

## Revision of ISOM 201x Final draft

### Submission presented by Orienteering Australia, 12 January 2016

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Endorsed by the Technical Director, Orienteering Australia

Given the short time frame in which to respond this is a provisional submission to meet the deadline of 17<sup>th</sup> January 2016, hence we reserve the right to make further submissions as appropriate. It is to be noted that the 'Final Draft' is incomplete and that only when the draft is complete can it be judged as a whole.

### Opening comments

There are many new aspects of the draft that are supported including the introduction of sections titled On the ground (real world) minimum dimensions, Footprint of symbols, Graphical minimum dimensions, Georeferencing and addressing colour vision impairment issues.

There are however a number of key points requiring attention being:

- Reduced worldwide utility

The mapping specifications are to provide a worldwide standard symbol set for the 1:15000 scale. ISOM2000 has essentially met this objective in that member nations have adopted the specification because a variety of terrains throughout the world can be mapped to this common standard.

This Draft proposes increased regulation of many symbols which in the case of a couple of features adversely affects the ability of a skilled mapper to draw an accurate 'picture' of the terrain. As an example, obvious height differences in Boulder fields cannot be shown, with the mapper being restricted to showing only the density of boulder fields. Some mappers also consider that in Australia the draft would make some granite maps outdated with **features that are obvious to the orienteer at competition speed**, no longer capable of being mapped.

The over regulation of some symbols should therefore be removed to allow a level of flexibility that will meet world acceptance. If necessary member nations may then develop guidelines to ensure uniformity in mapping a particular feature ie Mapping of Rock Features , Australia, see:

<http://orienteering.asn.au/wp-content/uploads/2013/10/209-Orienteering-Australia-Operational-Manual-Mapping-of-Rock-Featutes-20140414.pdf>

There is a suggestion that complex forest terrains that cannot be mapped at the 1:15000 scale may be suitable for sprint orienteering. This is inconsistent with the IOF Competition Rules which define Sprint as a primarily urban and park format. As complex forest terrains can be ideal for Middle Distance orienteering, ISOM needs to consider and accommodate, as much as it is possible, the mapping of such terrains. Otherwise we support the base scale of an orienteering map to be 1:15000 as per the section Map scale.

It must be permissible to use the Overprinting symbols at the 1:15000 scale on enlarged maps to the 1:10000 scale. Course symbols at the 1:15000 scale are normally, if not always, used for Middle Distance events which has become a popular, highly competitive format. The use of 6mm control circles on 1:10000 maps is better suited for describing the control feature and for courses having short intensive legs and direction change.

The proposal in Map enlargements that for larger scales the overprinting symbols shall be enlarged proportionally is therefore not supported, however it can remain as an option ie same as ISOM2000.

- Forbidden to cross

A number of symbols are now described as also being “Forbidden to cross” as per section Barriers and forbidden areas.

It is considered that this rule be removed from the mapping symbols for the following reasons:

- Some symbols ie Impassable fence, Prominent impassable line feature (Pipeline!!), are too large and can be difficult to impossible to draw legibly where space on the map is a limiting factor.
- Some symbols have been enlarged to such an extent that they dominate over other mapped features thereby giving an unrealistic, distorted representation of the terrain. A feature should be represented on a map according to its visual aspect and prominence, so that it can be related from terrain to map and vice versa
- The enlarged symbols may obscure important map detail.
- The ‘Forbidden to cross’ status will be difficult to impossible to enforce.
- It may have legal ramifications that will vary from country to country.
- ‘Forbidden to cross’ features are the responsibility of the organiser and course planner and can be easily marked on the course map by applying the Overprinting symbols 708, 709, 710 and 711.

- Evaluation and legibility of symbols

In order to make a fully informed decision on the suitability and legibility of symbols it is necessary that printed map samples and a symbol set be supplied. In particular it would be useful to see the new symbols applied to the Print Tech map samples for comparative purposes. In respect to the Print Tech sheet the sprint map sample could be replaced with an Australian map sample.

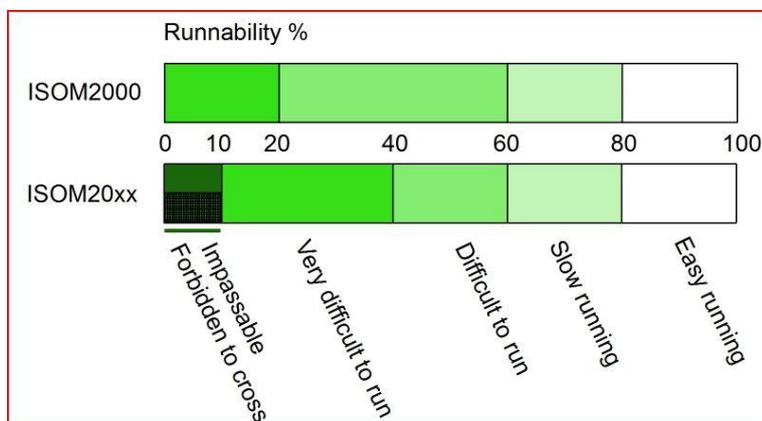
At no stage of the revision process have sample maps been produced (sample maps were produced and updated for each stage of the ISOM2000 development). In the absence of sample maps produced by the Revision Team then they will have to be done locally. This will require field working a sample of an existing map to conform to the draft, a process that may take several months.

The size of the map symbols are mostly at their limit of legibility for normal eyesight hence a further reduction in size of some symbols as proposed in this draft will make the printing of legible maps from a non-offset, spot colour printing machine, an even more difficult task.

A print test from a good quality commercial printer confirms a lot of legibility issues, these being noted under **Specifics**. Further testing is likely to reveal more issues.

If the draft in its current form is implemented it may well lead to members refusing to use it, and this would be counterproductive in endeavouring to achieve a mapping standard that has worldwide utility. After consideration of the Draft proposals some people are now thinking that we go back to ISOM2000, which on the whole is working well, and make a few changes to that.

### Runnability



In Australia’s original submission we asked for the addition of a 4<sup>th</sup> green to cover impassable vegetation that falls within the 0 to20% Runnability, Very difficult to run. There has been no discussion about increasing the runnability to 40% and indeed, recent comments support retaining it at 0 – 20%. We are not aware of any testing or support for the 10-40% range so at this stage we consider the Runnability% should remain the same as per ISOM2000 ie 0-20%.

The ‘Impassable to cross’ symbol should remain for vegetation that is actually impassable, but without the ‘Forbidden to cross’ status as per reasons above.

### Printing and colour

This section is incomplete.

In respect to the sub section on Colour vision impairment, further advice is being sought, with comments to be provided in due course.

### Editing

The text requires professional editing.

There has been no attempt to edit the text in this submission apart from noting a few corrections in the symbols section.

### **Specifics**

#### 103 Form line

As stated in the introductory text, ‘The shape of the ground is the most important aspect of an orienteering map’, hence it follows that contour lines, form lines, index lines and slope tags must be prominent and take precedence in legibility over other map symbols. The proposed thin form line and slope tag can now become hidden or lost in map detail, particularly when covered with some of the new area screens. The line weight for the Index line and associated Slope line must be increased to 0.14mm so as to maintain legibility.

#### 106 Ruined earth wall

Retain current term: Small earth wall

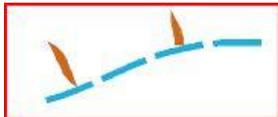
Then consistent terminology with 108 Small erosion gully / 107 Erosion gully

A small earth wall is not necessarily a ruined earth wall.

#### 107 Erosion gully

This has a minimum footprint of 24m.

To accommodate shorter erosion gullies a non-tapered or square end is necessary so as to achieve a footprint of 15m or thereabouts ie minimum length similar to symbol 108



#### 113 Broken ground

It appears that single point placement is permitted hence this needs to be clarified, or is it only an screen area symbol.

The single point placement of Broken ground is essential.

This use of single point placement better represents broken ground as compared to the proposed area symbols. The individual dot can be placed to avoid contour lines and other important map detail as appropriate.

The fixed area screen can be used to visually set the density for the individual placement of dots.

#### 114 Very broken ground

The screen symbol hides other map detail particularly contour lines hence results in an unacceptable loss in map legibility.

The screen can be used to visually set the maximum density for the placement of individual dots.

#### 115 and 116 Special prominent landform feature

I note the new statement in the Printing and colour, Colour vision impairment, section that now covers the use of additional point symbols re assisting colour blind orienteers by only using one shape of the colour combinations. This will be greatly appreciated by colour blind orienteers.

#### 202 Cliff

The tag should refer to the direction of the 'down' slope.

The main line in the Cliff has been increased from 0.18 to 0.25mm, hence together with the tag, creates a larger footprint. To accommodate closely positioned cliffs it is better to retain the 0.18mm main line and also have flexibility to shorten the tag to a minimum of say 0.3 (standard is 0.4).

#### 206 Gigantic boulder

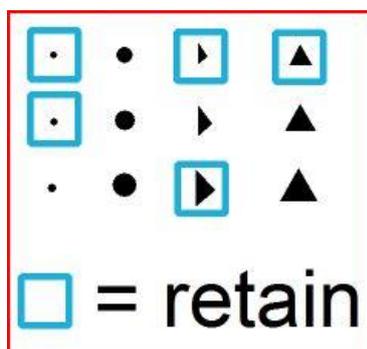
Not certain what the white in the middle achieves. Also it looks unsightly, perhaps infill with grey.

#### 207 Boulder cluster

There are three sizes of Boulders which is necessary to show obvious height differences.

In exactly the same way it is also necessary to show obvious height differences for Boulder clusters. Although two are proposed it is necessary that three sizes of Boulder cluster symbols be available for mapping, hence the option for a smaller Boulder symbol needs to be retained. The smaller size will also occupy a smaller footprint.

Relative height differences must also be able to be portrayed for 208 Boulder field and to a lesser extent 210 Stony ground. Obvious Boulder fields and Stony ground areas are important navigational features hence must be shown in respect to both height and density. It is essential for Australian maps to retain the depiction of height and density for 208 and 210.



#### 208 Boulder field

As mentioned in 207 it is necessary to show obvious height differences in Boulder fields.

The definition is also too prescriptive in application ie 'One triangle may be used if it is placed directly below a cliff symbol'. What if it is at the top!

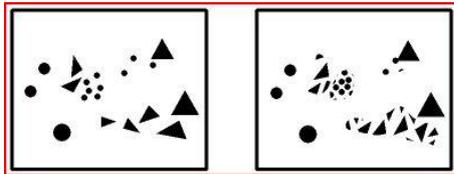
In respect to minimum placements simply say that the symbol may be combined with other rock features.

The area screen reduces the legibility of other map detail however it can be used to provide a visual minimum density for individual placement ie maximum gap between dots.

#### 209 Dense boulderfield

This screen obliterates other mapped features.

Also, as with 208, the drawing tool cuts off small shapes which in some cases appears like other rock features ie Stony ground, Boulder. This can be seen in the example below, the Right Hand Side (RHS) box.



The example also demonstrates that it is impossible to use the new screens to present an accurate picture of the terrain, nor is it possible to show obvious height differences even if using individual placement as only one size is permitted. The LHS box shows individual placement (variations in size indicating observable height differences) versus RHS box fixed screen areas .

The fixed area screen can be used to visually set the maximum density for the hand drawing and placement of the symbol ie minimum space between objects.

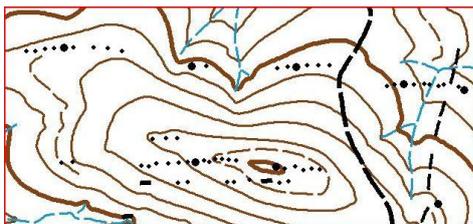
#### 210 Stony ground, slow running

It is understood that individual placement of dots is permitted in lieu of using the fixed area screens. This is a must.

Observable height differences should also be permitted by using dots of different sizes ie 0.16 to 0.20mm.

The use of single point placement better represents Stony ground as compared to the proposed area symbols and can be placed to avoid contour lines and other important map detail.

It is also essential that dots can be randomly drawn to form a line to match linear rock outcropping in the natural terrain ie remove the sentence "The dots shall not be arranged to form a line".



The area screen can be used to visually set the minimum density for individual placement ie the maximum gap between objects.

#### 211 Stony ground, difficult to run

The area screen reduces legibility of other map detail.

#### 212 Stony ground, very difficult to run

The area screen obliterates other map detail.

The screen can be used to visually set the maximum density for individual dot placement ie the minimum gap between objects.

#### 214 Bare rock

To improve legibility it is often necessary to increase the colour to 40%K.

(In the OCAD symbol set, the Bare rock symbol should go over the Yellow colours)

#### 215 Trench

The gap between the two lines may be too narrow as the symbol appears as one line on the printed map.

#### 306 Minor/seasonal water channel

The minimum footprint of two dashes is 41m. This is a too long for some watercourse junctions, particularly side creeks. It is suggested that when used in conjunction with another water course that the full line symbol 305 be used that has a minimum footprint of 15m. This is shown below where the short dashed lines of only 15m in length (LHS) are replaced with full lines (RHS).

The example also shows Distinct and Indistinct watercourse junctions, something that could be illustrated in the specifications similar to the footpath diagrams for 505 and 506



#### 402 Open land with scattered trees

Testing is required to determine which the best dot size is for white in the screens (now reversed). With reference to the 3 screens in OCAD, testing suggests that the smaller white dot (0.3) screen is probably better as it makes point features like 109 Small knoll (0.5) more legible.

Testing of the Open land with scattered bushes/thickets using green at 60% or 100% is also required. This screen will be terrible for colour vision impaired orienteers hence from the perspective of a colour-blind person these screens must be avoided.

#### 404 Rough open land with scattered trees

Similar comments as per 402, although the colour blind issue is probably worse.

407 Vegetation, slow running, good visibility

407 and 409 now have closer line spacings. As the line spacing for 409 are too close resulting in reduced legibility of other map detail, and as it also impacts on 407, it is considered that the respective line spacings be changed to:

407 from 0.48 to 0.80mm (current is 0.84)

409 from 0.24 to 0.40mm (current is 0.42)

Again these screens are subject to further testing but will be more legible than the proposed line spacings for 407 and 409.

409 Vegetation, difficult to run, good visibility

Detail under this screen is illegible. See above.

411 Vegetation, Impassable

The alternative colour green and black dot screen prints as virtually black, hence possibly indistinguishable from 201 Impassable cliff. Remove this option.

414 Orchard

Combining this symbol with the Undergrowth symbols is subject to testing for legibility.



417 Distinct vegetation boundary

The dotted black line is a problem particularly in Stony ground areas. In these areas Symbol 416 Distinct cultivation boundary appears to be a satisfactory remedy as permitted.

The full green line must be avoided as this will be a complete disaster for colour-blind orienteers as the symbol will be confused with contour lines. Feedback also suggests that some normal vision orienteers may interpret the green line as a hedge or actual physical boundary.

Use of a green line should be removed.

418 Prominent big tree

Suggest terminology Prominent large tree

419 Prominent bush or tree

This symbol must be avoided for colour-blind orienteers as it will be confused with 109 Small knoll. The Earth feature is generally more important than a single small tree or bush. On urban Sprint maps

a small coloured dot to the colour-blind, who cannot tell the difference between brown and green, is more likely to interpret the dot as being a bush / small tree so is less of an issue.

Also the use of single green dots cannot be used in combination with the proposed new screen Open land scattered bushes/thickets and vice versa. And the same with Rough open land scattered bushes/thickets.

Suggest the small green dot be deleted and that if any prominent bush or tree really needs to be mapped for the 1:15000 scale then use 418 or the proposed 421 Prominent vegetation feature – triangle, or perhaps introduce a green asterisk. However I would suggest if used this will lead to over mapping of small bushes / small trees, something to be avoided for the 1:15000 scale.



515 Impassable wall

Footprint is too large, revert to existing symbol size.

518 Impassable fence

Footprint is too large, revert to existing symbol size.

519 Crossing point

Footprint is too large, revert to existing symbol size.

529 Prominent impassable line feature

Footprint is too large, revert to existing symbol size.

532 Prominent man-made feature -asterisk

Not asterix

702 Map issue point

The symbol appears understated, perhaps use a double bar.

708 Uncrossable boundary

The word 'Uncrossable' is used differently here than every other usage where it means it's difficult to cross. Here it means 'forbidden', hence the symbol name should be 'Forbidden boundary'.