

# Looking after Heritage Buildings

## LOOKING AFTER LIMESTONE

Fact Sheet



**Waitaki's abundance of good building stone and the scarcity of timber has created our district's identity: our many beautiful Oamaru stone buildings.**

Limestone also provided the mortar for these same buildings – smaller pieces of stone were burnt in kilns to produce quicklime. Quicklime was mixed with local sands and slaked (combined with water to produce calcium hydroxide) to make mortar.

Limestone has particular properties and needs particular care. Limestone walls breathe. They exchange air with the atmosphere as temperature and air pressure change. The wall warms up during the day, the air within it expanding the wall. At the end of the day, the wall cools down and the air within it shrinks. Air and some water vapour are drawn into the wall.

When old stone walls were built, it was accepted that a certain amount of dampness would penetrate the masonry and that this would evaporate naturally. Traditional mortars, plasters, renders and finishes such as limewash were permeable and allowed the walls to breathe. Careful detailing with lead flashings and overhangs that shed water quickly were the hallmarks of good masonry practice. Maintenance involved replacing deteriorated mortar, render and limewash, especially at the base of walls, as well as regularly cleaning out gutters and downpipes to avoid blockages and leaks over the limestone.

In cold climates water in masonry freezes. When water freezes it expands and when water is trapped in masonry it can cause the stone to break away, causing damage. Looking after limestone means letting it breathe. Repairs should be in permeable lime mortars, plasters, and renders. Good masonry practice is the best means of preserving limestone.

Pollution can be absorbed into the limestone and cause hard outer crusts (gypsum) to form. When moisture is absorbed into the limestone with a crust, the same damage as with freezing can occur. Gentle cleaning the limestone can avoid this crust forming.

Contemporary materials such as Portland cement or acrylic paints are relatively impermeable and prevent water getting in, but they also stop it getting out. You can tell water is not getting out when paint bubbles or blisters, and when render fails or cracks. Locking in the damp leads it to rise up the walls. Along with making sure there is good drainage, using traditional finishes help keep the stone in good condition.

### Things to do when working with limestone

When working with limestone, the damage salts/damp causes is a big factor in stone decay, here is some general advice:

- Do as much as necessary, but as little as possible – be cautious, don't do anything you're unsure about that might cause problems later
- Do minor maintenance regularly – monitor the building – instead of reacting to major defects that happen over a long time
- Do think traditional – if there is a modern product that promises to do wonders, be VERY sceptical. CEMENT = too hard, too impermeable, too brittle.
- Do use limewash instead of paint.

### Some things to avoid:

- Changing the pattern of the masonry – repairs should match the original work
- Sandblasting or using high pressure water jets – either use chemical stripper or low-pressure water (trickle cleaning)
- Replacing timber floors with poured concrete – concrete floors force dampness into the walls
- Using cement when repairing lime mortars, plasters, and renders
- Sealing walls with water-repellent coatings or using acrylic or other impermeable paints.

