



## ORIENTEERING NSW

### COMPARISON OF MAPPING SPECIFICATIONS

#### VEGETATION

**Green** = symbol change, map needs to change. **Yellow** = symbol change, gets smaller. **Blue** = symbol change that might need manual adjustment of map nearby, eg new symbol is bigger. **Grey** = symbol sizes change with area object, so no significant map changes

**Pink** = ISOM 2017 and ISSprOM differ. **Red** = symbol different, fix when field checking map. **Olive green** = not sure about this change in symbol.

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p>The representation of vegetation is important to the orienteer because it affects runnability and visibility and it also provides features for map reading.</p> <p><b>COLOUR</b></p> <p>The basic principle is as follows:</p> <ul style="list-style-type: none"><li>- <b>white</b> represents runnable forest,</li><li>- <b>yellow</b> represents open areas divided into several categories,</li><li>- <b>green</b> represents the density of the forest and undergrowth according to its runnability and is divided into several categories.</li></ul>	<p>The representation of vegetation is important to the competitor because it affects runnability and visibility and it also provides features for map reading.</p> <p><b>Colour and Runnability</b></p> <p>The basic principle is as follows:</p> <ul style="list-style-type: none"><li>• <b>white</b> represents typical open forest,</li><li>• <b>yellow</b> represents open areas divided into several categories,</li><li>• <b>green</b> represents the density of the forest and undergrowth according to its runnability and is divided into several categories</li></ul>	<p>[No introductory text]</p>	<p>The representation of vegetation is important to the competitor because it affects runnability and visibility and it also provides features for map reading.</p> <p><b>Colour and Runnability</b></p> <p>The basic principle is as follows:</p> <ul style="list-style-type: none"><li>• <b>white</b> represents typical open forest,</li><li>• <b>yellow</b> represents open areas divided into several categories,</li><li>• <b>green</b> represents the density of the forest and undergrowth according to its runnability and is divided into several categories</li></ul>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>RUNNABILITY.</b></p> <p>The runnability depends on the nature of the forest (density of trees/brushwood and undergrowth—bracken, brambles, nettles, etc.) but does not take account of marshes, stony ground etc. which are shown by separate symbols.</p> <p>Runnability in forest is divided into 4 categories according to running speed. If speed through typically open runnable forest is, for example, 5 min/km, the following ratios apply:</p> <p>open forest 80-100% 6:15 min/km  slow running 60-80% 8:20 min/km  difficult to run 20-60% 25:00 min/km  very difficult to run 0-20% &gt; 25:00 min/km</p> <p>[See foot of this document regarding chart of running speed.]</p>	<p>The runnability depends on the nature of the vegetation (density of trees / scrub and undergrowth: bracken, brambles, nettles, etc.), but runnability is also affected by marshes, stony ground, etc. which are shown by separate symbols.</p> <p>Vegetation runnability is divided into categories according to running speed (see section 2.3).</p> <p>[2.3 is reproduced at the foot of this document.]</p> <p>[See foot of this document regarding chart of running speed.]</p>		<p>The runnability depends on the nature of the vegetation (density of trees / scrub and undergrowth: bracken, brambles, nettles, etc.), but runnability is also affected by marshes, stony ground, etc. which are shown by separate symbols.</p> <p>[See foot of this document regarding chart of running speed.]</p>
<p><b>401 Open land</b></p> <p>Cultivated land, fields, meadows, grassland, etc. without trees, offering easy running.</p> <p>If yellow coloured areas becomes dominant, a screen (75%) instead of full yellow may be used.</p> <p>Colour: yellow. Screen: 100%</p>	<p><b>401 Open land (A)</b></p> <p>Open land that has a ground cover (grass, moss or similar) which offers better runnability than typical open forest. If yellow coloured areas become dominant, a screen (75% instead of full yellow) may be used.</p> <p>Shall not be combined with area symbols other than <i>Broken ground</i> (113), <i>Boulder field</i> (208), <i>Marsh</i> (308) and <i>Indistinct marsh</i> (310).</p> <p>Minimum area: 0.55 mm x 0.55 mm (footprint 8 m x 8 m).</p> <p>Colour: yellow (or yellow 75%). Screen: 100%</p>	<p><b>401 Open land</b></p> <p>An area of cultivated land, lawn, field, meadow, grassland, etc. without trees, offering very good runnability.</p> <p>Colour: yellow. Screen: 100%</p>	<p><b>401 Open land (A)</b></p> <p>An area of cultivated land, lawn, field, meadow, grassland, bark mulch etc. without trees, offering very good runnability.</p> <p>Minimum width: 0.3 mm. Minimum area: 0.5 mm<sup>2</sup> (footprint 8 m<sup>2</sup>). Colour: yellow. Screen: 100%</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>402 Open land with scattered trees</b></p> <p>Meadows with scattered trees or bushes, with grass or similar ground cover offering easy running.</p> <p>Individual trees may be added (418, 419, 420).</p> <p>If yellow coloured areas becomes dominant, a screen (75%) instead of full yellow may be used.</p> <p>Areas smaller than 10 mm<sup>2</sup> at the maps scale are shown as open land (401). Colour: yellow (20 lines/cm).</p> <p>(Diagonal pattern (45°) of rows of dots of yellow on white.)</p> <p>Dot diameter = 0.4mm Spacing between rows of dots = 0.5mm Overall: 50% yellow.</p>	<p><b>402 Open land with scattered trees (A)</b></p> <p>Areas with scattered trees or bushes in open land may be generalised by using a regular pattern of large dots in the yellow screen.</p> <p>The dots may be white (scattered trees) or <b>green (scattered bushes / thickets)</b>.</p> <p>Prominent individual trees may be added using symbol <i>Prominent large tree</i> (417). If yellow coloured areas become dominant, a screen (75% instead of full yellow) may be used.</p> <p>Shall not be combined with area symbols other than symbol <i>Broken ground</i> (113), symbol <i>Boulder field</i> (208) or marsh symbols (308, 310). The symbol is orientated to north.</p> <p><b>Minimum width: 1.5 mm (footprint 22.5 m).</b></p> <p><b>Minimum area: 2 mm x 2 mm (footprint 30 m x 30 m).</b></p> <p>Smaller areas must either be left out, exaggerated or shown using symbol <i>Open land</i> (401). Colour: yellow (or yellow 75%) with holes of white or green 60%. <b>(Diagonal pattern (45°) of rows of holes.)</b> Hole diameter = <b>0.4mm</b> Spacing between rows of holes (on diagonal) = <b>0.7mm</b>. <b>On diagonal is what is used by OCAD, but is not what is drawn in the ISOM 2017 picture.</b></p>	<p><b>402 Open land with scattered trees</b></p> <p>An area of meadows with scattered trees or bushes, with grass or similar ground cover offering very good runnability.</p> <p>Symbols <i>prominent large tree</i> (418) and <i>prominent bush or small tree</i> (419) may be added.</p> <p>Areas smaller than 10 mm<sup>2</sup> at the maps scale are shown as <i>open land</i> (401). Colour: yellow (20 lines/cm).</p> <p>(Diagonal pattern (45°) of rows of dots of yellow on white.)</p> <p>Dot diameter = 0.4mm Spacing between rows of dots = 0.5mm</p>	<p><b>402 Open land with scattered trees (A)</b></p> <p>An area of meadows with scattered trees or bushes, with grass or similar ground cover offering very good runnability.</p> <p>The dots may be white (scattered trees) or <b>green (scattered bushes / thickets)</b>.</p> <p>Symbols <i>Prominent large tree</i> (417) and <i>Prominent bush or small tree</i> (418) may be added.</p> <p>The symbol is orientated to north.</p> <p><b>Minimum width: 2.2 mm</b></p> <p><b>Minimum area: 6.25 mm<sup>2</sup> (footprint 100 m<sup>2</sup>)</b></p> <p>Smaller areas must be left out, exaggerated or shown using the symbol <i>Open land</i> (401). Colour: yellow with holes of white or green 60% <b>(Diagonal pattern (45°) of rows of holes.)</b> Hole diameter = <b>0.6mm</b> Spacing between rows of holes = <b>0.75mm</b>. <b>We are not sure why ISSprOM has a greater percentage of green on this symbol than ISOM. The symbol looks quite green.</b></p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>403 Rough open land</b> Heath, moorland, felled areas, newly planted areas (trees lower than ca. 1 m) or other generally open land with rough ground vegetation, heather or tall grass.</p> <p>Symbol 403 may be combined with symbols 407 and 409 to show reduced runnability.</p> <p>Colour: yellow 50% (60 lines/cm).</p>	<p><b>403 Rough open land (A)</b> Heath, moorland, felled areas, newly planted areas (trees lower than ca. 1 m) or other generally open land with rough ground vegetation, heather or tall grass offering the same runnability as typical open forest.</p> <p>May be combined with symbol <i>Vegetation: slow running, good visibility</i> (407) or <i>Vegetation: walk, good visibility</i> (409) to show reduced runnability.</p> <p>Minimum area: 1 mm x 1 mm (footprint 15 m x 15 m). Smaller areas must either be left out, exaggerated or shown using symbol <i>Open land</i> (401).</p> <p>Colour: yellow 50%.</p>	<p><b>403 Rough open land</b> An area of heath or moorland, a felled area, a newly planted area (trees lower than ca. 1 m) or other generally open land with rough ground vegetation, i.e. heather or tall grass.</p> <p>This symbol may be combined with symbols <i>undergrowth: slow running</i> (407) and <i>undergrowth: difficult to run</i> (409) to show reduced runnability.</p> <p>Colour: yellow 50% (min. 60 lines/cm).</p>	<p><b>403 Rough open land (A)</b> An area of heath or moorland, a felled area, a newly planted area (trees lower than ca. 1 m) or other generally open land with rough ground vegetation, i.e. heather or tall grass.</p> <p>This symbol may be combined with symbols <i>Vegetation: slow running, good visibility</i> (407) and <i>Vegetation: walk, good visibility</i> (409) to show reduced runnability.</p> <p><b>Minimum area: 1 mm<sup>2</sup> (footprint 16 m<sup>2</sup>).</b></p> <p>Colour: yellow 50%.</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>404 Rough open land with scattered trees</b></p> <p>Where there are scattered trees in rough open land, areas of white (or green) should appear in the tone. Such an area may be generalised by using a regular pattern of large white dots in the yellow screen.</p> <p>Individual trees may be added (418, 419, 420).</p> <p>Areas smaller than 16 mm<sup>2</sup> in the maps scale are shown as rough open land (403).</p> <p>Colour: yellow 70% (60 lines/cm), white 48.5% (14.3 lines/cm). (Diagonal pattern (45°) of rows of holes.) Hole diameter = 0.55mm Spacing between rows of holes = 0.7mm Overall: 36% yellow.</p>	<p><b>404 Rough open land with scattered trees (A)</b></p> <p>Areas with scattered trees or bushes in rough open land may be generalised by using a regular pattern of large dots in the yellow screen.</p> <p>The dots may be white (scattered trees) or green (scattered bushes / thickets).</p> <p>Only the white dot variant can be combined with symbol <i>Vegetation: slow running, good visibility</i> (407) or <i>Vegetation: walk, good visibility</i> (409) to show reduced runnability. The symbol is orientated to north. Minimum width: 1.5 mm (footprint 22.5 m). Minimum area: 2.5 mm x 2.5 mm (footprint 37.5 m x 37.5 m). Smaller areas must either be left out, exaggerated or shown using symbol <i>Rough open land</i> (403).</p> <p>Colour: yellow 50% with holes of white or green 60% (yellow 35%). (Diagonal pattern (45°) of rows of holes.) Hole diameter = 0.5mm Spacing between rows of holes (on diagonal) = 0.8mm</p>	<p><b>404 Rough open land with scattered trees</b></p> <p>An area of rough open land with scattered trees or bushes. Areas smaller than 16 mm in the map scale are either mapped as <i>rough open land</i> (403) or <i>forest: easy running</i> (405).</p> <p>Symbols <i>prominent large tree</i> (418) and <i>prominent bush or small tree</i> (419) may be added.</p> <p>Colour: yellow 70% (min. 60 lines/cm), white screen of 48.5%. (Diagonal pattern (45°) of rows of holes.) Hole diameter = 0.55mm Spacing between rows of holes = 0.7mm Overall: 36% yellow.</p>	<p><b>404 Rough open land with scattered trees (A)</b></p> <p>An area of rough open land with scattered trees or bushes.</p> <p>The dots may be white (scattered trees) or green (scattered bushes / thickets). Symbols <i>Prominent large tree</i> (417) and <i>Prominent bush or small tree</i> (418) may be added. Only the white dot variant can be combined with symbol <i>Vegetation: slow running, good visibility</i> (407) or <i>Vegetation: walk, good visibility</i> (409) to show reduced runnability.</p> <p>Minimum width: 2.5 mm.</p> <p>Minimum area: 6.25 mm<sup>2</sup> (footprint 100 m<sup>2</sup>) Smaller areas must be left out, exaggerated or shown using either the symbol <i>Rough open land</i> (403) or <i>Forest</i> (405). Colour: yellow 50% with holes of white or green 60%. (Diagonal pattern (45°) of rows of holes.) Hole diameter = 0.8mm Spacing between rows of holes (on diagonal) = 1.0mm</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>405 Forest: easy running</b> Typically open runnable forest for the particular type of terrain.</p> <p>If no part of the forest is runnable then no white should appear on the map.</p> <p>Colour: white.</p>	<p><b>405 Forest (A)</b> Typical open forest for the particular type of terrain.</p> <p>If no part of the forest is easily runnable then no white should appear on the map. <b>Minimum area:</b> 1 mm x 1 mm (footprint 15 m x 15 m) for openings in screens of other colours, except for symbol <i>Vegetation: walk</i> (408) where the minimum area is 0.7 mm x 0.7 mm (footprint 10.5 m x 10.5 m). For openings in symbol <i>Open land</i> (401), the minimum area is 0.7 mm x 0.7 mm (footprint 10.5 m x 10.5 m). For openings in symbol <i>Vegetation: fight</i> (410) the minimum area is 0.55 mm x 0.55 mm (footprint 8 m x 8 m).</p> <p>Colour: white.</p>	<p><b>405 Forest: easy running</b> An area of typical open runnable forest for the particular type of terrain. If no part of the forest is runnable then no white should appear on the map.</p> <p>Colour: white.</p>	<p><b>405 Forest (A)</b> Typical open forest for the particular type of terrain.</p> <p>If no part of the forest is easily runnable then no white should appear on the map. <b>Minimum width</b> (for openings): 0.3 mm. <b>Minimum area:</b> 1 mm<sup>2</sup> (footprint 16 m<sup>2</sup>) for openings in screens of other colours, except for <i>Vegetation: walk</i> (408) and <i>Open land</i> (401), where the minimum area is 0.5 mm<sup>2</sup> (footprint 8 m<sup>2</sup>) and for openings in <i>Impassable vegetation</i> (410), where the minimum area is 0.3 mm<sup>2</sup> (footprint 5 m<sup>2</sup>).</p> <p>Colour: white.</p>
<p><b>406 Forest: slow running</b> An area with dense trees (low visibility) which reduces running to ca. 60-80% of normal speed.</p> <p>Colour: green 30% (60 lines/cm).</p> <p>[From 411 Forest runnable in one direction]</p> <p>Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>406 Vegetation: slow running (A)</b> An area with dense vegetation (low visibility) which reduces running to about 60-80% of normal speed. <b>Minimum area:</b> 1 mm x 1 mm (footprint 15 m x 15 m). Minimum width: 0.4 mm (footprint 6 m). Colour: green 30%.</p> <p>Where runnability is better in one direction, a regular pattern of white stripes is left in the screen to show the direction of better running.</p> <p>Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>406 Forest: slow running</b> An area with dense trees (low visibility) which reduces running to ca. 60-80% of normal speed.</p> <p>Min width: 0.25mm</p> <p>Colour: green 30% (min. 60 lines/cm).</p> <p>[From 411 Forest runnable in one direction]</p> <p>Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>406 Vegetation: slow running (A)</b> An area with dense vegetation (low visibility) which reduces running to about 60-80% of normal speed. <b>Minimum area:</b> 1 mm<sup>2</sup> (footprint 16 m<sup>2</sup>). Minimum width: 0.4 mm.</p> <p>Colour: green 30%.</p> <p>When runnability is better in one direction a regular pattern of white stripes is left in the screen to show the direction of better running. At least two white stripes shall be clearly visible. Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>

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<p><b>407 Undergrowth: slow running</b></p> <p>An area of dense undergrowth but otherwise good visibility (brambles, heather, low bushes, and including cut branches) which reduces running to ca. 60-80% of normal speed.</p> <p>This symbol may not be combined with 406 or 408.</p> <p>Colour: green 14.3% (11.9 lines/cm). Width green stripe: 0.12 mm Distance between stripes: 0.84mm</p>	<p><b>407 Vegetation, slow running, good visibility (A)</b></p> <p>An area of good visibility and reduced runnability, due to, for instance, undergrowth (brambles, heather, low bushes, cut branches). Running speed is reduced to about 60-80% of normal speed.</p> <p>The symbol is orientated to north. <b>Minimum area: 1.5 mm x 1 mm (footprint 22.5 m x 15 m).</b></p> <p>Colour: green. Width green stripe: 0.12 mm Distance between stripes: 0.84mm Colour: green (14%).</p>	<p><b>407 Undergrowth: slow running</b></p> <p>An area of dense undergrowth but otherwise good visibility (brambles, heather, low bushes, cut branches, etc.) which reduces running to ca. 60-80% of normal speed.</p> <p>This symbol shall not be combined with the symbol <i>forest: slow running</i> (406) or <i>forest: difficult to run</i> (408).</p> <p>Colour: green. Width green stripe: 0.12 mm Distance between stripes: 0.84mm (Overall: 14% green.)</p>	<p><b>407 Vegetation: slow running, good visibility (A)</b></p> <p>An area of good visibility and reduced runnability due to, for instance, undergrowth (brambles, heather, low bushes, cut branches, etc.). Running speed is reduced to about 60-80% of normal speed.</p> <p>This symbol shall not be combined with the symbol <i>Vegetation: slow running</i> (406) or <i>Vegetation: walk</i> (408).</p> <p><b>Minimum width: 2 lines.</b></p> <p>Colour: green. Width green stripe: 0.12 mm Distance between stripes: 0.84mm</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>408 Forest: difficult to run</b> An area with dense trees or thicket (low visibility) which reduce running to ca. 20-60% of normal speed.</p> <p>Colour: green 60% (60 lines/cm). [From 411 Forest runnable in one direction]</p> <p>Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>408 Vegetation, walk (A)</b> An area with dense trees or thickets (low visibility) which reduce running to about 20-60% of normal speed. <b>Minimum area:</b> 0.7 mm x 0.7 mm (footprint 10.5 m x 10.5 m). Minimum width: 0.3 mm (footprint 4.5 m). <b>Minimum width in the drawing is 0.4mm.</b> Colour: green 60%.</p> <p>Where runnability is better in one direction, a regular pattern of white / green 20% stripes <b>[should be 30% to align with slow run?]</b> is left in the screen to show the direction of better running.</p> <p>Width stripe (shown in white or slow run green): 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>408 Forest: difficult to run</b> An area with dense trees or thicket (low visibility) which reduces running to ca. 20-60% of normal speed.</p> <p>Minimum width: 0.25mm</p> <p>Colour: green 60% (min. 60 lines/cm). [From 411 Forest runnable in one direction]</p> <p>Width white stripe: 0.4 mm Distance between stripes: 1.5mm</p>	<p><b>408 Vegetation: walk (A)</b> An area with dense trees or thicket (low visibility) which reduces running to about 20-60% of normal speed. <b>Minimum area:</b> 0.5 mm<sup>2</sup> (footprint 8 m<sup>2</sup>). Minimum width: <b>0.4 mm.</b> Colour: green 60%.</p> <p>When runnability is better in one direction a regular pattern of white / green 30% stripes is left in the screen to show the direction of better running.</p> <p>At least two stripes shall be clearly visible. Width stripe (shown in white or slow run green): 0.4 mm Distance between stripes: 1.5mm</p>



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<p><b>409 Undergrowth: difficult to run</b></p> <p>An area of dense undergrowth but otherwise good visibility (brambles, heather, low bushes, and including cut branches) which reduces running to ca. 20-60% of normal speed. This symbol may not be combined with 406 or 408.</p> <p>Colour: green 28.6% (23.8 lines/cm). Width green stripe: 0.12 mm Distance between stripes: 0.42mm</p>	<p><b>409 Vegetation, walk, good visibility (A)</b></p> <p>An area of good visibility that is difficult to run through due to for instance undergrowth (brambles, heather, low bushes, cut branches). Running speed is reduced to about 20-60% of normal speed.</p> <p>Areas of good visibility that are very difficult to run or impassable are represented using symbol 410 (<i>vegetation: fight</i>). The symbol is orientated to north. <b>Minimum area: 1 mm x 1 mm (footprint 15 m x 15 m).</b> Colour: green.</p> <p><b>Width green stripe: 0.14 mm</b> Distance between stripes: 0.42mm</p>	<p><b>409 Undergrowth: difficult to run</b></p> <p>An area of dense undergrowth but otherwise good visibility (brambles, heather, low bushes, cut branches, etc.) which reduces running to ca. 20-60% of normal speed. This symbol shall not be combined with the symbol <i>forest: slow running</i> (406) or <i>forest: difficult to run</i> (408).</p> <p>Colour: green.</p> <p>Width green stripe: 0.12 mm Distance between stripes: 0.42mm (Overall: 29% green.)</p>	<p><b>409 Vegetation: walk, good visibility (A)</b></p> <p>An area of good visibility and reduced runnability due to, for instance, undergrowth (brambles, heather, low bushes, cut branches, etc.). Running speed is reduced to about 20-60% of normal speed. This symbol shall not be combined with the symbol <i>Vegetation: slow running</i> (406) or <i>Vegetation: walk</i> (408).</p> <p><b>Minimum width: 2 lines.</b></p> <p>Colour: green.</p> <p><b>Width green stripe: 0.14 mm</b> Distance between stripes: 0.42mm</p>

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<p><b>410 Vegetation: very difficult to run, impassable</b></p> <p>An area of dense vegetation (trees or undergrowth) which is barely passable. Running reduced to ca. 0-20% of normal speed.</p> <p>Min width: 0.25mm</p> <p>Colour: green 100%.</p>	<p><b>410 Vegetation, fight (A)</b></p> <p>An area of dense vegetation (trees or undergrowth) which is barely passable. Running reduced to less than about 20% of normal speed.</p> <p>Minimum area: 0.55 mm x 0.55 mm (footprint 8 m x 8 m).</p> <p>Minimum width: 0.25 mm (footprint 3.8 m).</p> <p>Colour: green.</p> <p>Where runnability is better in one direction, a regular pattern of white / green 20% / green 50% stripes is left in the screen to show the direction of better running.</p> <p>Width green stripe: 0.4 mm</p> <p>Distance between stripes: 1.5mm</p>	<p><b>410 Vegetation, very difficult to run</b></p> <p>An area of dense vegetation (trees or undergrowth) which is barely passable. Running reduced 1-20% of normal speed.</p> <p>Min width: 0.25mm</p> <p>Colour: green 100%. [From 411 Forest runnable in one direction]</p> <p>Width white stripe: 0.4 mm</p> <p>Distance between stripes: 1.5mm</p>	<p><b>[No separate symbol]</b></p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
[No separate symbol]	[No separate symbol]	<p><b>421 Impassable vegetation (forbidden to cross)</b>  An area of dense vegetation (trees or undergrowth) which is impassable or which shall not be crossed, due to forbidden access or because it may constitute a danger to the competitor.</p> <p>Colour: green 100%, black 50% (min. 60 lines/cm).  It is forbidden to cross impassable vegetation!  Competitors violating this rule will be disqualified.</p>	<p><b>410 Impassable vegetation (A)</b>  An area of dense vegetation (trees or undergrowth) which is impassable.  Running speed is almost 0%.</p> <p>Minimum area: 0.3 mm<sup>2</sup> (footprint 5 m<sup>2</sup>).  Minimum width: 0.4 mm.  Colour: green 100%.</p> <p>[OA Rule 17.2 says competitors shall not cross a feature drawn with the Impassable vegetation symbol.]</p> <p>When runnability is better in one direction a regular pattern of white / green 30% / green 60% stripes is left in the screen to show the direction of better running.</p> <p>At least two stripes shall be clearly visible.  Width green stripe: 0.4 mm  Distance between stripes: 1.5mm</p>
<p><b>411 Forest runnable in one direction</b>  When an area of forest provides good running in one direction but less good in others, white stripes are left in the screen symbol to show the direction of good running.  Colour: green, white.  Width green stripe: 0.4 mm  Distance between stripes: 1.5mm</p>	[This type of forest and symbol has been incorporated into ISOM 2017 symbols 406, 408 and 410.]	<p><b>411 Forest runnable in one direction</b>  When an area of forest provides good running in one direction but less good in others, white stripes are left in the screen symbol (406, 408, 410) to show the direction with good runnability.  Colour: green, white.  Width green stripe: 0.4 mm  Distance between stripes: 1.5mm</p>	[This type of forest and symbol has been incorporated into ISSprOM symbols 406, 408 and 410.]

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>415 Cultivated land</b> Cultivated land which is seasonally out-of-bounds due to growing crops may be shown with a black dot screen.</p> <p>Colour: yellow 100%, black5% (12.5 lines/cm). Small black dots. Rectangular pattern Dot diameter = 0.2mm Spacing between dots = 0.8mm</p>	<p><b>412 Cultivated land (A)</b> Cultivated land, normally used for growing crops.</p> <p>Runnability may vary according to the type of crops grown and the time of year. Since the runnability may vary, such areas should be avoided when setting courses. For agroforestry, symbol <i>Forest</i> (405) or <i>Open land with scattered trees</i> (402) may be used instead of yellow. The symbol is combined with symbol <i>Out-of-bounds area</i> (709) to show cultivated land that shall not be entered. The symbol is orientated to north.</p> <p>Minimum area: 3 mm x 3 mm (footprint 45 m x 45 m). Colour: yellow, black</p> <p>Small black dots. Rectangular pattern Dot diameter = 0.2mm Spacing between rows of dots = 0.8mm</p>	<p><b>415 Cultivated land (seasonally out of bounds)</b> Cultivated land which is seasonally out-of-bounds due to growing crops may be shown with a black dot screen.</p> <p>Colour: yellow, black5% (12.5 lines/cm). Small black dots. Rectangular pattern Dot diameter = 0.2mm Spacing between rows of dots = 0.8mm</p>	<p><b>412 Cultivated land (A)</b> Cultivated land, normally used for growing crops.</p> <p>Runnability may vary according to the type of crops grown and the time of year. Since the runnability may vary, such areas should be avoided when setting courses.</p> <p>The symbol is combined with symbol <i>Out-of-bounds area</i> (709) to show cultivated land that shall not be entered. The symbol is orientated to north. Minimum width: 3 mm. Minimum area: 9 mm<sup>2</sup> (144 m<sup>2</sup>).</p> <p>Colour: yellow, black</p> <p>Small black dots. Rectangular pattern Dot diameter = 0.2mm Spacing between rows of dots = 0.8mm.</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>412 Orchard</b> Land planted with fruit trees or bushes. The dot lines may be orientated to show the direction of planting. If yellow coloured areas becomes dominant, a screen (75%) instead of full yellow may be used.</p> <p>Colour: yellow with dots of green. (Rectangular pattern) Dot diameter = 0.45mm Spacing between rows of dots = 0.8mm</p>	<p><b>413 Orchard (A)</b> Land planted with trees or bushes, normally in a regular pattern. The dot lines may be orientated to show the direction of planting. <b>Must be combined with either symbol Open land (401) or Rough open land (403).</b> <b>May be combined with symbol Vegetation: slow running, good visibility (407) or Vegetation: walk, good visibility (409) to show reduced runnability. IOF omitted italics on 409 name.</b></p> <p><b>Minimum area:</b> 2 mm x 2 mm (footprint 30 m x 30 m). Colour: green, yellow or yellow 50%. dots of green. (Rectangular pattern) Dot diameter = 0.45mm Spacing between rows of dots = 0.8mm</p>	<p><b>412 Orchard</b> Land planted with fruit trees or bushes. The dot lines may be orientated to represent the direction of planting.</p> <p>Colour: green (dots), yellow. (Rectangular pattern) Dot diameter = 0.45mm Spacing between rows of dots = 0.8mm</p>	<p><b>413 Orchard (A)</b> Land planted with fruit trees or bushes, normally in regular pattern. The dot lines may be orientated to show the direction of planting. <b>Must be combined with either symbol Open land (401) or Rough open land (403).</b></p> <p><b>Minimum width:</b> 2 mm. <b>Minimum area:</b> 4 mm<sup>2</sup> (64 m<sup>2</sup>). At least four dots shall be clearly visible. Colour: green (dots), yellow or yellow 50%. (Rectangular pattern) Dot diameter = 0.68mm <b>Spacing between rows of dots = 1.2mm</b></p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>413 Vineyard</b></p> <p>The green lines may be orientated to show the direction of planting.</p> <p>If yellow coloured areas becomes dominant, a screen (75%) instead of full yellow may be used.</p> <p>Colour: yellow and dashes of green (diagonal pattern.)</p> <p>Dash width: 0.2mm, Dash length: 1.3mm, Gap length 0.6mm. Spacing between rows: 0.85mm</p>	<p><b>414 Vineyard or similar (A)</b></p> <p>A vineyard or similar cultivated land containing dense rows of plants offering good or normal runnability in the direction of planting. The lines shall be orientated to show the direction of planting.</p> <p>Must be combined with either symbol <i>Open land</i> (401) or <i>Rough open land</i> (403).</p> <p>At least three lines shall be clearly visible. Minimum area: 2 mm x 2 mm (footprint 30 m x 30 m).</p> <p>Colour: green, yellow or yellow 50% Colour: yellow and dashes of green (diagonal pattern.) Dash width: 0.2mm Dash length: 1.3mm Gap length 0.6mm. Spacing between rows: 0.85mm</p>	<p><b>413 Orchard, one direction (e.g. Vineyard)</b></p> <p>Land planted with fruit trees or bushes, with a distinct direction of planting which reduces the runnability. The green lines shall be orientated to show the direction of planting.</p> <p>Colour: green, yellow.</p> <p>Dash width: 0.2mm Dash length: 1.3mm Gap length 0.6mm. Spacing between rows: 0.85mm</p>	<p><b>414 Vineyard or similar (A)</b></p> <p>A vineyard or similar cultivated land containing dense rows of plants offering good or normal runnability in the direction of planting. The lines shall be orientated to show the direction of planting.</p> <p>Must be combined with either symbol <i>Open land</i> (401) or <i>Rough open land</i> (403).</p> <p>At least three lines shall be clearly visible. Minimum area: 4 mm<sup>2</sup> (64 m<sup>2</sup>) Minimum width: 2 mm.</p> <p>Colour: green, yellow or yellow 50%.</p> <p>Dash width: 0.3mm Dash length: 2.0mm Gap length 0.9mm. Spacing between rows: 1.3mm</p>
<p><b>414 Distinct cultivation boundary</b></p> <p>The boundary of cultivated land when not shown with other symbols (fence, wall, path, etc.) is shown with a black line. A permanent boundary between different types of cultivated land is also shown with this symbol.</p> <p>Colour: black. Width: 0.12mm</p>	<p><b>415 Distinct cultivation boundary (L)</b></p> <p>A boundary of cultivated land vegetation (symbols 401, 412, 413, 414) or a boundary between areas of cultivated land when not shown with other symbols (fence, wall, path, etc.).</p> <p>Minimum length: 2 mm (footprint 30 m). Colour: black. Width: 0.1mm</p>	<p><b>414 Distinct cultivation boundary</b></p> <p>The boundary of symbol (415) when not shown with other symbols (fence, wall, path, etc.) is represented with a black line. A permanent boundary between different types of cultivated land is also represented with this symbol.</p> <p>Colour: black. Width: 0.07mm</p>	<p><b>415 Distinct cultivation boundary (L)</b></p> <p>A boundary of symbol cultivated land vegetation (401, 412, 413, 414) or a permanent boundary between different types of cultivated land, when not shown with other symbols (fence, wall, path, etc.) Minimum length: 1 mm (footprint 4 m). Colour: black. Width: 0.1mm</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>416 Distinct vegetation boundary</b> A distinct forest edge or very distinct vegetation boundary within the forest.</p> <p><b>417 Indistinct vegetation boundary</b> Indistinct boundaries between areas of green, yellow or white are shown without a line. The edge of the area is shown only by the change in colour or dot screen.</p> <p>Colour: black.</p> <p>(A line of dots 0.22mm in diameter, 0.5mm spacing.)</p>	<p><b>416 Distinct vegetation boundary (L)</b> A distinct forest edge or vegetation boundary within the forest. Very distinct forest edges and vegetation boundaries may be represented using the cultivation boundary symbol.</p> <p>Only one of the vegetation boundary symbols (black dotted line or <b>dashed green line</b>) can be used on a map. For areas with a lot of rock features, it is recommended to use the green dashed line for vegetation boundaries. A disadvantage with a green line is that it cannot be used to show distinct vegetation boundaries around and within symbol <i>Vegetation: fight</i> (410). An alternative for these situations is to use symbol <i>Distinct cultivation boundary</i> (415). <b>Minimum length, black dot implementation: 5 dots (2.5 mm - footprint 37 m).</b> Minimum length, green line implementation: 4 dashes (1.8 mm - footprint 27 m).</p> <p>Colour: green and black 50% (dashed line) / black (dotted line). (Black boundaries: A line of dots 0.22mm in diameter, <b>0.45mm</b> spacing.) (Green boundaries: A dashed line 0.14mm width, dash length 0.3mm, dash spacing 0,2mm.)</p>	<p><b>416 Distinct vegetation boundary</b> A distinct forest edge or very distinct vegetation boundary within the forest.</p> <p>For indistinct boundaries, the area edges are shown only by the change in colour and/or dot screen.</p> <p>Colour: black.</p> <p>(A line of dots 0.25mm in diameter, 0.6mm spacing.)</p>	<p><b>416 Distinct vegetation boundary (L)</b> A distinct forest edge or very distinct vegetation boundary within the forest. For indistinct boundaries, the area edges are shown only by the change in colour and / or dot screen.</p> <p><b>Minimum length (isolated): five dots (2,65 mm - footprint 10,6 m)</b></p> <p>Colour: black.</p> <p>(A line of dots 0.25mm in diameter, 0.6mm spacing.)</p>

ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>419 Special vegetation feature</b></p> <p>Symbol 419 ... can be used for special small vegetation features. [It is often used for a tree.] The definition of the symbol must be given in each case in the map legend.</p> <p>Colour: green Circle diameter 0.8mm Line width 0.18mm</p>	<p><b>417 Prominent large tree (P)</b></p> <p>White mask is used under the green circle, to improve readability in yellow and green (OM 1.1 mm). Footprint: 13.5 m x 13.5 m. Colour: green. Circle diameter 0.9mm (OM) White mask diameter 1.1mm Line width 0.18m</p>	<p><b>418 Prominent large tree</b> A prominent single tree.</p> <p>Colour: green Circle diameter 0.95mm Line width 0.25m</p>	<p><b>417 Prominent large tree (P)</b> A prominent large single tree. White mask is used under the green circle, to improve readability in yellow and green (OM 1.2 mm). Footprint: 4m in diameter (OM 4.8m). Colour: green, white. Circle diameter 1.0 mm (OM) White mask diameter 1.2mm) Line width 0.25m</p>
<p><b>420 Special vegetation feature</b></p> <p>Symbol can be used for special small vegetation features. [It is often used for a bush.] The definition of the symbol must be given in each case in the map legend.</p> <p>Colour: green Diameter dot 0.5mm</p>	<p><b>418 Prominent bush or tree (P)</b></p> <p>Use sparingly, as it is easily mistaken for symbol <i>Small knoll</i> (109). Small white dot inside is used to aid the colour vision impaired. Footprint: 9.0 m x 9.0 m. Colour: green. Diameter dot 0.6mm Diameter inside white dot 0.2mm (OM)</p>	<p><b>419 Prominent bush or small tree</b> A bush or a tree with a trunk less than 0.5m diameter. Colour: green. Dot diameter 0.75 mm</p>	<p><b>418 Prominent bush or small tree (P)</b> A prominent bush or a small single tree. Small white dot inside is used to aid the colour vision impaired. Footprint: 3.2 m in diameter. Colour: green. Diameter dot 0.8mm Diameter inside white dot 0.2mm (OM)</p>



ISOM 2000	ISOM 2017-2 (Adjusted version published January 2019)	ISSOM 1 January 2007	ISSprOM 2019 (valid from 1 January 2020, with errata)
<p><b>418 Special vegetation feature</b> Symbol 418 can be used for special small vegetation features.</p> <p>The definition of the symbol must be given in each case in the map legend.</p> <p>Colour: green X height: 0.8mm</p>	<p><b>419 Prominent vegetation feature (P)</b></p> <p>White mask is used under the green cross, to improve readability in yellow and green (line width of white mask 0.36 mm, and it shall be 0.18 mm longer in the ends of the symbol).</p> <p>The symbol is orientated to north. The definition of the symbol must be given on the map. Footprint: 13.5 m x 13.5 m. <b>That's the footprint of the X, not the mask.</b></p> <p>Colour: green. X Height (OM without white) 0.9 mm [White mask X height: approx. 1.17mm] Line width 0.18 mm</p>	<p><b>420 Prominent vegetation feature</b> A vegetation feature which is significant or prominent. The definition of the symbol shall always be given in the map legend. The symbol is orientated to north.</p> <p>Colour: green. X Height 1.2 mm Line width 0.25 mm</p>	<p><b>419 Prominent vegetation feature (P)</b> A vegetation feature which is significant or prominent. White mask is used under the green cross, to improve readability in yellow and green (line width of white mask 0.50 mm, and it shall be 0.25 mm longer in the ends of the symbol).</p> <p>The symbol is orientated to north. The definition of the symbol must be given on the map. Footprint: 4.8 m x 4.8 m (OM 7.1 m x 7.1 m). Colour: green. X Height (OM without white) 1.2 mm [White mask X height: 1.775mm] Line width 0.25 mm</p>

## EXTRACT FROM ISOM 2017

### 2.3 Runnability

The runnability depends on the nature of the terrain (density of trees/scrub and undergrowth, i.e. bracken, brambles, nettles, as well as marshes, stony ground, etc.). Runnability is divided into five categories of speed. If speed through flat and open runnable forest is 4 min/km, the following applies:

A combination of a green screen and stony ground means that the runnability will be worse than for each of them in isolation. The steepness of the terrain may also influence runnability (the steeper the terrain, the less runnable).

No	Percentage	Description	Examples	Approx speed (min/km)
1	> 100%	Easy running	Lawns, paved areas, paths	< 4
2	80 - 100%	Normal running speed	Rough open land, forest	< 5
3	60 - 80%	Slow running	Stony ground, undergrowth, dense vegetation	5-6:40
4	20 - 60%	Walk / Difficult to run	Very stony ground, undergrowth, dense vegetation	6:40-20
5	< 20%	Fight	Extremely stony ground, very dense vegetation	> 20

**SUMMARY OF CHART IN ISOM 2000, ISOM 2017 AND ISSPROM**

<b>Vegetation colour</b>	<b>Runnability %</b>	<b>Distance covered in 4 minutes</b>
Run (white)	80-100%	800-1000m
Slow run (light green)	60-80%	600-800m
Walk (medium green)	20-60%	200-600m
Fight (solid green)	0-20%	0-200m