

Cranbury Brook Preserve White Orienteering Course

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Classical orienteering is best done with physical paper maps and a compass. A mobile compass is sufficient
(See Map Orientation)

To print the maps, custom print the page(s) you want. Alternatively, individual PDFs of Maps for printing
are available at [this link](#). (Links to External Site, you will leave the Cranbury Township Website). Individual
maps can also be accessed from an embed on the maps.



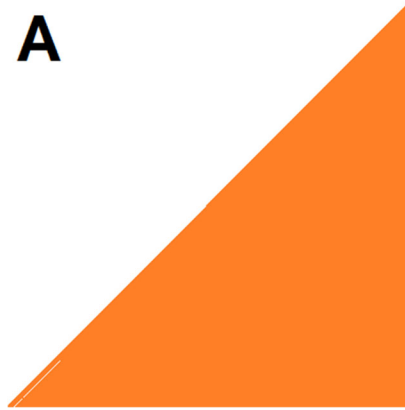
Map of Trails at the Cranbury Brook Preserve. A more detailed map is included later in the document

Introduction

Located in the heart of Cranbury, the Cranbury Brook Preserve consists of 50 acres of land for walking, bird watching, fishing, cross country skiing, and spending time in nature. The preserve protects a section of the stream corridor of the Cranbury Brook, fed by Brainerd Lake. Camping is permitted in designated areas with a permit from Cranbury Township Recreation Department. Permits for campfires can be obtained from the Fire Official at the Township. More information on the Cranbury Brook Preserve, along with other parks and open spaces, can be found on the Cranbury Township Parks Commission page.

Orienteering is an activity where participants use navigational skills to locate control points, or special signs, in the real world using a map. This orienteering course is a white orienteering course, a beginner course serving as a guide to introduce navigational skills and map reading. Directions to read maps and navigate by compass are included on the next page. This course will be within the Cranbury Brook Preserve and always remain on trails. The control points, a square sign with white and orange triangles with a letter in the upper righthand corner, will be visible from these trails. An example of a sign is included below.

A



Example of a Control Point

The Cranbury Brook Preserve can be accessed from the gravel driveway starting on North Main Street across from Brainerd Lake and extending westward along the Cranbury School into a parking lot. A pedestrian entrance to the preserve is on the left of the driveway, just before the parking lot. Access to the south side of the Cranbury Brook Preserve is via Unami Woods Park located on Wynnewood Drive at the end of Woodview Drive.

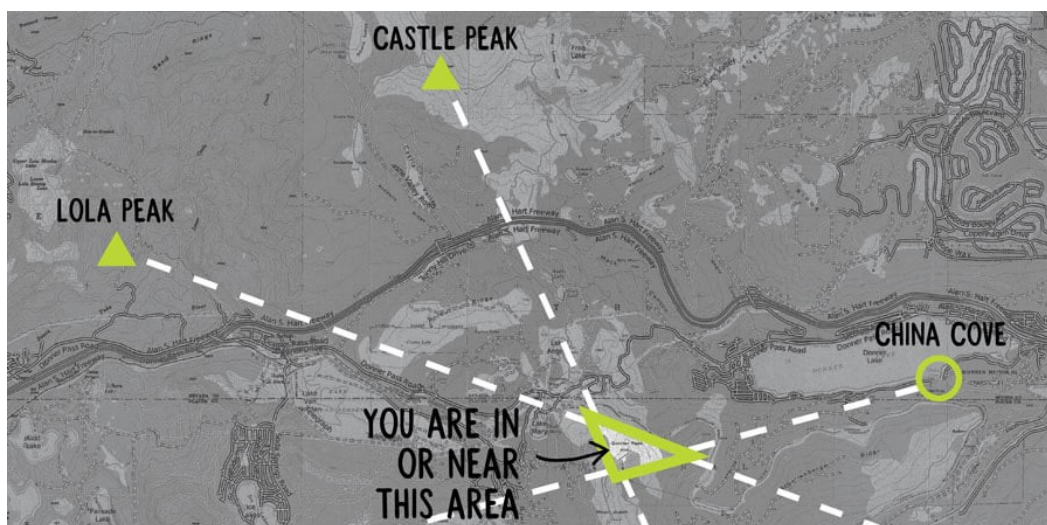
How to Orienteer *(Throughout the next few pages, compass can refer to either a physical compass or a digital compass that uses magnetic north.)*

Maps are 2D representations of the real world, often scaled down by thousands of times. Maps also have figures and colors to represent many different things including buildings, roads, and geographic features or vegetation. You can read these colors using a legend included with the maps. Once you understand a map, you will then be able to match parts of the map with what is in front of you. An example of orienteering will be on page 6.

Location

To navigate with a map, orienteers first need to know their current location and orientation, where they are and which direction they are facing. It is also important to orient the map in the right direction. This can be done by aligning a compass to the vertical lines on the map, and then rotating the map until the compass points to North. All vertical lines will then be pointing to magnetic north.

Without GPS, determining your current location is done with landmarks and geographic features, including but not limited to topographic extrema (peaks or dips), bends or intersections in the trail, or physical objects like benches. Often, at least 2 of these features are required to locate your location in a process called triangulation, where lines are drawn from the direction of these features your location is where you are. Because of the few benches and minimal topography, trail intersections will be most useful for locating yourself while orienteering in the Cranbury Brook Preserve. By knowing the direction you are facing by compass and the position of the nearest trail intersections, you can find your location on the map.



Example of Triangulation, Multiple points are used to find position

Destination

The other part of orienteering is knowing your destination. Where do you want to go? Which direction is it in and how far is it? How many trail intersections should you pass? Which direction do you turn? Are you walking through a field or a forest? All of these should be considered when planning to reach your next control point for safe navigation and to avoid getting lost.

Where do you want to go?

After you locate your current position and which direction you are facing in, you can then plan to advance. Determine where you want to go, whether it is the next control point or the finish. Some, but not all, control points are located at intersections of trails.

Which direction is it in and how far is it?

With an oriented map, find the direction you should go in. Any direction on the map should now be the same direction in the real world. The scale of the maps is 1:5000, meaning 1 inch on the map represents 417 feet in real life (A soccer field is about 300 feet). The first joint of your index finger is around an inch. Using this, you can estimate the distance you should travel to make sure you do not walk too far.

How many trail intersections should you pass? Which direction do you turn?

When you reach an intersection or are unaware of where you are, always check the map to make sure you are on track and to find the next direction to go in. Sometimes you will go through an intersection, other times you may turn left or right.

Are you walking through a field or a forest?

While many parts of the Cranbury Brook Preserve are wooded, there are some fielded areas. It is important to know where you should be walking to make sure you are going in the right direction. Following trails is also important to prevent plants from being trampled.

Orienteering Example using Path 1



A portion of the Orienteering Course path 1, used as an example for orienteering

First Point

I have just arrived at the parking lot and walk back down the gravel road to the start of the course, the purple triangle. Using a compass, I orient the map so that the vertical lines will face magnetic north. Since I know where I am (The purple triangle), I can start locating my destination.

Where do I want to go?

To control point 1

Which direction is it in and how far is it?

I am walking in the Southwest direction. The length is a bit more than half the length of my first index joint, so it is about 250 feet, which is about the actual distance.

How many trail intersections do I pass? Which direction do I turn?

My destination is the first intersection. I do not turn

Are I walking through a field or a forest?

I will be walking through a forest

Second Point

After I have reached my first control point, I will record the letter in the table. Then, I can orient myself again (Although in this case, if I held the map steady, the map is already oriented since I walked in a straight line). I know where I am, the intersection with the 1st control point, so I can then navigate to the 2nd control point.

Where do I want to go?

To control point 2

Which direction is it in and how far is it?

I will walk in the Southwest direction until I reach an intersection. Then I will turn left and walk in a Southeast direction until I reach control point 2. On the map, the total distance is about 0.8 inches, or 320 feet in the real world.

How many trail intersections should you pass? Which direction do you turn?

I will reach a trail intersection. Then I will turn left. After walking for about 160 feet, I will reach control point 2 and record the letter.

Important Things to Know

Trails

The map on the first page includes the many trails in the Cranbury Brook Preserve. Many of these trails are well developed, wide and suitable for walking and even biking. However, the Eagle Trail, the portion of the red trail from the bottom left to the bottom right that follows Cranbury Brook, is narrower and thorny plants may grow on the side. It is recommended to wear pants and to pay attention to the trail in front of you. Motor vehicles are not allowed in the preserve.

Safety

Safety is a key part to a successful trip outdoors and orienteering. Please remain on trails while orienteering to avoid poison ivy and other potential injuries. As with all outdoor activities, especially those in wooded areas, bugs will bite, and you may get ticks. Consider using bug spray and always check for ticks after a day's activities. Long sleeved clothing, hats, and sunscreen are also recommended. Orienteering should be done in clear weather; rain can make trails slippery, and wind may cause branches or dead trees to fall. Always be aware of your surroundings.

Wildlife

The Cranbury Brook Preserve is the home of many birds and smaller animals along with larger animals like deer. There are also bee houses around the preserve that will help solitary bees. Please be respectful of wildlife and leave habitats the way you find them. New Jersey's state bird is the American Goldfinch. Look around to see the many animals flying around or on the ground. See how many different bird songs you can hear!



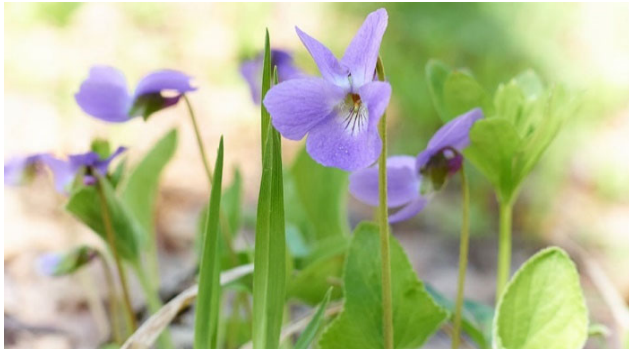
American Goldfinch, State Bird of New Jersey



Bee houses provide shelter for bees, a vital pollinator

Plants

The Cranbury Brook preserve has a variety of plants, many of which benefit the many pollinators in the region. The informational kiosks can help identify many of these plants. Like with wildlife, please leave plants the way you find them. Stay on trails and avoid walking through dense vegetation to reduce the trampling of plants. New Jersey's state flower is the violet, and the state tree is the red oak. Look around to see the many different plants and flowers.



Violet, State Flower of New Jersey



Red Oak tree, State Tree of New Jersey

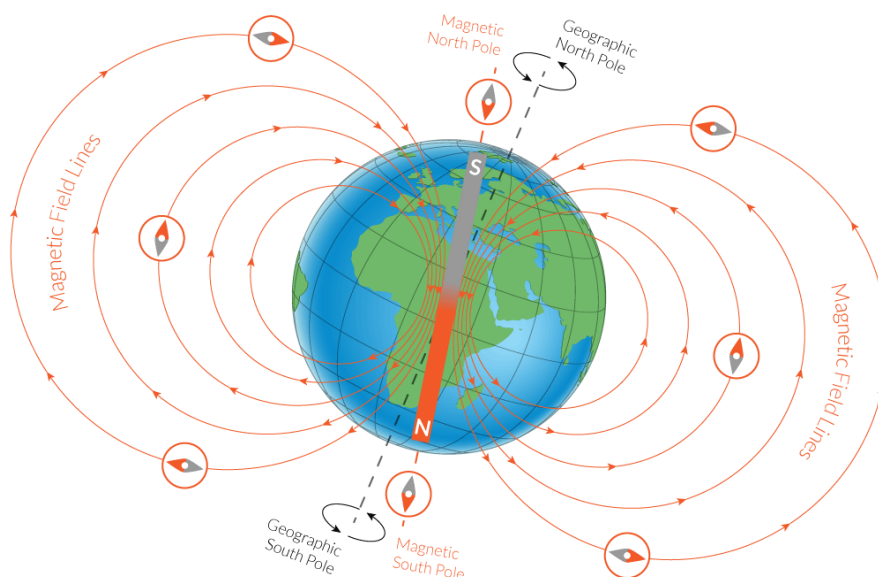
Private Property

Some of the land around the preserve is private property. While orienteering, please stay within the orienteering area marked on the general map on page 12. Note that while there is a trail that extends west along cultivated land, the cultivated land itself is private property. Please be respectful to our neighbors and their privacy!

FAQ

Why is the map orientated differently from Google Maps?

Google Maps projects the Earth on a globe, meaning that North is True North, pointing to the geographic North Pole. On the other hand, compasses use Earth's magnetic field, which has a North and South pole. The North magnetic pole is close to, but not actually at the geographic North Pole, so compasses point to a direction called magnetic north. Depending on your location, magnetic north is off from True North by a few degrees, called magnetic declination. In New Jersey, declination is about 12° West meaning the orienteering map is rotated about 12° East to orient magnetic north as True North to allow for smoother compass use. For this orienteering map, you can try using a real compass or set a phone's compass to magnetic north in the settings.



Earth's magnetic field. Note that the Geographic North Pole is not the same as the Magnetic North Pole

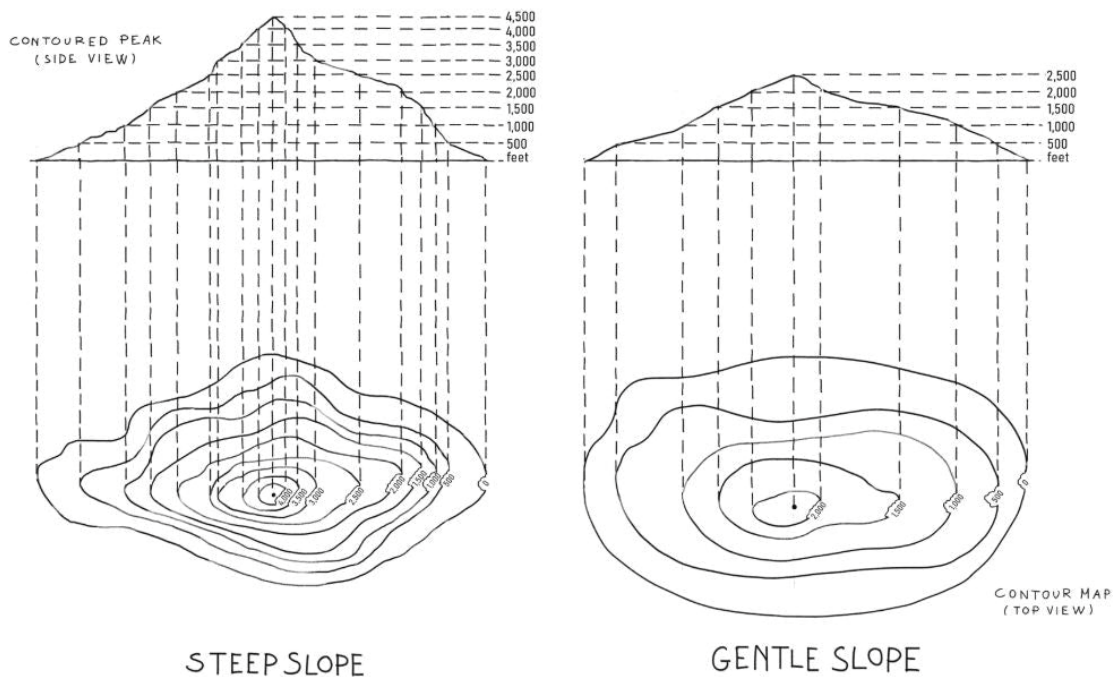
Fun Fact: A compass contains a magnet, which also has a North and South pole. The north pole of the magnetic needle points towards the North magnetic pole. Since opposites attract, the North magnetic pole is really the South Pole of the Earth's magnetic field!

Why does the brook look different?

The condition of the brook depends greatly on the environmental conditions around it. The size of the brook can widen or narrow with different periods of rainfall. With heavy or constant rains, the ground will soak with water and the brook will start to be much thicker. With extended periods of low rain or higher temperatures, the brook will look thin. The shape of the brook can also change over time due to erosion.

What is topography?

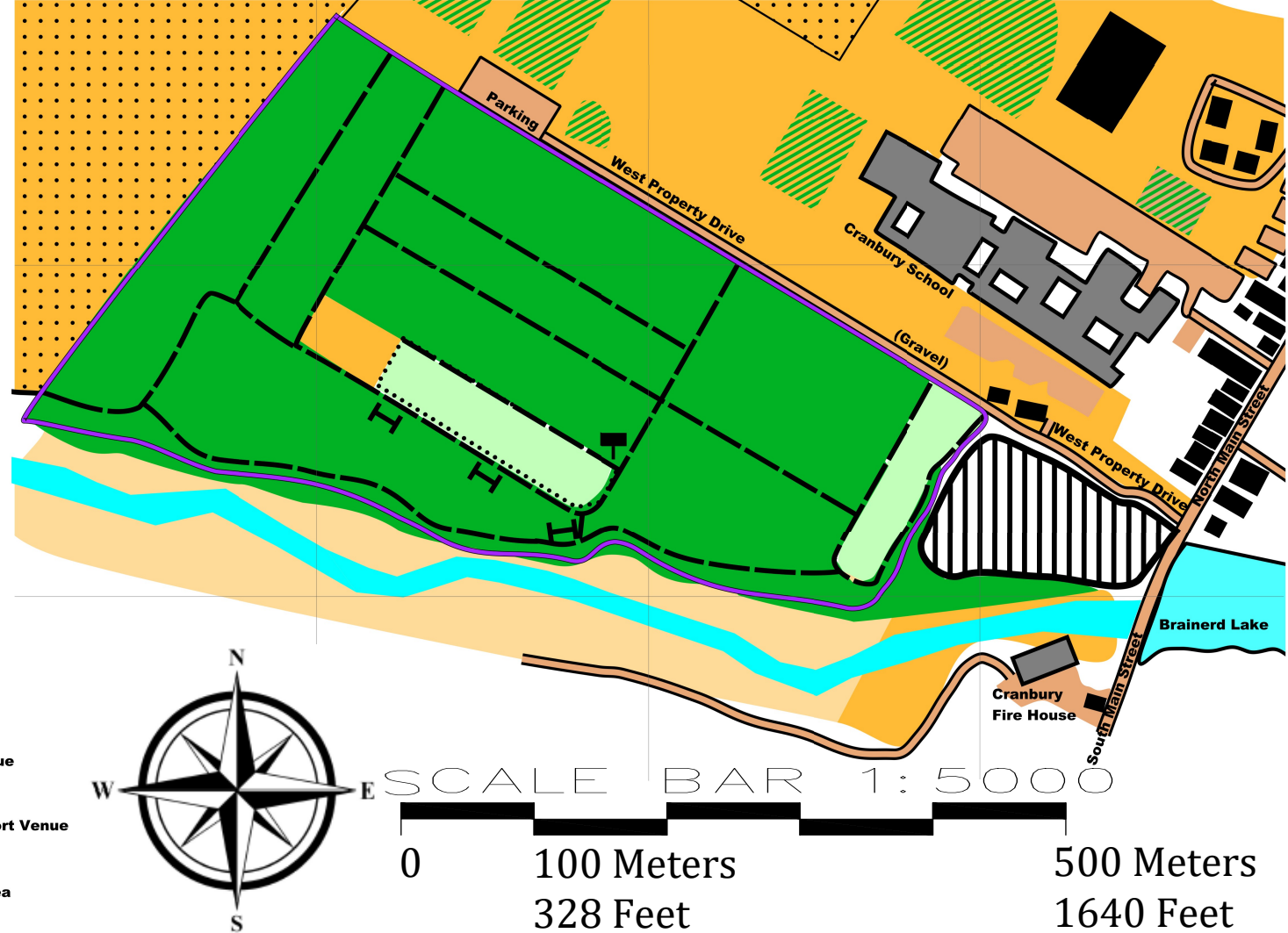
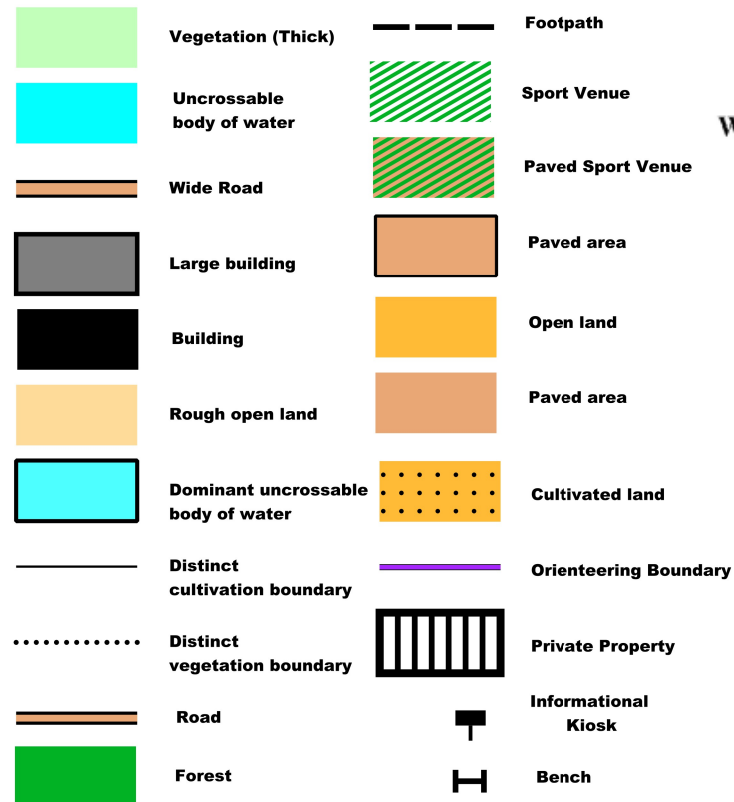
Topography is the study of forms and features on the surface. In the United States, topography can also be synonymous with relief, or the terrain. Maps are 2D and cannot fully show terrain, so on many maps, terrain is denoted by contour lines, which are spaced in a way to show changes in elevation. The contour lines represent a specific elevation, with increments that can vary from 50 to 500 feet. Every place on the contour line would have that same elevation. It is like taking a horizontal sheet of paper and drawing the outline of cuts at certain heights. The steeper a geographic feature, the closer these contour lines would be on a map. More gentle slopes have much more spaced contour lines. A surprisingly large amount of information can be shown using contour lines. Because of the relatively levelness of the Cranbury Brook Preserve, the maps do not contain contour lines.



Contour Lines on different slopes. Note that steeper slopes have closer contour lines. Every place on the same line has the same altitude

General Map of Cranbury Brook Preserve Trails and Orienteering Boundary

(Click for individual printable PDF)

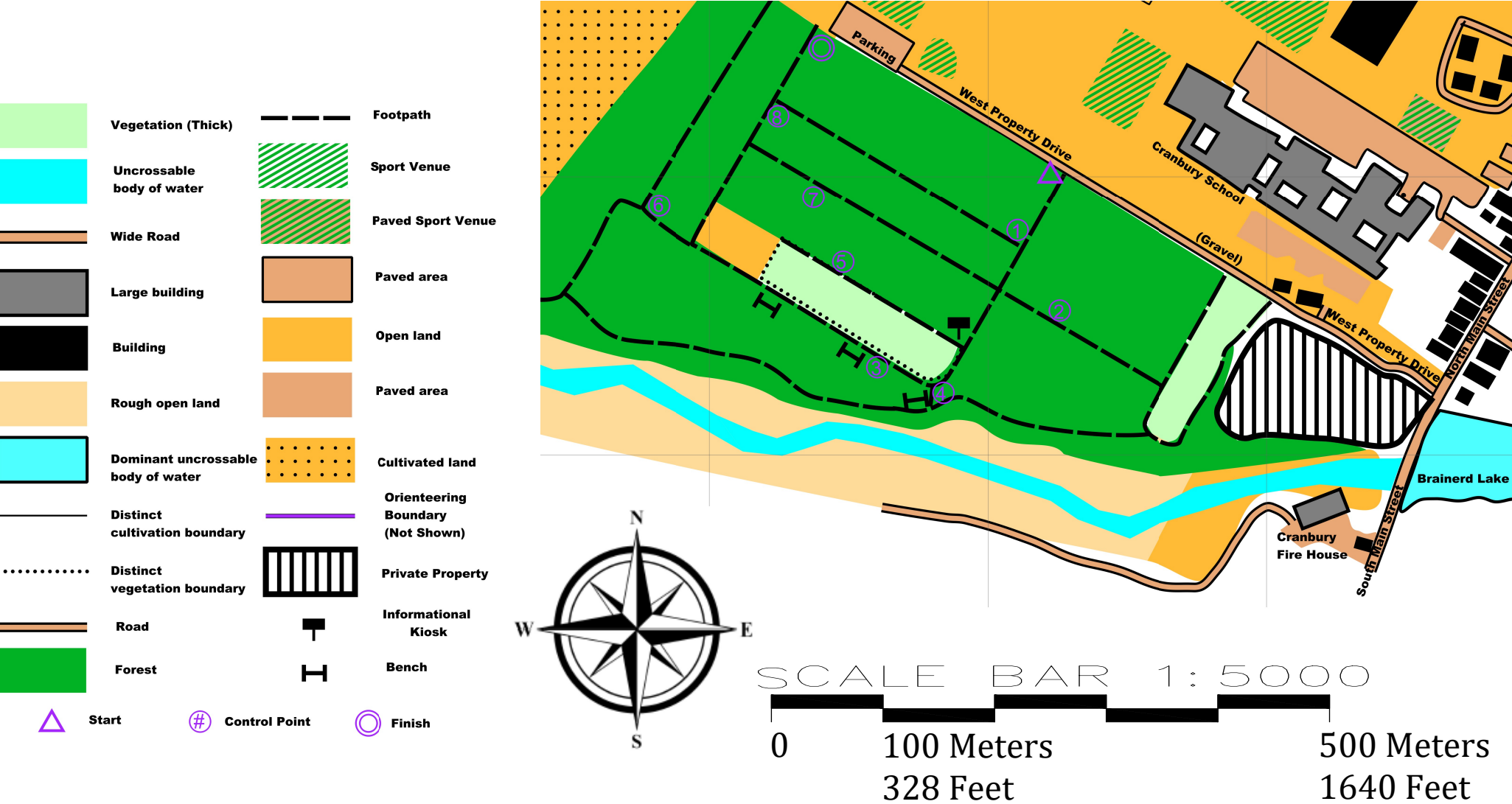


The Cranbury Brook Preserve protects the Cranbury Brook stream corridor. Access to the preserve is by West Property Drive, a gravel road north of Brainerd Lake

Path 1 (1.1 km, 0.7 Mile) [\(Click for individual printable PDF\)](#)

This orienteering course goes through 8 control points.

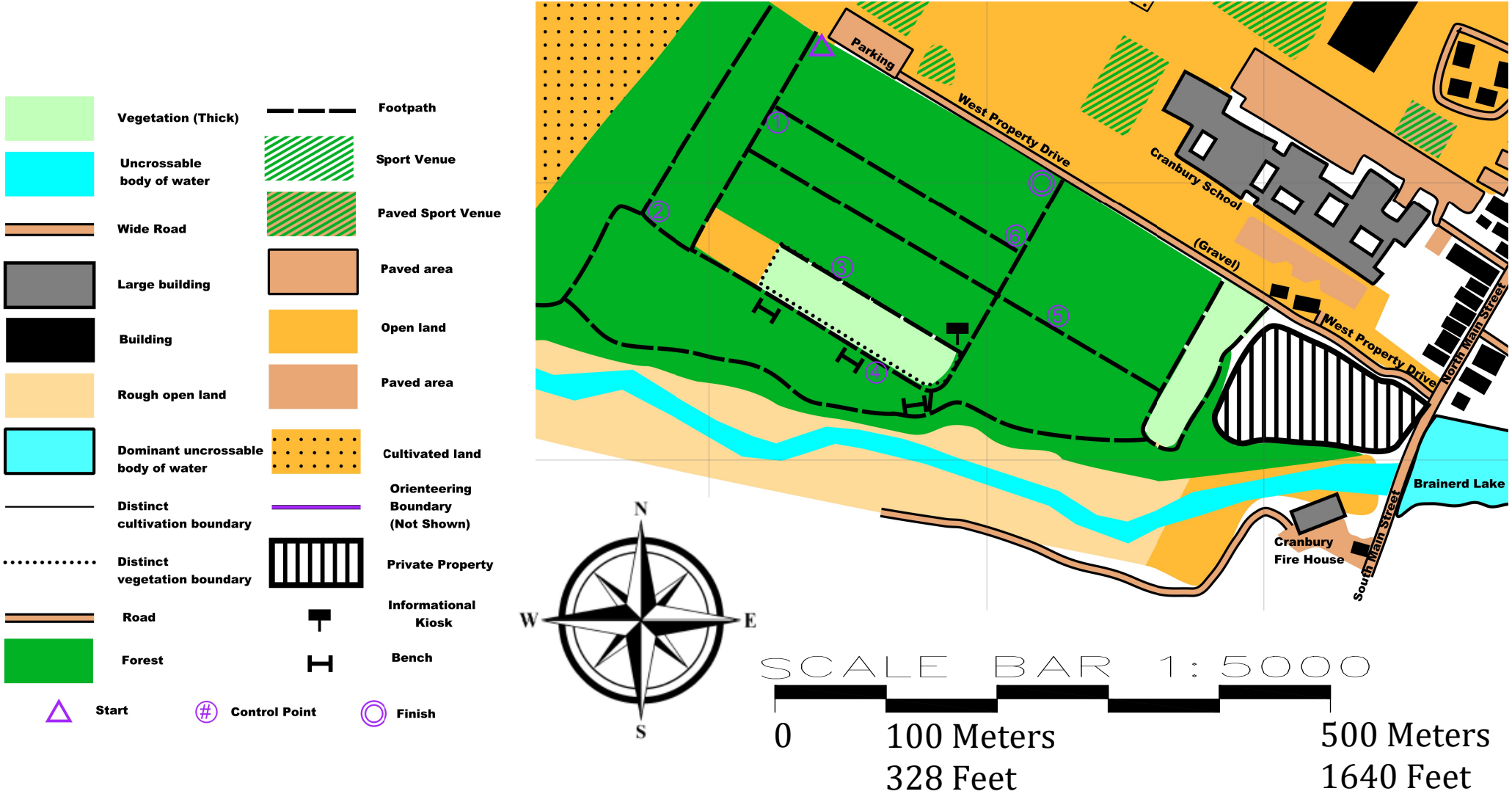
Control Point	1	2	3	4	5	6	7	8
Letter								



Path 2 (1 km, 0.6 Mile) [\(Click for individual printable PDF\)](#)

This orienteering course goes through 6 control points.

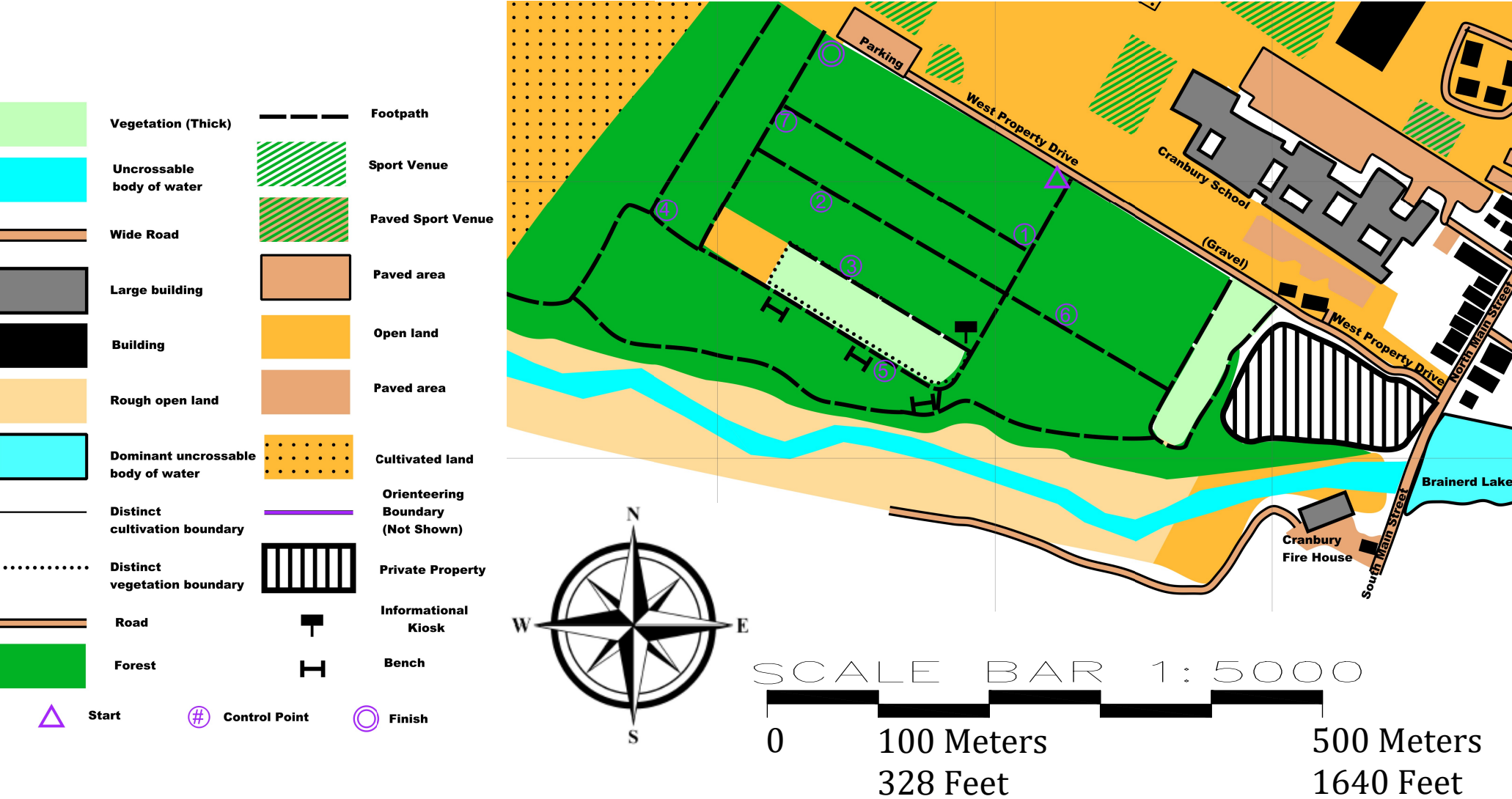
Control Point	1	2	3	4	5	6
Letter						



Path 3 (1.7 km, 1 Mile) [\(Click for individual printable PDF\)](#)

This orienteering course goes through 7 control points.

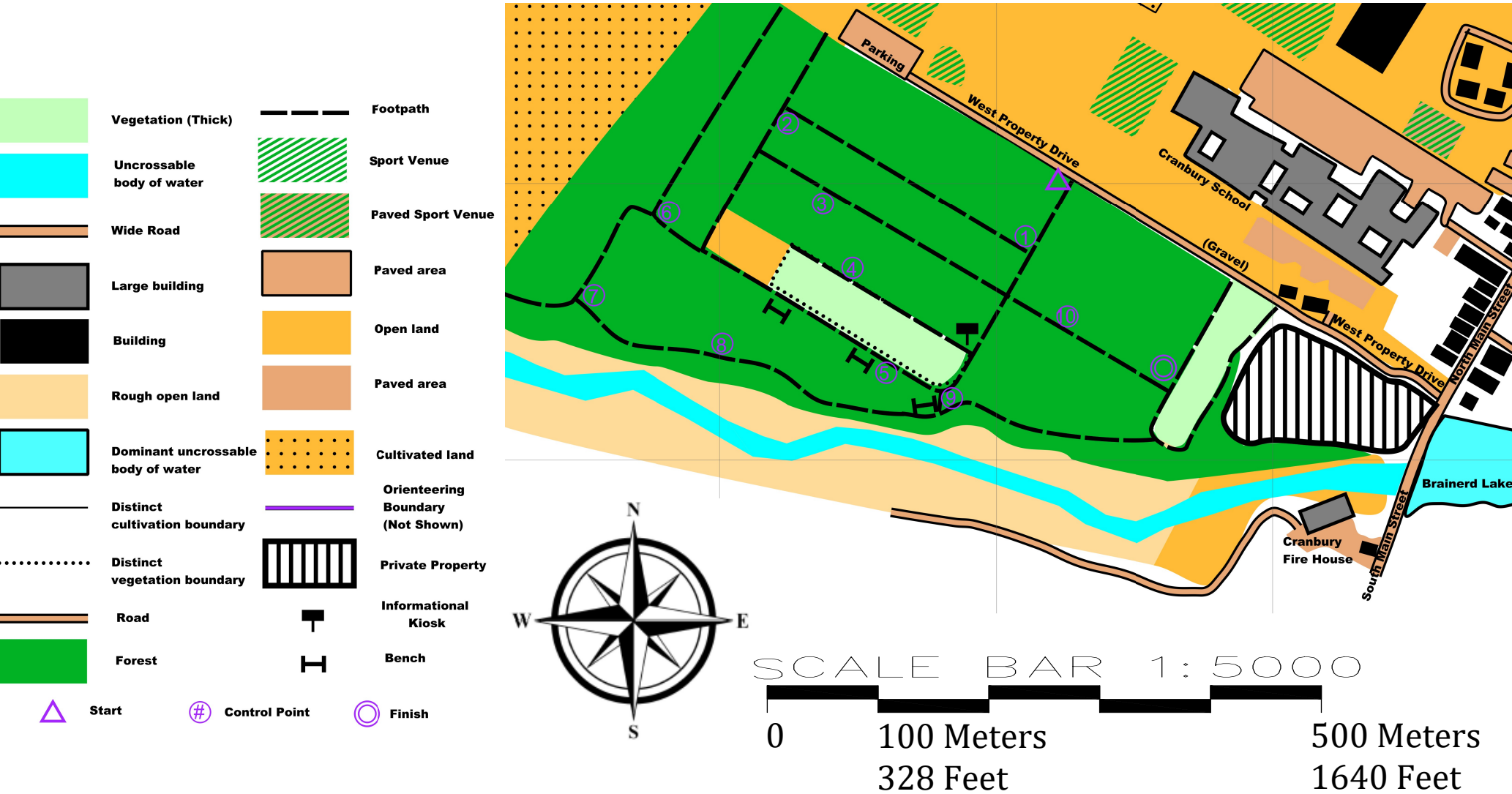
Control Point	1	2	3	4	5	6	7
Letter							



Half Eagle Trail Path (2.1 km, 1.3 Miles) [\(Click for individual printable PDF\)](#)

This orienteering course goes 10 control points and a portion of the Eagle Trail. Be mindful of narrow trails from points 7 to 9

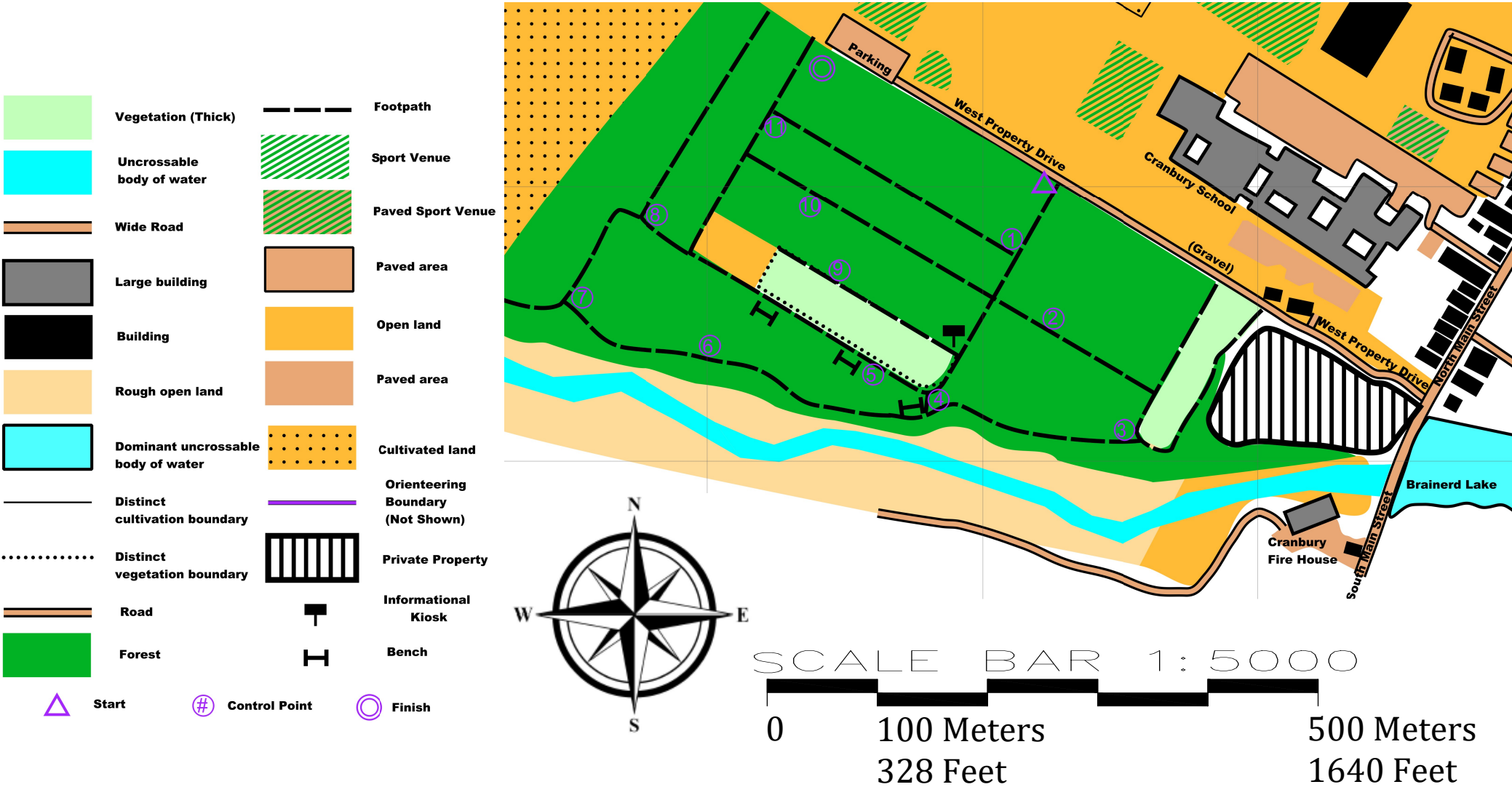
Control Point	1	2	3	4	5	6	7	8	9	10
Letter										



Eagle Trail Path (1.7 km, 1 Mile) [\(Click for individual printable PDF\)](#)

This orienteering course goes through all control points and the Eagle Trail. Be mindful of a narrower trail from points 3 to 7

Control Point	1	2	3	4	5	6	7	8	9	10	11
Letter											



Your Own Path (Click for individual printable PDF)

Design your own course. Print out the map and fill them with numbers. Use any of the points and see where it leads you!

Control Point	1	2	3	4	5	6	7	8	9	10	11
Letter											

Vegetation (Thick)

Uncrossable body of water

Wide Road

Large building

Building

Rough open land

Dominant uncrossable body of water

Distinct cultivation boundary

Distinct vegetation boundary

Road

Forest

Footpath

Sport Venue

Paved Sport Venue

Paved area

Open land

Paved area

Cultivated land

Orienteering Boundary (Not Shown)

Private Property

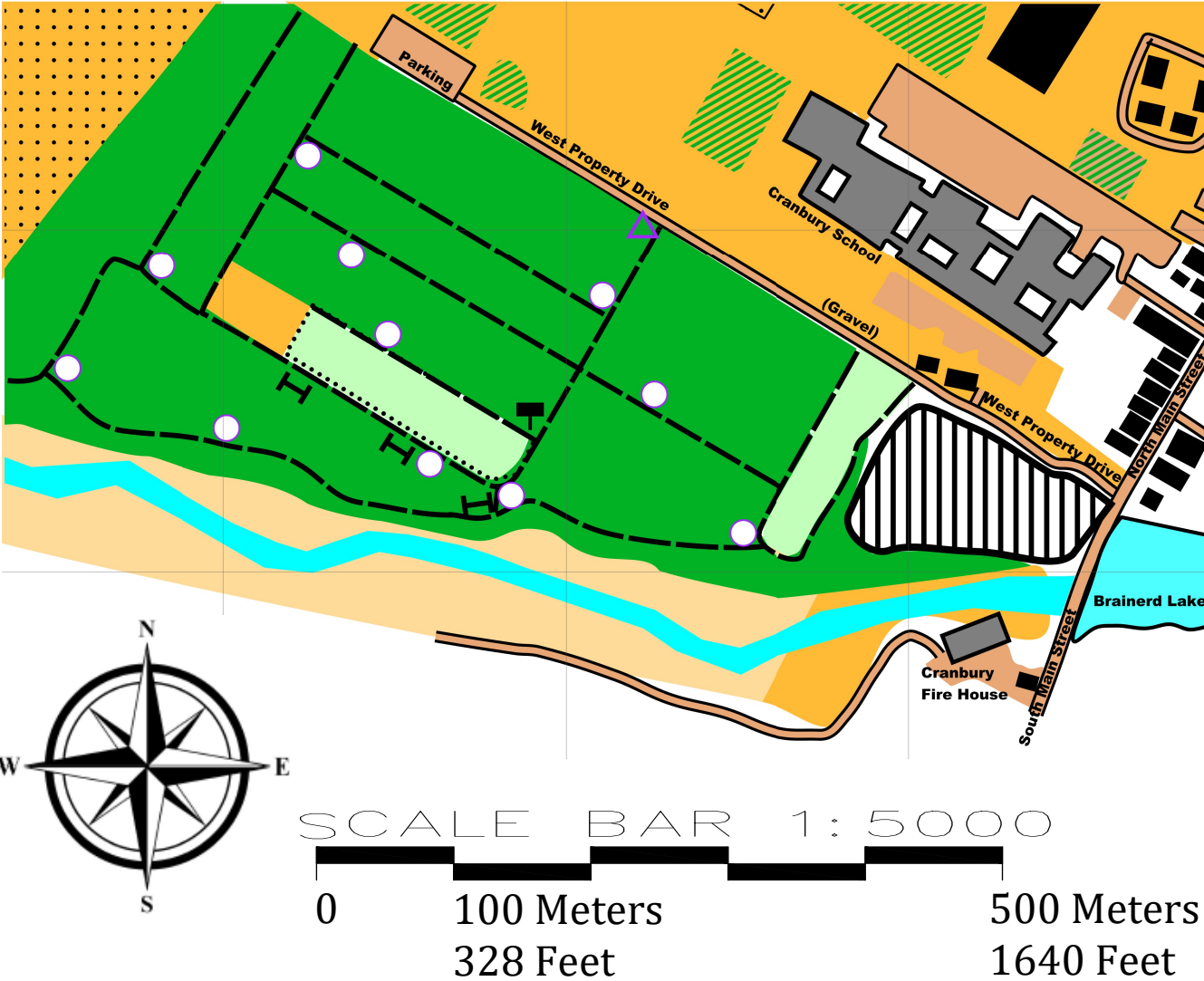
Informational Kiosk

Bench

Start

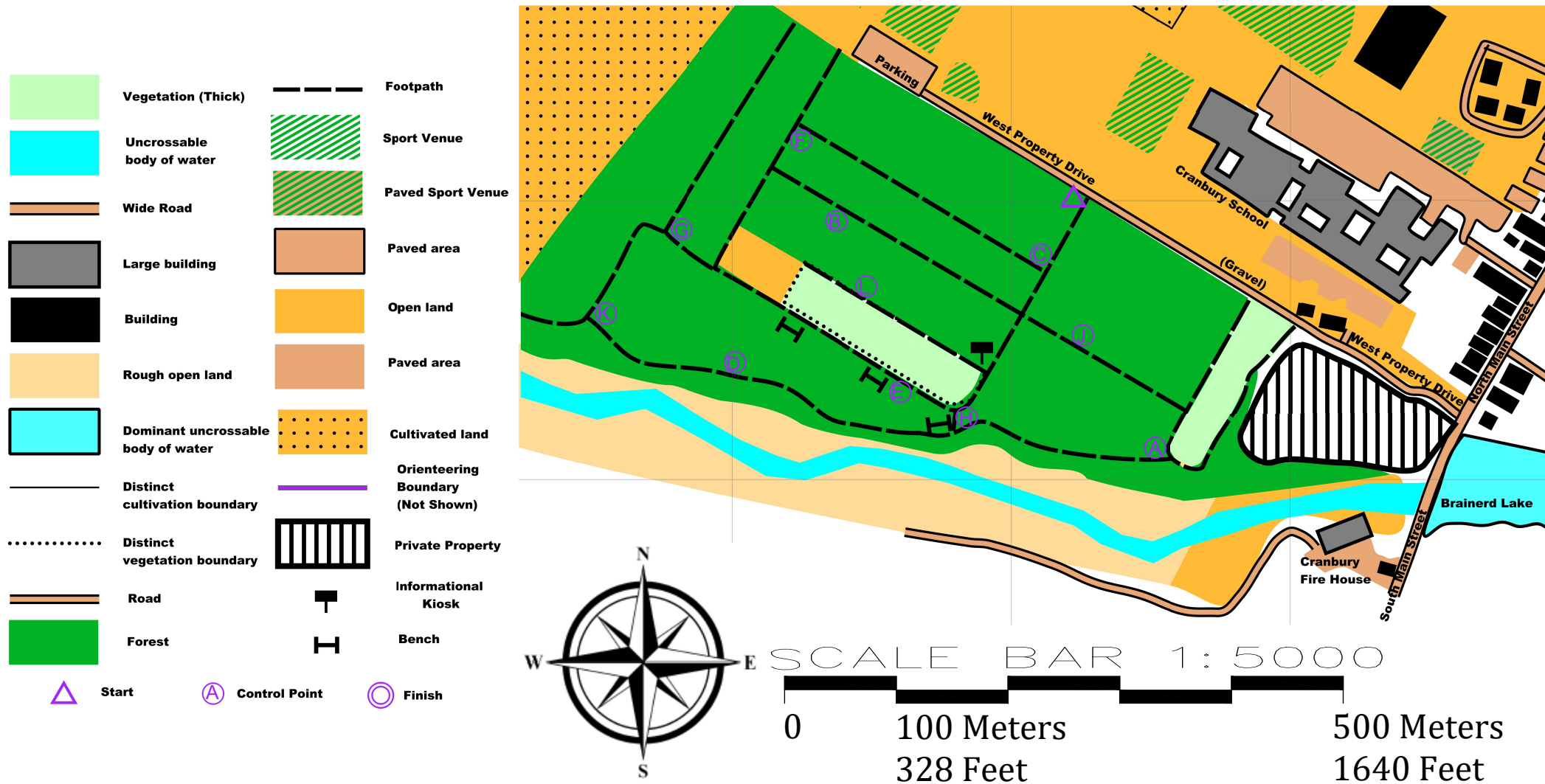
Control Point

Finish



Orienteering Control Points Key (Click for individual PDF)

The letters below are the letters on the control points. After orienteering, you can check the control points you found with the ones below. Tables with the answers will be on the next page



Key to Orienteer Courses

Path 1

Control Point	1	2	3	4	5	6	7	8
Letter	C	J	E	H	L	G	B	F

Path 2

Control Point	1	2	3	4	5	6
Letter	F	G	L	E	J	C

Path 3

Control Point	1	2	3	4	5	6	7
Letter	C	B	L	G	E	J	F

Half Eagle Path

Control Point	1	2	3	4	5	6	7	8	9	10
Letter	C	F	B	L	E	G	K	D	H	J

Eagle Path

Control Point	1	2	3	4	5	6	7	8	9	10	11
Letter	C	J	A	H	E	D	K	G	L	B	F

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Eagle Project 2022