



PITTWATER COUNCIL

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TITLE: **GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER**

STRATEGY: **LAND USE & DEVELOPMENT
RISK MANAGEMENT CO-ORDINATION**

BUSINESS UNIT: **URBAN INFRASTRUCTURE
PLANNING & ASSESSMENT**

RELEVANT LEGISLATION:

RELATED POLICIES: **DEVELOPMENT CONTROL PLAN P21 – APPENDIX 5**

Objectives

The objectives of this Policy are to ensure that:

- (a) geotechnical and related structural matters are adequately investigated and documented by applicants or proponents of activities prior to the lodgment of any development application to carry out any development subject to this Policy, or wherever an application is lodged for a Building Certificate,
- (b) the proposed development activity is appropriate and relevant conditions that should be applied if it is to be carried out, are identified, having regard to the results of the geotechnical and related structural investigations,
- (c) in the event that a proposed development activity is only appropriate if carried out subject to geotechnical and related structural engineering conditions, those geotechnical conditions are identified by applicants prior to lodgment of the development application are able to be met, including all appropriate constraints and remedial maintenance actions required prior to, during and after the carrying out of the development,
- (d) effective geotechnical conditions are specified in the Geotechnical Reports and are incorporated into the architectural and structural engineering design plans at the Construction Certificate stage,
- (e) the preparation of geotechnical and related structural engineering information and certificates required to be lodged by this Policy are carried out by suitably qualified professionals with appropriate expertise in the applicable areas of engineering, and
- (f) developments are only carried out if geotechnical and related structural engineering risks,

and where appropriate coastal process risks, are identified and can be effectively addressed and managed for the life of the development.

- (g) the development is constructed in accordance with the recommendations of the Geotechnical Engineer/Engineering Geologist and verified by the Geotechnical Engineer/Engineering Geologist.
- (h) ongoing requirements to maintain the integrity of the geotechnical solution as contained in consent are effectively carried out to the specified requirements for the life of the development.

Policy Statement

Development must be undertaken in accordance with the “Acceptable Risk Management” criteria defined in this document for Loss of Property and Loss of Human Life for a design project life, taken to be 100 years, unless otherwise justified by the applicant and accepted by Council. These criteria are based on the guidelines established initially in AGS 2000 and as further developed in AGS 2007.

The primary method of Geotechnical Risk Management in the Pittwater LGA is through the application of geotechnical conditions as set out in the Geotechnical Report supporting a Development Application and through the review generated by the issue of Building Certificates, for all development on land identified as Geotechnical Hazard Zone H1 and H2 and, where excavation and/or filling is to take place (subject to specific criteria) for development on all land in the Pittwater LGA.

Once geotechnical risk management measures have been identified for a site, it is the owners’ responsibility to ensure their sites are maintained in accordance with “AGS 2007” standards and the principal that every reasonable and practical step that is available should be used to remove risk.

Note: See extract of Appendix 5 (to Pittwater P21) as attached for full details.



PITTWATER COUNCIL

**Appendix 5
(To Pittwater P21)**

**Geotechnical Risk Management
Policy for Pittwater - 2009**

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GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER - 2009

1.0 Introduction

The Geotechnical Risk Management Policy (the Policy) establishes the Risk Management approach for property affected by geotechnical hazards within the Pittwater Local Government Area (LGA).

2.0 The Policy Statement

Development must be undertaken in accordance with the "Acceptable Risk Management" criteria defined in this document for Loss of Property and Loss of Human Life for a design project life, taken to be 100 years, unless otherwise justified by the applicant and accepted by Council. These criteria are based on the guidelines established initially in AGS 2000 and as further developed in AGS 2007.

The primary method of Geotechnical Risk Management in the Pittwater LGA is through the application of geotechnical conditions as set out in the Geotechnical Report supporting a Development Application and through the review generated by the issue of Building Certificates, for all development on land identified as Geotechnical Hazard Zone H1 and H2 and, where excavation and/or filling is to take place (subject to specific criteria) for development on all land in the Pittwater LGA.

Once geotechnical risk management measures have been identified for a site, it is the owners' responsibility to ensure their sites are maintained in accordance with "AGS 2007" standards and the principal that every reasonable and practical step that is available should be used to remove risk.

3.0 Objectives

3.1 Policy Objectives

The objectives of this Policy are to ensure that:

- (a) geotechnical and related structural matters are adequately investigated and documented by applicants or proponents of activities prior to the lodgment of any development application to carry out any development subject to this Policy, or wherever an application is lodged for a Building Certificate,
- (b) the proposed development activity is appropriate and relevant conditions that should be applied if it is to be carried out, are identified, having regard to the results of the geotechnical and related structural investigations,

- (c) in the event that a proposed development activity is only appropriate if carried out subject to geotechnical and related structural engineering conditions, those geotechnical conditions are identified by applicants prior to lodgment of the development application are able to be met, including all appropriate constraints and remedial maintenance actions required prior to, during and after the carrying out of the development,
- (d) effective geotechnical conditions are specified in the Geotechnical Reports and are incorporated into the architectural and structural engineering design plans at the Construction Certificate stage,
- (e) the preparation of geotechnical and related structural engineering information and certificates required to be lodged by this Policy are carried out by suitably qualified professionals with appropriate expertise in the applicable areas of engineering, and
- (f) developments are only carried out if geotechnical and related structural engineering risks, and where appropriate coastal process risks, are identified and can be effectively addressed and managed for the life of the development.
- (g) the development is constructed in accordance with the recommendations of the Geotechnical Engineer/Engineering Geologist and verified by the Geotechnical Engineer/Engineering Geologist.
- (h) ongoing requirements to maintain the integrity of the geotechnical solution as contained in consent are effectively carried out to the specified requirements for the life of the development.

3.2 Application of this Policy

This Policy is to be applied as follows:

- (a) to address both structural and geotechnical requirements relating to geotechnical issues only. Separate structural requirements will also apply for the erection of any structure in accordance with the Building Code of Australia (BCA), engineering standards and best engineering practice.
- (b) to each of the following criteria:
 - (i) for development on land identified on Pittwater 21 Development Control Plan Map P21DCP-BC-MDCP087 as being areas subject to the Geotechnical Risk Management Policy.
 - (ii) for development on land identified on Pittwater 21 Development Control Plan Map P21DCP-BC-MDCP017 as being Bluff Management Areas and subject to the Geotechnical Risk Management Policy.
 - (iii) For development by Utility Companies and Public Authorities including Pittwater Council
 - o The Policy is to apply to all works by Council or any Authority on public land where identified on the Pittwater 21 Development Control Plan Map (P21DCP – BC-MDCP087) and subject to Part 4 of the Environmental Planning and Assessment Act requiring the lodgement of a Development Application.
 - (iv) for Excavation and Landfill activities for all development on land in the Pittwater LGA that includes:

- excavations greater than 1 metre deep, the edge of which is closer to the site boundary or a structure to be retained on the site, than the overall depth of the excavation and/or
- any excavation greater than 1.5 metres deep below the existing surface and/or
- any excavation that has the potential to destabilize a tree capable of collapsing in a way that any part of the tree could fall onto adjoining structures (proposed or existing) or adjoining property and/or
- any fill greater than 1.0 metre high and/or
- any works that may be affected by geotechnical processes or which may affect geotechnical processes including but not limited to construction on sites with low bearing capacity soils.

4.0 Definitions

Any terms which are defined in the Environmental Planning & Assessment Act 1979 (E.P & A) or the E.P & A Regulations 2000 there under have the same meaning when used in this Policy.

In this Policy, the following terms have the meanings set out below:

Acceptable Risk Management – The complete process of risk assessment and control of risk to the level defined as “acceptable” in this Policy.

Acceptable Risk – Acceptable Risk includes the risk to life and the risk to property, both must be considered. The guidance for the establishment of acceptable risk criteria in this Policy has been based on the contents of AGS 2007(c & d). Acceptable Risk for Loss of Life for the person(s) most at risk, per annum is taken as having a probability of 10^{-6} per annum. Acceptable Risk for Loss of Property is taken as “Low” as defined in AGS 2007.

Risk levels for both loss of life and property should be determined in accordance with the methodologies presented in AGS 2007(c). Risk of loss of life should be determined quantitatively. Risk of loss of property can be determined quantitatively or in accordance with the qualitative terminologies and matrices presented in AGS 2007(c).

AGS – Australian Geomechanics Society.

Application - means any development application which relates to land in the Pittwater LGA

BCA - means the Building Code of Australia.

Building Certificate Geotechnical Risk Assessment – means a Geotechnical Report associated with the lodgment of a Building Certificate Application. The report must conform to the requirements of AGS 2007 for identification and treatment of risk to the “Acceptable Risk Management” criteria stated in this policy and the requirement to remove risk wherever reasonable and practical.

AGS 2000 – Australian Geomechanics Society 2000, “Landslide Risk Management Concepts and Guidelines”, AGS Sub-Committee on Landslide Risk Management, Australian Geomechanics Journal Vol 35 No. 1 March 2000 also reprinted in Australian Geomechanics Journal Vol 37 No. 2, May 2002.

AGS 2007 (a, b, c, d, e) – Australian Geomechanics Society 2007, “Landslide Risk Assessment and Management”, Australian Geomechanics Journal Vol 42, No 1, March 2007. AGS 2007 may be viewed on www.australiangeomechanics.org (got to “Download the Land Risk Management documents” and view documents under *Landslide Management (2007)*)

Building - includes any structure or part of a structure.

Building Certificate – A Certificate under Section 149a of the EPA Act that, if issued by Council, confirms that:

- (a) the building or part thereof is in accordance with a consent or approval, or
- (b) no action will be taken by Council in relation to a building or part thereof that was not originally approved.

The issuance of the certificate may be contingent on the carrying out of works.

Coastal Engineer - means a specialist coastal engineer who is a registered professional engineer with chartered professional status as a CP Eng with coastal engineering as a core competency and, has an appropriate level of professional indemnity insurance.

Covenant – An agreement between the Council and a landowner for the landowner to do, or to refrain from doing, certain acts in relation to the land. A restrictive covenant prevents a proprietor from carrying out specified actions. A positive covenant binds a proprietor to do or complete specified action(s).

CPEng — Chartered Professional Engineer (Institution of Engineers, Australia)

CPGeo Chartered Professional Geologist (Australasian Institute of Mining & Metallurgy)

RPGeo — Registered Professional Geoscientist (Australian Institute of Geoscientists)

Civil Engineer or Structural Engineer - means a civil or structural engineer who, is a registered professional engineer with chartered professional status (CP Eng) and, has an appropriate level of professional indemnity insurance.

Development - has the same meaning as set out in Part 4 of the EP&A. Act 1979 or any replacement or substitution of that provision and includes not only that specific development but also the overall site on which the development is located.

Engineering Geologist - means a specialist Engineering Geologist who is a registered professional engineering geologist with chartered professional status being either CPEng or CPGeo or RPGeo with Landslide Risk Management as a Core Competency, and has an appropriate level of professional indemnity insurance.

EP & A Act 1979 - means Environmental Planning & Assessment Act 1979 (NSW).

Final Geotechnical Certificate - means a certificate of a Geotechnical Engineer or Engineering Geologist in accordance with Form 3.

Geotechnical Engineer - means a specialist Geotechnical Engineer who is a registered professional engineer with chartered professional status being either CPEng or CPGeo or RPGeo with Landslide Risk Management as a Core Competency, and has an appropriate level of professional indemnity insurance.

Geotechnical Hazard - means a condition with the potential for causing the movement of rock, debris or earth, which may cause injury or death to persons or damage to, or destruction of property

Geotechnical Maps - means the maps identifying sites subject to Pittwater Council's Geotechnical Risk Management Policy for Pittwater Local Government Area. (See 3.2(b)).

Geotechnical Report - means a report prepared by and/or technically verified by a Geotechnical Engineer or Engineering Geologist as defined by this policy, which incorporates each of the elements, where applicable to the type of development, described in the "Preparation of the Geotechnical Reports" section of this policy.

Geotechnical Works - means the elements of site modification designed by the geotechnical engineer.

Life of the Structure – This provides the context within which the geotechnical risk assessment should be made. The required 100 year baseline broadly reflects the expectations of the community for the anticipated life of a residential structure and hence the timeframe to be considered when undertaking the geotechnical risk assessment and making recommendations as to the appropriateness of a development, its design and any remedial measures that should be put in place to control risk. It is recognized that in a 100-year period external factors that cannot reasonably be foreseen may affect the geotechnical risks associated with a site. Hence, the Policy does not seek the Geotechnical Engineers to warrant the development for a 100-year period, rather to provide a professional opinion that foreseeable geotechnical risks to which the development may be subjected in that timeframe have been reasonably considered.

Minor Development and/or Minor Alteration – Development/alterations with a value of less than \$20,000 or as determined by Council from time to time every five years. That is, there can only be one minor development/alterations in any five-year period to a property for consideration under this category.

Occupation Certificate – means an interim or final Certificate under Section 109c of the EPA Act that if issued by Council or an accredited certifier, authorizes occupation and use of a building or part thereof.

Orders Process – Orders issued under Protection of the Environment Operations Act, 1997; Local Government Act, 1993; Environmental Planning & Assessment Act, 1979; Roads Act, 1993; and Noxious Weeds Act, 1993.

Policy - means this Geotechnical Policy.

Related Land - means land including roads and thoroughfares that could affect or could be affected by any development proposed on a site.

Remove Risk – It is recognized that, due to the many complex factors that can affect a site, the subjective nature of the science of geotechnical engineering, the risk for a site and/or development cannot be completely removed. It is, however, essential that risk be reduced to at least that which could be reasonably anticipated by the community in everyday life. Further, landowners should be made aware of the reasonable and practical measures available to them to reduce risk as far as possible. Hence where the Policy requires that “reasonable and practical measures have been identified to remove risk” it refers to the process of risk reduction. The Policy is not requiring the Geotechnical Engineer to warrant that risk has been completely removed, as this is not meaningfully achievable.

Requirements - include all acts, statutes, regulations, by-laws, ordinances, codes, delegated legislation, all approvals granted under any such instrument, the BCA, any applicable Australian Standard.

Risk - means a measure of the probability and severity of an adverse effect to health, property or the environment.

Site - means the whole of any parcel of land to which the carrying out of any development relates.

Site Classification - means a classification of the site in accordance with AS 2870.1 Australian Standard Residential Slabs and Footings.

Structure – Any building including, but not limited to residences, residential, industrial and commercial buildings, out buildings, pools and retaining walls.

Structural Design - means the selection and proportioning of load carrying elements incorporated in a structure, which require certification by a structural engineer.

Structural Document - means a document (which may be in the form of drawings) from a Structural Engineer or Civil Engineer which makes recommendations in respect of the Structural Design and Structural Works required for any structure to be erected on the site which, under this Policy, requires certification in accordance with Form 2.

Structural Works - means the elements of any structure designed by a structural engineer.

Tolerable Risk Management – The complete process of risk assessment and control of risk to the level defined as “tolerable” in this Policy.

Tolerable Risk – 10^{-5} for the person(s) most at risk, per annum and “Moderate” for property, as defined in AGS 2007 (c & d). The Tolerable Risk criteria is only applicable to sites with structures that have been in existence in their present form for at least 10 years and have demonstrated a performance at a Tolerable Risk level, or better, during that period and there is not a foreseeable reason why this situation should change. Tolerable risk can only be considered as a criterion for the purpose of Building Certificates and under the Orders process.

Verifier - means a Geotechnical Engineer or Engineering Geologist or Coastal Engineer as defined by this policy who verifies a geotechnical report or aspects of a geotechnical report.

5.0 Geotechnical Report

5.1 Development Application or Application for a Building Certificate

A Geotechnical Report is required to be lodged with a Development Application or an Application for a “Building Certificate” as follows:

- a) For all development activities on land described in Paragraph 3.2(b) Clauses (i) and (ii) – private land.
- b) For all development activities on land described in Paragraph 3.2(b) Clause (iii) – Works by Utility Companies and Public Authorities.

5.2 Construction Certificate Stage

A Geotechnical Report is required to be lodged with a Construction Certificate as follows:

- a) For all Excavation and Landfill activities for all development as described in Paragraph 3.2(b) Clause (iv).

6.0 Preparation of the Geotechnical Report

6.1 Level of Geotechnical Investigation

It is the responsibility of the Geotechnical Engineer/Engineering Geologist to determine the level of investigation required for a particular site/proposal.

Note: *To assist the Geotechnical Engineer/Engineering Geologist in determining the level of investigation, reference may be made to:*

Geotechnical Hazard Mapping of Pittwater LGA-2007 prepared by GHD-Geotechnics (this is a large A3 document and is available for loan through Council's Library, or available on CD through Council (at a fee specified in Council's Fees and Charges Schedule).

6.2 Minor Development, Minor alternations and/or Development separate from a Geotechnical Hazard

For minor development, minor alteration and/or Development separate from and is not affected by a Geotechnical Hazard, the Geotechnical Engineer/Engineering Geologist may determine that a detailed Geotechnical Report is not required. This must be justified as a clear professional opinion with the supporting basis on which the opinion was formed and must be certified on Form 1.

At all times any decision regarding the degree of investigations and assessment required must be dictated by consideration of risk to Life and to Property and the recognition by the Geotechnical Engineer/Engineering Geologist that the Council will rely on the Geotechnical Report/Opinion as the basis for ensuring that the geotechnical risk management aspects of the site/proposal have been adequately addressed.

6.3 Structures separate from the Primary Development

For structures separated from the primary development, eg swimming pool, retaining wall, the Geotechnical Engineer/Engineering Geologist may determine the level of investigation required for a particular

site/proposal and in particular where the primary development is pre-existing. This must be justified as a clear professional opinion with the supporting basis on which the opinion was formed and must be certified on Form 1. At all times any decision regarding the degree of investigations and assessment required must be dictated by consideration of risk to Life and to Property and the recognition by the Geotechnical Engineer that the Council will rely on the Geotechnical Report/Opinion as the basis for ensuring that the geotechnical risk management aspects of the site/proposal have been adequately addressed.

6.4 Property Located in Geotechnical Hazard Zone H3

A Geotechnical Report is not required for a Development Application or Building Certificate for sites located in Geotechnical Hazard Zone H3, other than as required to satisfy Section 5.2(a) – Construction Certificate stage.

6.5 Geotechnical Report to Support Development Application

(Information to be submitted with Development Application)

For a Development Application where a Geotechnical Report is required, a detailed Geotechnical Report to be submitted with a Development Application, is to include the following elements:

- (a) An assessment of the risk posed by all identifiable Geotechnical Hazards that have the potential to either individually or cumulatively affect people or property upon the site or related land to the proposed development in accordance with the guidelines set out in AGS 2007(c) and in particular, in the format as outlined in Figure 1 “Framework for Landslide Risk Management” contained therein. Risk of loss of life should be determined quantitatively. Risk of loss of property can be determined quantitatively or in accordance with the qualitative terminologies and matrices presented in AGS 2007(c).
- (b) Plans and sections of the site and related land to a minimum scale of 1:200 from survey and field measurements with contours and spot levels to AHD. Key features are to be identified, including the locations of the proposed development, buildings/structures on both the subject site and adjoining site, storm water drainage, sub-surface drainage, water supply and sewerage pipelines. Where possible, the survey plan should be augmented by geomorphological mapping.

- (c) Details of all site inspections and site investigations and any other information used in preparation of the Geotechnical Report. A site inspection is required in all cases. Site investigation may require sub-surface investigation; appropriate investigation may involve boreholes and/or test pit excavations or other methods necessary to adequately assess the geotechnical/geological model for the site.
- (d) Photographs and/or drawings of the site and related land adequately illustrating all geotechnical features referred to in the Geotechnical Report, as well as the locations of the proposed development.
- (e) Presentation of a geological model of the site and related land showing the proposed development, including an assessment of sub-surface conditions, taking into account thickness of the topsoil, colluvium and residual soil layers, depth to underlying bedrock, and the location and depth of groundwater. Hydrogeological conditions including seepage inflows and/or dewatering impacts should also be modeled and assessed where applicable.

For Coastal bluff areas, the model must also include an assessment of the mechanism of bluff failure and assessment of the potential and scale of bluff failure that may affect the site.

- (f) A conclusion as to whether the site is suitable for the development proposed to be carried out. **This must be in the form of a specific statement that “The site is suitable (or can be made suitable) for the development proposed and that the site and/or the development proposal can achieve the Acceptable Risk Management required by this Policy provided that”.**
- (g) Specify all geotechnical conditions to be referred to by the Development Consent. Geotechnical conditions to achieve the management of the Geotechnical Hazard Risk for the subject site throughout the four stages of development management as follows:
 - (i) **Geotechnical Conditions to be provided to establish the design parameters** – these conditions are to be provided in the Geotechnical Report -
 - Footing levels and supporting rock quality (where applicable)
 - Degree of earth and rock cut and fill (where applicable)
 - Recommendations for excavation and batters (where applicable)
 - Parameters, bearing capacities and recommendations for use in the design of all structural works with geotechnical components including all footings, retaining walls, surface and sub-surface drainage.
 - Recommendations for the selection of building structure systems consistent with the geotechnical risk assessment
 - Any other conditions required to ensure the proposal can achieve the “Acceptable Risk Management” level as defined in this Policy.
 - Any other condition required to remove geotechnical risks that can reasonably and practically be addressed.

- (ii) **Geotechnical Conditions applying to the detailed design to be undertaken for the Construction Certificate** – these conditions are to be provided in the Geotechnical Report.
- That any structural design relating to the geotechnical aspects of the proposal is to be checked and certified by a suitably qualified and experienced Structural / Civil Engineer and Geotechnical Engineer / Engineering Geologist as being in accordance with the geotechnical recommendations.
 - Any other design, excavation or construction conditions the geotechnical engineer preparing the Geotechnical Report believes are required in the design phase in order to ensure the design will achieve the “Acceptable Risk Management” level as defined in this Policy for potential loss of both property and life.
- (iii) **Geotechnical Conditions applying to the Construction** – these conditions are to be provided in the Geotechnical Report:
- Constructed works relating to the geotechnical aspects of the proposal that require the sign off by a suitably qualified and experienced Geotechnical Engineer/Engineering Geologist. The report must highlight and detail the inspection regime to provide the builder with adequate notification for all necessary inspections.
 - Any other design, excavation or construction conditions including works methodology and temporary works that the geotechnical engineer preparing the report believes are required in the construction phase in order to ensure the design will achieve the “Acceptable Risk Management” level as defined in this Policy for the potential loss of both property and life.
- (iv) **Geotechnical Conditions regarding ongoing management of the site/structure** – these conditions are to be provided in the Geotechnical Report.
- Any conditions that may be required for the ongoing mitigation and maintenance of the site and the proposal, from a geotechnical viewpoint. Such conditions to be in the form of a recommendation for inclusion as a covenant (or similar) on the land title to ensure that any owner or future owners are clearly notified of their ongoing responsibility.
- (v) **Geotechnical Conditions applying to the release of the Occupation/Subdivision Certificate** – these conditions are to be provided in the Geotechnical Report.
- Any conditions that may be required for the Occupation/Subdivision stage, from a geotechnical viewpoint
- (h) For bushfire prone lands, as designated in the Pittwater LGA Bushfire prone Land Map, the Geotechnical Report is to assess the potential geotechnical impacts of any Asset Protection Zones required and mitigate landslide risk due to Bushfire management.
- (i) For coastal bluff areas designated on Pittwater’s Coastal Hazard Map, a coastal engineer’s report on the impact of coastal processes on the site and the coastal forces prevailing on the bluff must be incorporated into the geotechnical assessment as an appendix and the Coastal Engineer’s assessment must be addressed through the Geotechnical Report and structural specification.

- (j) A statement with supporting information to the effect that every reasonable and practical step available has been identified to remove any foreseeable geotechnical risk from the site over and above attainment of the “Acceptable Risk Management” criterion.
- (k) A copy of Forms 1 and 1(a) bearing the original signature of the Geotechnical Engineer and/or Engineering Geologist as defined by this Policy, who has either prepared or technically verified the Geotechnical Report. Where a Coastal Engineer has been involved as required by this Policy, separate Forms 1 and 1(a) must be submitted by that Engineer.

6.6 Geotechnical Report to Support a Building Certificate

Where a Geotechnical Report is to be submitted in support of a Building Certificate Application it is the responsibility of the Geotechnical Engineer/Engineering Geologist to determine, from consideration of the site, the structures and the risk to life and property, whether a detailed assessment is required. Where, in the opinion of the Geotechnical Engineer, the site/structures have been in existence for at least 10 years and have demonstrated a performance at a tolerable risk level, or better, during that period, and there is not a foreseeable reason why this situation should change the Geotechnical Report to be submitted with the application for a Building Certificate should at least address the following elements:

- (a) An assessment of the risk posed by the identifiable Geotechnical Hazards that have the potential to either individually or cumulatively affect people or property upon the site or related land to the existing development in accordance with the guidelines set out in AGS 2007 (c) and the criteria in this Policy for “Tolerable Risk”.
- (b) For coastal bluff areas designated on Pittwater’s Coastal Hazard Map, a coastal engineer’s report on the impact of coastal processes on the site and the coastal forces prevailing on the bluff must be incorporated into the geotechnical assessment as an appendix and the Coastal Engineer’s assessment must be addressed through the Geotechnical Report and structural specification.
- (c) Details of all site inspections and site investigations and any other information used in preparation of the Geotechnical Report. A site inspection is required in all cases. Site investigation may require sub-surface investigations; appropriate investigations may involve bore holes and/or test pit excavation or other methods necessary to adequately assess the geotechnical/geological model for the site. It is the responsibility of the Geotechnical Engineer/Engineering Geologist to determine the level of investigation required to adequately address the issues of risk to life and property.
- (d) Photographs and/or drawings of the site and related land adequately illustrating all geotechnical features referred to in the Geotechnical Report, as well as the existing structure.
- (e) A conclusion as to whether the site and the existing development achieves the Tolerable Risk Management criteria “and if not, what specific actions are required to achieve this criteria to enable a Building Certificate to be issued.
- (f) Any further reasonable and practical action that should be undertaken to remove risk.
- (g) Any covenant that would be necessary to ensure the ongoing mitigation and maintenance of the site from a geotechnical viewpoint.

- (h) A copy of Form 4 bearing the signature of the Geotechnical Engineer/Engineering Geologist as defined by this Policy who has either prepared or technically verified the Geotechnical Report. Where a Coastal Engineer has been involved, as required by this Policy a separate Form 4 must be submitted by that Coastal Engineer.

6.7 Geotechnical Report to Support a Construction Certificate

Where a Geotechnical Report is to be submitted in support of a Construction certificate for all Excavation and Landfill activities on all land within the Pittwater LGA, it is the responsibility of the Geotechnical Engineer/Engineering Geologist and/or the Structural Engineer to determine a detailed assessment is required. The Geotechnical Report may be a full assessment as set out in Section 6.5 or a Statement to the effect that the Structural Engineer has fully considered the Geotechnical issues into the design of the temporary and/or permanent structure to manage risk and safety to workers and/or occupants of the development.

The Geotechnical Engineer/Engineering Geologist may elect to address the Excavation and Landfill issues in the Geotechnical Report at the Development Application phase for properties located in Geotechnical Hazard Zone H1 and/or H2.

7.0 Circumstances in which Pittwater Council would not support a Development Application or an application for a Building Certificate

Council may not support a Development Application or application for a Building Certificate as follows:

- (a) Where, under clause 5.1, a Development Application is required to be accompanied by a Geotechnical Report, then this report must be prepared and/or verified by a Geotechnical Engineer or Engineering Geologist and a Coastal Engineer (where applicable) as defined by this policy, through the submission of Forms 1 and 1(a). Where a Geotechnical Report accompanying a Development Application has been prepared by an engineer(s) with qualifications that do not meet the requirements of this policy then Pittwater Council shall refuse to support the development application, until the Geotechnical Report has been verified by a Geotechnical Engineer or Engineering Geologist and, where applicable, Coastal Engineer, as defined by this policy.
- (b) Where under Clause 5.1, a Building Certificate Application is required to be accompanied by a Geotechnical Report, then this report must be prepared and/or verified by a Geotechnical Engineer or Engineering Geologist and a Coastal Engineer (where applicable) as defined by this policy, through the submission of Form 4.

Where a Geotechnical Report accompanying a Building Certificate Application has been prepared by an engineer(s) with qualifications that do not meet the requirements of this policy then Pittwater Council shall refuse to support the development application, until the Geotechnical Report has been verified by a Geotechnical Engineer or Engineering Geologist and, where applicable, Coastal Engineer, as defined by this policy.

- (c) Where a Geotechnical Report or independent review of a Geotechnical Report accompanying an application, identifies the risk to property and/or life posed by the geotechnical hazard as greater than the level of "Acceptable Risk Management" in the case of a Development Application or "Tolerable Risk Management" in the case of a Building Certificate as defined in this Policy after all feasible measures to reduce the risk have been considered and/or;
- (d) Where the Geotechnical Report does not follow the methodology of AGS 2007.

8.0 General Requirements

The following general requirements are also applicable:

- (a) Pittwater Council may, if appropriate, impose conditions on a development consent requiring the lodgment of interim Geotechnical Certificates related to the stages of the construction of any development the subject of the consent. The form of any such interim certificate must be consistent with Forms 3, amended as required to reflect its status as an interim certificate only.

It is the responsibility of the Geotechnical Engineer/Engineering Geologist preparing the Geotechnical Report in support of the Development Application submission to ensure the necessary Geotechnical Conditions requiring interim inspections are included in the Geotechnical Report.

- (b) All conditions relating to the geotechnical aspects of the proposal for the design and construction phase are to be incorporated in the report as per Clause 6.4(g). Council will rely on those conditions as being the complete set required to ensure the proposed outcome achieves an “Acceptable Risk Management” level as defined in this Policy.
- (c) Any development application for a development subject to this Policy must incorporate any conditions the Geotechnical Engineer or Engineering Geologist believes are necessary to incorporate into a covenant on title to ensure that the land owner both at the time of application and into the future is aware of their responsibilities for any necessary on-going works or monitoring to ensure the site and the development remain within the “Acceptable Risk Management” level.

9.0 Other Analysis Requirements

Other analysis Requirements are as follows:

- (a) Where a Geotechnical Report contains a recommendation for a separate analysis of the site to be carried out by another consultant, for example a flood study to be compiled by a hydrological consultant, this recommendation is to be highlighted to the applicant in the submission of the Geotechnical Report. This would enable the applicant to engage the required consultant and obtain the necessary report prior to the lodgment of the Development Application.
- (b) This policy requires that the civil/structural engineer, who prepares the structural documentation, is a civil or structural engineer as defined by this Policy. This Policy also requires that the engineer, in preparing the structural documentation, has viewed and where necessary used the recommendations given in the Geotechnical Report for the same development. These requirements need to be verified by accompanying the submission of the structural documentation with a completed copy of Form 2.
- (c) This Policy requires that where the site is in a coastal bluff area, as defined by Council’s Coastal Hazard Map, the Geotechnical Engineer must engage a Coastal Engineer to provide an assessment of the impact of coastal process and identification of the coastal forces that impact on the site. This report should form an appendix to the Geotechnical Report and the geotechnical analysis must include an interpretation of the influence of coastal processes and forces on the site and the development.

- (d) Pittwater Council retains the right to have a Geotechnical report submitted with a Development Application peer reviewed by an independent Geotechnical Engineer or Engineering Geologist or Coastal Engineer (where applicable) at the applicant's cost.

10.0 Forms

10.1 Form 1 and Form 1(a) - Declaration and Certification made by Geotechnical Engineer or Engineering Geologist and Coastal Engineer (where applicable) in relation to the DA Geotechnical Report.

When is Form 1 and Form 1(a) to be submitted?

Form 1 and Form 1(a) are to be submitted with a Geotechnical Report accompanying a development application. Attach Form 1 to the inside cover of the Geotechnical Report.

Why is Form 1 and Form 1(a) necessary?

These forms are essential to verify that the author of a Geotechnical Report is a Geotechnical Engineer or Engineering Geologist as defined by this policy. Where a coastal bluff area is included, then it is verified that the author of the coastal component is a Coastal Engineer. Alternatively, where a Geotechnical Report has been prepared by a professional person not recognised by this Geotechnical Policy, then Form 1 and Form 1(a) may be used as technical verification of the Geotechnical report if signed by a Geotechnical Engineer or Engineering Geologist as defined by this Policy.

10.2 Form 2— Declarations and Certification made by Part A - Structural Engineer or Civil Engineer and Part B - Geotechnical Engineer or Engineering Geologist in relation to the design plans and structural plans.

The purpose of this form is to ensure the Geotechnical Engineer verifies that the structural and/or civil engineer has correctly interpreted and incorporated the geotechnical requirements into their design and that the structural and/or civil engineer has prepared their documents in accordance with the geotechnical requirements.

When is Form 2 submitted?

This form must be attached to the submission of the structural documentation required for the determination of a Construction Certificate. The applicant must issue a copy of the structural documents and Form 2 to the Geotechnical Engineer who prepared or technically verified the Geotechnical Report for the Development Application now requiring a Construction Certificate.

This form is also required when a Geotechnical Report is required at the Construction Certificate stage to address Excavation and Landfill activity.

Why is Form 2 necessary?

Form 2 is essential, as it provides evidence to Pittwater Council or other certifying authority determining the construction certificate, that structural documents have been prepared or verified by a structural/civil engineer as defined by this policy, and that the structural documents have been prepared in accordance with the recommendations given in the Geotechnical Report for the same development.

Form 2 is also essential to establish that the recommendations given in the Geotechnical Report have been interpreted and incorporated in the structural design as originally intended by the Geotechnical Engineer or engineering Geologist in preparing the Geotechnical Report.

10.3 Form 3—Post Construction Geotechnical Certificate – Declaration and Certification by Geotechnical Engineer or Engineering Geologist in relation to the Occupation Certificate or Subdivision Certificate

The purpose of this form is to ensure that the recommendations made in the Geotechnical Report have been complied with during construction. In most cases the Geotechnical Engineer or Engineering Geologist who prepared and/or verified the design will need to observe foundation materials, and excavation cut and fill retention systems, subsoil drainage etc prior to signing Form 3.

When is Form 3 submitted?

This form must be submitted at the completion of a project, prior to occupation of the premises and prior to the issue of an Occupancy Certificate.

Why is Form 3 necessary?

Form 3 is essential, as it provides certification that the building works have been carried out in accordance with the requirements of the Geotechnical Report, and any subsequent geotechnical requirements introduced during the construction process.

10.4 Form 4—Geotechnical Certificate (To accompany Application for Building Certificate or response to an Order issued by Council)

The purpose of this form is to ensure that the site and the structures on the site have been assessed by a Geotechnical Engineer/Engineering Geologist in accordance with Council's Policy and has been found to achieve at least a "Tolerable" Risk Management" status. Further that reasonable and practical measures to remove foreseeable geotechnical risk have been identified and suitable recommendations have been included in the report.

When is Form 4 submitted?

This form must be submitted with the geotechnical report accompanying a Building Certificate Application or a response to an Order. Should in the opinion of the Geotechnical Engineer/Engineering Geologist, the site and the development not be at a "Tolerable Risk Management" level from a geotechnical risk viewpoint then the remedial action required is to be identified in a report and indicated on Form 4 is before it is signed and lodged with Council. Where such remedial action requires works that would need Development Approval a Development application must be lodged. Form 4 would then be supported by Form 3 on completion of the necessary works.

Why is Form 4 necessary?

Form 4 is essential, as it provides certification that the site and the existing structures achieve the "Tolerable Risk Management" criteria detailed in this policy.

11.0 Community Awareness

11.1 Section 149 Certificates

Notification of properties known to be potentially affected by Geotechnical Hazards is to be undertaken by inclusion on the Section 149 Certificate. This provides advice to current owners as to the potential for geotechnical risk and the advice transfers to new owners with the sale of the property.

11.2 88B Instruments

Where there are specific management, maintenance or monitoring requirements to ensure the geotechnical risk is managed within the "Acceptable Risk Management" criterion, and/or reasonable practical steps can be taken to remove risk, then these are to be included as a covenant on the title of the property to ensure current and future owners are aware of their responsibilities.

Any recommendation for inclusion of a covenant on the title of the property must be contained in the Geotechnical Conditions attached to the Geotechnical Report

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1 – To be submitted with Development Application**

| | |
|-----------------------------------|-------------------|
| Development Application for _____ | Name of Applicant |
| Address of site _____ | |

Declaration made by geotechnical engineer or engineering geologist or coastal engineer (where applicable) as part of a geotechnical report

I, _____ on behalf of _____
(Insert Name) (Trading or Company Name)

on this the _____ certify that I am a geotechnical engineer or engineering geologist or coastal engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009 and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10million.

I:
Please mark appropriate box

- ⊗ have prepared the detailed Geotechnical Report referenced below in accordance with the Australia Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009
- ⊗ am willing to technically verify that the detailed Geotechnical Report referenced below has been prepared in accordance with the Australian Geomechanics Society's Landslide Risk Management Guidelines (AGS 2007) and the Geotechnical Risk Management Policy for Pittwater - 2009
- ⊗ have examined the site and the proposed development in detail and have carried out a risk assessment in accordance with Section 6.0 of the Geotechnical Risk Management Policy for Pittwater - 2009. I confirm that the results of the risk assessment for the proposed development are in compliance with the Geotechnical Risk Management Policy for Pittwater - 2009 and further detailed geotechnical reporting is not required for the subject site.
- ⊗ have examined the site and the proposed development/alteration in detail and I am of the opinion that the Development Application only involves Minor Development/Alteration that does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.
- ⊗ have examined the site and the proposed development/alteration is separate from and is not affected by a Geotechnical Hazard and does not require a Geotechnical Report or Risk Assessment and hence my Report is in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009 requirements.
- ⊗ have provided the coastal process and coastal forces analysis for inclusion in the Geotechnical Report

Geotechnical Report Details:

| |
|--------------------------------|
| Report Title: |
| Report Date: |
| : |
| Author: |
| Author's Company/Organisation: |

Documentation which relate to or are relied upon in report preparation:

| |
|--|
| |
| |
| |

I am aware that the above Geotechnical Report, prepared for the abovementioned site is to be submitted in support of a Development Application for this site and will be relied on by Pittwater Council as the basis for ensuring that the Geotechnical Risk Management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature

Name

Chartered Professional Status.....

Membership No.

Company.....

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 1(a) - Checklist of Requirements For Geotechnical Risk Management Report for
Development Application**

| |
|--|
| Development Application for _____ <div style="text-align: right; margin-right: 100px;">Name of Applicant</div> |
| Address of site _____ |

The following checklist covers the minimum requirements to be addressed in a Geotechnical Risk Management Geotechnical Report. This checklist is to accompany the Geotechnical Report and its certification (Form No. 1).

Geotechnical Report Details:

| |
|---|
| Report Title: Report Date: Author: Author's Company/Organisation: |
|---|

Please mark appropriate box

- ⊗ Comprehensive site mapping conducted _____
(date)
- ⊗ Mapping details presented on contoured site plan with geomorphic mapping to a minimum scale of 1:200 (as appropriate)
- ⊗ Subsurface investigation required
 - ⊗ No Justification
 - ⊗ Yes Date conducted
- ⊗ Geotechnical model developed and reported as an inferred subsurface type-section
- ⊗ Geotechnical hazards identified
 - ⊗ Above the site
 - ⊗ On the site
 - ⊗ Below the site
 - ⊗ Beside the site
- ⊗ Geotechnical hazards described and reported
- ⊗ Risk assessment conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
 - ⊗ Consequence analysis
 - ⊗ Frequency analysis
- ⊗ Risk calculation
- ⊗ Risk assessment for property conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ⊗ Risk assessment for loss of life conducted in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009
- ⊗ Assessed risks have been compared to "Acceptable Risk Management" criteria as defined in the Geotechnical Risk Management Policy for Pittwater - 2009
- ⊗ Opinion has been provided that the design can achieve the "Acceptable Risk Management" criteria provided that the specified conditions are achieved.
- ⊗ Design Life Adopted:
 - ⊗ 100 years
 - ⊗ Other
specify
- ⊗ Geotechnical Conditions to be applied to all four phases as described in the Geotechnical Risk Management Policy for Pittwater - 2009 have been specified
- ⊗ Additional action to remove risk where reasonable and practical have been identified and included in the report.
- ⊗ Risk assessment within Bushfire Asset Protection Zone.

I am aware that Pittwater Council will rely on the Geotechnical Report, to which this checklist applies, as the basis for ensuring that the geotechnical risk management aspects of the proposal have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure, taken as at least 100 years unless otherwise stated, and justified in the Report and that reasonable and practical measures have been identified to remove foreseeable risk.

Signature

Name

Chartered Professional Status.....

Membership No.

Company.....

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 2 – PART A – To be submitted with detailed design for Construction Certificate**

| |
|---|
| Development Application for _____ <p style="text-align: center;">Name of Applicant</p> Address of site _____ |
|---|

PART A: Declaration made by Structural or Civil Engineer in relation to the incorporation of the Geotechnical issues into the project design

I, _____ **on behalf of** _____
(insert name) (trading or company name)

on this the _____
(date)

certify that I am a Structural or Civil Engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009. I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10 million. I also certify that I have prepared the below listed structural documents in accordance with the recommendations given in the Geotechnical Report for the above development and that

Please mark appropriate box

- ☐ the structural design meets the recommendations as set out in the Geotechnical Report or any revision thereto.
- ☐ the structural design has considered the requirements set out in the Geotechnical Report for Excavation and Landfill both for the excavation/construction phase and the final installation in accordance with Clause 3.2 (b)(iv) of the Geotechnical Risk Management Policy.

Geotechnical Report Details:

| |
|---|
| Report Title: Report Date: Author: Author's Company/Organisation: |
|---|

Structural Documents list:

| |
|--|
| |
| |
| |

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified.

Signature
Name
Chartered Professional Status.....
Membership No.
Company.....

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 2 – PART B – To be submitted with detailed design for Construction Certificate**

PART B Declaration made by Geotechnical Engineer or Engineering Geologist and/or Coastal Engineer (where applicable) in relation to the incorporation of the Geotechnical issues into the project design

I, _____ on behalf of _____
(insert name) (trading or company name)

on this the _____
(date)

certify that I am a Geotechnical Engineer or Engineering Geologist and/or Coastal Engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2099 and I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10 million. I also certify that I have reviewed the design plans and structural design plans for the Construction Certificate Stage and that I am satisfied that:

Please mark appropriate box

- the structural design meets the recommendations as set out in the Geotechnical Report or any revision thereto.
- the structural design has considered the requirements set out in the Geotechnical Report for Excavation and Landfill both for the excavation/construction phase and the final installation in accordance with Clause 3.2 (b)(iv) of the Geotechnical Risk Management Policy.

Geotechnical Report Details:

| |
|---------------|
| Report Title: |
| Report Date: |
| Author: |

Documentation which relates to or is relied upon in report preparation:

| |
|--|
| |
| |
| |

I am also aware that Pittwater Council relies on the processes covered by the Geotechnical Risk Management Policy, including this certification as the basis for ensuring that the geotechnical risk management aspects of the proposed development have been adequately addressed to achieve an "Acceptable Risk Management" level for the life of the structure taken as at least 100 years unless otherwise stated and justified.

Signature

Name

Chartered Professional Status.....

Membership No.

Company.....

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 3 – Post Construction Geotechnical Certificate to be submitted with Occupation
Certificate or Subdivision Certificate**

| |
|---|
| Development Application for _____ <div style="text-align: right; margin-right: 100px;">Name of Applicant</div> |
| Address of site _____ |

Declaration made by geotechnical engineer on completion of the Development

I, _____ on behalf of _____
 (Insert Name) (Trading or Company Name)

on this the _____
 certify that I am a Geotechnical Engineer, Engineering Geologist and/or Coastal Engineer as defined by the Geotechnical Risk Management Policy for Pittwater - 2009. I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10 million. I prepared and/or verified the Geotechnical Report as per Form 1 dated _____ referred to below.

Geotechnical Report Details:

| |
|---|
| Report Title: Report Date: Author: Author's Company/Organisation: |
|---|

I reviewed the original structural design, and where applicable the subsequently amended structural details (below listed) which have been incorporated into the completed project.

I have inspected and/or am satisfied that the foundation materials, upon which the structural elements (as detailed in the original and amended structural documents) of the development have been erected, comply with the requirements specified in the Geotechnical Report and the Construction Certificate approved Structural Plans.

I have inspected the site during construction and to the best of my knowledge, I am satisfied that the development referred to in the development consent D.A. _____ dated _____
 (D.A.No) (Date consent given)

has been constructed in accordance with the intent of the Geotechnical Report, the requirements of the conditions of Development Consent and the Construction Certificate approved Structural Plans relating to the geotechnical issues (including any treatment and/or maintenance plan that may be required to remove risk where reasonable and practical).

I am aware that Pittwater Council require this certificate prior to issuing an occupancy certificate for the development identified above and will rely on this certificate in regard to the development having achieved the "Acceptable Risk Management" criterion defined in the Policy and that reasonable and practical measures have been taken to remove foreseeable risk.

List of all work as executed drawings and Ongoing Maintenance plans relevant to geotechnical risk management.

| |
|--|
| |
|--|

Signature
 Name
 Chartered Professional Status.....
 Membership No.
 Company.....

**GEOTECHNICAL RISK MANAGEMENT POLICY FOR PITTWATER
FORM NO. 4 (As per Pittwater Council's Geotechnical Risk Management Policy) – To be submitted
with Application for a Building Certificate/Response to an Order**

| |
|--|
| Building Certificate Application/Response to an Order (delete that not applicable)for _____ <div style="text-align: right; margin-left: 300px;">Name of Applicant</div> |
| Address of site _____ |
| Order No. (if applicable) _____ |

Declaration made by geotechnical engineer in relation to the submission of an application for a Building Certificate/Response to an Order

I, _____ on behalf of _____
 (Insert Name) (Trading or Company Name)

on this the _____
 (Date)

certify that I am a geotechnical engineer as defined by the Geotechnical Risk Management Policy for Pittwater 2009. I am authorised by the above organisation/company to issue this document and to certify that the organisation/company has a current professional indemnity policy of at least \$10 million.

⊃ I have inspected the site and the existing development and am satisfied that both the site and the development achieves at least the "Tolerable Risk Management" requirement of the Geotechnical Risk Management Policy for Pittwater - 2009. The attached report provides details of the assessment in accordance with the Geotechnical Risk Management Policy for Pittwater - 2009. The report also contains recommendations as to any reasonable and practical measures that can be undertaken to remove foreseeable risk. I am aware that Pittwater Council will rely on this certification as the basis for ensuring that the geotechnical risk management aspects of the site and the development have been adequately addressed to achieve at least a "Tolerable Risk Management" level for the life of the structure taken as 100 years unless otherwise stated and justified in the Report.*

OR

⊃ I have inspected the site of the existing development. The attached report details the remedial actions required to be undertaken prior to me being prepared to certify that the site and the development achieves at least the "Tolerable Risk Management" criteria required in accordance with the Policy.

Geotechnical Report Details:

| |
|---------------|
| Report Title: |
| Report Date: |
| Author: |

Signature

Name

Chartered Professional Status.....

Membership No.

Company.....

* Note: If life of structure taken as less than 100 years, please indicate ----- years