# Yabby Cellular GPS & WiFi – Getting Started

INTRODUCTION

The Yabby is a super compact, rugged GPS tracking device that has been designed for tracking bags, tool boxes, containers, trailers, skip bins, animals and many other assets where long battery life and small form factor is required. It's a great choice where access to external power sources does not exist or is difficult to access. The Yabby is very portable so it can be moved from asset to asset as required.

While able to perform Trip Based tracking similar to the Oyster and Remora by default the Yabby simply records the beginning and end point of movement. As such the Yabby should be thought of as a location/movement detection device rather than a detailed trip tracking device. If the Yabby is the best choice for your application please contact us to discuss the appropriate parameter settings to meet your tracking needs. Please keep in mind the Yabby works off of three AAA batteries so frequent tracking updates will reduce battery life resulting in frequent battery changes.

See the product page https://westcoastgps.com/Yabby-Cellular-Datasheet-WCGPS.pdf for more specifications.
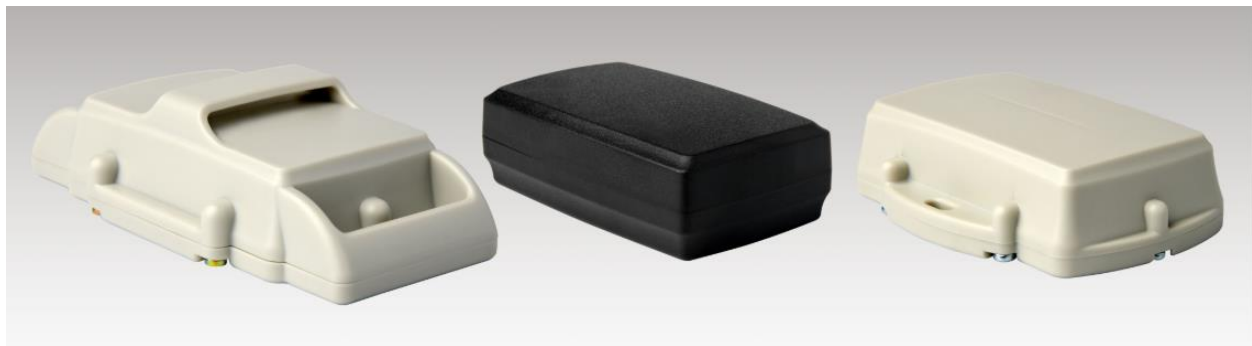
You will receive a compact box containing the Yabby, 6 housing screws (in a small plastic bag inside the housing), and typically the SIM card will already be installed.

This guide is only for the Yabby cellular version which comes in 2G or 4G Cat-M1/Nb-IoT and uses GPS or Wi-Fi to locate. There are four variants:

- Yabby 2G + GPS
- Yabby 2G + WiFi
- Yabby 4G Cat-M1/Nb1 + GPS
- Yabby 4G Cat-M1/Nb1 + WiFi

SIM CARD

Typically you will receive your Yabby with the SIM card already installed. The information below is supplied in case you have to install the SIM card yourself or the SIM card has to be replaced.

The Yabby uses a Nano SIM card (form factor 4FF). The SIM holder is on the underside of the control board so the control board will have to be removed/lifted out of the housing to insert/swap the SIM.

CAUTION: When handling the control board take steps to prevent static discharge which could render the device inoperable. DO NOT touch the GPS antenna.

Slide the SIM card into the holder with the keyed corner first and the SIM contacts orientated down to the main board.

BATTERIES

The Yabby uses 3 x AAA 1.5 V off the shelf Lithium batteries. *Note: The Yabby does not have reverse voltage protection so take care to insert the batteries with the correct polarity – the springs are the negative terminals.*

If you use normal Alkaline AAA batteries they will only operate for about 50% of their useful life. Do not use rechargeable batteries.

To ensure you change batteries before the current batteries go flat you should also pay close attention to the battery voltage being displayed in Live View. For example, the Yabby in the image below is outfitted with three Energizer Ultimate Lithium 1.5 V AA batteries and the battery voltage is displaying as 4.7 V (circled in red):
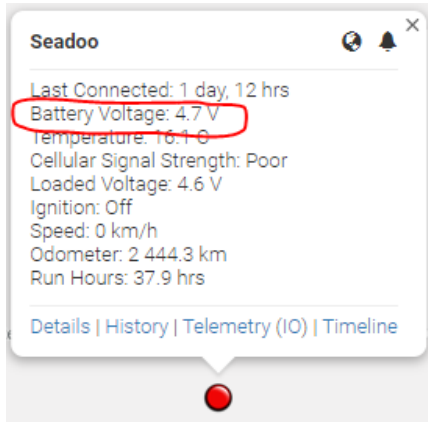
At 4.7 V the batteries are very close to being flat and should be replaced soon. New batteries will display 5.2 or 5.3 V.

Once the batteries are inserted the LED should flash continuously. If it does not, it means the unit has not yet reset. In this case remove the batteries for a minute or two to allow any residual charge to drain and the reinsert the batteries. Failure to reset the unit will prevent automatic APN detection and proper resetting of battery life statistics.

LED Behaviour	Information
Off	If the LED is not on at all, it is likely that the battery is flat, or the device is asleep. Measure the battery voltage with a multi-meter. If there is a charge and you wish to see some activity reset the device by removing and replacing the batteries.
From Power-on-Reset, LED flashes for duration of start up connect, GPS fix, and re-connect or until 10 minutes have passed.	After reset of the Yabby the LED will flash. It will continue to flash until it has completed its start up sequence of connect to server ($Hz flash, gets a GPS fix (1Hz flash), and reconnect to server (4Hz flash). If the connections are not successful this will timeout after 10 minutes.
After first sleep - off	After the start up sequence has completed (connect, fix, connect) or after 10 min the LED will be switched off. No LED flashes will occur until a power-on-reset.
In Recovery Mode – flashes in trip	The LED will flash once every 5s during trips in recovery mode.

GETTING ONLINE

Once the batteries are inserted the internal LED will begin to flash. The Yabby will do the following:

- Connect to the server: if the SIM card works the Yabby will connect and attempt to download any firmware and parameter updates then fetch fresh GPS aiding data.
- Get a GPS fix: the Yabby will attempt to get a GPS fix. You can speed this up by moving to an area with good GPS signal – outdoors with a clear view of the sky.
- Reconnect to the Server: the device will attempt to connect again to upload the result of the GPS fix.

If the Yabby does not complete these steps in 10 minutes it will go to sleep and try again on the next heartbeat or the next trip start.

If the LED flashes but the Yabby does not connect check to ensure the SIM is in the holder correctly. Failing that contact us and ask us to check that the SIM is working properly.

OPENING and CLOSING the HOUSING

Once online all that remains is to seal the housing. Seal the device carefully to achieve the IP-67 rating. Ensure that the clear silicon seal is in good condition, is lying flat, and is not fouled by any plastic debris or other material. WestcoastGPS does not warranty against water ingress into the Yabby.

1. Close the housing, and gently squeeze it shut. Foam on the lid will compress against the batteries holding them firmly in place.
2. Tighten the 6 screws to a uniform tightness. On first assembly the screws may be quite stiff. Over tightening will crack the lid and the housing.
3. If you wish to replace the batteries and open the housing, be sure to check that the silicon seal is in good condition before closing the housing again.
4. Contact us for replacement seals, housings, and housing lids.

DEFAULT SETTINGS

By default the Yabby is setup for Movement Detection. The following default settings apply:

- Out of trip wake up and upload every 12 hours – a heartbeat
- Upload on movement - trip star
- GPS fixes every 15 minutes
- Upload on trip end after 3 minutes of no movement

These settings and many more are configurable and the Yabby can be configured to do Trip Based tracking similar to the Oyster/Remora. The defaults provide a good starting point. If you require different parameter settings for your own unique tracking needs please contact Support who will assist with changes to those settings. Please remember that more frequent tracking will shorten battery life.

LOCATION FIXING

Yabby GPS

The Yabby GPS uses its GPS module to determine its position. Indoor or dense urban environments can greatly impact GPS performance sometimes leaving the devices unable to get a fix.

Yabby WiFi

The Yabby WiFi scans for Wi-Fi Access Points (Wi-Fi Routers) and records the signal strength from each then uses this information to triangulate its position. If Wi-Fi signals can't be found the Yabby WiFi has cellular fall back meaning it will determine its position based on which cellular tower it is communicating with. The accuracy of this measurement will be quite unreliable, however it will give an idea of where the unit is.

Wi-Fi signals can be received indoors (even basements) and in dense urban environments, hence Wi-Fi geolocation has the ability to provide a position where GPS will not. In practise, in an urban environment, accuracy should be around +- 30m.

Note: The Yabby does not use Wi-Fi to send its data to the server. All data is sent to the server using a cellular connection. The Yabby only uses Wi-Fi sniffing to obtain its position.

MOVEMENT TRACKING

The Yabby uses its accelerometer to detect movement and operates as follows:

Accelerometer wakes the unit and only starts a trip when it has seen 1 second worth of above-threshold movement in a 4 second period or repeated short movements over several 4 second periods.

- Yabby determines it is moving – equivalent to enter a trip for other devices.
- Once moving the accelerometer no longer wakes the Yabby
- The Yabby wakes every 2 minutes on a timer and does two things:
    - Asks the accelerometer if there has been any movement in the last two minutes
    - If its time to log a position it gets a GPS fix and logs it
- Once the accelerometer claims there has been no movement, the default is 5 minutes, the Yabby determines that movement has stopped. The GPS version will also wait until speed reported by the GPS is low in order to prevent movement ending when the movement is very steady and constant, ex a train where acceleration is minimal.

Heartbeats occur every 12 hours when there is no movement – GPS fix and upload.

The Yabby is highly configurable so if more frequent, Trip Based style, tracking is required please contact us to discuss parameter settings. Remember frequent tracking can quickly flatten the batteries.

DEVICE INSTALLATION

The Yabby can be mounted on the asset to be tracked using screws, bolts, cable ties, or industrial adhesives. When choosing a mounting point you have two competing goals:

1. To minimize the chances of the device being accidentally being crushed or dislodged.
2. To maximize the GPS and mobile cellular reception and provide adequate ventilation.

Since the Yabby is a battery powered device reception is critical to its performance. Experiment with different mounting locations to ensure you are achieving the correct performance and if possible choose a mounting point that will not result in elevated temperatures. For instance, mounting the Yabby in direct sunlight on the dash of a non-ventilated cabin may cook the batteries, leading to abnormally short service life.

TRACKING YOUR ASSET

There are two methods for tracking your assets, using the Telematics Guru app on your Android or Apple devices and/or by logging into the westcoastgps.com website with the credentials provided to you by WestcoastGPS. The App provides basic tracking information including the ability to set up a one-time only "Movement Alert" and to put the asset into "Recovery Mode" should the asset go missing or is stolen. The website provides more robust tracking features including geofencing, alerts, and reports.

To login via the website make sure you click on the "Tracking Platform Login" button:
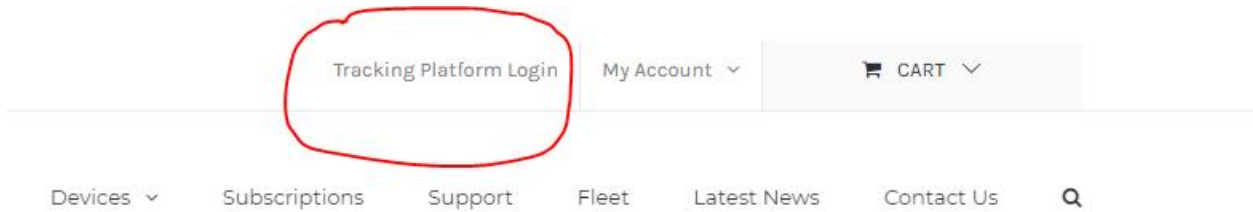
Once you enter your credentials you will be taken to the tracking platform:
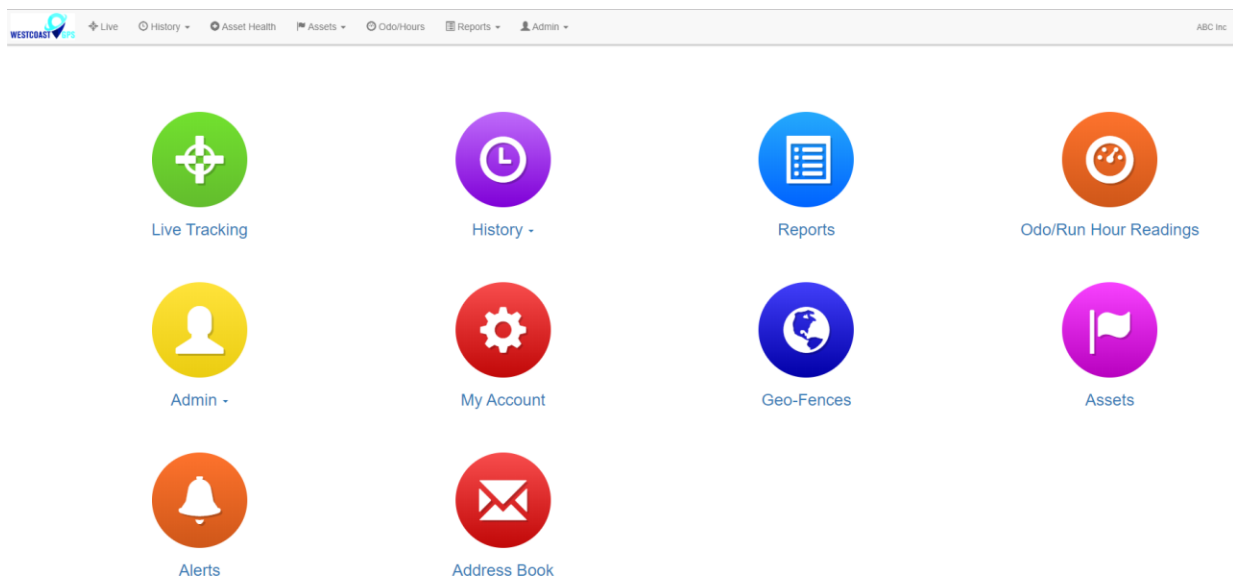
The Tracking Platform is intuitive and easy to use. Navigate using the tabs across the top or by clicking on the balloons. If you need to return to this page simply click on the WestcoastGPS logo on the top left.

To download the Telematics Guru app use your smart device (Apple/Android phone/tablet) to click on the links below:

https://itunes.apple.com/au/app/telematics-guru/id1132506292?mt=8

https://play.google.com/store/apps/details?id=guru.telematics.mobile.droid

TRACKING PLATFORM DIFFERENCES FOR THE YABBY

Given that by default the Yabby is set up to be a location/movement detection device there are two main differences in the way the Yabby will display on the Tracking Platform.

First, in Live View the map icon will not change from red to green when the Yabby is mobile. In other words by default the Yabby is a point based asset as it reports infrequently.

Second, when viewing History choose "Point History Map View" circled in red below:
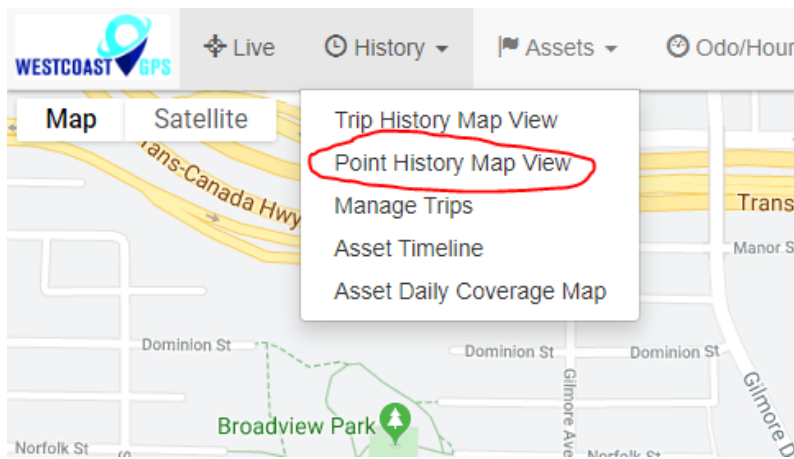
If we have set your Yabby up to perform frequent tracking we will also set it up to use Trip Based tracking and the trips will appear in Trip History Map View vs Point History Map View.

RECOVERY MODE

Recovery Mode is a particularly useful feature when used with battery powered devices to recover stolen and/or lost assets. The Yabby is designed around battery conservation and using as little data as possible but when your asset has been stolen/lost Recovery Mode can be used to dramatically increase GPS fixes and location updates so that your assets can be recovered as quickly as possible.

There are 2 Ways to Activate/Deactivate Recovery Mode

1. The easiest way is to use the Telematics Guru app. When viewing an asset in the app use the Recovery Mode icon to switch Recovery mode on and off:
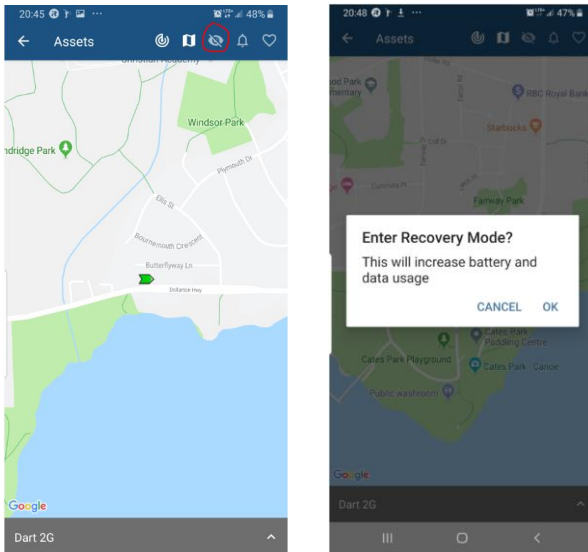
   Follow the same steps to exit Recovery mode. When using the Telematics Guru app your Yabby by default will exit Recovery Mode after 6 hours. If you want Recovery Mode to operate for less or more time use the Tracking Platform as explained below.

2. From the Tracking Platform go "Manage Assets" and use the settings cog to select "Enter Recovery Mode"
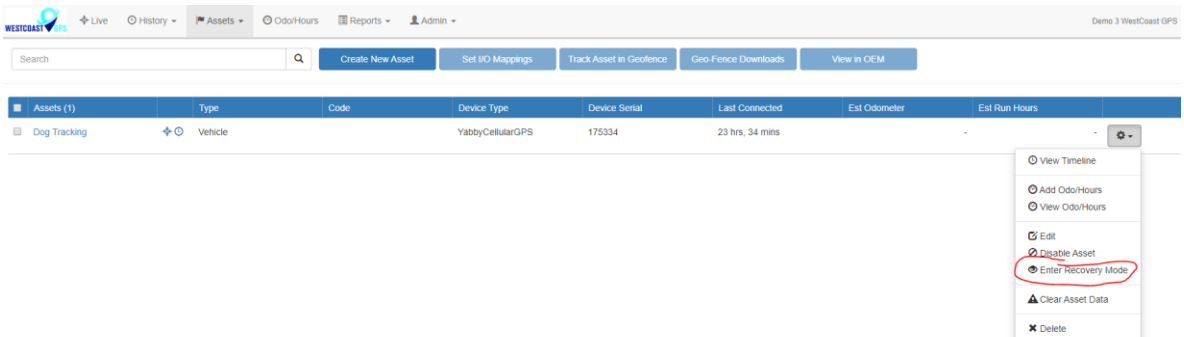
The pop up below will appear. Choose the expiration time and click on "Send Message"
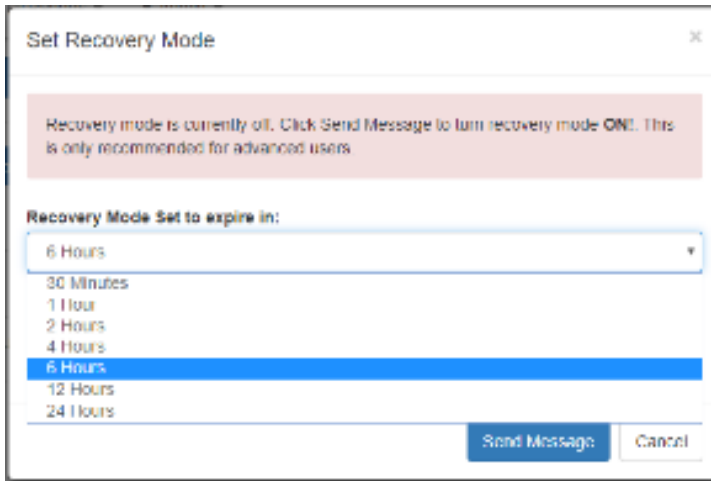
By default Recovery Mode is set to expire after 6 hours but on the tracking platform you can choose between 30 minutes and 24 Hours as per the image above.

To exit Recovery mode follow the same steps and this time you will be prompted to exit Recovery mode.

Important Note – Please Read

Recovery Mode will quickly drain the batteries so be sure to only use this mode when absolutely necessary. By default Recovery mode will turn off after 6 hours. If your device has not been recovered in that time frame be sure to activate Recovery Mode again and/or contact WestcoastGPS to ensure Recovery Mode does not turn off. **Recovery Mode does not Activate until the device performs its next upload so this will depend on the settings related to in trip uploads (most battery powered devices are set to upload on trip start, every 30 minutes while in trip, and at trip end once movement has stopped for 5 minutes) and heartbeats (schedule uploads that occur at least once per day whether the device moves or not). Please do not abuse this mode as doing so could result in extra data charges or suspension of your tracking subscription.**

Remember to turn off Recovery Mode as soon as possible.

ADDRESS BOOK

Alerts are an important component of managing your assets and to take advantage of **Alerts** you first have to do a few things, the most important being to set up your address book. Click on the "Address Button" which is circled in blue below:
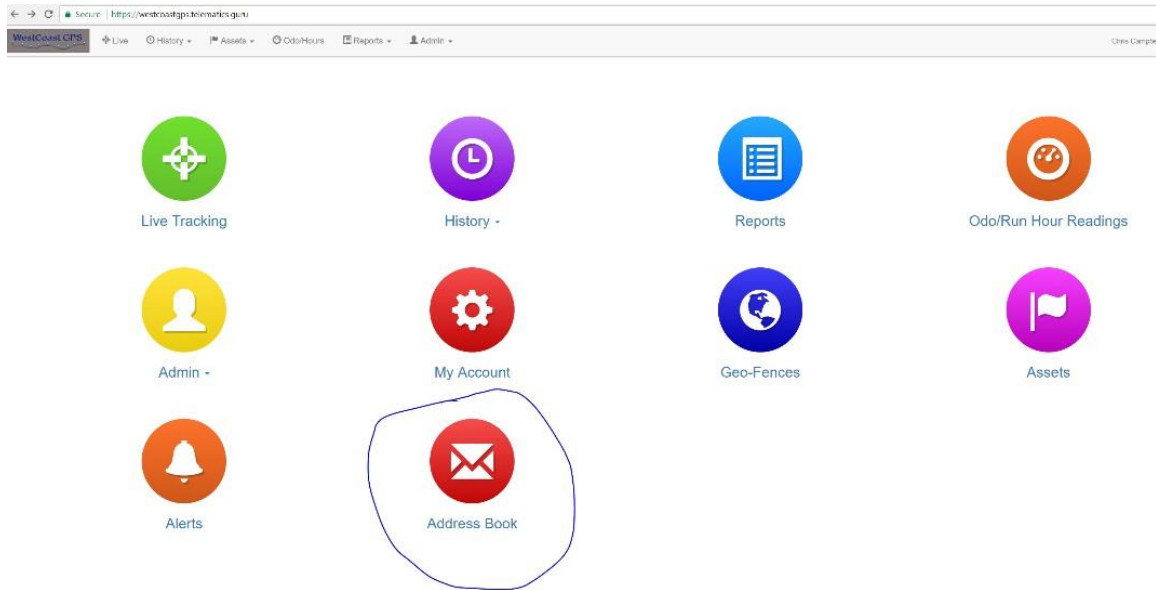
Then click on the "New" button

Enter the email addresses you anticipate you will use for ALERTS. You can use whichever email addresses you want for each ALERT that you set up and you choose which emails to use when you create ALERTS.
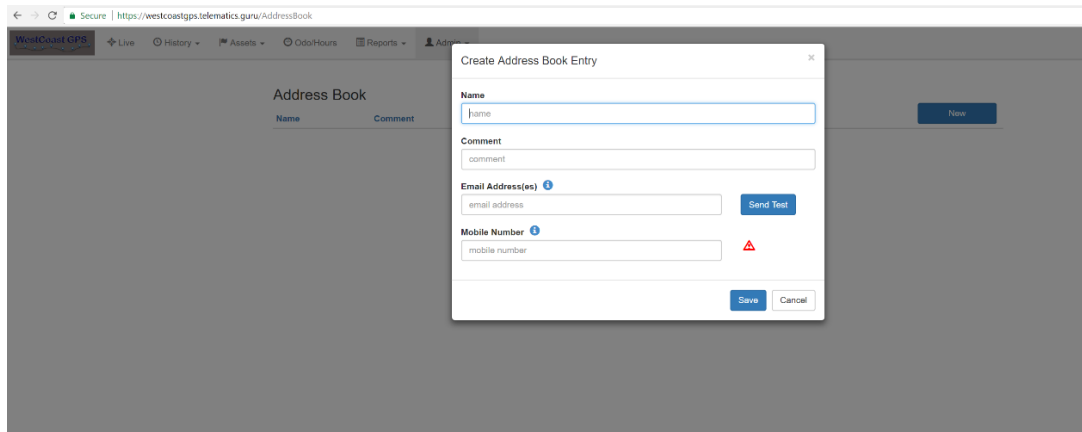
Once you have entered your first email address click "Save" and repeat the process until you have all of the email addresses entered. You can go back at any time and add or delete email addresses.

GEOFENCES

Setting up a Geo-fence is easy. From the main menu (which you can reach by clicking the WestCoastGPS logo on the top left corner) select Geo-fences as shown below:

Begin typing an address and matching options will appear. Select the correct one as shown:
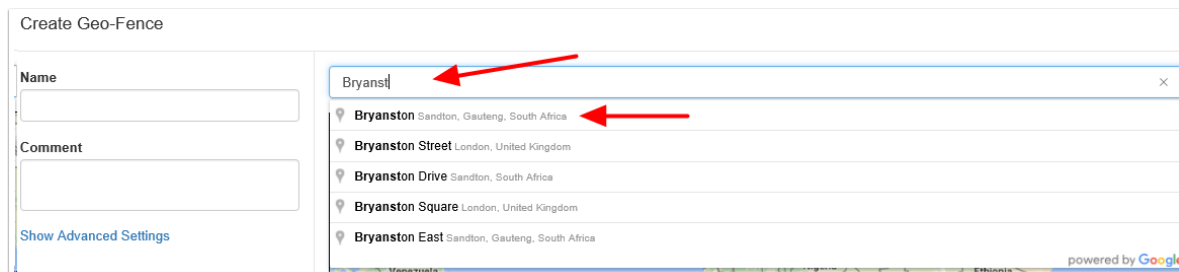
You can now adjust the zoom level using the plus(+) and (-) functions on the bottom right corner of the map, and once you see the area that you wish to create a zone for, use your cursor to click points outlining the shape, ensuring that your last point meets the first point you created, as show below:
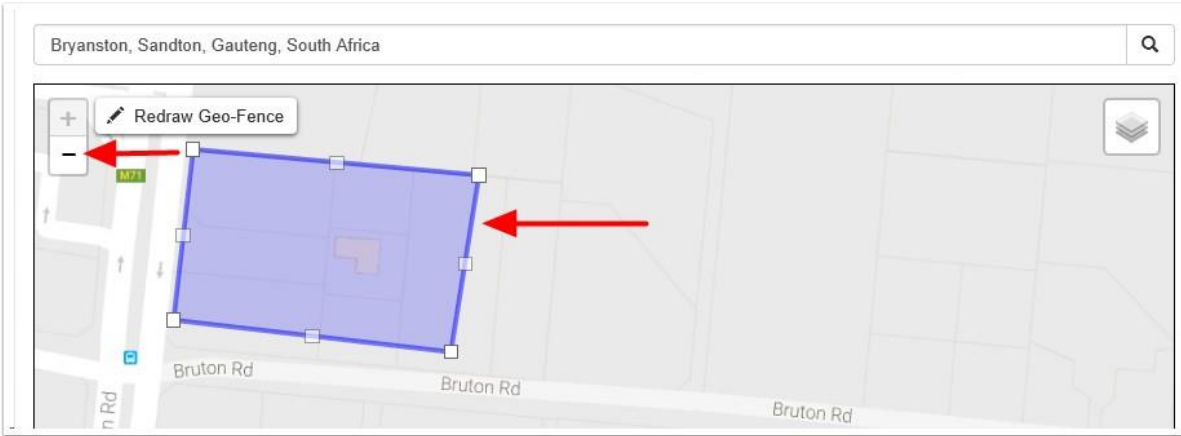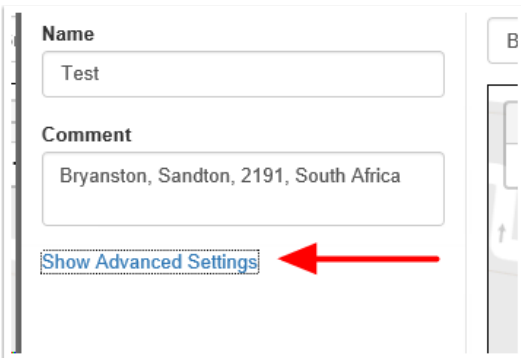
Once you have clicked on your starting point the geo-fence shape will appear and you can adjust the shape by dragging any of the nodes shown by arrows below:
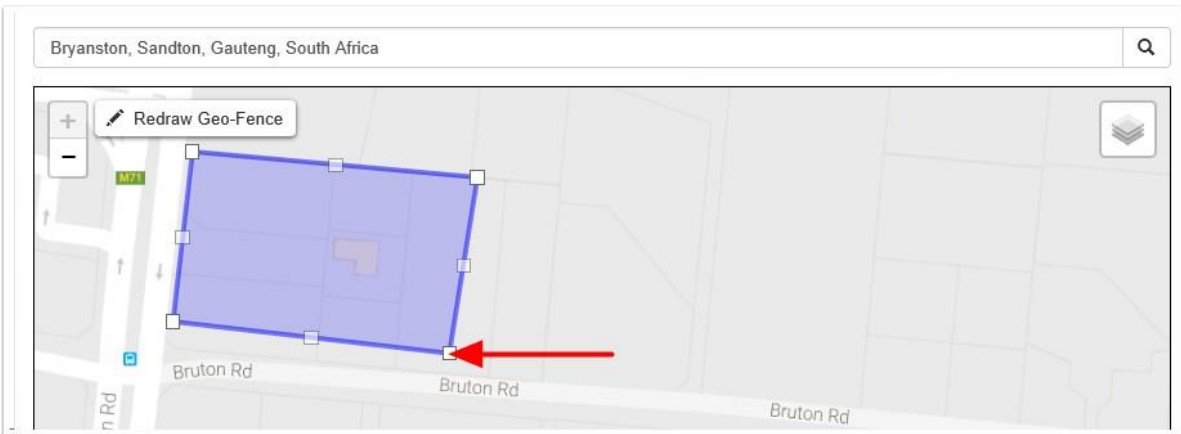
Remember that at least three points must be defined to create an area. Be sure to click the starting point to close the shape. A common stumbling block is not completing or closing the area. The Geo Fence will not save until it is closed.
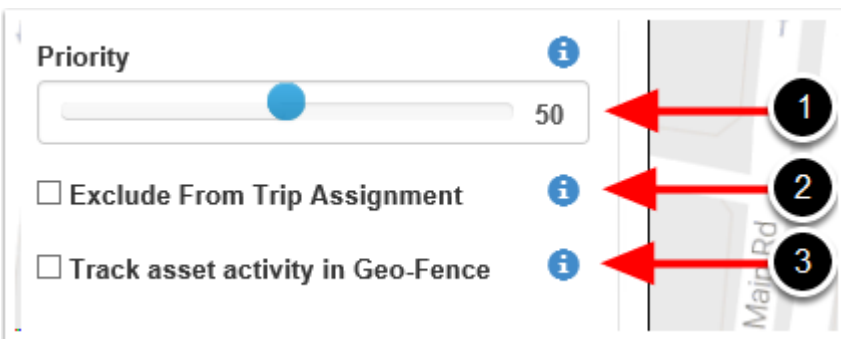
Lastly, name your geo-fence and then click SAVE. The name given to your geo-fence will now appear in all of your trip history and reports.

For advanced options click on Show advanced options.

These are the advanced settings:

1. Priority: Geo Fences with a Higher priority are shown preference over those with a Lower priority. Where two Geo-Fences overlap with the same priority, the fence with the smallest area will be shown preference.
2. Exclude from trip assignment: If selected the Geo-Fence will only be used for setting up location based alerts. It will not be used when looking up trip start and end locations
3. Track asset activity in Geo-Fence: If selected, the system will record statistics for the asset activity inside this Geo-Fence.

ALERTS

Setting up an **Alert** is easy. From the main menu (which you can reach by clicking the WestCoastGPS logo on the top left corner) select **Alerts** as shown below:
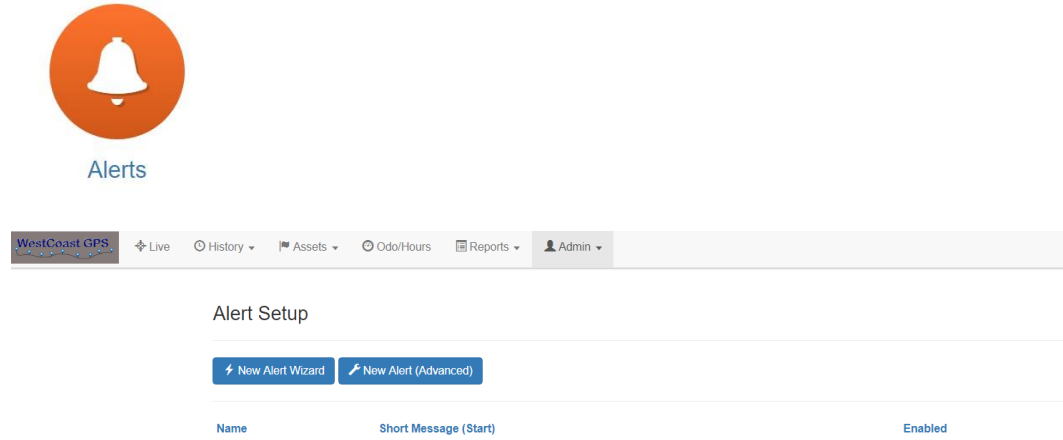
Alerts

Click on "New Alert Wizard"
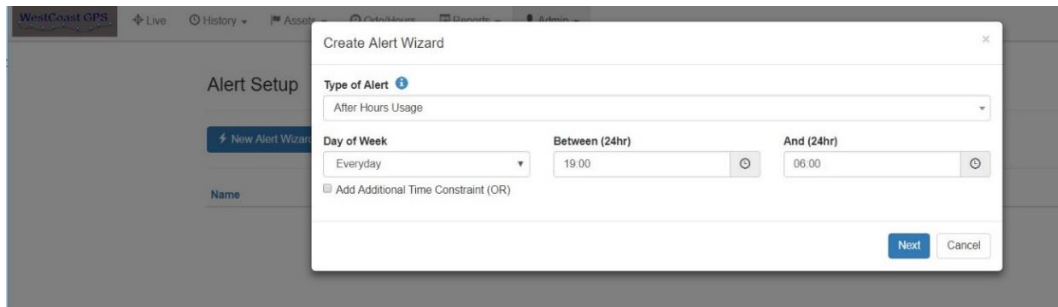
Select the Alert you want to set up:
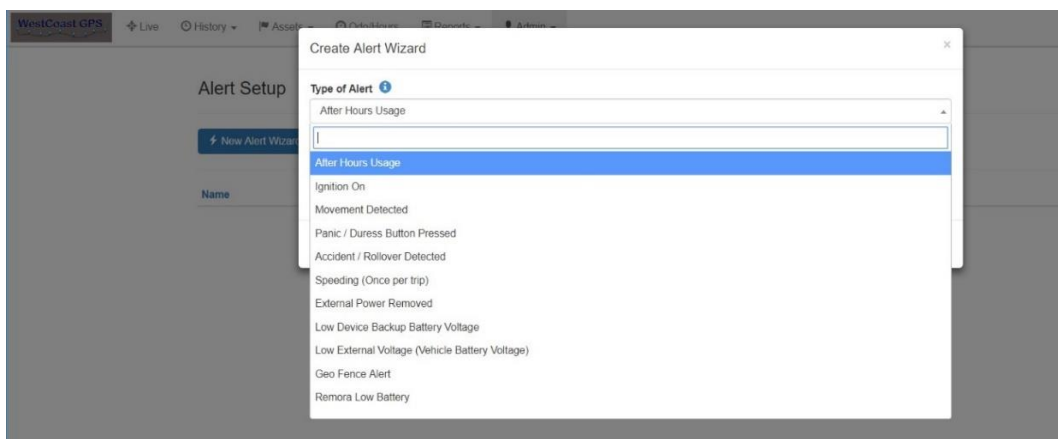
Follow the prompts to set up which asset (device) you want to use for the **Alert** – in this case the **Yabby** and the email address or addresses you want the **Alert** to be sent to.

ASSET NAME/DESCRIPTION

You can edit the name of your asset by navigating to the Asset – Manage Assets (circled in red) page and clicking on the Asset name in blue (circled in red)as per the image below:
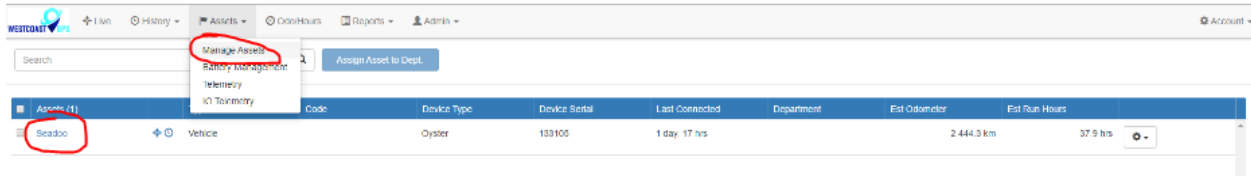
The pop up window below will appear:

Under the "General" tab you can change the name of the Asset and add a Description. Under the "Info" tab there is other data you can enter:

If you choose to enter a photograph under the "Photo" tab please ensure it does not exceed 2MB in size.

This guide introduces many of the Yabby and Tracking Platform features. If you have unique tracking needs, have any problems, or have questions related to using the Yabby, or any of our other products, please do not hesitate to contact us at info@westcoastgps.com