Ian Thomas has an interesting workplace.
Some people have vibrating mobile phones. Ian has an office that shakes. Some people decorate their desk with photos. Ian can glance out of the window for an interrupted view of the sea.
He said: "Some of the best days in the year are in winter. They can be fantastically clear. Quite spectacular. When it's very windy, it's like being at sea. You can hear the office creaking and shaking."
But then his office is a 40ft temporary building on top of a beach.
Thomas works at this exposed location at Pevensey Bay, East Sussex, because he is overseeing a project that could help to tackle two of the key problems that exercise the minds of today's local authority engineers: what to do about waste and what to do about flooding.
Further along the beach, bales of used tyres have been buried beneath the shingle. What they have displaced has been used to bulk up the embankment.
Even though this is a flood defence project, it is also supporting the Department of Trade and Industry's Partners In Innovation programme. The DTI wants to find a second use for the 10 million or so used tyres that are currently landfilled. This practice is being phased out through an EU directive that will ban the landfilling of almost all tyres, including those that have been shredded, by July 2006.
The DTI has awarded the water and civil engineering specialists HR Wallingford a PII contract to see if one of those uses could be in coastal and river defences. Jonathan Simm (correct), HRW technical director, is co-ordinating projects that will test the tyres in three settings: within the shingle bank at Pevensey, at the base of a toe revetment at Selsey, West Sussex, and as part of an embankment along the River Witham, Lincolnshire.
Pevensey Bay is the first to be completed. This area had been protected by a shingle embankment and an extensive field of groynes. However, many of these had reached the end of their useful life. The embankment could be breached in some places by a storm with a return period of one in 20 years and the Environment Agency was spending an average of £650,000 annually on shingle replenishment.
The intention had been to replenish the beach and replace the groynes, but a change in the economic criteria used to evaluate schemes led to the latter work being removed from the plan. Instead major beach replenishment was planned to create a bank that would protect to at least a one-in-150-year storm standard.
The tyres should reduce the amount of shingle imported to boost the beach.
They are compressed into blocks of 100 or more tyres measuring 1.5m x 1.2m x 0.8m.
Thomas said: "The 'memory' of the rubber and polymers used in the tyres is actually changed during this process, forcing the tyres into a permanent configuration."
Each bale weighs 800-900kg and has a density of about 544 kg/m^3. The bales are bound with an environmentally-inert strapping that will not decompose. As they remain porous, it is not anticipated that they will upset the hydraulic balance of the embankment.
The Pevensey scheme is not only a testbed for used tyres. It is also a government "pathfinder" project, which means that it is at the forefront of finding new ways to use the PPP/PFI set up.
Thomas works for Pevensey Coastal Defence Ltd, which is jointly owned by four companies with expertise in this field. Its partner is the Environment Agency.
At Selsey, the contractual arrangements are more familiar. It is a Chichester District Council project that will be funded by DEFRA if it goes ahead. The aim is to protect the toe of 100 metres of existing sea wall from being undermined by the sea. The tyres will form the core of the protection, although the bulk of the construction will be rock armour.
The Lincolnshire project is part of the Environment Agency's work to provide one-in-25-year flood standard for the River Witham system. The proposed tyre bale site is a 1km length of existing bank on the landward side of the embankment, which doubles as a flood defence barrier for Branston Island, an emergency flood storage area.
Project manager Helen Restall said: "The planned works involve stabilisation of the flood defence by widening the crest to 4 metres, reprofiling the embankment, berm reinstatement and toe protection."
She added: "The tyres are being used in the core of the embankment and thus will be incorporated into an engineering structure.

"Some material will be removed from the embankment so that the tyres can be placed into the embankment. The material that is removed will be used to cover the tyres completely and so minimal extra material will need to be imported to finish the embankment, i.e. topsoil and seed."
Overall HRW estimates that tyre bales have the potential to replace up to 25% of armour rock and perhaps 5% to 10% of beach recharge material. This equates to some 250,000 cubic metres of tyre bales or two million tyres a year. This could reduce the demand for natural filler material and provide a second purpose for approximately 5% of England and Wales' tyre mountain.
But these experiments have to show that the tyre bales can do the job before that potential can be fulfilled.
In case the bales don't perform adequately, Chichester District Council is looking for insurance to cover the cost of removing the structure. The cost of this could prove a deciding factor in whether the scheme goes ahead.
Another reason for removing the tyres might be contaminants released from the tyres themselves or material stuck to them. The evidence so far is that there is an initial surge as material previously broken down by sunlight is washed off the tyres, although this is very short-lived and reduces to a low level.
David Lowsley, senior engineer at Chichester District Council, said: "But this is one of the reasons for the experiment. The output of zinc from the tyres will be measured as this is easily picked up by living organisms."
Environmental monitoring will be carried out on the two south coast projects by Dr Ken Collins from the University of Southampton. He has studied the environmental impact of tyres since 1995 and has created an experimental tyre reef at Poole Bay.
Monitoring at Witham will be carried out by the EA although Collins will do some work there too. The monitoring will check zinc levels in the water and study the plant and animal life around the defences. Collins said there was no evidence to date of health or environmental problems caused by tyres in a marine environment.
Then there is a question of paperwork. At present in England and Wales, flood defence sites with tyre bales on them are deemed to be waste handling sites until all the tyres have been incorporated into the engineering structure. Therefore a waste management licence is needed, albeit a temporary one, said Simm.
The tyre bales could also bring advantages. In the case of the Witham project, if the work was carried out using conventional materials, overhead powerlines and a soke dyke would have to be moved.
Restall explained: "It is possible to have a slope of 1 in 2.5 if we use the tyre bales, ie a much steeper slope than the 1 in 4 slope which would be required if we were to use clay, and we would not have to move the soke dyke or powerlines.
"The location of the soke dyke did play a big part in the decision about using tyre bales as we did not want to fill it in and re-excavate a new one. Doing this would disturb the local environment."
But what about financial savings from using a waste material? At Selsey, the answer is muddied by the prospect of buying insurance. As for Pevensey, Thomas said: "It's too early to say. It is a function of how many tyres we use in any one location. Digging a big hole and chucking out loads of shingle out, and then burying the tyres would be an ideal solution, but Pevensey has houses built right on the beach so that's not always possible!"