

COURSE PLANNING WORKSHOP

Feb 2023 Session 1

Date 15/02/2023

Essentials Of Course Planning

Reference: OA Foot Rules Appendix 2

- Courses should be correctly designed for the expected abilities (technical and physical) of participants
- Orienteering is running navigation, terrain needs to be “runnable”
- Fairness - Course planner needs to ensure that the contest is fair, all competitors face essentially the same conditions on every part of their course, i.e. eliminate the element of luck, courses are won by the best orienteer on the day
- Competitor enjoyment - orienteers need to be satisfied with the courses they are given, courses are suitable for the competitors
- The course planner needs to be fully acquainted with the terrain
- Courses should be set that “normally fit” competitors can run over most of the course set for their level of ability
- Consideration of wildlife and the environment
- Consideration for spectators (generally other competitors)

Runnability – From the Mapping Specification

| 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 |

“Walkers” will be slowed down by similar percentages

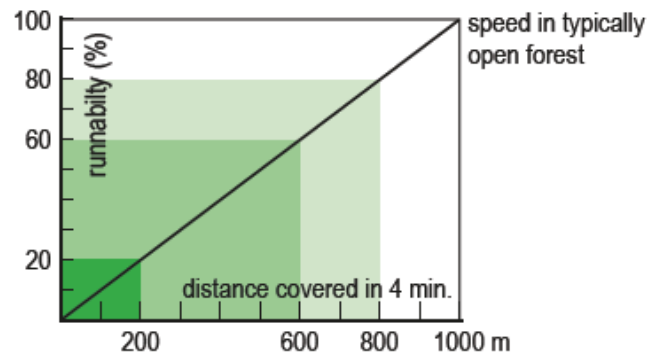
3.4 Vegetation

The representation of vegetation is important to the competitor because it affects runnability and visibility and it also provides features for map reading.

Colour and Runnability

The basic principle is as follows:

- **white** represents typical open forest,
- **yellow** represents open areas divided into several categories,
- **green** represents the density of the forest and undergrowth according to its runnability and is divided into several categories



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.

“Components” of the Course

Reference: OA Foot Rules Appendix 2

- Start – mark by a control flag, course begins then
- Terrain
- Legs - fairness
- Controls – see later
- Climb – generally aim for < 4% in forest,
 - variations for shorter hard courses (less) and very open terrain (can be more)
- Finish
- Elements of map reading
- Route choices
- Degree of Difficulty

Other References

- Various technical documents here
- <https://www.sa.orienteering.asn.au/about-us/technical-information>
- OA Foot Orienteering Competition Rules 2023
- <https://orienteering.asn.au/wp-content/uploads/2023/02/OA-Foot-Competition-Rules-2023.pdf>

Course Formats

Discuss in detail in Session 2

Reference OA Foot Rules Appendix 8

- Long
- Middle
- Sprint
- Relay

Descriptions in this document are from the viewpoint of Hard Navigation

Plus variations

- Night
- Street Park
- Score/Scatter

- MTBO – may not cover

Navigational Standards

Summarised in OA Foot Rules Appendix 1

- Hard – applies to all A and AS courses except 14 and under
- Moderate – B Courses and M/W14
- Easy – M/W12
- Very Easy – M/W10

Standards allow a progression in the use of orienteering skills

Some terrain will have up to Moderate only e.g. Street Park, Sprint

Examples covered later

Planning Very Easy Courses

- Course must follow drawn linear features (tracks, fences, etc.) or physically easy flagged routes in open forest
- A control site should be at every turning point and placed to lead competitor in the right direction
- Control markers must be visible on the approach side. Large obvious features, **visible** from and close (<25m) to the linear feature may also be used as control sites.
- Compass should not be needed to complete the course
- Can never be too easy – avoid DNFs
- May require many controls
- “The course should serve as a guided tour, allowing competitor to learn how to read the map. The controls are used to keep them on the route – they should almost fall over them, not have to search for them. If in doubt, make the course too easy - **everybody should be successful**. Failure on a course at this stage may mean the loss of that competitor to orienteering.” BOF

Very Easy Course Examples



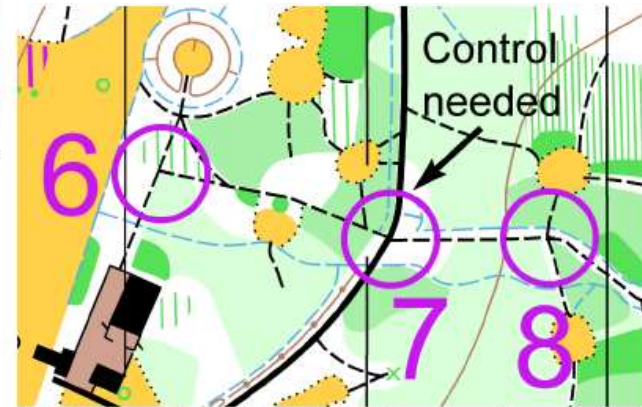
Map3 : Decision Point - Control 3 needed - turning right at a T junction



Map4 : Decision Point - Control 4 needed - turning right off a path

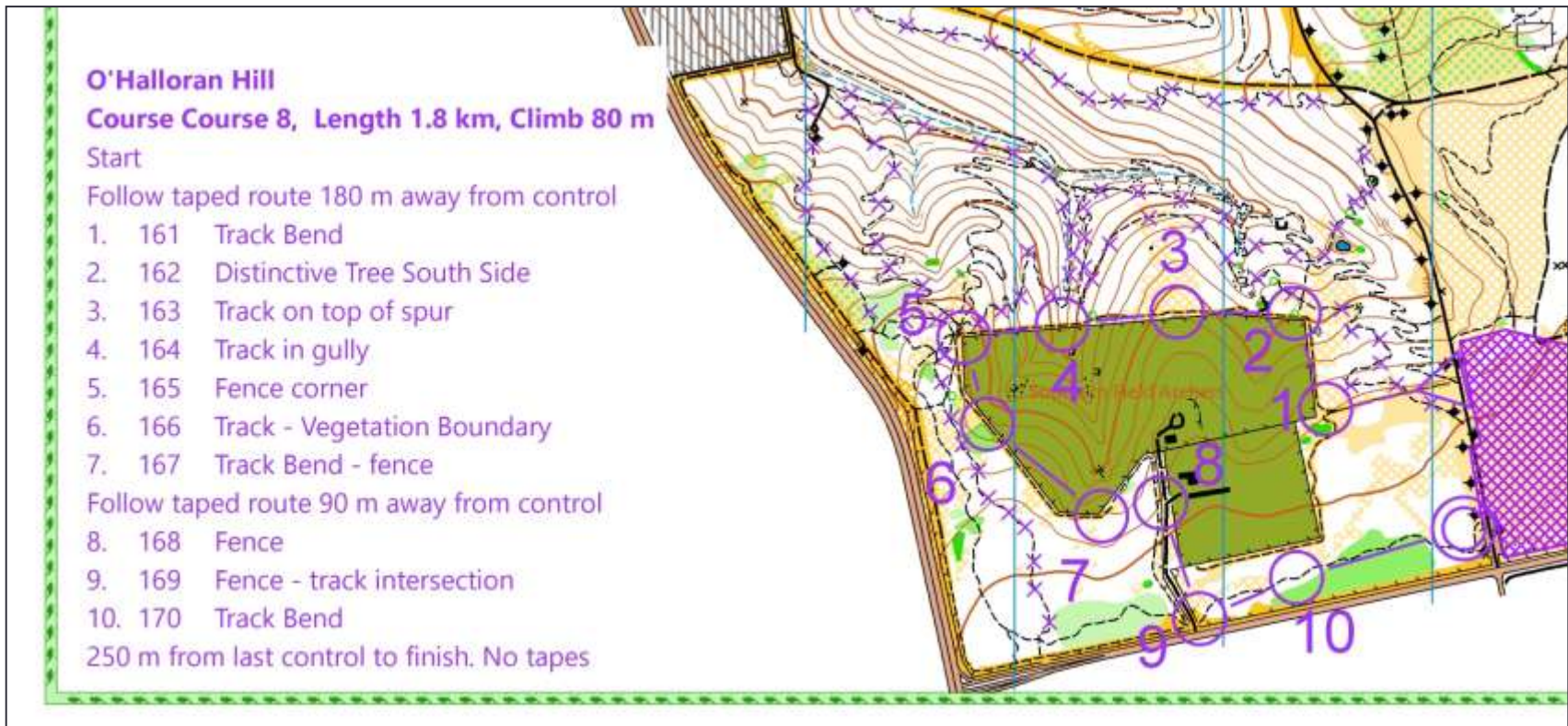


Map5 : Not a Decision Point - Control not needed - straight along a major track with a small path junction off



Map7 : Decision Point - Control 7 needed - straight along a small path where it crosses a large track

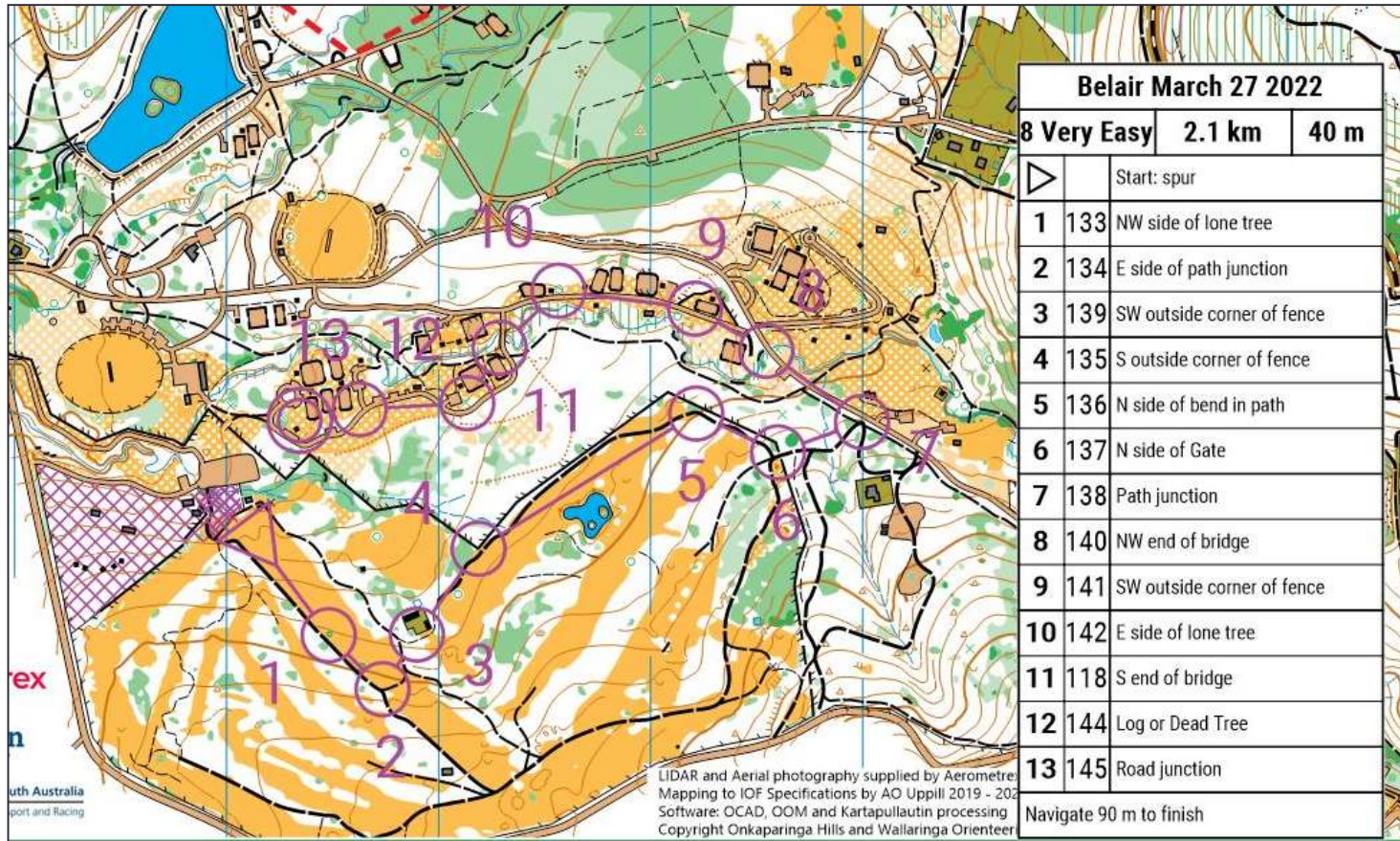
Very Easy Course Examples



Example using OCAD Course Planning – can create your own text descriptions
Some taped routes – start to 1 as the track was faint
Some steep sections – but OK
Control sites with contour features in the description

Very Easy Course Examples

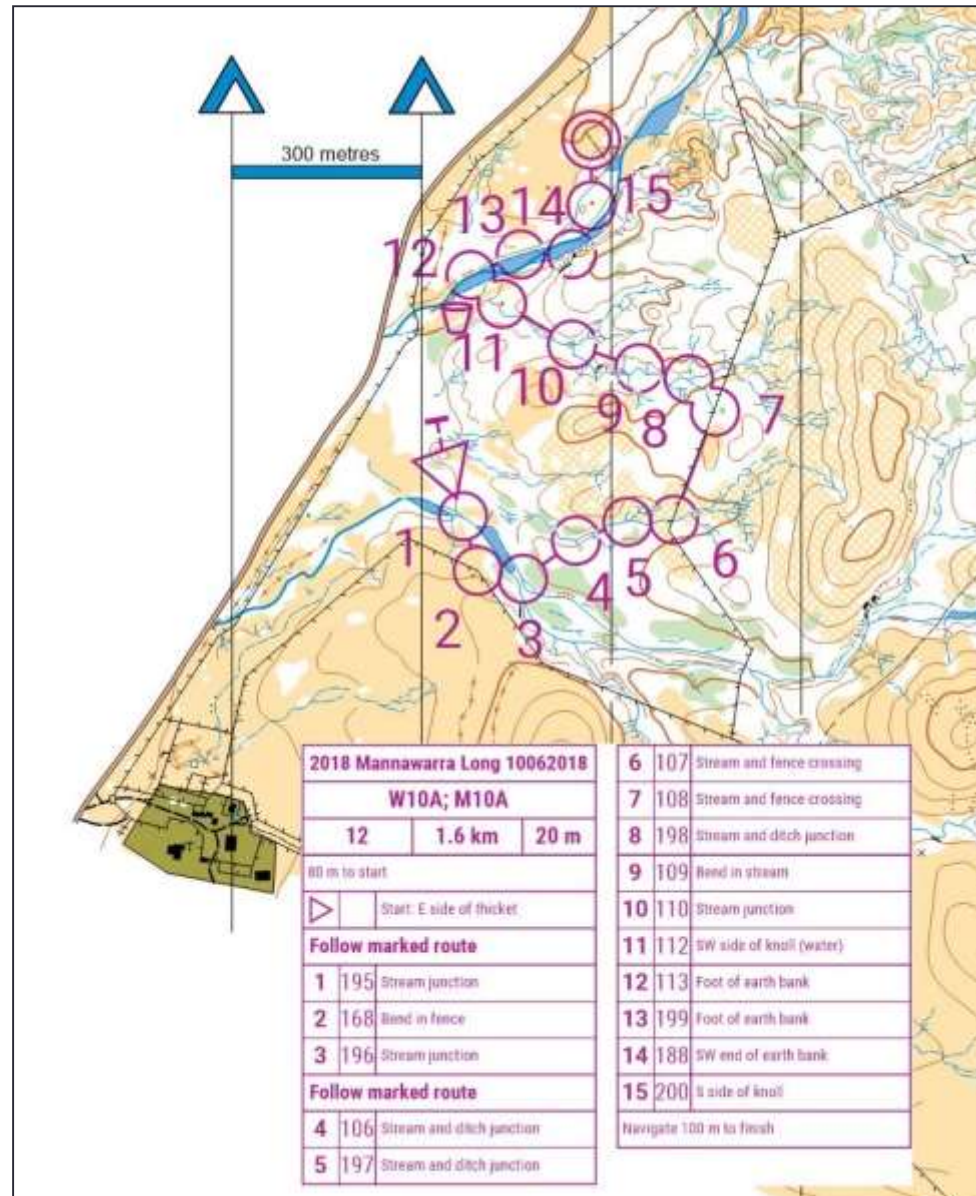
Using Purple Pen –
 (free)
 Standard text
 descriptions – can
 edit but then applies
 to all controls on that
 feature
 Course follows
 various types of
 linear features
 Some controls just
 off the linear feature
 but visible
 10 – 11 – turning
 point with no control
 but 11 visible at the
 turn



Very Easy Course Examples

Very Easy Course in area with few tracks
Course

- Uses water courses
- Uses the fence
- Many close controls
- Some taped legs



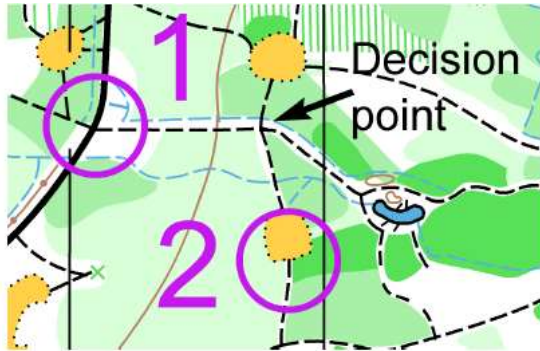
Planning Easy Courses

- Control sites must be on or near drawn linear features (or use flagged cross country routes)
- But do not need to be at all turning points. This gives the opportunity to follow handrails or to cut across country.
- Some decision points required
- Short distances along large linear features that are not drawn (such as large gullies or well-defined spurs) may be included in the course but then catching features are essential.
- Control markers should be visible from the approach side by any reasonable route.
- Control sites introduce contours e.g. gully on a track
- Expectation that competitors can check control numbers

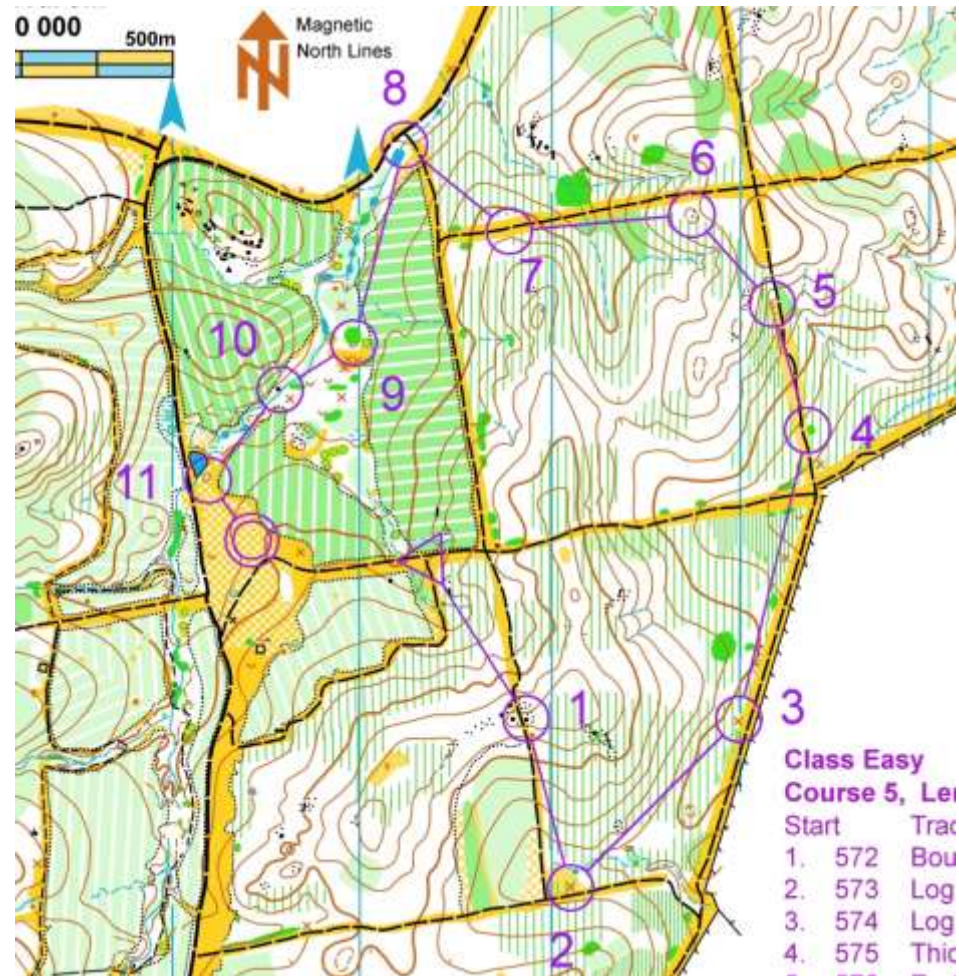
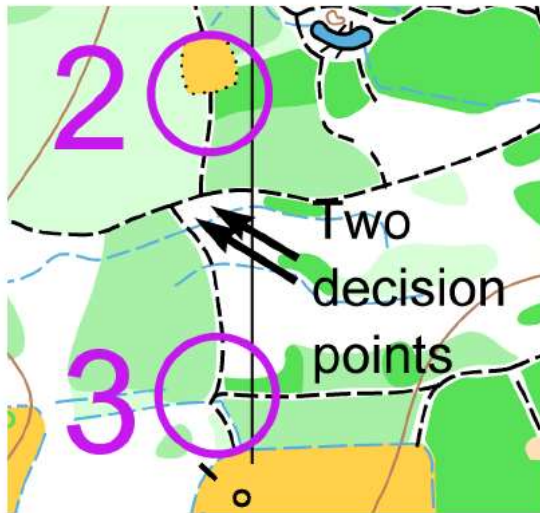
Easy Course Example

Control 6 – flag visible from track

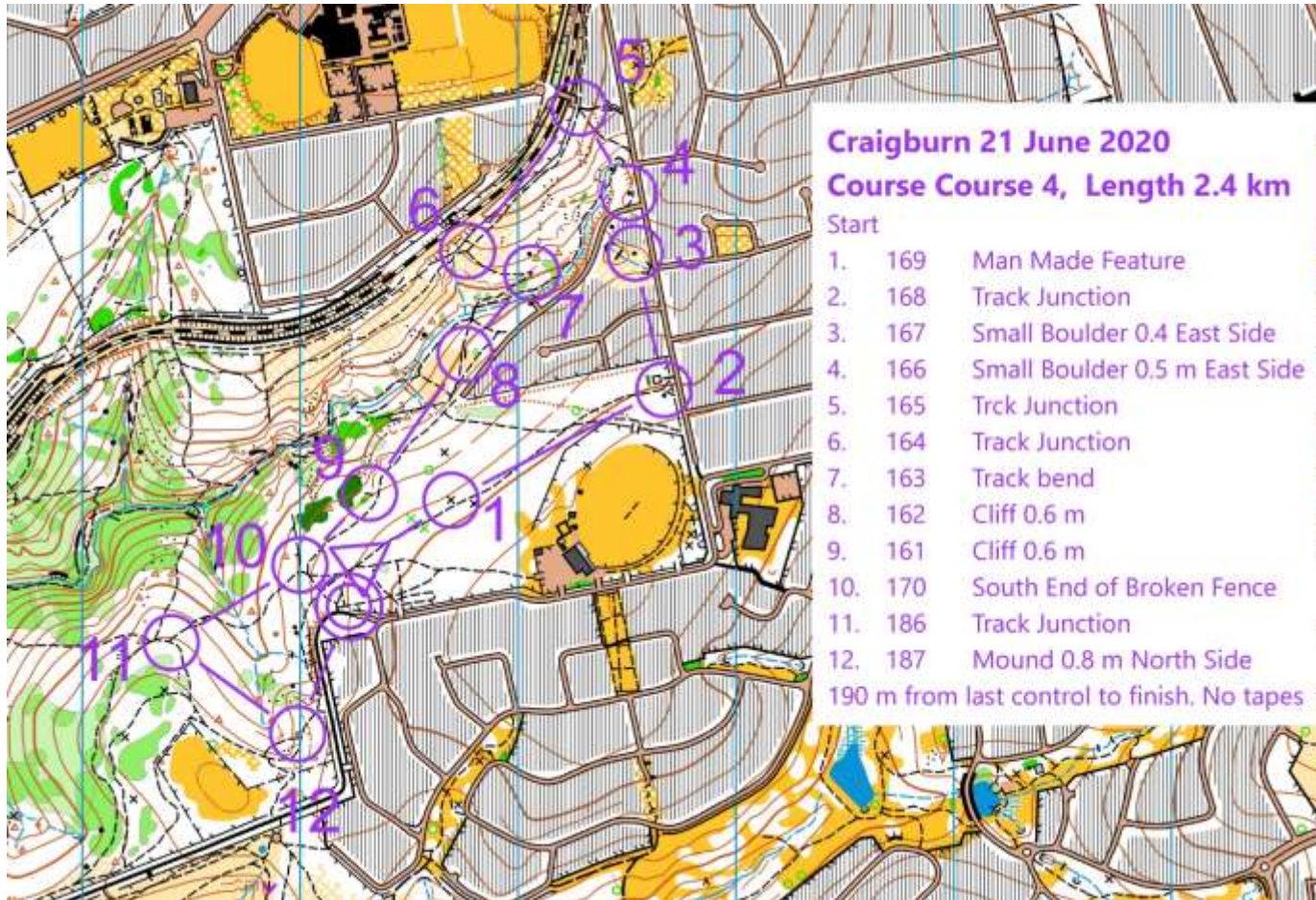
Legs 8 – 9, 9 - 10 ?



Map 5 : One Decision point - turning right at a path crossing without a control

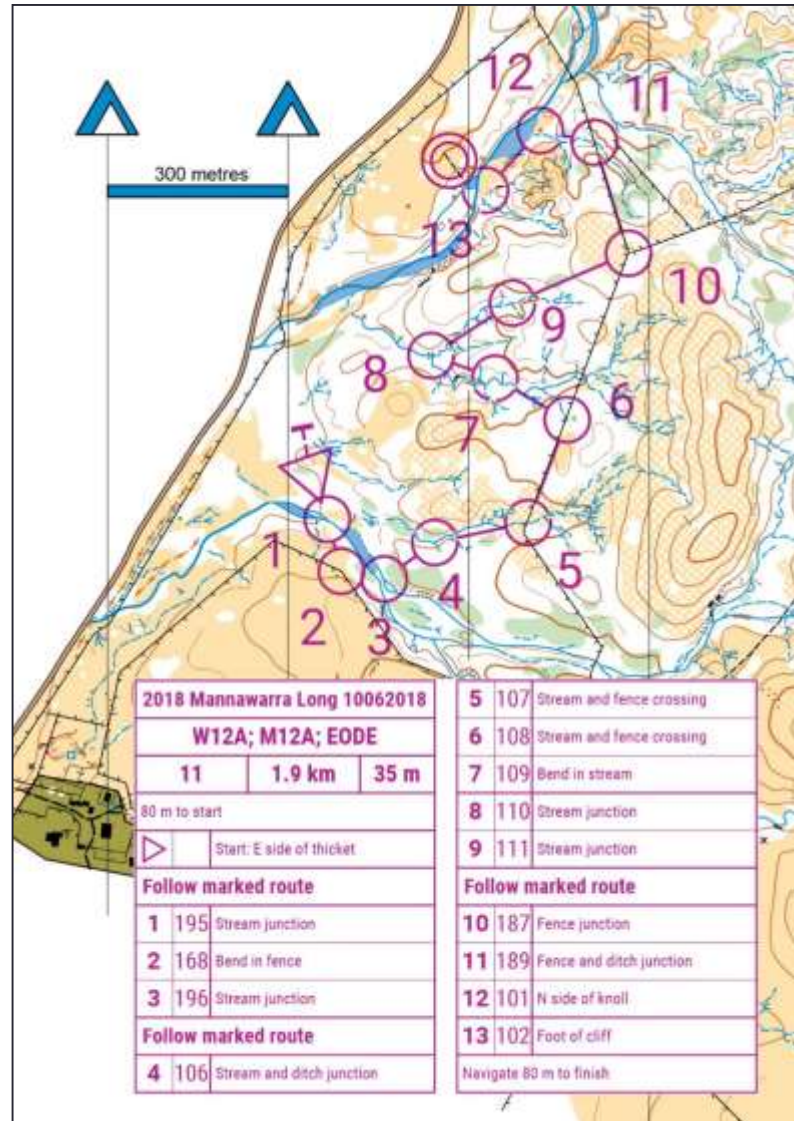


Easy Course Example



Easy Course Example

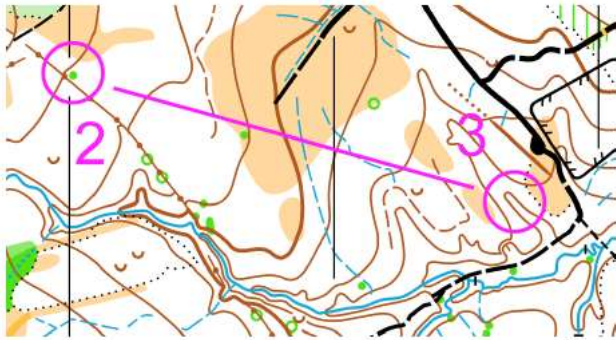
May have some of the same controls as the Very Easy Course
 Follows watercourses
 Some decisions
 e.g. Control 8
 Taped route for cross country legs



Planning Moderate Courses

- Course should have route choice
- Require big attack points near control sites
- Catching features less than 100m behind (or sometimes just before the control).
- Control sites may be fairly small point features and the control markers need not necessarily be visible from the attack point.
- Competitors should have basic contour recognition
- Avoid areas of complex detail
- Provide an orienteering challenge - but without allowing **serious** errors to occur

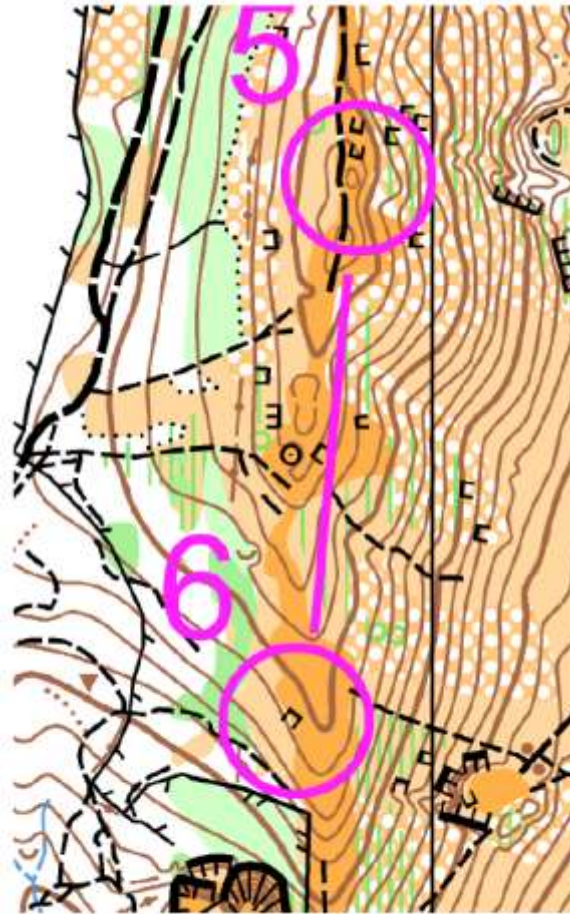
Moderate Course Example



Map3 : A good long leg to a very obvious control feature with the paths behind it acting as collecting / relocating features.

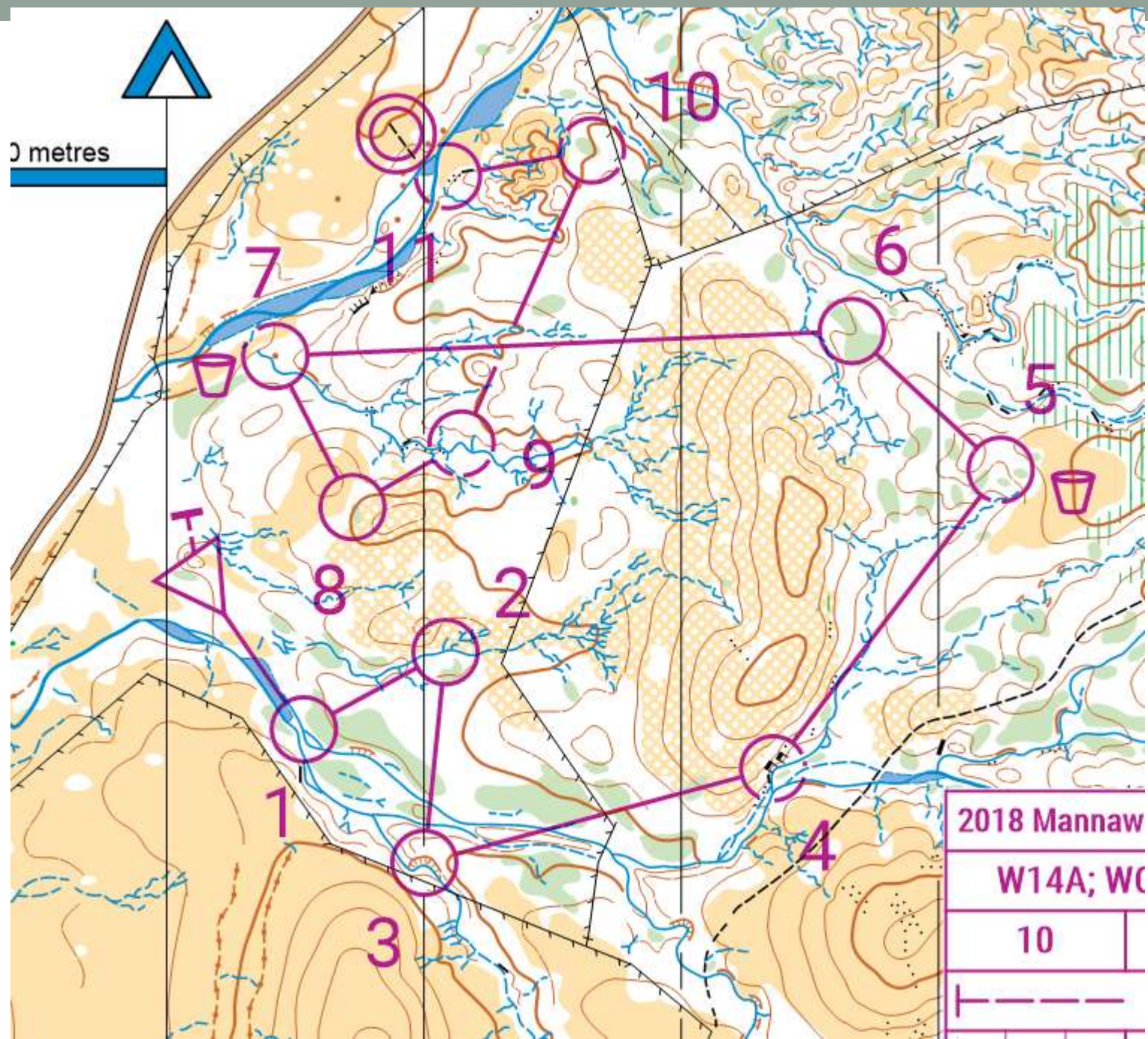
Route choice options

- Safe longer
- Cross country but with catching features



Map6 : Using the hilltops and then the long spur for navigation.

0 metres



Hard Course Planning

General Principles

- Navigation should be as difficult as possible with small contour and point features as the preferred control sites (forest courses);
- Competitors should be required to concentrate over as much of the course as possible (some longer routes may have less intense sections along tracks for example)
- Course should have no handrails and no large attack points nearby.
- Route choice should be an important element of most legs (but this varies depending on the course format, to be discussed later).

Planning Hard Courses

Aim to challenge the orienteer, ideally requiring

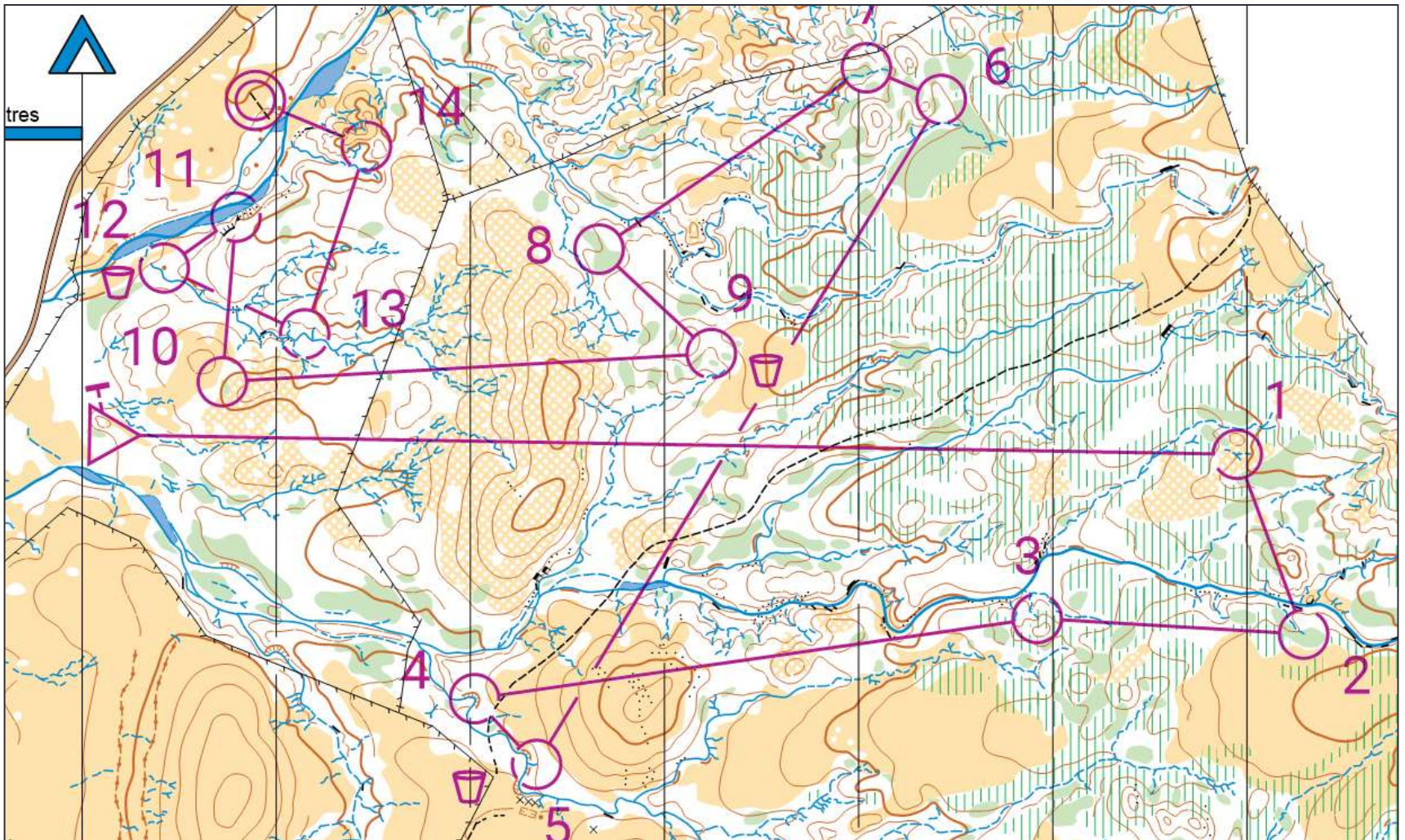
- High concentration
- Decision making
- Good problem solving and planning

Can be achieved with

- High technical difficulty – for many consecutive legs
- Route choice – also can split the field and reduce following
- Dramatic technical intensity changes

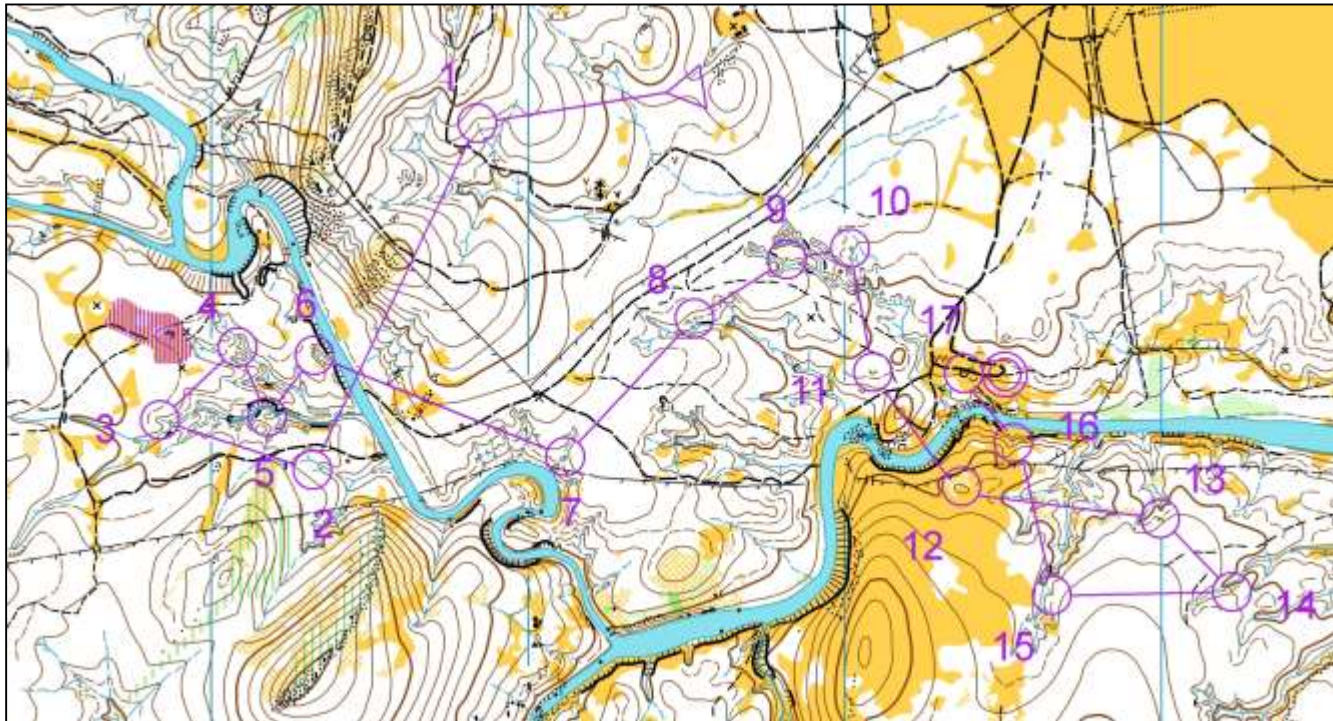
Format and course style varies for the different event formats – will discuss more examples when looking at the course formats

Hard Course Example – Long Distance



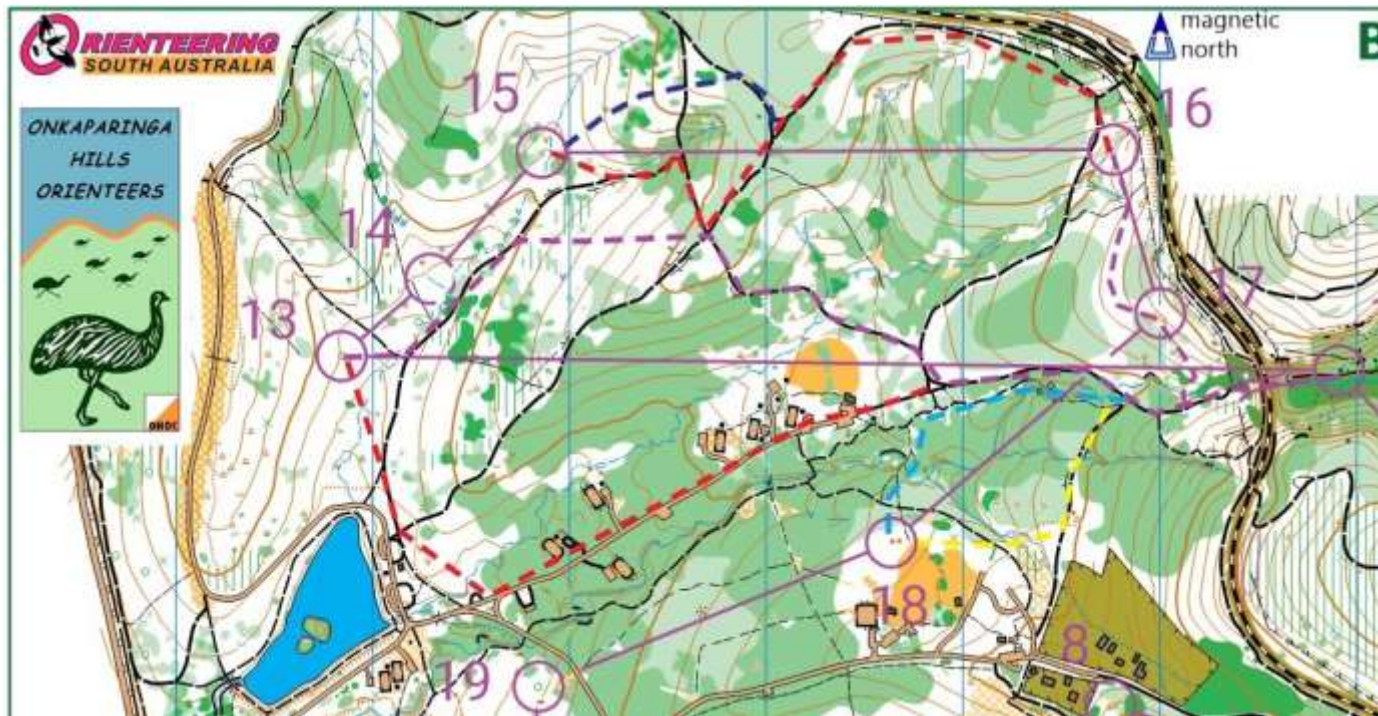
Planning Hard Courses

- Local SA Maps often do not have large areas of technical detail – but if they do make the best use of these for the technical challenges on hard courses
- E.g.



Hard Courses – Route Choice

- Example to facilitate track options – warmer weather event, terrain with many tracks



Hard Courses – Older Age Groups (e.g. M70 and W65 and above)

Two important points to remember when course planning are

- Consider if the course is unnecessarily physical for age groups concerned - do not equate technical and physical difficulty
- Older age groups like a technical challenge but do not overdo the physical challenge

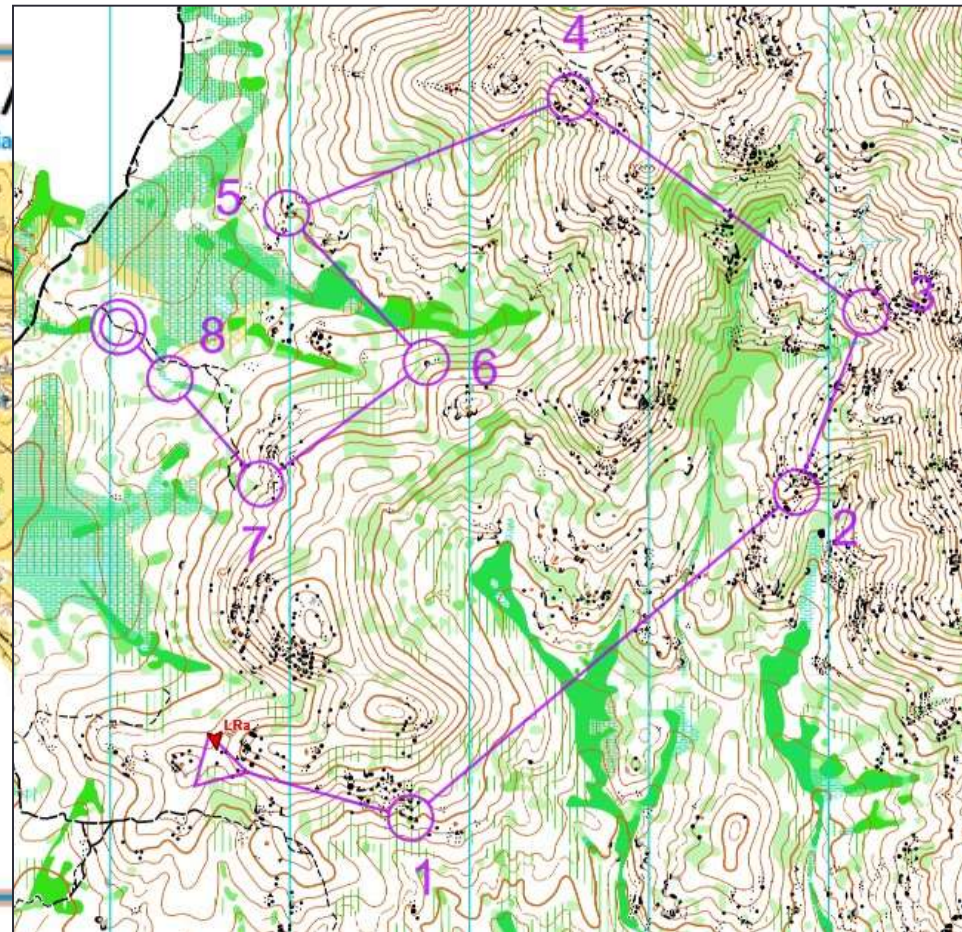
Physical challenge includes considering the

- Total climb on a course – this is recommended to be not more than 4 %, although in very fast running open terrain, higher climbs are possible as leg lifting over obstacles is much less
- For older age classes, consider if a lower climb is possible e.g. 3%, and avoid long steep uphill and downhill sections on a course. Going steep downhill is often more challenging than up hill
- Avoid control sites that are physically difficult to get to e.g. at the bottom of a steep gully, creek or earth bank
- Avoid a lot of green areas as these also can be physically more demanding
- Use your common sense!

Examples – OK and not so OK?

- Wiela – Bunyip reach

Bells Marsh – W70A



Course Planning Process

- *Land holder permission and liaison (several steps – not discussed further)*
- Research map and previous events, course requirements for the event
- Be acquainted with the terrain, and the expected conditions on the day of the event
- Agree timetable with controller/organiser as applicable
- Are there any OOB areas or other land holder requirements
- Investigate/plan start and finish locations
- Draft courses – get controller feedback (where applicable), consider water
- Examine and tape controls (why?) – check map, control approaches, finish and start areas, take photographs of control sites (useful for sprint, more distant areas)
- Get controller field review of courses (where applicable), update as required
- Finalise courses, control numbers and control descriptions
- Check/cut circles (correctly centred), crossing lines – cut and move as required (we will look at the course planning software later)
- Get maps and control descriptions printed
- Get controls stands, flags and units
- Place controls (controller check if applicable)
- Event is held
- Collect controls on course closure or all competitors have returned (have a plan beforehand)

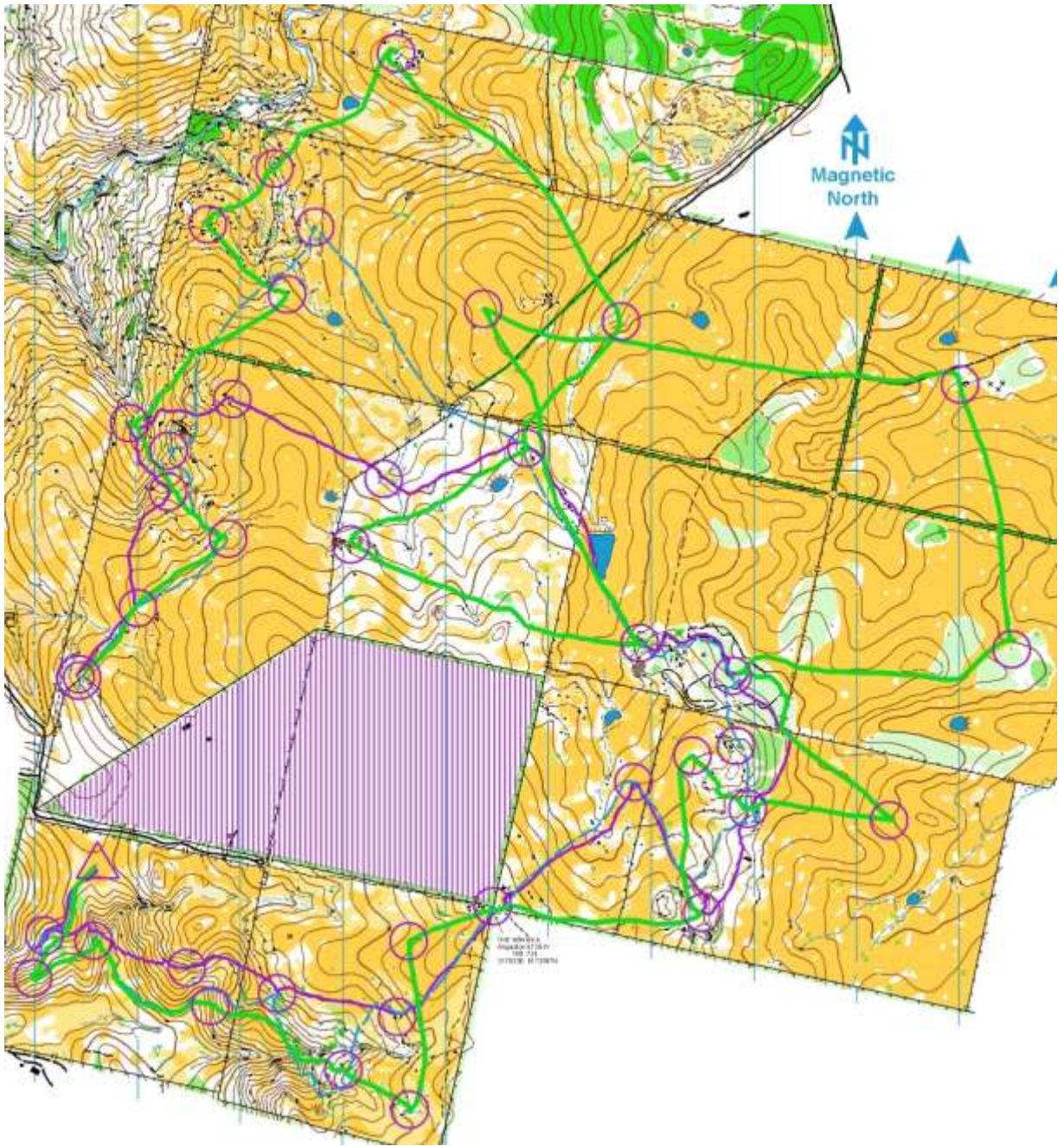
The Start and Finish

Start

- Doesn't need to be at/near the Finish
- Consider Very Easy and Easy Courses when planning
- Be prepared to have it away from the Finish/Assembly area if this improves your courses
- A remote Start is much better than a remote Finish, ensure route is clearly marked
- An uphill walk to a start can help reduce climb on courses
- Marked by a control flag (no punch)

Finish

- Should be at or close to assembly
- Improve spectator involvement even for minor events
- Avoid unmanned remote finishes except in exceptional circumstances e.g. no suitable parking or assembly on the map
- *"The precise location of the finishing line or point shall be clear to all competitors approaching it."* It is important to ensure that the finish is easily located and that there should be no possibility of a competitor being unable to find the finish after they have visited the last control.



Water on Courses

- Plan early – consider the course planner and organiser
- Consider accessibility when putting out water
- Spacing defined by the rules – “If the estimated winning time is more than 30 minutes, refreshments shall be available at least every 25 minutes at the estimated speed of the winner.”
- Drinks locations – rule changed for 2023
 - “Refreshments should be at controls where feasible. If not at controls, they must be located such that refreshment points meeting the above requirements are available on any reasonable route choice without significant deviation”
- Can add easy controls for water if logistically easier e.g. after a long route choice leg or technical section
- Consider the weather – put out water more frequently if required
- Use “common sense”
- Impact of COVID – trend has been to not always provide water on courses at “minor” events, if so this needs to be advertised before the event

Map Legends

- Course planners need to have a good understanding of the map legends and control descriptions
- Links to legends are here – please review as these are important when we consider the different event formats
- <https://www.sa.orienteering.asn.au/about-us/technical-information>
- Sprint Legend – some changes to the Sprint Specification made in 2022 – will discuss further under Sprint Courses (Session 2)

Control Descriptions and Control Placement

References: Refer to OSA Web Site for links

IOF Control Descriptions, Australian Edition

(See Section 2 – Items 4 and 4A here - <https://www.sa.orienteering.asn.au/about-us/guidelines-and-policies>)

Purpose - to give greater precision to the picture given by the map of the control feature and the location of the control flag in relation to this feature.

However, a good control is found primarily by map reading.

Descriptions and codes can assist in this task, but should be kept as short and simple as is necessary to locate the control.

Note: Control descriptions should not be used to correct map errors – control description symbol must match the mapping symbol.

| | | | | | | | |
|-------------------------|---------------|----------|----------|----------|----------|----------|----------|
| Event Name | | | | | | | |
| Classes | | | | | | | |
| Course No | Course Length | Climb | | | | | |
| A | B | C | D | E | F | G | H |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| Distance to finish | | | | | | | |
| Marking of finish route | | | | | | | |

Column A - Sequential numbers for no of controls on course

Column B - Control code

Column C - Which (of any similar) feature

Column D - The control feature

Column E - Details of Appearance

Column F - Size of Feature

Column G - Location of Marker

Column H - Any other Information

Control Description Example

| IOF Event Example | | | | |
|--------------------|-----|--------|-----|-------|
| M45, M50, W21 | | | | |
| 5 | | 7.6 km | | 210 m |
| | | | | |
| 1 | 101 | | | |
| 2 | 212 | | 1.0 | |
| 3 | 135 | | | |
| 4 | 246 | | | |
| 5 | 164 | | | |
| ○----- 120 -----> | | | | |
| 6 | 185 | | | |
| 7 | 178 | | | |
| 8 | 147 | | 2.0 | |
| 9 | 149 | | | |
| ○----- 250 ----->⊙ | | | | |

Condes. Octavian Droobers

| Control Descriptions for IOF Event Example | | |
|---|---------------------|---|
| Classes M45, M50, W21 | | |
| Course number 5. | Length 7.6 km. | Height climb 210 m. |
| Start | Road, wall junction | |
| 1 | 101 | Narrow marsh bend |
| 2 | 212 | North western boulder, 1m high, east side |
| 3 | 135 | Between thickets |
| 4 | 246 | Middle depression, east part |
| 5 | 164 | Eastern ruin, west side |
| Follow taped route 120m away from control | | |
| 6 | 185 | Stone wall, ruined, south east corner (outside) |
| 7 | 178 | Spur, north west foot |
| 8 | 147 | Upper cliff, 2m high |
| 9 | 149 | Path crossing |
| Follow taped route 250m from last control to finish | | |

Control Sites

- Controls must be placed at features in the terrain that are marked on the map. This demands careful planning and checking to ensure fairness.
- It is particularly important that the map portrays the ground accurately in the vicinity of the controls, and that the direction and distances from all possible angles of approach are correct.
- Competitor should be able to see the control when they are at the described feature/position – e.g. if in a gully do not try and hide behind a bush or log!
- Value of a good leg is lost if the control is poorly placed leading to a treasure hunt and a searching pack of runners, first runners there are often disadvantaged.

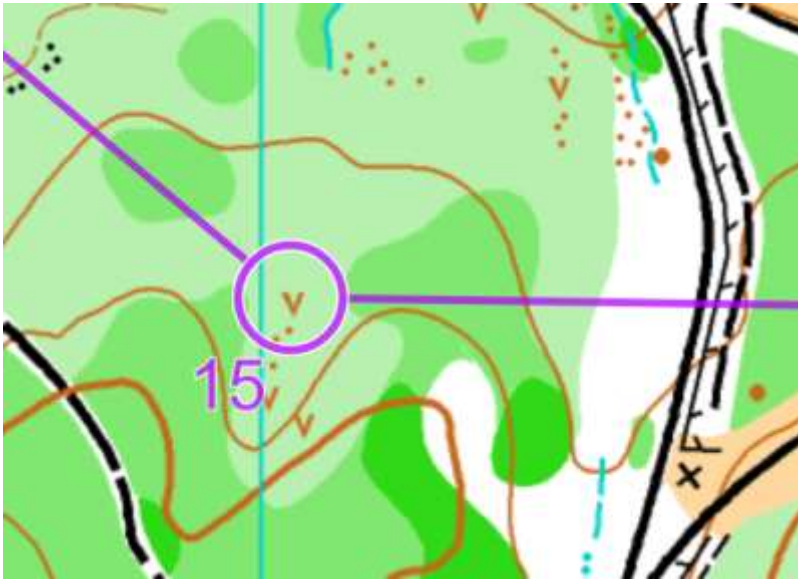
Control visible from different approaches



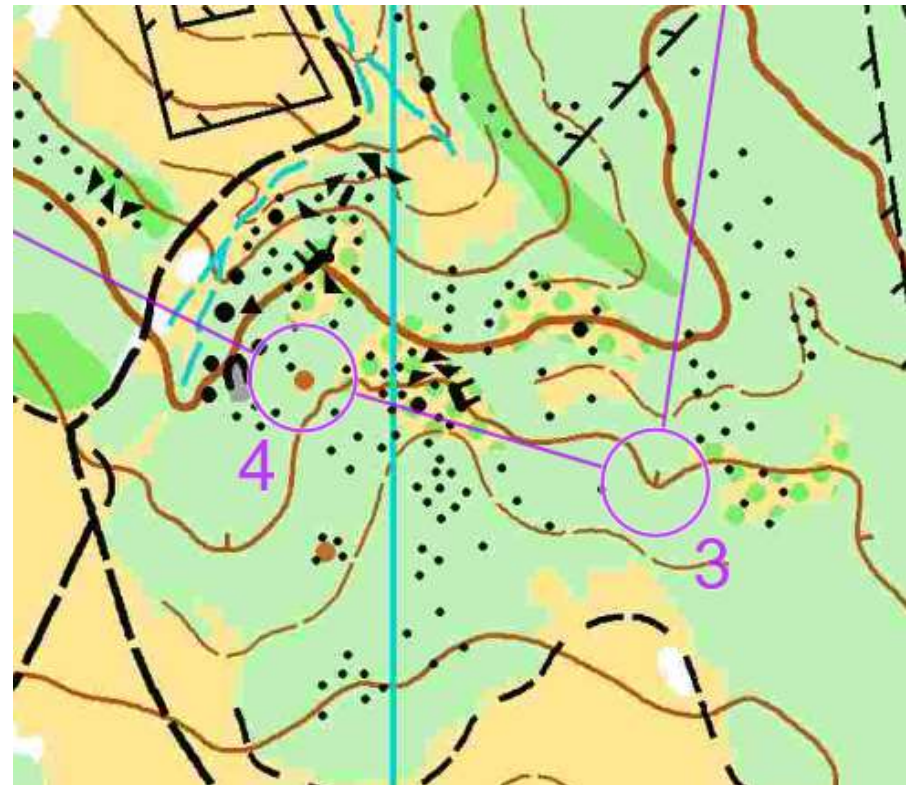
Control Sites

- Don't try and make controls more difficult than the description suggests e.g. using a bush to "hide" a control in an open gully – reduces level of fairness as control visibility varies depending on approach direction
- Controls should not be sited on small features visible only from a short distance if there are no other supporting features on the map (esp. in green areas).
- Controls must not be sited where the visibility of the control flag for runners coming from different directions cannot be evaluated from the map or control description.
- Don't place controls in a maze of illegible detail or in very green areas
- Controls are not technically difficult because they are hidden
- Controls mark beginning and end of leg – also used for other purposes e.g. crossing points, water control, spectator points

Control Sites – Hard Courses

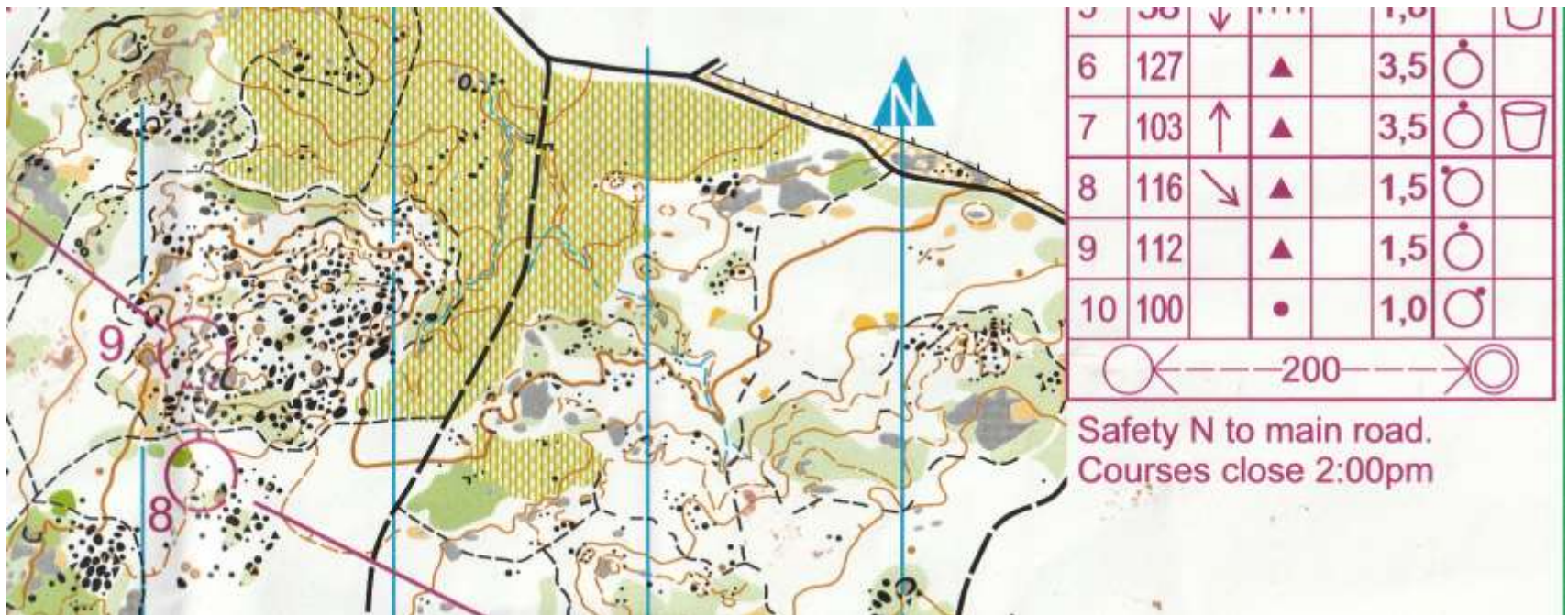


In a “negative” feature in green with no good attack features as gully is broad, no close catching feature (approach is from NW)



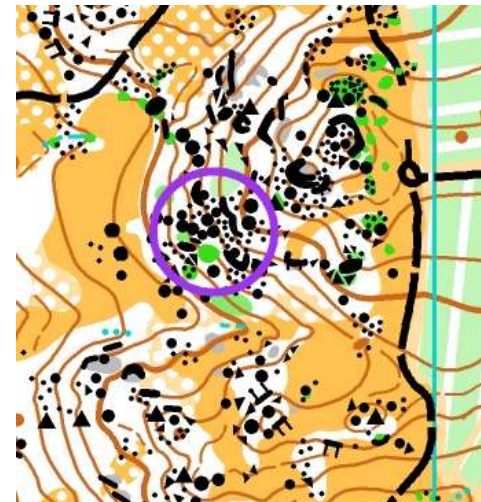
Controls in green – have attack “features” to use, and catching features

Control Sites – description incomplete ?



Control Sites

- Competitors are sometimes more upset by issues with control sites than with quality of legs
- But don't spoil a good leg by an unsuitable control site (hidden, ambiguous, misplaced, misleading description) leading to unnecessary time loss
- Controls that cannot be described should not be used e.g. the "Middle" boulder in a cluster of boulders
- Control numbers – avoid having consecutive numbers on close by controls, finalise the control numbers as part of the final course completion



Control Sites – Rules and Guidelines

Fairness of Control Sites

It is necessary to choose control sites with great care and notably to avoid the 'acute angle' effect where incoming competitors can be led into the control by outgoing runners.

This is less applicable in sprint events

Proximity of Controls

Controls on different courses placed too close to one another can mislead runners who have navigated correctly to the control site.

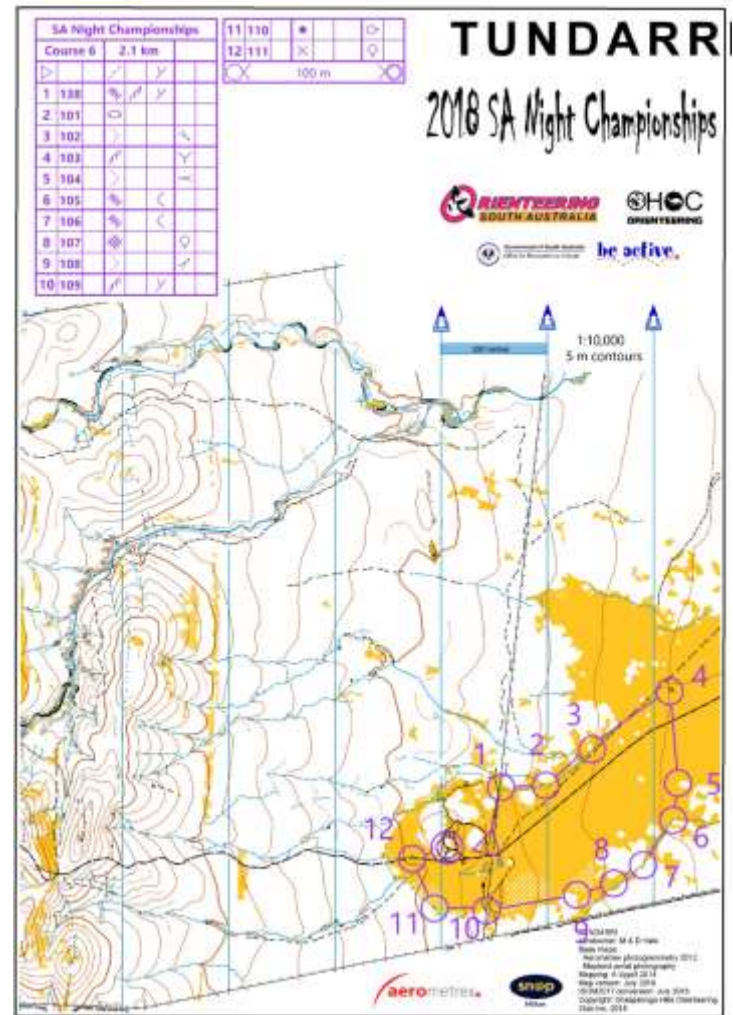
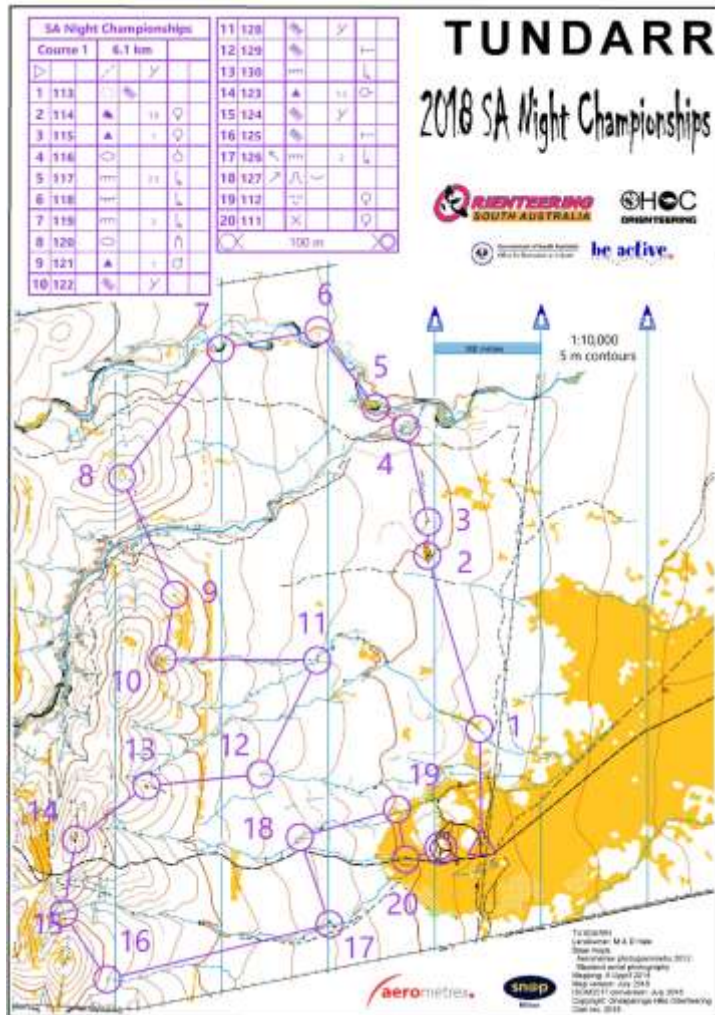
Controls should not be sited within **30 m** of each other (**25 metres** running distance for map scales of 1:4000 and 1:3000, minimum straight line of **15 m** – new IOF rule). Further, only when the control features are distinctly different in the terrain as well as on the map, should controls be placed closer than **60 metres** (**30 metres** for map scales of 1:4000 or 1:3000 has been removed from the latest IOF rules).

All distances are the straight line distance except where listed

Safety Considerations

- Safety of competitors
- Safety of officials especially course planner
 - During field check – notify others of plans, consider weather, working with others
- Event Planning
 - Identify hazards (bush and street-park are different)
 - Weather – hot, cold
 - Water
 - Plans for an emergency (Search & Rescue Plan, Communications, Emergency Services, Keys for locked gates)
 - Appropriate course planning
 - Consider map boundaries

Control sites close to edge of the map



Safety Considerations








- Information for competitors – these need to be planned as part of the event organisation and course planning
 - Standard information displayed at registration – safety bearing, course closure, event specific – map notes
 - Information on map – out of bounds, crossing points, dangerous areas and hazards
 - Repeat safety information at the start

Standard symbols for marking these features








- Out of bounds areas – if not printed on map, purple cross hatched areas added in course planning software
- Out of bounds/uncrossable boundary – thick purple line
- Compulsory crossing points – shown by two purple arcs)(
- Dangerous areas – show in purple cross hatching (out of bounds), tape if necessary
- Forbidden route – mark purple crosses along route e.g. a railway line, route can't be followed but can be crossed

Special Course Marking Symbols

- Forest Maps

-  Out-of-Bounds Boundary (can not cross)
-  Out-of-Bounds Area
-  Out-of-Bounds Area With Dashed Line Boundary
-  Out-of-Bounds Area With Solid Line Boundary
-  Crossing Point
-  Out-of-Bounds Route (can cross, not along)
-  First Aid Post, Refreshment Point

- Sprint Maps

-  Out-of-bounds boundary
-  Out-of-bounds area
-  Out-of-bounds area with dashed line boundary
-  Out-of-bounds area with solid line boundary
-  Crossing point
-  Crossing section
-  Temporary construction or closed area

No line – no marking
 Dashed line – intermittent marking
 Solid line - marked continuously

Essentials Of Course Planning - Review

Reference: OA Foot Rules Appendix 2

- Courses should be correctly designed for the expected abilities (technical and physical) of participants
- Orienteering is running navigation, terrain needs to be runnable
- Fairness - Course planner needs to ensure that the contest is fair, all competitors face essentially the same conditions on every part of their course, i.e. eliminate the element of luck, courses are won by the best orienteer on the day
- Competitor enjoyment - orienteers need to be satisfied with the courses they are given, courses are suitable for the competitors
- The course planner needs to be fully acquainted with the terrain
- Courses should be set that “normally fit” competitors can run over most of the course set for their level of ability
- Consideration of wildlife and the environment
- Consideration for spectators (generally other competitors) – Finish and Spectator controls (specific events only)

OSA Guidelines

Course Specifications

- Available on the OSA Web site at
- <http://sa.orienteering.asn.au/admin/OASAGuidelinesPolicies/>
- Cover the required courses for each type of event. For OY and above, defines the age classes for each course

Also on this page

- Safety Guidelines
- Link to OA Foot Orienteering rules
- Link to Control Description documents

Course Planning Software

- Two main software packages used
 - OCAD – mapping and course planning software (not free)
 - Purple Pen – free software, used by most people except those who have OCAD for mapping, is a Windows application

Introduction to Purple Pen

Download here - <http://purple-pen.org/>