

GISBORNE DISTRICT COUNCIL
CONSTRUCTION CONTROL

Bearing Capacity & Geotechnical Investigation Requirements

for

Light Timber Framed Buildings



Requirements outlined in this pamphlet are intended to apply generally to light timber framed buildings (up to 2 storey's high) such as domestic dwellings, and most residential and some commercial buildings.

Contact Gisborne District Council – Construction Control or Soil Conservation:
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1. BUILDINGS NEEDING SITE INVESTIGATIONS

The following buildings will require some level of subsurface investigations:

- All new habitable buildings (including sleep outs)
- All relocated houses
- Substantial additions > 50% of original area
- All commercial buildings
- Large (generally over 100m²) ancillary buildings (sheds, garages etc), excluding pole sheds with a metal or dirt floor
- Any building including sheds, garages, retaining walls with excessive loads and swimming pools in an area of natural hazard:
 - On or at the base of sloping land
 - Mangatuna Formation geology
 - Fill material
 - Coastal environment
 - Wheatstone Road/Sponge Bay area
 - Te Puia landslide
 - Adjacent to watercourses
 - Potential flooding.

Exemptions

Ancillary buildings less than 100m² will be assessed by council on a case by case basis depending on location and proposed use. For ***Small to Medium Additions*** to an existing building, which shows no sign of previous movement and depending on location, it may be possible to construct the foundations to the same dimensions as the existing foundations or to that required by the New Zealand Standard – NZS3604:1991 *Timber Framed Buildings* NZS3604 whichever is the greater, without the need for subsurface investigations.

2. GROUND BEARING CAPACITY

One of the minimum investigations required by Council involves testing the bearing capacity of the supporting ground beneath a proposed building. This must be undertaken by a **suitably qualified professional**, approved by the Council, prior to designing the foundations. The method of testing varies depending on the subsurface conditions. For example if it is a sandy soil as in the Te Hapara area a ‘penetrometer’ is used, or a clay soil like that found in Kaiti a ‘shear vane’ is used. The type of ground and its bearing capacity determines the foundation requirements.

Generally, if the ground beneath your proposed building has an ‘allowable bearing’ pressure of 100kPa then foundations can be constructed in accordance with NZS3604:1991. This means they can be constructed without the need for specific engineering design.

However, where the ‘allowable ground-bearing capacity’ is less than 100kPa OR the ground consists of expansive soils (shrink – swell), soft soils (clays) or loose gravels, the foundations (*not necessarily the remainder of the building*) must be specifically engineered designed.

3. REQUIREMENTS - FLAT SITES

On a generally flat site, a '**Structure Specific Foundation Report**' **MUST** be submitted as part of the building consent application. This report must be prepared by a suitably qualified professional and contain:

1. A site plan (to scale) showing the position of the proposed building 'on the lot' and accurate locations of the investigation sites (resiting of the building may require a whole new series of investigations).
2. Auger profiles and ground bearing capacity test results (see specifications below).
3. A description of the landscape and an interpretation of the results, including recommendation for bearing capacity plus depth of good-ground and reasoning how this was derived. Confirmation that the potential for differential (uneven) settlement and liquefaction is either, a low risk or can be mitigated must also be included.
4. Recommendations for any foundation design (engineered) requirements i.e. for clays, expansive soils or loose gravels or due to low bearing capacity.

4. TESTING SPECIFICATIONS

1. If your building platform is 200m² or less and generally rectangular in shape:
 - Five auger holes and five ground-bearing capacity tests
 - One in each corner of the building platform & one in the centre.
 - To a minimum depth of 2m or proof of 1m of good ground, which ever is the deeper, or until refusal.
2. A penetrometer must be used in sandy soils, a shear vane in cohesive, expansive or clay soils. Shear vane readings are to be taken every 200mm in depth in each bore.
3. If the building platform is greater than 200m² or an irregular shape additional test(s) will be required - 1 extra test site per additional 50m².

5. GEOTECHNICAL INVESTIGATIONS

A detailed '**Site Specific Geotechnical Investigation Report**' **MUST** be included with a building consent application where a proposed building site is to be located:

- On or at the base of sloping land (including ridge tops)
- In close vicinity to a watercourse/water body
- On fill material
- In an area of natural hazard.

The investigations and report must be undertaken by a suitably qualified professional with appropriate geotechnical experience, such as an engineering geologist or geological engineer and include recommendations for appropriate foundation design and development options (stability measures). Council can supply the minimum requirements of a detailed geotechnical investigation and report.

6. ENGINEER DESIGN SOLUTIONS

Where the ground-bearing capacity does not meet the requirements for NZS3604 i.e. allowable bearing of 100kpa, or if the ground consists of clays, expansive soils, or loose gravels, or slope stability remedial measures are required then the foundations and any remedial measures (e.g. a retaining wall) must be designed by a suitably qualified engineer or suitably qualified person with NZCE [Civil] and/or REA [Civil].

The consulting engineer is also required to give a professional guarantee through a 'Producer Statement' (PS1) which must also be supplied with the building consent application.

7. RECENT SUBDIVISIONS

If you are intending to build on land which has recently been part of a subdivision, check to see if a '**Consent Notice**' is on the **Certificate of Title**. A '**Consent Notice**' may dictate the level of subsurface investigations and instability remedial measures required at the building consent stage. The Council's 'Development Control' Planners can help you with this.

8. ASSOCIATED EARTHWORKS

Depending on the location of your proposed building site you may require earthworks (cut and fill) to form the building platform and associated areas. This may trigger a requirement for a building consent for 'site works' or resource consent for land disturbance, particularly if you are on a hill slope. Please contact the Soil Conservation Division of Council if earthworks is required as part of the development. Resource Consent for land disturbance is issued by the Soil Conservation Division of Council at no charge.

9. BEFORE SUBMITTING A CONSENT

If you are unsure about the investigation requirements for your particular building proposal it is recommended that a PIM (Project Information Memorandum) be applied for BEFORE the building consent. A PIM is a report you can request from Council which contains information and/or requirements that could affect the construction of a proposed building. This allows you to assess the feasibility of your project before proceeding with a Building Consent application.

Local suitably qualified professionals, accepted by the council to undertake bearing capacity testing are:

- LDE Land Development & Exploration Ltd, PO Box 671, Gisborne. (06) 867 3035
- Opus International Consultants Ltd , PO Box 49, Gisborne. (06) 868 5199
- John Klemenko (04) 479 3749

Or, any other suitably qualified professional outside the district.

PLEASE NOTE: If you choose to use someone not on the above list, your Building Consent may be peer reviewed at the owner/clients expense. The use of trade, firm or individual named above does not constitute an official endorsement or approval by the Gisborne District Council of any product or service that they provide.

If you require further information contact Construction Control or Soil Conservation staff before committing to any major project.