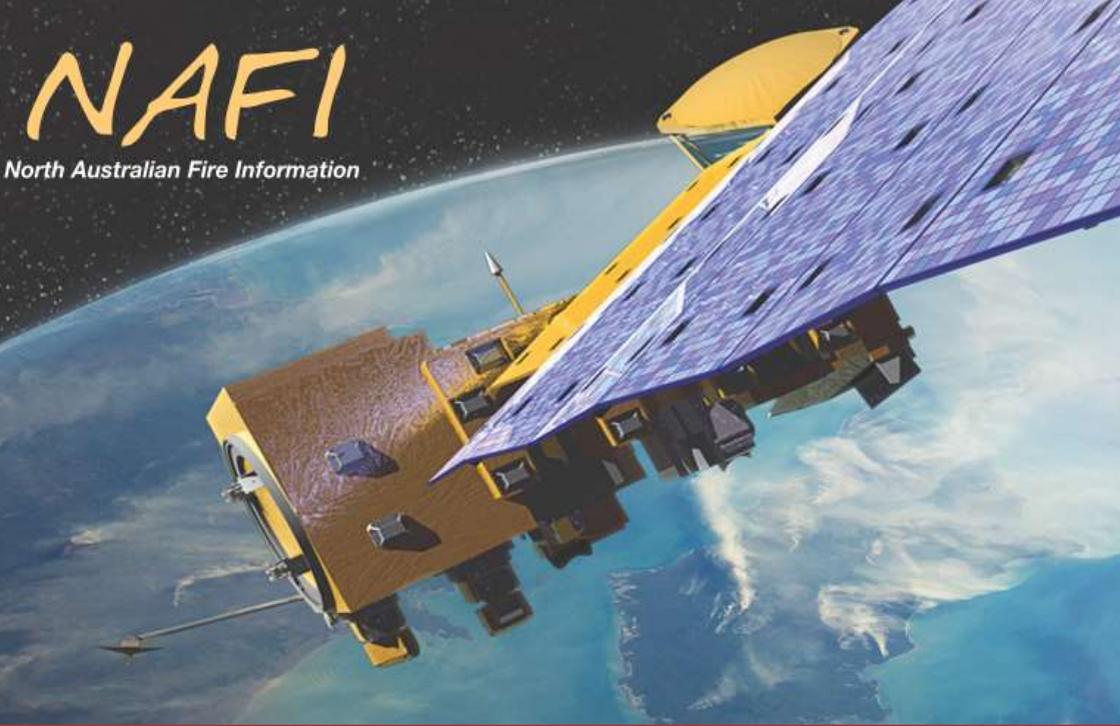


# NAFI

North Australian Fire Information



## The NAFI Booklet



A how-to guide for the NAFI website

Darwin Centre for Bushfire Research

This booklet was produced by the Darwin Centre for Bushfire Research, Charles Darwin University.

The information in this booklet is current as of May 2016 but may date quickly given the nature of the web-based tools described.

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# Introduction

## What is NAFI?

The North Australia and Rangelands Fire Information (NAFI) website was developed in 2002 by the community of fire researchers and fire managers involved in the Tropical Savannas Cooperative Research Centre, to facilitate access for the general community of northern fire managers to regularly updated maps of active fires and burnt areas, in the open landscapes of the Australian rangelands.

**Active fires** are shown via **hotspots** which are updated every few hours. Hotspots are produced from thermal (heat) sensors on a number of different satellites. They are usually accurate to within **1km** of their actual location. Due to the way the heat image is converted into hot spot points, one large fire could show up as many hotspots or a number of smaller fires could appear as one hotspot.

Hotspots are sourced from Landgate Western Australia (from NOAA and NASA satellites) and Geoscience Australia (from NASA satellites).

**Burnt area maps** show you what has already burnt, and are updated every week or so throughout the entire year. They are produced by comparing two different satellite images, generally 1-2 weeks apart, and identifying only the areas that have been burnt. On NAFI, the burnt areas are displayed in different colours depending on the month in which they occur.

These data are produced via a number of satellites that pass over Northern Australia multiple times every day. Burnt area maps are derived from **MODIS** satellites. These sensors look at an on-ground pixel size of **250m**, have a larger spatial extent (covering the whole of the NT in one or two images), and pass over the same spot on the earth's surface twice

daily. For this reason, they are useful for monitoring active fires and providing emergency management information.

Firescars are sourced from the Darwin Centre for Bushfires Research at Charles Darwin University (for NT and northern WA fire scars) and from Cape York Peninsula Sustainable Futures (for Queensland)

This document had been produced to explain how the NAFI website works, and how best to use the data for fire management in Northern Australia.

## **How can NAFI be used?**

The maps available through the NAFI website can be used to help fire managers in this open country respond to current fires, plan their fire management and then assess and report on their fire management.

Section 1 deals with using NAFI to respond to current fires, and includes the basics of interpreting the NAFI maps, how to use web-based tools to track fires, viewing NAFI maps on *Google Earth* and set up email alerts for fires.

Section 2 explains how to use NAFI for planning fire management, and describes how to use various fire histories and how to download NAFI data to mapping software so you can combine it with your own maps.

Section 3 deals with using the NAFI reporting tool which allows you to produce graphs and tables that measure fire patterns in an area of interest. NAFI reports can be used to show how these patterns have changed over time which can be useful for assessing progress.

Section 4 briefly describes the Savanna Burning Abatement tool (SavBAT) which uses NAFI fire scar data to calculate Greenhouse Gas emissions from savanna burning projects.

# 1. Viewing maps of current fires

The North Australian Fire Information (NAFI) Website provides maps of fire based on satellite images to help fire managers across regional and remote northern Australia.

## 1.1 The Homepage

The homepage has a number of features to help you get the fire map you need:



**1** **Read this advice on uncertainty first.** The satellites used are only capable of mapping the approximate location of active fires; their detection of fires is affected by cloud cover and other factors

**2** You can quickly bring up a map of your local area using this menu of pre-set maps. Clicking on the arrows on the left will reveal sub-grouped local pre-set maps. Clicking on a map title will then bring up a map on the screen of recent fire activity in that area.



You can also bring up map of recent fire activity by clicking on the satellite image on the right of the homepage. You will get a fire map across the broad region you click on: e.g. across the Top End of the NT. This homepage satellite image also shows the current cloud cover – courtesy of Geoscience Australia’s Sentinel website.



Underneath the site banner is a set of tabs that bring up different menus on the left, grouped so you can explore different fire management tasks. The standard left-side menu is “View Fire Maps”, as this is what most people want to do first. By clicking on the other tabs at the top you can bring up new menus with tools to help you:

- track active fires
- view maps of past patterns of burning (fire history)
- download data from the NAFI site
- create a printable report that analyses the fire patterns in an area you select and displays them as tables, maps and graphs
- use other tools such as a list of all the fire map layers on the site, the SavBAT emissions calculation tool, and links to fire information.
- access a menu of help information on how to use the NAFI site.



In addition to the help menu, some videos are also available on the homepage, detailing how to use the NAFI site. Just above the videos there is also a link to the latest developments on the NAFI site, such as data updates or new tools, as well as Frequently Asked Questions, links to advice on common issues etc.

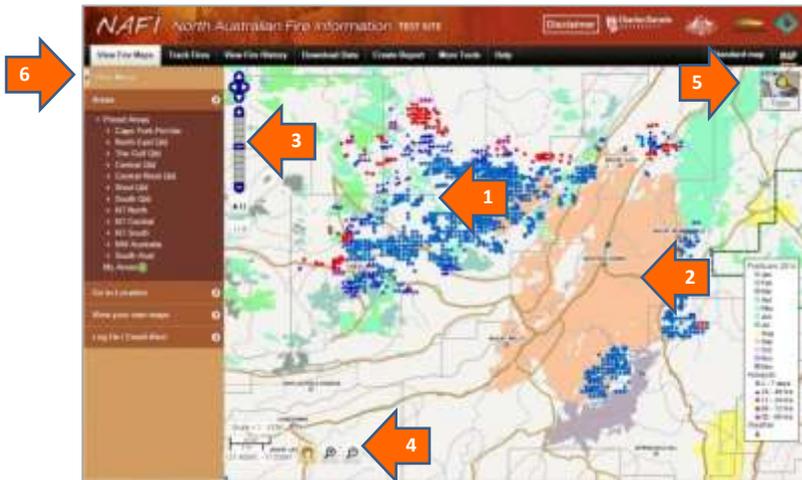


Occasionally there will be developments that affect the maps of recent fire activity that are useful to know about – such as extensive cloud cover in the fire season that limit the detection of burning fires, or a technical problem that has interrupted the fire mapping. This information will be displayed in the menu bar above the map, in the space to the right of the standard menu tabs.



In the lower right of the homepage is a link to the old NAFI site which can be easier to use if you have a slow internet connection.

## 1.2 The Fire Maps



The maps of recent fire activity show:

1 Actively burning fires from the last two days displayed as coloured points, or “hotspots”, with the pink and red hotspots indicating more recently detected burning fires and the blue hotspots indicating fires detected earlier as shown below:

-  Fires detected in the last six hours
-  Fires detected in the last 6 - 12 hours
-  Fires detected in the last 12 – 24 hours
-  Fires detected in the last 24 – 48 hours
-  Fires detected in the last 2 – 7 days

2 → Areas of land burnt in the current calendar year are shown as coloured patches with the colour corresponding to the month in which they were detected as being burnt. The warmer colours (yellow, orange, pink and purple) have been allocated to those warmer months where fires are generally more intense.

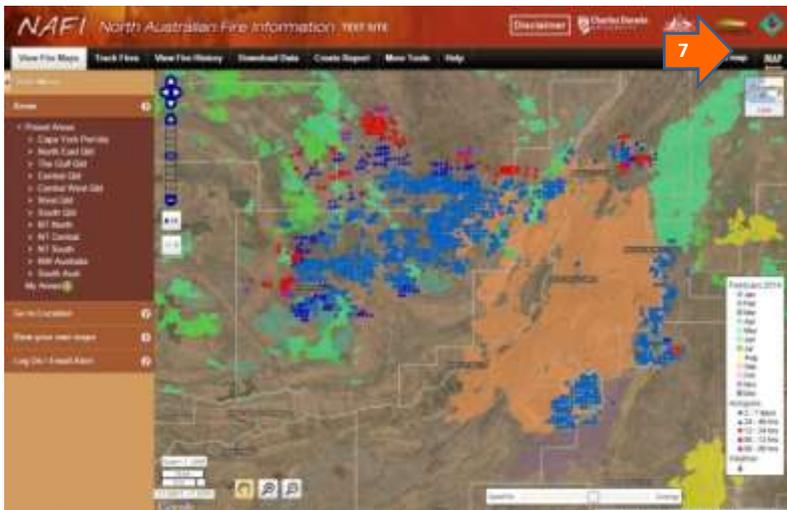
 January	 May	 September
 February	 June	 October
 March	 July	 November
 April	 August	 December

3 → The standard navigation is similar to that used on *Google Maps*, with a slider bar and arrows for panning. Move the cursor to pan across larger distances on the map. The “H” history buttons below the slider bar allow you to quickly go back and forwards through all the maps you have made in your

4 → Alternatively, you can use the zoom-in and zoom-out by rectangle buttons together with a pan button, as featured on the old NAFI site.

5 → You can choose from different background map options by clicking on the small image in the upper right of the map as you would in Google Maps. Choices available are: line/topo maps (default), line maps, and topo maps as well as the Google satellite image.

- 6 You can hide the left-side menu by clicking on the arrow, top left, to make more room for the map. Clicking the arrow again restores the menu.



- 7 If you select the Google satellite image as a background, you can use the slider bar at the bottom of the screen to fade the fire scars so that the background features become easier to see behind the fire scars.

**! YOU NEED TO REFRESH THE MAPS TO SEE THE LATEST**

**HOTSPOTS.** The hotspots are usually updated a few times a day (see *More about hotspots*) but if you leave a NAFI fire map displayed for a long time hoping to see the hotspots update you will be disappointed – nor will moving the map about by small distances (panning) update the information, as this also draws on stored maps to make panning quick. To see the latest hotspots you need to either zoom in or out, or pan by a large distance to get the maps to update. If you visit the site briefly for the latest hotspots, and then close the site and visit it again later on, it will also display updated maps.



**THE MASK** You will notice that if you go far enough to the north, east south or west you will come across a grey border that masks off areas further out. This marks the limit of the NAFI service: no hotspots or fire scars are mapped in these regions, although some hotspots may be mapped just across the grey border.

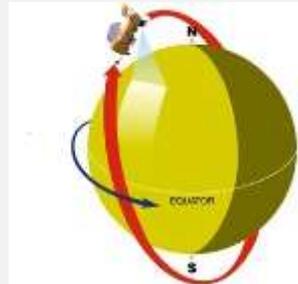
## 1.3 More about hotspots

### How accurately are the hotspots mapped?

- The locations of the hotspots on the map are accurate to within approximately 1 kilometre of their actual location. This error may be greater under some conditions.
- The great majority of hotspots represent actual fires or heat sources such as smokestacks. Occasionally hotspots may be triggered by very hot rock surfaces, smoke plumes or errors in the automated process that detects the hotspots from a satellite image. In the latter case, the hotspots may appear in a line running diagonally across the map. These are usually removed as soon as they are detected.

### How frequently are the hotspots updated?

- Active fires large enough to be detected by the satellites can have their position updated as often as four or five times a day. The NAFI site sources data from five satellites which have orbits that pass over the poles. These satellites only get to see a given location twice a day: once in the day and once at night.



Broadly speaking there are five hotspot updates a day corresponding to the different satellites passing over twice a day:

1. Very early morning pass (around 1-3am CST) Aqua and NPP satellites
2. Early morning pass (around 4-6am CST) NOAA 18 and NOAA 19 satellites
3. Late morning pass (around 10am-12pm CST) Terra satellite
4. Early afternoon pass (around 1 – 3pm CST) Aqua and NPP satellites
5. Late evening pass (around 10pm-12am CST) Terra satellite

Note that these times are Central Standard Time (NT time).

- Most hotspots are displayed on the NAFI site between 30 minutes and 3 hours after they are detected by the satellites, as they need to be processed at a downlink station and sent across the network to the NAFI server. A smaller number of hotspots are supplied to NAFI many hours after they were detected; these are from earlier satellites passes that have been processed in a different way, (e.g. sourced from NASA in the US), and are displayed to provide a more complete record. Because of this inherent delay the NAFI site is not suitable for tracking fast moving fires.

## 1.4 More about fire scars

### How accurately are the fire scars mapped?

The mapped fire scars generally provide a more comprehensive and accurate record of burning. The burnt areas are mapped from satellite images of fire with a pixel size of 250m. This contrasts with the approximately 1 km resolution of the hotspot mapping.



This 250m resolution is suitable for broadly mapping the areas burnt by large open-country fires, but it won't pick up the smaller scale patchiness that often characterises early dry season fires.

Each year aerial validation surveys compare the NAFI fire scar mapping with actual burnt areas. These show that the NAFI mapping is between 85-90% accurate. The accuracy is lower in the more wooded, moister

northern and coastal regions, and in the more developed landscapes further south.

### **How frequently are the fire scars mapped, and how accurately are they dated?**

In the northern fire season, the fire scar mapping in a given area of the fire-prone far north (north of 20 degrees South) is usually updated once a week – occasionally twice a week.

NAFI mapping is undertaken using a combination of both automated and manual processes. Using MODIS imagery two (cloud-free if possible) image dates are selected, generally about a week apart. A computer program creates polygons/areas grouping the image into similar regions based on changes between the image dates.

The rest of the process is largely manual, with the NAFI mapper visually identifying burnt areas based on shape, pattern and context, with the help of additional data such as hotspots and fire lines. Polygons that have been visually identified as containing burnt areas are selected and copied into a final burnt area map for upload to the NAFI website.

If the interval between the two images dates covers the end of one month and the beginning of the other, then the fire scar is given the colour corresponding to the month with the most days in the interval.

So, the cut-off date between one month and the next in the fire scar mapping is only approximate for most months.

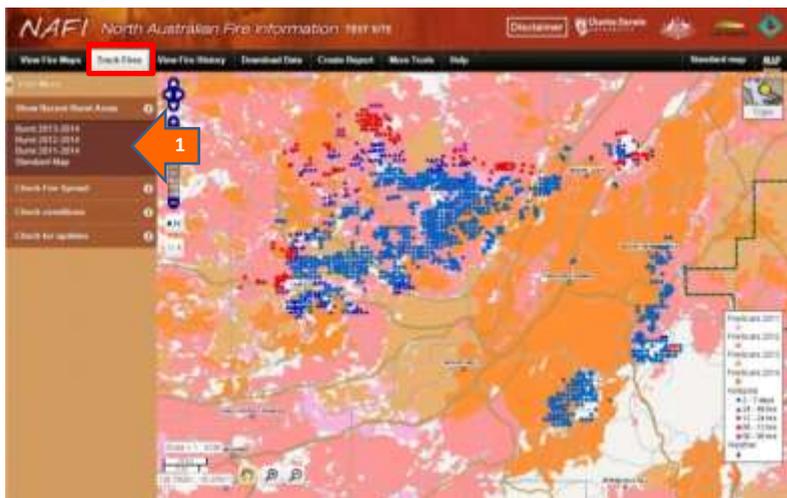
#### **July-August cut-off**

The exception is the cut-off date between July and August, which is important for Carbon Farming Initiative Savanna Burning projects. Images are chosen to ensure that mapping identifies all July fire scars correctly and does not assign August scars to July.

## 1.5 Tracking Fires

Beyond locating fires, the NAFI site can also be used to get more information on the behaviour of an active fire. The tools to do this are found in the **Track Fires** menu – click the tab to the right of the View Fire Maps tab. You should then see the left hand menu with the various tools for tracking fires.

### Tracking fires: Show Recent Burnt Areas



1 By clicking on one of the layers in the **Show Recent Burnt Areas** menu you can display the most recent one to three years of fire scars. In the far north of the region, where rainfall is reliant annually, this can provide a good guide to grassy fuel levels. In the map above, the white and pale pink areas have not been burnt for three and two years respectively, and may have more fuel available for fire.

To restore the map of current year fire scars, click “Standard Map”. Using the satellite image background and the slider bar to fade the fire scars can also be useful.

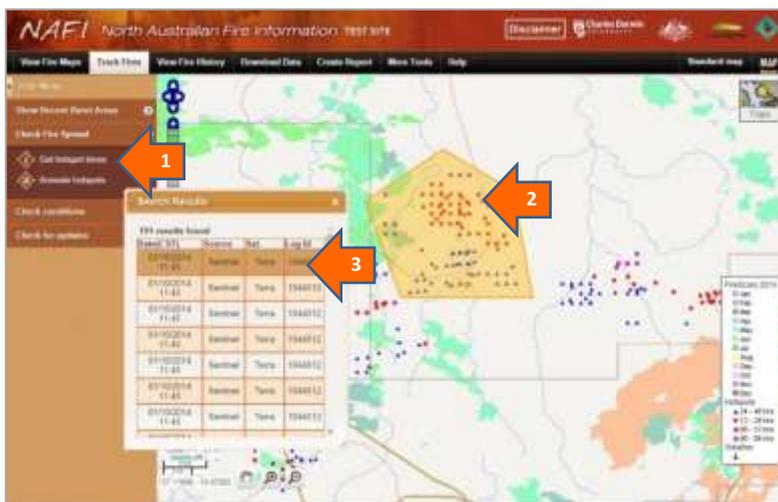
## Tracking fires: Check Fire Spread



This menu item has two useful tools for checking how rapidly and in what direction a fire is spreading, as well as where it may have started.

### Get hotspot times

The **Get hotspot times** tool displays in a table the date and times at which all hotspots in a selected area were detected by satellite. This table can be useful for finding out more about how a fire is spreading and where it may have started from. This tool can be used on recent hotspots as well as those from past months and years.



- 1 Clicking on the **Get hotspot times** tool will produce a small yellow circle at the tip of your cursor; use cursor to draw a boundary around a fire that you want to get hotspots times for.

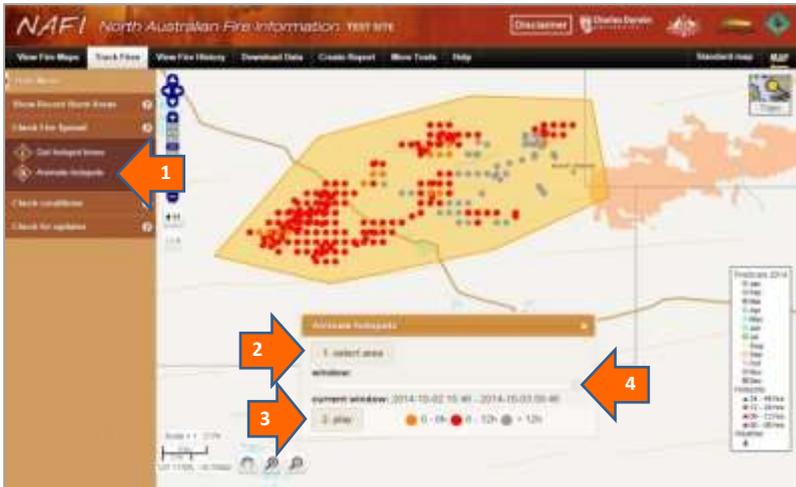
**2** Double-clicking the completed boundary will highlight the area selected and bring up a list of all the hotspots within the area and the times at which they were detected by the satellites – as well as which satellite detected them, what organisation the data was sourced from and the Log Id (used by site administrators). You can drag the table to a convenient place on the screen with the cursor.

**3** You can highlight details of a hotspot in the table and that hotspot will be highlighted in the map in yellow. The table is ordered with the earliest hotspots at the top, so highlighting the topmost hotspots in the table can give you information on where the fire may have started.

**! THE LOCATION OF THE EARLIEST DETECTED HOTSPOT MAY NOT BE WHERE THE FIRE STARTED.** The actual early stages of a fire may have been too cool to be detected by satellites or may have occurred on days where detection was hampered by cloud cover.

## Animate hotspots

The **Animate hotspots** tool creates a mini-movie of the spread of a particular fire by animating the hotspots based on their time of detection. This can give an idea of how a fire is spreading, however care should be taken interpreting these animations given that the satellites may not have detected all hotspots in a fire. This tool is for hotspots up to a week old.



1 → Clicking on the **Animate hotspots** tool will bring up a panel at the bottom of the screen – you can move this with the cursor if you need to reposition it next to your hotspots of interest.

2 → Next, click the “1. select area” button on the panel and you will be able to draw a boundary around the hotspots of interest. Double-click to highlight the area.

3 → Then click the “2. play” button on the panel to start the animation of the hotspots in the highlighted area. This may take a little while, but soon you should see the slider bar move across the panel as the hotspots are cycled through the colours orange (0-6 hours after detection), red (6-12 hours after detection) and grey (over 12 hours after detection).

- 4 → After the animation has played you can grab the slider bar with the cursor and move the animation back in time to analyse the fire spread in more detail.

**! THE ANIMATION MAY NOT PROVIDE A FULL VIEW OF FIRE SPREAD.** The satellites may not have detected all the hotspots associated with a fire due to cloud cover or other conditions, therefore the animations of fire spread should be interpreted with caution.

## Tracking fires: Check Conditions



This menu allows you to check the cloud conditions as seen by the satellites that detect the fires, and to view recent lightning activity.

These tools can be useful when checking an active fire – to see if cloud cover might be limiting satellite detection, to verify hotspots are a fire by looking for smoke plumes, and to see if lightning strikes may have been involved in starting a fire.

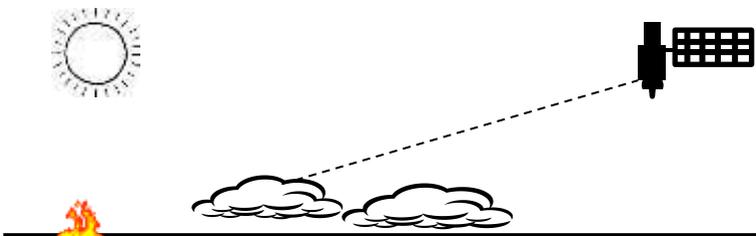
## Check Clouds

Clicking **Check Clouds** will open an image in a new tab or window that shows the view of the map area by the most recent Terra or Aqua satellite. The image may appear a bit blurry if you are zoomed in, but it will show the current cloud cover and the presence of smoke plumes. For example, the image below shows significant cloud cover in the satellite's view of a NAFI map area. In this case if you have a fire in the



area arrowed, it will likely not be detected by the satellite due to cloud cover, and will not show up on NAFI.

The satellites are often passing low in the sky when they take a photo of a fire. In this case although it may be sunny overhead, it is the clouds towards the horizon that may be preventing detection of a fire. Using Check Clouds will provide the satellite's eye view to verify if this is happening.

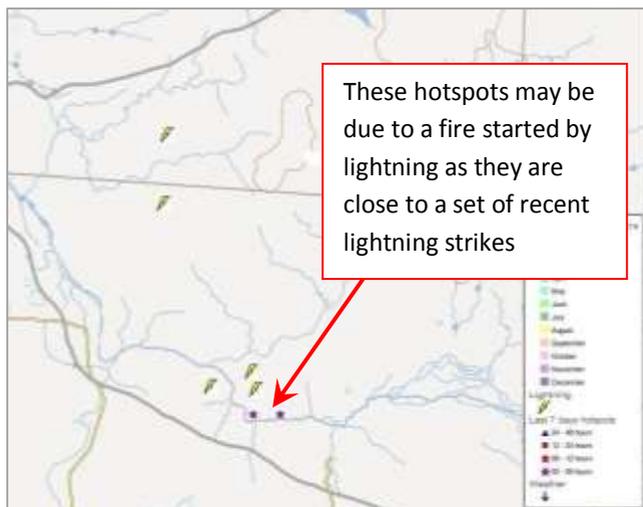


You can also use the **Check Clouds** tool to verify that a hotspot or group of hotspots on a NAFI map are actually fires. As shown below, many active fires will show up as smoke plumes –such images can also give a good guide to prevailing winds.



### Show Lightning, Query Lightning

Selecting **Show Lightning** allows the display of satellite detected lightning strikes on your NAFI map. You will have to zoom in some way to see the lightning strikes displayed. Viewing lightning strikes can be useful in deciding if a fire may have been started by lightning.



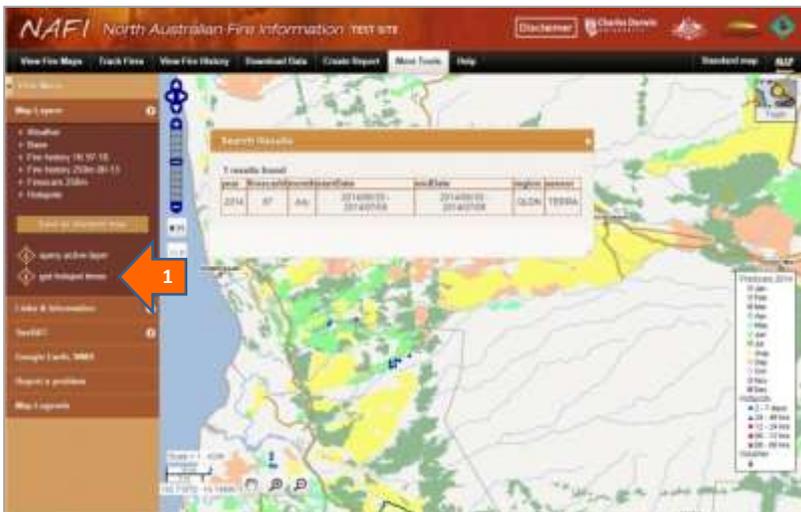
Because of the potentially very large number of lightning strikes, the NAFI site only displays the last few days of lightning strike observations. It can be useful to get a more accurate idea of the timing of a lightning strike to see if it corresponds to a fire. You can do this by selecting **Query Lightning**. You will then be able to select a group of displayed lightning strikes just as you can a group of hotspots (see above). After double-clicking to select the lightning strike/strikes a table will be displayed that shows the time at which the lightning was detected.

**!** **MANY DISPLAYED LIGHTNING STRIKES MAY NOT BE AT GROUND LEVEL.** Because the lightning strikes are detected by satellites rather than by an on-ground detection system, many of the strikes detected in an area may be cloud-to-cloud strikes. So you may see a lot of strikes in your area, but not be aware of many strikes on the ground.

## 1.6 Other useful tools for tracking fires

### Querying Fire Scars

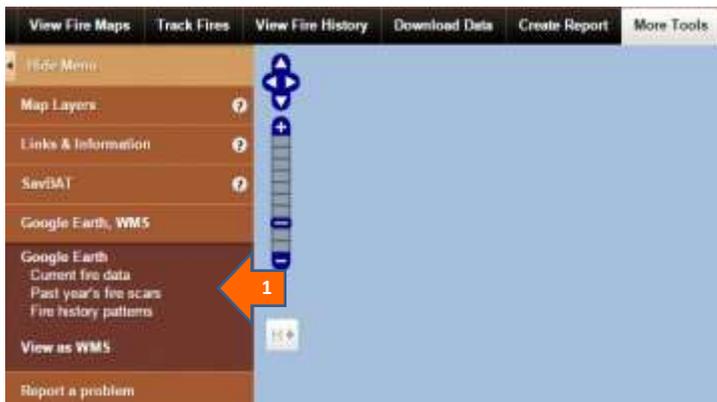
If you want to find the dates between which a particular fire scar was mapped, you can query fire scars using the **More Tools** menu above the map. (fire scars are mapped by comparing a satellite image of an area with an image of the same area from an earlier date - see “More About Fire Scars” above).



1 Click on “query other active layers” and you should see a yellow point appear at end of your cursor– next click on the fire scar of interest and you will see the mapping period and other information displayed. If not, check that the “fire scars by month (Current year)” layer is selected as active in the Map Layers.

## 1.7 Viewing Fires on Google Earth

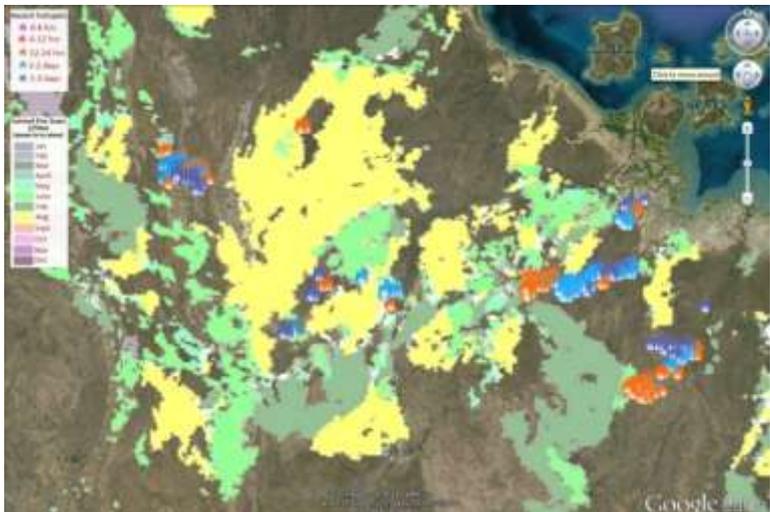
- 1 You can view the main fire maps from NAFI on Google Earth by downloading kml files (*Google Earth* files) from the site. You can either go to the **Download Data** Tab and then open the **Data as .kml file** menu (above) or go to the **More Tools** Tab and open the **Google Earth, WMS** menu (below):



There are a few kml files you can download that are useful for monitoring active fires.

**Current fire data.** Clicking on this link will bring up a dialog box that allows you to download a kml file displaying the last 3 days of hotspots and the current year-to-date fire scars.

Clicking on the downloaded kml file should then display the recent hotspots and fire scars in Google Earth. As this is a network linked file, saving it to “My Places” on Google Earth means that the latest fire data will be sourced from NAFI each time you open Google Earth.



**Past Year's fire scars.** Clicking on this link will bring up a dialog box that allows you to download the following kml files:

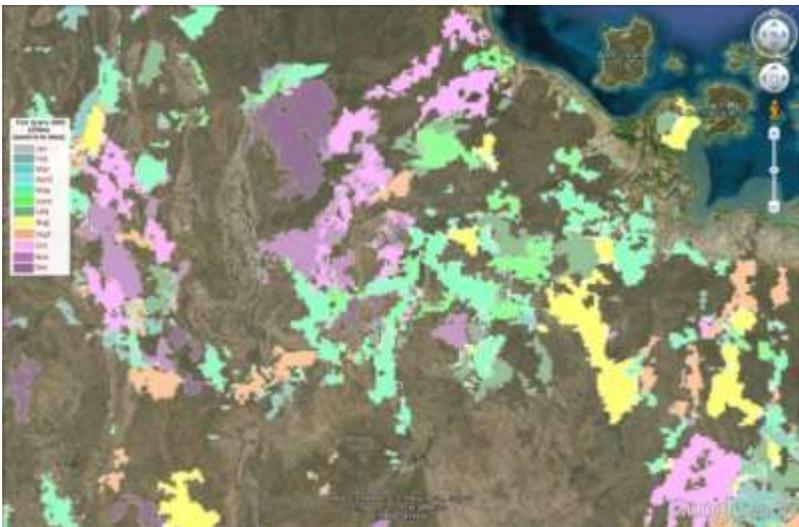
- *Fire scars by year (from 2006):* downloads a kml file displaying the fire scars colour-coded by year for each year from 2006 to the current year. Follow the same procedure above as for the current hotspots and fire scars, if you save it to “My Places” on Google Earth, the kml data will automatically be updated. This layer is useful for showing what country has been burnt in recent years; this can be used to estimate grassy fuel in many areas of the far north.





**HINT:** If you display more than one of these layers, the most recent layers need to be on top, as more recent burns will replace older burn histories. Depending on how you ticked the boxes, the initial layering in *Google Earth* may not be like this – so once you have all your layers displayed, move the map around until the scars refresh and they should display in the correct order.

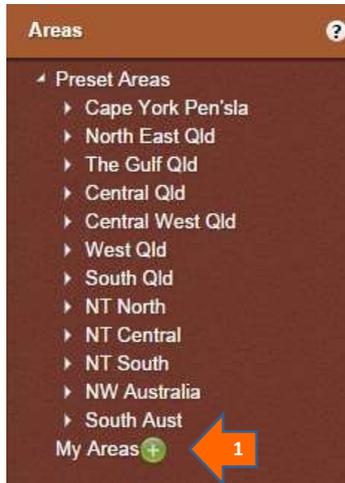
- *Fire scars by month (from 2000)*: downloads a kml file displaying the fire scars colour-coded by month for each year from 2000 to the year before the current year. This layer is useful for showing the seasonal pattern of burning in earlier years.



## 1.8 Setting email alerts

You can get the NAFI site to send you an email when a hotspot is detected in an area that you select. This can be a useful tool if you have infrequent fires and so do not want to monitor the NAFI site all the time, but do want to know when a hotspot is detected.

To set up an email alert, the first thing you need to do is to create the custom area on NAFI that you want to set the alert for.



**To create new custom areas** that you can then activate with email alerts, navigate to a NAFI map that you want to set as a new custom area and then click the green "+" button in the "My Areas" list in the menu on the left of the NAFI site. You should then see the box below.

## Create a Custom Area

Create a custom fire map region using the displayed map area

Area name:

**Add Area** 

Your new custom area should appear in "My Areas" with a red "-" sign - click on this if you want to delete the area

If you use the current browser on this computer and have not de-activated or cleared your "cookies" (marks the browser uses to keep track of your personal options), the area should continue to be displayed in the "My Areas" menu.

You can activate an email alert on this area using the "Log On/Email Alert" menu at left. Once you are logged in your custom areas will be displayed in "My Areas" regardless of the browser or computer you are using.

 Name your new custom area and click "Add area" and you should see the box disappear and your new area appear in the "My Areas" list with a red "-" button. Clicking this "-" button allows you to delete your area when it is no longer required.



The email alerts will use the boundaries of the area as shown in your browser window when you create your custom area. The displayed map area will change slightly when you re-size the web-browser window as shown below.



*Large browser window displaying a custom area (under “My Areas”)*



*Smaller browser window displaying the same custom area displays a larger map area with more fires on left*

The boundaries of the custom area are always set by the initial display you have in the browser (in this case the upper one) and these will be the boundaries used by the email alerts – regardless of how the area may display in different sized browser windows in the future.

So when setting your custom areas it can be useful to always use a standard browser size (such as full screen) so that you can re-display the custom area’s exact boundaries.



**3** Go to the **Log On/Email Alert** menu on the left. (This is under the **View Fire Maps** tab) Then click on the **Manage my areas and alerts** link that appears when you open the menu. You should see the dialog box below appear.

**4** If you have not set up a username and password on the old or new NAFI sites, enter your email address (the one you want hotspot alerts sent to) and create a password. Otherwise enter your existing NAFI email and password. Then click “log on” and you should see a panel that allows you to set your alerts (next page).

*Nb. If your email and password combination is not accepted, click the “Forgotten password” link and we can send you a new password.*

 **If you had hotspot alerts on the old NAFI site, these have been migrated across to the new site and you can continue to use these as before.** Log onto the new NAFI site as described above with your existing username and password (note that the new site does not display passwords) and you should then be able to manage your existing areas, including setting and removing alerts. Once you are logged on you should also see your custom areas displayed under the "My Areas" menu, top left.

Because the zoom-in and zoom-out levels on the new NAFI site work differently to those on the old site, the boundaries of your old alert areas may display differently than they did on the old site, but the alerts are still triggered by the boundaries you set on the old NAFI site.

**Step 2: Edit your custom areas**

Tick the Alert boxes for the areas you want email alerts for - or untick the box to delete an alert

Then click "Update" to set the alerts - or "Cancel" to start again.

Name	Alert
Area 3	<input type="checkbox"/>
Area 1	<input checked="" type="checkbox"/>
Area 2	<input checked="" type="checkbox"/>



Update Cancel

You can create additional pre-set areas for any NAFI map view in the "Areas" menu at left - click on the green "+" at the bottom.

 **Your custom area should now appear in a list in the box shown above.** This list will also have any previous custom areas you have created on the NAFI site. You can activate or de-activate email alerts in each area by ticking the box to the right of the area name.

When you have set your email alerts, click “Update” and you should see a message confirming this appear at the top of the box. You can now close the box.

## How the hotspot alerts work

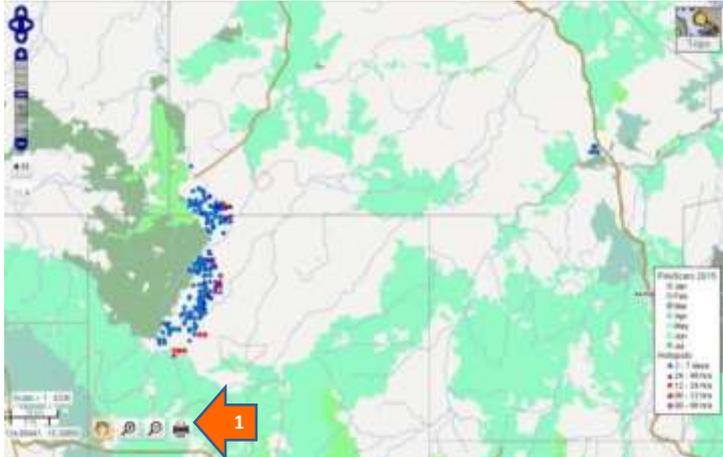
Once you have set up an email alert for an area, when new hotspots are received by the NAFI site from the satellites and they fall within the boundaries of your alert area, NAFI will send out an email, like the one below:

```
Hotspots have been identified in your area(s) of interest:  
  
(Area name)  
  
These hotspots were detected by analysis of the most recent  
satellite data received. To view these hotspots go to NAFI  
www.firenorth.org.au.  
  
To prevent frequent alerts for duplicate hotspots checking  
for new hotspots in this area resume in two hours.  
This email is generated automatically for registered NAFI  
subscribers.
```

As the email indicates, to prevent frequent email alerts being sent, once an email for an area has been sent, the NAFI service waits for two hours before resuming regular checking for hotspots in the area. This is because the service can receive several different versions of the same hotspots from different satellite ground stations – and while this improves the reliability of the hotspot detection it can be annoying for users to receive numerous email alerts and yet see no new hotspots have been detected.

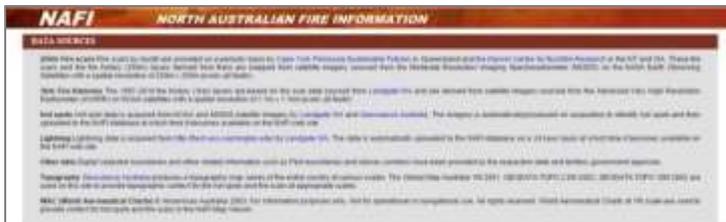
## 1.9 Printing and other useful tools

### Printing a map



- 1 You can print out a displayed NAFI map by clicking on the print icon at the lower left of the map. This will produce a printable map and a description of the data sources used in the map in a new tab or window, as shown below.

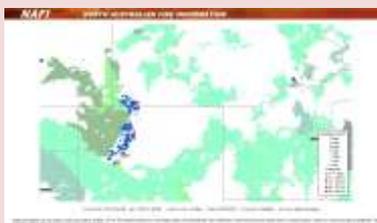




You can then print this page out.

- In the Chrome and Firefox browsers you should select the menu icon in the top right of the page and then select the “Print” option.
- In recent versions of Internet Explorer such as IE 11 you will need to select the gear icon and then select “Print”. With Internet Explorer it can help to use the “Page setup...” option under the “Print” option to set the page to landscape.
- In older versions of Internet Explorer such as IE 8 the “Print” option appears on its own in the top menu. Clicking the arrow to the right bring up the print preview and page setup options.

**! YOU CAN'T PRINT OUT THE GOOGLE SATELLITE IMAGE BACKGROUND.** NAFI does not have the special licence required to print out the Google Satellite image background used on NAFI, so it cannot be printed from the maps. So if you print out a map with the satellite imagery as a background, the print will use a blank background map as shown below:



## Hiding/displaying the map legend

You can hide or re-display the map Legend (the list of layer colours in the lower right of the display) by going to the **More Tools** tab and then the **Map Legends** menu, and clicking “Toggle Legend”.



You can also view the legend for the background maps used on the NAFI site (the symbols used for roads, railways, airfields, contours etc.). Click on **Legend for NAFI background maps**.

## 2. Using NAFI for planning



The NAFI site has a number of tools that are useful for planning fire management. These are found under the **View Fire History**, **Download Data** and **More Tools** tabs:

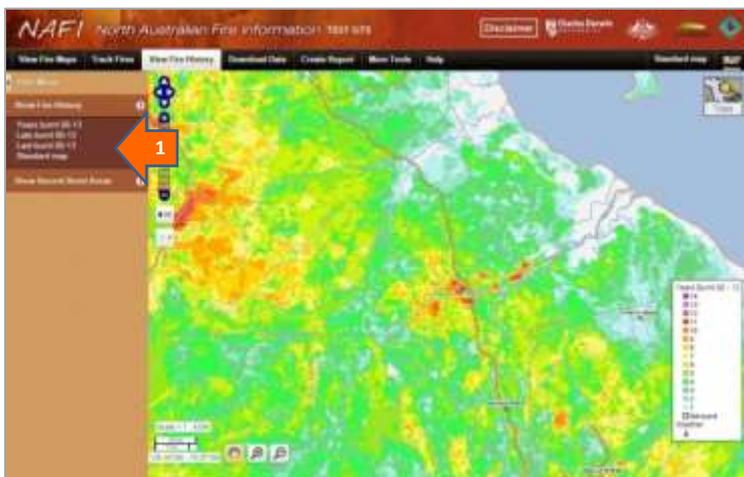
- **Viewing Fire History** displays maps of historic fire scars. These can be as fire frequencies, and time since last burnt (back to 2000), or colour-coded by year (back to 2006).
- **Viewing past Monthly Fire Scars and hotspots** allows you to view the seasonal patterns of past fires, back to 2000, by displaying the fire scars colour-coded by months for these years – as well as the hotspot records colour-coded by month for years back to 2004.
- **Downloading Fire Data and viewing NAFI data along with your own maps** allows you to download a range of NAFI fire data to your own mapping software which allows you to mix and match the NAFI data with other relevant maps for planning.

### 2.1 Viewing Fire History

It can be useful to know the history of burning in an area. The tools for this are found in the **View Fire History** menu – click the tab under the banner. You should then see the left hand menu with the tools for viewing fire history. The menu offers two ways of viewing patterns of past burning:

- **Show Fire History** displays patterns of *fire frequency* or *time since burnt* across the period 2000-present year. Useful for identifying long-term fire patterns.
- **Show Recent Burnt Areas** displays country that has burnt in the last one to three years. Useful for estimating grassy fuels, particularly in the far north. Also available in the **Track Fires** menus.

## View Fire History: Show Fire History

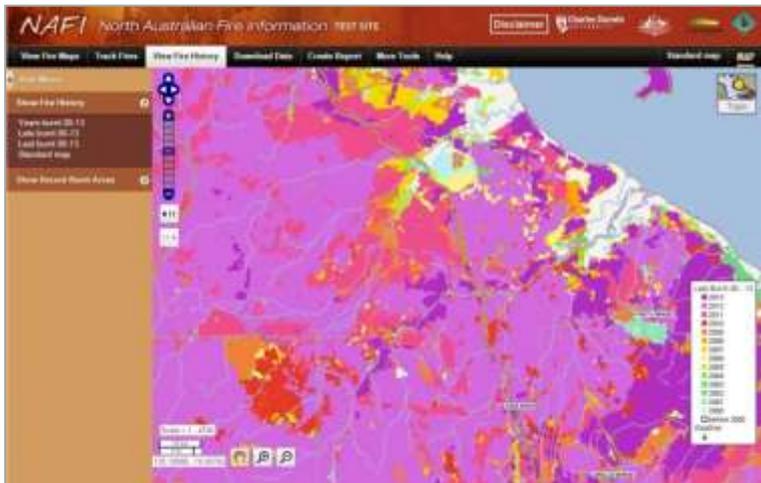


1

Click on the map layer name to view the following Fire Histories:

- **Years Burnt (since 2000)** (shown above) displays the number of years a given area of land was detected as being burnt between 2000 and the most recent completed year. The higher the number of years burnt, the warmer the colour. These maps can be useful for identifying areas susceptible to high fire frequencies – and areas protected from frequent fire.

- **Late Burnt (since 2000)** displays the number of years a given area of land was detected as burnt after July 31, between 2000 and the most recent completed year – and again the higher the number of years burnt, the warmer the colour. These maps can be useful for identifying areas frequently burnt by more intense fires, and that, for example, might be candidates for a Savanna Burning Methodology Project.
- **Last Burnt (since 2000)** displays the last year in which a given area of land was detected as being burnt between 2000 and the most recent completed year. In this case the warmer colours indicate areas that were last burnt





**HINT:** because the fire histories can cover much of the land areas in the far north, it can be hard to see any detailed background features. One way to see background features is to switch on the “Satellite” background layer and then use the slider bar to fade the fire history layers.

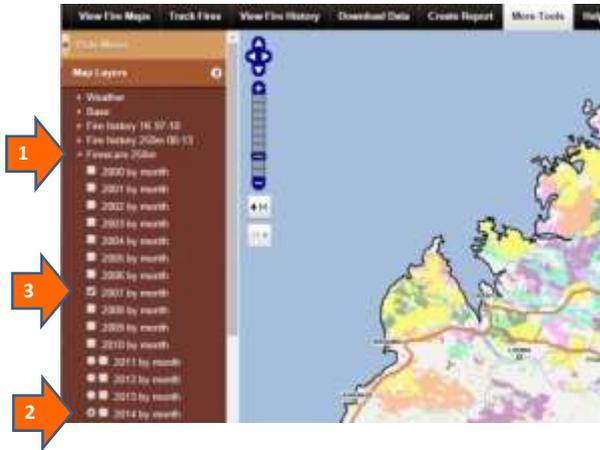
### **View Fire History: Show Recent Burnt Areas**

These map layers are also available under the **Track Fires** menu - see *Using Nafi for Viewing Fires* page 7 for more details. They are included in the Fire History menu because knowledge of recent fire history can be useful for fire planning – particularly if you are in the far north in areas where recent fire history is a good guide to grassy fuel levels.

## 2.2 Viewing Past Monthly Fire Scars and Hotspots

### More Tools: Map Layers

#### Viewing past monthly fire scars



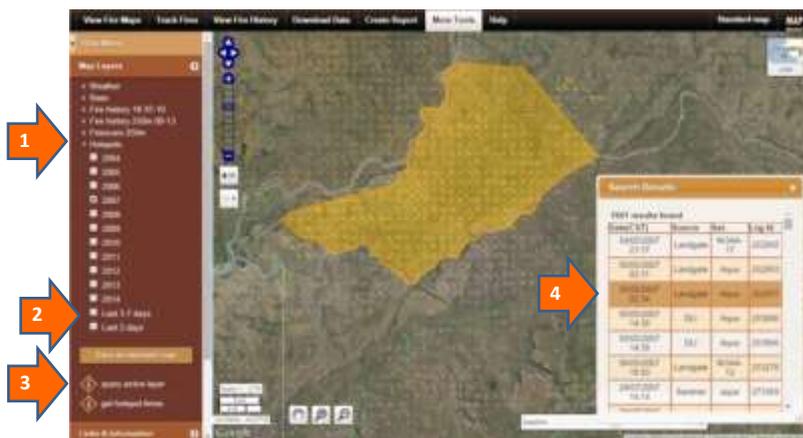
If you want to see the seasonality of fire in past years and how it may have changed, you can view the fire scars coloured by month for years back to 2000.

**1** Go to the **More Tools** tab and in the **Map Layers** menu, open the **Firescars 250m** node by clicking on the arrow to the left. You should then see all the past years' fire scar layers displayed.

**2** If you have the standard map display you should see that the current year by month layer is displayed and has a tick in the box to the left – un-tick this box so the current fire scars are not displayed. (Note that the more recent fire scar layers also have a radio button on the left – selecting this allows you to get information on the layer)

**3** Then tick the box to the left of the Fire scar by month layer you want to display – it should appear on the map as shown above.

## Viewing past monthly hotspots



If you want to see how individual fires have spread in the past:

- 1 Go to the **More Tools** menu and open the **Hotspots** layers under **Map Layers**
- 2 Make sure that the current hotspot display is turned off by un-ticking the **Last 3-7 days** and **Last 2 days** layers. Then tick the past hotspot layers you want to see, e.g. for 2007 as shown above. The past hotspots are colour coded by the month in which they were detected, using the same colours as the fire scars by month display.
- 3 To get an idea of how the fire has spread you can use the “get hotspot times” tool which will allow you to select an area of hotspots with the cursor. Double-click to select the area (shown in orange above).
- 4 A table of hotspot times will then appear, allowing you to check the times individual hotspots were detected (see *Using Nafi for Viewing Fires* page 8 for more details)

**! THE LOCATION OF THE EARLIEST DETECTED HOTSPOT MAY NOT BE WHERE THE FIRE STARTED.** The actual early stages of a fire may have been too cool to be detected by satellites or may have occurred on days where detection was hampered by cloud cover.

## 2.3 Downloading Fire Data

It can be useful to display the NAFI fire maps alongside your own maps of tracks, fence-lines, significant areas etc. for planning your fire management. One way to do this is to download the NAFI maps into a mapping program like Google Earth, QGIS or ArcGIS. With these programs you can then upload your own maps. The NAFI site offers a few different ways to download data under the **Download Data** tab.

### Download Data: Data as image or shapefile

This menu allows you to download the NAFI fire scar by month or fire history maps for all of northern Australia as either a geo-referenced image (a geo-tiff) or as a shapefile.



**1** **Fire History** brings up a table of download options for the 250m fire history maps: Fire Frequency, Late Fire Frequency and Year last Burnt – either as a geo-image or as a shapefile (below). Just click on the “image file” or “Shape File” buttons to download the relevant file.

Fire History Data Download			
Fire Frequency	250m pixel 2000-2013	Image File	Shape File
Fire Frequency after July 31	250m pixel 2000-2013	Image File	Shape File
Year Last Burnt	250m pixel 2000-2013	Image File	Shape File

**! THE FIRE HISTORY SHAPEFILES CAN BE LARGE.** The Fire Frequency shapefiles for the whole of north Australia since 2000 can approach 100Mb in size. This can make them difficult to download and use on some mapping programs.

**Fire scars by year** brings up a table of download options for the 250m fire scar by month maps for each year from 2000 including the current year to date. Just click on the “Image file” or “Shape File” buttons to download the relevant file.



The screenshot shows a web interface titled "Firescar Data Download". It contains a table with two columns of years. Each year has two buttons: "Shape File" and "Image File".

Year	Shape File	Image File	Year	Shape File	Image File
2000	Shape File	Image File	2001	Shape File	Image File
2002	Shape File	Image File	2002	Shape File	Image File
2004	Image File	Shape File	2005	Shape File	Image File
2006	Shape File	Image File	2007	Shape File	Image File
2008	Shape File	Image File	2009	Shape File	Image File
2010	Shape File	Image File	2011	Shape File	Image File
2012	Image File	Shape File	2013	Shape File	Image File
2014 to date	Image File	Shape File			

## Download Data: Data as .kml file

This menu allows you to download the NAFI fire data as kml files which can then be displayed on Google Earth. You will need to have the free *Google Earth* viewer installed – go to <https://www.google.com/earth/> For more details on viewing NAFI data on *Google Earth* see *Using NAFI – viewing maps of current fires*



1 There are three groups of kml files you can download:

**Current fire data:** brings up a dialog box that allows you to download the kml file that displays the last 3 days of hotspots and the current year-to-date fire scars.

Clicking on the downloaded kml file should then display the recent hotspots and fire scars in Google Earth. As this is a network linked file, saving it to “My Places” on Google Earth means that the latest fire data will be sourced from NAFI each time you open Google Earth.

**Past Year’s fire scars:** brings up a dialog box that allows you to download the following kml files:

- *Fire scars by year (from 2006).* Clicking on this link will download the kml file that displays the fire scars colour-coded by year for each year from 2006 to the current year. This layer is useful for estimate fuel levels.
- *Fire scars by month (from 2000).* Clicking on this link will download the kml file that displays the fire scars colour-coded by month (like the current fire scars) for each year from 2000 to the year before the current year. This layer is useful for showing the seasonal pattern of burning in earlier years.

**Fire history patterns:** brings up a dialog box that allows you to download the following .kml files:

- *Fire history (from 2000)* downloads the .kml file that displays the fire frequency, late fire frequency (after July 31) and time since last burnt fire patterns from 2000.
- *Fire history (2000-2009)* downloads the .kml file that displays the fire frequency, late fire frequency (after July 31) and time since last burnt fire patterns from 2000-2009.
- *Fire history (last ten years)* downloads the .kml file that displays the fire frequency, late fire frequency (after July 31) and time since last burnt fire patterns from the last ten years (e.g. 2006-2015). Comparing these most recent fire patterns with the earlier (2000-2009) ones is useful for detecting changes in fire history patterns.

## Download Data: Data from map

If you want to just download the fire data from your area of interest, rather than for the whole of north Australia, you can use this menu to download some types of NAFI fire data just from the displayed map area.



1 Three types of data can be downloaded from the displayed map area:

**map image or fireline.** These tools are not available on the new NAFI site yet, so clicking on this link provides instructions on how you can use the old NAFI site, which is still operating, to download a geo-tiff of the displayed NAFI map, or to draw and download a fireline as a .gpx file.

**hotspots.** The only way to download hotspots from NAFI is from the displayed map area, as the whole of the north Australia hotspot dataset is usually too large to download.

**Fire scars** If you don't want to download the whole of north Australia 250m fire scar data, you can just download those fire scars from a particular map area – useful for property planning.

## Downloading hotspots from the displayed map area

Selecting this option should bring up the display below:

**Download Hotspots**

Please select the year you wish to download data for:

selected year: Hotspots 2014

Please select the date range within that year:

from: 01/01/2014

to: 31/12/2014

- Hotspots are received from Landsat and Sentinel - see help documentation.
- Dates refer to the acquisition by the satellite in UTC time.
- Hotspots are downloaded in shapefile format in a zip archive.
- A specified date includes all data from 00:00:00 to 23:59:59 on that date.

Data will be downloaded for the extent of the map at the time you click the download button.

**Download data**

A maximum of 50,000 hotspots will be supplied in any one download - This will limit the area and date ranges of your selection.

please acknowledge the IAPF website as the source of this data

**1** Select the year of hotspots you are interested in. You can download hotspots from the map back to 2004.

**2** Select the date range you are interested in. You must use the format dd/mm/yyyy.

Then click the “Download” button and your selected hotspots, limited to the displayed map area will be downloaded as a shapefile.

**!** **THIS TOOL WILL ONLY DOWNLOAD A LIMITED NUMBER OF HOTSPOTS.** A maximum of 50,000 hotspots can be downloaded with this tool, so if you want to download from a large map area, you will have to use a narrow date range – particularly for areas and years with very extensive fires.

**! THE DOWNLOADED HOTSPOT TIMES ARE IN UNIVERSAL TIME.**

These hotspot data come directly from the data feeds as received from the satellites and have not had their times of detection translated to Central Australian time as they are when queried on the NAFI site. Instead, they have time of detection in Universal Time - approximately the same as Greenwich Mean Time – so 8 hours behind WA Standard Time, 9.5 hours behind Central Standard Time and 10 hours behind Eastern Standard Time.

## Downloading fire scars from the displayed map area

Selecting this option should bring up the display below:



1

**Select the year of fire scars you are interested in.** You can download fire scars from the map back to 2000.

Then click the “Download” button and your selected fire scars, limited to the displayed map area will be downloaded as a geotiff image. This is a regular tiff image with a small “world file” or tfw file which contains the geographic information mapping programs need to display the image as a map.

## 2.4 View Fire Maps: View your own maps



The **View your own maps** tool, at the bottom of the **View Fire Maps** tab, lets you upload your own maps of boundaries, fire lines and breaks, significant sites, water points etc. to NAFI so you can view them on the site along with the other NAFI maps.

These maps are uploaded as kml (Keyhole Markup Language) files for viewing on NAFI – files that you can also view, and create, on *Google Earth*. You can also upload the compressed or zipped version of these files – kmz files.

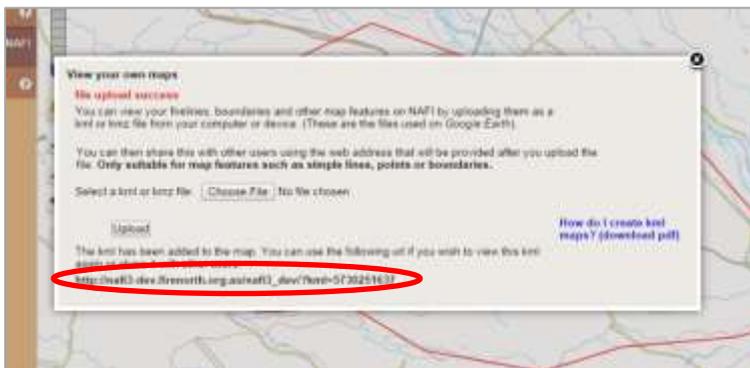
The NAFI maps have the commonly used map information such as the standard property boundaries, topographic features, roads, rivers etc. Often, however, you might need to see other map information for fire planning – for example, more detailed tracks, significant sites, paddock boundaries, fire breaks and waterholes. Or it could be that the property boundary shown on NAFI is not correct or out of date. You may also want to keep some of this information private.

With this tool you can upload this map information as a kml or kmz (compressed kml) file to NAFI which will then generate a web address that you can share. This web address will take you to the NAFI site but with your own map information displayed on top of the background maps.

Selecting this option should bring up the display below:



Click “Choose File” and then browse to the location of the kmz or kml file of the map features you want to view on NAFI and select the file. Then click “Upload”. You should then see something like the display below:



**HINT:** This tool can only upload relatively simple map features like lines, points and property or simple area boundaries. It will not be able to upload files of images like fire scars, or complex files like large chunks of the cadastre. You will get an “upload failed” message when you try to upload these files.

The map behind the dialog box should now be centred on a display of the uploaded map – in this case a red boundary. You will also see a web address (circled in red above). This will link to a version of the NAFI site with your uploaded map displayed (shown below). You can save this in your favourites or circulate it to others.

In this way you can view map features on NAFI but still keep it private.

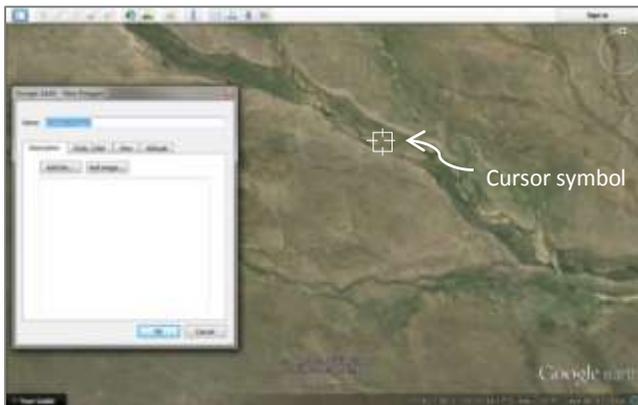


## 2.5 Creating kml and kmz files

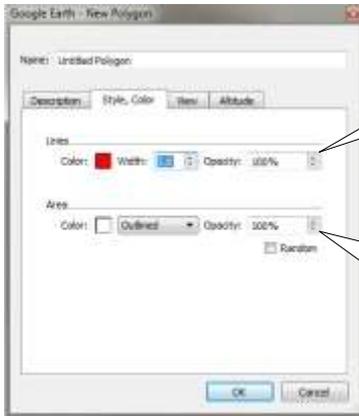
You can create kml or kmz files in a couple of different ways: by creating your map features in *Google Earth* and saving them as kml/kmz files; or if you already have your map features saved as shapefiles or gpx files you can use a mapping program like Quantum GIS or ArcMAP to save them as kml/kmz files.

### Using *Google Earth* to create kml or kmz files

Open *Google Earth* and navigate to the map area where you want to create a map feature. You can then choose one of the tools above the map: add placemark, add polygon or add path:  For example, to create a boundary, choose “add polygon”



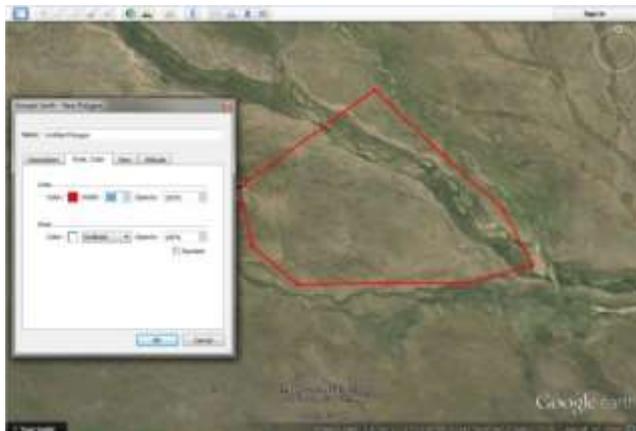
- you should then see the box above appear and the cursor should change into a target box. You can then outline your boundary with the cursor – you can also give your area a name. You will finish with a solid white shape, but you can change the appearance of the shape by clicking the “Style, Color” tab of the dialog box and adjusting the colour and thickness of the outline and whether your shape is filled with solid colour.



You can change the colour, thickness and opacity of your border here.

Here you can change the colour and opacity of the shading of your area – as well as whether it is filled or left as an outline.

Using the control box above, we can create outlines of a given colour and thickness suitable for marking property boundaries, paddocks, significant areas etc. as shown below.



Once you have created your area, you can save it as a kml or kmz file by going to “My Places” in the left hand menu in *Google Earth* where you should see your area listed as a polygon with whatever name you gave it. Right-click on this polygon label and select “Save Place As..”. A new box will then appear that allows you to save your area to your computer as a kml or kmz file.



## Using Quantum GIS to create kml/kmz files

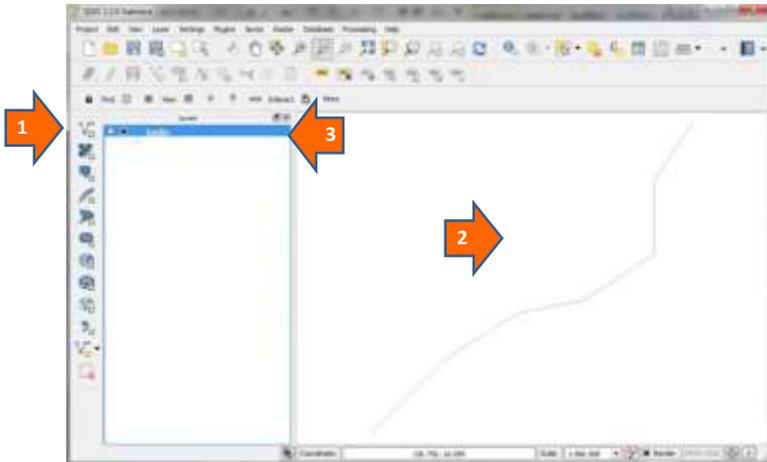
If you already have firelines, fencelines, boundaries etc. stored as shapefiles or .gpx you can convert these to kml/kmz files using the free mapping program Quantum GIS (QGIS). Google “Quantum GIS” to get to the download page for this software.

Once you have downloaded QGIS you should see the interface shown below.



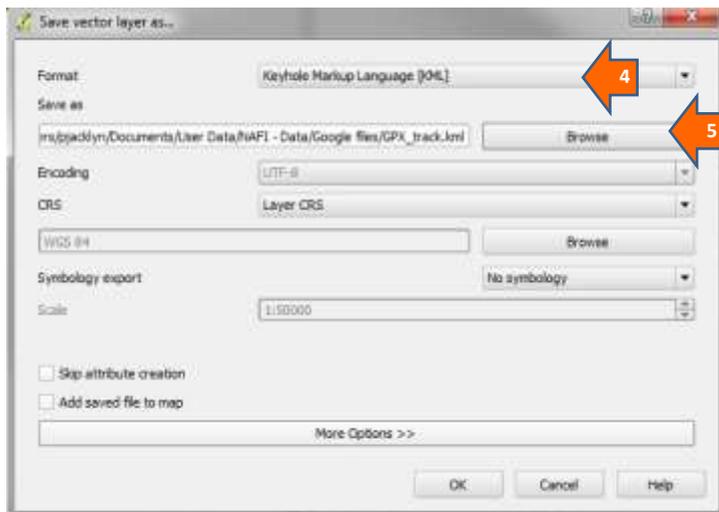
Click on the **Add Vector Layer** button and browse to your .gpx or shapefile on your computer and click “open” to display it in QGIS.

For some .gpx and shapefiles you will need to specify the type of file you are displaying.



2 Your fireline/boundary etc. should now be displayed in the main window.

3 Right click on the name of your layer in the Layers column and then select "Save as...". You should see the box below appear:

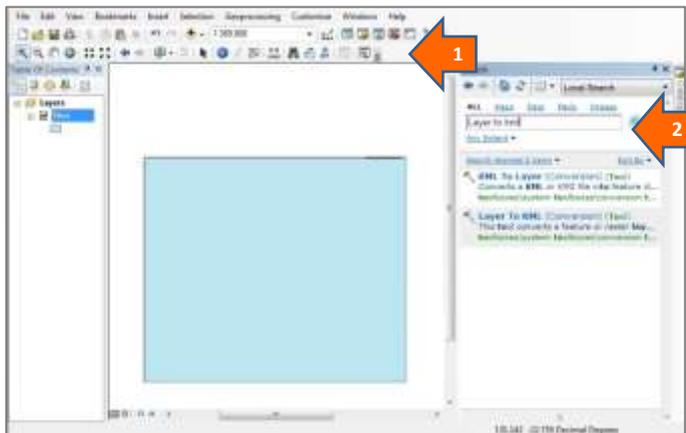


- 4 Select “Keyhole Markup Language [KML]” as your format from the drop-down menu
- 5 Select the location where you want to save your kml file to. When this is done click the “OK” button at the bottom of the box and you should get a message at the top of the map window saying the export has been successfully completed.

If you have installed *Google Earth* you can check that the kml file has been created correctly by double-clicking on it – it should then open in *Google Earth*. You can then use *Google Earth* to alter to colour and style of your boundaries/lines and whether you want it saved as a kml or compressed kmz file (see above).

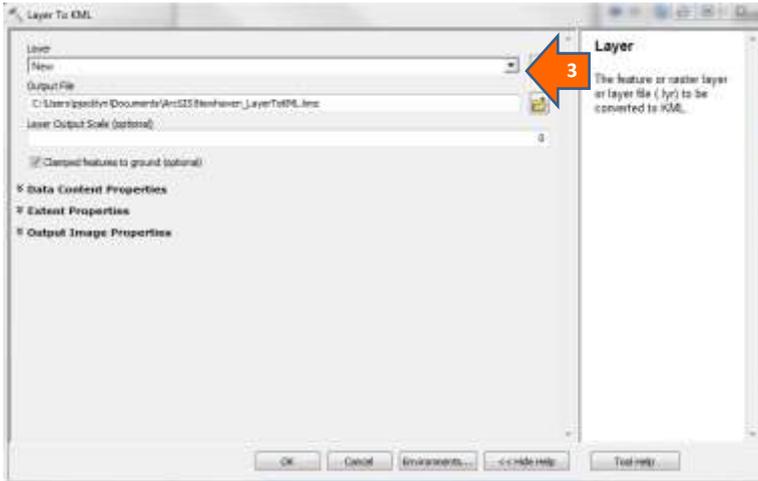
## Using ArcMap to create kml/kmz files

These instructions apply to creating a kml file from a shapefile using ArcMap 10.



- 1 Once you have displayed your shapefile as shown above, you will need to search for the “Layer to KML (conversion)” tool using the search above the map display.

- 2 This will appear in the Search window on the right – clicking on the tool should bring up the box below:



- 3 Use the drop-down menu to select the current layer you have displayed in ArcMap. Then in the box below select the destination file location. Note that this will be stored as a compressed .kmz file. Then click “OK” at the bottom of the box – and your .kmz file should be created.

Again, you can use *Google Earth* to check that the .kmz file looks Ok and to edit the style and colours used.

### 3. Using NAFI – creating reports



You can create reports on the NAFI site that produce tables and graphs that analyse and summarise fire history patterns in an area that can be useful in planning. For example, you can graph the areas burnt in each month of the year for each year back to 2000, and put numbers to any change in seasonal burning.

On the new NAFI site you generate these reports by a link to the *NRM Infonet* website which has improved drawing tools and more options than the reports on the old site. For example, for any area in the Northern Territory you can create additional summaries of vegetation, soils, threatened species, weeds, pest animals, and land management issues. For the NT the site also provides access to management guidelines and other information on the species recorded in, or near, your area.

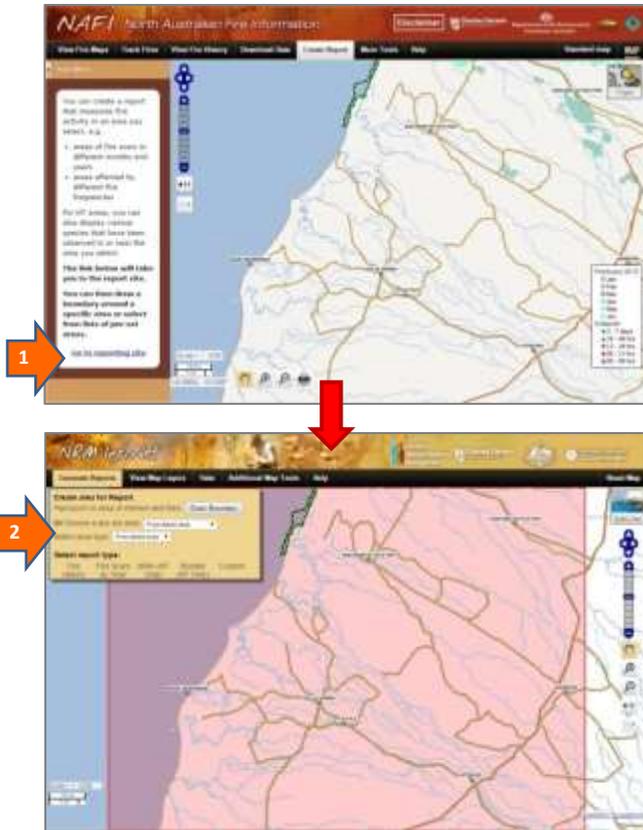
The *infontet* report site can be accessed independently at [www.infontet.org.au](http://www.infontet.org.au)

The data used to compile these reports comes largely from satellite data on fires and from NT Government records. The results are presented as either Portable Document Format (PDF) or CSV downloads. Click on one of the items below for more details.

### 3.1 Getting Started



You can create a report in an area displayed on the NAFI website by selecting the **Create Report** tab above the map and then clicking **go to reporting site** at the bottom of the left hand menu.



After a short delay the map will reappear (in a different tab or window) with a different banner with menus in the top left and with the NAFI map area selected in pink. This is the NRM *Infonet* website and has a range of tools that allow you to make reports on fire activity.

## 3.2 Creating a Report

To generate a report, you must first select the area which you want to profile. When you enter the report site, the area you were looking at on NAFI will be already selected as shown by the pink boundary.

**2** You can select a different area for your report by clicking on the drop-down menu displaying “from linked area” and then clicking “select” to disable the current selection and then either:

- Clicking on the “Draw Boundary” button to trace your own boundary with the cursor on the map viewer (so you can select any area you want)
- Or clicking on the drop-down menu again and then selecting another pre-set area (useful for consistent reporting)

### Drawing a boundary with the cursor

#### Step 2

Select the type of boundary you want to draw from the drop-down menu.

The screenshot shows the 'Create area for Report' section of the NRM InfoNet interface. At the top, there are navigation tabs: 'Generate Reports', 'View Map Layers', 'Data', and 'Addition'. Below these, the 'Create area for Report' section contains a 'Draw Boundary' button. Below that is a 'Select' dropdown menu. Further down, there is a 'Buffer (in kms):' input field. At the bottom, there is a 'Name of your area' input field and a 'Clear' button. A dropdown menu is open from the 'Select' dropdown, showing options: 'Any shape', 'Select', 'Six shape', 'Solid Circle', 'Line', and 'Line Path'. Arrows from the surrounding text point to these elements.

#### Step 1

Click on the Draw Boundary button. This will expand the menu.

#### Step 3

You can set a buffer area around your shape/box or line – or set the radius of your circle.

#### Step 4

You can name your area by typing in the box.

You can clear the area you have drawn

The NRM Infonet site allows you to draw the following area types:

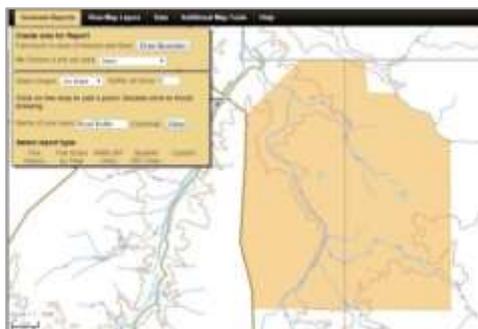
**Any shape:** selecting this option allows you to draw a boundary of any shape with the cursor – e.g. around a property boundary. Once you have completed the shape just double-click and the area will be highlighted. You can also make the report area include a buffer of a set width in kms around your initial drawn line.

**Point/Circle:** this option allows you report on a circular area of a set radius.

**Box:** this option allows you to drag out a rectangular area on the map. You can set a buffer around the rectangle.

**Line/Path:** this option allows you to draw a line or path – for example along a road or river – and then set a buffer area of a given width (in kms) around this line

Once you have selected the type of shape and buffer, click on the map with your cursor (which will have a blue circle at the end) and click around the boundary you want. You can draw the boundary clockwise or counter clockwise. When finished, double-click and the area you have selected will be highlighted in orange on the map – and the report types available will be displayed as shown below. If you want to change your map boundary just click the **Clear** button.



*An "Any shape" area*



A "Line/Path" area created using a 3km buffer



**HINT:** The buffer is not reset when you draw a new shape so that you can draw the same shape again with the same buffer if you make a mistake. To reset the buffer, just enter 0 at Step 3 above.

## Selecting a pre-set area

It can be useful to have the exact boundaries of some areas stored as a menu option. These are available as pre-set areas



- 1 Click on the pre-set area menu and choose a category from the drop-down menu. Apart from the area linked from NAFI you can choose to select a State/Territory or the boundary of the displayed map
- 2 Another drop-down menu will appear listing the types of areas available for that State/Territory
- 3 Then the pre-set areas for that type of area will appear – click on the area you want.

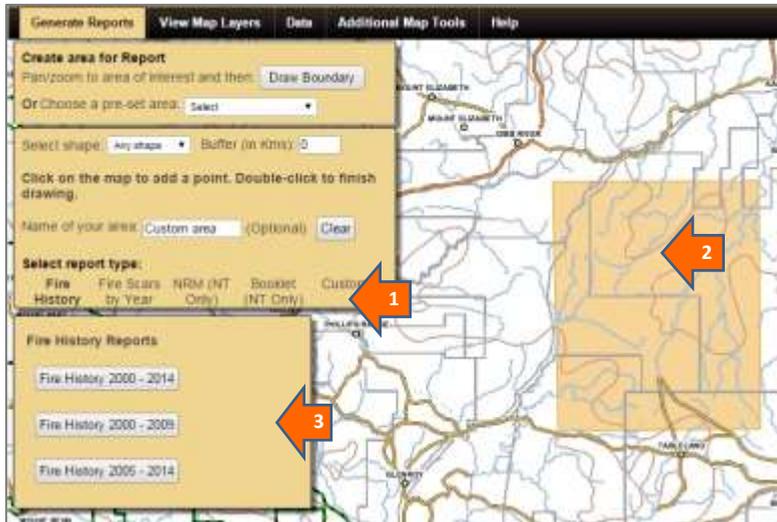


This will produce the area highlighted on the map in pink (at right). Pre-set boundaries are good for areas with complex boundaries that use rivers and coastlines –and for areas that you need to report on regularly and that you want a consistent boundary for.

You can choose from a range of pre-set area types such as Indigenous Protected areas, grazing properties and parks and reserves.

## Selecting a report

Once you have selected an area you will be able to generate reports for it.



- 1 Click on the report type you want. It will highlight in bold and a further menu will appear below.
- 2 Your selected area highlighted on the map (in this case a cursor-drawn boundary highlighted in tan).
- 3 Click on the report option you want. (In some cases this will be a **Get Report** button). A message will appear to let you know the report is generating. When the report has generated, you have the option to open it or save it.

Two types of fire-related reports can be generated for download on the NRM Infonet website (**Fire History**, as illustrated above, or **Fire Scars by Year**).

## Fire History Report

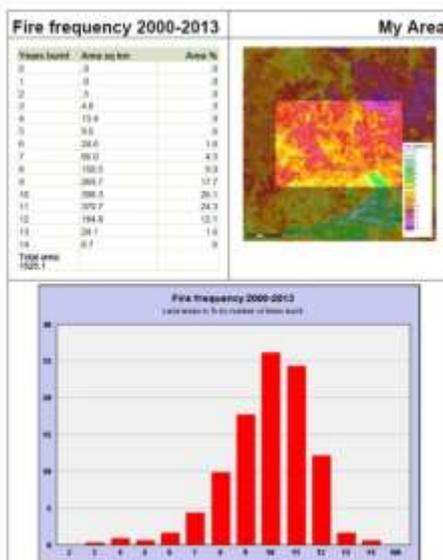
You can choose from three date ranges for your fire history report:

- 2000 – 2014 (the entire range),
- 2000-2009 (the earliest 10 year period), and
- 2005-2014 (the most recent 10 year period)

Comparing fire history reports from the two ten year periods allows you to see how fire histories have changed over time in an area and to gauge fire management progress.

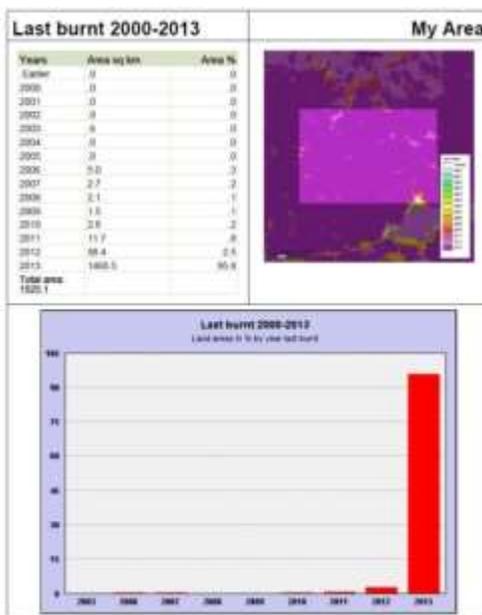
Fire history reports on your selected area feature a detailed profile of recent fire history including fire frequency, frequency of area burnt late in the year and the time since an area was last burnt. Climate profiles are also included in the fire history report. This report shows:

- (a) The **fire frequency** experienced by various areas within your selected area period since the year 2000 (a report from 2014 is shown below). The report provides a table, map and graph:



These reports can be useful in identifying areas within a property that are subject to either very frequent fires or very few fires – and in measuring progress in changing or maintaining fire frequencies in those areas.

- (b) The **Late Fire Frequency**: Similar to the fire frequency report above, but showing only the frequency of fires in the late dry season (occurring after July 31) affecting your area of interest.
- (c) The **Year Last Burnt**: shows the years in which various parts of your selected area were last burnt, again as a table, a map and a graph. In frequently burnt country the time since last burnt report will show most areas have been burnt in recent years, as illustrated below.



These reports can be useful in identifying how long areas of country have been free of fire which can be important for fire sensitive plants and animals.

## Fire Scar by Year Report

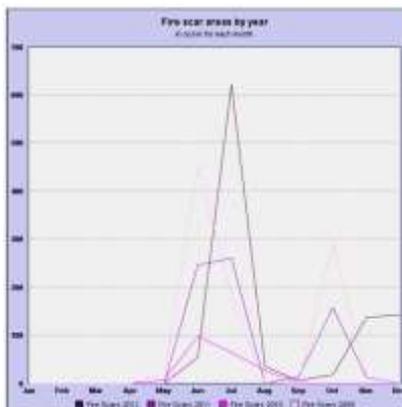
This report lists the areas of country burnt in each month for any of the years since 2000, (including current year - month to date), as well as areas not burnt in the selected area. You can select multiple years in your report.

The results are displayed as a table showing the area burnt in each month, for each requested year, based on measuring the area of the relevant fire scars (below).

Fire scar areas by year My Area		
Fire Scars 2012	Area sq km	Area %
Jan	0	0
Feb	0	0
Mar	0	0
Apr	0	0
May	0	0
Jun	54.0	0.1
Jul	621.8	35.6
Aug	34.7	2.0
Sep	4.0	.3
Oct	17.6	1.0
Nov	132.2	7.6
Dec	142.8	8.2
Unburnt	730.2	41.9
<b>Total area 1744.8</b>	<b>Total area burnt 1810.8</b>	<b>Total percentage burnt 104.1</b>
Fire Scars 2011	Area sq km	Area %
Jan	0	0

An average amount burnt for each month for the years requested is also provided.

The report also graphs the monthly distribution of fire for each year, as shown below:



By creating a report on a group of recent years and comparing them to a report on a group of earlier years, you can see if the seasonal pattern of fire in your selected area has been changing.

## 4. More Tools and SavBAT



The “More Tools” menu is near the right end of the toolbar below the banner. It opens a menu that contains links to a number of useful tools beyond the core tools in the other menus.

### 4.1 SavBAT



**1** The Savanna Burning Abatement Tool (SavBAT) is a web-based tool that calculates the extent to which Greenhouse Gas Emissions from fires in an area have changed over time – and is used to calculate the emissions reduced by implementing fire management that aims to reduce the extent and frequency of late dry season fires under the Savanna Burning Methodologies.

The methodologies are administered by the Federal Government under the Emissions Reduction Fund and are used by projects across northern Australia to earn income in the form of carbon credits.

For more information on the Emissions Reduction Fund go to:

<http://www.environment.gov.au/climate-change/emissions-reduction-fund>

SavBAT has been developed by the Federal Government and the current SavBAT version is not hosted by NAFI. SavBAT does, however, use the NAFI fire scar data in its emissions calculations.

## How do I use SavBAT?

You'll see there are two versions of SavBAT:

**SavBAT 1** is for projects using the 2013 High Rainfall Methodology;

**SavBAT 2** is for projects using the 2015 High-Low Rainfall Methodology. SavBAT 2 can also be used by people planning a 2015 Savanna Burning Methodology project to estimate the potential for reducing emissions.

Just click on the links to SavBAT 1 and SavBAT 2 in the left hand menu to start using the tools. For guidance see the user manuals:

SavBAT 2

[http://savbat2.net.au/20151106%20SavBAT2.1\\_UserManual.pdf](http://savbat2.net.au/20151106%20SavBAT2.1_UserManual.pdf)

SavBAT 1

[http://nafi3-dev.firenorth.org.au/savbat/ui/SavBAT\\_User\\_Manual.pdf](http://nafi3-dev.firenorth.org.au/savbat/ui/SavBAT_User_Manual.pdf)

For tips on SavBAT 2, click on the SavBAT 2 FAQ link in the more tools menu.



When you submit an Offsets Report produced by SavBAT 1 or SavBAT 2 you are required to send in the NAFI data used (it is the same for both SavBATs). This is available through the SavBAT data link.

## 4.2 The Map Layers menu



The Map Layers menu displays all map layers used on the NAFI site and to ability to query some of them for more information. (Nb. some of these layers are also viewable as part of the “Track Fires” or “View Fire History” menus).



The “Save as standard map” button can be used to change the default map layers that are displayed when you enter the site. Normally they will be the current 250m fire scars by month and the recent hotspots. If you expand the “Firescars 250m” node you will see the menu at right showing that “2016 by month” is selected – the tick box shows it is displayed and the radio button shows it is also the active layer set up for querying.



If you want to set another layer as the standard fire scar display, such as the “2016” fire scar by year layer (circled), then tick that layer. Uncheck all layers to remove firescar layers from the display.

Clicking the “Save as standard map button” will save the current settings as the default display. Once you set a new default layer, a button will also appear allowing you to revert to the standard default layers.



The “Query Active Layer” button lets you see information about features in layers. Only some map layers can be queried in this way: the recent 250m fire scars (from 2011) and some of the boundaries in the “Base” group such as Parks.

## 4.3 Measure Distance & Area



The Measure Distance & Area tools (under the Map Layers menu) allow you to measure distances (km) and areas (km<sup>2</sup>) on the map using the cursor. Clicking on either tool displays the instructions (above). Basically you trace out a distance or an area with the cursor and double-click to finish. The distance or area is then shown (below).



You can reset a measurement operation by clicking back on the link. To exit the tools and return to normal map navigation, click on the pan hand symbol at the lower left of the map.

## 4.4 Links & Information



This menu item has some useful links for fire managers:

**Useful Links:** brings up a list of links (below) to useful websites from fire agencies to weather conditions and information on the satellite systems used by NAFI.



**Send firelines to mappers:** brings up the current email contacts for the NAFI fire scar mappers. This allows fire managers who have shapefiles or other spatial data on fire breaks or fire lines they have implemented that should have produced fire scars, to send these to the mappers to alert them to recently burnt areas that need to be inspected for mapping.

**Fire management information:** links to the “Northern Fire Manager” website: [www.firemanager.org.au](http://www.firemanager.org.au). This is a clearinghouse of useful information for northern fire managers that can be searched by various criteria (topic, region, keyword etc.). *Northern Fire Manager* has a focus on information about mapping and planning fire management in northern Australia. For example if you search for “Satellite images” you get links to videos of how to access current Landsat images in your area using free software from the web.



You can upload your own information to the Northern Fire Manager site by clicking the “submit new resource” link on the front page. The idea of the site is that fire managers across northern Australia often face similar issues and can share practical solutions.



## 4.5 Google Earth, WMS



This menu provides links that allow continually updated NAFI fire data to be fed into a mapping program. One of the most popular mapping programs is *Google Earth* and how to use the kml links for *Google Earth* are described in sections 1.6 (Tracking Fires) and 2.3 (downloading data).

The Web Map Services link allows you to feed continually updated NAFI maps into other mapping programs such as ArcGIS and QGIS. The link takes you to an instructions page on how to set up the link depending on the mapping program you have.

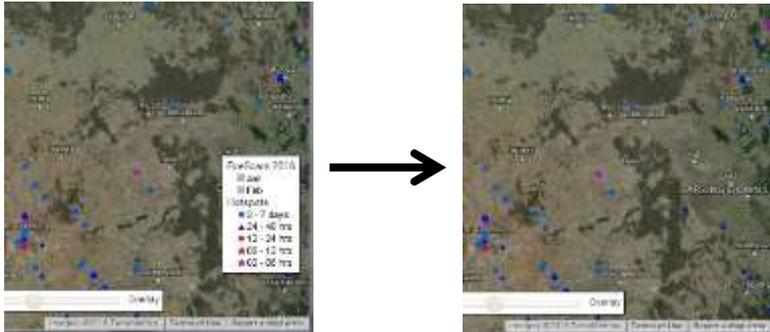
These feeds allow you to view regularly updated NAFI data alongside other maps that may be useful for your fire management.

## 4.6 Problem reporting, Legends



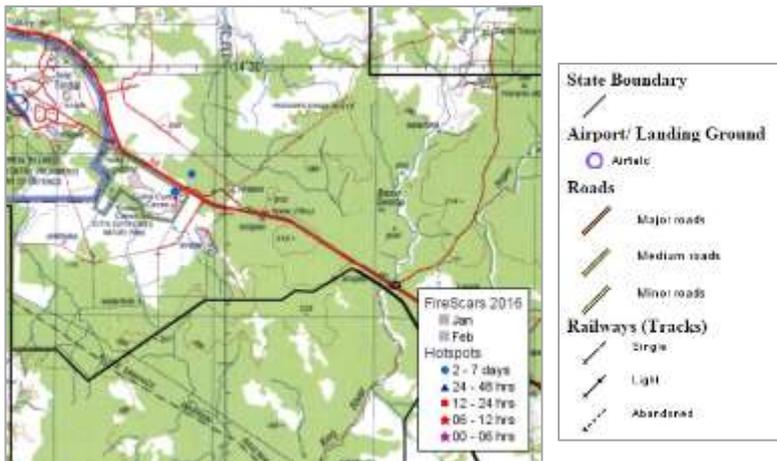
The last two menu items are “Report a problem” which is a simple email link that allows you to contact NAFI staff and report problems with NAFI, and “Map Legends” which have two legend tools.

**Toggle Legend** clicking this will remove the legend display in the lower right of the map (below) which can be useful if you need to maximise your display area.



To restore the legend, just re-click “Toggle Legend”.

“Legend for NAFI background maps” displays the legends (below right) used in the 250K Topographic maps that are displayed when you zoom in with Topo maps selected as a background (below left).



## 4.7 The Help Menu



The Help menu is found on the right of the tool bar below the banner. It has links to a range of information that helps you use the NAFI service.



**Using the NAFI site** At the top of the Help menu is the basic help on the site. This is provided as a series of pdfs which cover the material in this booklet.

**Using the NAFI site (video)** Some key sections are available as short videos.

**What's New** This section, also on the home page, links to information on the latest developments on the NAFI website as well as to the archive of NAFI newsletters.



The NAFI newsletters, which started in late 2014, cover news on the NAFI site as well as the broader NAFI service including workshops. By signing up to the newsletter, using the link below the Archive, you can be alerted to NAFI developments without having to check the website.



**About NAFI** outlines the basic purpose and limitations of the site, and the approach taken to privacy. This section also has the key contacts for the site.

**The data behind NAFI** links to a pdf document that describes where the main fire data displayed by the NAFI site comes from. This is mainly satellite data and the limitations of this data are explained and related to the characteristics of the satellites and sensors used.