

WAITAKERE CENTRAL – A CATALYST FOR URBAN ENRICHMENT

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ABSTRACT

Waitakere City's new, green civic centre anchors town revitalisation, supports sustainable transport, promotes economic development and epitomises the Eco City's sustainability principles.

When the council brought staff together from several scattered locations onto a site alongside the redeveloping Henderson railway station in 2006, it made the \$36 million, 13,400 m² civic centre a showcase for practical green design.

The council also demonstrated the focus on town centres and transport hubs outlined in its growth management strategy. By placing its 700 staff alongside the town centre, linked by a bridge with access to the railway station, the council supported nearby retailers and provided a link and critical mass for development of the "wrong" side of the tracks.

Waitakere City hired architects and consultants who used the council's Better Building Code to ensure economical running costs through energy efficiency. With that came excellent working conditions and durable quality.

Waitakere Central has a six-storey administration wing and a civic wing, housing the council chamber, councillors' facilities and directorate. All display the work of local artists and sculptors. The civic wing has a 'green roof' with drought-tolerant plants that filter and slow the flow of rain. The administration wing uses passive solar design and a form that allows daylight to penetrate, low-energy displacement ventilation and energy-efficient lighting. It has solar water heating, a worm farm and active waste sorting and recycling.

The site is landscaped for on-site rainwater collection and stormwater management – including a beautiful Japanese garden.

A covered entrance adjoins an airbridge to the train platforms, bus interchange and roadway. The council and railway network owner integrated the new railway platforms and station into the centre's design.

A workplace travel plan, combined with restricted parking and subsidised public transport, has successfully encouraged many staff to leave their cars at home.

Why Waitakere City Council moved to Henderson town centre

Fifteen years ago the people of Waitakere City elected Mayor Bob Harvey and the council on an Eco City platform.

Since then, the ideals of the United Nations' Local Agenda 21 for sustainable development have formed the basis of council policy. Examples include the green network of waterway margins and ecological linkages.

The council has a strong commitment to protecting the character of the Waitakere Ranges. This culminated in the introduction to Parliament in 2007 of the Waitakere Ranges Protection Bill.

While the natural environment was protected by the Resource Management Act, urban and suburban development have been more problematic.

Low-quality suburban infill was degrading the character of neighbourhoods, and in town centres commercial and retail development were dominated by sprawling single-storey buildings in a sea of carparks. The big-box strip along Lincoln Rd was typical.

The council wanted to concentrate future population growth around town centres and major transport corridors, offering people choices in housing and the chance to walk, cycle and use public transport.

A week-long design workshop for New Lynn – an area that had been stagnating – was a turning point. It inspired key landowners to build \$300 million worth of housing, particularly on land from the derelict bricks and ceramics industry near the railway line.

The design charette process and the ensuing changes to rules in the District Plan invigorated the area. For each dollar the council put into New Lynn, the private sector has invested \$30.

Waitakere City has invested substantial capital in town centres, with new libraries in New Lynn, Glen Eden and Henderson – where the library is shared with a new Unitec campus.

The council's property company, Waitakere Properties Limited (WPL), has shifted focus from primarily residential projects to town centre redevelopment, with projects including the Henderson film studio complex, streetscapes in New Lynn, Henderson, Ranui and other centres, and the \$100 million Waitakere Central development based at Henderson's Civic Centre site.



Plan of New Lynn town centre.

The council is investing in projects to offer residents opportunities to work closer to where they live. Because so many residents face an increasingly expensive and greenhouse

gas-emitting motorway drive to faraway workplaces, particularly in south Auckland, the council sought a change to the Auckland region's Metropolitan Urban Limit to allow a new town centre to be built at the end of the north-western motorway.

From 1991 to 2001 the population in Waitakere City town centres has increased by around 20%, growing faster than the population at greenfield sites.

The building itself was designed on sustainability principles (see below), using the council's own Better Building Code as a basis for the brief.

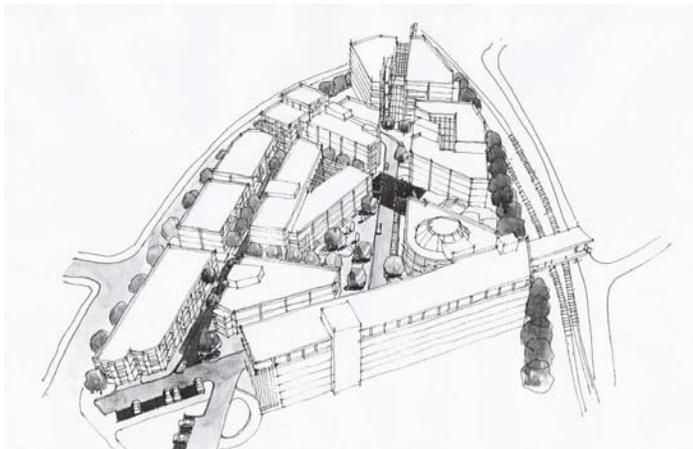
The addition of 700 people working in Henderson has been a shot in the arm for the retailers. But this is only the start – the rest of the 4.2 hectare site is being developed with more commercial buildings.

As a symbol and beacon for its intention to encourage people to avoid travelling long distances to work by private vehicle, the council re-sited its headquarters in Henderson town centre, alongside the railway station. The bus interchange was relocated nearby to form a public transport hub.



Above: Waitakere Central under construction – civic wing in the foreground, administration wing behind. The bridge links the complex and nearby high school to railway and bus stations, and Henderson shopping centre.

Below: Site plan showing how the completed development could look. Already completed are the buildings in the foreground: council administration and civic wings and the Central One office block and café.



Sustainable Design at Waitakere City Council's Civic Centre - Waitakere Central

Waitakere Central is a showcase for practical environmental design. It integrates architecture, engineering, art and urban design to demonstrate the eco city's sustainability principles.



Left: The Japanese garden behind the civic wing.

Above: The main entrance to the building, with the civic wing on the left and the administration wing on the right. The bridge begins at the head of the stairs.

Siting and orientation

The key to the Waitakere Central development is its location in the heart of Henderson, one of Waitakere's three main town centres.

The administration wing is a six-storey rectangular building that houses the public interface facilities and council staff, mainly in open-plan offices.

The civic wing houses the mayor, directors, council chamber and meeting rooms. The buildings face each other across a glazed bridge that provides direct sheltered access to the railway platforms and bus interchange. It provides a pedestrian link between the town centre at one end and neighbourhoods and a school at the other.

The administration wing's long rectangular shape minimises the surface area exposed to the low eastern and western sun, to avoid overheating.

The glazed northern side has metal louvres to prevent overheating and minimise glare, while admitting natural light.

Glazing is with high-performance low-emissivity glass.

The colder southern side has brick cladding and smaller windows, to limit heat loss.

A wide staircase that sweeps across five of the floors on the building's northern face provides a buffer between inside and outside, admits natural light, circulates air and encourages staff to take the stairs instead of the lifts.

Transport

Waitakere Central's site was deliberately chosen to be near the Henderson town centre and next to the western railway line's Henderson station and a bus interchange.

The council paid for the upgraded railway station to be connected to the council buildings with a glazed bridge, escalators, lifts and stairs.

The bridge also provides sheltered access for rail travellers to cross the tracks to the platforms.

The location gives staff and visitors more sustainable transport options.

For the public, a visit to the council can be combined with a trip to the shopping centre. Through the council's workplace travel plan, staff have been offered incentives to use public transport, cycle, walk or carpool.

The number of staff carparks has been deliberately reduced, with priority given to those who share rides.

Secure cycle storage facilities and nearby showers encourage cycling.

Energy

Waitakere Central has been designed to an annual energy consumption target of no more than 100 kilowatt-hours per square metre of occupied floor space.

To achieve this, it was important to replace some electric lighting with daylighting.

The interior surfaces are pale and simple, to reflect light. This, and a long, narrow floor plan that faces north, makes good use of daylight.



The train delivers staff to the door.

The electrical circuits have been designed in zones so lights switch off around the administration wing's perimeter if enough daylight is coming in.

The controller also dims lights in response to rising levels of natural light. Office lighting is by energy efficient T5-type fluorescent lamps with electronic control ballasts. The lamps have reduced mercury content and are recyclable.

The control system has pre-programmed strategies for automatic monitoring of the occupied areas, scheduling by time clocks, and controlling the zones that can be selectively switched on and off.

Appliances have been chosen for their energy star rating, and when computer monitors are due for replacement, low-energy LCD screens are being installed. The lifts are energy-efficient and do not require a machine room.

Climate and air handling

The buildings have been designed to keep conditions comfortable with a minimum of supplied energy.

Ideally, the ventilation and air supply would be natural, through opening windows, but the nearby railway station makes this impractical – a certain amount of mechanical air conditioning is needed.

The buildings are insulated to twice the Building Code requirement.

The administration wing's uncovered concrete structure keeps temperatures steady by slowly absorbing and releasing heat.

The exposed concrete ceiling beams are hollow and act as pipes, distributing cool air to circular vents installed flush with the carpeted floor above.



The air rises as it collects heat from sources such as people and computers, setting up a flow that draws in more cool air.

A grand staircase on the administration wing's northern side admits light and offers a sociable alternative to using the lifts. The exposed concrete structure acts as a thermal store.

This displacement ventilation system doesn't need large fans, and the incoming air needs less chilling, so it uses less energy than typical office air conditioning. A high proportion of the air supply can come from fresh outside air that doesn't need chilling – another way to save energy.

A reverse-cycle air-to-water heat pump chiller provides heating or cooling. It re-uses waste heat from outgoing or incoming air.

During the night, the computer-based building management system pre-cools the building using night air.

Water

Waitakere Central is set up to collect rainwater from the roof, use it efficiently and then dispose of it responsibly.

Rainwater falling on the site is either collected from the roof and stored, or flows from the paved areas into planted areas that filter the water and slow its entry into the stormwater system.

To minimise the need for watering, the landscaping uses drought-tolerant native plants. Water collected from the 1500m² administration wing roof is stored and re-used for flushing toilets, and is piped to architectural water features.

The storage capacity is 37,000 litres, enough for the toilets in the administration and civic wings.

The civic wing has a 500m² 'green roof' where plants grow in a substrate of clay pellets on a waterproof membrane. The roof acts as a buffer for rainwater and filters it, while providing insulation.

Hand-basin tapware designed for low water use has built-in infra red sensors to provide only enough water as needed.

The administration and civic toilet blocks have waterless urinals.

The administration rooftop supports six solar panels that heat water for toilet blocks, showers and kitchen. Electric boosters back them up. Another toilet block has water heated by a heat pump.



The civic wing's green roof insulates the building and slows the rate of rainwater flow.

Materials

The warehouse previously on the site had a massive concrete floor. The team decided that rather than send it all to landfill, it could be ground down and stockpiled on site for later use as hard fill during construction.

Around 4,000 m³ of the hard fill was used for trenches and under the floor slabs. Some was used for temporary construction access roads, without which construction during winter would have been very difficult.

The cost for grinding was around \$12 per cubic metre, where imported hard fill would have cost \$20-\$25 per cubic metre.

The floor plan of the administration wing is designed for flexibility and changes of layout with minimal waste of materials.

Concrete, steel, glass and timber have been left in as natural a state as practical, with minimal paint and other finishes. This avoids the need for repainting and reduces air pollution from off-gases.

Materials were selected for their environmental qualities. In the council chamber, hoop pine acoustic panels were sourced from sustainable forests.

The carpet tiles are a carbon neutral product. If damaged or worn, tiles can be replaced individually.

The louvres for the council chamber and administration wing are set at an angle to control sun and glare.



The council chamber – glare-excluding louvres on the right.

The building management system controls the council chamber's blinds, which can be pre-programmed to close at certain times of the day.

One layer of blinds reduces glare and heat transfer and provides shade, while the other offers a total blackout for multimedia presentations.

Waste

Food scraps are collected to feed tiger worms at the on-site worm farm.

Paper wastage in office printing is minimised by making double-sided printing the default option. The copy is printed only when the staff members goes to the printer and swipes an identity tag.

Staff can also scan items at the copiers and send faxes directly from their computers.

Paper, recyclables and polystyrene packaging are separated at source and collected for recycling.

The loading bay and office floors and kitchens were designed to accept recycling facilities.

Art

Waitakere City Council wanted art to be a prominent part of Waitakere Central.

Consultant artists Kate Wells and Matthew von Sturmer worked closely with the architects, iwi and council staff to integrate arts into the building.

Artists and sculptors include Anna Crichton, John Collins, Sunnah Thompson, John Edgar, Tabatha Forbes, Dean Buchanan, Ann Robinson and Allie Eagle.

Workplace Travel Plan – On the Go!

A workplace travel plan to encourage sustainable commuting was an important aspect of the council's move to Waitakere Central.

The travel plan was a condition of the council's resource consent for the development. It was an opportunity to demonstrate leadership in sustainable transport and make the most of the potential of the new building's location alongside the railway station and bus interchange. It would also reduce the council's greenhouse gas emissions.

The council's travel plan, "On the Go!", is defined as "a package of measures that aim to reduce the number of car journeys and provide people with greater transport choice".

The travel plan covers staff travel to and from work – whether by bus, train, car-pool, cycle or on foot – and staff parking, some business trips and visitor travel to the council.

The Waitakere Central campus has 232 car parks – not enough for everybody who wants one. This was a conscious decision, to encourage alternative transport modes. Apart from the spaces allocated to visitors, council vehicles, directors and councillors, preference is given to staff who car pool or share a space.

The council offers a 50% subsidy to staff for their bus and train tickets. Some types of concession passes are available directly from the council cashier's office. Prepaid train tickets are available for work meetings. This also encourages staff to get out and visit other parts of the city along the railway line.

A locked room at street level, accessible by staff swipe tag, offers secure shelter for 20-30 bikes. The room also houses three council-owned bikes for staff to borrow, and a powerful floor pump to keep the tyres rolling smoothly. Showers and lockers are just a few metres away, inside the main building. The council has also negotiated discounts at nearby bike shops.

A visitors' guide on the council's website not only features a map showing access routes and parking, but also encourages visitors to come by public transport.

Before and after the move, staff were polled on their travel habits. The travel plan resulted in an 18% shift away from car driving for staff travel to work. The proportion of staff using buses and trains rose from 3% to 13%. Staff reported they enjoyed car-pooling.

The estimated reduction in greenhouse gas emissions is 126 tonnes a year.



Bikes on hooks in the secure, dry storage room.

The travel plan is an ongoing exercise, with promotions and improvements to keep up interest and encourage new staff to choose sustainable transport.