

# AUSRIVAS Mapping and Reference Site Screening Module

## Software User Manual

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# Chapter 1

## Introduction

### 1.1 Background

This project is a part of the Toolbox component of the Australia-wide Assessment of River Health, which is a sub-program of the Natural Heritage Trust's *National River Health Program*.

The goal of the National River Health Program is to provide the information needed to reverse the degradation of our inland waters. The objectives of the National River Health Program are to:

1. Provide a sound information base on which to establish environmental flows;
2. Undertake a comprehensive **assessment of the health of inland waters**, identify key areas for the maintenance of aquatic and riparian health and biodiversity, and identify stressed inland waters;
3. Consolidate and apply techniques for improving the health of inland waters, particularly those identified as stressed; and
4. Develop community, industry, and management expertise in sustainable water resources management and raise awareness of environmental health issues and needs of our rivers.

The priorities of the Australia-wide Assessment of River Health include:

1. A nationwide assessment of 6000 sites using instream biota and habitat assessment; and
2. Development of a comprehensive toolbox of assessment methods for all inland waters.

An Australia-wide assessment of river health is continuing, under the National River Health Program. This assessment uses a rapid, standardised approach for assessing riverine ecological health, referred to as the *Australian River Assessment Scheme* (AUSRIVAS).

AUSRIVAS has two major modules, **bioassessment** and **physical and chemical assessment**. The macroinvertebrate bioassessment component uses a series of models, which predict

## Chapter 1. Introduction

the composition of the macroinvertebrate community at a river site in the absence of any impacts. This data is then used to make a comparison with the macroinvertebrate community actually found at a site. These models are based on data derived from 1500 **reference sites** across Australia.

### 1.2 Selection and comparison of reference sites

A key issue with using AUSRIVAS models at the national and state level is **reference site condition reporting**. Currently the models treat all reference sites equally. There are variations in the degree of human impact on reference sites within states, as well as between states, which require an external framework for assigning a degree of comparison.

A systematic assessment of all rivers in Australia has already been carried out by the *Wild Rivers Project* (Section 1.4). The Centre for Resource and Environmental Studies (CRES) at the Australian National University has determined, at a national scale, the level of disturbances for rivers on a continuum from pristine through to highly degraded.

The disturbance indices resulting from the Wild Rivers data set can be compared to reference site AUSRIVAS scores, allowing development of a system for making comparisons between reference sites in terms of the degree of human impact and then reporting them on a national or regional level.

An added benefit of using the Wild Rivers data set is that it can also be used as an aid for selecting new reference sites, on the basis of disturbance caused by human impact, which could be a significant advancement on the existing system of reference site selection.

### 1.3 The role of the AUSRIVAS Mapping and Reference Site Screening module

The AUSRIVAS Mapping and Reference Site Screening module supplies the linkage between AUSRIVAS outputs and the Wild Rivers river disturbance indices described above.

The module supplies river disturbance indices in a graphical map based format incorporating sites, reference or otherwise, along with their associated AUSRIVAS outputs. In fact, the software module has been made flexible to allow any extra site information to be included in the outputs, not just the AUSRIVAS scores.

More detail about the AUSRIVAS Mapping and Reference Site Screening module software, also referred to as the *AUSRIVAS Mapping software*, is presented in the following chapters, starting with how the software works, and your system requirements to run it, in Chapter 2.

## 1.4 The Wild Rivers database

The Wild Rivers model produces indices of river disturbance using a grid-based GIS modelling procedure. The Wild Rivers indices indicate the potential of a stream section to meet the definition of a “Wild River”. Derived indicators are used to rate the level of disturbances for stream sections on a continuum from pristine through to highly degraded.


The data base covers all natural water courses in the GEODATA TOPO-250K digital database derived from 1:250000 map series. The level of detail available for different areas varies depending on the location, for example the level of detail about land uses, river systems for certain areas such as Western Australia is limited. Thus, indices could be more accurately calculated for some areas than others. Generally, with the exception of Western Australia, there is good coverage of streams and land use across Australia.

### 1.4.1 Wild Rivers River Disturbance Index

The Wild Rivers index displayed in the maps of the AUSRIVAS Mapping software is the River Disturbance Index (RDI). The RDI values span the range 0 to 1, with 0 being the **most pristine** or “wild” and 1 being the **most disturbed**.

Within the 0-1 continuum, the RDI values are divided in bands or classes. The class divisions originally applied to the Wild River indices for the purposes of viewing mapping outputs were divided so as to differentiate between rivers at the undisturbed end of the continuum and therefore identify any potential ‘Wild Rivers’. However, the class divisions implemented in the AUSRIVAS Mapping software for each index have been altered and now are evenly distributed along the continuum (0-1) of each index. This allows better differentiation at the upper end (more disturbed) of the continuum and allows results to be compared across Australia. The bands are shown in Table 1.1.

Table 1.1: Wild Rivers RDI bands

Band range	Colour rendered on map	Disturbance level
0.0 to less than 0.2	green	Low disturbance
0.2 to less than 0.4	burgundy	
0.4 to less than 0.6	purple	
0.6 to less than 0.8	orange	
0.8 to 1.0	khaki	
		High disturbance

# Chapter 2

## Installation and setup

### 2.1 System requirements

#### 2.1.1 Software requirements

The AUSRIVAS Mapping software runs under Microsoft Windows. It has been tested under Windows NT, Windows 2000 and Windows XP. Unfortunately, versions of the Mapping software for operating systems other than Microsoft Windows are not available.

#### 2.1.2 Hardware requirements

- IBM compatible PC.
- Network access, either direct or through a proxy server.
- The minimum recommended memory required to run your version of Microsoft windows.

### 2.2 How to get the software

The software can be obtained from the AUSRIVAS website

<http://ausrivas.canberra.edu.au>

Navigate from the main page, using the left-hand menu to the section "Mapping and reference site screening module" (under "Resources"). From here select "Get the Mapping & Reference Site Screening software" from the left hand menu. On the "Get the software" page you will find information on the four-step process for downloading and using the software.

## 2.3 Access requirements

**Step 1** Details access requirements (see Section 2.3). There are no restrictions on downloading AUSRIVAS software. However, to run the program you need to obtain a **username** and **password**. This is explained further in Section 2.3.

**Step 2** Involves downloading the software. Simply click on the link given in this section and you will be prompted for the location where you'd like to save the software.

**Step 3** Shows you how to install the software. This information is also given here in Section 2.4.

**Step 4** Gives links this document and others which show you how to use the software

## 2.3 Access requirements

To use AUSRIVAS software, you need to have a **username** and **password**.

To obtain these access codes, you must apply through your State or Territory National River Health Program (NRHP) contact. An up-to-date list of NRHP contacts is maintained on the AUSRIVAS web site, (select "NRHP contacts" from the left hand menu).

Note: If you already have an AUSRIVAS password (for accessing the models) you **don't** need to get another one.

## 2.4 How to install the software

Once you have downloaded a copy of the AUSRIVAS Mapping and Reference Site Screening Module Software (Section 2.2), you can begin to install it on your computer. The following steps take you through the process of installing the software.

### 2.4.1 Download the installation program

Firstly, note the name and type of file you have downloaded. The name will show you the version number of the software you are about to install. For example, the file:

`Ausrivas_MappingSetup_1-0.exe`

shows you that you have the Mapping and Reference Site Screening Software (Mapping) Version 1.0 (the file you obtain may have a different version number depending on further development). Also, the file you download is **not the program**. It is an installation program that when run, will install the Mapping software on your computer and set up menu's and desktop icons to run the software.

More on this later in this section.

## Chapter 2. Installation and setup

### 2.4.2 Uninstall old versions

Before you start to install a new version of the AUSRIVAS Mapping and Reference Site Screening Software, you should **uninstall** any older versions if you have them. You do this using “Add/Remove programs” from the Control Panel.

### 2.4.3 Install the mapping software

The file you have downloaded, `Ausrivas_MappingSetup_1-0.exe`, is an installation file. **To start installation of the Mapping software, double-click on the filename in Windows Explorer or My Computer.** The steps involved in this part of the installation are detailed next.

1. The setup program will initially spend some time setting up files on your computer for the install. When this is finished, it will present you with a welcome screen as shown in Figure 2.1. If you don't currently have the Mapping software installed, you will be prompted to click on the 'Next' button to proceed with installation. If however you have the Mapping software already installed, clicking on 'Next' will allow you to modify, repair or uninstall the Mapping software.

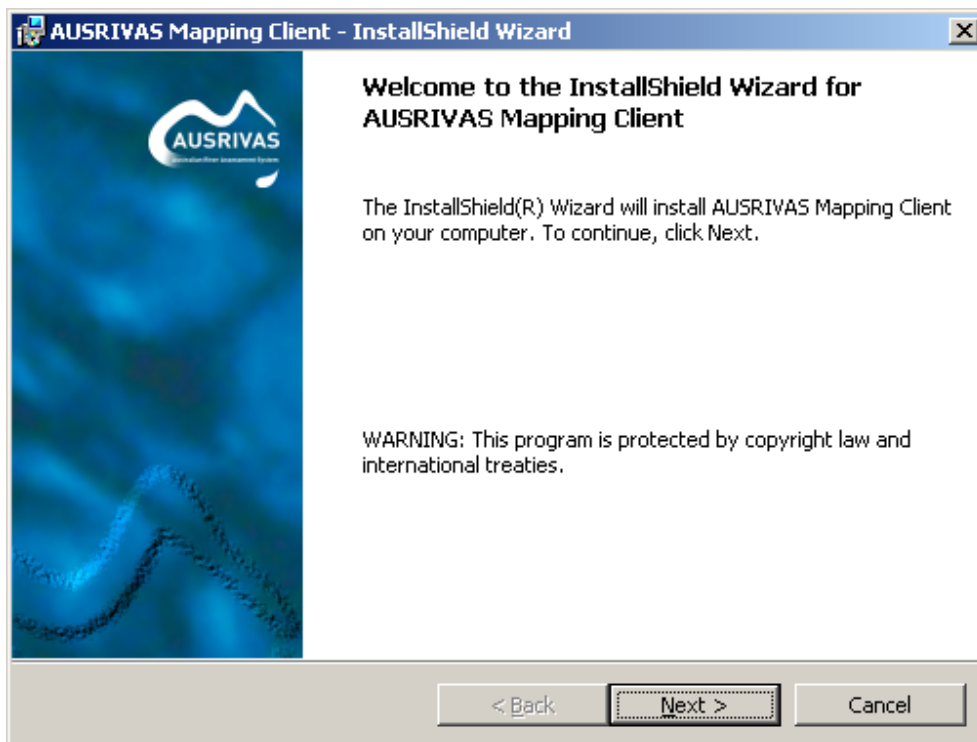


Figure 2.1: Installation program - Welcome screen

2. The next screen shows the licence agreement for the AUSRIVAS Mapping software, as shown in Figure 2.2. Scroll down using the scrollbar on the right to view the entire



## 2.4 How to install the software

agreement. You must **agree** to the licence conditions to continue the software installation. To signal your agreement, click on the radio button labelled “I accept the terms of the license agreement”, then click on the 'Next' button to continue installation.

**Hint:** If the 'Next' button is greyed out, click on “I accept the terms of the license agreement”.

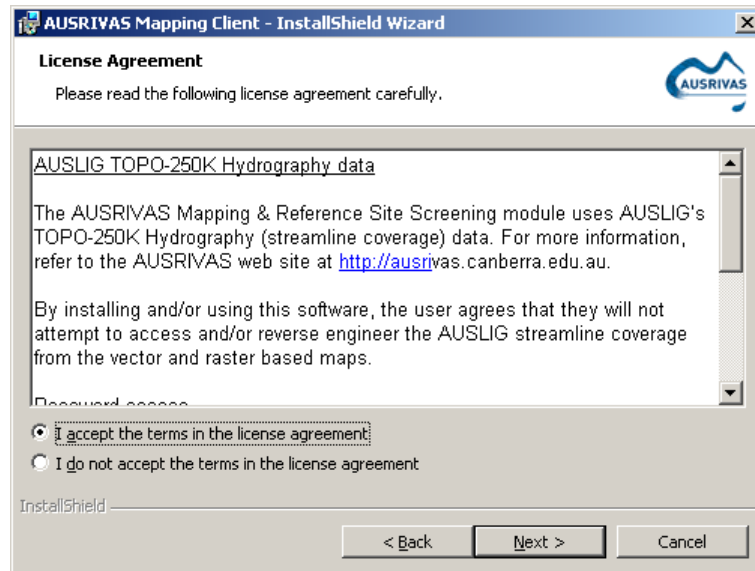


Figure 2.2: Installation program - License agreement

3. Enter your name and organisation in the customer information screen, shown in Figure 2.3. Click 'Next' to continue.

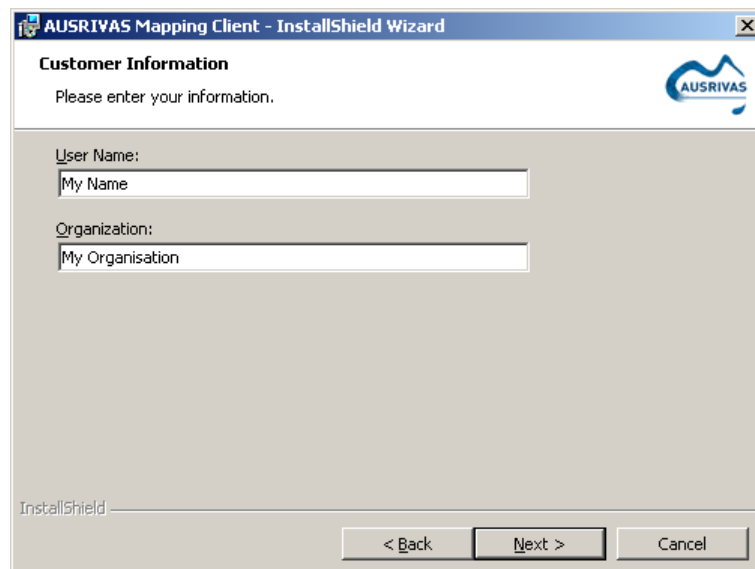


Figure 2.3: Installation program - Customer information

## Chapter 2. Installation and setup

- The following screen allows you to select the destination folder that the program will be installed in. If you wish to accept the default, shown in Figure 2.4 as C:\Program Files\AUSRIVAS\AUSRIVAS Mapping Client just click on 'Next'. If you want to change the destination folder from the default setting, click the 'Change' button and navigate to the destination folder in the 'Change Current Destination Folder' dialog that appears, as shown in Figure 2.5. Click on 'OK' to continue.

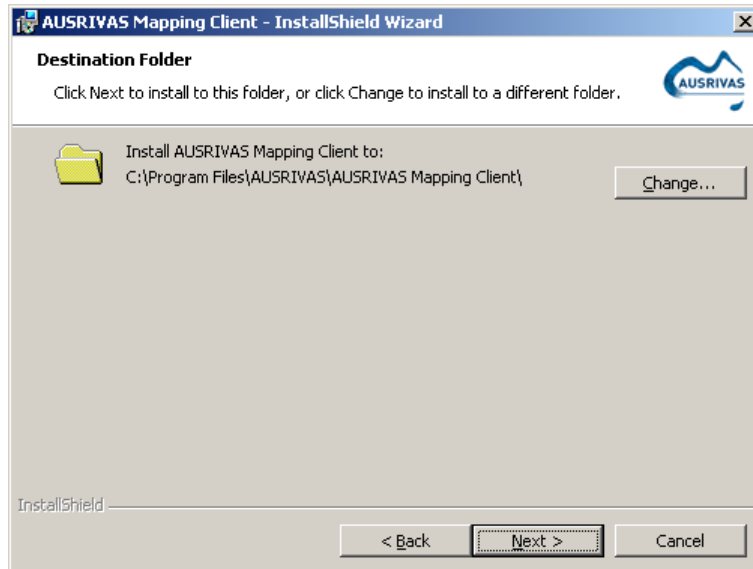


Figure 2.4: Installation program - Destination folder

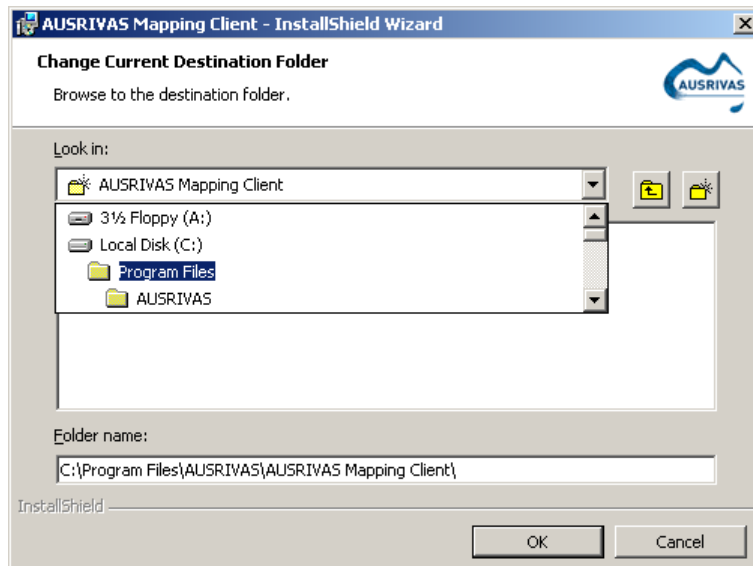


Figure 2.5: Installation program - Change destination folder

- The confirmation screen shown in Figure 2.6 shows you the installation options you have chosen. If you wish to change any of the settings, click on the 'Back' button. Otherwise

## 2.4 How to install the software

select 'Install' to begin installation of the AUSRIVAS Mapping software.

**Note:** This is the last chance you have to cancel installation if you wish to do so. Clicking on 'Install' will cause installation to commence and you will not be prompted again until installation has completed.

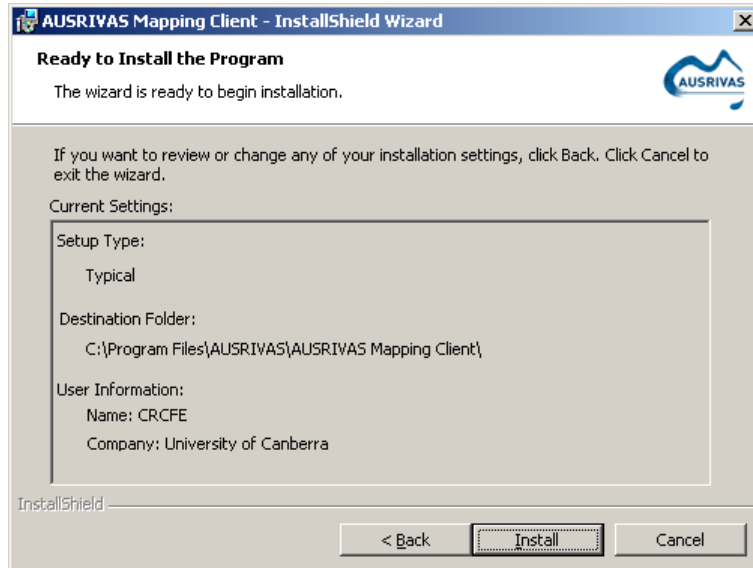


Figure 2.6: Installation program - Confirm installation

- When installation has successfully completed, the 'Installshield Wizard Completed' screen will be shown. Clicking on 'Finish' will end the installation process and start up the AUSRIVAS Mapping software. If you don't want the Mapping software to start up now, deselect 'Launch the program' by clicking on the tick-box.

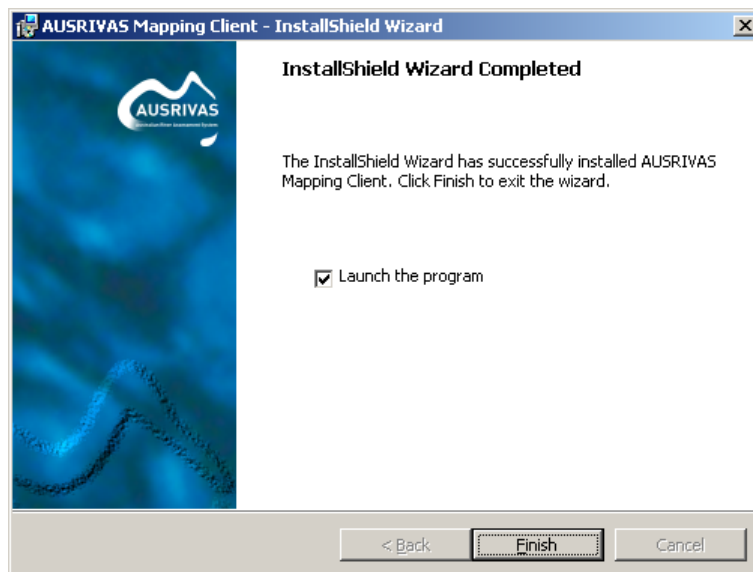


Figure 2.7: Installation program - Installation completed

## Chapter 2. Installation and setup

You have now installed the AUSRIVAS Mapping and Reference Site Screening Software! The next section shows you how to start up the software.

**HINT: If you have any problems** first talk to your systems administrator - most problems fall under her or his domain. If your systems administrator believes the problem to originate with the AUSRIVAS program, refer to our help page on the AUSRIVAS web site for the name of someone to contact at the CRCFE.

### 2.4.4 Start the program

The installation program has set up two ways for you to start the AUSRIVAS Mapping program.

1. A **menu item** has been set up for you in the Start Menu. Open the Start menu, select 'Program Files' and then 'AUSRIVAS' and click on the program name 'AUSRIVAS Mapping & Reference Site Screening Module' to launch the AUSRIVAS Mapping program. This is shown in Figure 2.8.

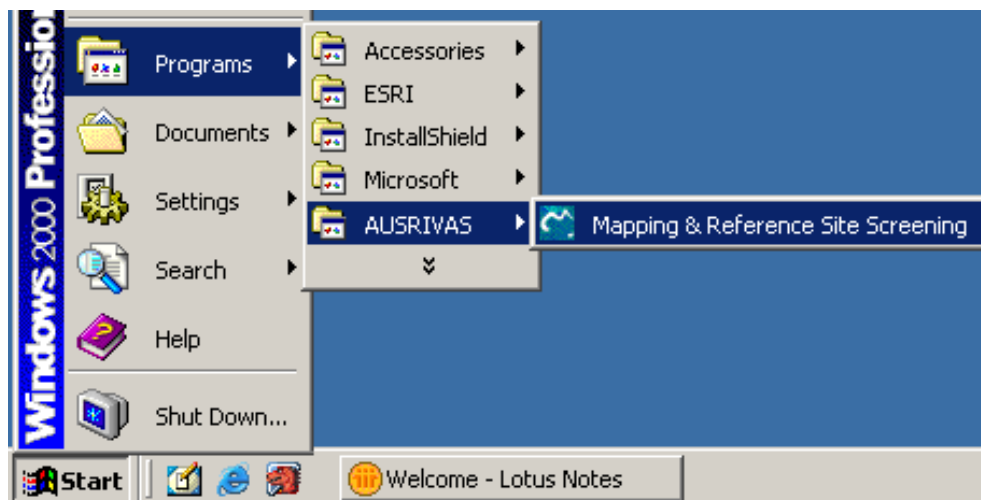


Figure 2.8: Installation program - Start menu item

2. A **shortcut icon** has also been added to your desktop, which will look like the one shown in Figure 2.9. To start the AUSRIVAS Mapping program, double-click on the desktop icon.

## 2.5 How Internet access works

The AUSRIVAS Mapping software requires Internet access to run, in much the same way as the AUSRIVAS Macroinvertebrate Predictive Modelling software and the AUSRIVAS Physical & Chemical Reporting software does. Figure 2.10 illustrates how this works.

## 2.5 How Internet access works



Figure 2.9: Installation program - Desktop shortcut

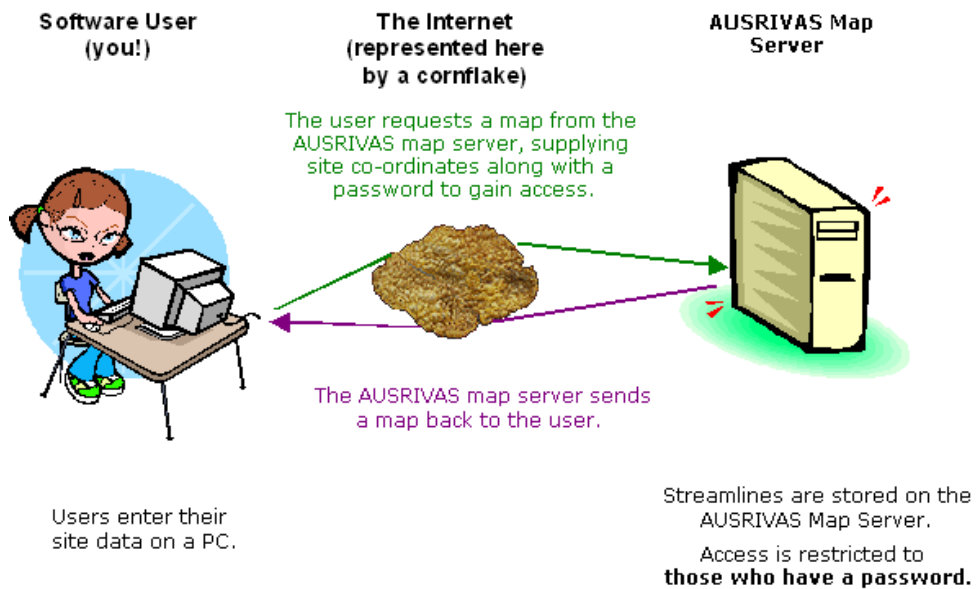


Figure 2.10: How Internet access works

## Chapter 2. Installation and setup

All the 1:250K streamline and WildRivers data used by the program is stored on the AUSRIVAS map server, which is currently located in Canberra at the CRC for Freshwater Ecology. So when you - the user - request a map, Internet access for communication between your machine and the AUSRIVAS map server is required.

### 2.5.1 Why is the map data stored on a server?

Part of the data used by the AUSRIVAS Mapping software to create a map is the AUSLIG 1:250K streamline data, which is not publicly available unless you pay a licence fee. In order to allow users of the AUSRIVAS Mapping software to access streamline information without having to purchasing a licence, an agreement was made between LAWA, the CRCFE and AUSLIG.

This agreement allows AUSRIVAS Mapping Software users to obtain **images** created from the streamline data but **does not** allow users access to the 'raw' streamline data. By keeping the streamline data on a central server rather than distributing it with the software, we are able to partially fulfil this condition. The AUSLIG streamline data are also protected by password access and by user agreement (when you install the software you need to agree to a set of conditions about using the streamline data), which together with the method of keeping the data on a central server, fully meet our obligations in regards to protecting the streamline data.

### 2.5.2 What happens to my site data?

The site data that you load into the Mapping Software is secure as it does not leave your machine. The only information sent from your machine to the AUSRIVAS map server is;

1. Information to enable the server to send you the correct map area, such as the coordinates of a rectangle bounding your sites.
2. The type of map you want, either a fully functional map which allows you to zoom, move sites, query map features etc (a large file) or a map which is only suitable for printing (a smaller file). *NOTE: the second option of requesting a map only for printing is not yet available.*

## 2.6 Setting up the software for Internet access

### 2.6.1 How do I enter my AUSRIVAS password

When you run the AUSRIVAS software, you will need to enter your AUSRIVAS username and password. While the program is open, it will store the username and password you give it, so you only need to enter this information once each time you run the software.

## 2.6 Setting up the software for Internet access

You must enter your **AUSRIVAS** username and **AUSRIVAS** password  
BEFORE YOU REQUEST A MAP

The steps for entering your AUSRIVAS username and password are:

1. Open the **Properties** dialog box, which can be found under the **Edit** menu as shown in Figure 2.11.

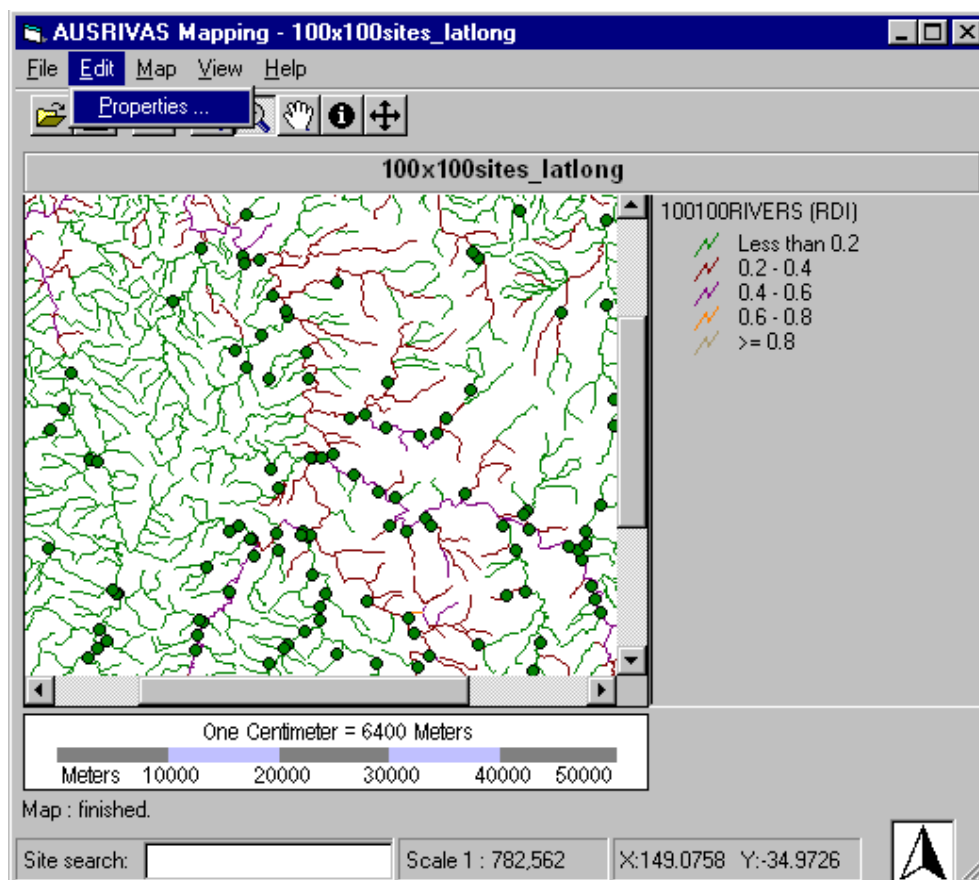


Figure 2.11: Opening the Properties dialog from the Edit menu.

2. Click on the **Map Server** tab. This will display the window where you can enter your password details, as shown in Figure 2.12.
3. Type in your AUSRIVAS username (shown as "myAUSRIVASusername" in Figure 2.12) and your AUSRIVAS password (shown as \*'s in Figure 2.12).
4. Click on the **OK** button.

## Chapter 2. Installation and setup

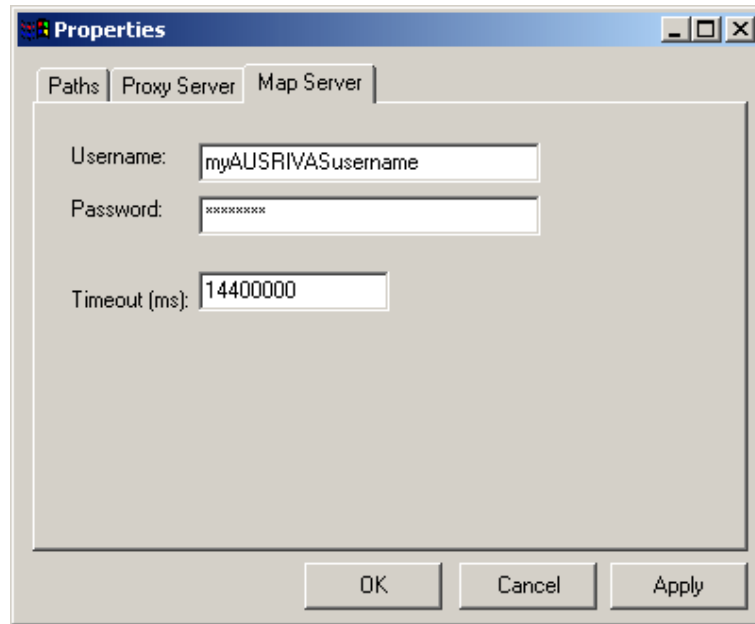


Figure 2.12: Entering your AUSRIVAS username and password.

Your **AUSRIVAS username and password** are provided to you by the AUSRIVAS server administrators, currently the CRC for Freshwater Ecology at the University of Canberra. For further information on AUSRIVAS usernames and passwords, see Section [2.3](#).

### 2.6.2 What if I access the Internet through a proxy server?

The AUSRIVAS Mapping Software allows you to access the AUSRIVAS server through a proxy server. It also allows you to enter a username and password for your proxy server if it requires this (proxy authentication).

Before you can use the program to obtain data via the Internet, you need to give it details about your proxy server. The information you need, which can be obtained from your Systems Administrator, is:

1. Your proxy server's **name**. For example, we at the University of Canberra need to enter:

`proxyhost.canberra.edu.au`

2. The **port number** your proxy server uses for HTTP connections. This is usually port 80.



## 2.6 Setting up the software for Internet access

You must enter your **proxy server name** and **proxy server port number**  
BEFORE YOU REQUEST A MAP

The steps for entering your proxy server details are:

1. Open the **Properties** dialog box, which can be found under the **Edit** menu (see Figure 2.11).
2. Click on the **Proxy Server** tab. This will display the window where you can enter your proxy server details, as shown in Figure 2.13.
3. Type in your proxy server's name (shown as "myproxyhost.mydomain.au" in Figure 2.13) and your proxy port number (shown as "80" in Figure 2.13).
4. Click on the **OK** button to store these settings.

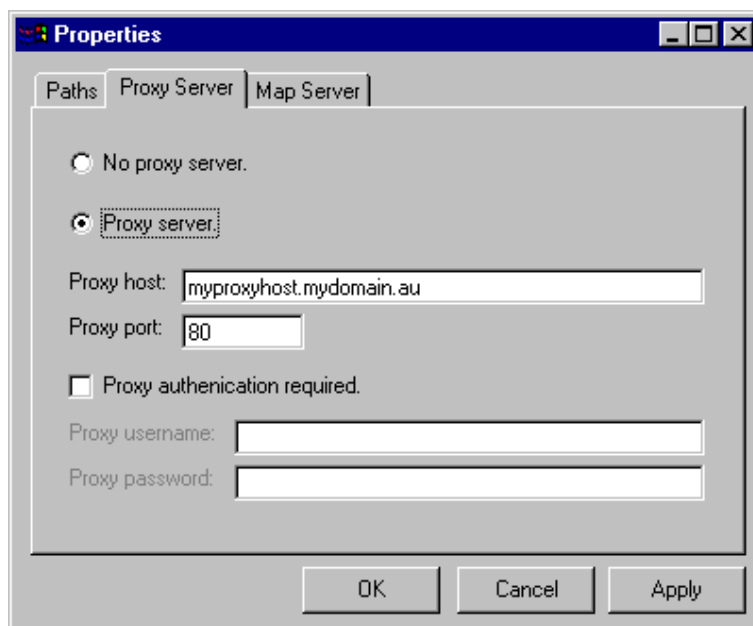


Figure 2.13: Setting proxy hostname and port

Once you have entered your proxy server details, the AUSRIVAS Mapping Software will be able to access data on the AUSRIVAS map server via the Internet.

### 2.6.3 My proxy server requires a password

It is common for proxy server's to require **authentication** in the form of a **username and password**. This is known as 'proxy authentication' If this is the case at your site, you can enter your access codes using the **Properties** dialog.

## Chapter 2. Installation and setup

You must enter your **proxy username** and **proxy password**  
BEFORE YOU REQUEST A MAP

The steps for entering your proxy server authentication details are:

1. Open the **Properties** dialog box, which can be found under the **Edit** menu.
2. Click on the **Proxy Server** tab. This will display the window where you can enter your proxy server details.
3. Select **Proxy authentication required** by clicking in the check box, as shown in Figure 2.14. The check box should now have a tick mark in it.
4. Type in your proxy username (shown as “myproxyusername” in Figure 2.14) and your proxy password (shown as \*’s in Figure 2.14).
5. Click on the **OK** button to store these settings.

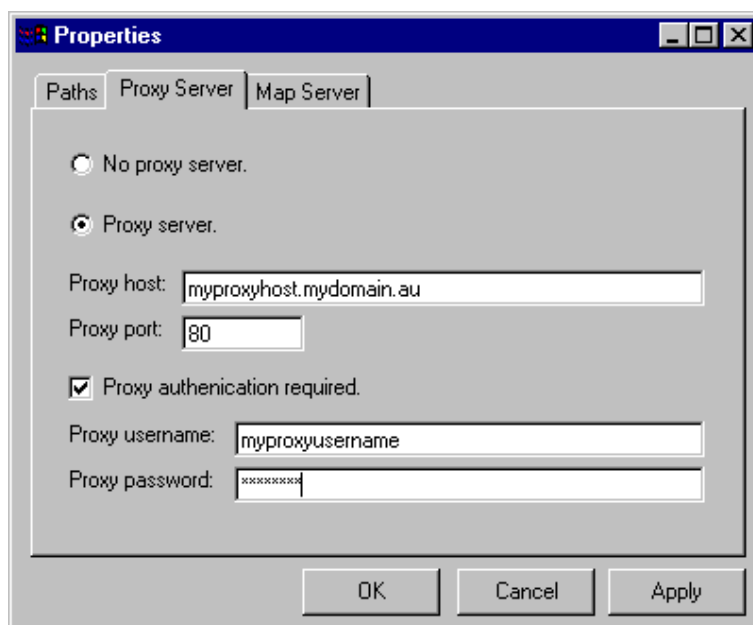


Figure 2.14: Setting proxy username and password

As with server authentication (your AUSRIVAS username and password) you only have to enter this information once each session.

The **username and password required by your proxy server** (proxy authentication) are access codes provided to you by your Systems Administrator. They are **NOT** your **AUSRIVAS** username and password.

### 2.6.4 Setting the Internet timeout

There is a setting in the AUSRIVAS mapping program that determines how long the program will wait for a map to be generated and sent over the Internet to your machine. By default, this **timeout** value is set to four hours - a figure that is calculated for the biggest map the server will let you request. If you want to change this value, either to reduce it, or to increase it if you want to request a large map and have a slow Internet connection, you can via the **Map server** tab in the **Properties** dialog, as shown in Figure 2.12.

**NOTE:** The time it takes to get a map in the AUSRIVAS mapping program is normally in the order of minutes, rather than hours! More information on how long it takes to get a map, and the steps involved in creating a map can be found in Section 4.2.

## 2.7 Setting a temporary directory

The AUSRIVAS Mapping software needs to create temporary files while it runs. You can set the folder that the software will put these temporary files in the **Properties** dialog. This is shown in Figure 2.15.

By default, the temporary files path is set to `C:\temp`. You can change this once the program starts, and your new settings will be saved so you don't need to re-enter them next time you run the Mapping software.

If for some reason the set temporary directory is not valid (for example, it doesn't exist, isn't writeable etc) you will be prompted to either supply a new path for the temporary directory or exit the program (cruel but necessary!).

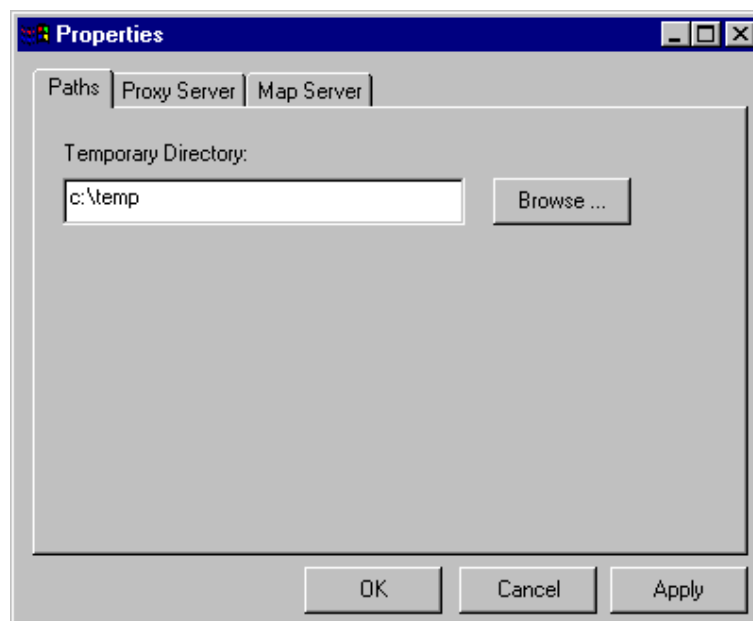


Figure 2.15: Setting a temporary directory

## Chapter 2. Installation and setup

### 2.8 Saving my customised program settings

If you have set or changed settings in the AUSRIVAS Mapping software, in most cases you won't need to re-enter them next time you use the software.

Several settings are stored in Window's *registry*, and whenever you run the software, these settings will be loaded for you.

The settings that are stored between program uses are shown in Table 2.1:

Table 2.1: Program settings that will be saved between program runs.

<b>Saved program settings</b>
Proxy server name
Proxy server port
AUSRIVAS username
Proxy server username
Temporary directory

To change the settings saved in the registry, simply change them within the program, and when the program ends it will replace the old settings with your new ones.

# Chapter 3

## Setting up site data

### 3.1 What are site data?

The site data are the spatial (geographic) information about sites along with any extra site data you want displayed with your map.

The AUSRIVAS Mapping software will display these site on a streamline map along with their corresponding emph Wild River River Disturbance Index.

### 3.2 How to set up a site data set

#### 3.2.1 Obtain the spatial information about your sites

For each site that you want included in your map, you need to obtain the site's spatial coordinates. The specifications for these coordinates are:

<b>Reference system:</b>	Geographic (latitude and longitude)
<b>Datum:</b>	WGS84
<b>Prime Meridian:</b>	Greenwich
<b>Co-ordinates:</b>	Decimal degrees

The AUSRIVAS Mapping software doesn't enforce a minimum degree of accuracy in your coordinate values, however we recommend using a minimum of 4 decimal places which will give you an accuracy of  $\pm 10m$ . If you can enter your site coordinates to 5 decimal places you will decrease error to around  $1m$ .

## Chapter 3. Setting up site data

### 3.2.2 Obtain other desired information about your sites

Along with spatial information about your site, you can include other information in your site file. This information will be included in your map as a feature attribute of each site.

Some ideas for extra fields include:

- AUSRIVAS O/E bands.
- Site coordinates, if they are normally kept in a format different from the one used here (ie eastings and northings).
- Comments about the type of site ie reference site, test site.

### 3.2.3 Allocate site codes

Each site in your site file must be referred to by a site code. This code is alphanumeric, and so can contain digits or characters or both. Some examples of valid site codes are shown in Table 3.1. Note that, as shown in these examples, **numeric site codes must be enclosed in quotes**.

The site codes in one site file can each be in any of these formats. So for example, your first site code could be numeric, while the second contains only alphabet characters and the third is alphanumeric.

Table 3.1: Examples of valid site codes.

Type	Site code
numeric	"4106789"
alpha-numeric	AM436
alpha	Molonglo
alpha with spaces	Molonglo upstream of dam

### 3.2.4 Set up the site data in CSV format

Once you've determined the spatial information for your sites, you can assemble the data into a site data file.

The site data file is in comma-separated values (**CSV**) format. Data are arranged in rows and columns, with one row for each site. The first row of the file contains labels, or headings, for each column.

Data have the following general properties:

- The data for a site occupies one row.

## 3.2 How to set up a site data set

- Each row must have the same number of data. For example, if *site 1* has 5 attributes, all other sites must have five attributes.
- Three columns are compulsory. These contain a **site code** and the **latitude** and **longitude** of the site. If one or more of these required fields is not present the program will generate an error.
- Each column must have a heading. The acronyms of the headings for the three compulsory columns must be as specified below.
- The columns of data not specified above can have any acronym for their column heading.

Each column of data contains a different type of information. The layout of information required in each column is:

**Column 1** contains the **site code**. This column must be labelled **LOCATION\_C**.

**Column 2** contains the **latitude** of the site. This column must be labelled **LATITUDE**.

**Column 3** contains the **longitude** of the site. This column must be labelled **LONGITUDE**.

**Columns 4 to  $n$**  (where  $n$  is the number of columns) contain any extra data that you would like included as an attribute of the sites on the map. Some ideas for extra fields are shown in Section 3.2.2.

If you use **NUMERIC** site codes, the site code **MUST BE ENCLOSED IN QUOTES**, as shown in Table 3.1.

An example site file is shown below in Table 3.2. This file has the three compulsory columns, sitecode, latitude and longitude, along with extra optional data: site type, easting, northing, O/E taxa score and taxa band.

Table 3.2: Example site file

```
LOCATION_C,LATITUDE, LONGITUDE, SITETYPE, EASTING, NORTHING, O_E_TAXA, TAXA_BAND
'4102001', -35.3291596, 148.9473896, Reference, 677000, 6088700, 0.96, A
'4102002', -35.3220563, 148.9406193, Reference, 676400, 6089500, 0.88, A
'4102003', -35.3481086, 148.8895263, Reference, 671700, 6086700, 0.95, A
'4102005', -35.4174656, 148.8349786, Reference, 666600, 6079100, 1.11, A
'4102006', -35.6123930, 148.8217576, Reference, 665000, 6057500, 1.18, X
'4102007', -35.3423032, 148.9146972, Reference, 674000, 6087300, 0.97, A
'4102008', -35.3223664, 148.8636270, Reference, 669400, 6089600, 0.91, A
'4102009', -35.3605884, 148.8402936, Reference, 667200, 6085400, 1, A
'4102010', -35.3678742, 148.9505206, Reference, 677200, 6084400, 0.96, A
'4102012', -35.4155286, 148.9582763, Reference, 677800, 6079100, 0.97, A
```

## Chapter 3. Setting up site data

### Tools for creating a CSV file

A convenient method for creating CSV files is to set up your data first in a spreadsheet. In the spreadsheet each cell will contain an item of data as shown in Table 3.3.

Table 3.3: Example of setting up site data in a spreadsheet.

LOCATION_C	LATITUDE	LONGITUDE	SITETYPE	EASTING	...	
4102001	-35.32915	148.94738	Reference	677000	...	
4102002	-35.32205	148.94061	Reference	676400	...	
⋮	⋮			⋮		

When you have set up the data in the spreadsheet, use the “Export” or “Save As” option to save the data as a CSV file, choosing the comma as the column (or data) delimiter.



## Chapter 4

# Getting a map

Start the AUSRIVAS Mapping program, as described in Section 2.4.4. When you first start the AUSRIVAS Mapping software, the program window will look like the one shown in Figure 4.1. A description of the different components of the program window is given in Section 5.1.

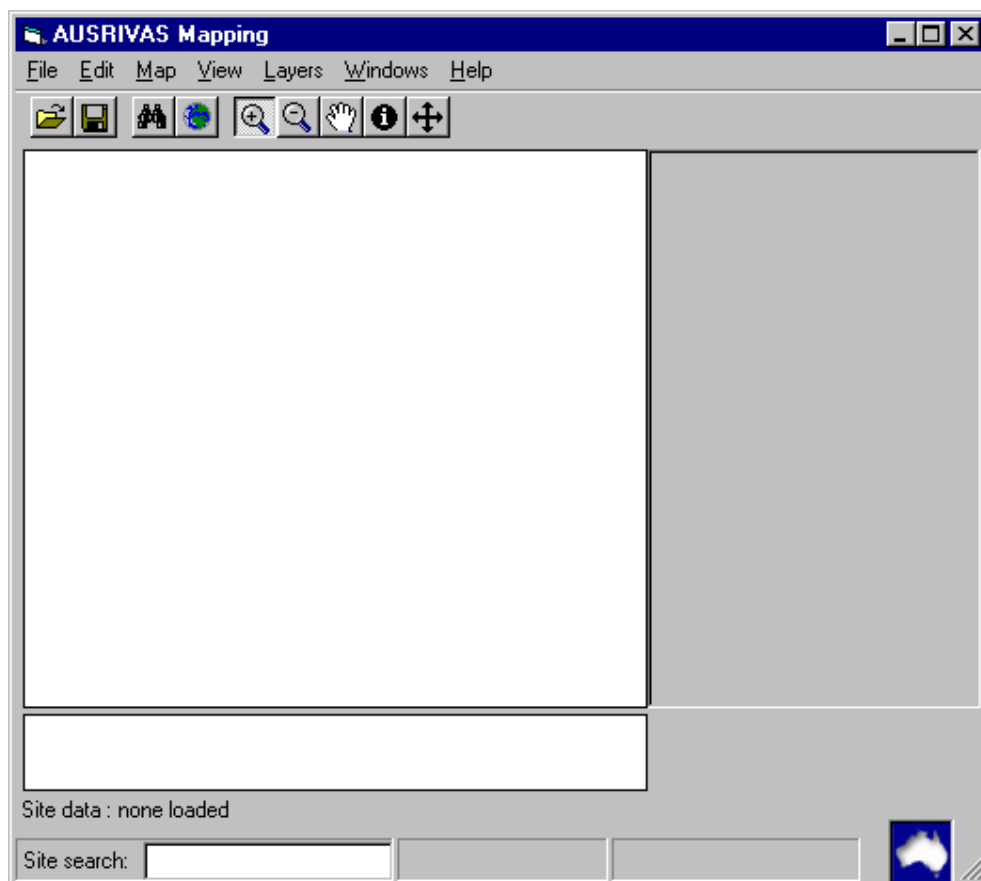



Figure 4.1: AUSRIVAS Mapping program window at startup.

Once you have set up the program (as explained in Section 2) and created a site data set (Section 3), you are ready to create a map!

## Chapter 4. Getting a map

The steps for doing this are detailed in the following sections, starting with loading your site data.

### 4.1 Loading site data

There are two ways you can start the process of loading your site data. Either select **Open** from the **File** menu as shown in Figure 4.2, or click on the open icon  in the toolbar.

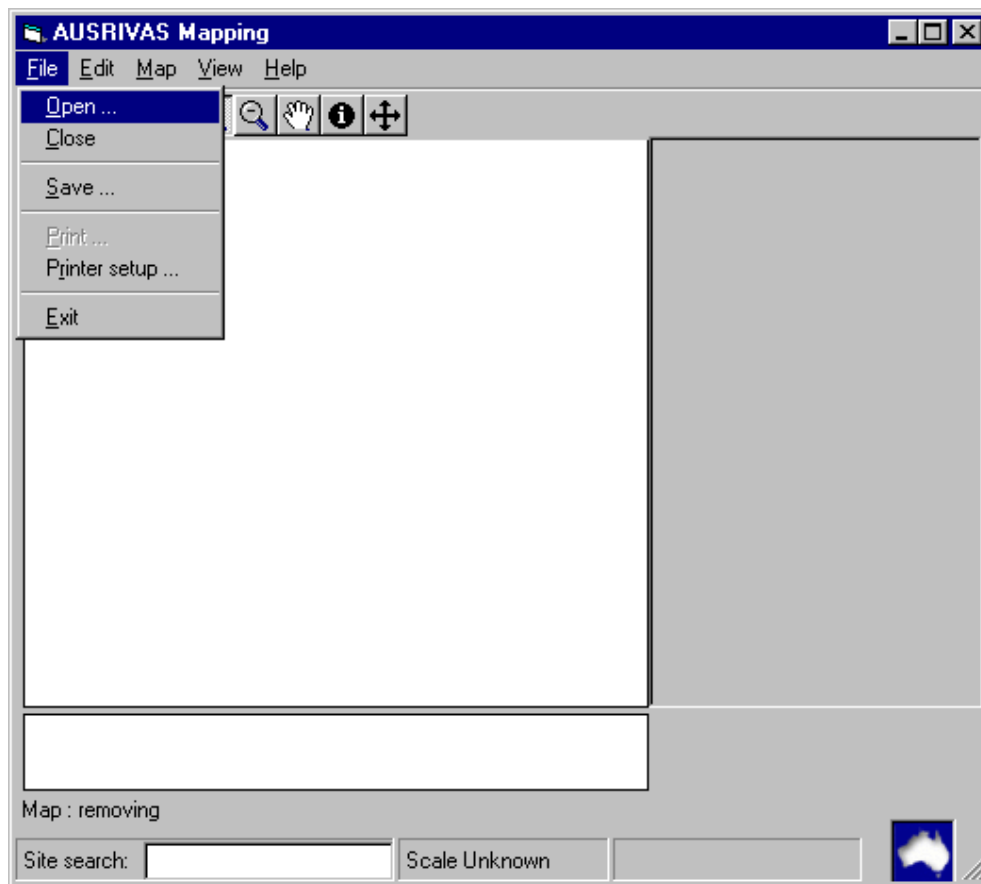


Figure 4.2: Opening a site file using the menu.

Selecting the **Open** menu item or toolbar icon will cause the **Open dialog box** to be displayed. The Open dialog box is shown in Figure 4.3. Simply navigate to the folder your site data is stored in, and select the site file name by clicking on it. In Figure 4.3 the file `100x100sites_latlong.csv` has been selected.

When you now click on the **Open button** the AUSRIVAS Mapping software will start to load your site data file. While the program is in the process of opening your site file and plotting your site data, it will inform you of its progress in the information bar at the bottom of the program window. An screen shot of the status message displayed as your site data is being loaded is shown in Figure 4.4.

## 4.1 Loading site data

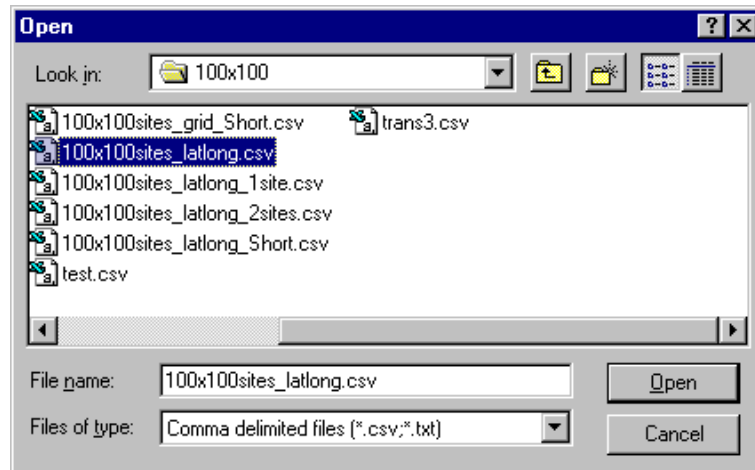


Figure 4.3: Open Site File dialog box.

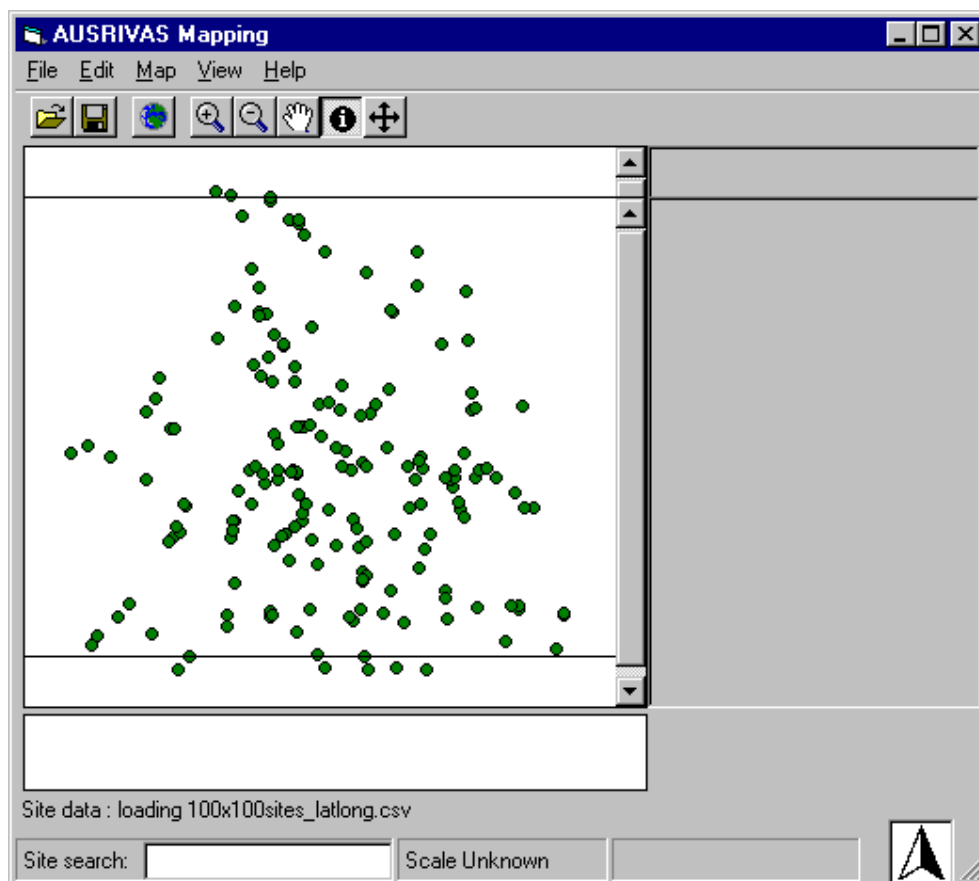


Figure 4.4: Status message showing that site data is being loaded.

## Chapter 4. Getting a map

When the program has finished loading and plotting your site data, it will inform you with a status message “finished” as shown in Figure 4.5.

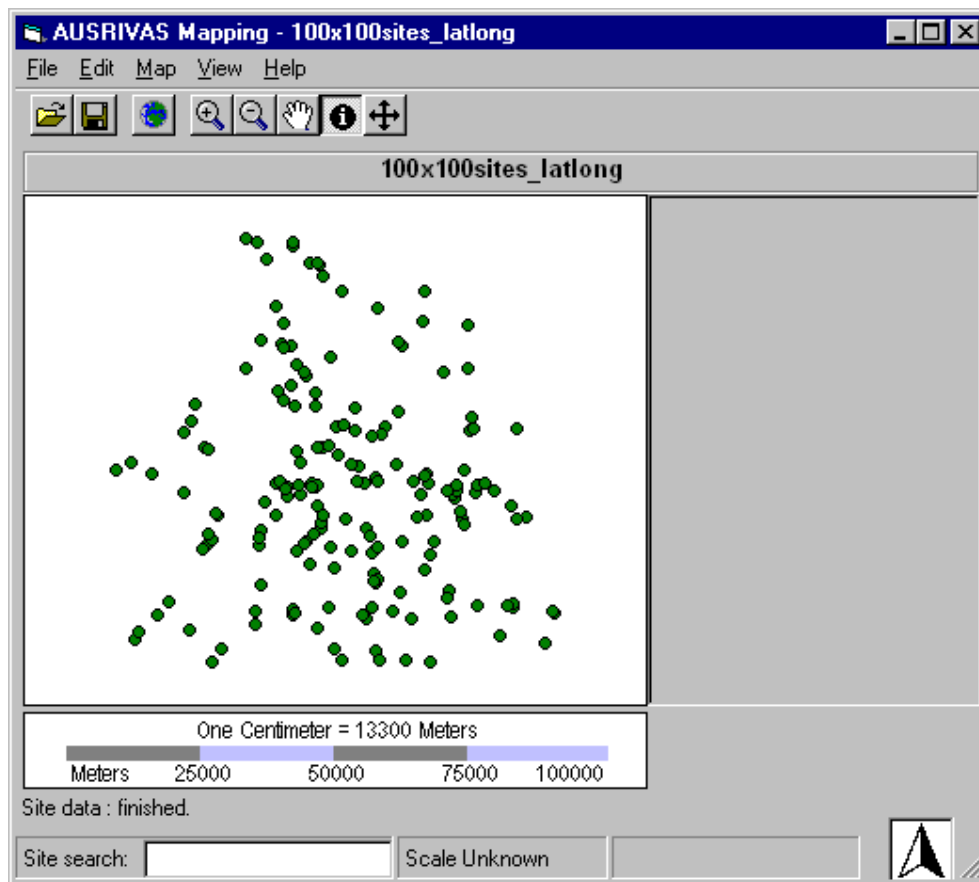


Figure 4.5: Status message showing that site data has been loaded.

Your AUSRIVAS Mapping software window will now look something like Figure 4.6. Your sites have been plotted according to the coordinate system specified in Section 3.2.1, and a scalebar is shown under the map. A north arrow has been added (where the AUSRIVAS logo used to be), and a map title is displayed.

### 4.2 Requesting a map

When your site data is loaded, you can request a map from the AUSRIVAS map server.

To do this, open the **Map menu**, select **Get map** and then select **Full capabilities** from the second menu that pops up. This is shown in Figure 4.7. The other option in this second menu **For printing only** is greyed out as it has not been implemented yet. In future versions of the Mapping software you will be able to download either a large file that contains a map with all (“full”) capabilities, or a smaller file that contains a rasterised map that can be printed but is without the extra capabilities of the larger map such as zooming, querying and moving sites (these are described in later sections).

## 4.2 Requesting a map

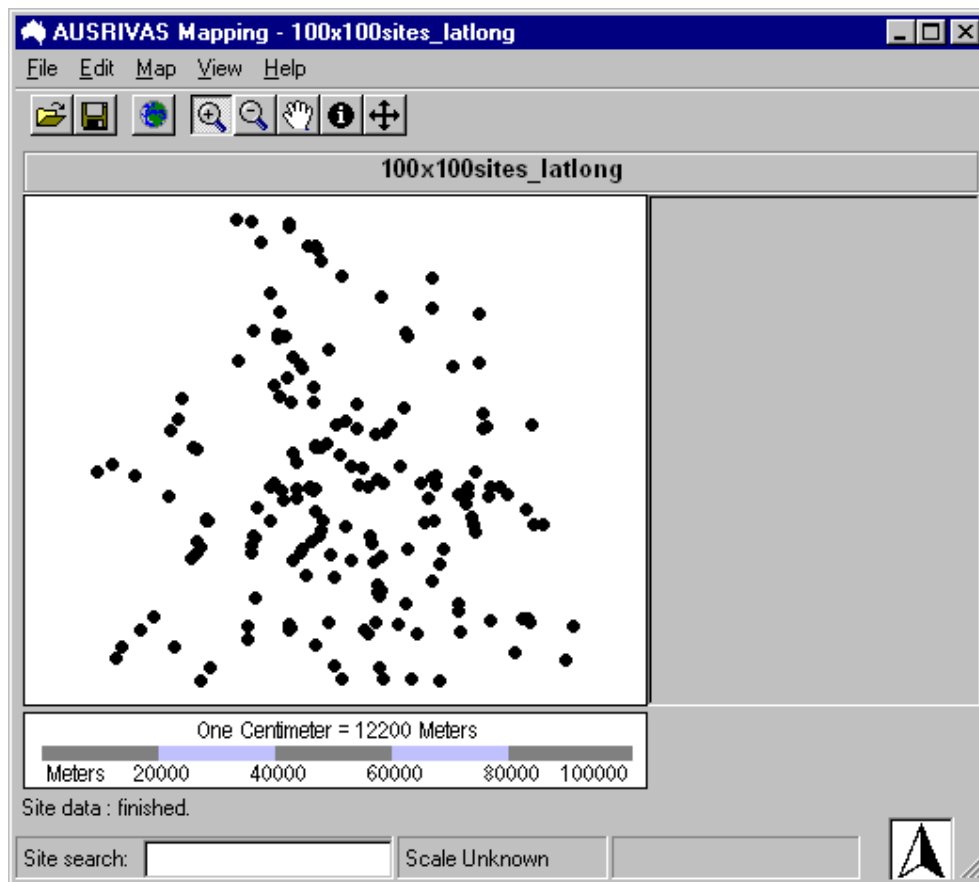


Figure 4.6: AUSRIVAS Mapping program window with site data loaded.

## Chapter 4. Getting a map

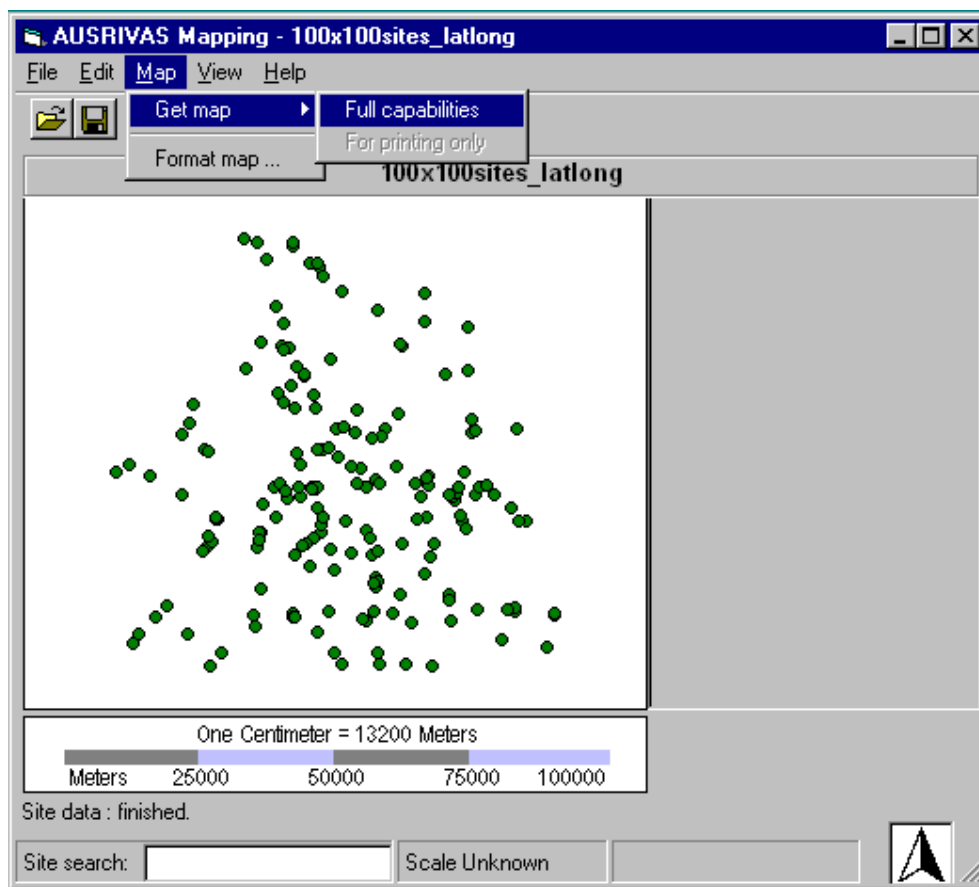


Figure 4.7: Requesting a map using the menu.

## 4.2 Requesting a map

Once you have requested a map from the AUSRIVAS map server, the status bar at the bottom of the program window will let you know the progress of your map. There are four main stages in getting your map.

### Stage 1: Creating the map on the AUSRIVAS Map Server

The first stage is creating the map on the AUSRIVAS Map Server. This can take some time, and the time to create your map increases with the size of the map. As an example, a map whose boundaries are within **1 map sheet** will take around 5 seconds to produce, however one that spans **20 map sheets** can take around 15 *minutes*.

In order to make the operation of the map server viable, a **TIME LIMIT OF 60 MINUTES** is applied to the creation of maps. If your map takes longer than one hour to produce, you will get an error message 'Internal server error'.

### Stage 2: The map is sent to your machine over the internet

Once the AUSRIVAS map server has created your map, the second stage commences, where the **map is sent to your machine over the internet**. The time taken to do this depends on the speed of your connection and also on the size of the map. You can expect a file size of around 6MB for a map that is as big as **one full 250K map sheet**, which will take around **10-60 seconds** to transmit over a standard ethernet connection. A **20 sheet map** might be around 140MB compressed, so will take upward of **3 minutes** (possibly up to 30 minutes) to transmit. If you are accessing the data through a modem, the time taken will be even longer. As an example, if you have a 56K modem, the files listed above could take up to 200 times longer to download than the times given for an ethernet connection.

So the lesson here is ... **be aware of the size of the map you are requesting** and **tailor your input data** to make sure that the map you are requesting is not too big.

The maximum time that the Mapping program will wait for a map to be both **created and downloaded to your computer** is set by default to **FOUR HOURS**. If you need more time than this, adjust the timeout setting following the method described in Section [2.6.4](#).

### Stage 3: The RDI of your sites is determined

Once the map data has been downloaded to your machine, each site in your input data is 'matched' to a streamline on the map in order to determine the RDI of your site. This matching involves searching all of the streamlines in the map for the one that is closest to your site. So,

## Chapter 4. Getting a map

as in the previous steps, the size of your map will determine the amount of time that this takes. A map that spans less than **1 map sheet** and/or has few streamlines can be searched very quickly in a matter of seconds. Increasing the size and density of the map will result in increased searching times. For example, a map spanning **20 map sheets** (all of Queensland) took around 40 seconds to search *per site* on a 200MHz desktop machine. The site data for this run contained 800 sites, so this stage of running the program took over 8 hours! There is nothing wrong with doing this as long as you are willing to wait the time it takes.

### Stage 4: The map is plotted

When your AUSRIVAS Mapping software has received the map from the AUSRIVAS map server and determined the RDI of your sites, the map is plotted in the map window of the program. This involves, among other things, some rendering of the streamlines and setting of coordinate systems, which can take several seconds, depending on the speed of your machine.

Figure 4.8 shows one of the status messages you'll see as your map is created, sent and displayed.

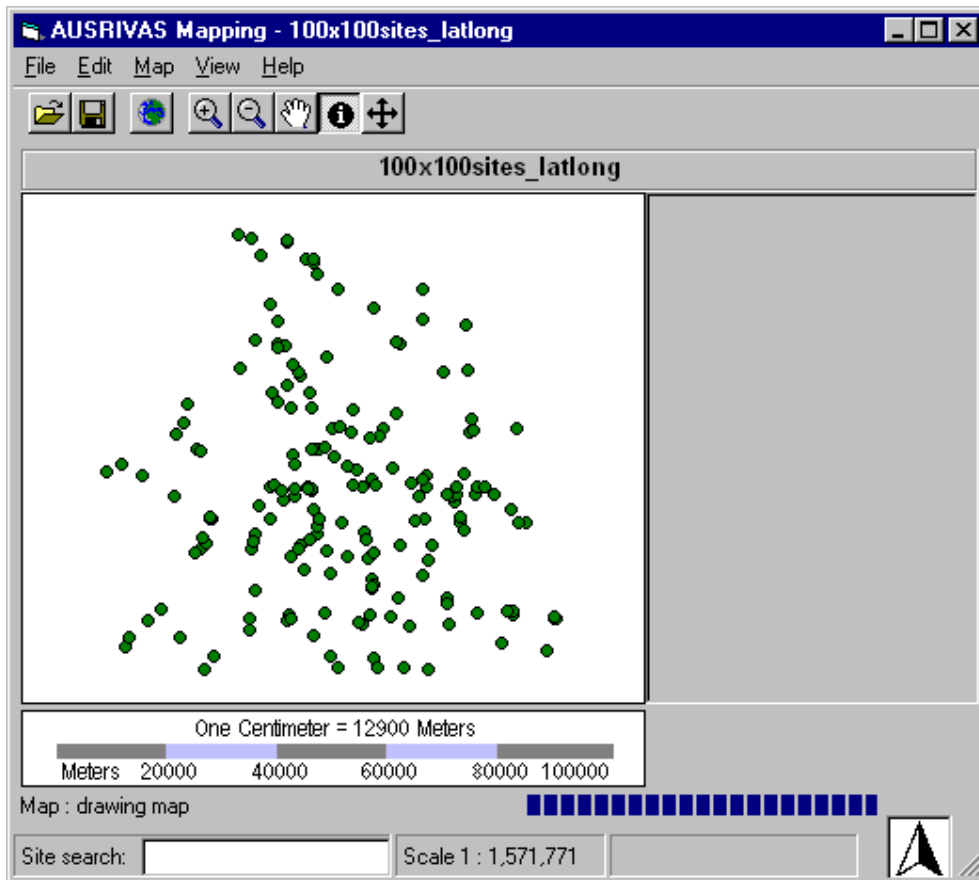


Figure 4.8: Status bar showing map display message.



### 4.2.1 What area will my map cover?

The AUSRIVAS Mapping software calculates the boundary of your map using the extreme values of latitude and longitude from your site data and adding a buffer to these.

The buffer is calculated at 10% in each direction (ie 10% of longitude in the  $x$  direction and 10% of latitude in the  $y$  direction). If all of your sites are on the same latitude, then the latitude buffer is calculated as  $latitude\ buffer = longitude\ buffer \times 90 \div 360$ . Alternately, if all your sites are on same longitude, the longitude buffer is set to  $latitude\ buffer \times 360 \div 90$

In the extreme case of all your site/s being at the same latitude and longitude (ie you are plotting only one site) the map boundary around your site will be set to  $\frac{1}{4}$  decimal degree.

The area of your map determines how big the map file sent from the AUSRIVAS map server will be and how long it takes to arrive at your machine and display, as discussed in the previous section. It is suggested that you check the area your sites cover before you request a map.

# Chapter 5

## Interpreting the map

### 5.1 Description of the map

The AUSRIVAS Mapping program window is shown in Figure 5.1. Each component of the program window is labelled for reference in the following sections that explain some methods of displaying and querying map features.

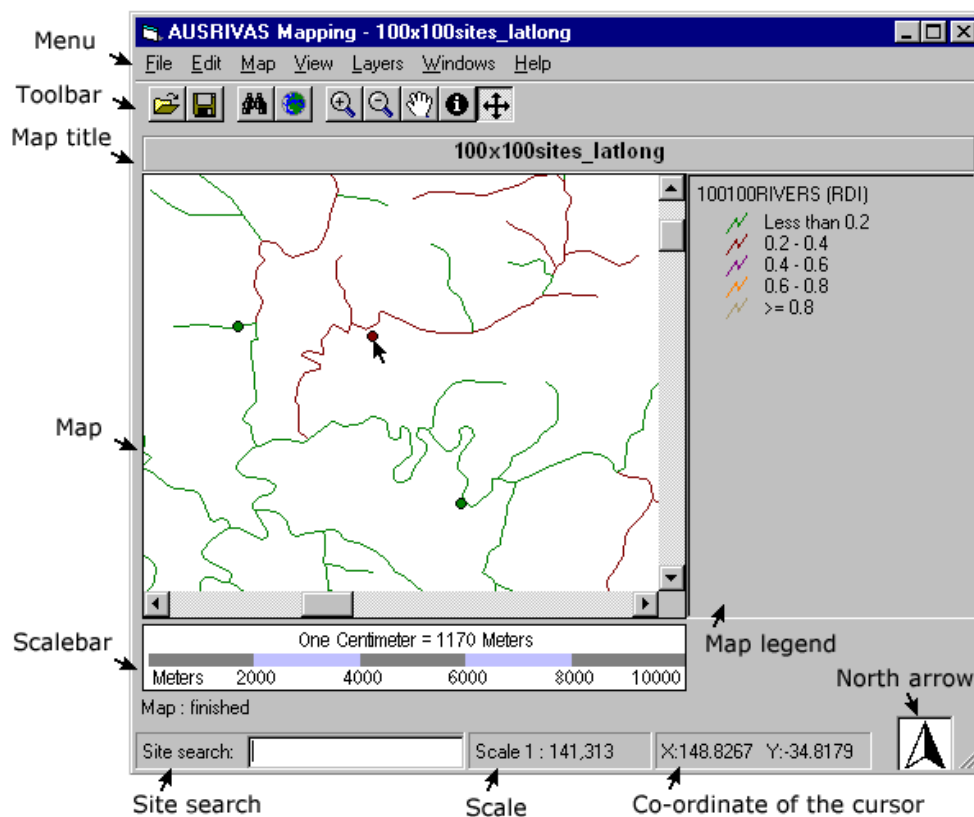


Figure 5.1: Elements of the AUSRIVAS Mapping program

## 5.2 Displaying map features

The *map view* part of the program window is shown in Figure 5.1 labelled “Map”. This example has a map displayed, which is composed of site data (circles) and streamlines colour-coded to indicate Wild River RDI band.

Currently these are the only features shown on the map produced by the AUSRIVAS map server, however it is possible that in the future, each map could be layered with topographic data allowing identification of roads and other infrastructure which may be useful for spatial location or determining possible impacts on sites.

### 5.1.1 Terminology

Some terminology used in this and following sections of the AUSRIVAS Mapping software manual is explained in this section.

**Map view** A collection of geographic features displayed in the Map area of the program window.

**Feature** A geographic component of the map, for example, sites, rivers or lakes.

**Legend** The legend shows the symbols used to draw the streamline features.

**Streamlines** The river features on a map.

**Attribute** Information about the features in a map. For example, River Disturbance Index is an attribute of the streamlines.

**Global extent** The whole map.



## 5.2 Displaying map features

This section explains how to obtain information from the map.

### 5.2.1 Displaying a feature’s attributes

Each geographic feature in the map has information associated with it that you can access. The attributes of your sites consist of the extra fields you entered into your site data file (Section 3.2.2). Each streamline segment has the attributes shown in table 5.1

The method of accessing a features attributes is shown in Figure 5.2.

Select the **information tool** by clicking on its icon  in the toolbar. When the information tool is selected, the cursor will change to an arrow with an 'i' above it, , when it is over the map.

## Chapter 5. Interpreting the map

Table 5.1: Attributes of the streamline data

Attribute	Description
Length	The length of the streamline segment
Name	The river name
RDI	The River Disturbance Index
ID	A map feature ID
Map	The map sheet that the data falls within

To use the information tool, position the cursor over the feature whose attributes you want to view and click the left-hand mouse button. When you click on Site 4102232 as shown in Figure 5.2, you get the attributes dialog shown first in Figure 5.3

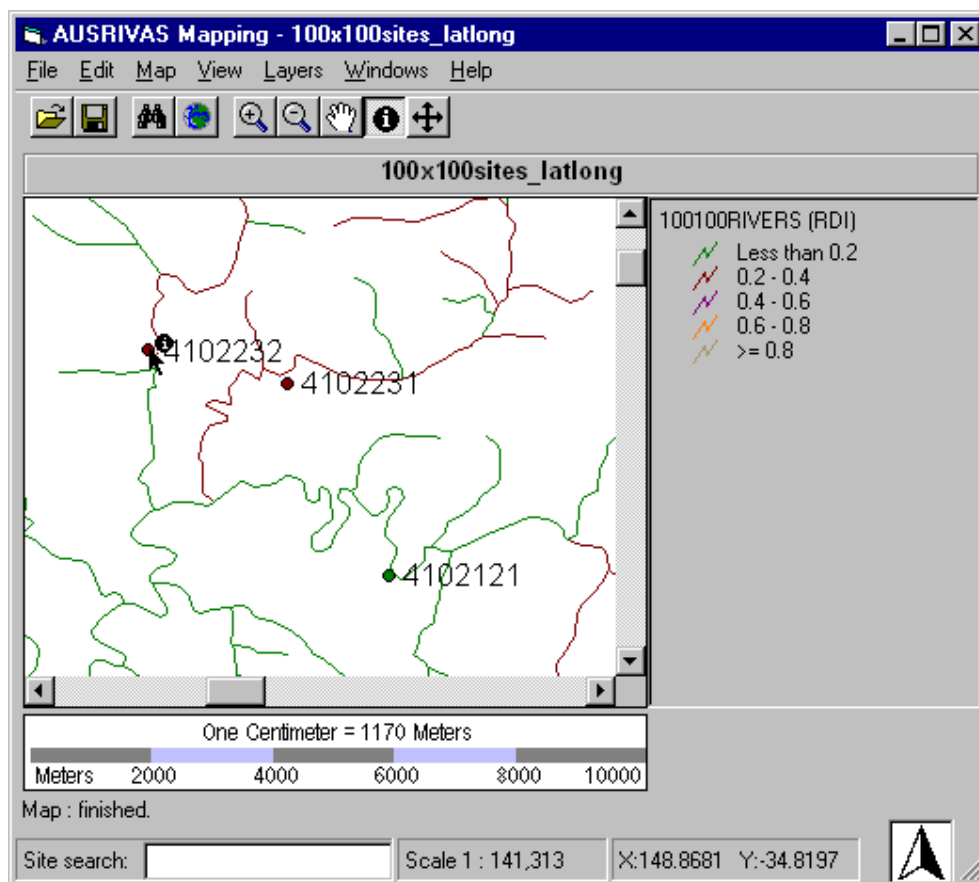


Figure 5.2: Using the Information Tool to view a sites attributes.

The **information tool** searches for map features that are within a predefined radius (based on a percentage of the map view area) and will find **all** the features within its search radius. This can be shown by moving the cursor south, and requesting information from the position where three streamlines intersect (just below Site 4102233) as shown in Figure 5.4.

In this case three features are found, and the first one, listed by feature ID, is shown in the second dialog box in Figure 5.3. You can view the attributes of the other two features simply by selecting them from the drop-down list at the top of the dialog.

## 5.2 Displaying map features

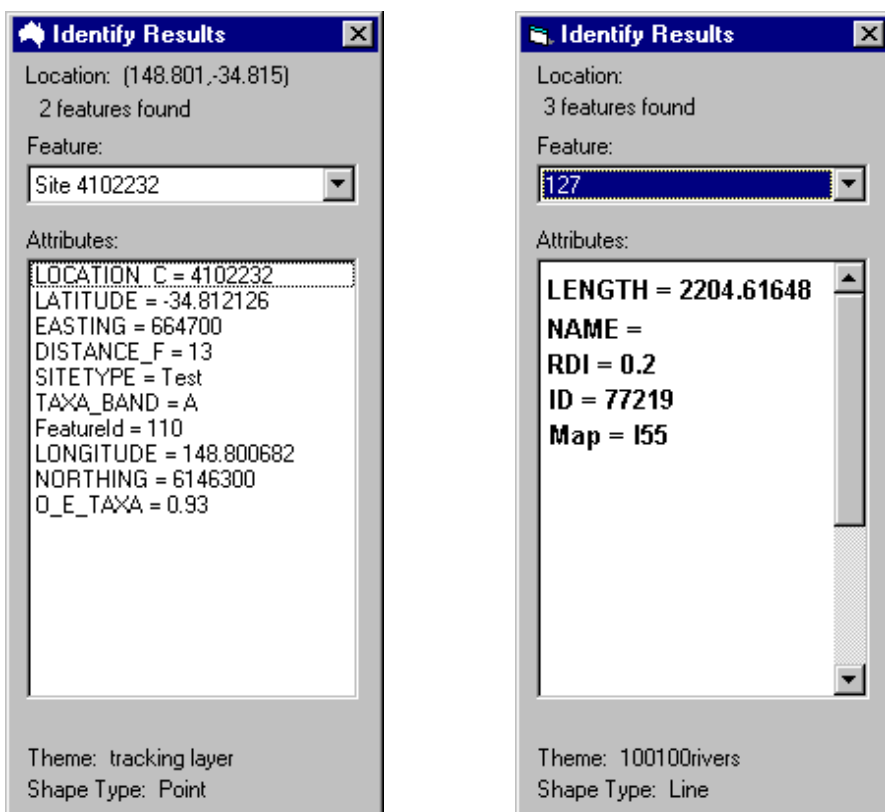


Figure 5.3: Looking at attributes of map features

## Chapter 5. Interpreting the map

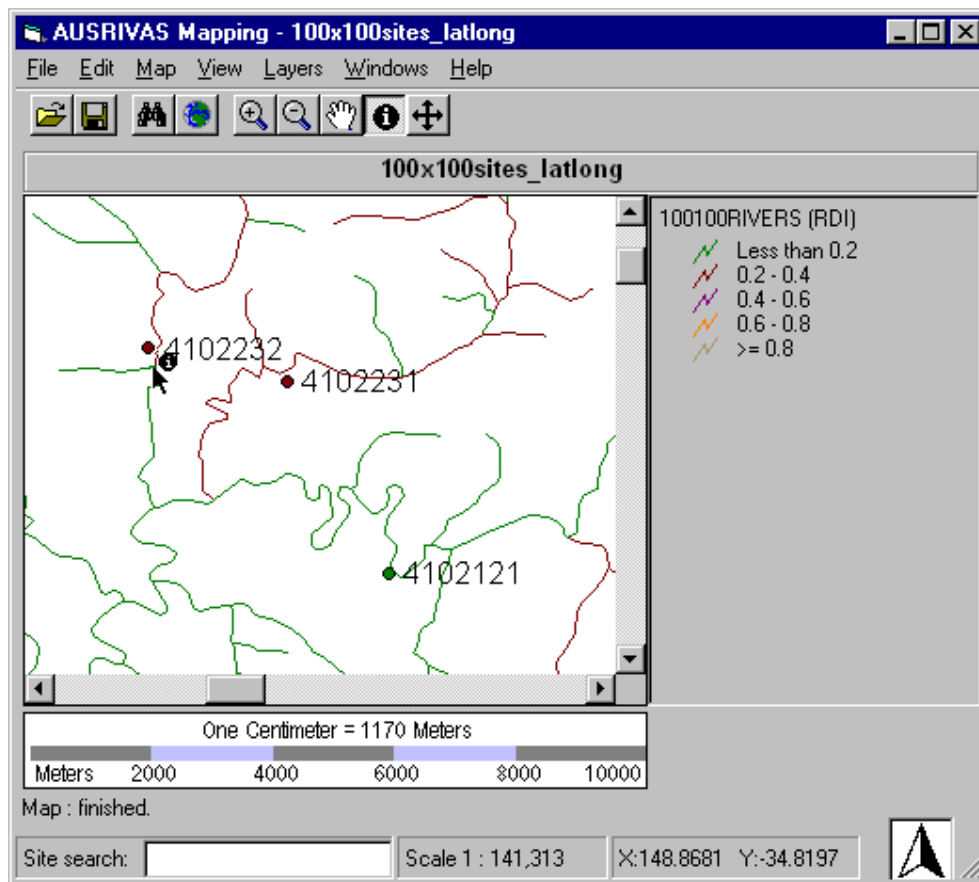


Figure 5.4: Using the Information Tool to view streamline attributes.

### 5.2.2 Displaying the Wild Rivers RDI's

Each site displayed on your map is colour-coded to represent the Wild Rivers RDI band it belongs to.

You can also choose to render the streamlines in your map based on the Wild Rivers RDI.

#### Sites

The sites on your map are colour-coded with a Wild Rivers RDI band as per the colours described in Table 1.1.

The RDI for each site is found by searching for the nearest streamline to the site that is within 500m. If no streamlines are found within 500m, the site is coloured black. If one or more streamlines are found within 500m, the one that is closest to the site is located and its RDI applied to that site.

If your site is located on the wrong streamline and hence allocated an incorrect RDI you can move the site as described in Section 6.3

#### Streamlines

To render the streamlines based on RDI band (a different colour is displayed for each band):

1. Open the **Format map dialog** from the **Map menu** as shown in Figure 5.5.
2. In the view tab of the **Format map dialog**, make sure **River annotations** is checked, then select **Wild Rivers RDI's** from the two river annotations available. (see Figure 5.6)
3. Click **OK**

A map with the streamlines rendered with colour-coded RDI values is shown in Figure 5.7.

### 5.2.3 Displaying river names

If you instead want to display river names on your map, open the **Format map dialog** using the method explained in Section 5.2.2. Make sure **River annotations** is checked, then select **River names** from the river annotations available as shown in Figure 5.8.

A map rendered with the river names renderer is shown in Figure 5.9. The river names renderer only shows river names if there is room to display them without overlapping other river names. This means that you may have to zoom in (as in this example) before you can see the labelled rivers. To find out how to zoom, see Section 6.1.

## Chapter 5. Interpreting the map

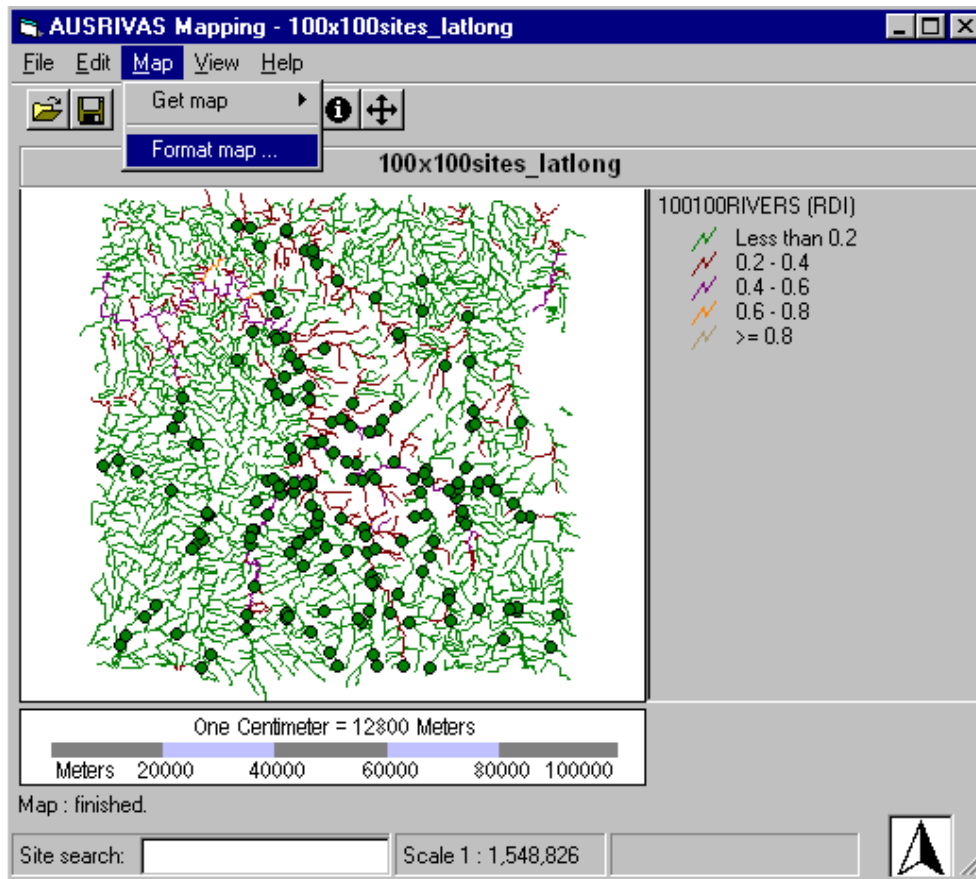


Figure 5.5: Opening the Format Map dialog.

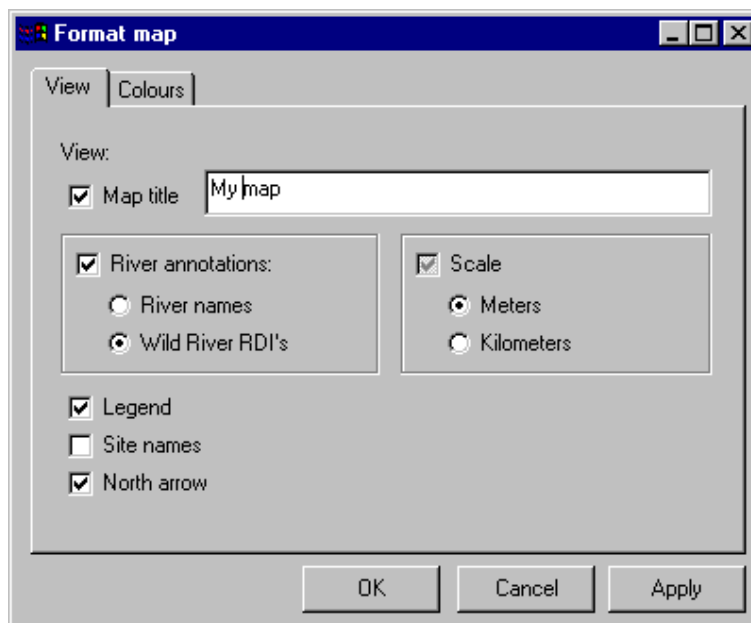


Figure 5.6: Selecting the Wild Rivers RDI renderer.



## 5.2 Displaying map features

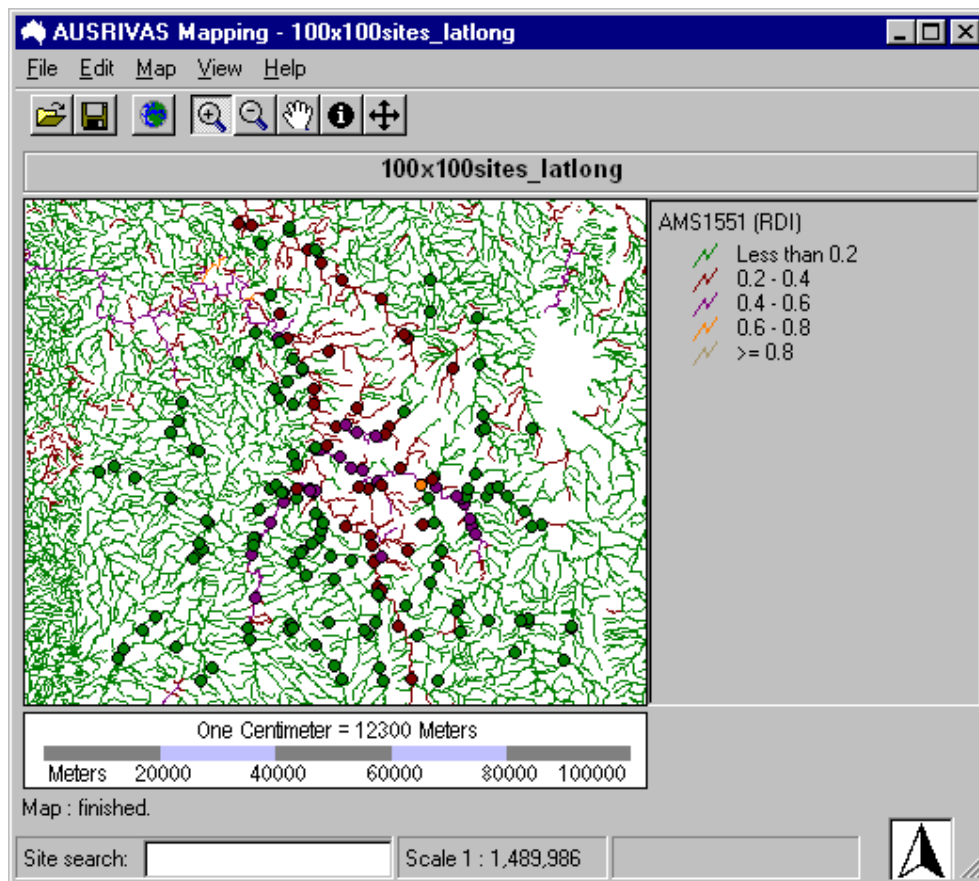


Figure 5.7: Map with streamlines rendered using the Wild Rivers RDI bands.

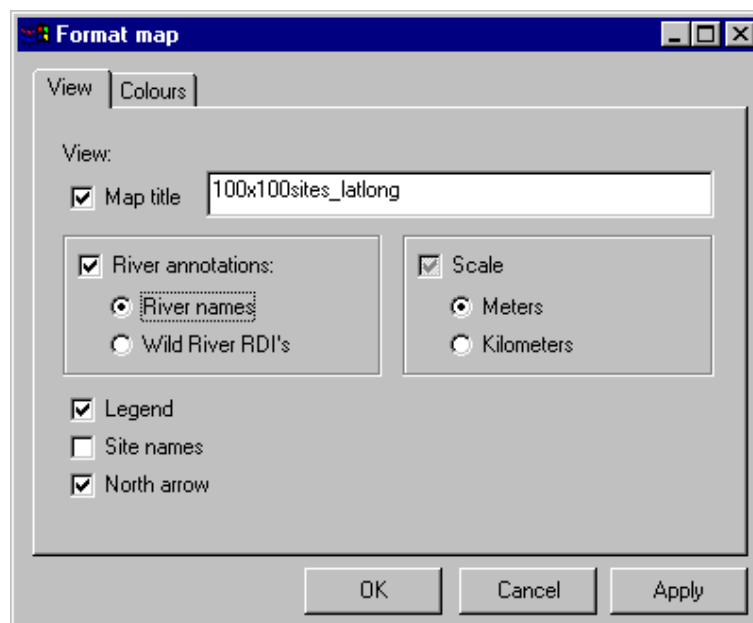


Figure 5.8: Selecting the river names renderer.

## Chapter 5. Interpreting the map

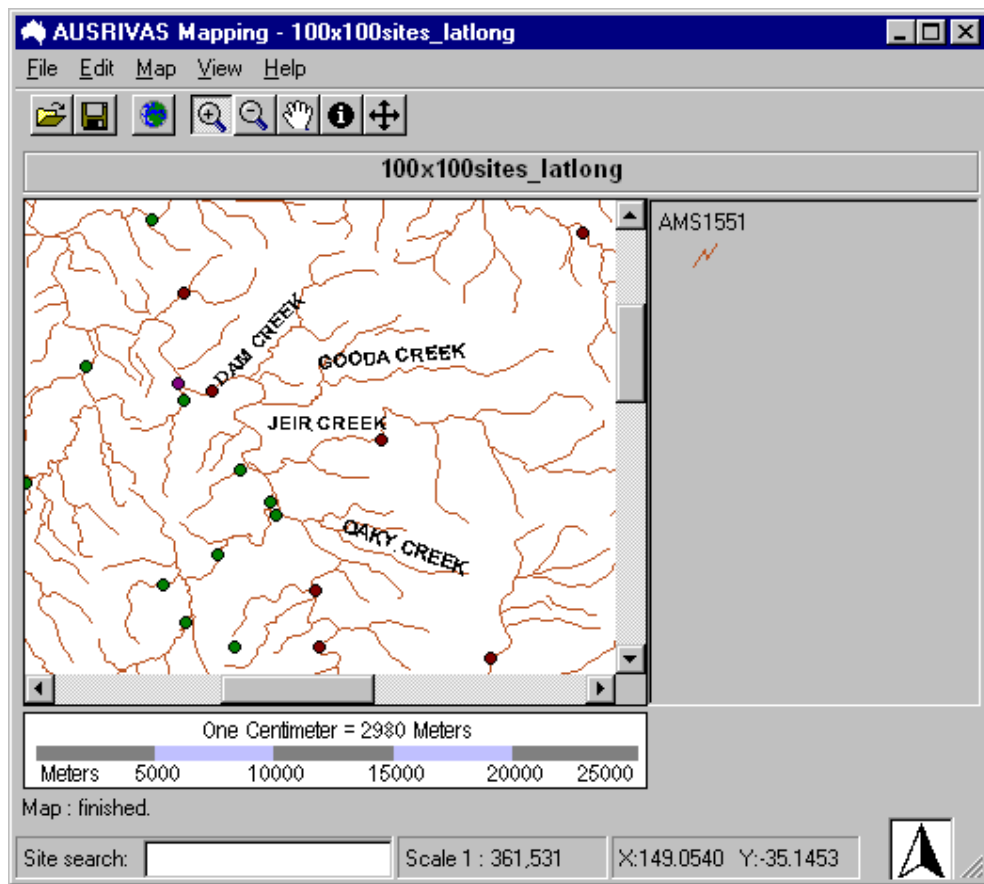


Figure 5.9: Map with streamlines rendered using the river names renderer.

### 5.2.4 Displaying streamlines only

To display streamlines without any rendering,

1. Open the **Format map dialog** from the **Map menu** as shown in Figure 5.5.
2. In the view tab of the **Format map dialog**, make sure **River annotations** is *not* checked as in Figure 5.10 (you can un-check by clicking with the mouse).
3. Click **OK**

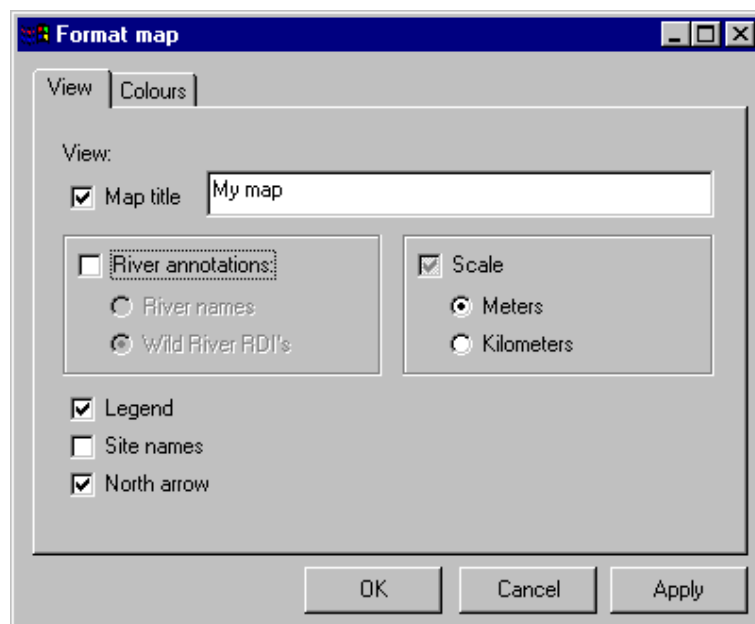


Figure 5.10: Removing all streamline renderers.

### 5.2.5 Displaying site codes

As well as selecting a renderer for the river features on your map, you can choose to label your sites with the site code you entered into the site file.

To do this, open the **Format map dialog** as explained in Section 5.2.2, and check the **Site names** box near the bottom of the dialog, as shown in Figure 5.11, then click on **OK**.

An example of labelled sites, combined with the Wild Rivers RDI streamline renderer, is shown in Figure 5.12.

Unlike the river names renderer, site names are all displayed even if they overlap each other. This means that you probably *won't* want to use this option if you have more than around ten sites on your map.

## Chapter 5. Interpreting the map

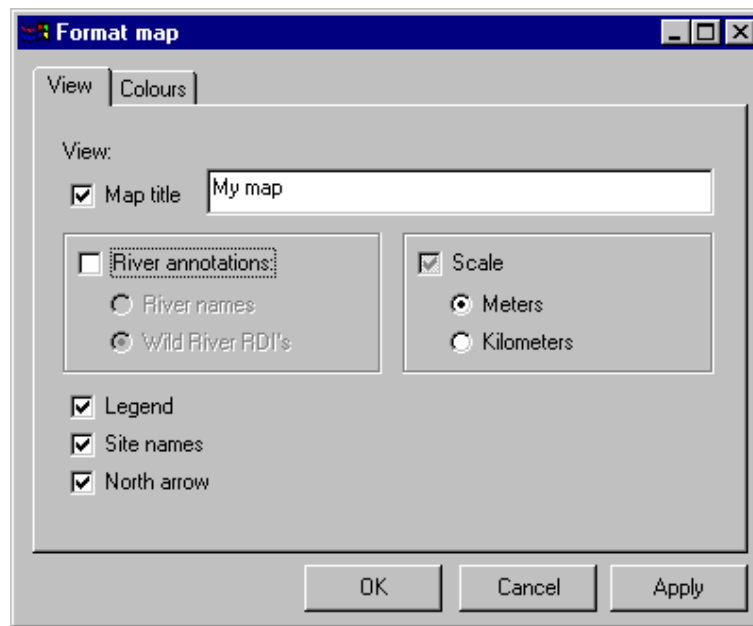


Figure 5.11: Choosing to displaying site codes on the map.

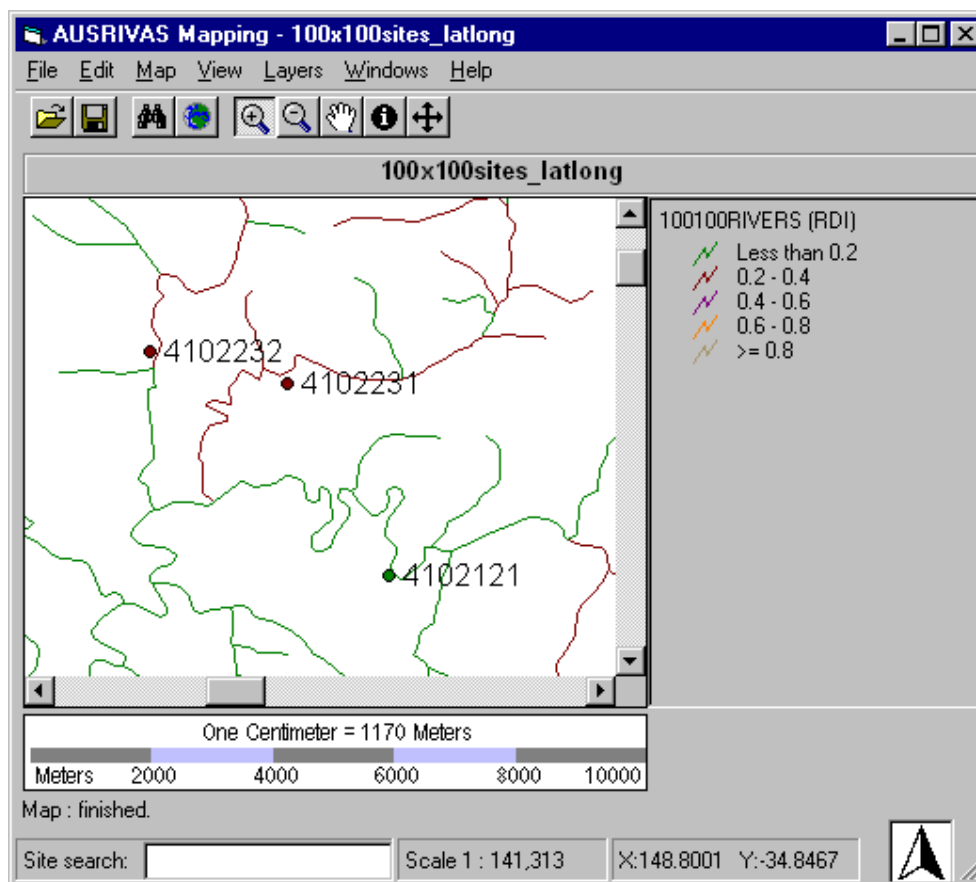


Figure 5.12: Map with sites labelled with site code.

# Chapter 6

## Working with a map


### 6.1 Panning and zooming

The maps produced require panning and zooming capabilities to allow you, the user, to interrogate the maps at a variety of spatial scales.

The available methods of panning and zooming are illustrated in the following sections.

#### 6.1.1 Panning


The pan tool lets you change the area of the map that you are viewing by dragging the display in any direction with the mouse.

Enable the **pan tool** by selecting the pan icon  on the program toolbar, as shown in Figure 6.1. You can then click on the map and holding the mouse button down, drag the map left, right, up or down, to display a new area of the map in the map window.

You can also enable the panning tool from the **View menu** as illustrated in Figure 6.2

#### 6.1.2 Zooming

##### Zooming using the zoom-in tool

To enable the **zoom-in tool** click on the zoom-in icon  on the program toolbar, as shown in Figure 6.3. There are two methods of using the zoom-in tool, as described below.

1. To **zoom in by a factor of one half, centred on a particular position on the map view**, click that position once (with the zoom-in tool enabled).

## Chapter 6. Working with a map

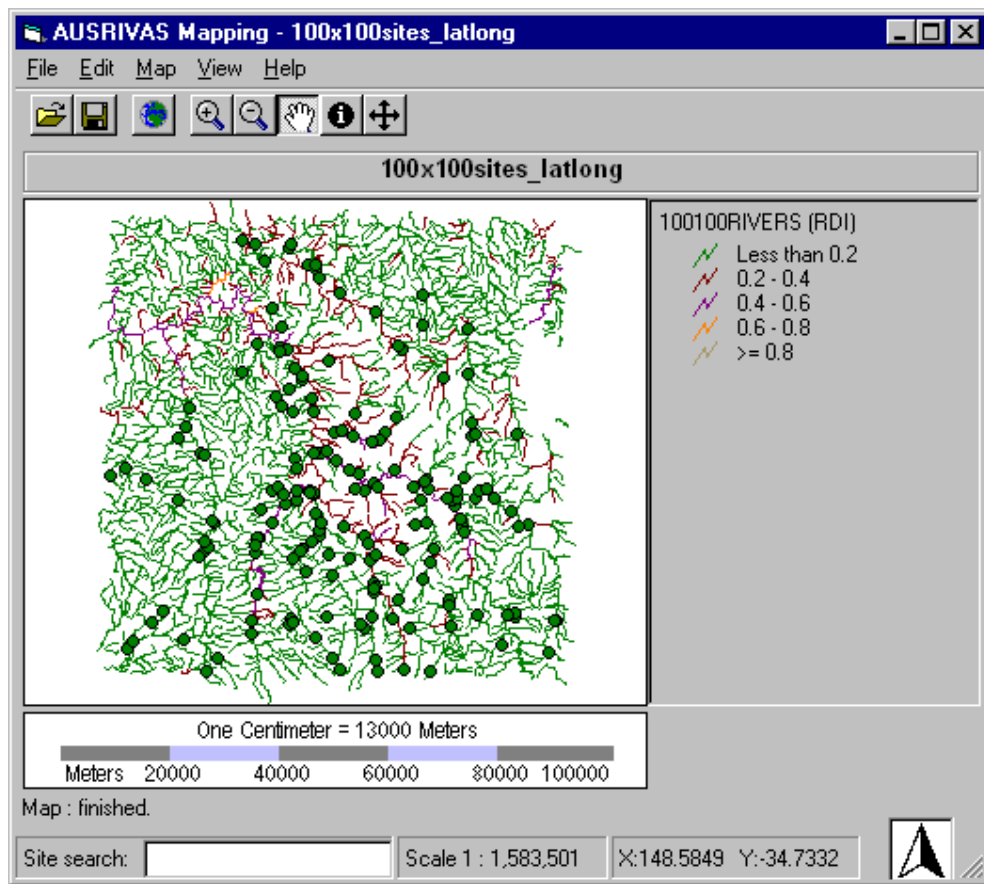


Figure 6.1: Enabling the Panning tool using the toolbar.

6.1 Panning and zooming

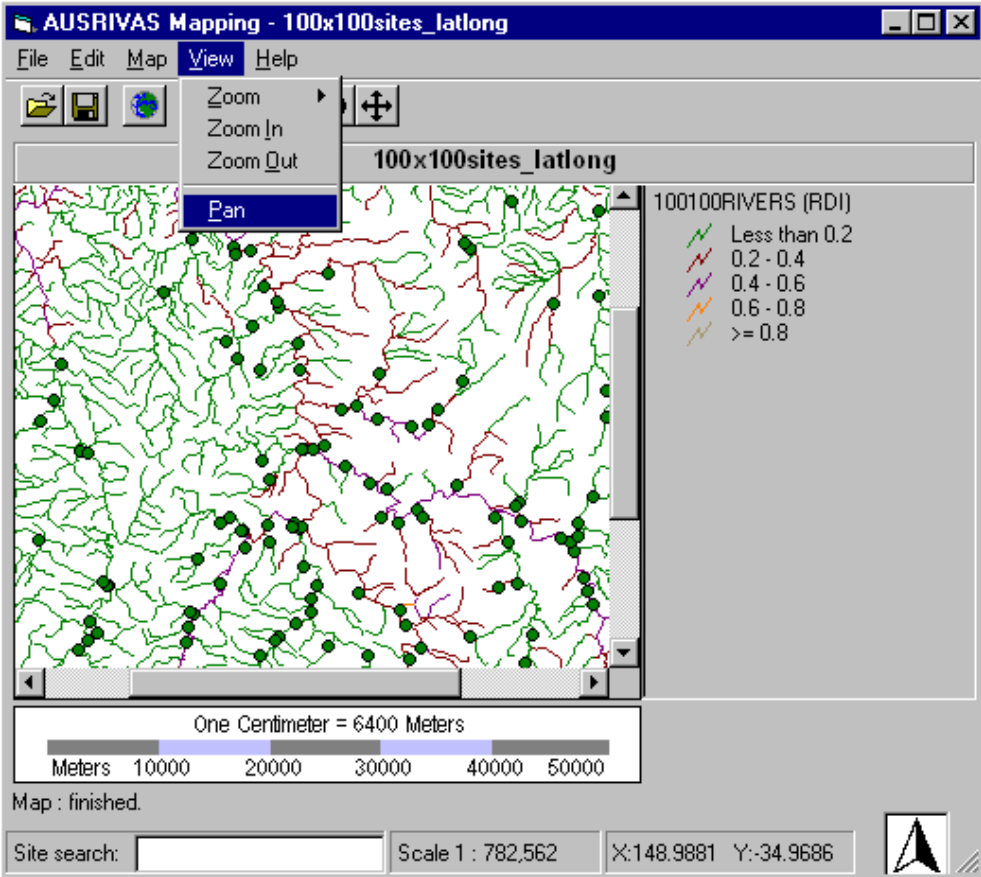


Figure 6.2: Enabling the Panning tool using the menu.

## Chapter 6. Working with a map

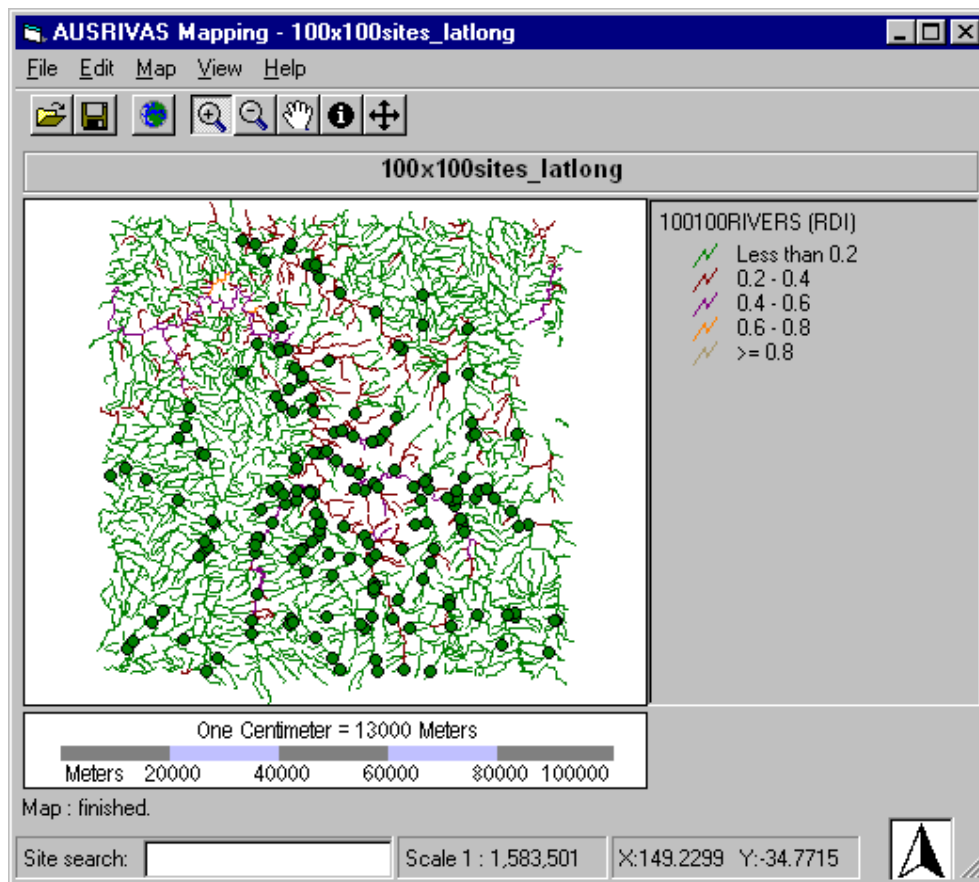


Figure 6.3: Enabling the Zoom In tool.



## 6.1 Panning and zooming

2. To **zoom to a particular area of the view**, drag out a box over this area with the mouse.

This second method, of zooming by dragging out a rectangle, is illustrated in Figure 6.4

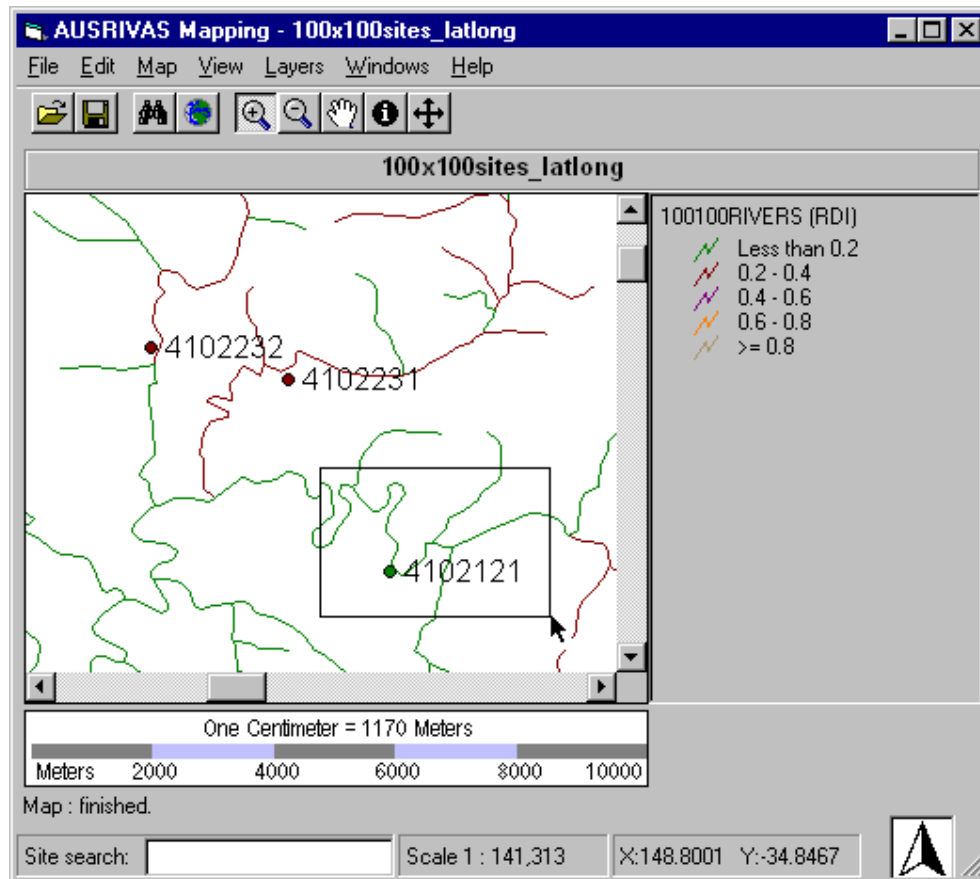



Figure 6.4: Using the mouse to zoom in.

### Zooming using the zoom-out tool

To enable the **zoom-out tool** click on the zoom-out icon  on the program toolbar, as shown in Figure 6.5.

The zoom-out tool works in the same way as the zoom-in tool but zooms out by a factor of 2 from the position you click or the area you drag over.

### Zooming to a percentage of the global extent

You can zoom to a proportion of the global extent using the **View / Zoom** menu as shown in Figure 6.6. This differs from the zoom-in and zoom-out tools which zoom to a scale factor

## Chapter 6. Working with a map

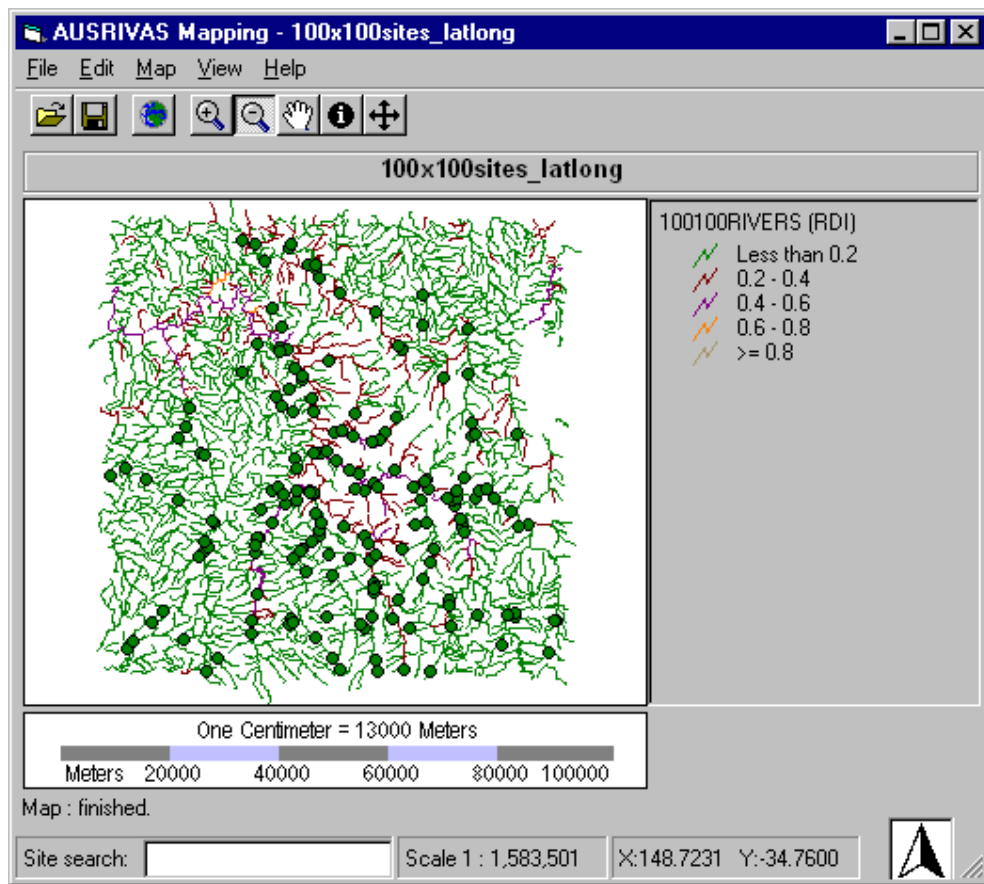


Figure 6.5: Enabling the Zoom Out tool using the toolbar.

## 6.2 Locating a site

of the *current map extent* rather than the global map extent. The map extent resulting from zooming to a percentage of the global extent is always centred at the centre of the map.

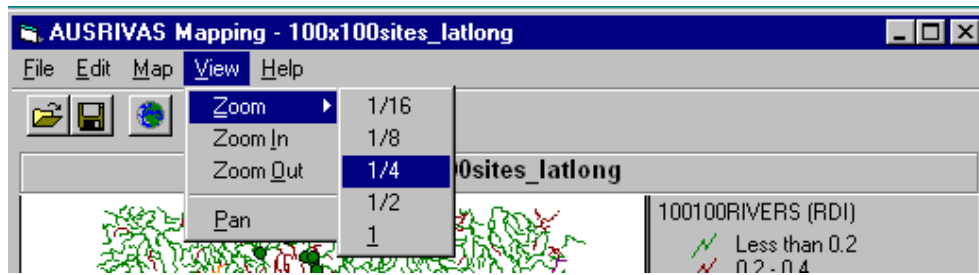



Figure 6.6: Zooming to a proportion of the global extent

### The Global Extent

You can show the global (full) extent of your map at any time by clicking on the **Global extent** icon  on the toolbar.

## 6.2 Locating a site

You can use the **site search tool** to find a site in your map. The search is based on the name attribute of your site features (ie the data in your site file headed "LOCATION\_C").

To locate a site, type its name into the text input box at the bottom left corner of the AUSRIVAS Mapping program window, and hit the ENTER key.

The AUSRIVAS Mapping program will then search for the site you have named, and if it finds the site it highlights it on the map by flashing the site three times. This is shown in Figure 6.7, where the site named 4102231 was found.

If the feature that is found is not in the map's current view, the map extent will automatically be altered so that the highlighted feature is in the centre of the view.

## 6.3 Moving a site

You, as the software user, are required to supply locations for your sites (latitude and longitude in decimal degrees with five decimal places) to ensure reasonably accurate location of sites.

You will still need to crosscheck sites to ensure that sites are placed within the appropriate sub-catchment and thus, will have the appropriate Wild Rivers River Disturbance indices assigned to them.

## Chapter 6. Working with a map

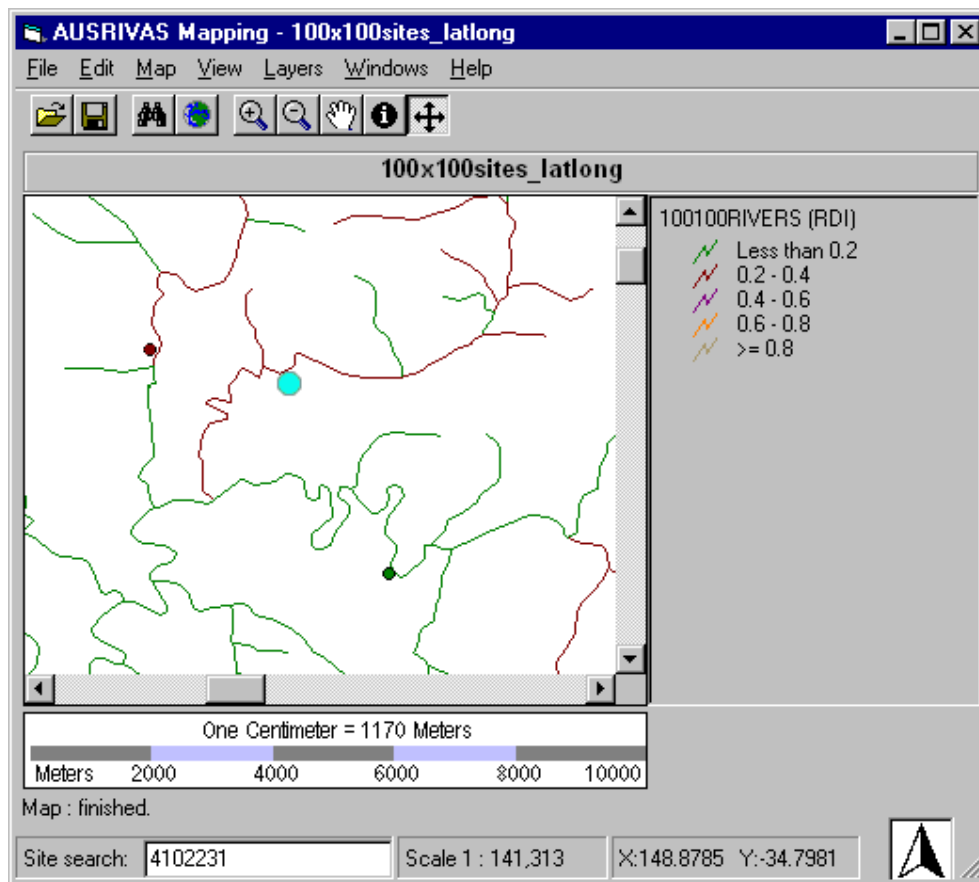


Figure 6.7: Locating a site.

### 6.3 Moving a site

To move a site that has been incorrectly located on the map, use the **move tool** as shown in Figure 6.8.

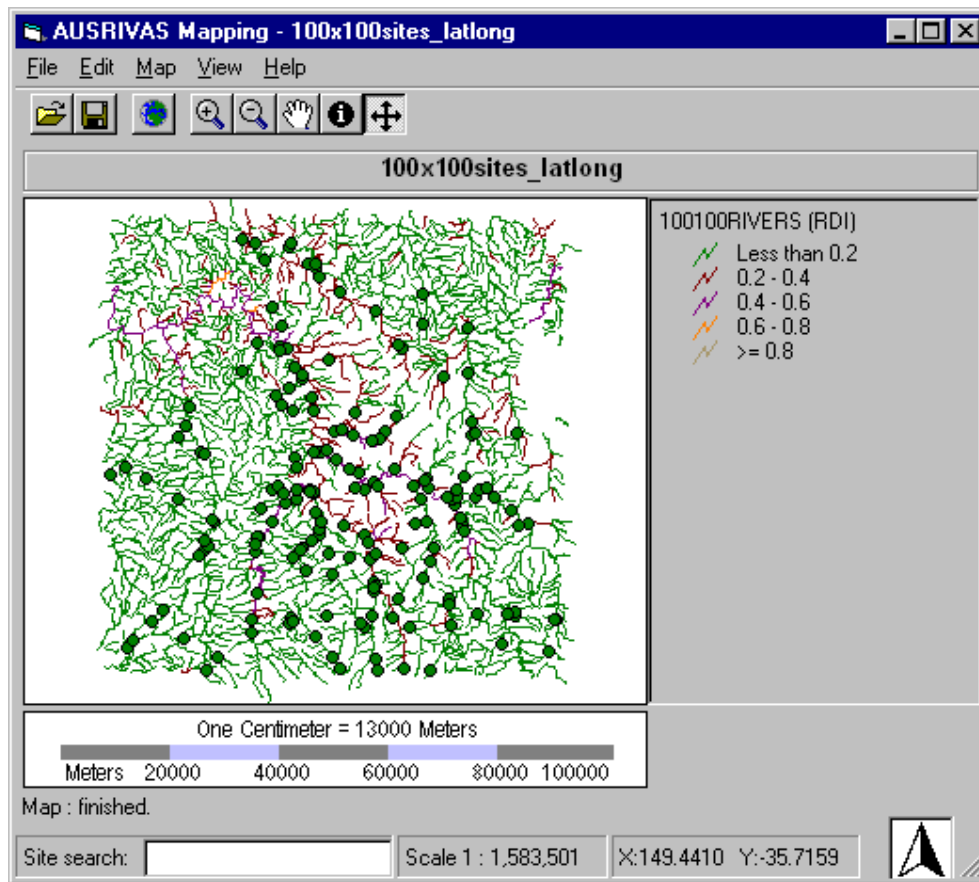


Figure 6.8: Enabling the move tool.

While the move tool is enabled, the cursor will be shown as crosshairs, +, while it is over the map. To move a site, simply click on it with the mouse and while *holding the mouse button down*, drag the site to a new location.

The program window, shown below in Figure 6.9, shows the map we have been working with (Figures 6.7 and 6.4) after Site 4102232 has been moved. Its new location is on a different stream segment with a different RDI, hence the colour of the site has changed from burgundy (RDI between 0.2 and 0.4) to green (RDI between 0 and 0.2).

Having a look now at the attributes of Site 4102232 (the site we've just moved) you can see that, as well as the site's RDI being changed, the latitude and longitude have been updated to reflect the site's new location (Figure 6.10). Section 7.1 explains how to save this updated site data.

Also looking at the attributes for the streamline that Site 4102232 is now on (the second window in Figure 6.10) you can see that the Wild Rivers RDI for this site is now 0.185, where previously it was 0.2 (Figure 5.3).

## Chapter 6. Working with a map

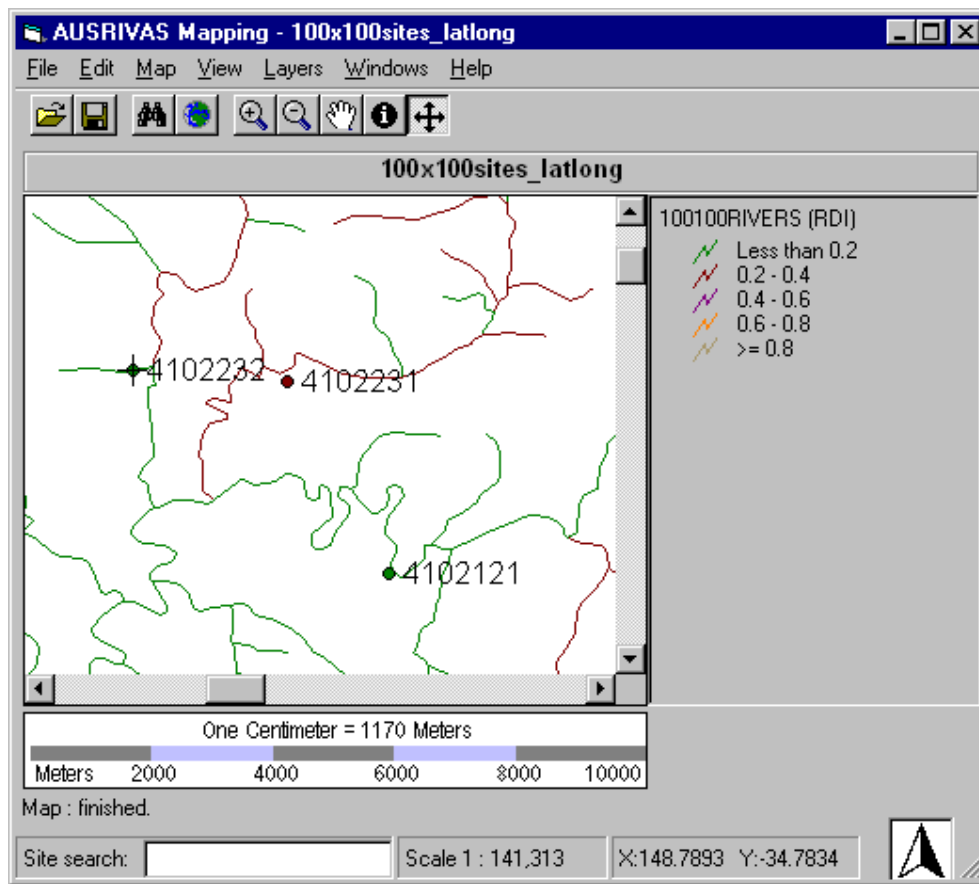


Figure 6.9: Map showing the new location of moved site, Site 4102232.

### 6.3 Moving a site

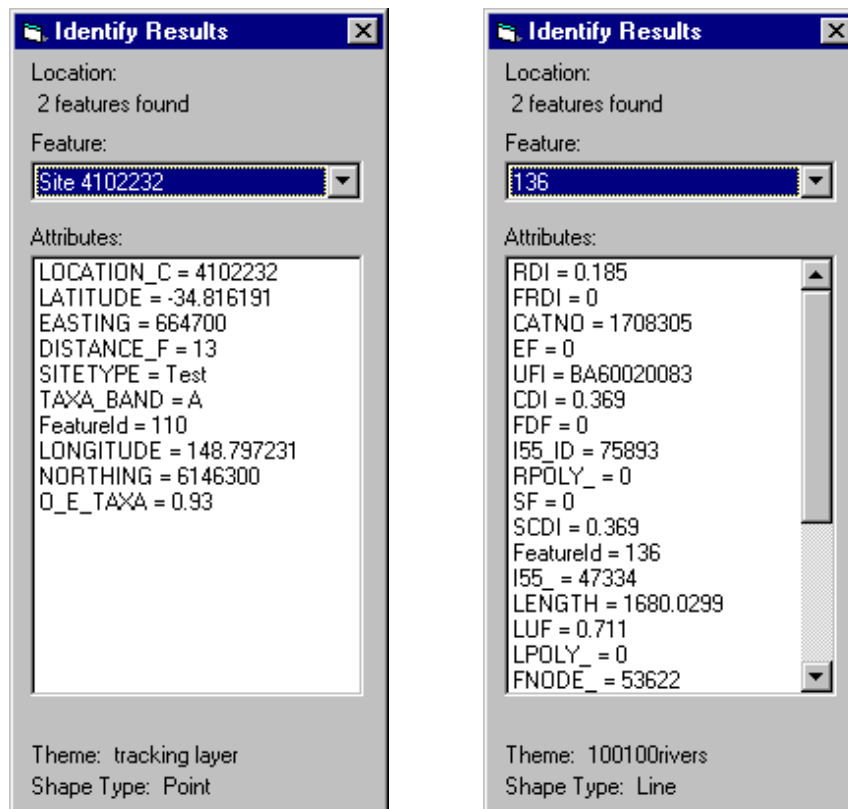


Figure 6.10: Attributes of site and river features.

## Chapter 6. Working with a map

To **CANCEL OR ABORT MOVING A SITE** once you have started dragging it, drag it completely outside the map view. Once you 'let go' of the site by releasing the mouse button, it will return to its original location.

### 6.4 Setting map colours

Not yet implemented.

### 6.5 Displaying information on the map

You can choose to change the information that is displayed on the map, or display extra information. When the program starts, by default a map will show:

- Sites (displayed as a circle);
- Streamlines colour coded according to RDI band.

You can **add** to the information shown by displaying site codes alongside each site (Section 5.2.5).

You can **change** the information shown by displaying river names beside streamlines instead of colour coding the streamlines according to RDI band. (Section 5.2.3)

### 6.6 Changing the screen layout

As well as changing the appearance of the map, you can also change the layout of the program screen. By default the program window will show (once a map has been loaded):

- the map;
- a map title, created using the name of your site data file;
- a legend, describing how the streamlines are displayed;
- a scalebar;
- a north arrow;
- an information bar.

You can choose to change or hide several of these components, as described in the following sections.



### 6.6.1 Title

#### Displaying a map title

To display the map title:

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu as shown in Figure 6.11.

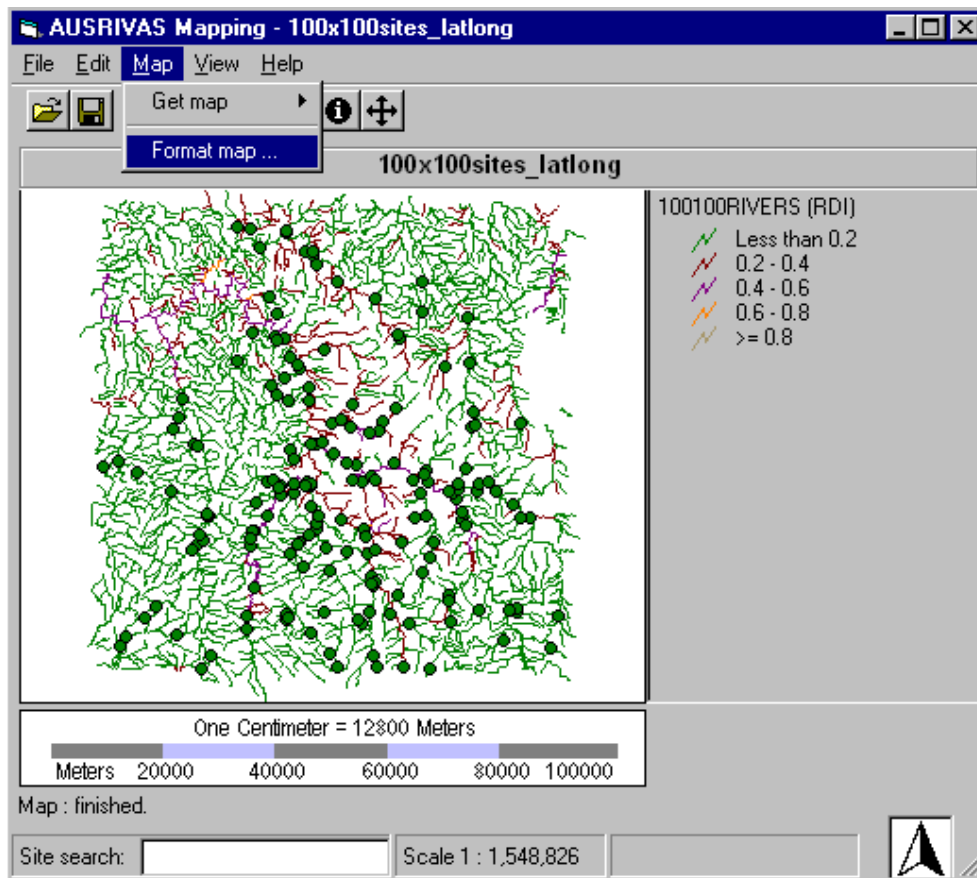


Figure 6.11: Opening the Format Map dialog box.

2. Check the **Map title** checkbox at the top of the dialog (shown in Figure 6.12).
3. Click on the **OK** button

#### Hiding the map title

Hiding the map title allows for a bigger map area on your program window. This is shown in Figure 6.13 - this program window also has the legend hidden (Section 6.6.2).

## Chapter 6. Working with a map

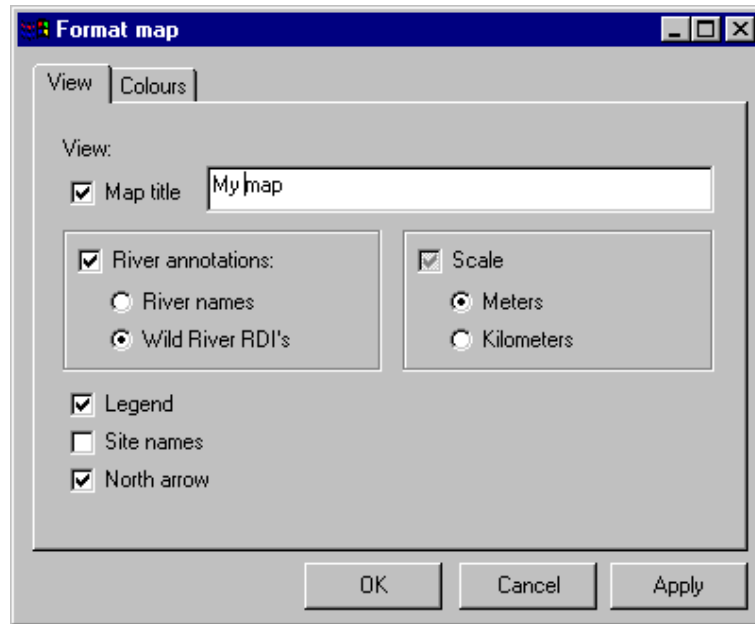


Figure 6.12: Displaying the map title

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu as shown in Figure 6.11.
2. Click on the **Map title** checkbox at the top of the dialog to *remove* the tick-mark from the box.
3. Click on the **OK** button

### Changing the map title

When you first open a site file, a map title will be automatically generated from the name of the site file. For example if your site file is called “my\_sites.csv” the map title will be set to “my\_sites”.

To set or change the map title:

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu.
2. Check the **Map title** checkbox at the top of the dialog. This will allow you to type in the map title text box.
3. Enter the map name in the **map title text box** as shown in Figure 6.12.
4. Click on the **OK** button

## 6.6 Changing the screen layout

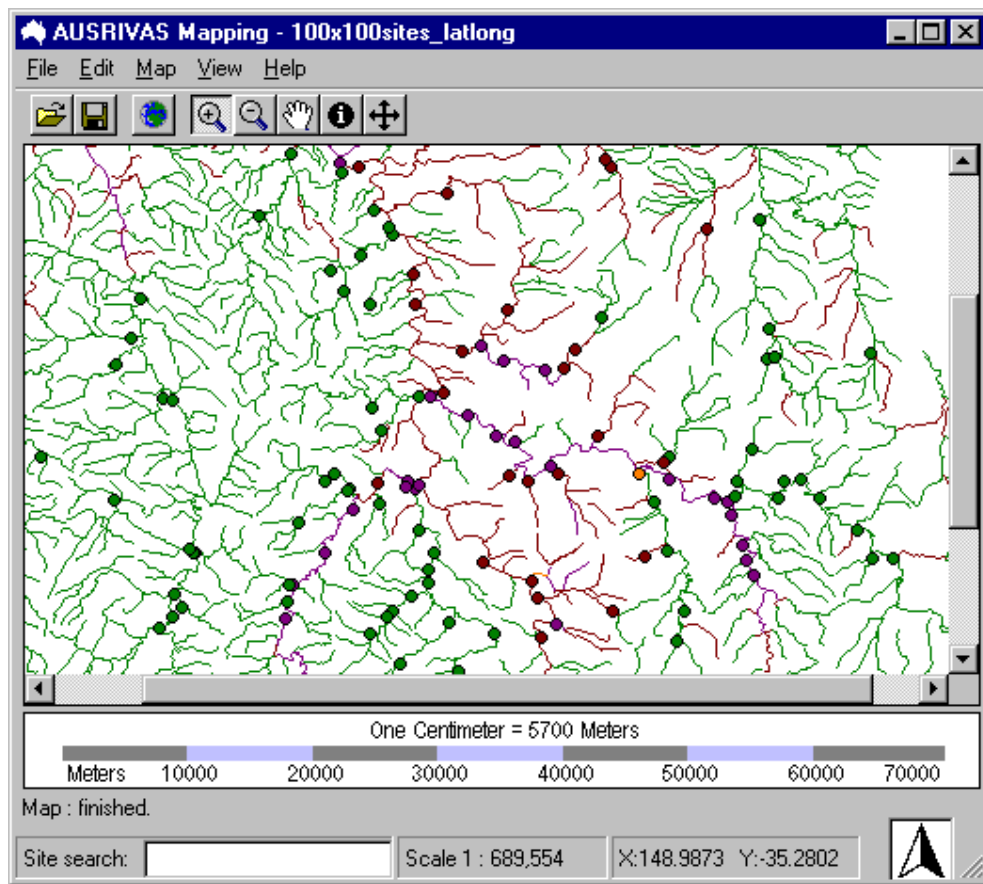


Figure 6.13: Program window with title and legend hidden.

## Chapter 6. Working with a map

### 6.6.2 Legend

#### Displaying the legend

To display the map legend:

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu.
2. Check the **Legend** checkbox (located towards the bottom of the dialog) shown in Figure 6.12.
3. Click on the **OK** button

#### Hiding the legend

Hiding the map legend will provide a greater area for displaying the map, as shown in Figure 6.13.

To hide the map legend:

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu.
2. Un-check the **Legend** checkbox.
3. Click on the **OK** button

### 6.6.3 North arrow

#### Displaying the north arrow



Figure 6.14: North arrow

To display the north arrow (shown in Figure 6.14):

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu.
2. Check the **North arrow** checkbox at the bottom of the dialog (shown in Figure 6.12).
3. Click on the **OK** button

### Hiding the north arrow

To hide the north arrow:

1. Open the **Format map** dialog box by selecting **Format** from the **Map** menu.
2. Un-check the **North arrow** checkbox.
3. Click on the **OK** button

# Chapter 7

## Outputs

### 7.1 Saving site data

If you change the location of a site in your map, you have the option of saving the updated coordinates of the site(s) to a CSV file.

To save your changed site location, select **Save** from the file menu as shown in Figure 7.1.

This will open up the **Save As dialog**, shown in Figure 7.2. Enter the name you would like the file saved as - in this example the file with the updated site coordinates will be called `100x100sites_latlong_modified.csv`.

### 7.2 Printing

There are three different ways you can choose to print a map - as a layout or as a plain map either printed to scale or to fit the page. These are explained in the following sections.

In each case, you must set up the printer before you open the print dialog. Once you have opened the print dialog, you will be able to see which printer is selected but you will not be able to change the printer selection or set printer options from this window.

#### 7.2.1 Print to fit page

To print your map to fit the page, start by opening the **Print dialog** from the **File** menu as shown in Figure 7.3

In the print dialog, select **to Page**, and click the **Print button** to send your map to the printer.

Figure 7.5 shows an example output when printing to page.

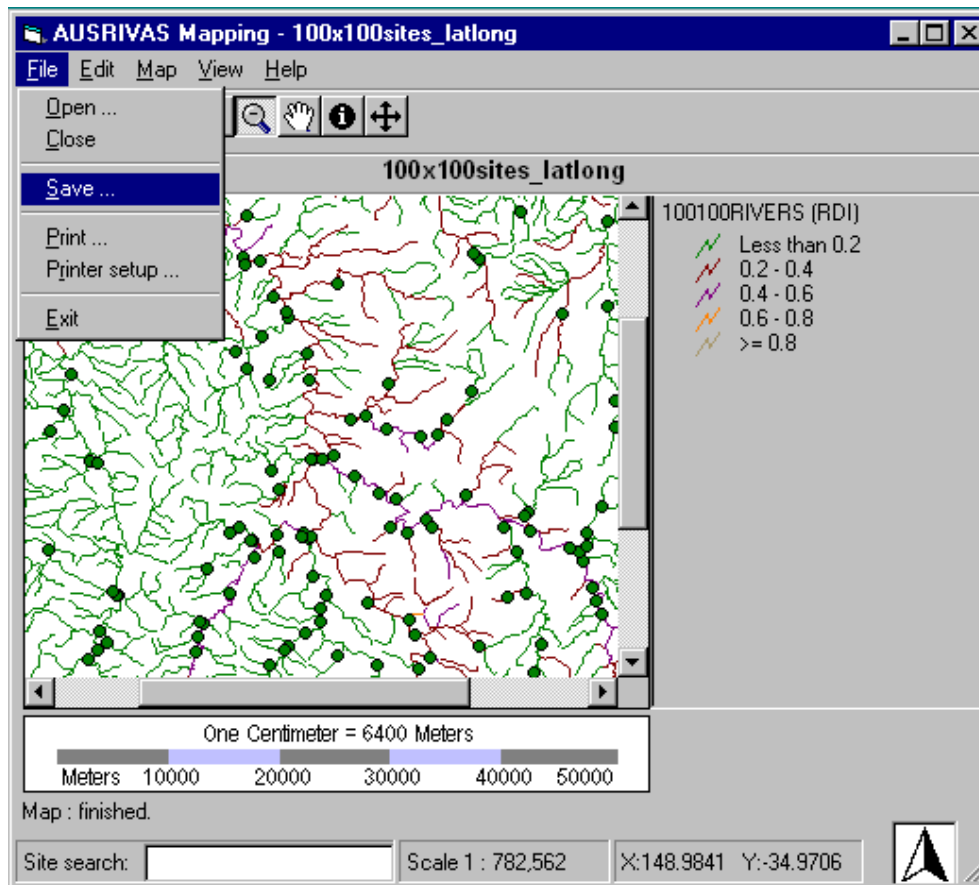


Figure 7.1: Opening the Save Site File dialog.

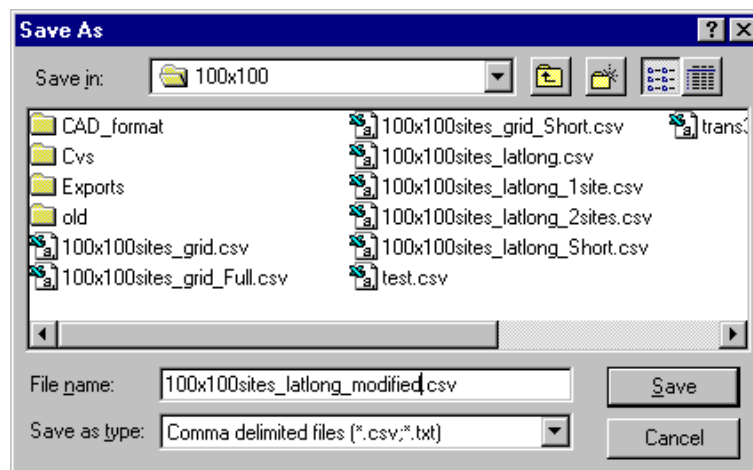


Figure 7.2: Save Site File dialog.

## Chapter 7. Outputs

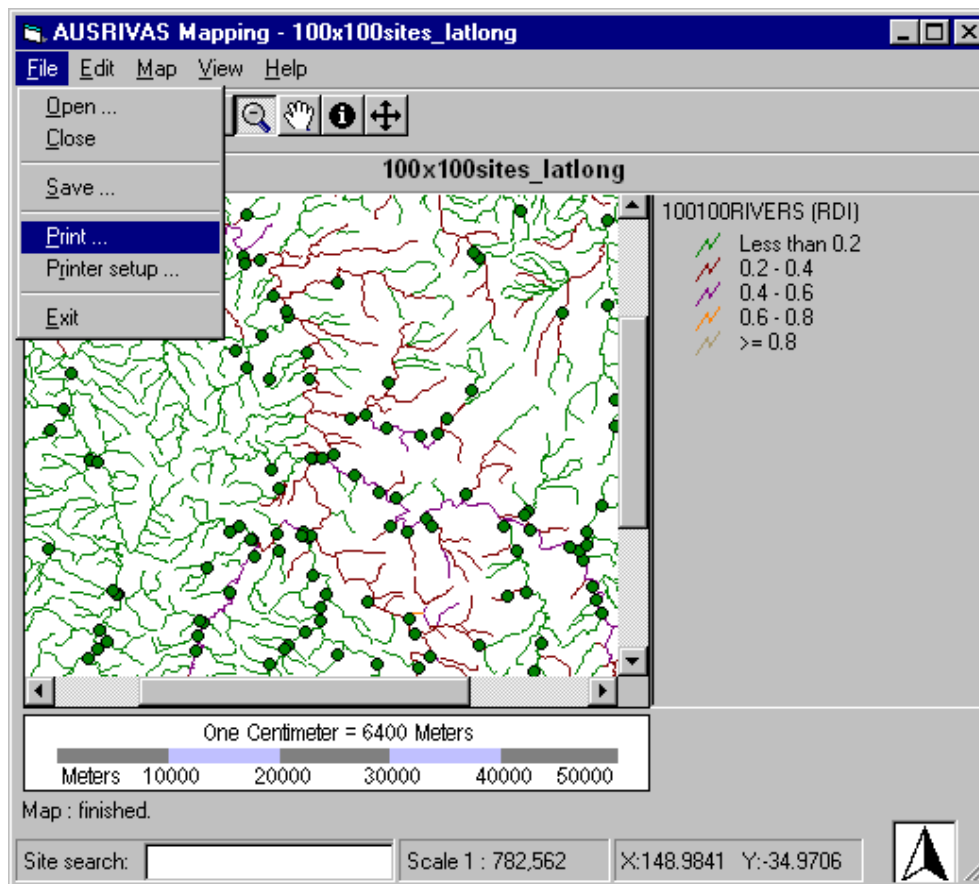


Figure 7.3: Opening the Print dialog



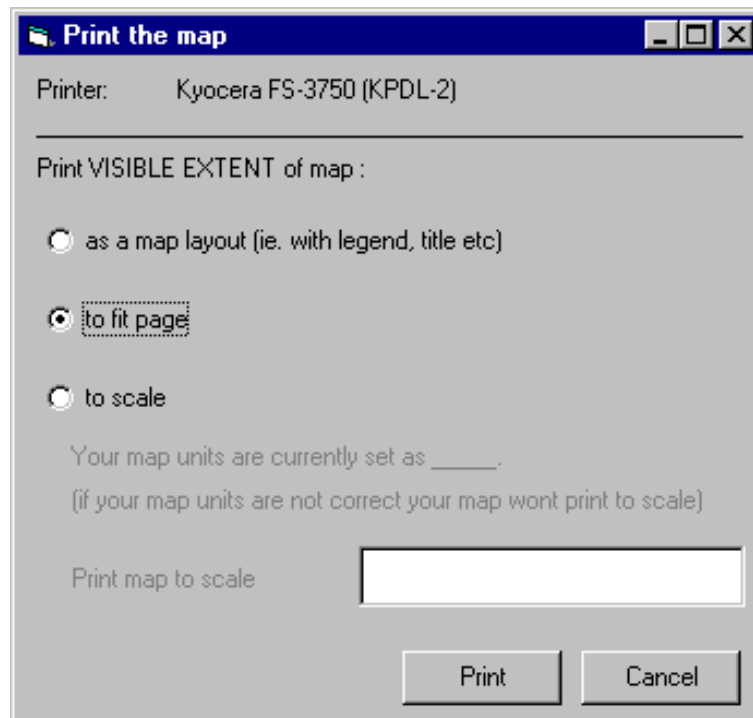


Figure 7.4: Print dialog with “print to page” selected.

### 7.2.2 Print to scale

You can also choose to print your map to scale. To do this, open the print dialog as before and select the **to Scale** printing option. In the text input box, type in the scale you want your map printed at. In the example shown in Figure 7.6 1570000 has been entered in the text box, so the map will be printed at a scale of 1 : 1570000.

When you select the **Print button** you will be shown details about the map scale you have chosen, including the dimensions of the page and the dimensions of the map. Check that your map will fit onto the selected paper size, and select the **Yes button** to print the map. Figure 7.8 shows an example output when printing to scale.

### 7.2.3 Print to layout

If you want, you can print a map layout instead of printing a plain map. A map layout contains the map, a legend, a north arrow, a title, a scalebar and details about the map extent.

To print a layout, select **as a map layout** on the **Print dialog** (Figure 7.9) and click on the **OK button**.

You will then be shown a preview of your print layout. In future versions of the AUSRIVAS Mapping software you will be able to alter the layout by dragging the different map components in the preview, which is why the preview stage of printing as a layout exists. At the moment



Figure 7.5: Map printed with Print to Page printing option.

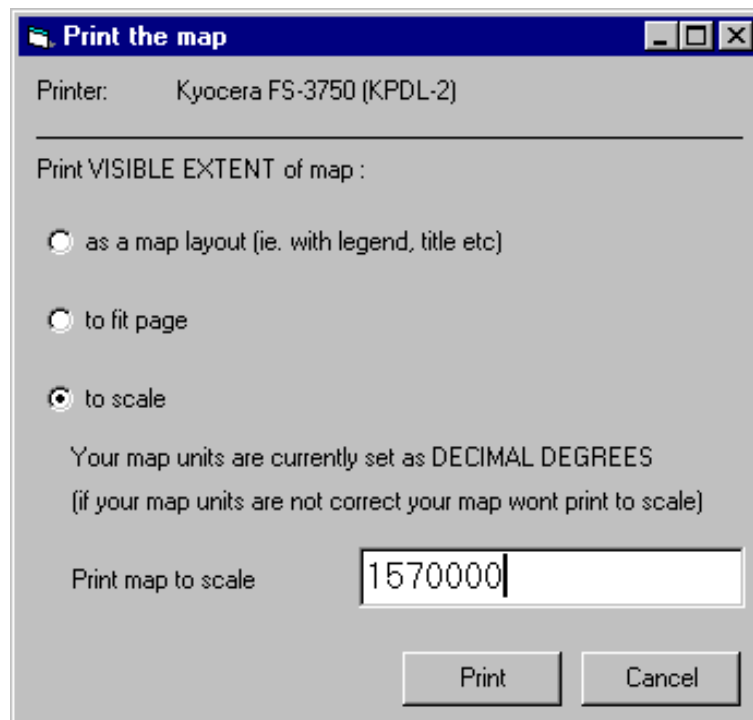


Figure 7.6: Print dialog with “print to scale” selected.

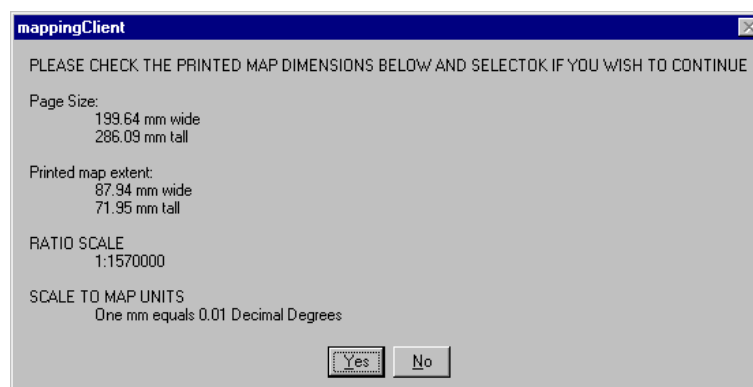


Figure 7.7: Print to Scale confirmation dialog.

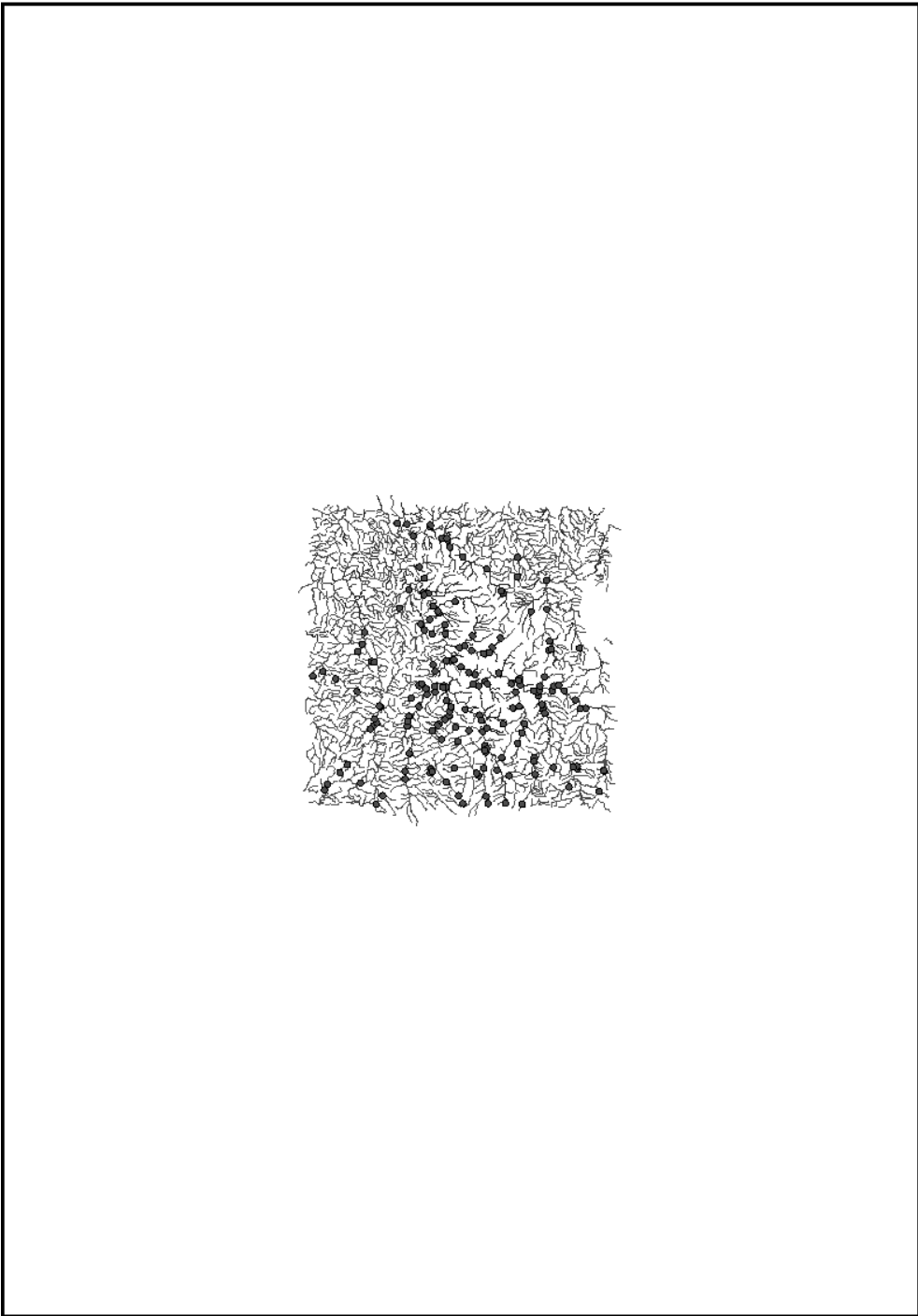


Figure 7.8: Map printed with Print to Scale printing option.

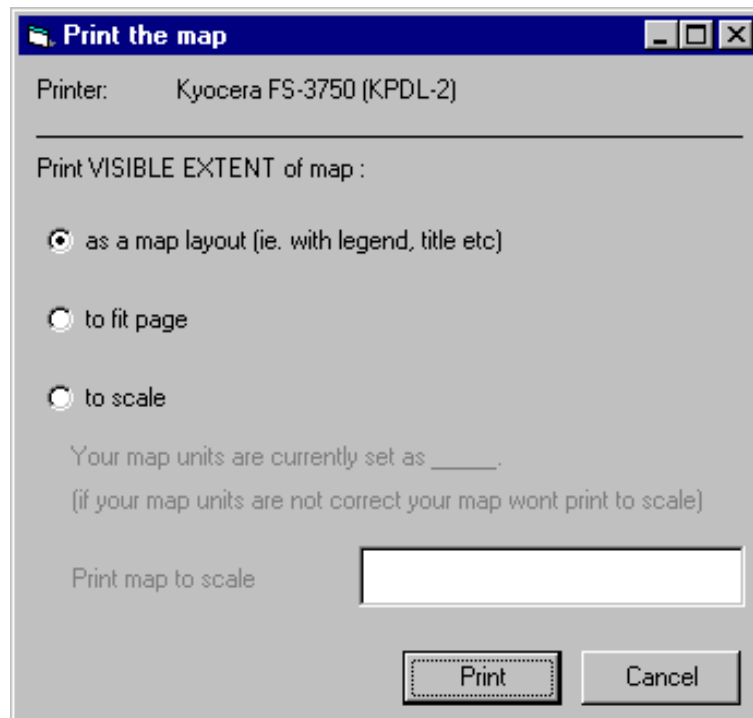


Figure 7.9: Print dialog with “print as a map layout” selected.

though, your only option is to select whether to print the map layout or to cancel. The print preview window is shown in Figure 7.10. The print preview is a rough mock-up of the final layout, so the quality of the preview is not as high as you will get in your printed version. Figure 7.11 shows an example output when printing as a layout.

Chapter 7. Outputs

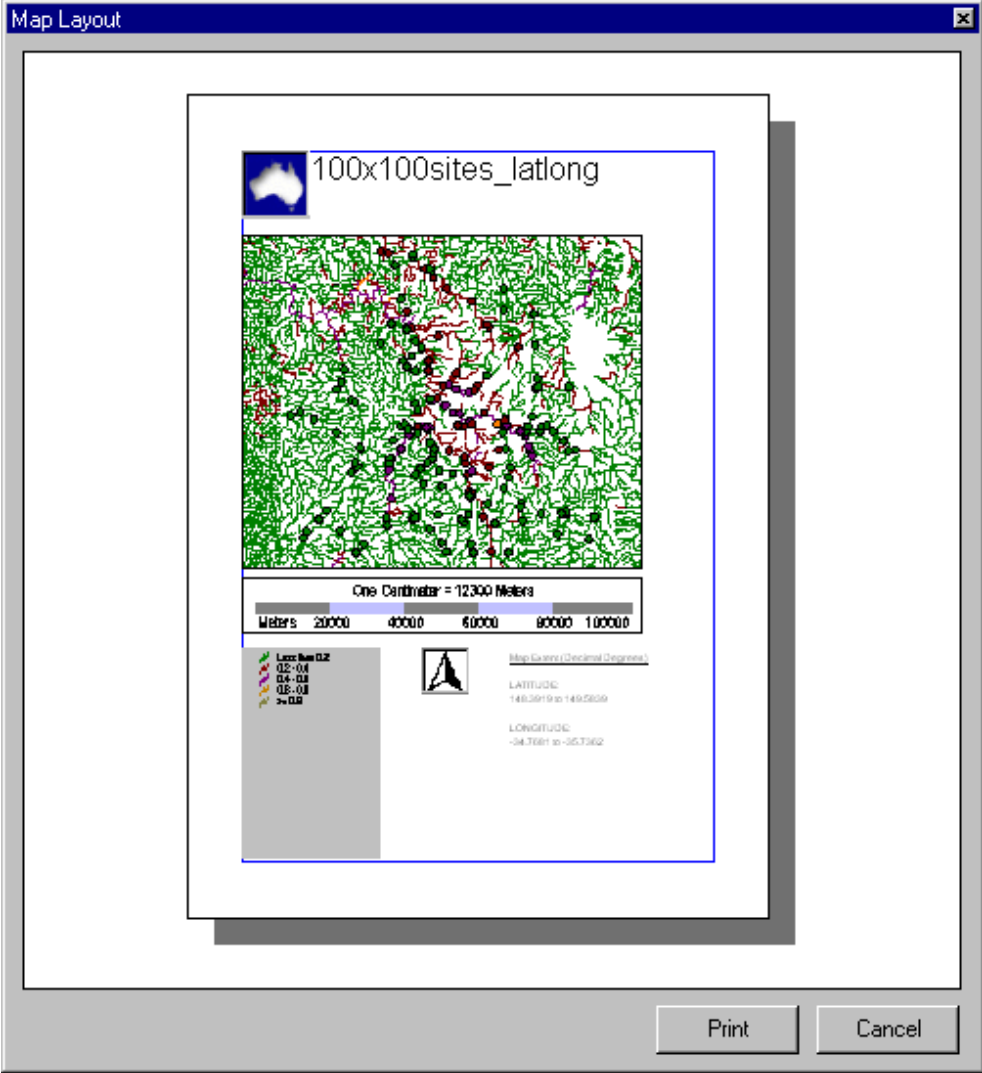


Figure 7.10: Print layout preview.

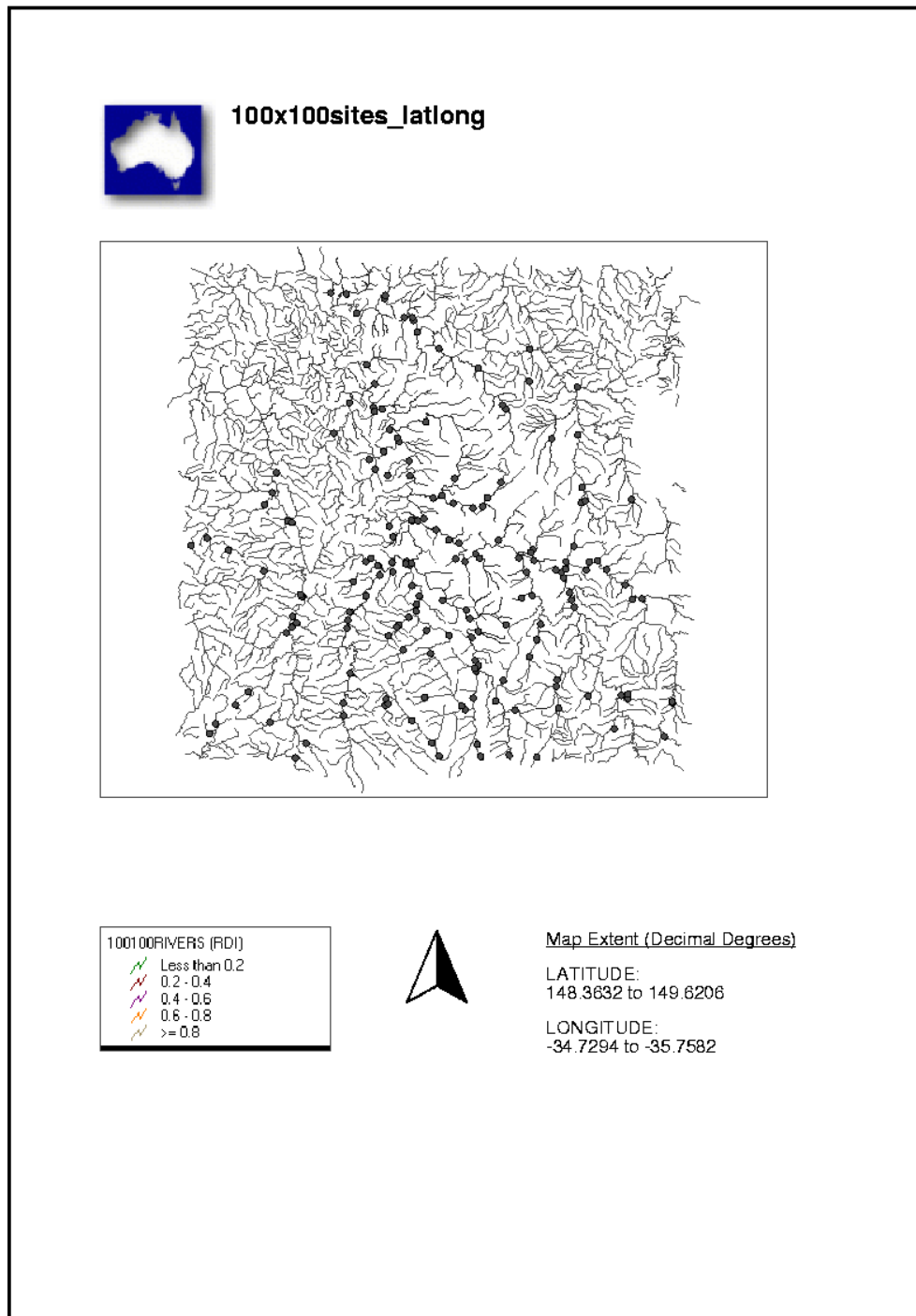


Figure 7.11: Map printed with Print as Layout printing option.

# Chapter 8

## Finishing up

### 8.1 Preparing to load a new data set

To reset map data, pending requesting a new map, loading a new data site data set or exiting the program, use the **Close** function in the **File** menu (Figure 8.1)

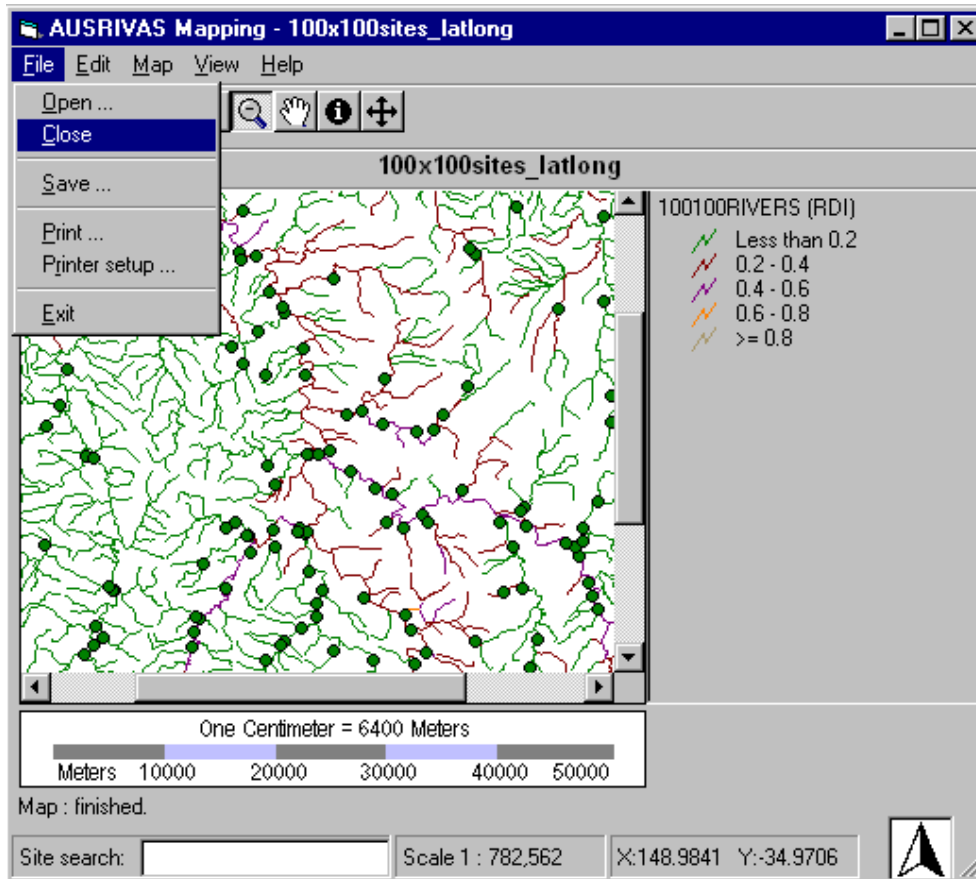


Figure 8.1: Closing a file



## 8.2 Exiting the program

This will leave you with a “clean” environment, as shown in Figure 8.2, in which to load a new site data set or exit the program.

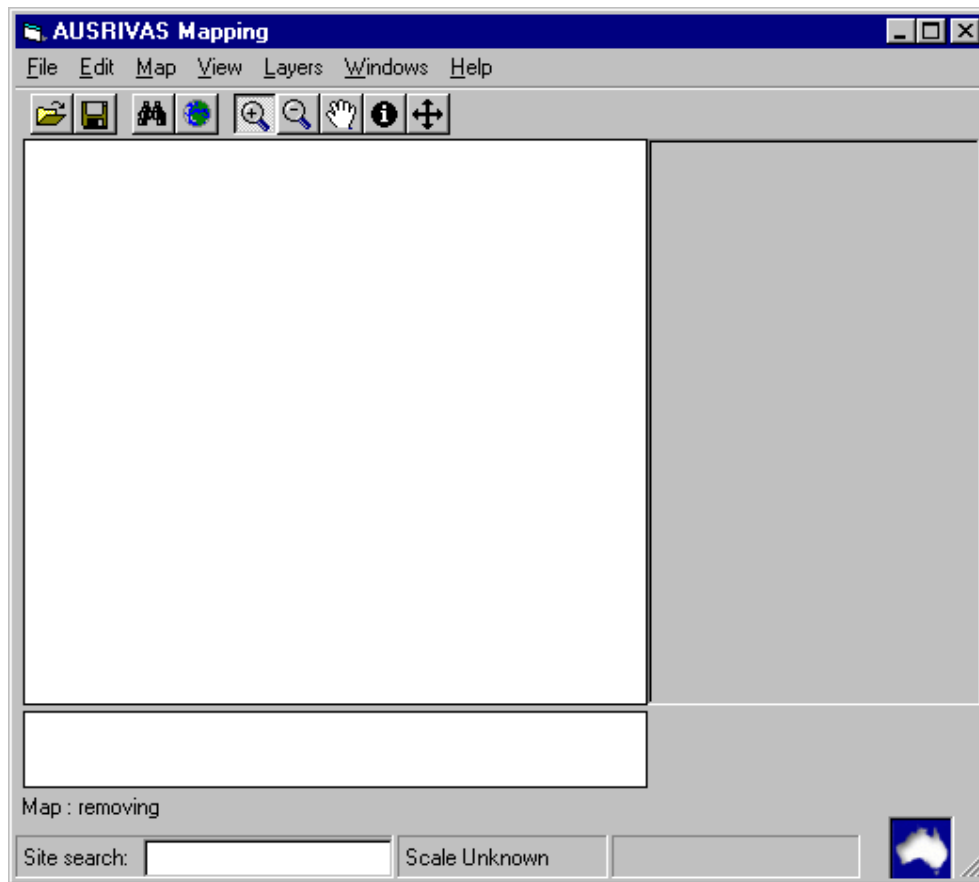


Figure 8.2: Program window after closing the site file.

Alternatively, you can request a new map or open a new site data set at any time and the program will “clean up” for you before loading the new site data or map.

## 8.2 Exiting the program

To exit the program, select **Exit** from the File menu.

## Chapter 9

# References

**Auslig** *GEODATA TOPO-250K*, Geoscience Australia.

**Environment Australia, June 2002** *Welcome to Wild Rivers*,  
[http://www.heritage.gov.au/anlr/wild\\_riv/guide/](http://www.heritage.gov.au/anlr/wild_riv/guide/).

**ESRI 1996** *Using ArcView GIS*, Environmental Systems Research Institute Inc., USA.

**ESRI 1996** *Using Avenue*, Environmental Systems Research Institute Inc., USA.

**ESRI 1999** *Building Applications with MapObjects*, Environmental Systems Research Institute Inc., USA.

**GEOSCIENCE AUSTRALIA, June 2002** *Welcome to GEOSCIENCE AUSTRALIA - National Mapping Division*, <http://www.auslig.gov.au/>.

**Stein, J.L., Stein, J.A. and Nix, H.A. 1998** . *The identification of Wild Rivers, methodology and database development*. Centre for Resource and Environmental Studies. Australian National University, Canberra.

# Chapter 10

## Glossary

**Catchment** The areas of land that contributes surface water to the river.

**AMG** Australian Map Grid - a Cartesian coordinate system based on the Universal Transverse Mercator projection. The unit of measure is the metre.

**Coordinates** Linear or angular quantities which designate the position of a point in a given reference or grid system.

**Coordinates, geographic** A system of spherical coordinates for describing the positions of points on the earth. The declinations and polar bearings in this system are the latitudes and longitudes respectively.

**Datum** A mathematical surface on which a mapping and coordinate system is based.

**GEODATA products** comprise Geoscience Australia map information converted into digital format. Used in conjunction with geographic information systems GEODATA products assist applications such as resource management, environmental assessment, mineral prospecting, communications and transportation planning.

**Geodetic datum's** Establish the reference systems that describe the size and shape of the earth, for example World Geodetic System 1984 (WGS-84).

**Geographic reference system** The Geographic Reference System consists of latitude and longitude. This system treats the globe as if it were a sphere or spheroid. The sphere is divided into 360 equal parts called degrees. Each degree can be further subdivided into 60 minutes, each composed of 60 seconds. The standard origin is where the Greenwich Prime Meridian meets the Equator. All points north of the Equator and east of the Prime Meridian are positive. The origin divides the globe into four quadrants: northwest, northeast, southwest and southeast. Each line of longitude runs north and south and measures the number of degrees east or west of the Prime Meridian. Values range from positive 180 to negative 180 degrees. Lines of latitude run from east to west and measure the number of degrees north or south of the Equator. Values range from the North Pole, at positive 90 degrees, to the South Pole which is located at negative 90 degrees.

**Lambert Conformal Conic Projection** A method for converting Latitude and Longitude onto a flat surface by projecting onto a cone whose axis is parallel to the axis of the earth and which intersects the earth at two parallels.

## Chapter 10. Glossary

**Latitude** An angular measurement involving north-south angular displacements from the equator. The Equator is at 0, the North Pole is at +90 and the South Pole is at -90 degrees.

**Longitude** An angular measurement involving east-west angular displacements from some starting place. Most commonly, Greenwich, England serves as the starting point and is considered to have a longitude of 0 degrees. Longitudes east of Greenwich are positive numbers. Longitudes west of Greenwich are negative numbers. +180 and -180 Longitude are the same meridian.

**Map** A representation of the earth's surface. A cadastral map is one showing the land subdivided into units of ownership; a topographic map is one showing the physical and superficial features as they appear on the ground; a thematic map displays a particular theme, such as vegetation or population density.

**Projected reference system** In order to display the curved surface of the Earth on a flat surface a number of projections have been developed, each with particular advantages and disadvantages. Two common projections are the *Universal Transverse Mercator* and the *Lambert Conformal Conic*.

**Raster Image** A cellular data structure composed of rows and columns. Each cell has a value that represents an attribute value for the feature represented by that group of cells.

**Vector data** Spatial data in which the location of features is defined by points and straight lines (vectors). A road network would be described by vector data.

**WGS84** World Geodetic System 1984 - a geocentric geodetic datum used for the determination of geographical coordinates developed by the United States Department of Defence. For all practical purposes, the current standard Australian datum, GDA94, approximates to WGS84.

# Chapter 11

## Technical details

### 11.1 Registry settings

**Key:**

HKEY\_CURRENT\_USER\Software\VB and VBA Program Setting\AUSRIVAS Mapping\Settings

**Values:**

Table 11.1: Registry values for key Settings.

Value name	Value data
AUSRIVAS username	User name
Proxy authentication required	True or False
Proxy port	Proxy server port number
Proxy required	True or False
Proxy server	Proxy server name
Proxy username	Proxy authentication username
Temporary directory	Path to writeable temp directory

**Key:**

HKEY\_CURRENT\_USER\Software\VB and VBA Program Setting\AUSRIVAS Mapping\System

**Values:**

Table 11.2: Registry values for key Settings.

Value name	Value data
Program version	Program version number

## Chapter 11. Technical details

### 11.2 Default values

#### Internet

Table 11.3: Default values for internet settings.

Setting	Default value
Proxy required	False
Proxy port	80
Proxy authentication required	False
Client timeout	240 minutes
Server timeout	60 minutes
Number of concurrent users (server)	1

#### General

Table 11.4: Default values for general settings.

Setting	Default value
Temporary directory	C:\temp

### 11.3 Format of site file

Table 11.5: Format of site file.

	Column 1	Column 2	Column 3	Column 4	...	Column n
Row 1	LOCATION_C	LATITUDE	LONGITUDE	Field 4		Field n
Row 2	Sitecode 1	Latitude 1	Longitude 1	Site 1 Field 4		Site 1 Field n
Row 3	Sitecode 2	Latitude 2	Longitude 2	Site 2 Field 4		Site 2 Field n
...						
Row m	Sitecode m	Latitude m	Longitude m	Site m Field m		Site m Field n

### 11.3 Format of site file

Table 11.6: Example site file

```
LOCATION.C,LATITUDE, LONGITUDE, SITETYPE, O.E.TAXA,TAXA_BAND
s4102001, -35.3291596, 148.9473896, Reference, 0.96, A
s4102002, -35.3220563, 148.9406193, Reference, 0.88, A
s4102003, -35.3481086, 148.8895263, Reference, 0.95, A
s4102005, -35.4174656, 148.8349786, Reference, 1.11, A
s4102006, -35.6123930, 148.8217576, Reference, 1.18, X
s4102007, -35.3423032, 148.9146972, Reference, 0.97, A
s4102008, -35.3223664, 148.8636270, Test, 0.81, B
s4102009, -35.3605884, 148.8402936, Test, 0.80, B
s4102010, -35.3678742, 148.9505206, Test, 0.76, C
s4102012, -35.4155286, 148.9582763, Test, 0.67, D
```