# FLOOD MANAGEMENT: INFILTRATION RATE AND MOISTURE

The composition of soil is important in determining how much water is absorbed and how much runs off when it rains. This is also determined by how compact the soil is. Trees play an important role in flood management by altering specific qualities of the soil, allowing more water to be taken in. This survey will help to assess the Tiny Forest's ability to reduce flood risks.

## EQUIPMENT PER GROUP:

1 x Water bottle (1-2 litres)
1 x Measuring jug (500ml)
1 x Stop watch (must measure seconds)
1 x Ruler
1 x Tablet/phone/printed field sheet

## WHEN TO SURVEY

Any time of day

Any time of year, but best to avoid snow and heavy rain

## INSTRUCTIONS

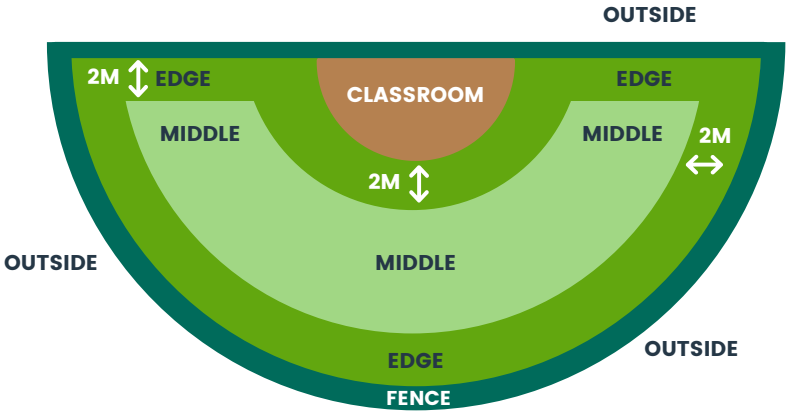
Begin by locating an infiltrometer. This is a piece of piping pushed into the ground. Use the diagram and notes below to help classify the study location. Record this, along with the Tiny Forest name, date and time that you started the survey, on your tablet, phone or field sheet.

**Middle:** A Tiny Forest cannot be less than 4m wide at any one point. If you are 2m or more away from any edges, including where the classroom area starts, then you are in the middle of the forest. The middle is shown in light green in the diagram below.

**Edge:** If you are 2m or less away from an area where there are no planted trees, including the classroom area, then you are in the edge of the Tiny Forest. The edge is shown in dark green in the diagram below.

**Outside:** This is a sampling location that is not in the Tiny Forest at all. There are no planted trees around you, and you are not in the classroom area either. If the Tiny Forest is fenced then you should be on the outside of the fence.

Use the example diagram below to help.




## STEP 1:

At your sample point, consider what the weather is like right now, in terms of rain, sun, cloud and wind. Select the most appropriate options on your tablet, phone or field sheet.

## STEP 2:

Now we want to know what the surface of the soil is like where you are sampling. Very gently move the top layer (mulch) away to see the soil underneath. Clear an area that is similar to the size of an A4 sheet (30x20cm approx.). Give the soil a score between 0 and 3, depending on how wet or dry it is (see the table for more information).

We want a 'representative' soil sample, meaning it's similar in most of the area you can see. Record your score on your tablet, phone or field sheet.

|  |  |  |  |
|---|---|---|---|
| "What a nice stroll!" | You know you will have to shake your boots before going inside. | "Gosh, is there another path? You have to jump to keep going" | "I should have come with tall wellies!" |
| DRY<br>0 | WET<br>1 | SATURATED<br>2 | RUN-OFF<br>3 |

## STEP 3:

Next measure the infiltration rate - this means how fast water can soak away into the soil. To do this, you will use the infiltrometer (the piece of piping in the ground).

Measure 450ml of tap water into your measuring jug. Make sure you have your timer ready! Carefully pour all of the water from the jug into the pipe and start your timer. Stop the timer when all of the water has been absorbed. Record the time in minutes and seconds on your tablet, phone or field sheet.

If all the water does not absorb back into the soil in 10 minutes, measure how much is left in the pipe. Put the ruler down so the start of it touches the soil at the bottom of the pipe, and measure where the water comes up to.

Remove the pipe and return the mulch to its original place to cover the soil again.