

22 May 2025

Proposed Residential Subdivision, Retirement Village and Solar
Farms

Station Road, Matamata

GEOTECHNICAL EFFECT MANAGEMENT PLAN





Matamata Development Limited C/O Maven Associates

Job No. HAM2023-0124AK | Version 0



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Version Control

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A	19 May 2025	Initial draft for internal review
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1.0 INTRODUCTION

CMW Geosciences (CMW) was engaged by Matamata Development Limited C/O Maven Associates to prepare a geotechnical effects management report (GEMP) for a site located at Station Road, Matamata, which is being considered for the development of a residential subdivision, a retirement village and two solar farms.

The scope of work and associated terms and conditions of our engagement were detailed in our services contract referenced HAM2023-0124AJ Rev0.

This report is to support a resource consent application to Matamata Piako District Council (MPDC).

This report is to be read in conjunction with the CMW Geotechnical Investigation Report (GIR) referenced HAM2023-0124AI Rev1 dated 22 May 2025.

2.0 SITE DETAILS

Refer to Section 2 of the CMW GIR HAM2023-0124AI Rev1 dated 22 May 2025 for details about the site. The site is generally flat ranging from RL64 to RL72 (Moturiki Datum).

3.0 PROPOSED DEVELOPMENT

Refer to Section 3 of the CMW GIR HAM2023-0124AI Rev1 dated 22 May 2025. The area of the residential development lots will range from 350m² to 800m². 218 single story villas and a medical centre are proposed at the retirement village. Solar Farm A will comprise of 156 solar panels and solar farm B will comprise of 110 solar panels.

4.0 GEOTECHNICAL EFFECTS

This report covers the risks and required monitoring of the risks identified in the CMW GIR HAM2023-0124AI Rev1 dated 22 May 2025. The effects covered in this report are detailed below:

- Load Induced Settlement
- Groundwater Drawdown Effects.

4.1 Settlement Effects

Load and earthwork fill induced static settlements at the residential subdivision and retirement village were estimated to be up to 40mm. Load and earthwork fill induced static settlements at the single-storey medical centre were estimated to be up to 45mm. Refer to Section 6.7 of the CMW GIR HAM2023-0124AI Rev1 dated 22 May 2025.

4.2 Drawdown Settlement Effects

Groundwater drawdown effects were assessed by WGA and have been summarised in WGA report referenced WGS241087-RP-HG-0002_A dated 28 April 2025. As per WGA's report, maximum drawdown at any existing structure due to the proposed development is anticipated to be 0.08m. Resultant drawdown-induced settlement at any existing structure is anticipated to be negligible. Hence, no mitigation or monitoring has been proposed for drawdown-induced settlement effects.

5.0 MONITORING AND REPORTING REQUIREMENTS

5.1 Settlement Monitoring

The above settlement magnitude estimates are based on CPT probe settlement estimations. As there will inevitably be some variation in soil composition and resulting settlement profiles from one location to the next and the magnitude of assumptions made, it is imperative that settlement monitoring is undertaken during construction to back analyse consolidation settlement parameters and progressively refine the settlement estimates.

For this project it is recommended that surface settlement plates, placed over the ground surface prior to filling, are used to assess total settlement magnitudes and provide a cost-effective robust monitoring technique. Recommended settlement marker locations are shown on **Drawings 01** and **02**. A typical detail for a settlement marker is presented in **Drawing 03**.

5.2 Instrumentation

Instruments shall be installed and monitored by the Contractor. Monitoring results shall be submitted to the Project Managers and Geotechnical Engineer in electronic format (excel spreadsheet or similar) within 24 hours of the monitoring being undertaken, at the intervals set out herein to confirm compliance to the Resource Consent conditions.

Should any of the monitoring pins be damaged and become in-operable, then the Council is to be informed, and a new monitoring pin may be required to be drilled at a nearby location as agreed in consultation with the Geotechnical Engineer.

To ensure appropriate quality settlement data is collected for analysis, the measurement of settlement plates is to be completed by the surveyors appointed by the contractors.

5.2.1 Initial Measurement

- Upon installation, all instrument locations are to be fixed with GPS. The RL must be recorded by precise levelling at that time.
- A topographical survey of the stripped and prepared subgrade must be made prior to the placement of any fills.

5.2.2 During Construction

- It is important that the fill surface RL is recorded and reported together with the instrument data whenever monitoring readings are taken.
- Readings must be taken weekly or per 0.5m fill or surcharge lift height, whichever is more frequent.
- GPS level readings can be taken during fill and any surcharge construction.
- Within 48 hours of full surcharge height being achieved, the RL at each monitoring device must be recorded by precise levelling and the full extent of the surcharge must be surveyed and provided to the Geotechnical Engineer as soon as possible to confirm it achieves the height and coverage required.

Settlement monitoring shall be undertaken in accordance with the following frequencies:

Table 1: Minimum Monitoring Frequency

Construction Stage	Ground settlement pins / markers	Visual Inspections
Prior to construction	At least 2 baseline readings (minimum of 24 hours shall apply between reading sets)	Once prior to construction
During construction / excavation / filling	Weekly during construction or every 0.5m lift (whichever is more frequent)	Once per week
Completion of construction	Monthly for six months	Once following construction
Responsibility	Matamata Development Limited	Matamata Development Limited
Monitoring Action	Surveyor/Contractor	CMW

The frequencies above may be decreased or increased by the Geotechnical Engineer depending on the results of the monitoring.

Settlement markers shall be levelled by precise survey to an accuracy of $\pm 2\text{mm}$ at the frequencies outlined above. All survey data must be provided to the Geotechnical Engineer as soon as possible following completion.

5.3 Geotechnical Observation Requirements

The following items form hold points in the construction works that require observation, testing and approval by the Geotechnical Engineer (CMW):

1. Approval of the prepared subgrade surface, including proof rolling, if required.
2. Observation of settlement monitoring equipment installation on the prepared surface prior to engineered fill placement.
3. Periodic measurement of engineered fill densities.
4. Review of monitoring data as it is collected.

It is the contractor's responsibility to ensure that the Geotechnical Engineer is given reasonable notice and opportunity to observe the above works and that the works do not proceed until approval has been gained from the Geotechnical Engineer.

48 hours is considered reasonable notice.

5.4 As-Built Information Requirements

CMW require the following as-built information to be provided:

- Cut and fill depth plans depicting both engineered fills and surcharge fills.
- Final contour plan.
- Material data for imported products used such as imported fill and instrumentation (where applicable).
- Confirmation that products installed comply with the requirements of the project drawings and this specification.
- Settlement monitoring data.

The results of the settlement monitoring must be provided to the Geotechnical Engineer to verify settlement trends with respect to current predictions. Within 48 hours of full engineered fill height being achieved, the RL must be recorded by precise levelling and provided to the Geotechnical Engineer as soon as possible.

APPENDIX A

CMW DRAWINGS




Cut/Fill Table			
Number #	Minimum Elevation	Maximum Elevation	Color
1	-3.000	-2.500	
2	-2.500	-2.000	
3	-2.000	-1.500	
4	-1.500	-1.000	
5	-1.000	-0.500	
6	-0.500	0.000	
7	0.000	0.500	
8	0.500	1.000	
9	1.000	1.500	
10	1.500	2.000	
11	2.000	2.500	

NOTES:

1. BASE PLAN COURTESY OF MAVEN.
3. SETTLEMENT PLATE LOCATIONS AND MEDICAL CENTRE BOUNDARY SHOWN INDICATIVELY ONLY.

LEGEND:

- FOR CONSENT**
- MEDICAL CENTRE LOCATION
- SETTLEMENT PLATE LOCATION

 Great People Practical Solutions	CLIENT: MATAMATA DEVELOPMENT LIMITED	DRAWN: PM	PROJECT: HAM2024-0124
	PROJECT: STATION ROAD, MATAMATA	CHECKED: HSP	DRAWING: 01
	TITLE: SETTLEMENT PLATE LOCATION PLAN	REVISION: 0	SCALE: NTS
		DATE: 13/05/2025	SHEET: A3



EARTHWORKS CUT/FILL (FROM FINISHED SUBGRADE TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)	
CUT VOLUME (IN-SITU)	238,361m³
FILL VOLUME (IN-SITU)	217,935m³
REQ. CUT VOLUME (FACTOR 1.1)	239,729m³
SURPLUS OF CUT	1,368m³
TOPSOIL STRIPPED (300mm) =	136,158m³
EARTHWORKS AREA =	45.39ha
NOTE: NO ALLOWANCE FOR SERVICES TRENCHES OR DRAINAGE SURPLUS	

Cut/Fill Table			
Number #	Minimum Elevation	Maximum Elevation	Color
1	-4.000	-2.000	Red
2	-2.000	0.000	Light Red
3	0.000	2.000	Light Green
4	2.000	4.000	Green

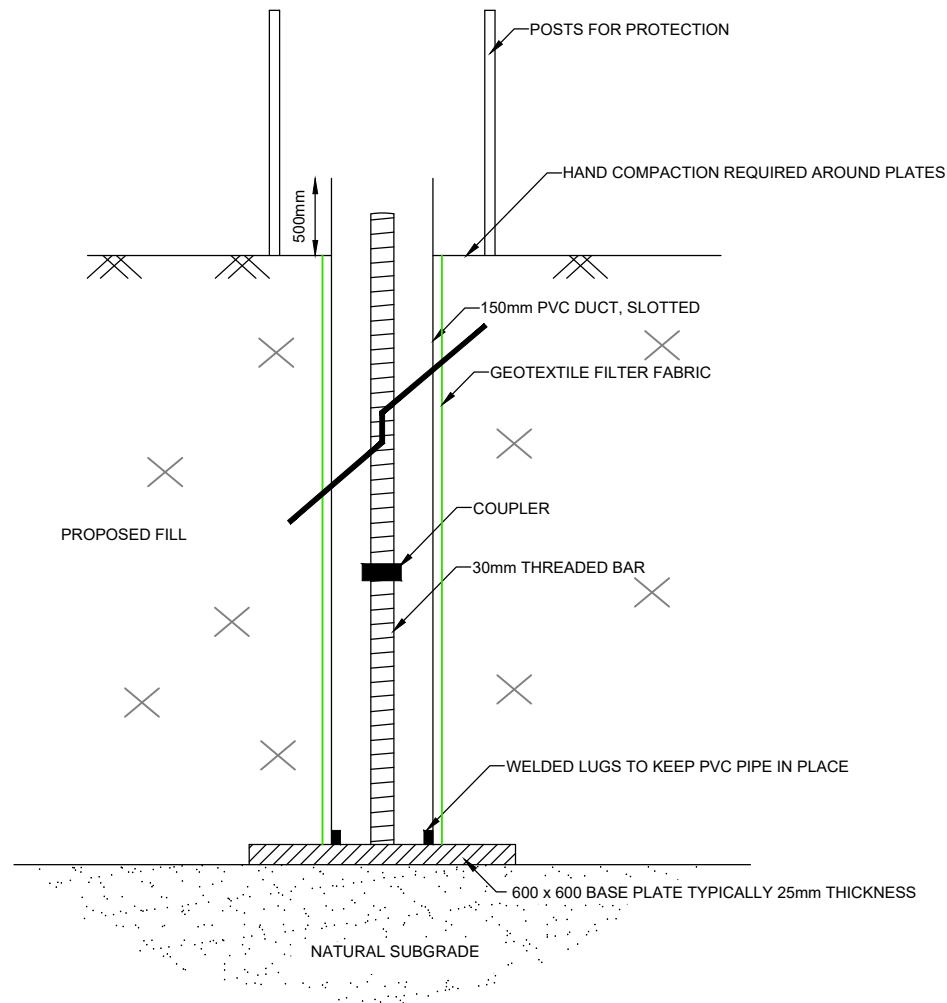
- NOTES:**
- 1. BASE PLAN COURTESY OF MAVEN.
 - 2. SETTLEMENT PLATE LOCATIONS SHOWN INDICATIVELY ONLY.

- LEGEND:**
- SETTLEMENT PLATE (SP) LOCATIONS



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CLIENT:	MATAMATA DEVELOPMENTS LIMITED	DRAWN:	PM	PROJECT:	HAM2024-0124
PROJECT:	STATION ROAD, MATAMATA	CHECKED:	HSP	DRAWING:	02
TITLE:	SETTLEMENT PLATE LOCATION PLAN	REVISION:	0	SCALE:	NTS
		DATE:	13/05/2025	SHEET:	A3



NOTES:

1. SETTLEMENT MARKERS SHOULD TYPICALLY COMPRISE 600MM X 600MM SQUARE STEEL BASE PLATES WITH A CENTRAL STEEL PIPE UPSTAND (30MM DIAMETER X 1M LONG TYPICAL) WELDED TO THE BASE AND A 150MM DIAMETER PVC DUCT PLACED AROUND THE UPSTAND.
2. PVC PIPE TO BE SLOTTED AND WRAPPED IN GEOTEXTILE.
3. THE SETTLEMENT PLATES MUST BE INSTALLED AT OR WITHIN 250MM OF EXISTING GROUND LEVELS AND A SMALL BUND OF FILL PLACED OVER THEM FOR STABILITY.
4. THE SETTLEMENT MARKERS (TOP OF UPSTAND) MUST BE PRECISELY LEVELLED AND THE PRECISE LENGTH OF THE UPSTAND MEASURED AT THE TIME OF INSTALLATION PRIOR TO ANY FILL PLACEMENT.
5. THE SETTLEMENT MARKERS MUST BE PERIODICALLY EXTENDED BY WELDING/SPlicing ADDITIONAL LENGTHS OF UPSTAND AS THE FILL LEVEL IS RAISED.
6. SETTLEMENT MARKERS AND ADJACENT FILL LEVEL MUST BE PRECISELY LEVELLED AT WEEKLY INTERVALS DURING CONSTRUCTION AND FORTNIGHTLY THEREAFTER AT THE GEOTECHNICAL ENGINEERS DISCRETION.
7. THE LAYOUT OF THE SETTLEMENT MARKERS MUST BE DETERMINED BY THE GEOTECHNICAL ENGINEER DURING THE FINAL PLAN REVIEW.
8. THE NUMBER AND POSITION OF MONITORING PLATES AND THE FREQUENCY OF POST CONSTRUCTION SETTLEMENT MONITORING IS TO BE AGREED WITH THE GEOTECHNICAL ENGINEER AT THE COMMENCEMENT OF EARTHWORKS.
9. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE INTEGRITY OF THE MONITORING PLATES IS MAINTAINED DURING THE WORKS AND UNTIL THE GEOTECHNICAL ENGINEER HAS INSTRUCTED THE PLATES CAN BE REMOVED.



CLIENT: **MATAMATA DEVELOPMENT LIMITED**

PROJECT: **STATION ROAD, MATAMATA**

TITLE: **SETTLEMENT PLATE DETAIL**

DRAWN: PM

CHECKED: HSP

REVISION: 0

DATE: 19/05/2025

PROJECT No: **HAM2024-0124**

DRAWING: 03

SCALE: NTS

SHEET: A4



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