Structural Engineers Initial geotechnical assessment Report

# Project Details

|  |  |
| --- | --- |
| **Project Street Address and legal description:** |  |
| **Client Details** |  |
| Project and site testing locations | *Insert image of site plan including project and testing locations here* |
| **Revision number** | 0 |
| Engineering Company Details: |  |
| **Prepared by:** |  |
| **Reviewed by:** |  |
| **Date:** |  |
| **Job number:** |  |

The Structural Engineer initial geotechnical assessment report is to be used by engineers to support their use of the Geotechnical Input Flowchart. It provides a template for the type of information that should be presented to a BCA to justify the engineer's assumptions when a geotechnical report by a Chartered Professional Engineer (Geotechnical) or Professional Engineering Geologist is unlikely to be required.

This document is only an indication of what additional information or expertise may be required. There will always be exceptions to general guidance, and the Structural or Civil Engineer should use their professional judgement in every case to determine the appropriate skills and expertise required for the job.

This document is not to be used to report ground investigations and soil assessment for projects with geotechnical risks outside the bounds of competence for a structural engineer.

## Summary of desktop assessment

|  |  |
| --- | --- |
| **Item** | **Comments** |
| List previous geotechnical reports available |  |
| Findings of previous geotechnical reports |  |
| Geological maps available |  |
| New Zealand Geotechnical  Database (NZGD) date nearby (I.e. within ~ 200 m) |  |
| Known geotechnical hazards from council’s GIS or equivalent |  |
| Minimum floor level and flooding |  |
| Review of historic aerial photographs – previous HAIL activity / earthworks / building activity at the site |  |
| Close-proximity active faults |  |
| Subsoil class as part current NZ standard |  |
| Topographical assessment of the surrounding area |  |
| Buried services and structures |  |
| Anticipated engineering geological model from maps and previous investigations and level of uncertainty in the model |  |

## Summary of PROPOSED DEVELOPMENT

|  |  |
| --- | --- |
| **Item** | **Comments** |
| Structure type |  |
| Levels above ground |  |
| Design life |  |
| Importance level |  |

## GROUND INVESTIGATIONS

### Investigation Undertaken

XXXXXXXXXXXXXXXXX undertook the following investigations to evaluate the subsurface conditions at the site on XXXXXXX date. Investigation data can be found in the Appendix XX.

The following tests have been undertaken:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test type** | **Number of tests** | **Maximum depth (mBGL)** | **Average depth (mBGL) min 2m** | **Test standard followed** |
| Scala penetrometer 1 |  |  |  |  |
| Hand auger 1 |  |  |  |  |
| Test pit |  |  |  |  |
| Shear vane |  |  |  |  |
| Other: |  |  |  |  |

1 – minimum required depth 2m or justifiable refusal.

Visual assessments were undertaken in accordance with NZGS Field Guide for the Description of Soil and Rock, 2005.

### Subsoil Profile

Table 2: Geotechnical Model Subsoil Profile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Soil type** | **Depth from (m)** | **Depth to (m)** | **Consistency / density**  **(NZGS)** | **Scala penetrometer range** | **Undrained shear strength (range) and remoulded range** |
|  | 0.0 |  |  |  |  |
|  |  |  |  |  |  |
| … add rows as required |  |  |  |  |  |

### Groundwater

Groundwater was encountered at xxxx mbgl at the time of the investigation (insert date).

## Investigation findings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | | **Yes** | **No** | **Comments** |
| **Our scope**  **Revision number** | Hazard check |  |  |  |
| Desktop study |  |  |  |
| Liquefaction risk (sandy soils, high groundwater) |  |  | *Consults Geotechnical Engineer if Yes.* |
| Slope stability risk, address both risk of inundation from above as well as global stability and instability from below; referring published hazard maps and local knowledge |  |  |  |
| Expansive soils (refer site specific testing, published maps and local knowledge) |  |  |  |
| Potentially compressible soils (recent alluvial soils (e.g. silts/peats); refer published hazard maps and local knowledge) |  |  |  |
| Minimum 300 kPa ultimate bearing strength established |  |  |  |
| Probable maximum settlement met under NZ Building Code |  |  |  |
| ‘Good ground’ per NZS 3604 (latest edition) |  |  |  |
| Flooding risk (refer published hazard maps and local knowledge) |  |  |  |
| Close-proximity active fault risk – has fault location been established / is min offset met? |  |  |  |

## Geotechnical Risk Assessment

|  |  |  |  |
| --- | --- | --- | --- |
| Risk | **Consequence description** | **Risk (L / M/ H)** | **Proposed mitigation** |
| Liquefiable deposits present below depth of investigated soils | Foundation damage | 10 | Consult Geotechnical Engineer. Use TC2 foundations. |
| Softer areas of soil in low-lying part of site | Differential settlement | 5 | Undertake additional ground investigation and consult Geotechnical Engineer. |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| …etc (add rows as required) |  |  |  |

## Recommendations

|  |  |  |  |
| --- | --- | --- | --- |
| Item | **Yes** | **No** | **Comments** |
| Planned earthworks |  |  | Cuts no greater than Xm, fill no greater than Xm to be made without involvement from CPEng (Geotech) or PEngGeol |
| Ground improvement/remediation |  |  |  |
| Foundation recommendations |  |  |  |
| Building restriction zone (BRZ) (Refer any resource consent conditions) |  |  |  |
| Preliminary SW design / control of surface water / groundwater |  |  |  |
| On-site wastewater design required? Any preliminary recommendations. |  |  |  |
| Further investigation/assessment[[1]](#footnote-2) |  |  |  |

The report has been prepared for the client's exclusive use, and it may not be relied on for any other purpose or by any person other than the client without our prior written agreement.

Site Photos

|  |  |
| --- | --- |
| Insert photo here | Description of view including the slope of ground and direction from which photo taken |
| Insert photo here | Description of view including the slope of ground and direction from which photo taken. |

## Appendix 1. Test locations

Insert image here of site location with test sites cleared marked and number

## Appendix 1. Scala and Borehole Test Results

### Test 1

Insert results here

### Test 2

Insert results here

### Test 3

Insert results here

### Test 4

Insert results here

|  |  |
| --- | --- |
| Insert image of hand auger spoils here | Hand Auger X - depth 0 – XXXXmm  Description of soil at different depths here |
| Insert image of hand auger spoils here | Hand Auger X - depth 0 – XXXXmm  Description of soil at different depths here |
| Insert image of hand auger spoils here | Hand Auger X - depth 0 – XXXXmm  Description of soil at different depths here |
| Insert image of hand auger spoils here | Hand Auger X - depth 0 – XXXXmm  Description of soil at different depths here |

## 

|  |  |
| --- | --- |
| Depth (mm) | Description of soil to [NZGS field guide sheet](https://fl-nzgs-media.s3.amazonaws.com/uploads/2016/06/Field-guide-sheet-description-of-soil-and-rock-2005.pdf) |
| 0 - XXXXmm | Description of soil here |
| XXXXmm - XXXXmm | Description of soil here |
| XXXXmm - XXXXmm | Description of soil here |
| XXXXmm - XXXXmm | Description of soil here |
| XXXXmm - XXXXmm | Description of soil here |

1. E.g. Any reccomendations required re. earthworks control? Filling to NZS 4431? Cutting? Max cut height and batter grade to ensure stability. Retaining needed? Max height on this site before geotech input required? Proximity to boundaries. Temporary works if cutting near boundaries. [↑](#footnote-ref-2)