MARLBOROUGH
DISTRICT COUNCIL

Geo-technical Reporting Requirements 2015

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Introduction

The Geo-technical reporting requirements were reviewed and subsequently adopted by council in August 2014. The previous accreditation scheme was made unavailable to new applicants from that time and the accreditation status terminated in August 2014. The accreditation status had been on the basis of self-cognisance, being training and work history plus having professional indemnity insurance.

It was considered that the standards expected of practitioners in the field of geotechnical engineering and having either Chartered Professional Engineering or Professional Consulting Geologist status are the standards that a reasonable local authority would expect of providers of documentation for its purposes. Keeping a standing list without a process of moderating the ongoing capabilities of providers is considered to be not the best practice that would expected of Council, further, the level of expertise required for moderation is not retained in-house.

Purpose

Council has a duty under both the Resource Management and the Building Acts to assess applications for consents pursuant to those Acts. The geological characteristics of a particular location can be a significant determining factor as to the ability of a proposal to meet the needs of a proponent and discharge the obligations imposed on Council. It is necessary therefore to set out Council's expectations and the reliance it places on the information provided in geo-technical evaluations so that this is understood and appreciated by a provider.

It is important to keep in mind that processes associated with the Resource Management Act very often are precursor to subsequent consents or permits. For example after granting a Resource Consent to subdivide conditions may require compliance with "NZ 4404 Land development and subdivision infrastructure" and then certificates pertinent to that "Standard" would then apply.

A key matter here is the decision whether or not in fact subdivision, or other proposal, should be granted at all and geotechnical considerations will be in many instances an important component of that decision process.

Accordingly, Objectives Policies and Methods are set out below to assist in shaping and directing an investigation as to its scale and nature, in the understanding of Council's reliance on those investigations.

A key element of the Policy is the requirement that a provider holds competency in the practice field of "geotechnical" at the time of lodging documents and shall not have their status otherwise fettered.

Objectives

Geo-technical reporting will have as its objectives –

1. the recording of the geophysical susceptibilities of a proposal including the consequences of adverse climatic events.

2. to enable reasoned projections to be made as to possible outcomes in both undeveloped and developed states.

3. to make recommendations pertinent to the proposal under consideration.

Policies

Council sets the following Policies for the purpose of achieving the Objectives

Policy 1 – Standards for Providers

Providers of geo-technical reports shall be Chartered Professional Engineers registered pursuant to the Chartered Professional Engineers Registration Act 2002 shall include the practice field of geotechnical and be unfettered in any way at the time documentation is lodged with Council:

OR

Shall be Professional Engineering Geologists and shall be on the IPENZ competence register with "field of practice" extension of geotechnical.

OR

Where a field report is prepared by an investigator, not being a practitioner on the IPENZ competence register in the geotechnical field of practice, then the provider in the required "Opinion" (see further), shall affirm responsibility for the investigations and that they are on the IPENZ competence register for either Chartered Professional Engineers or Professional Engineering Geologists in the practice field of geotechnical.

Policy 2 – Responsibilities for Investigations

Investigations are for the proposal being presented to Council for its consideration. It is not acceptable to incorporate the results of investigations by a party not having any part in the matter under consideration without qualification. The information ascribed to any other party must be attached as supplementary information; the report must clearly interpret the supplementary information in the context of investigations that have been carried out by the provider.

Policy 3 – Physical Investigations

Fieldwork will include as a minimum, subsurface evaluation of subsoil profiles by quantitative sampling, the results of these to be detailed in the report. In the event that subsoil investigations are not carried out documentation shall include reasons for not carrying out the examination. Council reserves the right to not accept a geo-technical report not supported by subsurface evaluations.

Policy 4 – Opinions

A provider's opinion in respect of a proposal **shall** take the shape and form as the model opinion set out elsewhere in this document. It can be expected that more likely than not any departure will be rejected. If a provider believes there is a special circumstance then the Manager of the Regulatory Department should be apprised of relevant details at the earliest opportunity. Delays can be expected as the implications of a particular instance are worked through.

Council reserves the right to have any opinion or site report peer reviewed at no cost to an applicant in any particular instance. If it believes on the grounds of the observations of the peer reviewer there are matters of concern then all costs of any consequent discussion or review of any further documentation will fall to the applicant.

Costs in that latter context will be the cost of staff time and disbursements including the retaining of peer reviewers.

Policy 5 – Reports

A "Good Practice" model **report** is set out elsewhere in this document for providers to follow as it is considered such a structure assists in interpretation by Council staff or Council's advisers and will perhaps assist providers in addressing all aspects of a proposal.

A provider may elect to follow their own report format but in any event the matters described in the model **report, as might be reasonably be expected,** must be clearly evident in a report to be acceptable. If the matters identified in the model report are either not traversed in substance or discounted then it will be probable that the report will not be accepted or, alternatively, it may be required to be peer reviewed at the applicant's cost.

Providers should make their clients aware of the outcomes if their intention is to not address investigations in the manner envisaged by the model report.

Policy 6 – Use of Providers Opinions and Reports

The provision of the required statement of professional opinion and related reports is regarded as an acknowledgement that the provider understands that the purpose and use of such documentation is for decision making to enable Council to discharge its statutory obligations in the particular instance.

A provider cannot reserve any rights as to the access to such opinions or reports lodged as part of a regulatory process administered by Council.

A provider may impose a "life" on an opinion or site report and in such instance the provider should make their client aware of such limitations. An opinion and or a report has no limitation for Council's purposes; in this regard Council may accept or reject such documents as may be reasonable at any time in the course of administering its processes.

In every case a site report and opinion will be presumed to be that of the presenting provider. In the event the work of another provider is referred to or incorporated in some manner it will be taken that the presenting provider has made all necessary investigations and calculations as to support the subsumed report. There will be no assignment to or reliance upon an opinion of a third party without the express written concurrence of the third party.

Policy 7 – Quality Control

As a general practice, and without notice, peer reviews of documentation provided may be made. This is to ensure than providers are observing appropriate standards of practice. The peer reviewer will observe any professional or ethical requirements required of a particular body to which the reviewer belongs. Details of the peer reviewer observations will be given to the particular provider.

Methods

To achieve the Objectives and Policies set out above it is expected that at least the following methods will be employed given that any particular instance may reasonably require additional methods or procedures to provide a best practice representation of the geophysical state prevailing in a particular instance.

Method 1

Conduct site investigations using procedures and practices appropriate to the scale and nature of the intended activity and the best practices for such investigations.

Method 2

Documentation is expected to follow the report format as outlined elsewhere and in every instance the model form of opinion set out shall be presented. (The Policy provides for departure from the model report format but this is qualified and a provider must evaluate any particular consequences).

Relationship with the RMA

A geo-technical report is a stand-alone document with its focus to be entirely on geo-technical matters. It is to stand apart from an Assessment of Environmental Effects (AEE) supporting a resource consent application albeit the latter document may import or otherwise refer to the geo-technical documentation. An AEE document is prepared for a different purpose and requires to be constructed in terms of the Resource Management Act's objectives and purposes.

Resource Consent Compliance

It is important to distinguish between the reporting for the purposes of obtaining resource consent and meeting of the terms of consent. In the former case, the basis for determining suitability and appropriate development parameters are expected.

In the first instance the objective will be to demonstrate that it is appropriate that consent be granted whereas, in particular, various certifications such as the Form detailed in NZ 4404 Land development and Subdivision Infrastructure" will be sufficient to verify the terms of consent.

Relationship with the Building Act

A proposal for building consent may need to take account of factors that will necessitate a geotechnical evaluation.

A recent (2014) example involved an application that satisfactorily addressed the basic parameters for consent in the ordinary course but overlooked the proximate active fault line. In that instance a geotechnical engineer evaluated and set down the necessary additional parameters to be included to enable consent to issue. Subsequently, Producer Statements were provided at the appropriate stage.

Model Documents

Opinion

All geo-technical **Reports** required by consent conditions or supporting applications for consents shall be accompanied by an "**Opinion**" in the model format.

Purpose of complying with the Format

The purpose of using the model format for an **Opinion** is to ensure the **Provider** understands there will be explicit reliance on **Opinion's** and **Reports** to enable Council to discharge its statutory functions. Further, the **Provider** is confirming that the necessary skills have been exercised with due regard for the technical complexity of the matter under consideration.

Each **Opinion** ***shall be specifically drafted*** upon due consideration of the conclusions of the **Report.**

Reports

The purpose of a Report is to record factual geologic, geomorphologic and cultural features present, at the site specifically, and to the extent beyond the site as the investigator may consider relevant. The **Opinion** will draw conclusions about features noted in a report and their relevance in the instance, and specify measures and set conditions appropriate to the proposal.

Format of Reports

The following format is preferred as it provides a structured approach to presenting information, which if used consistently improves the communication of information between **Providers** and Council's staff. The following is indicative of what a **Report** expected to address.

A – Synopsis

1 **Scope of the investigation**

This Section details the basis for the investigative engagement and any imposed constraints that may have a material bearing on the conclusions. The Investigator would detail any matters that might have been excluded from consideration given the terms of engagement.

2 **Summary and Conclusions**

The Investigator synthesises the details of the site investigations then draws conclusions as to possible or necessary constraints. This section may optionally be at the foot of the report if preferred.

3 **Recommendations**

Details desirable or necessary actions or controls that would arise from the Conclusions in terms of a specific proposal or details limitations as to any extrapolation of the findings that might be permitted. Suggestions as to possible consent conditions and monitoring programs would be framed here. This section may optionally be at the foot of the report if preferred

B – Report

1 **Introduction**

An optional Section the content being determined on a case basis by the Provider.

2 **Site Description**

This will specifically address the geological and geomorphologic characteristics of the site in particular and to such further extent that judgement indicates is relevant to the site. It will describe surface water patterns, surface expressions of subsoil disturbance and lithological boundaries for instance. This information will be presented on **scale drawings** in accordance with conventional mapping practice.

3 **Geotechnical Investigations**

All sites investigated will have at least three subsurface inspections to a depth consistent with the intended development needs and the details logged and included in the Report. Profiling the soil formation with a Scala penetrometer, only, is considered to be appropriate in

only the very simplest of cases.

It will be generally expected that describing and the characterisation of the soil profile will include an evaluation of shear values, for appropriate soils, following the practice guide of the New Zealand Geotechnical Society. It should be clear when reporting results whether they are field or factored values. Inspection sites will be spatially located with geo-reference measurements recorded and shown on a scale plan. Lithological descriptions and classifications shall follow that of the New Zealand Geotechnical Society recommendations[1].

Where water or wastewater is to be discharged on site particular regard is to be had for the possible change in material strengths and likely changes to structural performance and any long-term effects.

4 **Geotechnical Assessment**

This section will evaluate and weigh the matters identified or determined as arising from the site investigation and properties and characteristics of constituent materials. There will be evaluation of short and long-term processes as the site exists at the time of investigation and any particular sensitivity of constituent materials.

5 **Development Impact**

In terms of the scope of the investigation and the Provider's understanding of what is proposed then the effects of development are canvassed and their consequences for the development, in terms of the site features and characteristics, is detailed. For instance effects of waterways either as they are or proposed to be modified, introduction or concentration of waste or storm-water both on and off site, seismic and gravitational effects, stability of cuts and requirements for fill. Such other pertinent to the particular proposal that sound geo-technical practice would indicate a need to be addressed.

6 **Control or Implementation Measures**

The Provider canvasses the consequences of development and details the need for control or management of inherent features to ensure the satisfactory long-term performance of the development as well as such introduced elements necessary to avoid or mitigate effects both on and off site.

7 **Management Plans**

These will arise out of the consideration of the Control and Implementation measures in the geo-technical context and would include setting performance standards, which would form the basis of performance conditions.

8 **References**

C - Maps & Plans

1 **Location Plans and Details**

A scale plan or plans geo-referencing the area investigated including cadastre is to be provided. These plans will be prepared using the same standard of drafting used in the preparation of construction or consents documents. Applications presenting with poorly drafted freehand diagrams can be expected to be rejected.

At all times it must be possible to determine the location of the essential elements either in respect of the investigations or proposed development features **without scaling.**

2 **Detailed Plans**

All features either inherent or relevant to the investigation (eg Inspection /Test holes) or recommended shall be geo-referenced and to scale so that subsequent processes (eg Building Consents, Resource Consents) can determine their location without scaling. It includes geological cross-sections depicting lithology and slopes in sufficient detail so as to convey a description of the site slopes. Any features considered to be of relevance for the site but not on the site shall be identified and geo-referenced

Appendix I – Model Opinion

FORM 1

Opinion as a Practitioner in the Field of Geotechnical Engineering.

Description of Work :

.....

I *(insert full name)*

.....

Hereby confirm that:

I am an experienced practitioner in the field of geotechnical engineering;

And

1. I am a Chartered Professional Engineer and have demonstrated competence in the practise field of geotechnical engineering;

OR

2. I am a Professional Engineering Geologist and have demonstrated competence in the practise field of geotechnical engineering;

OR

3. I am a *[Chartered Professional Engineer / Professional Engineering Geologist]* and have demonstrated competence in the practise field of geotechnical engineering; I am responsible for the direction of investigations for and approve the report resulting that accompanies this Opinion.

I am familiar with and understand the purpose of the Marlborough District Council's geo-technical reporting standards. This professional opinion is furnished to the Marlborough District Council … (State purpose of report).

NB: Where this opinion includes reference to investigations and/or reports by others then It must be clear how the provider interprets the work of others in the context of their own opinion.

I understand that Marlborough District Council will rely on this Opinion and the accompanying Site Report for any subsequent statutory process including, but not limited to, the considerations for consent pursuant to the Building Act

A site investigation report is attached.

NB: A report format outline is set out below. It is preferred that the outline be used unless some circumstance requires otherwise. A consistent format assists Council's Officers to more readily appreciate any complexities relating to a proposal and minimise follow-up queries.

AND

Site investigations have been carried out by *[myself / under my direction]* and these are described in *[my / our]* site investigation report(s) dated *[provide dates]*.

In my professional opinion, having examined the site and have considered any potential for external threats that may have relevance for the site, it is reasonable for Council to assume that the information referred to above is representative of the whole area under consideration *[or as may be qualified]*.

OR

In my professional opinion and having regard to the specifics of the site which I have investigated to the extent that acceptable engineering practices require, the plans and specifications are in accordance with acceptable engineering principles and practices and that a construction in accordance with such plans and specifications will meet proper engineering standards.

NB: Special requirements to be set out here for the design and/or supervision of the works including matters that Council should be aware of for the administration of its statutory obligations and its Bylaws. Where this opinion relies on previous plans and reports by others then these are to be referred to.

OR

In my professional opinion and having regard to the specifics of the site which I have investigated to the extent that acceptable engineering practices require giving due regard to acceptable engineering principles and practices for land slope and foundation stability (*describe proposal*), then, providing that the recommendations in our accompanying report are adhered to.

[give description of report and plans]

[give recommendations and the nature of controls to be complied with]

Important Note

If, when submitting documentation, an "Opinion" is not proposed to be in the above form then the provider is strongly advised to discuss intentions as early as possible to avoid or minimise any delays that may arise

Appendix II - Interpretation

Absolute safety	Occurs where the probability of a **Hazard** occurring is zero. (See Safety)
Certificate	A specific document irrespective of form that attests to the **Certifier's** best endeavours to fairly state a situation and upon which Council may rely.
Certification	See **Certificate.**
Certified	See **Certificate.**
Certifier	A person or Organisation accredited for the purpose of supplying Certification to Council.
Chartered Professional Engineer	A person who is registered in terms of the Chartered Professional Engineers Act 2002
Field of Practice	Refer to Institution of Professional Engineers New Zealand for details
Hazard	Potential cause of human, social, environmental or economic harm. (Compare **Risk**)
Officer's Report	A report prepared by a Council Staff member identifying relevant issues and conclusions drawn there from, in the context of the empowering legislation and Councils Policies.
Opinion.	An approved form of certification used in matters relating to land stability
Peer Reviewer	A person having professional experience in matters pertinent to the context and having an acknowledged standing in the exercise of that profession by the members of that profession.
Producer	Provider of a **Producer Statement** see below.
Producer Statement	Refer to the IPENZ Practice Note 1 "Guidelines on **Producer Statements",** January 2014.
Professional Engineering Geologist	A Geologist meeting specific standards set down by the Institution of Professional Engineers New Zealand.
Provider	A person or organisation issuing Reports, **Certificates, Opinions** or **Producer Statements**.
Registered Engineer	A person who was registered in terms of the Engineers Registration Act 1924 (Repealed)
Report	A report following the prescribed format setting out investigations and the results thereof pertinent to the production of a Certificate.
Risk	Probability of a specified loss or harm times its adverse consequences. (Compare **Hazard**)
Safety	Relative protection from adverse consequences. (See **Absolute Safety**)

Endnotes

[i] The New Zealand Geo-technical Society *Guidelines for the description of soils and rocks in engineering use* is indicated as the preferred method of soils classification. There will be instances where especial consideration of soil properties will be made for the purposes of wastewater disposal. AS/NZ 1547:2000 *On-site domestic wastewater management* similarly provides a classification system. The first reference has the merit of providing a common terminology for engineers from the more general civil discipline versus the specialised geo-technical practitioner. The AS/NZ Standard on the other hand has been developed to focus on soil properties of particular relevance to behaviour responding to the introduction of wastewater. It is noted that the recently released NZS 1170.5 Supp: 2004 "Structural Design Actions" indicates the use of the above publication for classifying soils in respect of its purposes.

The ordinary course considered appropriate is that if so required both systems would be employed to ensure the maximising of the information content. If a practitioner feels that in the light of the particular skill and experience applying then as a matter of judgement one method of classification may be sufficient. It will be important to state within the Site Report what methodology is adopted given the base assumption from a Council Officer perspective that in the instance the expectation will be that the NZGS guideline will apply generally and AS/NZ Standard will be used for the purpose of that Standard.