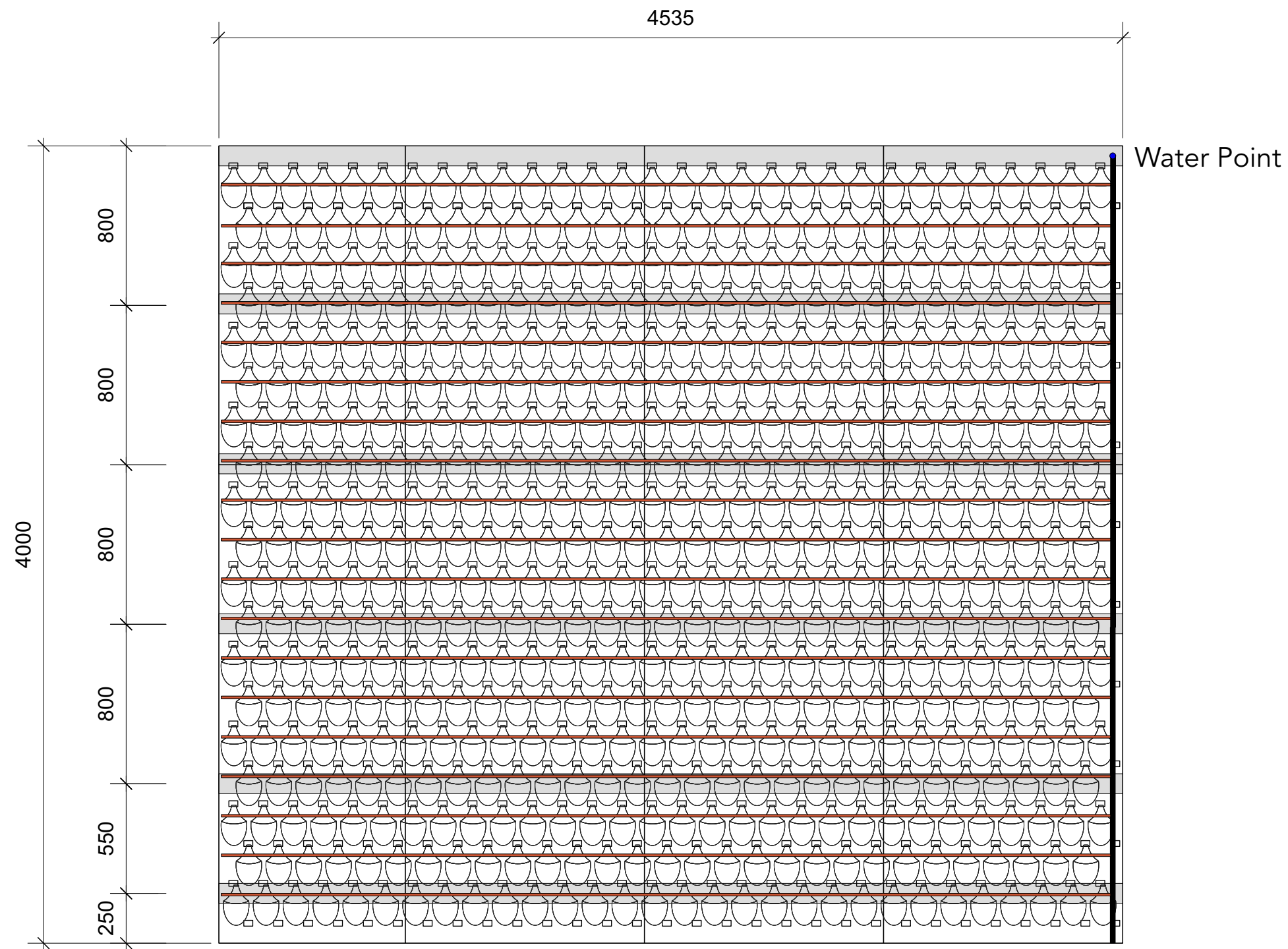
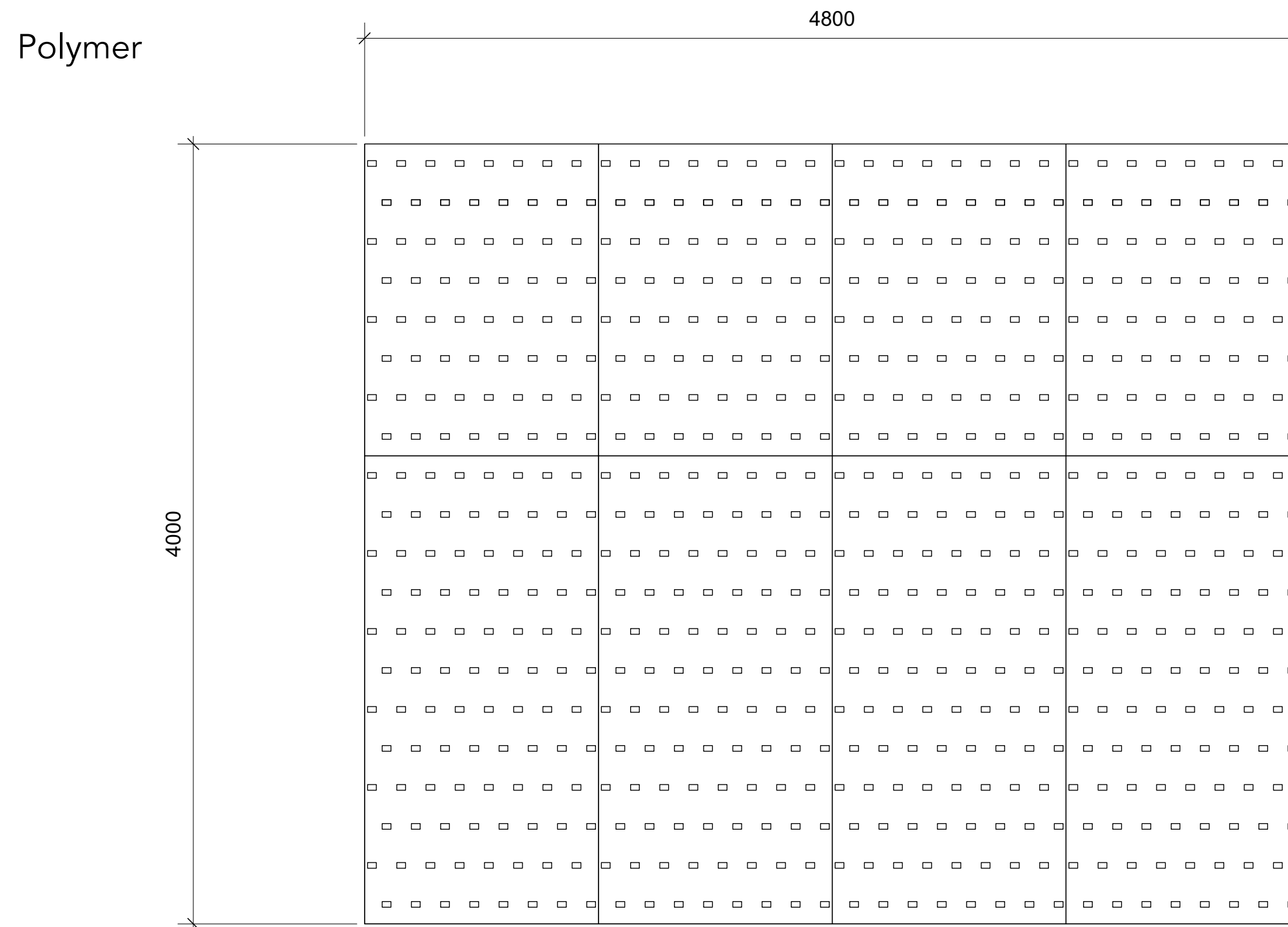


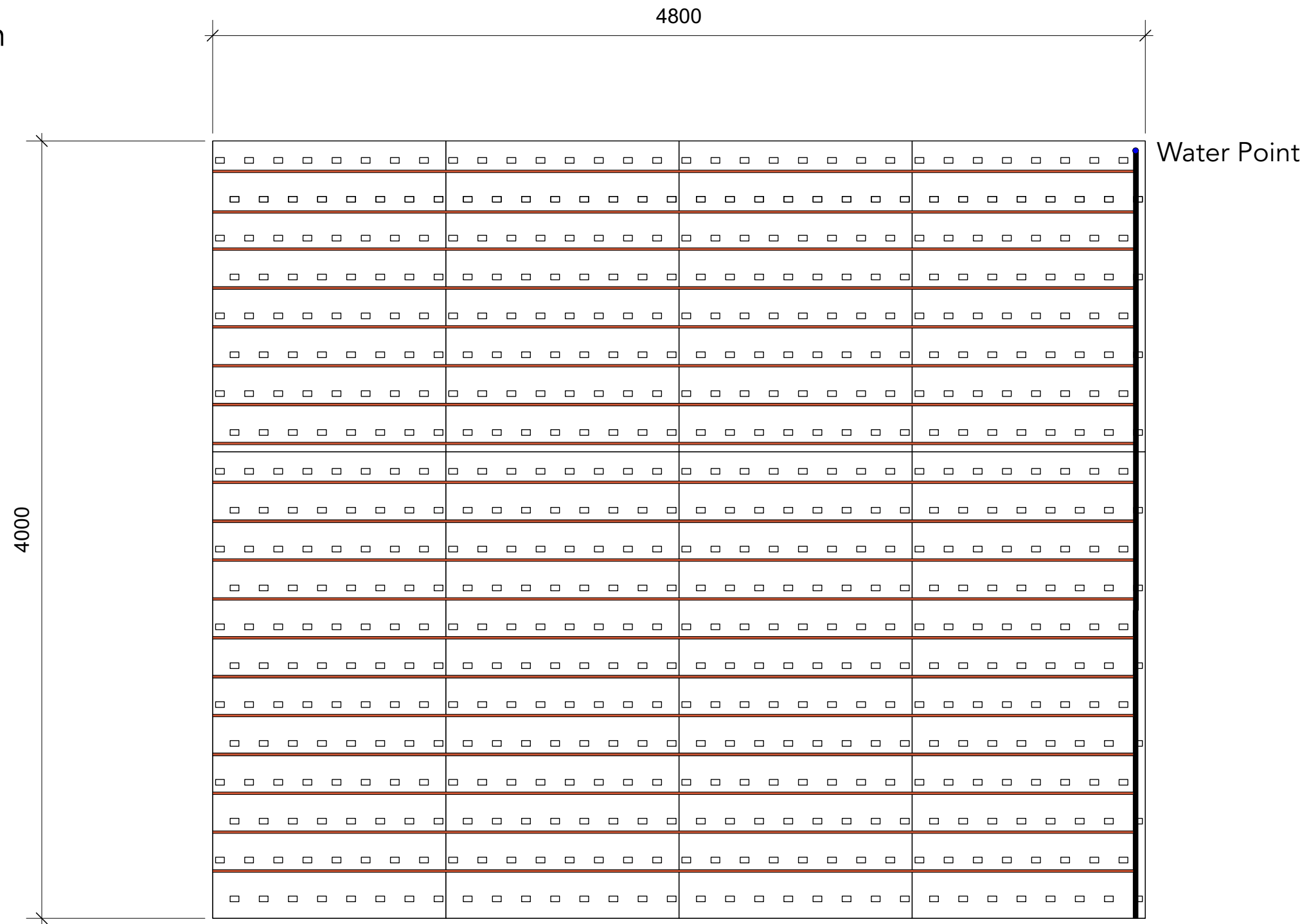


Battens





Irrigation



Client Name: McNab

Drawing No: 1

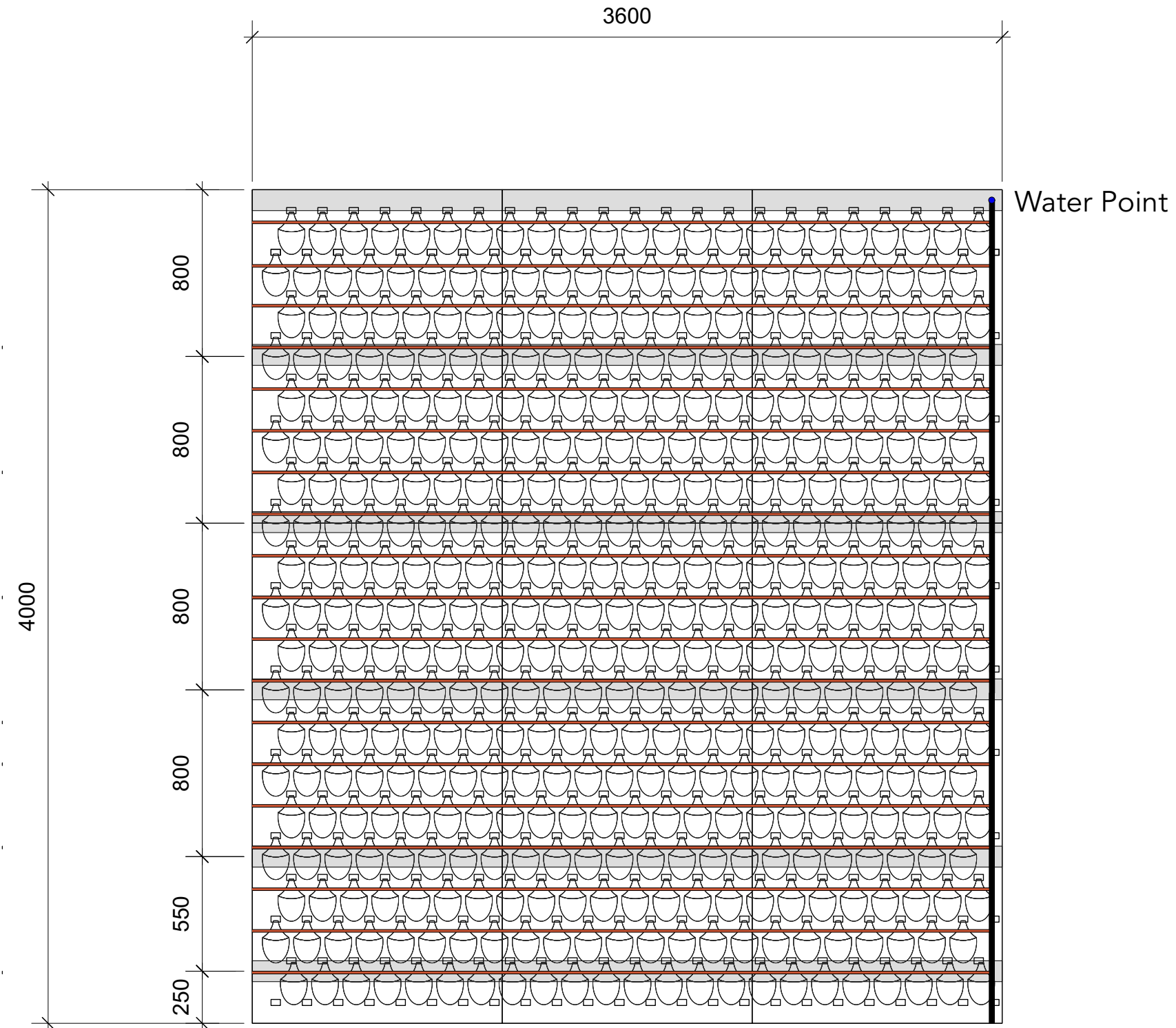
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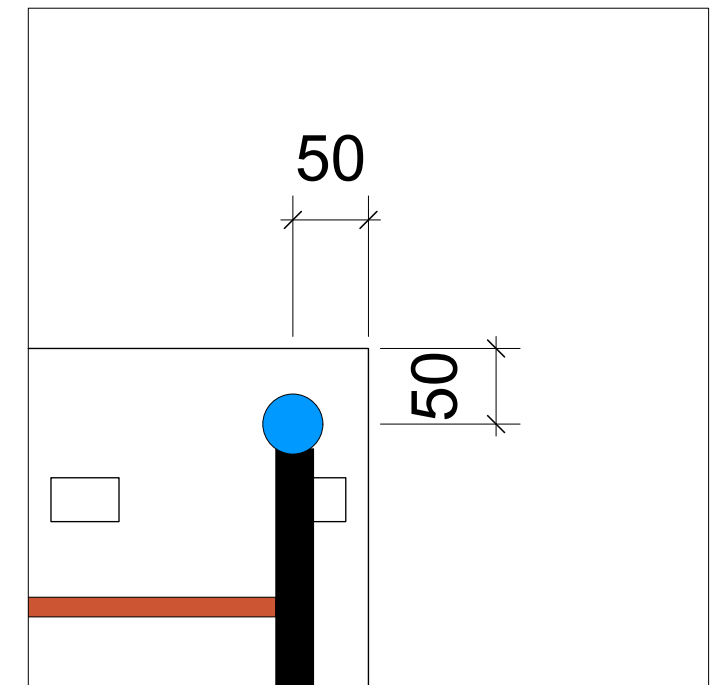
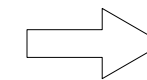
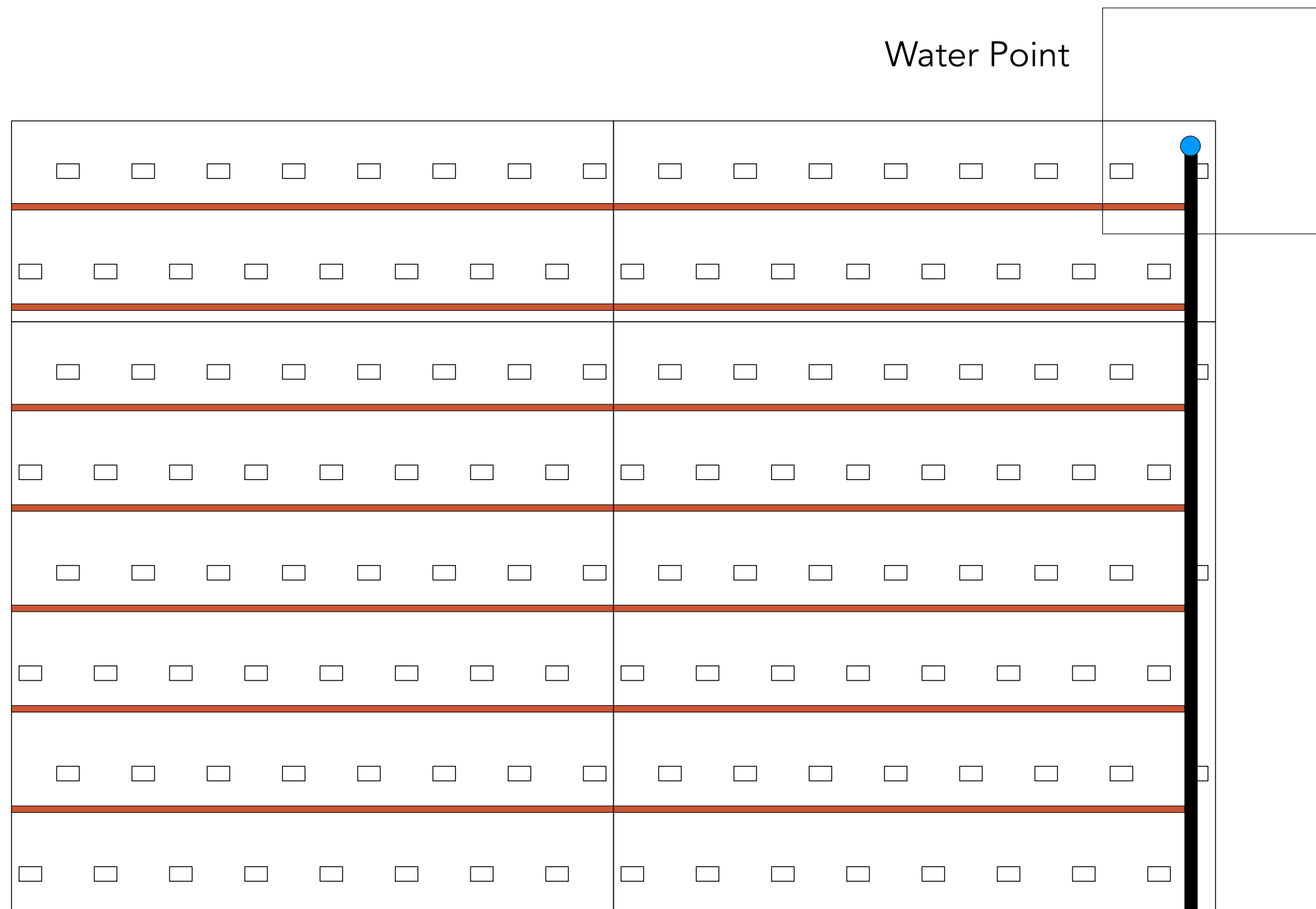
Drawn By: Vertikal

Date: 22 / 05 /2023

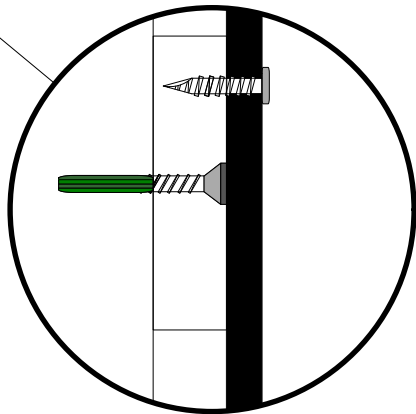
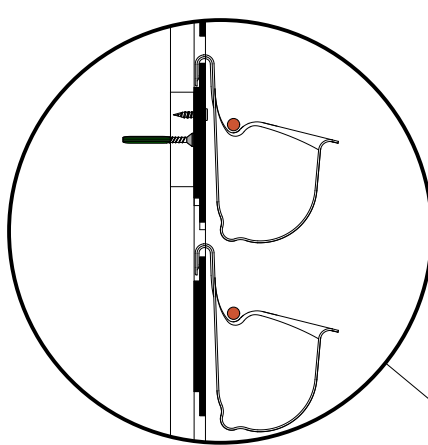
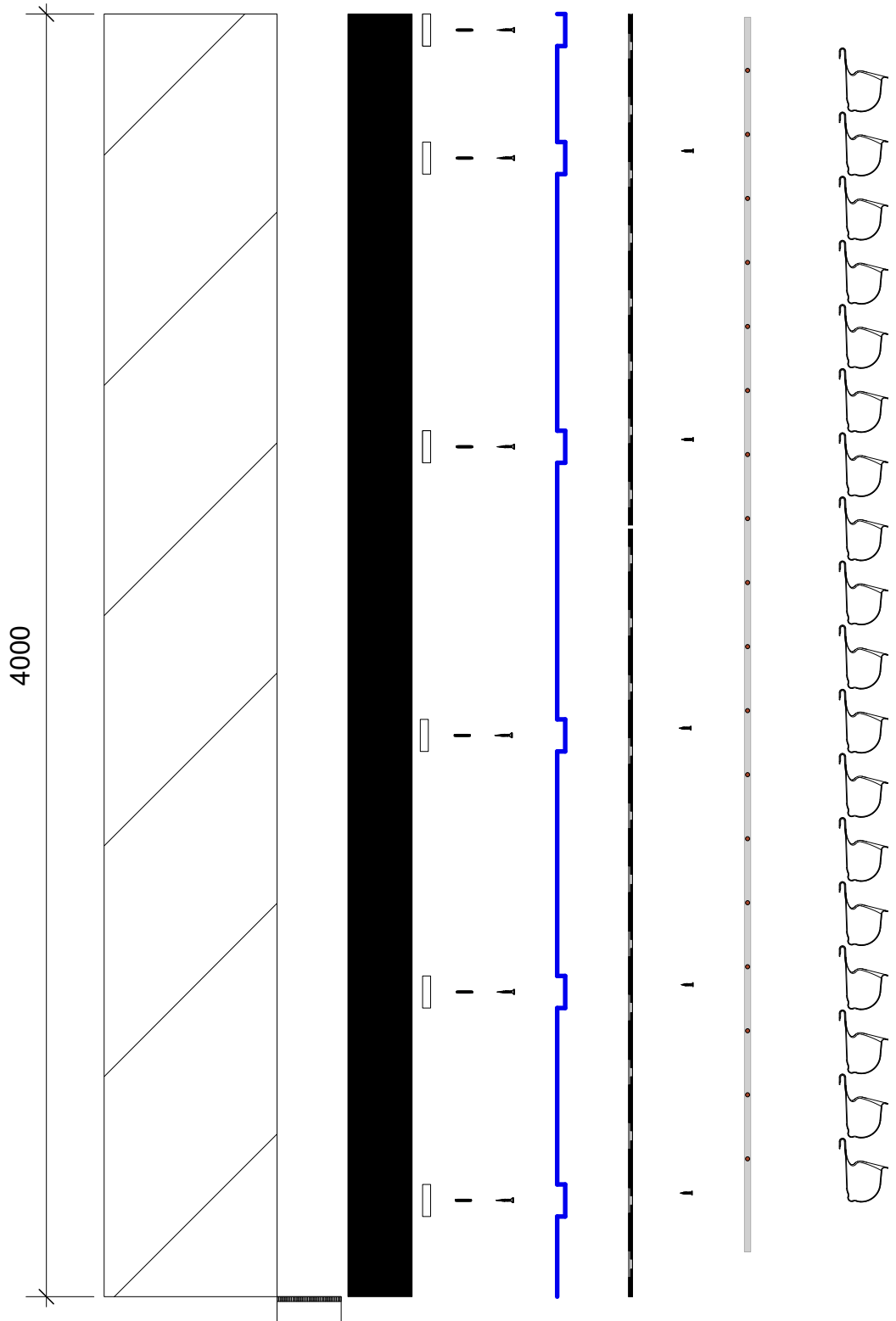




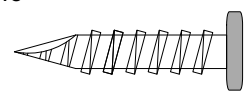
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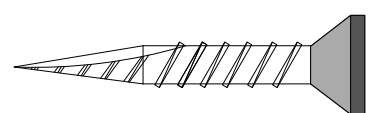
Section - Sequencing



10g x 35mm Galvanised Wafer Head Screws



14g x 50mm Galvanised Bugle Batten Screws



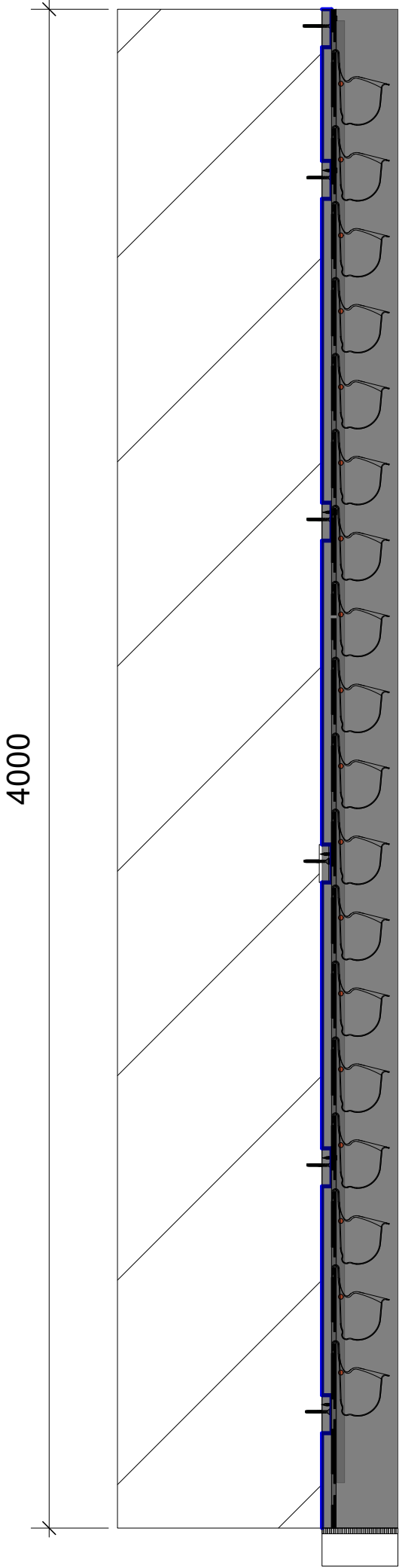
7 x 50mm Green Wall Plug



SEQUENCING

- * Install flashing
- * Install batten
- * Waterproof wall with Enviro 200P and Sika
- * Affix sheets
- * Run Irrigation lines
- * Test irrigation
- * Install potted plants

Built Section





FRASERS WOOLWORTHS LIQ...

Local



Materials

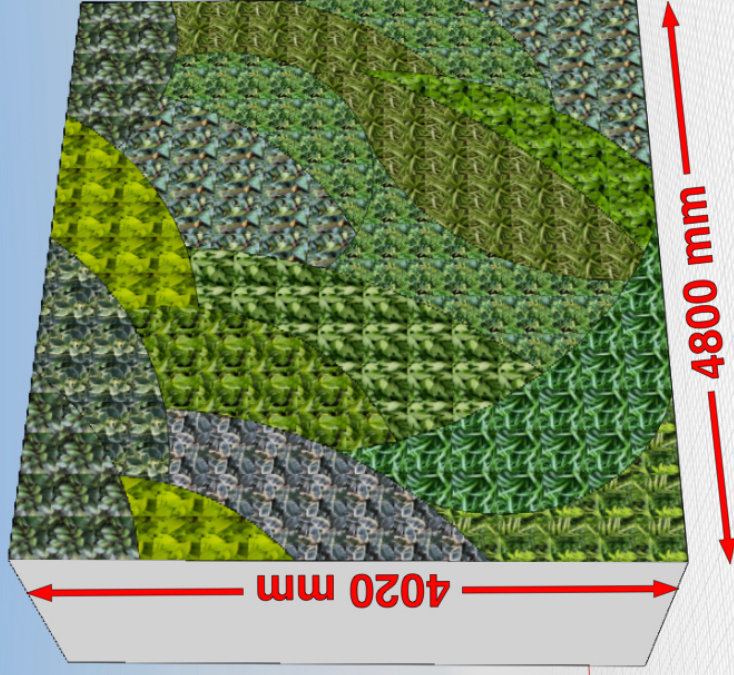
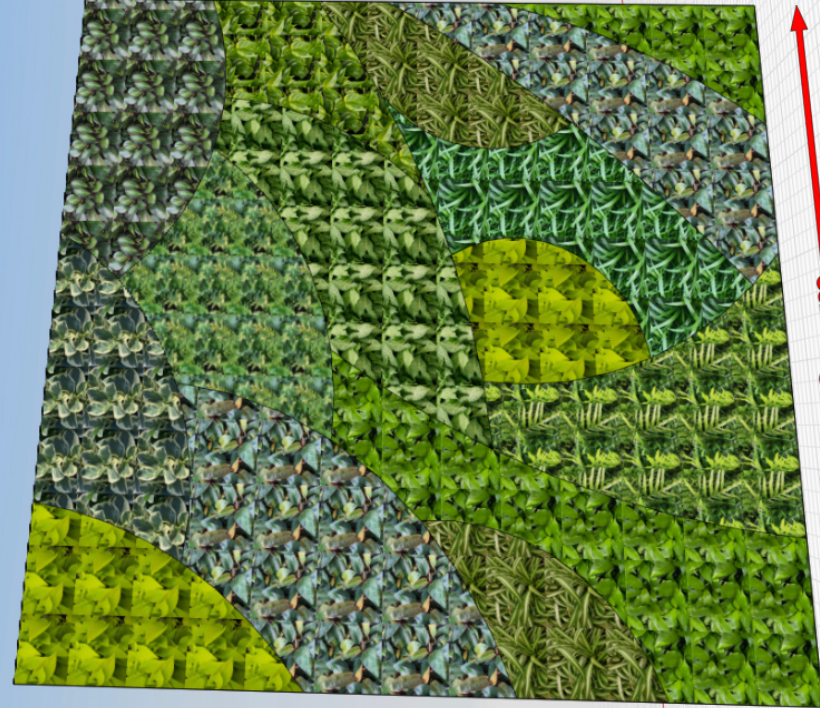


Samples

In Sketch



[Default]



CORDATUM NEON



PHILODENDRON ROJO



SYNGONIUM



PEPEROMIA VAR.



PEPEROMIA OBTUS.



CHLOROPHYTUM



PHIL. HOPE

DATE: 19 July 2023

REFERENCE: J001906-011-TM-Rev0

TO: Aiden Watson <Aiden.Watson@mcnab.net.au>; Clint Edmondson <clint.edmondson@mcnab.net.au>

CC:

FROM: Andrew Middleton

**BATTER SLOPE SHOTCRETE DESIGN
WOOLWORTHS WAREHOUSE, STAPYLTON JACOBS WELL RD, STAPYLTON**

As requested by McNab, a senior geotechnical engineer from Core Consultants Pty Ltd (Core) carried out a site visit on 18 July 2023 to inspect a section of the northern batter that requires soil nail and shotcrete treatment. The section of interest is shown below in Image 1 and comprises a zone of soil and fill about 30 m in length contained in a depression in the underlying rock. The slope face is about 6 m in height and formed at a slope of about 1V:1H apart from an upper section about 1 m high in soil formed at 1V:2H which will remain.



Image 1: Northern batter area requiring treatment

Previous investigation by others and inspection of the batter indicates that the fill/soil zone comprises a very stiff silty clay to a maximum of about 4 m below the adjacent surface, whilst the weathered rock comprises a low to high strength fractured arenite.

Stability analysis of the slope and proposed shotcrete and soil nail was undertaken using SlopeW with soil parameters assessed from experience; those values are shown on the stability output in Image 3.

As the adjoining site is concrete surfaced and there is little exposed unsealed surface only a perched water level was adopted at the base of the fill/soil layer. A 20 kPa surcharge for the adjoining hardstand was adopted.

A single row of soil nails at 2.5 m centres was adopted along the top of the wall with a second row of six nails (stagger pattern) where the shotcrete height exceeded about 1.5 m (refer Image 2). The nails were adopted as:

- 3 m in length and fully grouted in a 150 mm diameter holes with a declination of 20°
- N28 bar with a yield stress of 500 MPa and factored yield capacity of 270 kN
- working bond stress of 30 kPa in soil and fill and 50 kPa in mixed soil/weathered rock



Geotechnical



Environmental

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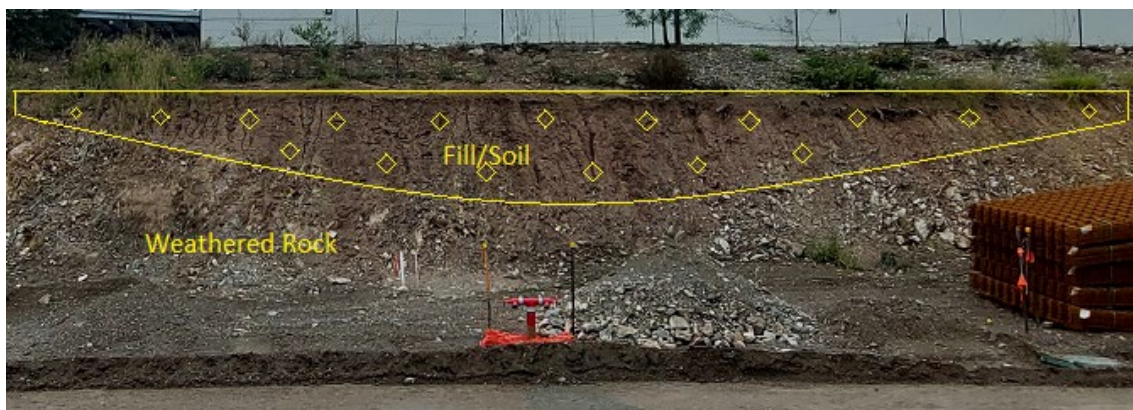


Image 2: Indicative proposed Soil Nail layout

As the adjoining site is concrete surfaced and there is little exposed unsealed surface, only a perched water level was adopted at the base of the fill/soil layer. A 20 kPa surcharge for the adjoining hardstand was adopted.

The results of the stability analysis are shown below in Image 3 and indicate that the proposed works achieve a safety factor exceeding the minimum of 1.5 required for permanent works.

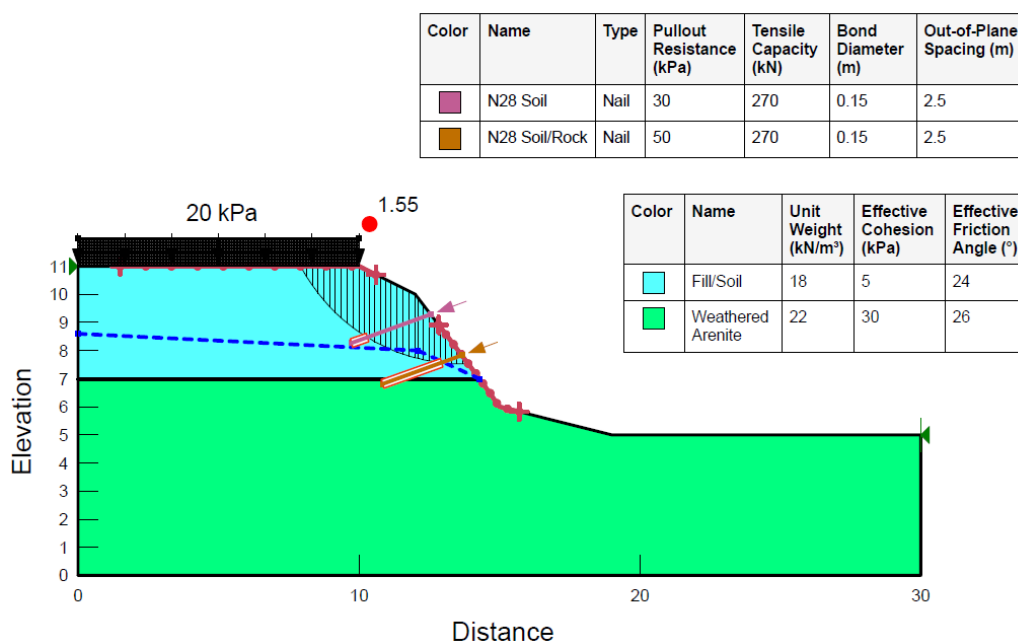


Image 3: Results of SlopeW Analysis

The following requirements must be included in the construction procedures:

- Holes to be air drilled and flushed to remove loose debris
- All loose materials to be removed from face
- Bars to comprise N28 galvanised bar sheathed for corrosion protection with centralisers and fixed to shotcrete with 300 mm cog over the mesh or 200mm square galvanised plate and nut
- 32MPa grout installed using sacrificial grout tube within 24 hours of drilling
- Weep holes (16 No.) placed intermediate to soil nail positions
- Shotcrete facing to be 32 MPa (28 days) minimum 125 mm thick but not exceeding 250 mm with SL92 galvanised mesh and keyed into weathered rock at the shotcrete facing base and formed at top of shotcrete crest to prevent water infiltration from upslope

Your attention is drawn to Limitations attached to this report.

Yours faithfully,



Andrew Middleton
BE(Civil) FIEAust EngExec
CPEng NER RPEQ 4366
Principal Geotechnical Engineer



Walter Mastenbroek
MEngPr (Civil) MSc (Env) BSc (Hons) MIEAust
CPEng NER RPEQ 16149
Director, Principal Geotechnical Engineer

Attachments: Limitations

AM/WM/am

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