There are programs available that can convert from other flight simulators to this format, for example XMapsy: https://xmapsy.com/

Help

Contains links to the RWY user documentation, frequently asked questions (FAQs), and contact details for the support team.

Aircraft

The Aircraft tab provides access to your existing aircraft profiles, or to add new ones. The operation of the Aircraft Editor is covered in the Aircraft chapter.

Flight History

Flight History contains a log of detected flights in GPX format. In order for flights be logged, the flight recorder must be enabled and RWY must be open and running in the foreground during takeoff and landing. Recording will begin when RWY detects that you are travelling above 70kts OR if you are climbing at a rate of 300fpm (or greater) for at least 20 seconds. Recording stops when you are travelling < 30kt for 2 minutes. The GPS files can be exported and viewed in software such as Google Earth.

User Waypoints

The User waypoint catalog contains a list of all User Waypoints you have created. Tap an existing User Waypoint to edit its details, or use the '+' to add a new User Waypoint. Press and hold on the user waypoint to reveal the bin icon, located on the top right hand corner. Press it to delete the selected waypoint.

Pilots

The controls are at the top right. '+' adds a new pilot entry. Tap on the new entry to edit the details. 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.

Filed Plans

The Filed Plans page contains a history of any plans you have filed with NAIPS/IFIS while using RWY.

Traffic

RWY/OzRunways has its own self contained traffic system which is described in the Traffic chapter. RWY can also receive ADS-B traffic via an external ADS-B receiver such as the ones we sell on our website https://www.ozrunways.com/store/adsb

External Devices

Enable or disable connecting to various types of external devices (e.g. ADS-B receivers and location inputs from flight simulators). This page also lists the details of any such connected devices.

Planning

Initiating a plan

There are a few ways to create flight plans in RWY:

Map Planning

Tap near the starting point on the map, tap the location in the resulting Closest Points popup, and then select *Add To Plan*. See Map Planning below for more information.

Quick Plan

Create a flight plan by typing a succesive list of waypoints. See Quick Plan below.

Search Planning

Tap the 'Search' button in the bottom right corner of the map page, search for the waypoint, select it and then select 'Set waypoint As Origin of Plan'. See Search Planning below for more information.

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 7.1). From here you can either use the 'Add to Plan' or 'Direct To' shortcut buttons, or, tap on the desired waypoint and select 'Add to Plan'
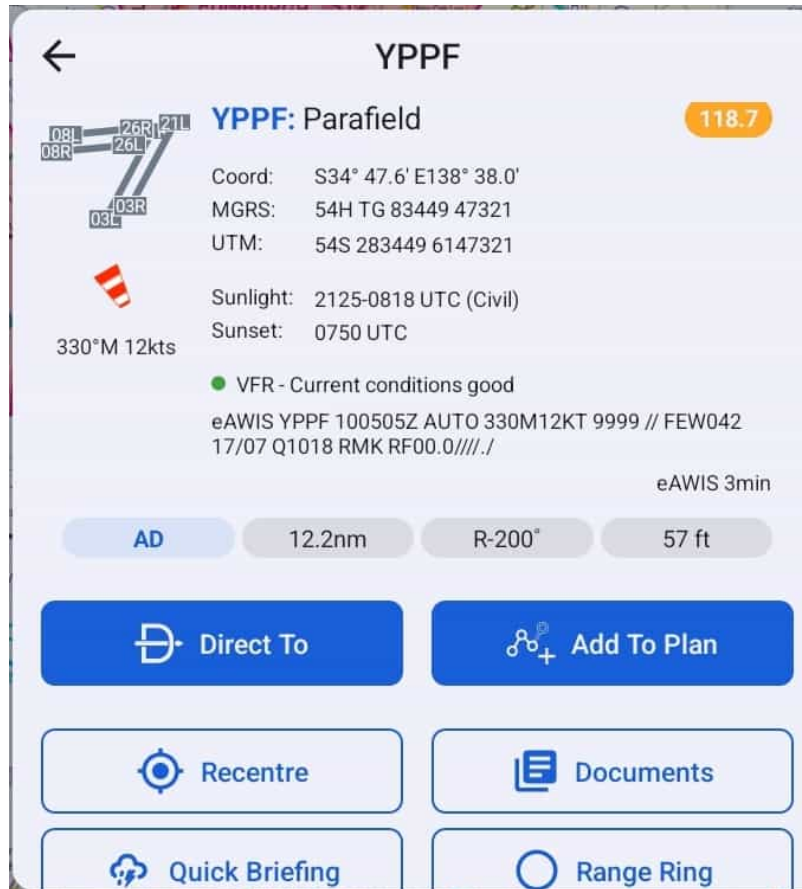
Planning shortcuts on the Closest Points popup

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:

1. Identify the segment where you wish to insert a waypoint
2. Tap and hold the magenta track line until a yellow outline appears
3. While keeping your finger on the screen, drag the track over to the waypoint you wish to insert
4. Take your finger off the screen
5. The Closest Points popup will appear, listing nearby waypoints
6. Tap on the waypoint you wish to insert
7. The plan will redisplay with the new waypoint inserted

Quick Plan
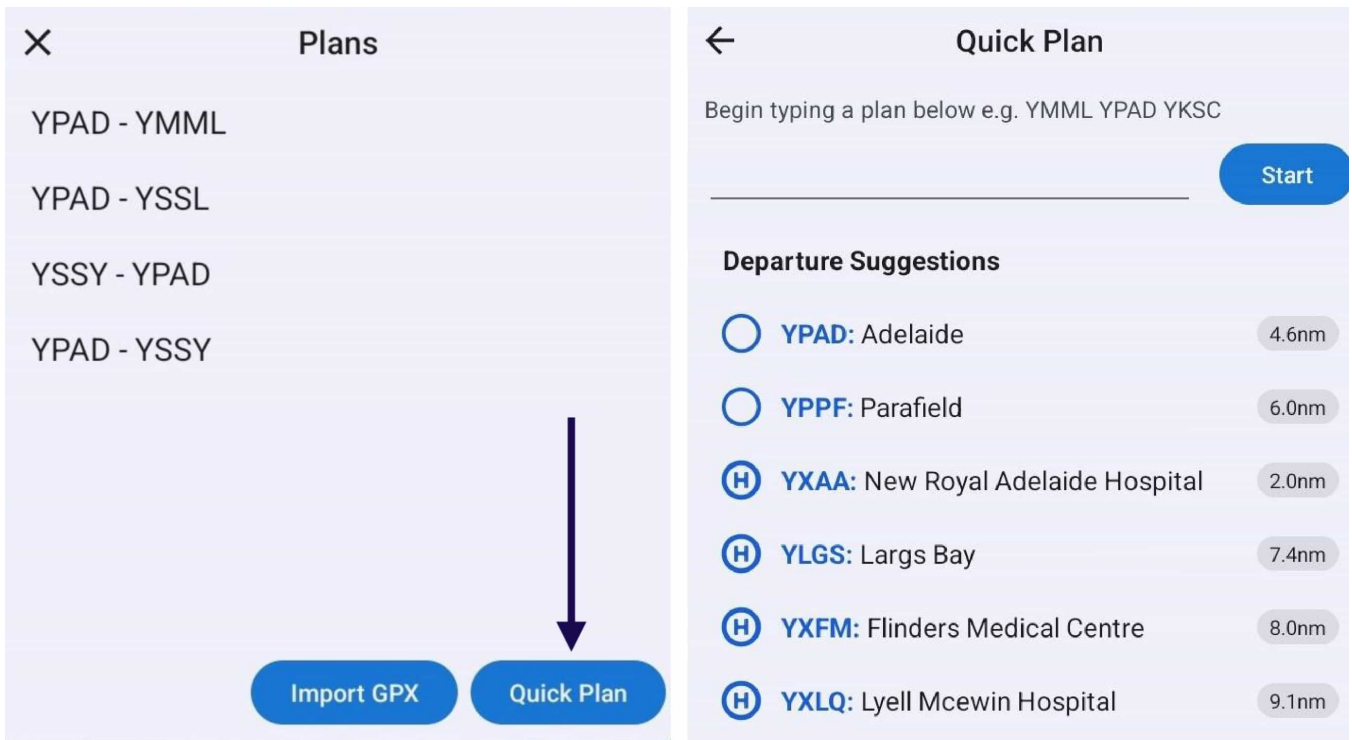
Quick Plan button in Plans list

Quick Plan is accessed by tapping the 'Plans' button on the Map page. If a plan is already active you will need to cancel it to return to the Plans list where the Quick Plan button can be found, as per Image 7.2

Begin typing a waypoint name or code, the suggestion list will update as you type. Tap your desired waypoint in the list to fill it into Quick Plan, or press space to fill the top suggestion automatically. Keep entering waypoints in this fashion, then once all desired waypoints have been entered press 'Start' to construct the plan.

Import GPX

To learn more about Import GPX check out Sharing Flight Plans

Search Planning

A flight plan can be created using the Search fucntion on the Maps Page. Search for the desired waypoint, tap on the waypoint in the list of results and select 'Add to Plan'. Repeat for remaining waypoints.

Plans List
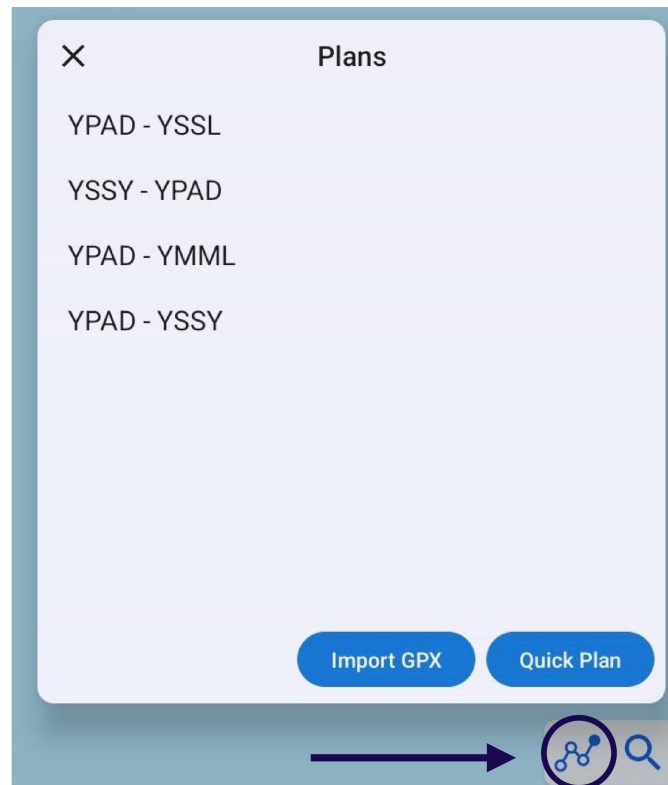
Plans List

A typical Plans List is shown in Image 7.3. Tap the Plans button / lines and dots icon to open the Plans list. (Note: if a plan is already active tapping the Plans button will open the Plan Details view instead.)

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 and hold any plan, select the plans you would like to delete, then press the bin icon/delete button in the top right corner of the screen.

Tap on a plan to enter the Plan Details view, described below.

Plan Details
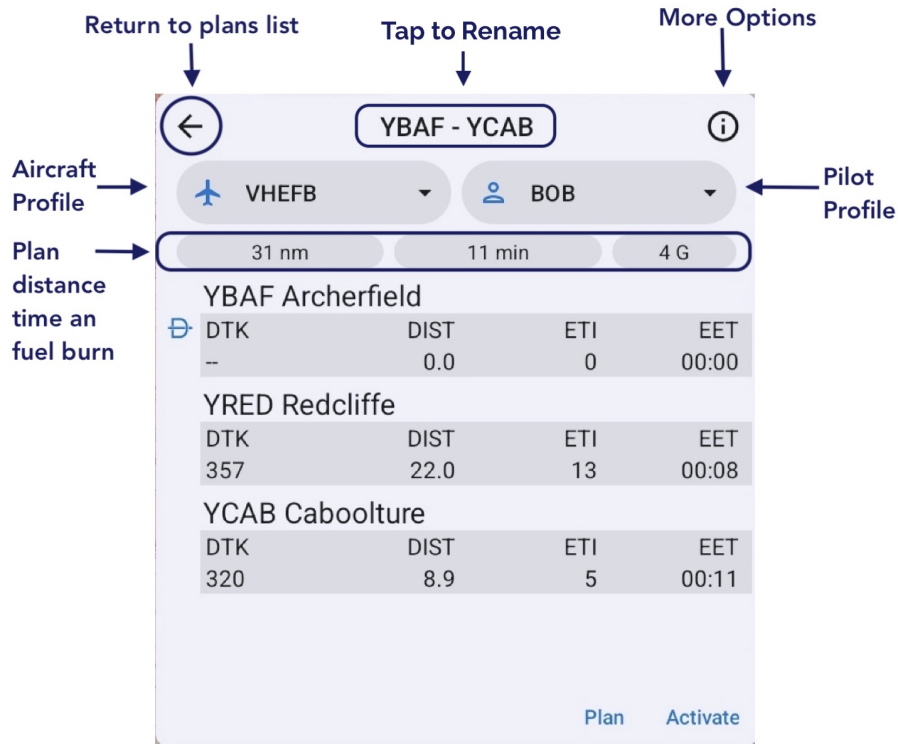
Plan Details view

The Plan Details view shows all the waypoints in your plan along with the Desired Track (DTK), Ditance (DIST), Estimated Time Interval (ETI), and Estimated Time of Arrival (ETA) for each waypoint. The calculations are based on which aircraft profile is selected for the plan.

Select your aircraft and pilot profile by tapping on the fields. You can also rename the plan by tapping the title and tying the new name.

Tap 'Activate' when you are ready to start flying your plan. Once a plan has been activated a second row of GPS HUD boxes will appear on the map page.

Tap on a waypoint in the Plan Details view to reveal more options: insert a waypoint above or below, activate the leg, perform a Direct To, remove the waypoint from the plan, or view more infromation about the waypoint.

Tap the 'i' in the top right corner to access more options, described below:
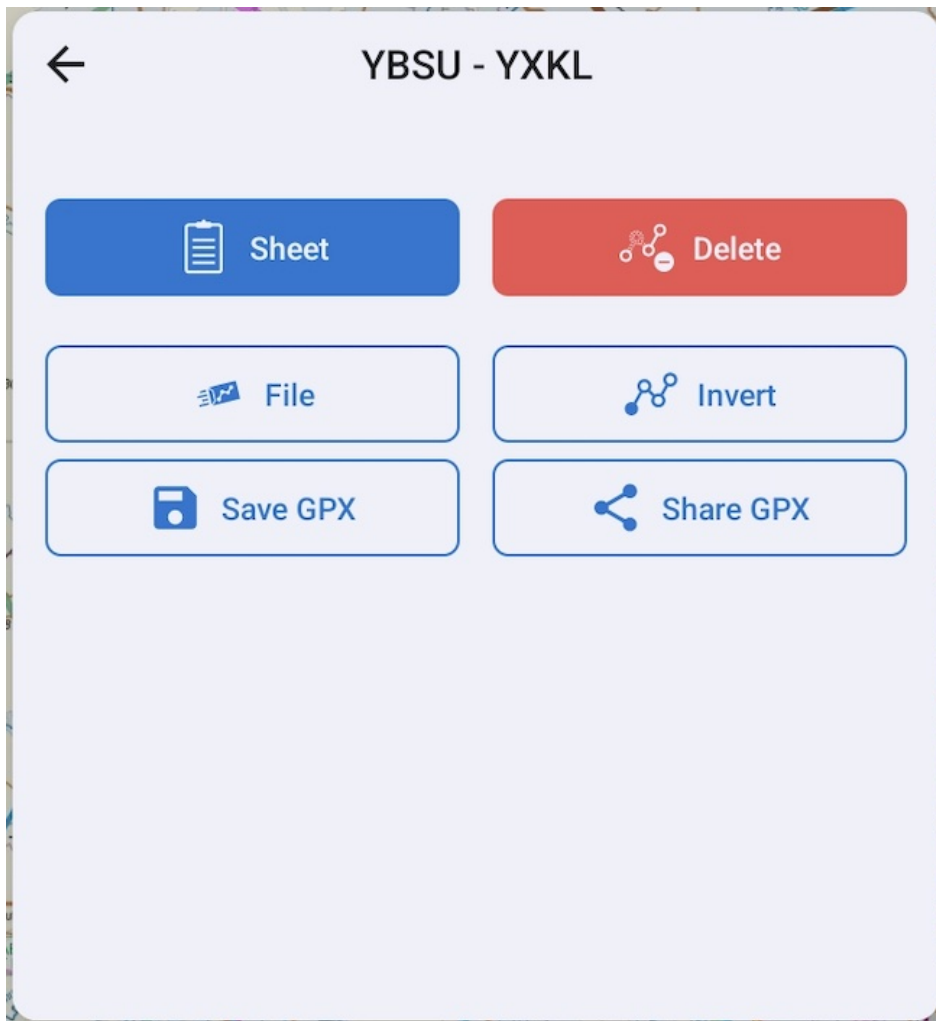
Sheet

Open the Plan Sheet.

Delete

Delete the entire plan.

File

Open a NAIPS/IFIS flight notification form for plan filing.

Invert

Creates and opens a new plan with the waypoints in reverse order. Return to the Plans list to access the original plan.

Save GPX

You can save the GPX file to your device for later review.

Share GPX

Flight plans can be exported as a GPX file, which can then be imported into RWY on another device. GPX files include track, altitude and speed information and can also be imported into Google Earth Pro, and other mapping software.

Sharing Flight Plans

Sharing a flight plan allows you to export a flight plan and import it to RWY on another device, such as your backup tablet, or to your co-pilot. Flight plans are shared in GPX format which can also be opened in Google Earth or other mapping software.

To share a Flight Plan with another device, Tap "Share GPX" and share the file using your desired method (email, text, upload to cloud, etc). The file name will mirror the name stored in the "Trip Name" field in RWY. Open the RWY

app on the second device, tap on the 'Plans' button, tap 'Import GPX' and then select the shared file to import the plan. This will import the plan into RWY automatically.

Plan Sheet

The Plan Sheet, or navigation log, is accessed by tapping the Plan Sheet button in the bottom right corner of the map page when a plan is active. It can also be accessed by tapping 'more options' in the Plan Details view.

The Plan Sheet is shown below in Image 7.5.

Plan Sheet

There are a set of buttons across the top and the plan waypoints are listed sequentially down the left of the page. The function of the buttons are as follows:

Load winds

Automatically load winds into the plan. Choose to load the wind forecast for 'now' or in 1, 2, 4 or 12 hours. The wind information is sourced from the Grid Point Wind Temperature low level data (1000ft - FL140), interpolated for altitude and time.

Share

Share a PDF of the plan sheet to another device.

Print

Print a PDF copy of the plan sheet including all entered values.

Aircraft performance

Set a TAS and fuel burn rate. Used to calculate groundspeed (GS) on the plan sheet, and approximate fuel burn as displayed in the Plan Details view.

The columns in the Plan Sheet are described below.

Waypoints

The waypoints in your plan, beginning with your origin point.

LSALT (Lowest Safe Altitude)

Tap to manually enter an LSALT value.

ALT (Altitude)

Tap to enter desired altitude. 1000 = 1000ft, 20000 = FL200 etc.

TAS (True Airspeed)

TAS as set in Aircraft Performance

TRK (Track)

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

Wind

Winds are entered & displayed in degrees True (ºT). RWY converts to degrees Magnetic (ºM) for all calculations. Wind can be manually set for each leg (tap to enter a wind value), or auto-fill all winds by tapping the Windsock / Load Winds icon.

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.

DIST (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.

EET (Estimated Elapsed Time)

The elapsed time (cumulative time) of the plan to that waypoint in minutes.

EST (Estimated Time of Arrival)

For use when printing the plan sheet.

REV (Revised ETA)

For use when printing the plan sheet.

ATA (Actual Time Of Arrival)

For use when printing the plan sheet.

Weather

Quick Briefing

Weather for a specific aerodrome can be accessed by tapping on the map near the waypoint of interest, tap on the waypoint in the resulting Closest Points popup, then tap Quick Briefing. 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.
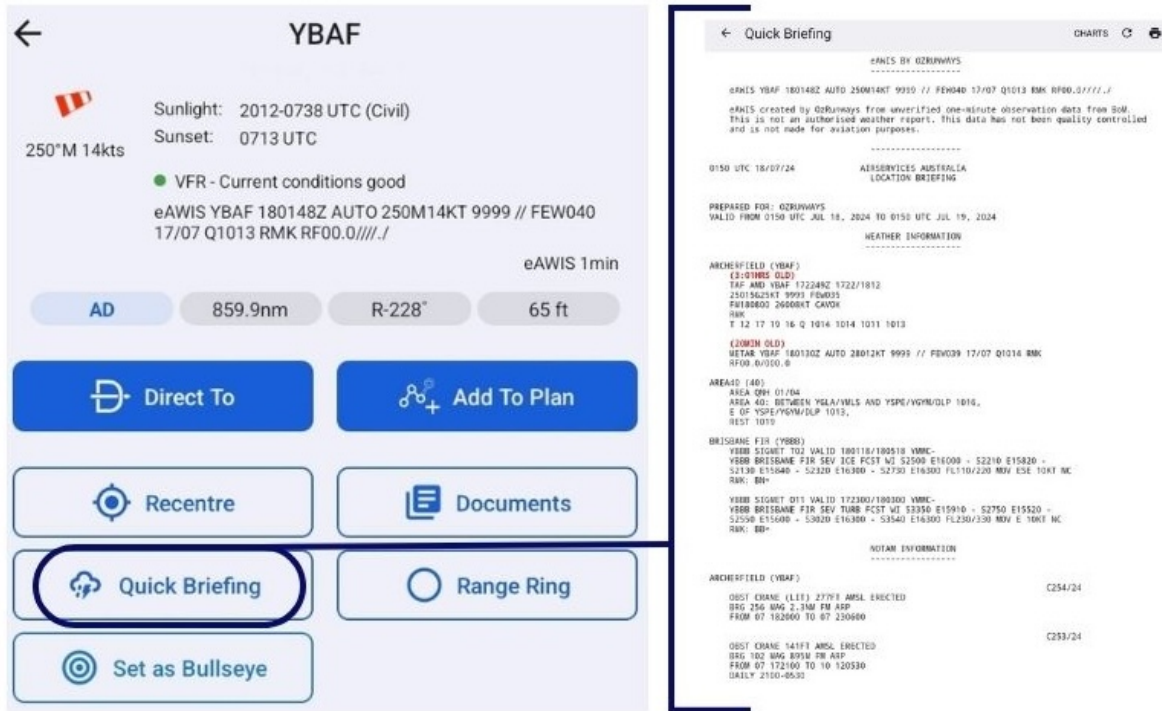
Quick Briefing

At the top of the Quick Briefing page there is a button to open the Chart Browser where you can find the GAFs and GPWTs relevant to the area of the selected waypoint, a reload button to fetch a new location briefing, and a button to print the briefing.

Where available, the eAWIS is displayed at the top of the briefing, followed by a typical NAIPS Aisrservices Australia location briefing, including weather and NOTAM infromation applicable to the waypoint area.

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

Naturally, TAFs or NOTAMs are not displayed for locations that have none.

Weather Overlay
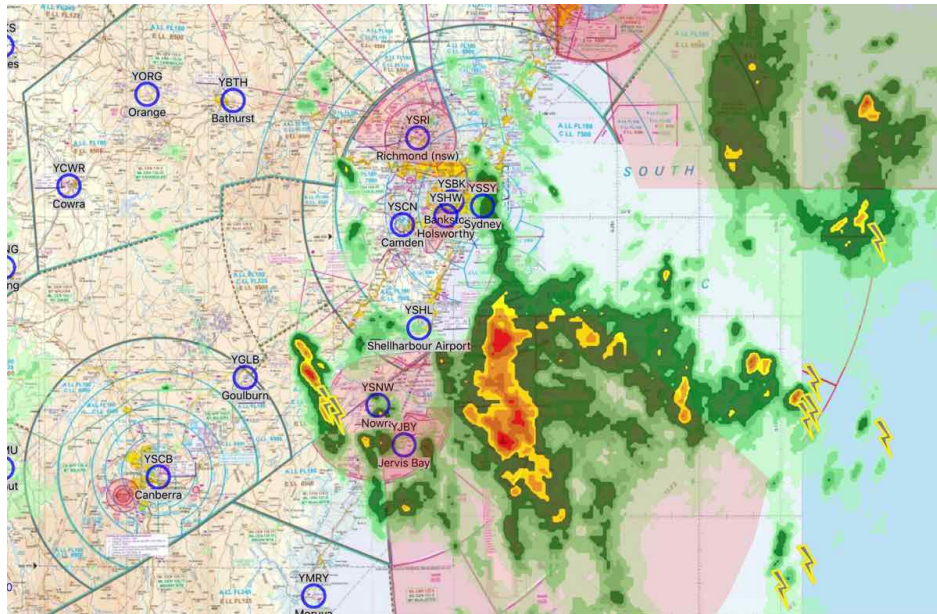
Weather Overlay

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

The Weather Overlay is turned on/off on the Range Ring on the Map Page

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 8.2 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 can be found at https://en.wikipedia.org/wiki/DBZ_(meteorology).

MetEye / Satview / Windy

These items are accessed by pressing the Radar button on the Map Page. Use the controls at the top to switch between MetEye / Satview / Windy

MetEye
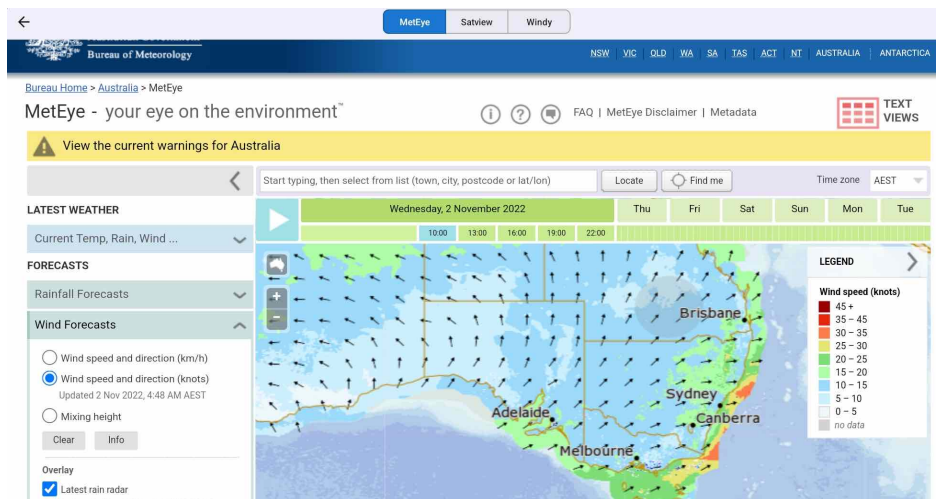
Weather

Provides access the Bureau of Metereology MetEye feature. Visit the MetEye website for more infromation: http://www.bom.gov.au/australia/meteye/

Satview

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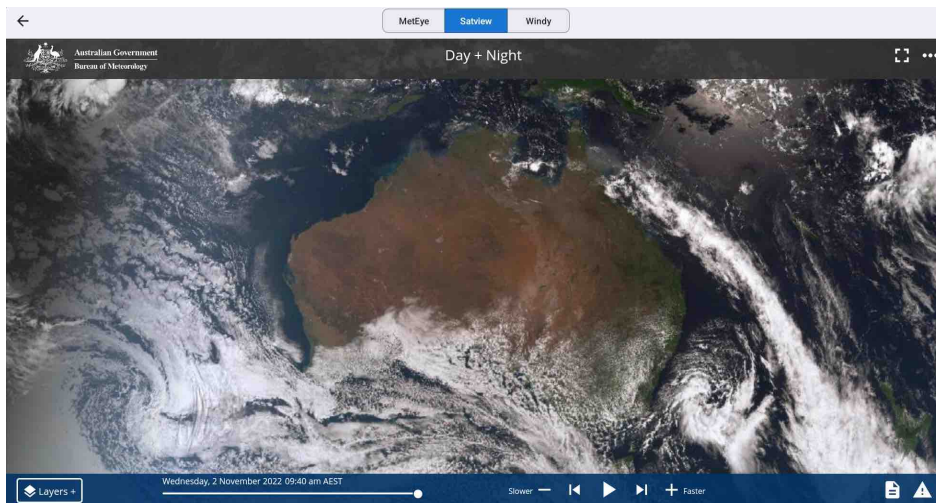 apart for 4 hours. Selecting the Layers button in the bottom left hand corner enables you to activate multiple features such as Lightning, Cities, Roads, and more.

Windy.com
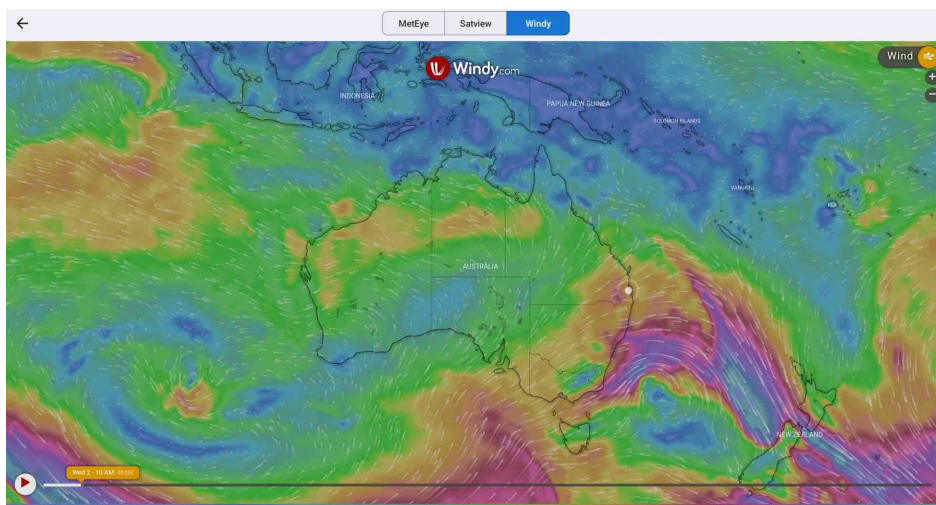
Windy is a forecast tool. The time of the forecast can be advanced using a menu at the bottom of the display. Wind, cloud, temperature, rain (and snow), and atmospheric pressure may be displayed (and forecast). In addition, where appropriate, the altitude may be set. Windy is a private company that accesses 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.

Brief / SmartBrief

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 Brief (or SmartBrief) Page

Aircraft

Aircraft profiles are found in the setting tab. Any aircraft profiles you have setup appear here.

When you create a flight plan, the Active aircraft profile will be added automatically, and you will be able to see it in Plan Details.

Aircraft Profiles List

Creating a new Aircraft Profile

Tap the '+' to manually create and setup an aircraft profile from scratch (i.e. all fields will be empty).

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

When expanding a list of options, make sure to press okay at the bottom of the list to save your selection.

Automatically adds profile to new flight plan

ACTIVATE — Delete

Tap to edit

Tap to expand options

Tap for more information
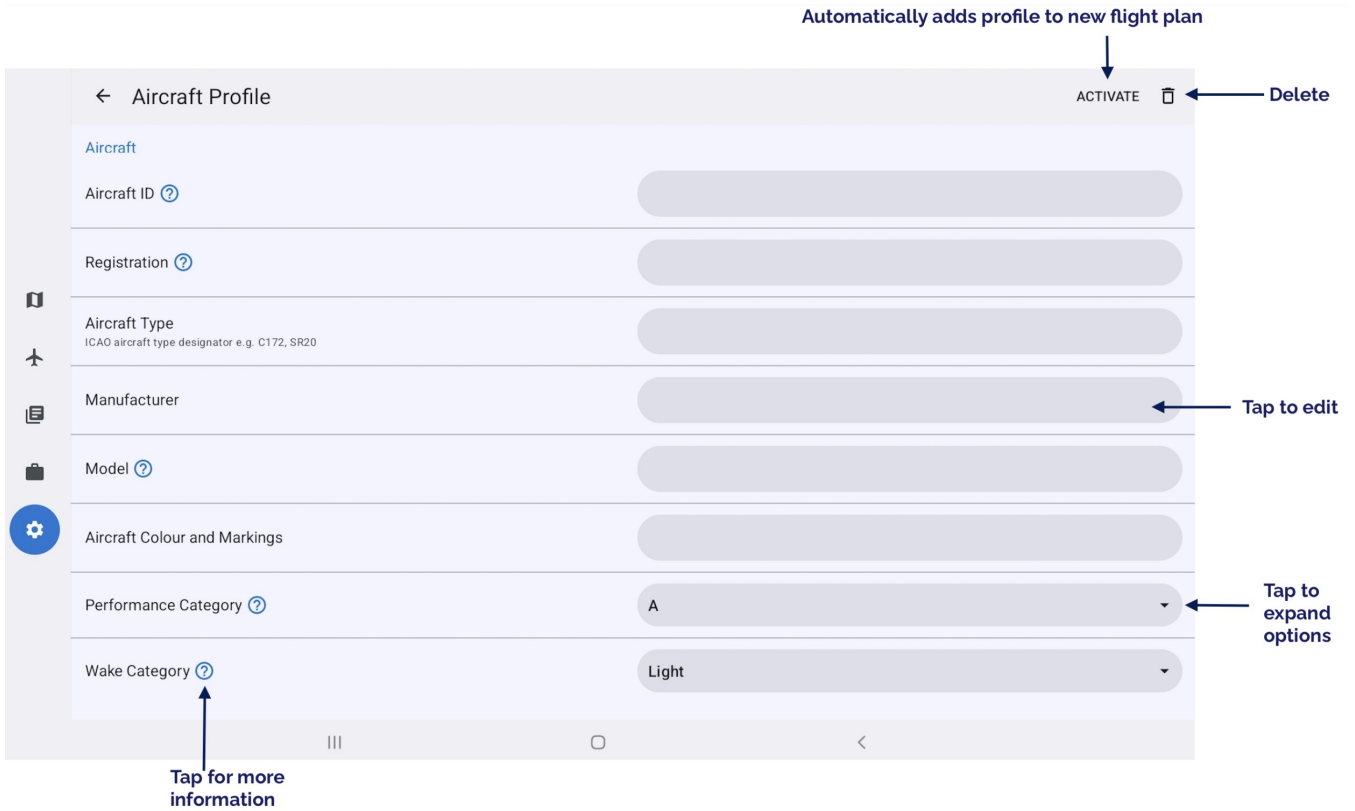
Create new aircraft

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 9.3).

Aircraft edit view

Importing & Exporting

Cannot import or export Aircraft profiles at this stage.

GPS HUD

The GPS HUD appears across the top of the Map Page. With no plan selected there is only one row of fields.

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 and held, will exit the current plan.

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.

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

Bearing to next waypoint

CRSR BRA

Position of Cursor referenced to yourself

CURSOR

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

DTG

Distance to go; distance remaining until reaching next waypoint

ETA

Estimated Time of Arrival at next waypoint

ETE

Estimated Time Enroute

FREQ

Centre Frequency

FREQ/NXT

Current *and* next Centre frequency combined into one box

FREQ NEXT

Next centre frequency based on your current heading

GPS Error

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

GS

Ground Speed in knots.

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.

LAT

Current GPS latitude

LAT/LON

Current GPS latitude/longitude consolidated in one box

LCL

Local Time (device timezone)

LON

Current GPS longitude.

MGRS

Military Grid Reference System

TRK

Current GPS track

TRK (CARD)

Current GPS track in a compass card format

UTC

UTC (Zulu) Time

UTM

Universal Transverse Mercator

UTM

Universal Transverse Mercator with Military Grid Reference System band

VS

Vertical Speed

XTK

Cross Track Error

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, 30m or less

Yellow: Poor accuracy, between 30m and 200m

Magenta: 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 aircraft away from any obstructions.

Traffic

OzRunways/RWY Traffic System (in-app)
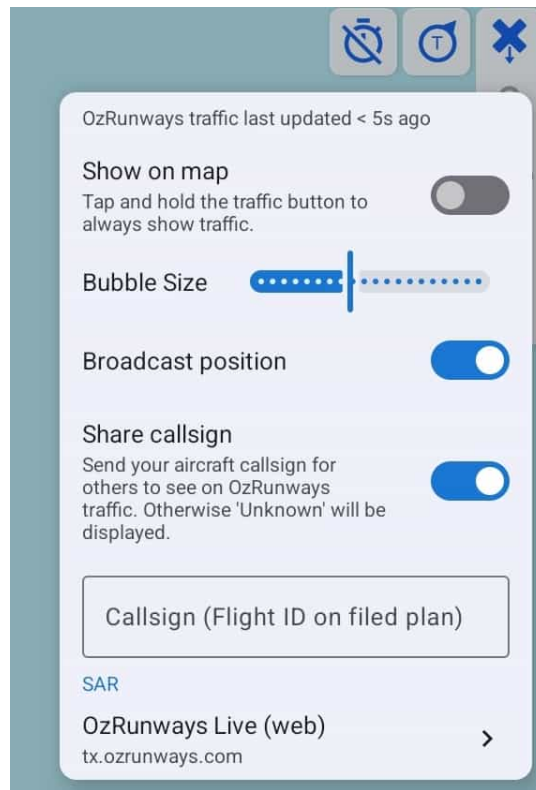
Traffic options on map

RWY has implemented a traffic system based on the use of mobile (3G/4G) networks. The way this 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 mobile network that hold your callsign, your position, heading and climb/descent rate. In addition, if you have an active plan, that plan is sent to an OzRunways 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 icon in the top right of the map screen enables or disables the traffic display as seen in Image 11.1. A single tap on the traffic icon reveals the traffic system options as shown above in Image 11.1. A 'tap and hold' on the traffic icon will momentarily enlarge all traffic bubbles on the map. If you wish to see other OzRunways/RWY traffic on the map you must also broadcast your own position. If you wish to hide your callsign then turn off the 'Share my callsign' option. Your callsign will then appear as 'Unknown'.

Traffic icon

The traffic displayed is the closest 18 active aircraft to your current location. Each light blue traffic icon displays a callsign as specified in the Callsign box of the Traffic Options icon.

Below the callsign is the altitude relative to your current altitude in 100's of feet. For example see Image 11.2. VH-KEG is 800ft above us, and VH-OTY is 4900ft above us. Additionally, the direction of travel is indicated by an arrow on the circumference of the circular icon. In the figure VH-KEG is tracking south, and VH-OTY is tracking west. If you tap on a traffic icon it will momentarily zoom, and if the user has an OzRunways/RWY plan active it will display that plan as a magenta line.

⊘	Traffic Disabled
◯	Enabled but no connection
Ⓣ	OzRunways Traffic Receiving
Ⓐ	ADS-B Traffic Receiving
ⒶⓉ	OzRunways and ADS-B Traffic Receiving

Traffic icon legend

tx.ozrunways.com (traffic wesbite)

OzRunways & RWY traffic is also displayed on the website https://tx.ozrunways.com This is displayed on a normal web browser (not the app). Aircraft are illustrated on the map as red directional arrows. Tap on any of these arrows for more information. If a plan is available for that aircraft it is displayed in blue. Airspace is also displayed on the map and can be indicated by tapping on the airspace in question.

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 RWY 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

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

ADS-B Receiver Setup

Connect your device to the ADS-B receiver in **RWY → Settings → External Devices → Select external device network**.

Do not connect in the tablet's own WiFi settings otherwise you may lose access to your cellular data / mobile internet.

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:

In **RWY → Settings → External Devices** ensure that **Enable GDL90/Stratux/Flightbox** is switched **ON**.

The receiver should appear in the External Devices section along with it's name, number of messages being received, and IP address.

Your device can likely 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 running the latest version of RWY in the Play Store / Google Play app. RWY receives regular updates for 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 11.2)

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.

Check out the SkyEcho and other ADS-B devices on our website: https://www.ozrunways.com/store/adsb/

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 available. 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 of an aeroplane in the midday (Australian) sun. If the device gets too hot it results in a shutdown of the device 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 (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 RWY 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 device as your primary source of navigation. It goes without saying that you may not use the app for IFR navigation.
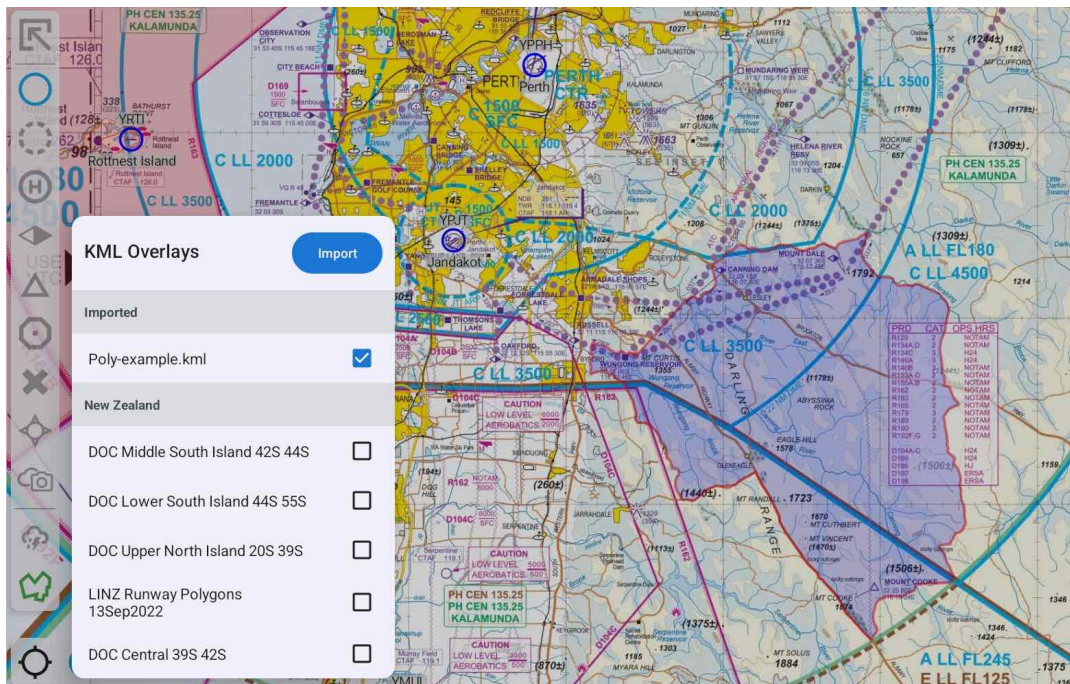
Graphic Overlays

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 RWY. This is achieved by first getting the KML file on to your device, by email or any other method. Tap on the file and choose to open it in RWY. Or alternatively, tap on the KML Overlays icon (see KML Overlays in the Map Page section) and press Import to browse for the file. When on, the KML file name will a tick next to its name in the list, and no tick 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 Conservation (DOC) Protected Areas.

Tap and hold a KML to delete it. (note: only user-imported KMLs can be deleted)

Example KML overlay near Jandakot (YPJT)

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 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.