International MTBO Mapping Specification Revision

Response Parts One and Two by Michael Wood

Issues OTHER THAN Off-Track Travel

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Introduction

Thank you, Steven for the opportunity to take part in the evolution of the MTBO Mapping Specification.

In this response I'll give you some background on MTBO in New Zealand, and its MTBO terrain. We hope and expect that the international mapping specifications will suit most countries round the world, including ours. The current MTBO mapping specification appeared to us to have some limitations so New Zealand had developed some variations. We have looked at the draft in the light of our experience. I am delighted that you have already fixed some of our issues😊

The 202X draft introduces the idea that events could be classified as ***either*** off-track generally allowed, or off-track generally prohibited, and that's ***not*** something we had considered. We'd like to think a bit more about that part of the spec. In the meantime I'll give you some thoughts on the other topics. These are based on the draft ISMTBOM 202x identified as version 13.2.

I have involved the ONZ MTBO Committee but the comments are mainly mine. It's great we'll have a chance to comment as a federation at the next stage.

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MTBO in New Zealand

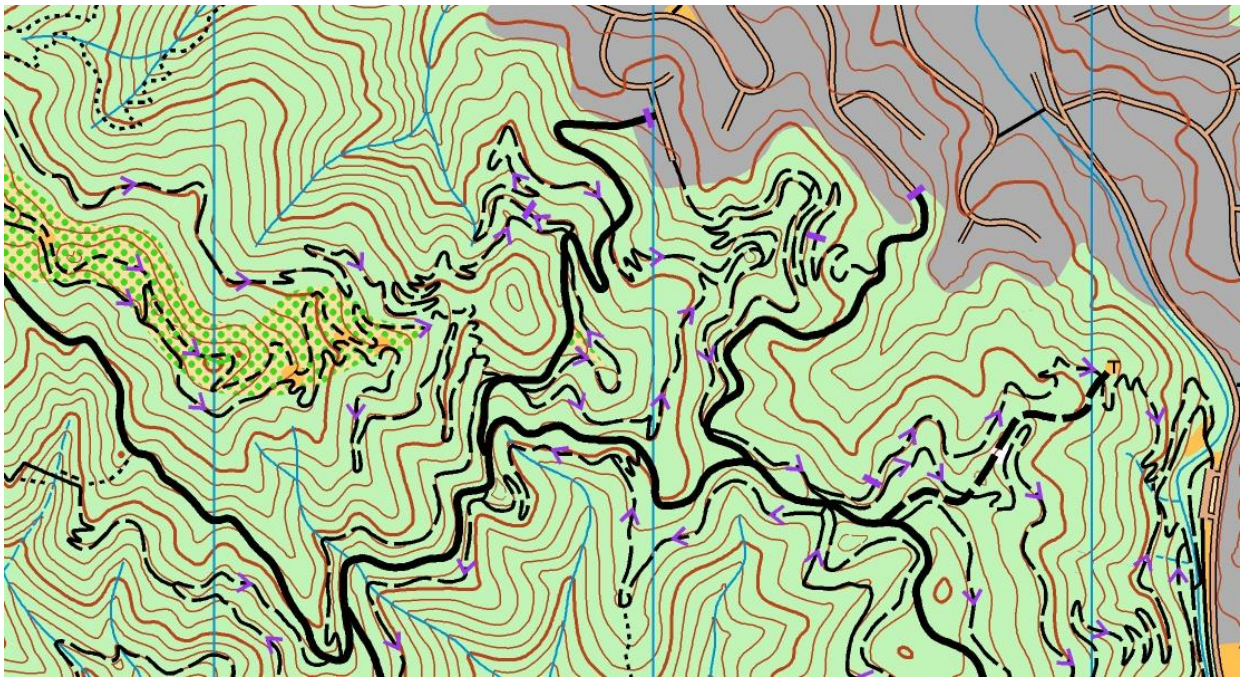
There's a high uptake of mountain biking in New Zealand. But like running only a small proportion take part in MTBO. And a small proportion of a small population is, well, small. But we see a potential, and we think we can offer a global perspective on rules and conventions. While distance restricts our participation in international events, New Zealand has achieved some high results in Junior World and World Masters competition. Interchange with Australia is regular.

New Zealand has a variety of terrain, but most areas of low to moderate slope are used for pastoral farming. The easier the slope, the more fences. And lush pasture is generally unsuitable for riding, even if the farmer was willing. Public land is mostly forest on steep slopes, and I do mean steep. A lot of it is covered in untracked native forest which is hard to traverse even on foot. Some of it is covered in plantation forest but due to the topography the road system tends to be branched rather than a network. So we have very few locations for bike navigation.

The most common location for MTBO is the MTB park. They consist of networks of single-track created by volunteers and sometimes contractors on public land near centres of population. The network may contain numerous switchbacks to allow climbing, and downhills for excitement – with resulting one-way restrictions. Tracks twist and turn and frequently pass close together.

A less common location type is open farmland in a few arid parts of the country where the ground is hard, the pasture short, and fences far apart. And thirdly, looking at foot-o we see potential for short urban MTBO eg on educational campuses.

Here's part of a MTB park near the capital Wellington. Scale may have been changed by pasting but the north lines are 500m apart. The contours are 10m.



Approach to These Comments – Off-Track Later

Taking our main terrain type (and small numbers) we cannot assume or survey all off-track terrain for its rideability, so for fairness we declare it generally out of bounds. But where short-cuts are possible (and that is common) we face the question of compliance. We solve this (and increase route choice) by mapping and allowing all feasible short-cuts. For these we use a colour system for allowable travel that has worked well for many years. It also works reasonably well for our other terrain types.

The colour system is not perfect but has certainly fixed the compliance problem. The draft has suggested a different approach of declaring off-track to be EITHER generally allowed or generally banned. We like that idea in principle and want to consider how it fits our maps. We'll give you our thoughts shortly in a second response.

For the rest, I'll divide them into (a) important issues and (b) a collection of minor things. Some of these could be just oversights in the draft, I know how errors can creep in (eg the word "runnability"😊). Others are suggestions about expression. Please excuse me for all misunderstandings of the draft, and of MTBO conditions in other countries.

Part One: Most Important Comments (Other than Off-Track)

The areas we are most concerned about (other than Off-Track Travel) are: the speed range for tracks; symbol numbers for tracks; the black percentage for rock and man-made features, and the 3 D's: ways of indicating danger, dismounts and direction.

Track classification

The wording suggested to us that if the slowest track on the map is say 70% speed, it would be shown as dotty, and the short and long dashed lines applied to 80% and 90% tracks. If that is the intention, it is not acceptable. Reasons include:

1. The meaning of the track symbols changes from map to map. Our goal should be the same track meanings throughout the country, and throughout the world.
2. The relationship between track routes and off-track passage (if allowed) would differ from map to map
3. This philosophy is not used in foot-orienteering with which we share many conventions and participants.
4. Extension (or subdivision) of a map would cause the track classification to change. If an extension to the area became available, connected by a bike carry or a push. the existing tracks would all have to be re-surveyed.

I sincerely hope that our interpretation is wrong! The track classification should aim to have the same meaning all over the world.

Symbol numbers

The track symbol numbers have changed – the 831-838 symbols have become 815-822. This makes conversion of existing map files much harder. We've just been through the ISOM update in which

many symbol numbers changed. Now we're in the process of the ISSprOM update, and the same thing happened. Symbol numbering should stay the same unless there are very good reasons. Are there any?

Rock and boulders black percentage

The reduction to 60% black will make rock and cliffs harder to see on a yellow background. (And green though this is less important.) Our rideable open areas may have rock outcrops, and of course they make good control sites – besides using them for navigation. Other rock features are barriers. These open areas are interesting and different. We found even 70% black was insufficient and it would be worse on the proposed orange background. We haven't found a solution for this, except by using a higher black percentage. We don't want the black percentage to drop.

Man-made features black percentage

The reduction to 60% black will make these hard to see on a yellow background. (And green though this is less important.) This may not matter if off-track riding is banned. But otherwise they are useful for navigation, some are obstacles which would affect route choice (eg fences) and some are even not-to-be-crossed barriers (high fences, walls and uncrossable line features). This is particularly a problem in urban areas which might be used for sprints and it would be worse on an orange background. We haven't found a solution for this, except by using a higher black percentage. We don't want the black percentage to drop.

Obstacles

We regard dangerous objects across the track (or any out of the ordinary danger which could cause injury) as something that must be marked in the terrain. If we did not, our community and legislation would take the view that we had failed in our duty of care. When it comes to danger, a symbol on the map (which may easily be overlooked under competition conditions) is just not enough.

So we take the view that the obstacle symbol is an indication of a required dismount affecting route choice. We have many gates, fallen trees, and sunken obstacles such as rocky stream crossings. The dimension of 717 is a little too large, considering many of the places we need to put them. Our size is about one third less (at 1.5X0.5mm) and even so we have to offset them sometimes. I don't think we would use the exclamation mark symbol, instead address it in the field.

One-Way Arrow

The One-way arrow is a symbol we use a lot. We have evolved one very similar in shape to the draft. Due to track density, ours is about half the size but we believe it is quite enough to stand out well on the narrow tracks where it mostly applies. Some track segments in MTB parks are very short, too. Our arrow is 0.3mm thick, 1.0mm top to toe and 1.4mm side to side, as measured on its centrelines. In many cases we couldn't fit the proposed one in.

Part Two: Some Other Observations

Principles

In the first sentence of section 2.1, I would say the emphasis is ***usually*** on paths and tracks. We have thoroughly enjoyed those areas where off-track is possible. We think that (as in foot-o) ***urban*** MTBO will become increasingly popular, and sports fields and parkland might be used. It certainly helps us find suitable areas to hold MTBO. Still the wording is better than it was before, which said "must stay on tracks" 😊 It is quite a good introduction

Do we need to be clear that any forbidden areas apply to pushing and carrying as well as riding? For example in the last item of the bullet list I would say "travel" rather than "cycle", and there might be other instances too.

Scales and symbol sizes

Though this is not new, we like the continued flexibility for scale enlargement without symbol enlargement - unlike foot-o which does not seem to recognise any terrains other than those suitable for 1:15,000 and 1:4000. As we are hard-pressed to find venues, we cannot afford to pass up those that are best mapped at eg 1:7500/1.5X symbols. Thank you. Likewise listing 1:12500 is a breath of fresh air 😊

Since the spec is presumably targeted at international elite events, we support the recommendation to enlarge for older orienteers. We'd like the degree of enlargement laid down, as per the SOFT legibility study. The reduction in relative visual performance with age might well be worse on a bike than on foot! The NZ Mapping Committee recommends enlargement to at least 133% from age 40 and to at least 150% from age 60.

It is clear from foot-o that planners and controllers with good eyes do not understand the experience that older people may have.

Good drawing practice

Other parts of Section 3 are good. I particularly like the examples showing dash control at junctions, something which is often ignored. I think it needs some wording to introduce them though.

The minimum gaps of 1mm (7X the foot-o spec) seem too big to me. In the MTB park situation we struggle at 1:5000 to depict the hairpins and close-together tracks – let alone at 1:7500 and 1:10/15000. It's not so much the tracks themselves as we could usually generalise their shapes – but we need enough detail so the rider can tell which bend the junction comes off. I'll come back to this later when we come to line thickness.

This is tied up with showing indistinct junctions, see below.

Colour concept

The reference Appendix contains different colour orders for ISOM and ISSprOM. We presume that it's the ISOM one that would apply.

Paths, tracks and roads

Indistinct junctions. The suggested gap of 2mm seems far too large. And it doesn't seem right that a rideable indistinct junction has a gap twice as large as two parallel tracks that do not connect. I

would think that the indistinct junction gap should be about the same as the gap in dashed lines. I've never measured mine, but they need to be fairly small to depict "connection".

The need to ensure a dash (not a gap) on the main track applies in this situation as well.

Base for relative speed. When you write "100%", I always think of a hard smooth UNPAVED surface. I expect that on paved surfaces I can ride at 110-120% speed. If this is the right philosophy then it could be stated. Yes of course the percentages are only a rough guide. I think my "medium" tracks ride pretty fast in the dry, but being unmaintained they ride much slower in and after rain.

Narrow sealed path. We've never had a symbol for this, whereas we distinguish paved and unpaved roads. Maybe there's no suitable symbol which can be used. We certainly can't use symbol 502 with its 10m footprint for a 1-2m sealed path😊

Track dimensions. I'm very pleased to see you've adopted the shorter 1.2mm dash. We also felt that we need a greater difference between short and long dashes, and have come to the same conclusion that 3.0/1.2mm is good.

We also felt the need for a bigger difference between the thick and thin tracks. A ratio of 3:2 is not enough and we wanted 2:1. As well as identifying the symbol when the other one is not close, many of our maps have numerous hairpin bends. So we changed the 0.4mm tracks to 0.3mm – and they are still legible.

We also use a smaller gap for the dashed track symbols to show bend shapes better, and see no need for any gap to be more than 0.5mm. Dashed lines are the bane of a cartographer's life, maps would be sooo good if only we could use solid lines everywhere! We have experimented with filling the track gaps with full yellow to better define the bends.

I would prefer the paved area sideline to be the same thickness as the road sidelines. Where a road widens into a carpark say, the sideline changes. Purely cosmetic, this mainly affects urban areas.

I think the stairs need more thought. Not the symbol itself but the lack of information it provides to the competitor. "Present a challenge to riding" I suppose means many competitors can ride down; but it's not possible to ride up. In complex urban areas (university campus etc) it may not be easy to see from the map which way is down and which is up.

Contours

I would prefer to say that 2.5m may be used in "flat" terrain (as in ISOM) rather than for "sprint" terrain. We have some forests on coastal sand dunes (rare to have ridable tracks though). When the contour interval is too large, it is a matter of chance which hills appear on the map and which are omitted. And that has nothing to do with whether we are running a sprint or a long😊

All those words from ISOM about the smallest bend in the contours and minimum sized knoll – if we are going to have these shouldn't they be larger than for foot-o? Maybe this is an issue that is better just left to the advice to reduce non-essential detail.

Earth bank, wall and erosion gully

Instead of minimum heights (which I assume come from ISOM) would it be more relevant to define these as "requiring a dismount to cross"?

Water and marsh

The text for 307 refers to a black line but I think it should say blue.

Watercourse/track crossings don't seem to be mentioned anywhere. Do we use the foot convention that ensuring a track dash over the blue implies a bridge? If a dismount is needed would we use an obstacle symbol?

Vegetation

I'll have more to say when we consider off-track travel. For now, I am curious about the reason for departing from the ISOM patterns for scattered trees. Is this intended? I would prefer a larger spacing than ISOM, to make the pattern more clearly "dotty" when on the bike. It can be hard to distinguish the several varieties of yellow.

ISOM 402 0.7mm spacing 0.4mm dots	Draft MTBO 0.7mm spacing 0.5mm dots
ISOM 404 0.8mm spacing 0.5mm dots	Draft MTBO 0.7mm spacing 0.5mm dots

Pillar

I was surprised to see the pillar. Perhaps you envisage ultra-sprints with very large scales where these would become important😊

Course planning symbols

We have a slight preference for showing the control code in a smaller 2.5mm font and inside brackets after the control number, as it has a smaller footprint.

The control point size of 6mm doesn't match the footprint of 75m unless my maths is wrong.

The focus point wording assumes controls are always on tracks – it could be generalised to include the off-track situation where it can be very useful.

Optional Symbols

Thank you for including 108 small erosion gully. We too have adopted this for ditches that are rideable.

The wording for 410 Hedge says "normally" forbidden to cross. It's unclear when one might be allowed to cross a hedge.

This brings up the question of forbidden areas in general. I understand that in respect of foot-o, the IOF council decreed that forbidden features were to be laid down in the rules, rather than the mapping specification. Now this MTBO specification has quite a lot of forbidden features, are they to have the force of a rule?

Vineyard. This is a possibility in New Zealand (not so far used). First, the word "runnability" is inappropriate😊 Second, it needs to be defined whether passage across the rows is permitted or not.