BUILDING PERFORMANCE

Removal of silt deposited during flooding

QUICK GUIDE

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

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INNOVATION & EMPLOYMENT
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Ministry of Business, Innovation and Employment (MBIE) Hīkina Whakatutuki – Lifting to make successful

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Information, examples and answers to your questions about the topics covered here can be found on our website: **www.mbie.govt.nz.**

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Information on removing silt deposited during flooding

Floodwaters can deposit silt in and beneath some types of buildings.

This quick guide provides guidance on the impacts of silt on building performance, the related steps to consider in the clean-up process and emphasises the core regulatory requirements associated with this work.

BEFORE REMOVING SILT

It is important to consider your Health and Safety before checking for silt or removing silt from beneath a building. There are a range of potentially hazardous situations, including but not limited to:

- handling and breathing contaminated material
- working in confined spaces
- slips and trips
- electrocution
- gas leaks
- working with machinery
- potential asbestos.

Use the following Worksafe guidance to carry out a risk assessment before you start work: https://www.worksafe.govt.nz/managing-health-and-safety/keeping-safe-during-cyclone-and-flooding-recovery/working-with-silt-or-contaminated-soil-after-cyclone-gabrielle/

Contact your insurer and local council

Prior to commencing work, you should consult your insurer to understand your responsibilities and your council to understand how to dispose of any material.

Keeping records

Before starting work, ensure that you take photographs and videos of the affected areas. It is important to have a record of the work undertaken for both the council and insurance claims. Make sure that you keep records of the heights and locations of any silt you find in, underneath and surrounding the building. You can do this by including rulers or tape measures in close-up photographs.

WHY SHOULD YOU REMOVE SILT?

Excessive build-up of silt around and under your building can have negative effects on both you and the building. These effects can be both short and long-term and can include:

- health of occupants: increased exposure to either mould or moisture can have a detrimental impact on people's health.
- durability of building elements: there could be long-term damage to the structure of the building and/or the cladding of the building.
- performance of building elements: which includes long-term damage to drains and insulation. In addition, this could include undue pressure and harm on retaining elements, floors, obstructed weepholes, drainage holes and drained and vented cavity systems and other related damage to building services and equipment.

HOW CAN SILT DAMAGE BUILDINGS?

Structural and ground damage

The foundations of a structure can be affected by silt in a number of ways, including:

- silt can block subfloor vents that help to keep the subfloor dry
- silt can trap moisture in framing such as piles, bearers or joists. This can lead to rot or damage.
- silt and water loading can dislodge walls and floors
- silt build-up can prevent water draining away from the building leading to ponding against building elements which in turn can cause damage.

When cleaning up the sub-floor area, check if any other repairs are required to framing, piles or services such as pipes and cables.

Internal Linings

Internal linings affected by silt or floodwater need to be removed to allow for replacement and drying out of the wall cavity. For further information refer to: Damage to wall linings (plasterboard) caused by flooding | Building Performance

Cladding and insulation

Cladding and insulation can be damaged in a number of ways, including:

- trapping moisture against the cladding, which can cause it to rot
- preventing air flow and moisture draining from the space behind cladding (drained and vented cavity walls systems) so the wall elements cannot perform their function of drying and venting
- damaging building paper and synthetic building wraps, including harbouring silt between cladding and the wrap/paper
- compressing or waterlogging insulation and limiting its ability to retain warmth. Any bulk insulation that was in contact with the flood waters and silt should be replaced
- where cladding has been subjected to mechanical damage associated with flood deposits and silt impacts it should be assessed as part of the overall remediation plan. Some silt deposits can be 'angular' in nature, which on occasion, can a have an abrasive effect on cladding and/or the paint system attached to the outer face of the cladding.

Building services and fixtures

Building systems such as plumbing, water, drainage, heating and cooling may be affected either due to blockage, overloading or damage to component parts which can have long-term effects on the building

Make sure you consider other structures on your property that may be affected by excessive silt build-up. These could include garages, decks and sleepouts.

AVOID DAMAGE WHEN REMOVING SILT

It is important to take care to avoid damage to building elements during the process of removing the silt. Such building elements may include:

- building paper/synthetic building wraps
- waterproofing membranes
- coatings (paint systems and the like).

REPAIRING SUBFLOOR DAMAGE CAUSED BY THE SILT

When removing silt, there are a number of requirements you need to consider in order to protect the performance of your building. Any repair work you do should ensure that the building complies with the building code to the same level as that it did before the event. You can repair using a "like for like" replacement, but may wish to take the opportunity to improve the performance of the building by building back better.

Some things to consider when repairing include:

Structure

Silt deposited by inundation can cause damage to the structure of the building, for example by damaging timber piles, subfloor bracing timbers and pile connections. Depending on the extent of the work this may require a building consent. NZS3604:2011 section 6 provides some common details for these elements.

Durability

All parts of the structure should be dried before you start repair work, as repairs undertaken before the structure has dried sufficiently can lead to mould and rot. Drying out can take several months, particularly in winter.

Ensure that all subfloor ventilation openings are clear and made vermin proof, and that there is sufficient clearance between the ground level and the underside of the subfloor framing. If there is limited clearance available you may wish to install a damp proof ground cover to the subfloor space.

It is also important not to over excavate in the subfloor space or excavate around the foundations as you don't want to create a low point where moisture could pond.

NZS 3604 – Section 6.14 Prevention of Dampness - provides some information about ventilation openings for sub-floor ventilation, ground cover, drainage, access and separation.

Surface water and external moisture

When you excavate silt and reduce the ground level around your building you should try to ensure that the ground surface surrounding the building slopes away from the building to lower ground or to a surface drain. Ensure that you clear other drains on the site such as around garages, sleepouts or retaining walls. You should also aim to have all external surfaces around the building clear of the base of your claddings and set above the adjacent ground level, to protect your building from future flooding.

There are recommended minimum finished floor and base of cladding clearances you can use to confirm what is required contained in NZS3604:2011 section 7, and also in E2/AS1.

Hazardous agents on site

The Building Code contains requirements that aim to protect people from the adverse effects of hazardous agents or contaminants on the site. This requirement would apply if the repair work could disturb any asbestos containing materials, or if the silt being removed is contaminated. You can find information about some common materials that may contain asbestos, and how to manage the risks from contaminated silt on the Worksafe website - https://www.worksafe.govt.nz/topic-and-industry/asbestos/

Services and facilities

Section G of the building code sets out the requirements for adequate and safe provision of sanitary fixtures and services such as gas, electricity and water, and foul water drainage. Once silt has been removed back to an acceptable ground level, these systems should be checked by suitably qualified persons before being used.

Energy efficiency

If you need to repair or replace any subfloor insulation after the silt has been removed, and all structural repairs are complete NZS4246:2016 provides guidance for the correct installation of insulation products by installers and others to achieve the intended thermal performance in buildings without compromising the durability and safety of insulation or building elements and the health and safety of installers and building occupants.

It is important to check other systems such as heating/cooling units and onsite wastewater treatment systems.

Additional information can be found here:

- Earthquake Commission website: https://www.eqc.govt.nz/what-we-do/what-youre-covered-for/storm-or-flood-damage/ and in the following: Factsheet – Land Cover: Storms and Floods
- Section 6 of this BRANZ Bulletin: BRANZ Bulletin BU666 Restoring a home after flood damage (tasman.govt.nz)

ARE THERE OTHER REQUIREMENTS RELEVANT TO ME?

Building Consent

In most cases, removal of small or moderate amounts of silt that has not caused damage to building elements will not require a building consent. However, any building work will still need to be carried out in accordance with the requirements of the Building Act. Repair work is considered to be an alteration to an existing building, and so you should ensure that the building performs to at least the same extent as it did immediately before the building work began. The performance of the building needs to be at least as good as it was before you altered or repaired it, but you can take the opportunity to improve the building performance.

Where building structure has been damaged you should check with your council if a building consent is required.

Exempt building work

Removal and replacement of floor, wall ceilings linings, cladding repair and replacement and certain plumbing and drainage work is often able to be completed without the need for building consent.

For more information about exempt building work please follow this link to a MBIE's 'quick guide' that was developed for the 2023 severe weather events and is focused on flood remediation.

Even if a building consent is not required, you may still need to consider other regulations, especially when removing and disposing of silt. Examples of such, include the Resource Management Act 1991 and local by-laws. Your Insurer and/or the Earthquake Commission may also have requirements that need to be meet.

OPPORTUNITIES TO IMPROVE BUILDING PERFORMANCE

Once silt has been removed to the required level, there may be an opportunity to improve your buildings performance. This could include improving:

- your building's foundations earthquake performance
- thermal performance by installing underfloor insulation
- comfort and durability by installing a polythene layer over the ground in your subfloor to reduce ground moisture.

LIMITATIONS

This information is intended as guidance only and as a homeowner, you should consult with both your local council and insurer before removing silt or carrying out building work.

This information is related to removal of silt underneath buildings and up to 150mm above the wall cladding. If your building has had significant silt intrusion you should consult a building professional for advice.

WHAT OTHER INFORMATION EXISTS?

For further information from other agencies please refer to the following:

Agency / Organisation	Details
Woksafe	https://www.worksafe.govt.nz/managing-health-and-safety/keeping-safe-during-cyclone-and-flooding-recovery/working-with-silt-or-contaminated-soil-after-cyclone-gabrielle/
Local Councils	https://www.aucklandemergencymanagement.org.nz/flood-event-2023/cleaning-your-home-and-disposing-of-waste https://www.hbrc.govt.nz/home/article/1407/dealing-with-waste-from-cyclone-gabrielle-?t=featured&s=1 https://www.gdc.govt.nz/council/news/silt-removal-please-wear-a-mask
Ministry for the Environment	https://environment.govt.nz/news/support-following-cyclone-gabrielle/
Ministry of Health	https://www.health.govt.nz/your-health/healthy-living/emergency-management/protecting-your-health-emergency/floods-and-health
EQC	https://www.eqc.govt.nz/what-we-do/what-youre-covered-for/storm-or-flood-damage/
Plumbing	https://www.pgdb.co.nz/
Insurance	Check your insurance provider's website

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