



Structural | Geotechnical | Civil | Environmental | Fire

ENGINEERING SERVICES

340E Pahoia Road
Tauranga

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Retaining Wall – Structural Assessment

find better ways.

QUALITY CONTROL

Title Retaining / Sea Wall Structural Assessment

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1 INTRODUCTION

We have been engaged by our client to provide our professional opinion as to the structural integrity and predicted future lifespan of the retaining wall construction on the foreshore at the above-mentioned property. The structural integrity and durability of the wall(s) are considered.

2 CONSTRUCTION

Construction comprises of an original uPVC plastic sheet pile wall which we understand was constructed circa 10 years ago. The height of this wall varies between 0.6 m to 1.0 m high above the sand.

A new timber pole retaining wall has been constructed 0.5m behind (in plan) the original wall and comprises of 150 diameter x approximately 3m long timber poles driven into the ground with 50mm thick timber rails. The height of the timber wall is 750mm above the top of the original uPVC wall.

3 CONDITION

3.1 Timber Wall

The condition of the newer timber wall is good with the wall apparently experiencing no signs of movement and therefore distress / overloading. Hence the structural integrity of this wall is considered to be acceptable.

It appears that the timber treatment to the piles is H5 and the rails H4. As the poles aren't immersed in sea water continuously this is in line with normal best practice and therefore the durability of the timber wall is expected to exceed 20+ years.

3.2 uPVC Wall

The uPVC sheet pile wall is in reasonable condition from a durability perspective in that there is no apparent chalking which can indicate UV damage and degradation to the plastic. Whilst the initial material specifications are unknown, given the condition of the wall at this time I believe, in my professional opinion, that the durability of the wall should be for at least another 15 years.

The wall is leaning over in some places but it appears that there has been no additional movement following installation of the new timber wall behind and above. Considering soil dynamics and behaviour the wall is unlikely to experience future movement given that it has moved and the soil has reached an "active" state where it has reached equilibrium.

The ongoing structural integrity of this wall depends on sand remaining in place in front of the wall and so any future movement of the wall is expected to be minor, provided the sand in front of the wall remains at current levels and does not lower. The expected fluctuations in sand level will require verification from a coastal engineer.

4 SUMMARY

Considering the durability and structural integrity of the walls, in my professional opinion (not to be inferred as a guarantee) I believe that the walls have a predicted lifespan of 15+ years.

The structural integrity of the walls is reliant on the ground level to the front of the wall remaining at the current level and not becoming lower. This will require investigation and comment by a coastal engineer as to any expected changes in ground level arising from coastal processes.