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, and the decomposition of their leaves and woody matter, can adjust key soil properties over time. This survey will help to assess the Tiny Forest's effect on infiltration rate of water into the soil.

EQUIPMENT PER GROUP:

1 x Water bottle (1-2 litres)
1 x Measuring jug (up to 500ml)
1 x Infiltrometer (piping)
1 x mallet and block of wood
1 x Stop watch (must measure seconds)
1 x Ruler
1 x Tablet/phone/printed field sheet

WHEN TO SURVEY

Any time of day and any time of year - but best to avoid snow and heavy rain

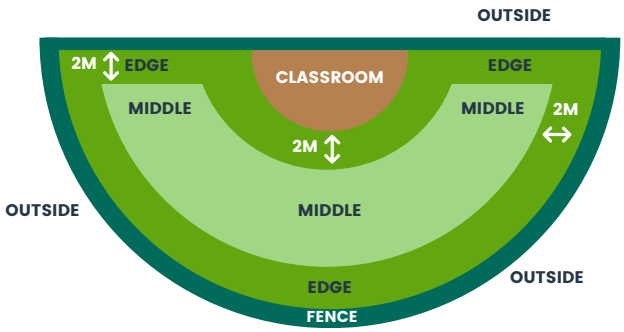
INSTRUCTIONS

STEP 1:

- Locate or set-up an infiltrometer. To set-up an infiltrometer choose a location in the middle, edge or outside the forest (see diagram) and use the wooden block and hammer to work it into soil up to line marked on the infiltrometer. Be sure to hammer it in bottom down so that the infiltrometer is buried to a depth of 7.5cm (see diagram on next page).

Middle: 2m or more away from any edge, including the classroom area . The middle is shown in light green in the diagram.

Edge: 2m or less away from an area where there are no planted trees, including the classroom area. The edge is shown in dark green in the diagram.

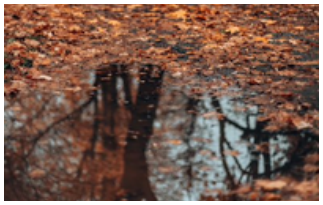


Outside: Not in the planted area of the forest, nor in the classroom or on a path. If the forest is fenced then outside of the fenced area.

- Record the location of the infiltrometer in relation to the Tiny Forest.
- Record the weather conditions right now, in terms of rain, sun, cloud and wind. Select the most appropriate options on your tablet, phone or field sheet.

STEP 2:

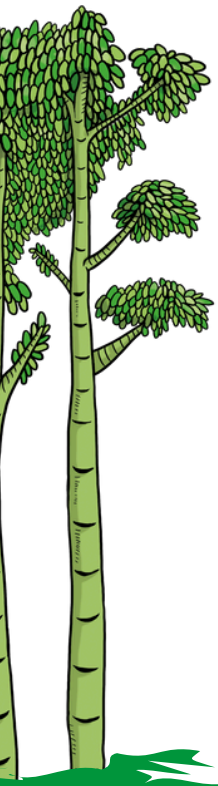
- Record how wet the soil is. Move the top layer (mulch or grass) away to see the soil underneath. Clear an area that is similar to the size of an A4 sheet (30x20cm approx.). Give the soil a score between 0 and 3, depending on how wet or dry it is (see the table for more information). We want a 'representative' soil sample, meaning it's similar to 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 0	WET 1	SATURATED 2	RUN-OFF 3

STEP 3:

- Measure and record the infiltration rate - this means how fast water can soak into the soil. Measure 450ml of water into your measuring jug. Make sure you have your timer ready! Carefully pour all of the water from the jug into the infiltrometer 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 the height of water left** in the pipe using the ruler.



- **If all the water soaked into the soil within 10 minutes**, refill your measuring jug (with 450ml) and **repeat step 3 again**; recording the time it takes to soak in, or the height of remaining water.

STEP 4:

- Remove the infiltrometer and cover the area back over.