Figure ??: Phased Plan of SPE6

Workflow from QGIS to Inkscape
Third Edition

Christina Robinson, Dana Campbell and Anna Kathrin Hodgkinson

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Manuals and documentation produced by Oxford Archaeology North:
Hodgkinson, Anna (2010) *Open Source Survey & GIS Manual.* Documentation. Oxford
Archaeology North. (Unpublished): http://library.thehumanjourney.net/367/

Robinson, Christina and Campbell, Dana and Hodgkinson, Anna (2010) *Archaeological maps from
qGIS and Inkscape: A brief guide.* Documentation. Oxford Archaeology North. (Unpublished):
http://library.thehumanjourney.net/366/

Hodgkinson, Anna (2011) *Using the Helmert (two-point) transformation in Quantum GIS.*
Documentation. Oxford Archaeological Unit Ltd.. (Unpublished):
http://library.thehumanjourney.net/462/

Software sources and downloads:
Qqis: http://qgis.org/
gvSIG OA Digital Edition 2010: http://oadigital.net/software/gvsigoade
gvSIG website: http://www.gvsig.org/web/
GRASS GIS: http://grass.fbk.eu/
Paraview: http://www.paraview.org/
VisIt: https://wci.llnl.gov/codes/visit/
pgAdmin: http://www.pgadmin.org/
Inkscape: http://inkscape.org/

INTRODUCTION:
**CREATING GEOMATICS MAPS (FIGURES) WITH INKSCAPE**

These brief instructions for Inkscape (www.inkscape.org) apply to maps first created in qGIS. Below you will find a quick guide to exporting and creating PDFs and SVGs (Scalable Vector Graphics) from qGIS, and Inkscape will be used simply to 'frame' it. Whereas most of the map is built in GIS, Inkscape is needed for formatting, editing, adding the north arrow, text and perhaps a legend (see below). The PDF option is used for simple figures with not to many elements involved, the SVG option is for the use of more complex figures. Also use an SVG if your image is not going to be a full page. Procedures are explained in detail with screenshots and photographs where appropriate and guides to troubleshooting and examples for data maintenance are provided. The manual is written in such manner that it can easily be adjusted for individual sites' survey requirements. Chapters can be extracted easily and supplied individually. The methods described are also applicable to a range of archaeological illustrations.

PART 1
CREATING AND EXPORTING MAP FROM qGIS

While creating the map in a GIS, try to do as much fine-tuning and styling as possible before exporting. While you can easily edit all the elements of the map in Inkscape, this process is made easier when using the actual data.


Selecting the 'print' tool (icon with star if you are using qGIS) opens the 'composer' window,
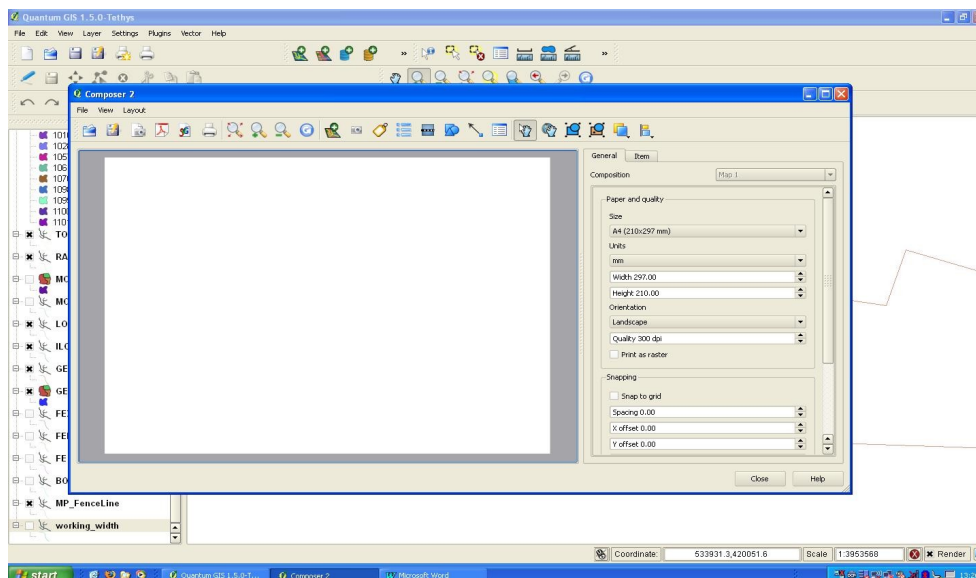
Select the 'add new map' icon, and left click then drag over the page to create the basic map frame.

Create SVG   Add new map   Add new vector legend   Add new scalebar

Along the right side of screen are the options to specify page size, units of measurement, page orientation and image resolution (dpi).
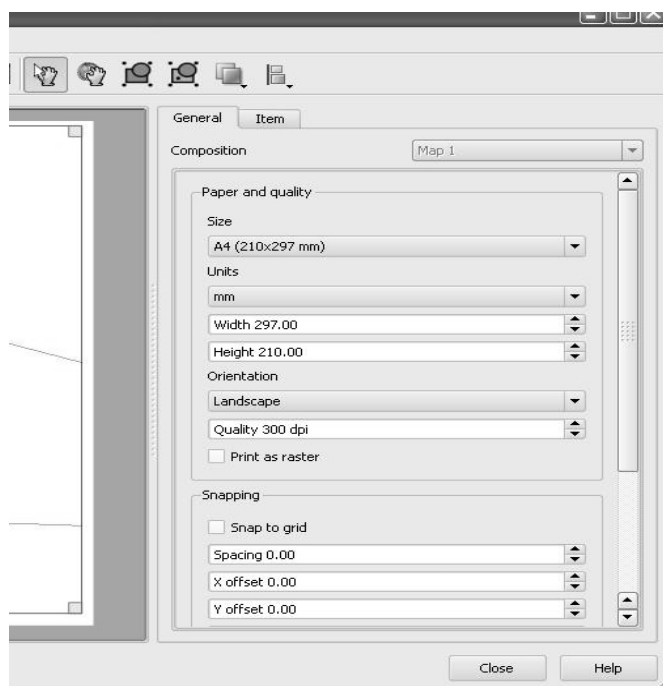
At this point, you will need to think about the resolution (dpi). When large or detailed background mapping is present, you will need to lower the resolution to less than 300 dpi. This is because Inkscape will be unable to explode the image properly later on (below).

VERY IMPORTANT:
You need to **scale the drawing** before importing into Inkscape
Do this from the 'item' tab on the 'composer' menu:
Enter the scale at which you want to print (if you want 1:500, for example, enter 500)
Create the **scalebar** before importing the map into Inkscape.
Select 'add new scalebar' and left click to add it to the map

Once added, options for formatting the scalebar appear in the 'item' tab (specifying map units, number of divisions, font, width, height, etc.)
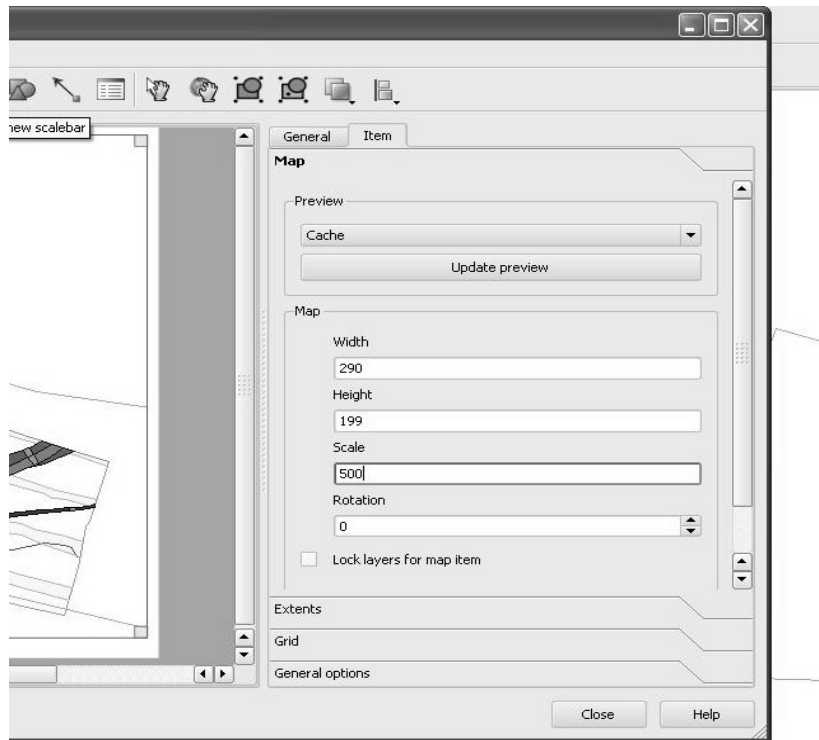
You may or may not want to create the **legend** in the GIS. When a legend is imported into Inkscape (see below), its text will not be editable as text.

If you do wish to create a **legend** prior to exporting from GIS, use the 'add vector legend' tool from the composer window.

When ready to **export the map** to Inkscape, DO NOT USE the icon for 'print to PDF', it won't work properly. Export by selecting 'print', 'PDFcreator' and ensure all page and printing preferences are correct and that the dpi has been lowered from 600 to 150.

When the SVG option is being used, a PDF will still be required for scaling purposes in Inkscape (see below), select the create SVG button on the tool bar.

PART 2
EDITING MAP IN INKSCAPE

KEY FUNCTIONS TO KNOW BEFORE GETTING STARTED
Many of Inkscape's functions and tools operate in a similar way to CAD, for example:
--like CAD, elements reside in layers,
--'esc' de-selects elements,
--also control and roll on mouse zooms in and out,
--for panning, press down on wheel on mouse,
--right-click brings up basic menu (includes cut, paste, etc.),
--to select all elements or a group of them, left click and drag box around them. Make sure you include the ENTIRE objects in the box.

Remember that if you re-size any elements in Inkscape, they are no longer to scale.

COMMONLY USED TOOLS

select and transform tool

edit paths by nodes tool

create rectangles and squares

draw bezier curves and straight line tool

eraser

create and edit text objects tool

Templates (Frame)
This is where you open or make your template for framing your PDF/SVG. This template should be saved as an SVG and to access it you need to open Inkscape first and then select 'file', 'open' and select the SVG you are looking for. If a template has not been provided you will be required to build one.

To start building a template/frame select 'file', 'document properties' and then 'page'.
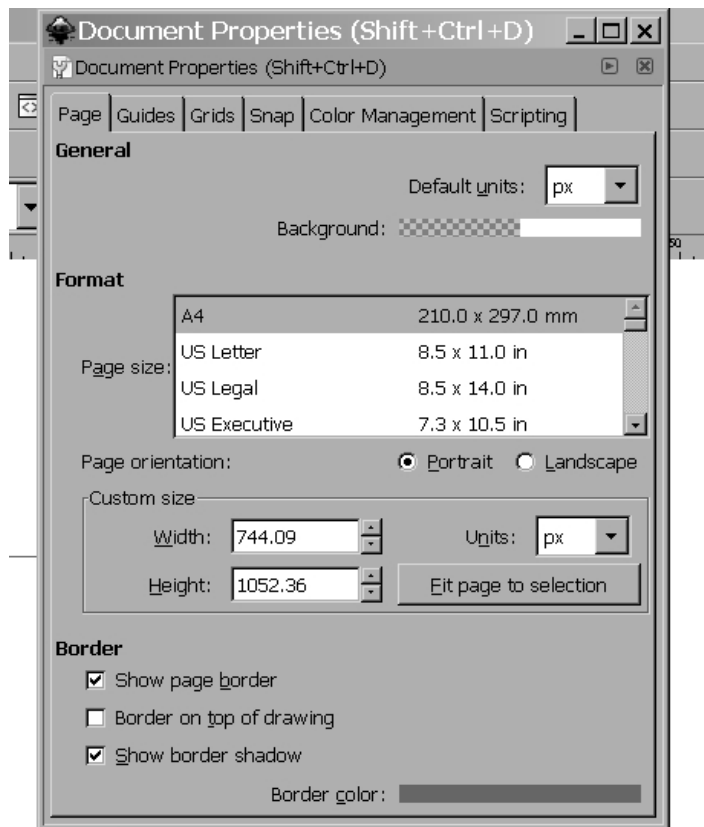
In this option you can select your page size, orientation, units etc. Once the correct properties are set layers can be added. The layers help to split components of the template, so that some layers can be locked and separate layers for the imported PDFs/SVGs. To create new layers select the 'layer', 'add new layer' (or shift+ctrl+n) menu. Title the new layer and the position it above or below current layer, then 'add'. Add as many layers as necessary for your template and imported image.
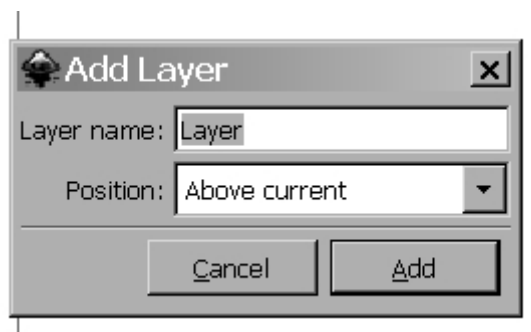

Then the blank page is then ready for the elements of the frame to be added on the correct layers (to lock a layer simply lock the padlock and if you wish to turn a layer off close the eye by clicking on either icon next to the layer list (see below)).

Importing Map PDF/SVG

From the 'file', 'import' menu, navigate to the appropriate PDF/SVG map that was just created.

This opens the PDF import settings window, simply select 'OK' and your PDF is then added. If importing an SVG, this will just open automatically in a window that is currently open. The SVG will come in at a larger scale and will also show the extents of any polyline/polygons even though they were not in your original map. Do not panic (see below).

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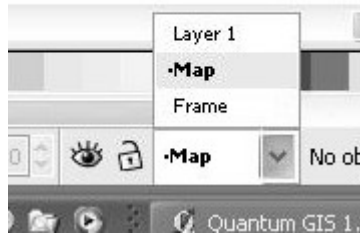
Once imported, move the PDF/SVG to the "map" layer (because it will be added to the layer you imported the file on automatically).
Do this by checking the order of layers from list at the bottom of the screen,
Select the PDF/SVG,
From 'layer' menu, choose 'move selection...' to layer below twice the frame layer or use shift+page down.
The PDF/SVG is then added to the map layer.

Scaling an SVG
Due to the large scale that the SVG is imported at, it is required to scale it down to the original size that it was exported at from qGIS. It seems to apply a scale value that is dependent on the DPI setting on the General tab. The long and the short of it is, that if you export at 300 DPI, you need to apply a scale in Inkscape of 30%; 600 DPI needs a scale of 15%; 150 DPI = 60% and so on, *regardless of paper size*. This is done by the Matrix tab on the Object Transform window and set values A and D to 0.15/0.3/0.6/etc, ensuring "Edit current matrix" is checked. This way it keeps the anchor at the top left of the group so it shouldn't need moving anywhere.
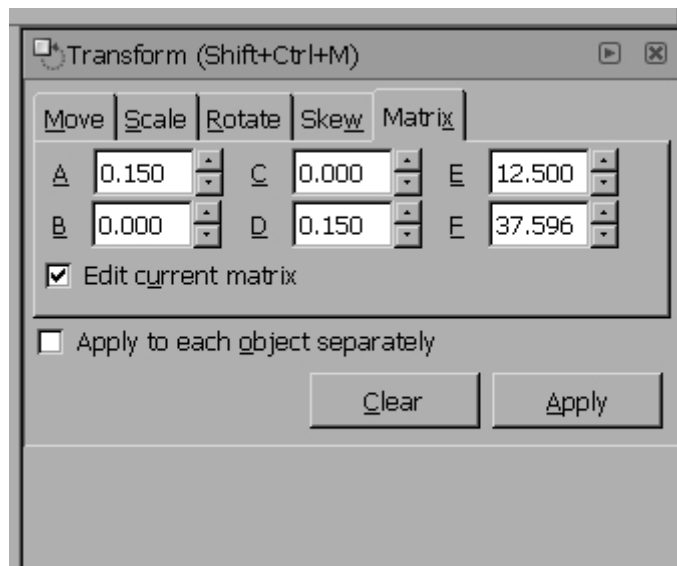
This issue of large scale SVGs being imported from qGIS has now been rectified and should no longer be an issue.

Exploding the PDF/SVG
Select the imported PDF/SVG by using ctrl+a, right click and choose 'ungroup',
This ungroups all the individual elements, but you may need to select these a number of times. Once this has ungrouped the larger elements, such as a site boundary, that when shown fully within the PDF may extend beyond the limits of your original PDF's limits. Do not panic (see below) if this is a full A4/A3 image.

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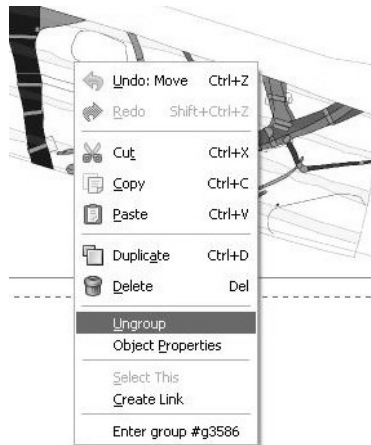
Clipping PDF/SVG

As the name suggests, this clips images, so you can get rid of any excess parts / overlaps. Once your PDF/SVG has been placed on the appropriate layer (the image needs to be all on the same layer or else this doesn't work), scaled and / or ungrouped, you need to draw a shape over the area you want to be in your image (use *create rectangle* or *squares* for this). The shape you have just drawn needs to be on the same layer as your image, but needs to be at the top of this layer. To make sure that this shape is at the top of this layer, select it and press "home". Then clipping can commence. The object you require to clip and the object you have just drawn both need to be selected for this to work. The clipping is then done from the object menu, 'clip' and then 'set'. This should clip the image, if this is not what was required, go through the object menu, 'clip' and then 'release' and the image will be as it was before.
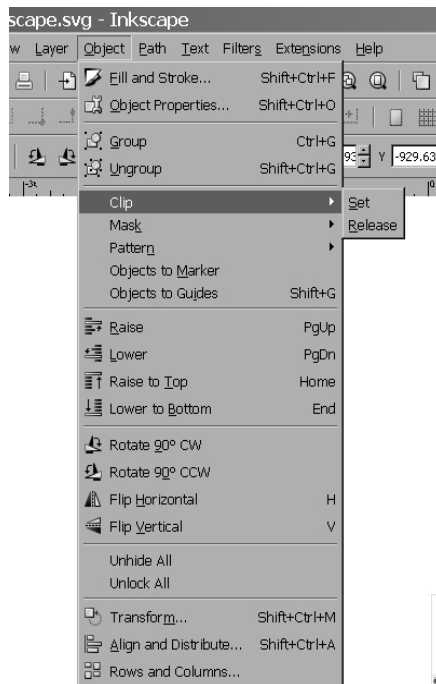
Framing / Preparing the Map

You should then delete all the excess elements that you do not want in your final map, for example: the imported map will have a frame or a box around it, select and delete this as there should already be a frame in the template. If the PDF or SVG is the size of a page and there are larger elements that have gone beyond the limit of the page, do not erase sections as this may alter them. Instead, load them into the frame with the other elements and there are some nifty hidden boxes that will eliminate the overlap.
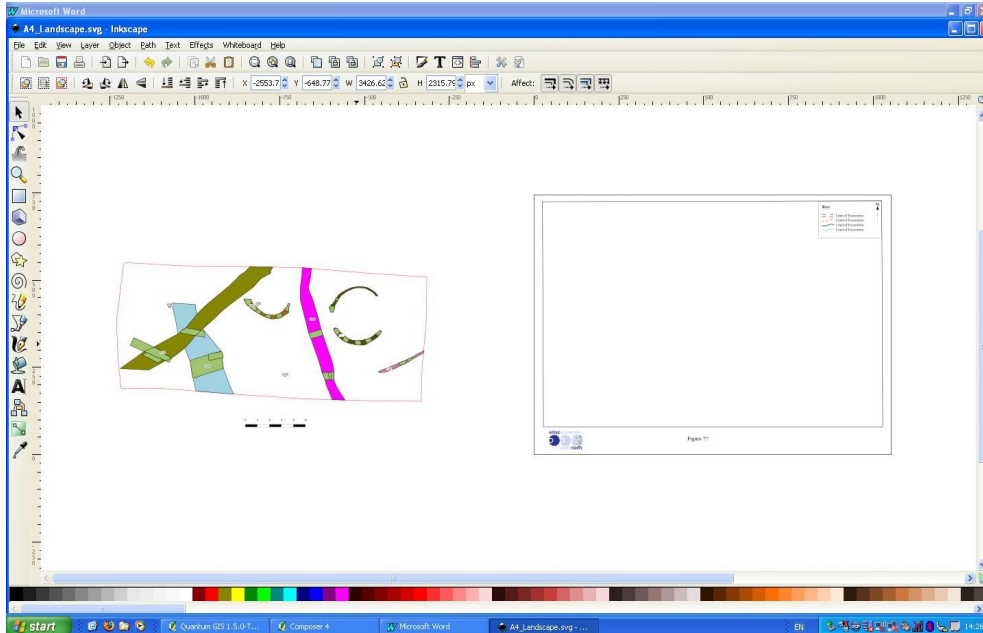
Select all remaining map elements, then hover the cursor over the selection until the 4-way arrow appears, and drag all the elements into the frame together.

Editing

To move, scale or rotate elements, use the 'transform' menu, located under the 'object' menu.

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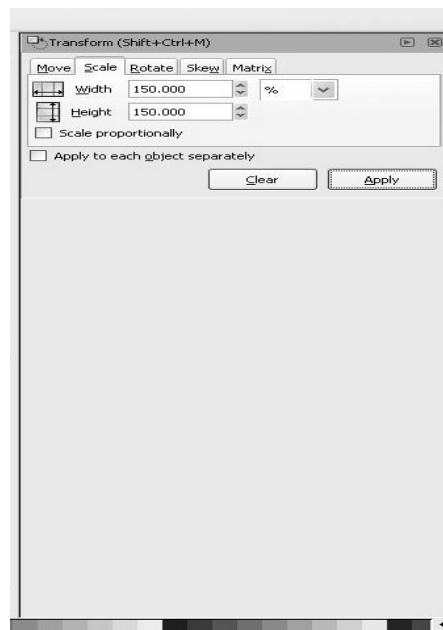
However, the best way to move objects in Inkscape is to select and move them with the 4-way arrow as this will keep everything to scale.

Editing Text in the Frame
Use 'select and transform objects' tool,
Double click on the text and edit as needed.

Changing the Colour and Style of a Polygon
Select the element(s),
Right click and choose 'fill and stroke' (stroke meaning line).
This opens a new menu to the right of the screen.
Change the colour of your element from the 'fill' tab on the menu.
Or you can select new colours from the colour bar along the bottom of the screen; there are several colour charts available, use the small arrow at the end of the colour bar to change the colour scheme.
From this tab you can also change transparency (called opacity) and different fill types.
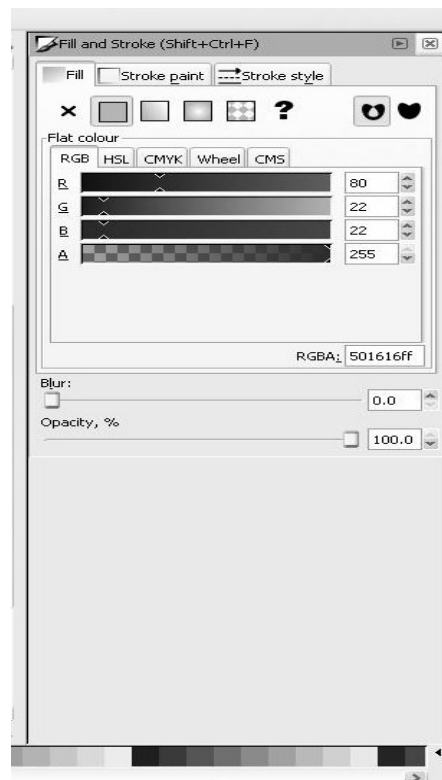
To Change the Colour and Type of a Line
Follow the same procedure as above, but use the 'stroke paint' and 'stroke style' tabs instead of the 'fill' tab.
There are several line types available, different means of choosing their colour, and the means to change their thickness.

Copying properties
 To copy colour and stroke (line type) from one feature to another simply select feature and press crtl +c and then select feature(s) that require the same properties and press ctrl+shift+v.

Re-scaling images
To scale something that already has a scale on it eg. 1:500. If you want to make the image smaller use a larger scale, if you want a bigger image use a smaller scale. Take the scale you already have (1:500) and take off the front part of the scale so your left with 500, divide this by the scale you

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want (750) and then times by 100. This will give you the percentage that you want to scale by. Example: 500/750x100=6.66666667

With this percentage you go into 'object',' transform' and then the 'scale tab'. In this scale tab you need to make sure you have the percentage symbol present and the scale in proportion box ticked. Type in your percentage and click apply and hay-presto you have your image scaled.
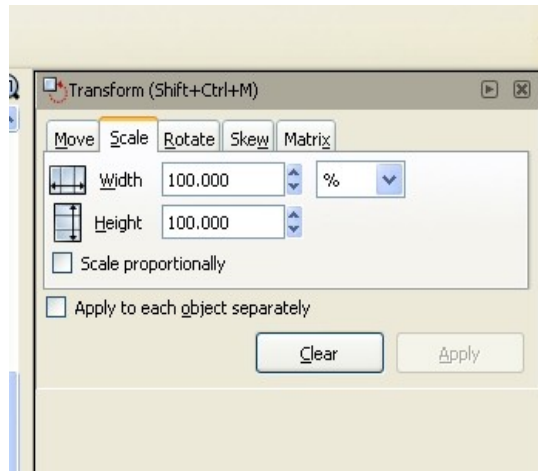

Snapping toolbar
Here are some of the more used snapping tools and how to set up the snapping tools to your preferences.

To set the preferences on the snapping tools open 'file', 'Inkscape preferences' (or shift+ctrl+p) and select 'snapping'. This will display 'enable snap indicator', 'delay', 'only snap the node closest to the pointer', 'weight factor' and 'snap the mouse pointer when dragging a constrained knot'.

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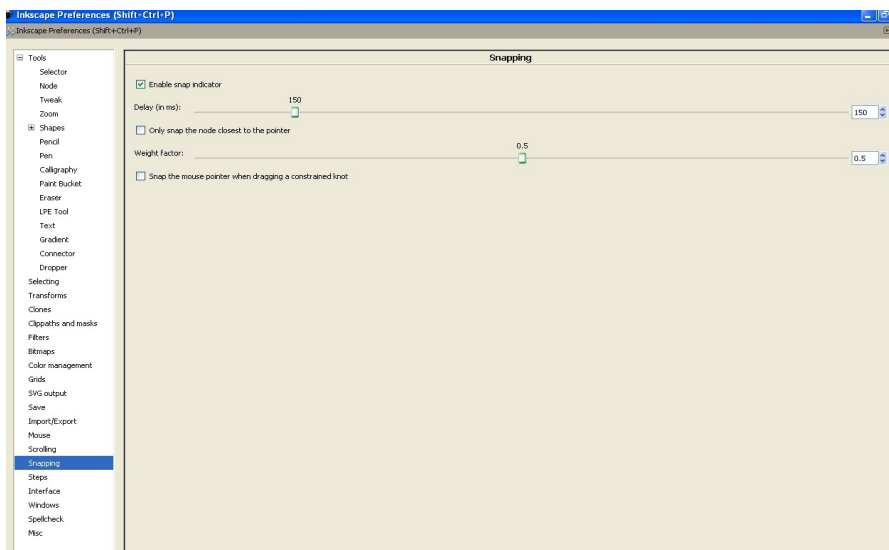
Make sure the enable snap indicator is ticked. The delay sections is to set how long after the mouse has stopped moving to snap to an object. The weight factor effects the efficiency of the snapping, when the weight slider is set to 0 it will prefer the closest transformation and when set to 1it will prefer the moved object's node that was initially the closest to the pointer.

When Ready to Print
Simply SAVE AS the drawing as a PDF (using PDF creator won't work properly).