



Division of Mines and Mineral Resources — Report 1991/31

Inspection of a house in Bay Street, Burnie

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A property in an area of active land at Burnie was inspected. The property, at 6 Bay Street, Parklands (406705 mE, 5455322 mN), is located on a slope of about 16° which is mapped on the Geological Atlas 1:63 360 series Burnie sheet as Quaternary age landslide material. This material is largely derived from slope mass wasting processes acting on a Tertiary age basalt which occurs upslope of 6 Bay Street. To the east of 6 Bay Street, Precambrian age Burnie Quartzite and Slate is exposed in a road cutting. The property falls within an area mapped as active land movement and/or slopes which are considered to be unstable or likely to become unstable with increased development. The property opposite 6 Bay Street was affected by land movement in the past and a house on that property has subsequently been removed. The land movement was probably associated with a build up of pore pressures within the Quaternary age landslide materials.

The property on which the house was removed is now planted to garden and the Burnie Council has constructed a small concrete retaining wall on the street frontage. The retaining wall has weep hole provisions and several of these were weeping at the time of the inspection. A seepage was also noted issuing in Bay Street near the entrance to this property.

The house at 6 Bay Street has been constructed on a perimeter wall of poured concrete and internally on wooden piers bearing onto concrete pads. The concrete perimeter wall has been rendered over externally and painted. Hairline cracks are present in the mortar render and in several areas minor spalling is occurring in the render. The concrete perimeter wall showed no signs of cracks extending from the external render through the thickness of the wall.

The soil beneath the house is a high plasticity basaltic clay which contains fine gravel size fragments of basalt. The surface is generally dry and shrinkage cracks have developed. There is an open, shallow drain extending beneath the house from the southwest corner towards the eastern wall of the house. The

material in this drain was a moist, high plasticity clay derived predominantly from the weathering of basalt.

The concrete perimeter wall extends to the main floor level of the house and clay-fired brickwork has been constructed on top of the concrete wall. Cracks have developed, mostly along mortar joints, in all walls of the brickwork. The cracks are generally about one millimetre wide and the damage would be classified according to Australian Standard 2870 (Residential Slabs and Footings, Appendix C) as very slight to slight. Cracks occasionally pass through the body of a brick. The general pattern of cracking is from the roof line, usually at the corner of the house, stepwise along mortar joints to a window lintel, down the edge of the lintel and along the next mortar course below the lintel to the window frame. Cracks also occur from the window sills, stepwise downwards along mortar joints, usually to a corner of the house where the brickwork meets the rendered concrete perimeter wall.

Below the window at the front of the house to the east of the porch, the pattern of cracking is from each outer edge of the window sill, stepwise downwards to the lower brick course towards the centre of the window. These cracks almost form a V section which appears to have moved outwards with respect to the rest of the brick wall. It may be significant that this part of the house receives the least amount of solar radiation and there is no hardtop cover such as a concrete path or driveway adjacent to the foundations in this area. Under these conditions, the moisture content of the soil beneath the footings may be maintained at relatively high levels where, expansive soils if present, may have swelled in volume.

Relatively extensive patching of mortar has occurred in the brickwork above the understorey laundry at the rear of the house. It may be significant that this portion of the property receives the maximum amount of solar radiation. The soil beneath the footings is likely to have a lower moisture content than at the front of the property, particularly as this area is also protected from solar radiation and water infiltration by a wide concrete paved area. Under these conditions, the soil is

likely to have a lower moisture content than the soil at the front of the house. Expansive soils, if present may have decreased in volume as they have progressively dried out.

It is significant that no cracks can be traced from the outer rendered concrete perimeter wall through the concrete to the inside of the perimeter wall. This wall has either been reconstructed (of which there was no visible evidence) or the brickwork, being more brittle than the concrete, has cracked whilst the concrete perimeter wall has not. It is unclear as to the cause of the cracking in the brickwork. Flexing of the foundations as a whole may be due either to earth pressure (i.e. landslide movement) or the presence of expansive clays. The latter is indicated by shrinkage cracks in the soil beneath the house. To confirm this soil samples could be taken from beneath or adjacent to the foundations at several points around the house and

submitted to a commercial laboratory for determination of the soil shrinkage index.

It is considered that there must be some risk of land movement attached to this site by virtue of its proximity to land which has already suffered landslide movement. However that risk is presently considered to be low and should remain so provided that drainage of the land opposite continues to occur. Evidence that this is currently occurring is shown by water seeping from the weep holes in the base of the low retaining wall. Should this seepage cease during the wetter periods of the year, there may be reason for concern and the Council should be alerted that drainage of the property opposite has become impeded. Council should also be requested to intersect the seepage issuing in Bay Street and divert it into the stormwater system.

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