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The reconstruction of an ecologically sustainable sand dune system from a former coastal sand mined site

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The Magenta Shores a resort and golf course development fronts 2.3 km of Tuggerah Beach on a formerly sand mined and landfill site in an urban growth area on the central coast of New South Wales, Australia. In the development area, more than one million cubic metres of sand was collected and reshaped to mimic a parallel dune ridge landform. To increase the natural defenses against storm waves and mass sand movements, the incipient foredune was retained and the parallel beach ridge landform was re-established by mimicking natural processes. A high mound, an artifact of the sand mining in the northern section of the reconstructed dune, was not reshaped. This high area was allowed to naturally wind erode. A minor blowout began to form as sand moved off this mound. To lessen the slope and aid in the regeneration process of the dune system, it was necessary to create additional sand trapping. One kilometre of organic 200 g/m^2 jute fabric with 40 percent porosity, 600 mm high, fastened to degradable wooden stakes, was positioned in a series of rows appropriate to the wind direction to capture sand both in front and behind the fence. To minimise blowouts forming, the jute at the end of each row was overlapped in a triangular shape at the ends of each fence so that there was no sharp defining edge. These fences assisted in retaining sand volume of the reconstructed dunes enabling the establishment of trials for coastal vegetation regeneration.

Biography

P A Hazelton is currently working as a **Senior Lecturer**, School of Civil and Environmental Engineering and **Associate Member**, CTWW - Centre for Technology in Water and Wastewater Treatment. Her Research interests included Environmental engineering including acid sulfate soil identification and management; and applied soil science for urban land management.

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