This document is a guide to setting up a base map, good practice when surveying, designing the final map and using OCAD.
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What is an Orienteering Map?

We are talking here about the actual orienteering map rather than the artwork etc that goes around it.

An orienteering map is not an exact plan. Its production involves some generalisation and also some exaggeration. The OCAD symbols used to draw it are, in themselves, a generalisation and on the map they will often be at a larger scale to the scale of the map and hence the scale of the features they are trying to depict.

An orienteering map needs to be mapped consistently so that it is fair to all competitors and it enables planners to confidently produce courses.

An orienteering map must be readable.

An orienteering map must be drawn using the set of drawing symbols (ISOM/ISSOM) appropriate to both its intended use (classic/urban/sprint) and the OCAD drawing scale chosen.

An orienteering map is aligned to magnetic north rather than grid north. Magnetic north moves over time so older maps are less well aligned (and so might need to be re-aligned).

BUT

An orienteering map will never be a perfect product as mappers, as surveyors, will interpret terrain differently and, as cartographers, will draw terrain differently.

An orienteering map will always need updating.
Sources of Background Map

A background (or base) map will not be required if you are simply updating an existing OCAD map which is currently reasonably accurate. Otherwise, get the most up to date background map(s) or image(s) of the area you will be mapping. These maps need to be in electronic form, e.g. .bmp, .gif, .jpg, so that they can be read by OCAD as templates or background maps. You also need to know the scale of your background map and its current orientation (usually grid north).

Consider getting your background map(s) from the following sources:

High definition scan of an OS 1:25000 map, covering at least one grid square

Large scale (1:500) OS city centre maps from (for example) http://www.bristol.gov.uk/page/know-your-place

Georeferenced aerial photos from http://www.getmapping.com

OS Landline map data available to buy, which can be previewed in http://www.ordnancesurvey.co.uk/oswebsite/products/landline/tileselector

This displays a low resolution bitmap that is ideal for the alignment of aerial photography and previous maps to the OS grid. The images also provide a good base for major boundaries in rural areas or quite a lot of useful information in urban areas. These images are continually updated so are very useful for features such as new roads and housing. For sample screen shots, right-click, save as… to get the images.

Local Authority plans (usually OS based)

Forestry Commission maps

Photogrammetric plots

Download LiDAR data from http://www.environment.data.gov.uk/ds/survey#/.

Please be aware of copyright when using other people’s material. OCAD maps drawn from OS material, including photogrammetric plots, are covered by the BO contract with the OS. This means that all OCAD maps based in some way on OS data should show the statement “Crown Copyright 20yy OS 100015287” where 20yy in the year that the OCAD map is being used.
Georeferencing an OCAD Map

It is now becoming common practice to produce an OCAD map set against a background of co-ordinates that matches the OS grid, i.e. the OCAD map is aligned to “real world co-ordinates”, which ensures it is drawn at the correct scale and is aligned to current magnetic north. Such an OCAD map is said to be georeferenced.

GPS tracks and waypoints and other georeferenced material, such as LiDAR digital elevation data, can then be imported into the OCAD map, and controllers and planners can use GPS devices to relate control features found “on the ground” to those shown on the OCAD map.

Before setting up a new (blank) georeferenced OCAD map:

Agree on the map’s OCAD drawing scale and the OCAD symbol set to be used to draw the map. A map’s drawing scale is often the same as its print scale, but might be smaller, e.g. 1:10000 printed maps are usually drawn in OCAD at 1:10000 but might be drawn at 1:15000, and 1:4000 printed maps are usually drawn in OCAD at 1:4000 but might be drawn at 1:5000. There are different OCAD symbol sets depending on the type of map (classic or urban/sprint) and the drawing scale and these can be downloaded from the BO website.

Booklets are available that describe these symbol sets in great detail, e.g. the booklet entitled “International Specification for Orienteering Maps” (currently ISOM 2000, although it is expected that this will soon be superseded by ISOM 201X) specifies each symbol which could be used on a classic orienteering map and the booklet. “International Specification for Sprint Orienteering Maps” (currently ISSOM 2007) specifies each symbol which could be used on a urban/sprint orienteering map.

Georeferencing when LIDAR data is available

By far the quickest and easiest way to georeference a new map is to use available LIDAR data and the “DEM Import Wizard” that is built into OCAD12 Standard. Download (as ASCII files) data for the relevant OS grid squares from the Environment website. Load them into the wizard and you can rapidly obtain a contour map, grey scale images of the land surface (from the DTM files) and of the vegetation cover (from the DSM files), together with an analysis of gradient. All these files are georeferenced. The analysis is very slick but requires files to be saved appropriately, so finding a friend with the necessary program and skills will save time! OCAD 11 can do the same job, but the process is more complicated and slower. Starter versions of the OCAD program do not include this capability. Unfortunately LIDAR coverage is patchy and many countryside areas have yet to be surveyed.
Georeferencing when LIDAR data is not available

Obtain the 2 * 6 digit OS map reference of the 1 km grid square nearest the centre of the area to be mapped. This reference takes the form “eee000, nnn000” where eee is the easting and nnn is the northing.

Obtain the anti-clockwise deviation of magnetic north from OS grid north at this map reference. This deviation, expressed in degrees and minutes (where there are 60 minutes in a degree), can be found by accessing www.geomag.bgs.ac.uk/gifs/gma_calc.html and entering the OS map reference.

File>New…, select “Normal map” and then select the BO symbol set the map will use, select “OK”
Options/Scales…, enter the OCAD map drawing scale, enter eee000 and nnn000, enter, as the Angle, the anti-clockwise rotation of magnetic north to OS grid north (this will be minus the deviation above), enter Grid Distance as 1000 (metres) and select the “British National Grid” co-ordinate system.

OCAD will then display a blank map with the OS grid in the background which has been angled to take account of magnetic north.

Then
Background map>open the image, e.g. the .jpg of the OS 1:25000 map, set the image resolution of scan or image capture (usually 300 dpi), the scale of the image, the angle of rotation to be applied to the image (the same value as was used to set up the georeferenced OCAD map) and the drawing scale of the OCAD map. After clicking “OK”, the image will appear in the background of the OCAD map. The grid lines on the image now need to be aligned to the same grid lines on the georeferenced OCAD map, i.e. the image needs to be adjusted to fit the grid on the OCAD map. Use alternating cursors to adjust the image. By following the process above again, you can align other, perhaps more detailed, background maps to (part of) this OCAD map.

If the existing OCAD map is to be redrawn then it could be exported as an image file and then re-imported as a background map and aligned as above.

If the existing OCAD map simply needs to be georeferenced, it first should be imported (as an OCAD map) into a blank georeferenced OCAD map. With the latter file open, select File…, Import…, browse to pick up the existing OCAD map and then select Open. Then select “Place using the mouse” and “Import symbol only if symbol number does not exist”, then “OK”. The imported existing OCAD map appears but will then need to be “transformed” to align it to the real world co-ordinates shown in the background. To transform the imported OCAD map, mark up to 4 points on it and then mark the corresponding points on the real world co-ordinates image. Press “enter” and the OCAD map will be moved, rotated and stretched to best fit the real world co-ordinates.
Surveying

Before actually doing any surveying, you need to set up the base map you will take with you by tracing onto your blank geo-referenced OCAD map all the detail on your background image of the type you consider will appear on your final OCAD map, e.g. the contours, buildings, roads, paths and/or streams. Also add 3 (say) registration marks to your OCAD base map so that you can, if required, scan your survey notes into OCAD as a template and re-align them with the latest version of your OCAD base map (before tracing your survey notes onto this map). It is often useful to draw a grid over your OCAD base map to help with distance measurement when surveying. Choose the grid's dimensions “on the ground” (50 metres say), convert this to the equivalent distance on your map according to its drawing scale (5 millimetres at 1:10000 say) and then select Extras, Gridlines... to enter this distance for the horizontal and vertical dimensions of the grid and also enter the orientation that should then be applied to this grid to align it to the real world co-ordinate grid on your OCAD base map.

For classic orienteering maps, surveying is carried out at a scale of 1:7500, i.e. twice the preferred map drawing scale of 1:15000. Thus, for maps drawn at 1:15000 or 1:10000, the survey content should be the same, the only difference being the use of a different OCAD symbol set when drawing up the map which then results in different size symbols on the map. Surveying at a larger scale than 1:7500 generally results in more detail being put on the map which then tends to make the map less readable. For the larger scale urban and sprint orienteering maps, surveying at 1:2500 would usually suffice.

Before setting out to survey any area:

• Ensure permissions and access have been agreed
• Check the weather forecast
• Carry a whistle and a charged mobile
• Wear suitable clothing
• Pack sufficient food/drink, spare clothes and even a toilet roll
• Tell someone where you are going, where you are parking and when you are likely to return

For surveying purposes, take with you:

• The current version of your geo-referenced OCAD base map
• Map board with some sort of covering for protection
• Polyester film
• Pens/Pencils and rubber
• Base plate compass and/or sighting compass

and perhaps

• Rangefinder
• GPS
• Digital camera
• Smartphone, which can include camera, GPS & theodolite functions.
While surveying:
- Do not take risks when near cliffs, steep slopes, water, etc
- Keep hydrated
- Watch out for animals, bikes, etc
- Stop before you get too tired
- Check for ticks

British Orienteering (BO) provides Public Liability insurance for those earning less than £6,000 per year from mapping. Of course, this insurance does not cover accidents and personal injuries. For maps, such as those for schools, which will not be used by BO for its own events, it is recommended that mappers confirm that they will be covered by the Third Party insurance of the organisation commissioning their work.

Firstly, familiarise yourself with the whole area to be surveyed. Then, for each subsequent surveying visit, plan which area and/or features you will aim to survey. Always work logically and try not to get side-tracked, but be prepared for a lot of walking.

Orienteering surveying is basically being able to:
- Take compass bearings
- Measure distance by pace counting
- Use triangulation when necessary to check bearings
- Estimate height, e.g. when drawing contours (a 5 metre contour interval is approximately equivalent to 3 people standing on top of each other)
- Be selective regarding the features to be mapped, e.g. considering their prominence generally or within a group of similar features
- Assess runnability (when mapping ground cover) and visibility (when mapping wooded areas)
- Apply the OCAD drawing symbols you will be using to the features you want to map. You may consider that some special symbols are needed for unusual features, e.g. sculptures and water troughs, if these features are being mapped

In addition, you will need to:
- Consider how you will map parallel features, e.g. a path running next to an earthbank running next to a ditch
- Ensure that all potentially dangerous features that could be encountered by the orienteer are clearly mapped
- Know which areas of the map are OOB and so will be marked as such on the map

Using different colour pens/pencils is a good way of distinguishing features you note on your survey draft. Make plenty of extra notes too unless you have a good memory. Start surveying the line features first, e.g. the paths, fences, walls, streams and earthbanks, which can help to break down the whole area into smaller areas when you come to survey the land features and vegetation.
Orienteering Map Design

Before advancing too far with the development of the actual map, you should think ahead and consider what size paper the final map will be printed on (often A4, sometimes A3 but rarely A5 or SRA3) and what this paper’s orientation will be (portrait or landscape). This will depend on what else needs to go on the final map and how everything, including the map itself, will be laid out.

As well as producing a map that is readable, it is also important to produce a final map that contains all the necessary supplementary information in a clear, concise and well-presented way. Such a presentation will almost certainly impress the orienteer and might even instil confidence in the quality of the map itself.

Things that should go on the final map:

**Title**

**Scale**

**Contour Interval**

**Scale Bar**

**Magnetic North Lines**
Quote the deviation from grid north. These lines should be respectively (33.33, 25, 37.5, 25) millimetres apart on maps printed at (1:15000, 1:10000, 1:4000, 1:1000) which is equivalent to (500, 250, 150, 25) metres on the ground

**Grid Reference**

**Legend**
A full legend may not be necessary - just OOB and uncrossable/impassable features, say

**Names of the Surveyor and the Cartographer**

**Copyright Statement(s)**
e.g. “Crown Copyright 2016 OS 100015287”, “Environment Agency Copyright 2016. All rights reserved.”, “Map Copyright BOK”

**OCAD Drawing Symbol Set used**
e.g. “Based on the ISOM 201X 1:10000 OCAD symbol set”

**Sponsors’ details or logos**

**Date final map produced**
Access and Permission Statement
e.g “Possession of this map does not imply right of access to this area for orienteering or any other purpose”

Name of Printer

Blank box for overprinted control descriptions

Things relating to an event that might be added but would most likely be overprinted (using Condes say):

Date of event

BO Event number

Names and Clubs of Event Officials

Map layout is ultimately all about “visual balance”. Legibility is therefore improved if the same font is used throughout and any text is sized and aligned appropriately. Arial is the preferred font. The map title, scale and contour interval are most important so should be printed in a larger font size. A “BOK Template” is now applied to all new/updated BOK maps to give a layout etc that is consistent with the above requirement.

It often helps to use a grid line approach to align blocks of text. Perhaps put a frame/box around your base map to indicate the print boundary. This will then define the space you have available to fit everything into.

For some further thoughts and suggestions on good map design, see http://www.britishorienteering.org.uk/images/uploaded/downloads/mappers_design.pdf
OCAD Drawing

“Drawing Objects” appear in an OCAD map created from the “Drawing Symbols” in the “Symbol Table”. These symbols have a number and a description and can themselves be edited or duplicated and then edited. Booklets are available from BO describing the ISOM 2000 and ISSOM 2007 symbols (what for, size, standard colour).

Standard Toolbar

<table>
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<th>New: Create a new map</th>
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<tr>
<td>Open: Open an existing map</td>
</tr>
<tr>
<td>Save: Save changes made to the map</td>
</tr>
<tr>
<td>Print: Print out the map</td>
</tr>
<tr>
<td>Undo: Undo previous actions</td>
</tr>
<tr>
<td>Redo: Cancel the previous undo action</td>
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Drawing modes

Basically, select the symbol to be used then select one of the following drawing modes:

Editing and Drawing Toolbar

<table>
<thead>
<tr>
<th>Curve mode: Draw a Bezier curve</th>
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<tr>
<td>Ellipse mode: Draw oval shaped area objects</td>
</tr>
<tr>
<td>Circle mode: Draw circular area objects, creating the circle from its edge</td>
</tr>
<tr>
<td>Rectangular line mode: Draw rectangular shaped area objects with any number of corners</td>
</tr>
<tr>
<td>Rectangular mode: Draw rectangular shaped area objects with any number of corners creating a rectangle based on the length and width drawn</td>
</tr>
<tr>
<td>Stairway drawing mode: Draw a rectangular stairway</td>
</tr>
<tr>
<td>Straight line mode: Draw objects with straight lines</td>
</tr>
<tr>
<td>Freehand mode: Draw objects in freehand</td>
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**Drawing multiple point objects**: Draw several point objects that are placed on a line with a constant interval

**Laser Rangefinder drawing mode**: Draw objects by distances transmitted from a laser distance meter

**Numeric Mode**: Draw objects in numeric mode

If you wish to **continue** an existing line objects, hold down the shift key.
If you wish to **follow** an existing object, hold down the control key.

**Editing modes**

Basically, select the editing function “Edit Object” or “Edit Vertex”, then select the object to be edited, then select a further editing function.

**Editing and Drawing Toolbar**

![Editing and Drawing Toolbar](image)

**Editing modes**

- **Select and Edit Object**: Select and move objects
- **Select Object and Edit Vertex**: Select objects or move points of objects

After “Edit Object”, you can select

- **Indicate Direction of Area Pattern, Point or Text Object**
- **Rotate Object**: Rotate the selected object(s)
- **Cut hole**: Cut a hole into the selected area object
- **Cut area**: Cut the selected area object
- **Cut**: Cut the selected line object or the borderline of the selected double line or area
- **Move parallel**: Move the selected line or area object parallel to the original object
- **Reshape**: Redraw part of a line, area or text object

Or select
**Edit Functions Toolbar**

- **Find Selected Objects**: Move screen to the selected object
- **Delete**: Delete the selected object(s)
- **Rotate (Enter Angle)**: Rotate selected object(s) by entering an angle
- **Align Objects: Horizontal Coordinates**: Align objects at a horizontal coordinate
- **Align Objects: Vertical Coordinates**: Align objects at a vertical coordinate
- **Interpolate Objects**: Insert line or point objects regularly between existing objects
- **Duplicate Object**: Create a copy of the selected objects
- **Fill or Make Border**: Fill a line or area object with an area object, make a line border for an area object or duplicate the object identically. Also create a line text object on a selected line object
- **Merge**: Merge multiple line, area and text objects with the same symbol
- **Reverse Object**: Reverse the direction of the selected line object(s)
- **Change to Polyline**: Convert the selected line or area object(s) into a polyline
- **Change To Bézier Curve**: Convert the selected line or area object(s) drawn in freehand mode into Bezier curves
- **Convert To Graphic Object**: Convert the selected object(s) into their graphic elements (lines and areas)
- **Smooth**: Smooth line or area objects
- **Snapping**: Snap vertices automatically to other curves or points
- **Join**: Move the ends of the selected line object to connect to adjoining objects
- **Change Symbol of Object**: Assign the symbol selected in the symbol box to the selected object(s)
- **Change Symbol For All Objects With This Symbol**: Change the symbol of all objects with a symbol A to symbol B
- **Measure**: Measure the selected line or area object or the distance between 2 selected point objects
- **Automatic Joining**: Automatically join the ends of lines and areas during the drawing process
Editing and Drawing Toolbar

After “Edit Vertex”, you can select

- **Normal Vertex**: Add a vertex. This will not influence a dashed line
- **Corner Vertex**: Add a corner vertex or turn a normal vertex into a dash vertex. This will affect the dashed line so that it will start with a full dash from this point, and/or the specific main symbol of a line will appear at the corner vertex
- **Dash Vertex**: Add a dash vertex or turn a normal vertex into a dash vertex. This will affect the dashed line which will start with half a dash from this point
- **Remove Vertex**

Various functions are available for increasing or reducing the size of the map view as well as repositioning it.

View Toolbar

- **Pan**: Reposition the map view
- **Pan Locked**: Reposition the map view a number of times in succession
- **Zoom In**: Zoom in the map view to greater magnification
- **Zoom In Locked**: Zoom in the map view a number of times in succession
- **Zoom Out**: Zoom out the map view to lesser magnification
- **Zoom Out to Previous View**: Zoom out to the last map view of lesser magnification
- **Show Entire Map**: Display the entire map in the drawing window
- **Zoom to Previous View**: Return to last map view
- **Zoom to Next View**: Undo “Zoom to Previous View”
- **Draft Mode Slider**: The upper slider (M for map) is used to fade out the map objects; the lower slider (B for background) to fade out the Background Map. The Draft Mode Slider is only visible if the Draft Mode is activated in the View menu
- **Show Screen Grid**: Display the coordinate grid in the drawing window
Here is a selection of drawing tips:

Typically draw your map at 8x zoom: Less than this and you may make positional errors, more than this and you end up splitting lines and roads into multiple segments. However curves and edges may need to be viewed and adjusted at 16x zoom. Higher zoom levels are rarely needed and you should never be surveying at these very large scales.

Point objects
Insert in Straight Line or Freehand mode. Some point features, e.g. depressions and ponds, are always orientated to the top of the map but some, e.g. gates, caves, springs, stiles, small buildings, elongated knolls and even boulder fields have variable orientation. For the latter set, click on the insertion point on the map and without releasing, drag a line in the direction you want the symbol to face. When you release, the symbol will be inserted with the required orientation.

Line objects
To reduce a line object, select it and then select the Normal Vertex tool. Click on the line object where it should end. Select the Remove Vertex tool and then click on the unwanted point beyond the target end point.
To extend or vary the shape of a line, you can add and drag additional points.

Several line features, e.g. cliffs, earthbanks and fences, come with tags. The tags are automatically drawn, but their orientation may be incorrect. To alter the orientation of tags, select the object involved and then the Reverse Object tool.

When a long line feature is present but has been drawn in several separate sections a better appearance will be created by joining the separate objects you have drawn. Ensure that the beginning of one object just touches the end of its neighbor. Select the first object, hold down the Shift key and click the next object so both are selected. Click the Merge tool and both should join. The Merge tool will only be active if all the features you have selected are of a single type. The Merge tool can also be used to merge two area fills of the same symbol (although caution should be used if one of the areas has a hole cut in it).

To obtain better distinct path junctions use the Dash Point tool at the ends of the feature or at the insertion point on the main path.

Drawing curves
To draw in Curve mode, click at the beginning of your object, drag and click to the beginning and end of each curve on your line and finish by dragging away from the object and releasing the mouse button.

Go to 16x zoom and select Edit Object and click on the curve. You will see that the Bezier curve drawn can be regarded as having a series of tangents which touch the curve at the "square" points and which run in the direction that would directly link each pair of "circle" points either side of the given "square" point. Editing a Bezier curve is done by moving the "circle" points and/or the "square" points. Moving a "circle" point also affects the position of the "circle" point it is paired with but doesn’t affect the position of the intervening "square" point. Moving a "square" point also affects the position of the pair of "circle" points either side of it. You can add an additional "square" point by using the Normal Vertex tool. If you have an unnecessary "square" point, remove it using the Remove Vertex tool.
Try to minimize the number of insertion points, as points on the apex of a curve usually distort rather than enhance the shape.

**Parallel tool**
To create a parallel feature, i.e. object B parallel to object A:
Create object A.
Select object A using the Edit Object tool.
Hold down the Control key.
Select the Straight Line mode.
Continue holding down the Control key while clicking on the two limits of object A that you want to make parallel.
Release the Control key before you release the mouse. The part of object A that you want to make parallel will be highlighted.
Select the Move parallel tool.
Select the part of object A you want to make parallel and drag that part away from object A into position. You now have a second object A, parallel with the first and with automatically adjusted radii.
Use the Change Symbol of Object tool to change the second object A to object B. This also works with circular, elliptical and rectangular objects in both line and area modes.

**Buildings**
The Rectangular mode tool is a great help when drawing urban maps. It allows you to draw around buildings tidily provided they have only right angles in them (irregular shaped buildings have to be created using the Straight line mode tool).
Start at a corner next to the longest straight wall of the building.
Drag along the long wall, then click at each successive corner until you have the shape you desire.
Double click to draw the final shape.
Don’t waste time with features at the back of a building – a runner will never see them.
In ISSOM, a building has a black outline and a dark grey interior. Having drawn the outline, fill it by selecting the “building inside” symbol (grey fill) followed by the Fill tool.
For urban maps, draw all the house outlines in an area first, select all of them by dragging across the whole area with the Select and Edit Object tool and then use the process above to fill all the houses in in one go. You need to be careful not to include any other objects in the selection as this will infill them also, even the contours.
Alternatively in the symbol set, select the building outline, then in the 'select' menu select 'select objects by symbol'. Another box opens and make sure 'All objects with a selected symbol' is selected (default). Click OK and all buildings will be highlighted, then select 'building inside' symbol. Click on 'the fill or make border'.

**Steps Tool**
OCAD 12 standard includes a tool in the “Editing and Drawing Toolbar that enables you to draw steps of any width and step density. Paradoxically this tool does not work with the two ‘step’ symbols in the ISSOM palette. Instead you need to select a line symbol, such as ‘paved edge’. Your steps are created by dragging first along the line of your steps, then across the width you wish them to be, and finally backwards to define the number of steps in the image. Do not make steps too narrow or too close together as the symbol can be hard to read when running.
**Miscellaneous**

Use the To Graphics tool to split an object into its graphic components. A cliff symbol can therefore be split into its top line and tags. The tags could then be spaced better in tightly curved cliffs. It is recommended to use only the Edit Object tool or Rotate Object tool when using this facility so as to maintain the correct length of the tags.

The number of objects currently on the map is found in Help, Map Information.

It is good practice to keep the number of objects points on the map down to a minimum. To do this when continuing drawing a line, hold the Shift key down on the last point of the previous line and then commence drawing. (This is also a useful way of switching from curved lines to straight lines.)

To replace a map’s symbol set with an updated symbol set, open a blank map containing the new symbol set. Import the existing map into the blank map with zero offset. Those old symbols not matching in symbol number to a new symbol will appear at the bottom of the symbol table. Select all the new symbols in the symbol table and do: Symbol, Hide. The objects now visible in the map will be those corresponding to the old unmatched symbols at the bottom of the symbol table. Select an object on the map. Find and select the corresponding symbol to it in the upper part of the table. Usually the two symbol numbers before the decimal point will match. Then Extras, Change Symbol will remove the corresponding object.

To determine the length of a line or size of an area, select the line or area and click on the Measure tool.

Lines/Shapes constrained to 0 or 90 degree angle. Select Straight line mode tool. Draw with the Alt key held down and the line will be constrained.

When editing an existing map using a scanned template, select View, Hatched Areas. This will allow you to see the template under the colour fills.

When using multiple templates, it can be useful to have one or more of these templates as transparent. To do this, select Template, Options and tick the Transparent box.
Exporting a georeferenced map to a smartphone/tablet

It is possible, using OCAD12, to export a georeferenced map to a smartphone or tablet. This is a fiddly task but worthwhile as it allows you to check the accuracy of your map and subsequently the position of controls. Make sure you keep a copy of your original digital map safe before you start modifying the download.

1) Assuming that your map has been georeferenced using the OS grid, you will need to alter the grid to the UTM system. Using Map>set scale and co-ordinate system…, you need to change the system using the Choose button. Select: UTM/WGS84, and then select Zone 30 (not 31 which is the default).

2) Note your existing OS Real World Easting and Northing Co-ordinates. Then go to www.nearby.org.uk/conversions.cgi to convert these co-ordinates to the equivalent numbers on the UTM grid system. Note that the easting and northing co-ordinates in the UTM system may not be of equal length. Change the figures in “Set scale and co-ordinate system” to those given by the website.

3) Once you have converted the grid system, File>Export your map. You should export to TIFF format, 600 dpi, using RGB 24 bit colour depth and LZW compression.

4) You now have to get this georeferenced TIFF file onto your smartphone/tablet. The easiest way is to set up the “DropBox” utility that enables files to be shared between different types of IT.

5) Find a suitable Map App for your smartphone/tablet. "PDF maps" works well for Apple products. Open your map file from within utility. It will take a while to convert the map file to the format that works on the smartphone/tablet but you should then have a map with geolocation functioning as your walk around the mapped area. Note that geolocation takes a time to catch up with movement so, if using the App to check your map, don’t walk too fast and allow the location marker time to settle on any given feature.

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