



KATE VALLEY LANDFILL

10

YEAR REVIEW 2005-2015

TRANSWASTE CANTERBURY LIMITED







This public/private partnership was one of the first such initiatives in New Zealand, and is certainly one of the most complex, involving five councils and the largest commercial waste company in New Zealand.



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### FRONT COVER:

Kate Valley Landfill and container park – 2007.

### LEFT:

Western Pad construction – 2015.

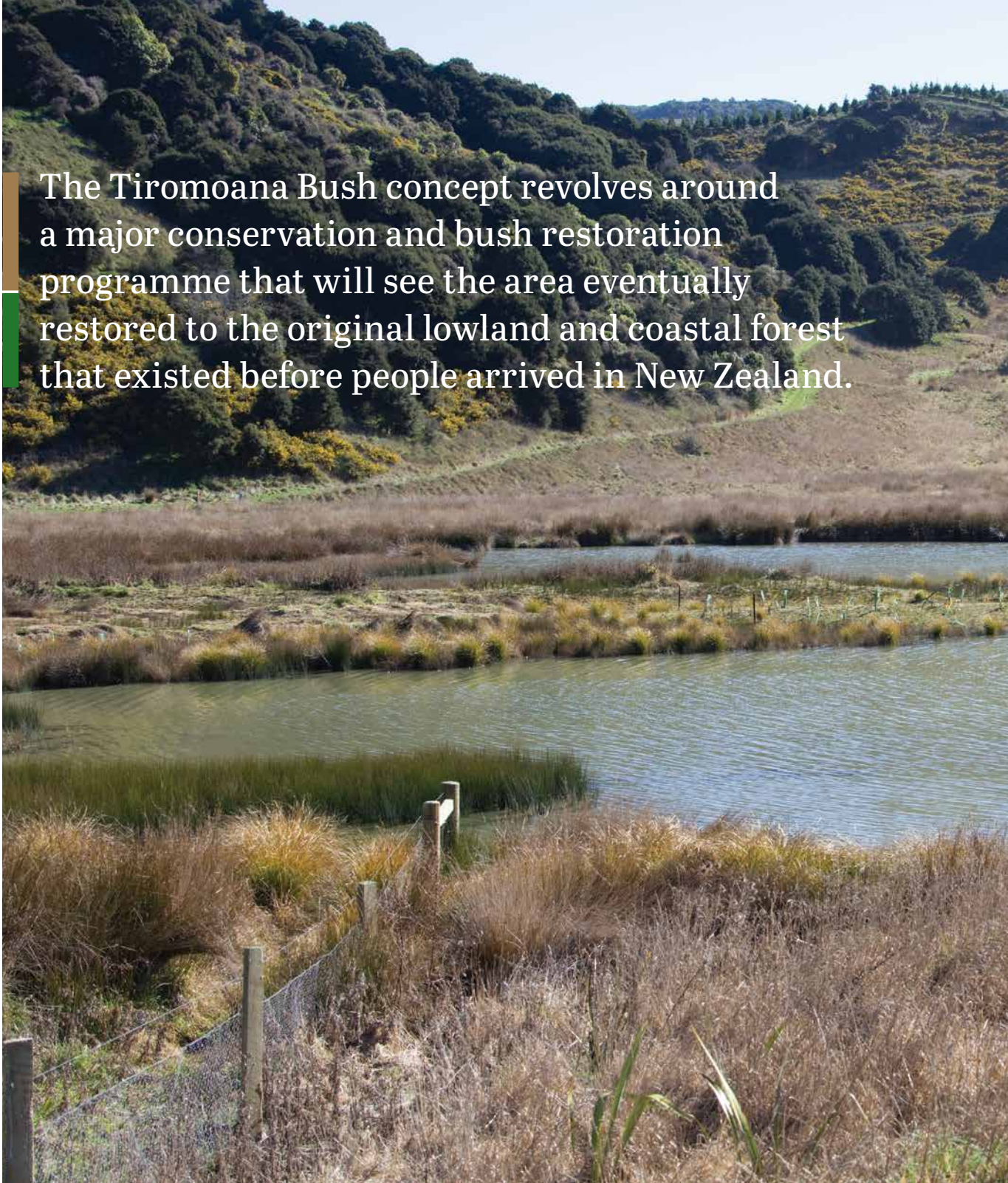
### BACK COVER:

Liner at Kate Valley Landfill.



Wetland created by Transwaste.

The Tiromoana Bush concept revolves around a major conservation and bush restoration programme that will see the area eventually restored to the original lowland and coastal forest that existed before people arrived in New Zealand.





## About Transwaste Canterbury



In the early 1990s there were 52 old-style dumps still in operation in Canterbury. All of these were without liners or gas collection systems and most were located in convenient “holes” directly above the vital Canterbury plains water supply aquifers. Some were even occupying riverbeds.

The Resource Management Act of 1991 introduced environmental requirements that would ultimately force the closure of these old-style rubbish dumps.

As a result the city and district Councils in Canterbury needed to begin looking for potential sites for new environmentally secure and well-engineered landfills to provide for future waste disposal needs.

By 1995 many of Canterbury’s councils were discovering that the potential cost to ratepayers of developing new local landfills was going to be prohibitive. The councils realised they could not justify the expense of building and operating comprehensively engineered landfills because their waste volumes were too small.

In 1996 all ten Canterbury councils formed a Joint Committee to formulate a plan for managing the region’s waste. The councils believed working as a collective would enable them to develop a modern landfill, of an international standard, that would provide affordable environmental security to the region. This was the first time that Canterbury councils had worked together formally on a region-wide matter.

After spending several months studying expressions of interest and proposals from a number of waste companies the joint councils chose private sector waste company, Canterbury Waste Services Ltd, with recognised landfill expertise to work together with the councils on development of a single landfill for

Canterbury. This was implemented through a commercial joint venture known as Transwaste Canterbury Limited (“TCL”). This joint venture owns the Kate Valley Landfill in North Canterbury.

This public/private partnership was one of the first such initiatives in New Zealand, and is certainly one of the most complex, involving five councils and the largest commercial waste company in New Zealand.

The public sector participants in TCL are Christchurch City Council, and the Hurunui, Waimakariri, Selwyn and Ashburton District Councils.

The private sector half of the TCL partnership is Waste Management NZ Ltd (WM), a wholly owned subsidiary of Beijing Capital Waste Management NZ Ltd. Primarily through its CWS operating unit, WM acts as the “working partner” for TCL, and has developed and is operating the Kate Valley Landfill and its integrated general waste transport system.

A unique feature of TCL is the built-in obligation of WM, the largest commercial waste company in New Zealand, to work in concert with the wider community goals of long-term waste minimisation. In an environment where the high cost of vital modern infrastructure is leading towards exclusively private sector provision of environmentally sound landfills, the Canterbury solution has ensured publicly elected bodies will continue to have a major role in community waste management systems.



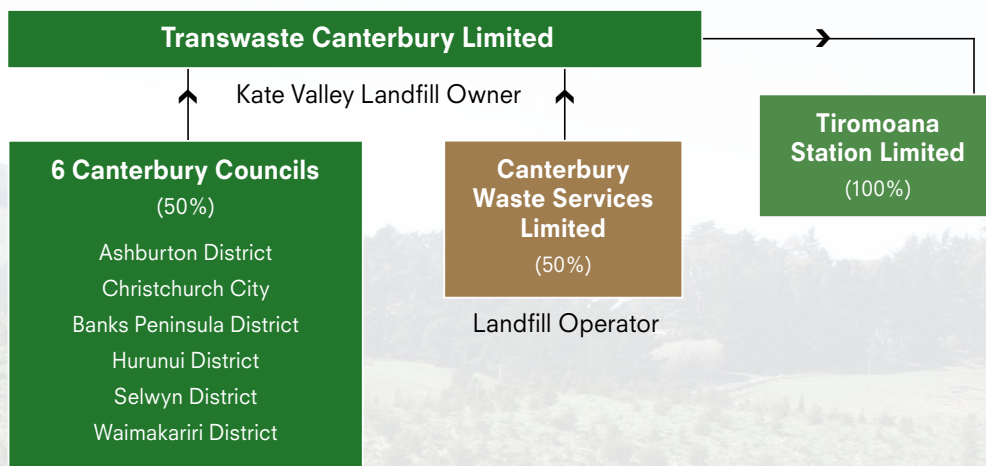
Transwaste is developing plantation forests around the perimeter of the Kate Valley Landfill, and works closely with the neighbouring organic farmer.



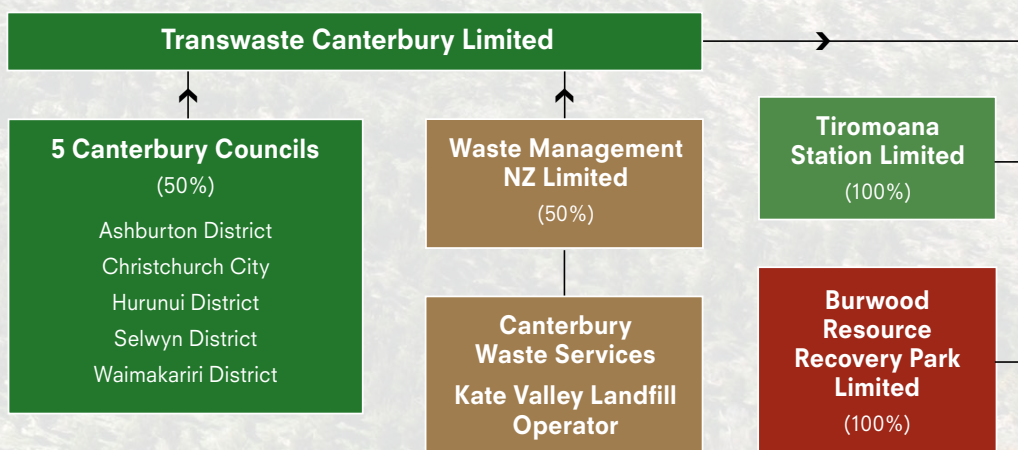


## Ten Year Ownership Structure

2005



2015



Transwaste Canterbury Shareholders	No of Shares
Waste Management NZ Limited	10,000,000
Christchurch City Council	7,780,000
Selwyn District Council	600,000
Ashburton District Council	600,000
Hurunui District Council	240,000
Waimakariri District Council	780,000
<b>Total</b>	<b>20,000,000</b>



Daily landfilling operation – 2015.





## Governance

Transwaste Canterbury Limited (TCL) is a joint venture. Half of its shares are owned by five local authorities, with the other 50% of its shares owned by Waste Management NZ Limited (WM).

TCL's activities are driven by four primary agreements: – the original Memorandum of Understanding (MOU) between the founding parties, a Shareholders' Agreement arising from the MOU, a Landfill Management and Operation Agreement between TCL and WM, and the Company's annual Statement of Intent.

As a Council-controlled trading organisation, the Statement of Intent is negotiated annually with shareholders.

Four of the eight TCL Directors are appointed by the Council shareholders via the Canterbury Regional Landfill Joint Committee, comprised of representatives of the shareholder Councils. The other four Directors are appointed by WM. A full list of TCL Board members can be found on page 30 of this Ten Year Review.

The Board adopts best practice corporate governance principles to govern the Company and achieve goals and objectives as set out in its Statement of Intent. An Audit Committee comprising three Board members, considers and makes recommendations to the full Board of Directors on accounting, audit, and related management issues.

The Board's primary function is to manage the Kate Valley Landfill asset, manage the Company's obligations arising from the Agreements, manage risk, including health and safety, monitor performance, and manage its financial affairs, including setting



The Tiromoana Bush restoration project includes the propagation of over 4000 indigenous plants each year.

charges annually. It contracts with WM, through its Canterbury Waste Services (CWS) operating unit, to undertake and manage all operations required.

The establishment of Burwood Resource Recovery Park (BRRP) in 2011 to recycle earthquake waste, added a new separate business function to TCL's portfolio.

### Tiromoana Station Limited

TCL manages its land ownership matters through its wholly owned subsidiary – Tiromoana Station Limited (TSL) – whose directors are the same as the TCL Board. In addition to the land held for the landfill and conservation operations, TSL also leases surplus land to private farming interests, and manages substantial forestry assets.

Real estate management activity has reduced over the ten years as surplus land was sold. Of the approximately 3,300 hectares originally owned by TCL through TSL, only approximately 1,500 hectares are to be retained long term. The area to be retained

contains the Kate Valley Landfill, the entire Kate Valley catchment, the Tiromoana Bush native forest restoration and conservation area, the public walkway, a forested area to the west of Kate Valley, and part of the coastal area.

### Tiromoana Bush

TCL administers Tiromoana Bush, a 410 hectare area of native forest regeneration, wetlands, and public walkways. This area was created by TCL at the time of landfill establishment. Tiromoana Bush is held in perpetuity by TCL for conservation and public recreation purposes under a QEII covenant. The Tiromoana Bush Advisory Group helps oversee the project.



Tiromoana Bush Wetlands.



Laying liner at Kate Valley.





# Economic Performance

## Value Created by the TCL Kate Valley Operations for our Key Stakeholders \$000

	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Landfill Revenue	47,857	41,102	33,748	29,682	31,868	24,475	24,907	25,231	23,758	21,426
Other Revenue	808	388	834	337	220	334	427	2,185	973	924
Total Revenue	48,665	41,490	34,582	30,019	32,088	24,809	25,334	27,416	24,731	22,350
<b>Less</b> Waste Levy cost	3,571	3,110	2,641	2,448	2,699	2,151	-	-	-	-
Revenue net of Waste Levy	45,094	38,380	31,941	27,571	29,389	22,658	25,334	27,416	24,731	22,350
<b>Less</b>										
Payment for Goods & Services	18,259	16,264	15,130	13,936	14,488	13,848	13,640	15,207	14,502	14,473
Depreciation & Amortisation	4,794	3,312	2,876	2,499	2,579	2,116	2,489	2,651	2,633	2,581
<b>Less</b>										
Benefits provided to: Directors (fees)	238	205	212	212	191	191	191	176	176	171
Employees (wages)	-	-	-	-	-	-	-	244	239	189
Government (taxes)	5,752	4,781	3,246	2,593	3,047	794	1,758	2,075	1,409	72
Shareholders (dividends)	13,600	9,603	6,900	5,900	5,629	2,900	1,500	4,123	1,900	500
Financiers (interest)	1,259	1,527	1,619	1,663	1,776	1,891	2,946	2,929	2,517	2,545
Amount Retained in the Business for future capital requirements	1,192	2,688	1,958	768	1,679	918	2,810	11	1,355	1,819

**Note:** Figures exclude BRRP as this is an as yet uncompleted project of limited duration.

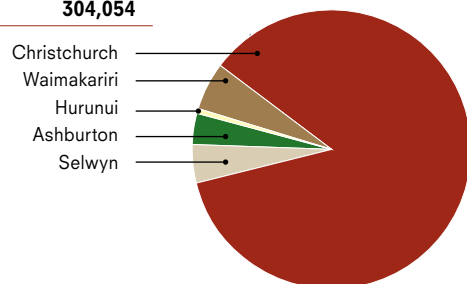
**Note:** Based on analysis of expenditure of Transwaste Canterbury, Waste Management, Tiromoana Station.

## Estimated capital costs for the TCL Kate Valley Operations over the life of the landfill \$000

Capital costs incurred over the 6 years prior to opening in June 2005 that need to be recovered over the life of the landfill	45,320
Further capital expenditure in the review period (after land sales)	28,558
Total capital cost to 14/15	73,878
Estimated further costs	
– landfill capital	61,914
– closure and post-closure costs	27,178
Estimated capital costs to be recovered over the life of the landfill	162,970

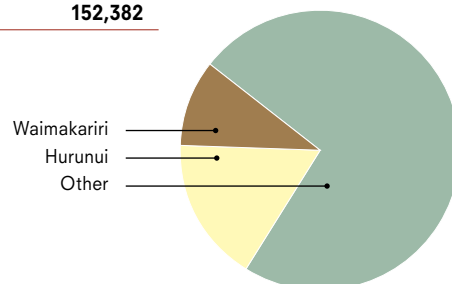
## Landfill Revenue by Local Authority Area \$000

Hurunui	2,072	Waimakariri	17,728
Christchurch	259,439	Selwyn	13,296
Ashburton	11,519		
<b>Total</b>	<b>304,054</b>		



## Estimated Operating Expenditure in Local Authority Areas \$000

Hurunui	25,943	Waimakariri	15,080
Other	111,359		
<b>Total</b>	<b>152,382</b>		



**Note:** Figures include wages and contractor payments within each area, but exclude payments for capital works.



# Social Performance



As part of the project to utilise the captured methane gas, the power supply to the Kate Valley Landfill has been upgraded – 2013.

## Safety Initiatives

### Responsibility

The TCL Board, together with other parties who directly employ staff carrying out activities for TCL, is responsible for the health and safety of all people engaged in TCL activities. Because TCL has no directly employed staff, the management of this responsibility is carried out through the WM CWS team who undertake and manage most of TCL's operational activity. The TCL Board receives a detailed Health and Safety report from CWS every month. Board policy also requires Board members to undertake site visits and inspections, and verify the effectiveness of health and safety practices for themselves.

### Health and Safety Committee

CWS operates a staff Health and Safety Committee consisting of elected staff and management. The Committee meets regularly to review and develop health and safety policies and procedures,

and make recommendations to WM management.

### Health and Safety Meetings

CWS has health and safety focussed "toolbox meetings" for all operational staff on a monthly basis. These meetings review health, safety and operational matters arising during the month and discuss new procedures and policies. TCL Board members have a standing invitation to each "toolbox meeting" held by CWS staff monthly to discuss health, safety, environment and operational matters.

### Health and Safety Policies and Procedures

CWS and its parent WM, maintain policies, procedures and associated documentation for all activities. TCL is involved in reviewing the policies and procedures operated by CWS. The CWS Health and Safety systems are audited by WM H&S professionals and external auditors regularly.

### The Vault System

WM maintains the Platinum Safety "Vault" computerised system for maintenance of all health and safety records and processes.

### Health and Safety Initiatives – General

- All CWS Drivers and Operators have to demonstrate a strong safety ethic and pro-active approach to safety initiatives during their selection process.
- Job applicants are tested using a reliable safety attitude assessment system, and must score highly to be considered for employment.
- Landfill job applicants are also aptitude tested for working in teams.
- Financial incentives can be earned for incident free driver performance.
- Financial incentives can be earned by the Landfill team for meeting safety, environmental and waste density targets.
- Ongoing annual health monitoring assessment for all staff.
- Comprehensive Board H&S policy and Annual H&S plan.
- Annual work hours limitation on drivers and operators to ensure healthy work/life balance and safe management of fatigue.
- Fully subsidised inoculation programme.
- Free external independent and confidential advisory and counselling services available to all WM employees.





### Health and Safety Initiatives – Transport Fleet

The fleet of truck and trailer units used by CWS to haul waste from transfer stations to Kate Valley Landfill is amongst the most modern fleets in New Zealand. The vehicles incorporate a full range of safety features. Most other heavy vehicles on the road are unlikely to have all of these features, which include:

- All trucks speed limited to 90km per hour.
- Side protection panel guards mounted on the trailer to prevent cyclists or pedestrians being able to fall under the trailer.
- Brushes mounted on trailer wheel guards to stop water spraying onto following or passing vehicles on wet days.
- Full width rear mudflap to stop any loose stones flicking up from truck wheels onto following vehicles.
- Trucks have a “telligent” transmission and braking system, which includes ABS (anti-lock braking system) and ASC (accelerated skid control).
- Trailers fitted with EBS (electronic braking system) and disc braking system, plus LED lighting.
- Configuration to Euro III Exhaust Emission Standard or better.

Transwaste has a Goodwill Agreement with Woodend school, with students being taught how to be safe around trucks.



- European Noise Standard engines.
- Electronic vehicle GPS satellite tracking system for vehicle and driver performance monitoring, including location, speed, engine status, distance travelled, etc.
- Video cameras in trucks. These cameras record all activity on the road in front of the vehicle. They also record driver behaviour, and are a useful tool for ongoing driver training.
- In-cab monitoring of truck tyre pressures.
- Fixed headlights on whenever engine is running.
- Containers are fully sealed, and fitted with RFID (radio frequency identification) tags so that their movements can be tracked.
- Containers are weighed during loading to prevent overloading trucks.
- Container perimeter is marked with reflective tape for excellent night visibility.

### “Thumbs-Up” Truck Safety for Children Programme

CWS has initiated the “Thumbs Up” Programme in Canterbury in conjunction with NZ Police, which teaches safety around trucks for school aged children. It uses CWS drivers and trucks in the schools and is focused on the primary schools on CWS transport routes. This was the first such programme to be used in the South Island.

In the four years since commencement of operations, the Thumbs-Up programme has been undertaken in the following schools along waste transport routes:

- Woodend Primary School
- Leithfield Primary School
- Amberley Primary School
- Wainoni Primary School
- Tuahiwi Primary School

Repeat programmes are being run on a regular basis to ensure new pupils have the opportunity to participate.



# Social Performance



Truck and trailer on landfill access road.

## Safety Indicators

### Lost Time Injuries (LTI)

LTI's	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	0	0	0	0	0	1	0	0	2	0

Number of days since last LTI (as at 30 June 2015)

2080

### Total Recordable Injuries Frequency Rate (TRIFR)\*

TRIFR	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	0	0	0	0	na	na	na	na	na	na

\*(LTIs and MTIs per million hours worked – not recorded before 2011).

### “At Fault” Incidents by CWS Transport

At Fault incidents	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	1	1	0	2	1	0	0	0	0	0

Kms travelled by CWS waste trucks since last at fault incident

1,249,559

Kms travelled by CWS waste trucks since landfill opening to 30 June 2015

14,329,008\*

\* = 357 times around the world or 18 times to the moon and back.





Kate Valley Landfill container park.

## Quality Initiatives

### Innovation

Through use of a containerised waste system, together with a container park at the landfill from which separate landfill tipper trucks operate, the transport of waste to the landfill is disconnected from the landfill operating hours. This innovation allows the landfill to operate at optimum efficiency, and ensures full control over waste arrival at the tipping face. The system also avoids disruption back in the communities, as waste can continue to be taken away from transfer stations even when the landfill is, on rare occasions, closed due to high winds or other weather-related reasons.

With only CWS tipper trucks discharging waste at the landfill tipping face, one at a time, the tipping face is able to be kept to a minimum size. Safety is optimised at the face, with avoidance of the usual maneuvering activity of road haulage vehicles. Transport of waste to the landfill can also take place over a much longer

time period than the landfill operating hours, optimising truck numbers and transport efficiency. This approach also minimizes the number of trips required to the landfill from the transfer stations around Canterbury.

### Heavy Vehicle Productivity Trial

On the 29th of May 2008, then Minister for Agriculture, Forestry and Fisheries, and former Minister of Economic Development, Hon. Jim Anderton, officially launched a



Minister Jim Anderton launches heavy vehicle productivity trial.

nationwide heavy vehicle productivity trial at the CWS Resource Recovery Centre in Christchurch.

He noted that he was very pleased to be asked by the Minister of Transport to launch the trial *"because the project is beginning in my own region with Canterbury Waste Services – a company committed to delivering a world class, environmentally safe transport and waste disposal system for the Canterbury region."*

For the twelve month trial, seven of the 12 CWS truck and trailer units were permitted to run at 50 tonnes all up weight, compared to the current limit of 44 tonnes. Due to the high specifications and quality of the CWS haulage vehicles, this could be done safely without any changes to the CWS trucks, trailers, or containers. The additional payload able to be carried reduced the overall number of truck trips required for hauling waste to landfill, and reduced emissions and fuel use.

The trial was monitored by the Ministry of Transport, which assessed the impacts of the heavier trucks, particularly in relation to the environmental, safety and maintenance implications of heavier vehicles on our roads and bridges.

The success of the trial led to a change in the road regulations to allow qualifying and permitted heavy vehicles to carry up to 53 tonnes gross weight on specified routes. This reduced the number of waste haulage trips to the Kate Valley Landfill by around 10%, with a consequential benefit to the environment and other road users.



## Social Performance

CWS waste transport trucks on the private landfill access road.







CWS General Manager Gareth James is presented with the Supreme Technical Award for Engineering Achievers by IPENZ – 2009.



New Zealand Engineering Excellence Award for Kate Valley Landfill.

## Recognition

In late 2006 TCL, together with CWS, and its construction alliance partners, won the prestigious **New Zealand Engineering Excellence Award for Infrastructural Utilities and Networks** for the Kate Valley Landfill.

In their citation, the judges commented:

*"Kate Valley Landfill's sheer scale and approach to waste and environmental problems represent world best-practice engineering, and it improves the quality of life for the communities of the Canterbury region.... The regional landfill has been developed to the highest international standards and includes many innovative features. It represents an effective, low-impact solution to a very high profile environmental issue."*

The Institution of Professional Engineers New Zealand (IPENZ), the Centre for Advanced Engineering (Canterbury University), the Electricity Engineers' Association of NZ Inc, and Ingenium (formerly the Association of Local Government Engineers

NZ) sponsor the New Zealand Engineering Excellence Awards.

In August 2007, the Kate Valley Landfill project was awarded a second prestigious national award: the **2007 Gold Award of Excellence** from the Association of Consulting Engineers NZ (ACENZ).

The judges, in their citation, noted:

*"The advanced containment and site-specific seismic-responsive design of the liner system puts Kate Valley on a par with the best facilities of its type anywhere in the world."*

In September 2007, CWS was awarded the **Champion Canterbury Award 2007** for the medium/large service/retail category. These awards are run by the Canterbury Chamber of Commerce, and recognise business excellence in the Canterbury region.

CWS won the **Champion Canterbury Award** for a second time in 2010.

In March 2009, Gareth James, the initial General Manager of CWS (1998 to 2010), was awarded the Angus



CWS was awarded the Champion Canterbury Award 2007 for the medium/large service/retail category. It won again in 2010.

Award, the **Supreme Technical Award for Engineering Achievers** from IPENZ for Utilities, Networks and Amenities. While the award was for outstanding engineering achievements across his whole career, Gareth's role in establishing the TCL partnership and the Kate Valley Landfill was particularly noted in the commendation. The awarding of this honour to Gareth is further testament to the quality of the Kate Valley Landfill and the engineering and support services that have been involved in its establishment and ongoing operation, and adds to those previously awarded as noted above.



# Social Performance

## Employment Initiatives

### Learning and Development

CWS Drivers and Operators have a comprehensive induction and training programme over two weeks. It includes first aid, spill kit, fire fighting training, and hazardous waste identification skills.

All CWS Drivers have to either have a National Certificate or be training towards this qualification. CWS fully subsidises this training.

CWS is a participant in the operator safety rating scheme project with TERINZ and Land Transport New Zealand. All landfill staff are registered with EXITO for ongoing training.

TCL risk management planning requires that key CWS employees undertake ongoing training to ensure a continuous understanding of international best practice in

waste disposal and transport.

Board members are also continually updated on these issues to ensure that they are always monitoring the Company performance against best practice.

## Employee Retention and Demographics\*

Employee numbers	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	45	43	45	47	41	41	49	46	47	46

### Gender Balance

All positions	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Female	3	3	5	7	6	6	7	7	7	5
Male	42	40	40	40	35	35	42	39	40	41

Management positions	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Female	1	1	2	2	2	2	2	2	2	2
Male	4	4	4	4	4	4	4	4	4	4

### Turnover

Turnover	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	1	5	9	6	1	2	4	4	7	6

### Employee Age

Age Band	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
15-39	7	5	5	8	7	8	10	14	16	17
40-59	30	31	29	29	31	32	37	30	29	28
+60	8	7	10	9	7	5	2	2	2	1

\*CWS staff on TCL activities.



CWS truck fleet – 2007.



### Health Services

WM provides fully (100%) subsidised inoculation programme for all CWS operational staff. Fully subsidised Flu vaccinations are also available to all CWS staff.

WM also provides a free independent confidential advisory and counselling service to all staff, for all personal and family issues.

### Pandemic Plan

WM has developed a fully operational Pandemic Plan for TCL, which was in operation during the Swine Flu, Bird Flu and SARs outbreaks.

### Support for NZ Defence Force

CWS was awarded a Gold Medal by the NZ Defence Force in recognition of its support through allowing an employee to serve a six month term with RAMSI in the Solomon Islands.

### Personal Development

WM provides a range of personal development programmes available to CWS staff, including the Manager Activation Programme for middle management seeking to make a move into senior management, the Manager Starter Programme for supervisors seeking to move into middle management, and the Mentoring Programme, which focusses on personal development of promising female staff.

### Landfill Information Network

WM operates a national Landfill Information Network, whereby operating staff at WM's NZ landfills meet regularly to share experience, benchmark performance, develop operating procedures, and review best practice for landfilling.

### Operations and Technical Services

WM maintains a highly skilled team of specialist engineers and technicians, engaged in support of landfill operations across NZ. This team is fully involved in Kate Valley and BRRP design and operational activities, with particular focus on landfill gas to energy, cell design, capital construction work project management, and leachate management.



# Social Performance

## Community Initiatives

### Community Trust

In 2005, TCL established the Kate Valley Landfill Community Trust. Three trustees elected from Waipara, one from Amberley, and two TCL appointees, govern the Trust.

TCL makes annual contributions to the Trust based on the level of use of Kate Valley Landfill by the wider Canterbury community. The Trust's deed requires it to allocate those funds to projects or facilities that benefit people in the Waipara community.

Trust Funding	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	\$86,500	\$76,321	\$70,000	\$72,078	\$65,000	\$61,500	\$81,500	\$81,500	\$80,000	\$80,000

### Community Liaison Group

TCL has set up a Kate Valley Landfill Community Liaison Group. The Group consists of three representatives of the property owners of the Waipara/Omihi area, two representatives of the property owners of Mt Cass Road, and one representative of the Consent Holder.

The Community Liaison Group meets quarterly with landfill operating staff. The prime purpose of the meeting is to:

- Outline and explain the progress of the landfill operation;
- Listen to, and discuss any community and cultural concerns with the landfill operation;
- Present and discuss the complaints register and results of any monitoring and/or reporting as required by the conditions of regional and district council consents.

CLG meetings	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	4	4	4	4	4	4	4	4	4	4

Complaints*	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Landfill	0	0	0	0	1	0	4	0	0	4
Odour	63	105	12	3	3	0	0	0	0	0
Transport	0	0	0	1	1	3	4	1	10	11
Total	63	105	12	4	5	3	8	1	10	15

\*The recent odour complaints relate to odour being detected on Mt Cass Road by local residents driving past the site. No complaints have been verified by consent authorities as being objectionable.

### Landfill Visits

The demand for visits to the Landfill by community groups is ongoing. CWS has employees with relevant skills retained as tour guides to handle the demand. A booking system is used to manage site visits. Available spots are booked out many months in advance.



Visits	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
No of groups	24	22	16	15	17	37	70	71	133	78
No visitors	723	551	525	549	667	1,326	2,139	2,490	1,479	2,820



Transwaste has a Goodwill Agreement with Woodend school, with students being taught how to be safe around trucks.



Local botanists, conservators and land managers visit Tiromoana Bush Conservation Management Area as part of a conservation workshop held at Kate Valley.



### Education Activities

CWS has hosted many local primary schools at Kate Valley as part of educational field trips studying waste and conservation issues. TCL and CWS have also worked with the Untouched World Foundation to develop programmes for senior high school students, including native tree planting, walking track maintenance, and wildlife study activities in Tiromoana Bush.

TCL has also partnered with Core-Ed to develop educational programmes that can be used in classrooms for “virtual field days” at the landfill.

### Woodend School Goodwill Agreement

In 2005, TCL signed a Goodwill Agreement with Woodend School (on the main State Highway One waste transport route) as part of the School’s accreditation with the World Health Organisation as a “Safe School”.

The Agreement, the first of its kind in New Zealand, is a mutual undertaking for both parties to work together for

safety. One outcome is that the CWS waste transport drivers have agreed to observe a 40kph voluntary speed limit on State Highway One in the vicinity of the school.

Meetings between TCL, CWS drivers, Woodend School staff, pupils and parents are held periodically to review the Agreement.

### Tiromoana Bush

As part of the establishment of the Kate Valley Landfill, TCL has set aside and protected in perpetuity, a 410ha area of land in the middle and lower Kate Valley – now known as Tiromoana Bush. This area is extraordinarily rich in scenery, flora and fauna, and natural history.

The Tiromoana Bush concept revolves around a major conservation and bush restoration programme that will see the area eventually restored to the original lowland and coastal forest that existed before people arrived in New Zealand.

Lowland forest is a nationally rare and under-represented vegetation type. The Tiromoana Bush restoration

project has the potential to result in an area of national bio-diversity and conservation significance.

Removal of stock and ongoing pest control is allowing natural regeneration of native plants to occur over the entire area. In addition, TCL will actively plant native bush species over the life of the landfill to assist and support the natural regeneration that will occur. The tree species that will be planted will be chosen for their ecological relevance to the location and their ability to attract and sustain key native birds such as korimako (bellbird) and kereru (native pigeon).

TCL has also developed a new 12ha wetland in the middle of Kate Valley to add to the extensive network of smaller natural wetlands in the area.

The long-term protection of the site has been secured through the establishment of a QEII National Trust open space covenant. This will ensure that the restored bush area will remain accessible to future generations. The entire site has also been fenced with deer fencing to



## Social Performance



keep pigs, deer and goats out of the area.

During the operational life of the landfill, TCL will directly fund conservation and restoration work. At the same time, TCL will also establish a production forest on other land in Kate Valley. Once the landfill has closed, revenue from the forestry activity will provide a sustainable source of funding for ongoing management of the Tiromoana Bush area.

Public use is also a major focus of the project. This includes recreational access, educational use and scientific research. A public walking track has been established that incorporates spectacular views of Pegasus Bay, Banks Peninsula, the coastal cliffs, valley floor wetlands, native bush areas and a remote sandy beach.

Canterbury schools and tertiary institutions can take advantage of the educational opportunities available in the Tiromoana Bush area. Children learn about bio-diversity, bush restoration, wildlife and conservation. They can also participate in some of

At the eastern edge of the Tiromoana Bush Walkway there is a lookout at the top of the cliffs that provides a panoramic view of the beach and Pegasus Bay.

the activities involved, such as tree planting.

These programmes work in concert with waste education programmes based at the nearby landfill, to provide a comprehensive educational experience. Scientific research providers are very enthusiastic about using the area for restoration and conservation research.



Tiromoana Bush Walkway opening by Minister Clayton Cosgrove.

Tiromoana Bush has the potential to become a major draw card in the Hurunui District. A wide variety of people, ranging from Sunday afternoon strollers to serious trampers, eco-tourists, students, scientists and conservationists are being attracted to the area.

### Websites

TCL has three websites in operation. The primary website is [www.transwastecanterbury.co.nz](http://www.transwastecanterbury.co.nz) which provides information about TCL, and links to its other websites and relevant external websites.

TCL has developed a website providing detailed information about Tiromoana Bush including walkways, conservation programmes and Advisory Group reports. The website [www.tiromoanabush.co.nz](http://www.tiromoanabush.co.nz) went live on the internet in July 2007.

TCL has also developed a BRRP website, [www.brrp.co.nz](http://www.brrp.co.nz) which showcases the earthquake waste recycling operations on the Burwood site.

### Mt Cass Walkway

TCL has worked with the Waipara Valley Promotion Association to establish a new public walkway to the summit of Mt Cass. This walkway provides views over much of Canterbury and access to the unusual limestone landscape near the summit. The Mt Cass Walkway was officially opened in November 2006.

TCL provides printed brochures about the Mt Cass walkway to the Waipara Valley Promotion Association for distribution through tourism businesses in the region.

## Cultural Initiatives

### Charter of Understanding with Ngai Tahu

TCL worked closely with Ngai Tahu, and the Te Rūnanga o Ngāi Tūāhuriri in particular, during the years leading up to the consenting and eventual development of Kate Valley Landfill.

A formal Charter was established between the parties originally in 2000, and was updated in 2004 after Kate Valley resource consents were granted.

The purpose of the Charter is to develop a relationship of mutual benefit between CWS and TCL and Te Rūnanga o Ngāi Tūāhuriri, based upon the core values of the parties.

The Charter seeks to establish and provide for a clear understanding of the basis and ongoing conduct of the partnership relationship between CWS and TCL and Te Rūnanga o Ngāi Tūāhuriri.

### Regular Site Visits

TCL arranges regular site visits for iwi to ensure that they remain familiar with operations at Kate Valley, and have opportunity to raise any matters they wish to discuss.

### Cultural Exchange

As part of the consultation with iwi, TCL arranged for members of all Canterbury iwi to visit Redvale Landfill in Auckland in 2000, so that the operations of a modern landfill could be viewed and better understood.

As part of this visit, a cultural exchange with local iwi Ngati Whatua took place. To recognise the importance of the occasion, TCL



The carved Kauri table presented to Te Rūnanga o Ngāi Tūāhuriri by Ngati Whatua, facilitated by TCL – 2015.

undertook to work with Ngati Whatua to arrange for the carving of a large piece of ancient Kauri recovered from excavations during development of the Redvale Landfill, for future presentation to Ngāi Tūāhuriri.

The carving was undertaken by two respected local Maori carvers, and the Kauri was transformed into a representation of Te Wai Pounamu. The carved Kauri slab was mounted onto legs to form a table.

The 'taonga' was formally handed to Te Rūnanga o Ngāi Tūāhuriri by representatives of Ngati Whatua in November 2015 in a ceremony arranged by TCL.

### Recognition of Relationship

In 2016, representatives of Te Rūnanga o Ngāi Tūāhuriri, Joan Burgman and Clare Williams, presented a pounamu mere in a woven flax basket to Gareth James of TCL, as a recognition for many years of very positive and rewarding relationships between CWS, TCL and Te Rūnanga o Ngāi Tūāhuriri.



Gareth James holding the pounamu mere gifted to TCL by Te Rūnanga o Ngāi Tūāhuriri – 2016.

### China

In 2014, Beijing Capital Ltd purchased Waste Management NZ Ltd. This will lead to opportunities for cultural and technical exchanges with China.



## Social Performance



### Coastal Ecological Assessment

To recognise the importance of the immediate coastal environment to iwi for kai moana, TCL undertook to conduct an extensive ecological survey of the coastal environs of Kate Valley prior to the commencement of any landfill activity in the Kate Valley catchment.

This survey is to act as a benchmark of the state of the ecological marine resource, to enable future comparisons. Te Ngāi Tūāhuriri Rūnanga may request TCL to undertake and resource a comparative survey of mahinga kai species along the adjacent coastline, if the Rūnanga has reasonable cause to believe the landfill is having an adverse effect on mahinga kai species.

Natural regeneration is an integral part of the Tiromoana Bush restoration project.

# Environmental Performance



Environment Canterbury staff undertake regular monitoring of the landfill resource consents – 2012.

## Environmental Management

The Kate Valley Landfill operates under 23 resource consents with a wide range of conditions (324) that cover operations and environmental compliance.

Many aspects of the monitoring are carried out using an onsite SCADA (Supervisory Control and Data Acquisition) system. This system monitors all environmental parameters that require continuous measurement, by collecting and analysing data sent from several remote sensors at monitoring points around the site.

Compliance with the resource consents and Transwaste's quality policies is the highest priority and utilises the following systems:

- A Landfill Management Plan that encompasses all aspects of the landfill operation including monitoring, auditing, and reporting.
- A Compliance Monitoring System that covers all aspects of site operation, safety, environmental compliance and risk assessment.
- Regular review by an independent Peer Review Panel.
- Quarterly meetings with a local Community Liaison Group.
- Liaison with the local runanga.
- External environmental audits by shareholders, regulatory authorities and customers.
- Monthly reporting to the local territorial authority.
- Annual reporting to the local territorial authority and the regional council.

## Environmental Compliance

Consent Compliance	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Abatement Notices	0	0	0	0	0	0	0	0	0	0
Enforcement Actions	0	0	0	0	0	0	0	0	0	0
Consent Breaches	0	0	0	0	0	0	0	0	0	0
Ground Water Trigger Events	0	0	0	0	0	0	0	0	0	0
Surface Water Trigger Events	0	1	0	0	0	0	1	0	0	0
Landfill Gas Trigger Events	0	0	0	0	0	0	0	0	0	0



# Environmental Performance

## Waste Landfilled

All Waste	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Tonnes	357,108	310,994	264,143	244,830	269,894	215,070	261,643	290,596	293,483	296,388

**Total Tonnes of waste in Kate Valley Landfill at 30 June 2015**

**2,814,442**

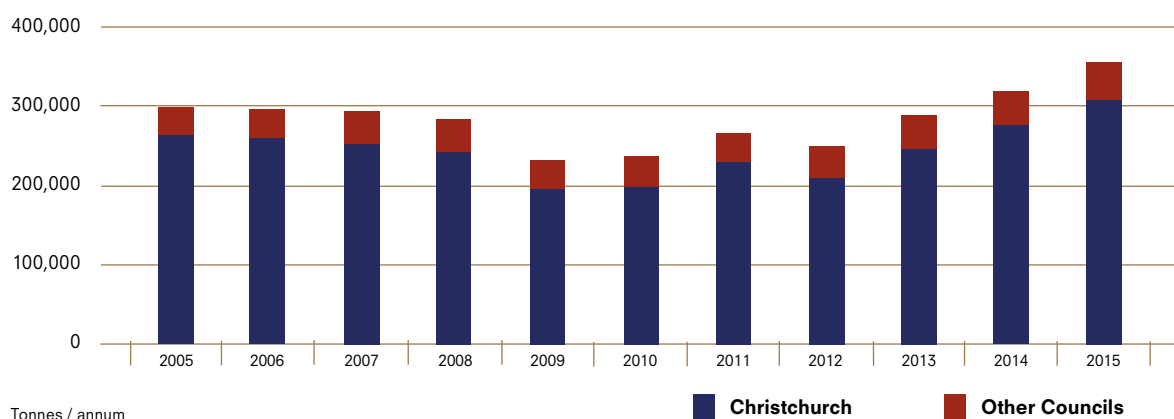
**Note:** 10,292 tonnes were placed in the Landfill in June 2005.

General waste tonnes	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Landfilled	285,840	272,195	242,357	230,057	257,664	203,363	249,813	277,743	280,022	285,927
Highest day	1,403	1,302	1,227	1,200	2,168*	1,073	1,254	1,273	1,293	1,253

\* Earthquake putrescible waste.

Special waste tonnes	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Landfilled	71,268	38,799	21,787	14,773	12,230	11,707	11,830	12,853	13,461	10,461
Highest day	713	389	324	258	266	167	164	116	144	116

## Residual Waste to Kate Valley from Contributing Councils (Calendar years)



The dramatic drop in waste volumes in the late 2008 to 2011 period is predominantly due to the effects of the world-wide economic recession, which greatly reduced the level of commercial activities in Canterbury, such as development, building and associated manufacturing. In addition, from May 2009, the new Christchurch three bin collection system became fully operational, designed to divert more domestic waste from landfill.

In late 2010 and early 2011, the landfill was required to accept large volumes of putrescible waste that urgently needed to be removed from Christchurch following the major earthquakes in the region. For a month after each earthquake, the landfill and the waste transport system operated around the clock to ensure that the rotting food from distribution centres and supermarkets was disposed of before it became a health hazard.

Since the earthquakes, substantial volumes of high density waste potentially containing asbestos, have been disposed of at Kate Valley. The landfill was the only site in Canterbury consented to accept such material.



The leachate collection system is an integral part of the Kate Valley landfill liner system – 2011.

### Landfill Leachate

Leachate is the liquid generated from the decomposition of organic material in the landfill. It is more than 90% composed of rainfall that has fallen onto the landfill face area. The leachate drains through the waste to a drainage blanket on top of the landfill liner. It then flows through a system of collection pipes to a leachate sump, from where it is pumped out of the landfill into storage tanks, before being irrigated back onto the landfill or removed for treatment at Bromley sewage treatment plant.



The Kate Valley Landfill includes an active landfill gas system. Gas wells are connected to generators which use the gas to produce electricity for the national grid.

Leachate to Bromley	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	9,429	0	10,195	7,956	29,907	25,852	17,623	1,739	4,479	7,454

**Note:** Leachate volume is closely linked to rainfall volume on the landfill.

### Landfill Gas

Landfill gas is generated through the decomposition of organic waste in an anaerobic environment. The gas is predominantly methane, which is a greenhouse gas, and accordingly is managed to minimise its escape to the atmosphere. The gas is collected from within the landfill by a network of pipes under vacuum, and drawn to the flare compound where since late 2014, it is used as a fuel to drive generators to generate electricity for the national grid. At the end of 2014, two generators were in operation, generating approximately 2MW of electricity. Surplus gas is destroyed in a high temperature flare.

The landfill is expected to be able to generate over 8MW at its peak, enough to power around 8000 houses.



# Environmental Performance

Landfill gas generation	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	13,771	11,866	10,756	3,746	2,503	1,994	2,425	2,694	2,721	2,748

**Note:** The amounts shown in the first 5 years are theoretical volumes only, as measurement only became possible after the installation of a landfill gas flare in 2010.

Power generated from landfill gas	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	8,693	0	0	0	0	0	0	0	0	0

**Note:** Quantities in Megawatt hours

## Landfill Traffic

Waste haul trips	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Total	17,176	14,781	12,425	11,485	12,672	10,975	12,562	14,709	14,959	14,851
7 day max	445	373	322	377	548*	257	296	374	364	358
Daily average	47.1	40.5	34.0	31.5	34.7	30.1	34.4	40.2	41.0	40.7

\* Earthquake putrescible waste.

## Landfill Water Usage

Water used	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Potable	13,599	10,427	8,736	5,125	7,529	6,226	1,285	1,490	1,440	1,267
Other	16,803	12,601	12,917	12,977	11,880	9,808	9,557	14,052	10,024	4,358

**Note:** Quantities in litres.

## Energy Usage

Fuel used	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
Landfill	513,294	490,074	430,166	410,391	429,576	395,451	399,270	405,312	363,949	370,861
Transport	1,056,202	981,290	875,107	855,206	1,001,038	794,250	808,609	948,827	986,220	965,011
Petrol	0	0	4,320	6,265	7,133	9,195	11,257	10,765	4,061	6,648

**Note:** Landfill and Transport are diesel, quantities in litres.

Electricity used	14/15	13/14	12/13	11/12	10/11	09/10	08/09	07/08	06/07	05/06
	297,413	155,643	81,771	65,005	57,541	67,831	113,943	104,572	92,931	73,782

**Note:** Used for pumping water and leachate. Quantities in Kilowatt hours.

## Risk Management



Two gas to energy generators, which convert landfill gas to electricity for feeding into the power grid, have been in operation at Kate Valley since the start of 2015.

TCL has developed a Risk Management framework which enables the Board to assess potential risks and assign high, medium or low risk-levels to each area of concern. The high-category risks are further assessed on a pre-control and post-control basis, factoring in existing mitigation strategies present.

A list of post-control high risks has been identified, and placed within five activity-based Action Plans for further review. This Risk Management Action Plan takes the risks identified in the five initial Action Plans and sets out the specific actions to be taken to mitigate those deemed to be of 'High' risk.

The Board has developed a programme of investigation to monitor and report findings based on the Action Plan to ensure it maintains awareness of potential risks.

### Peer Review Panel

TCL has established a Peer Review Panel to review the design, construction, operation, and after-care of the landfill and to assess whether or not the work is undertaken by appropriately qualified personnel in accordance with good practice.

The panel reports annually to the TCL Board.

Membership of the Peer Review Panel is as follows:

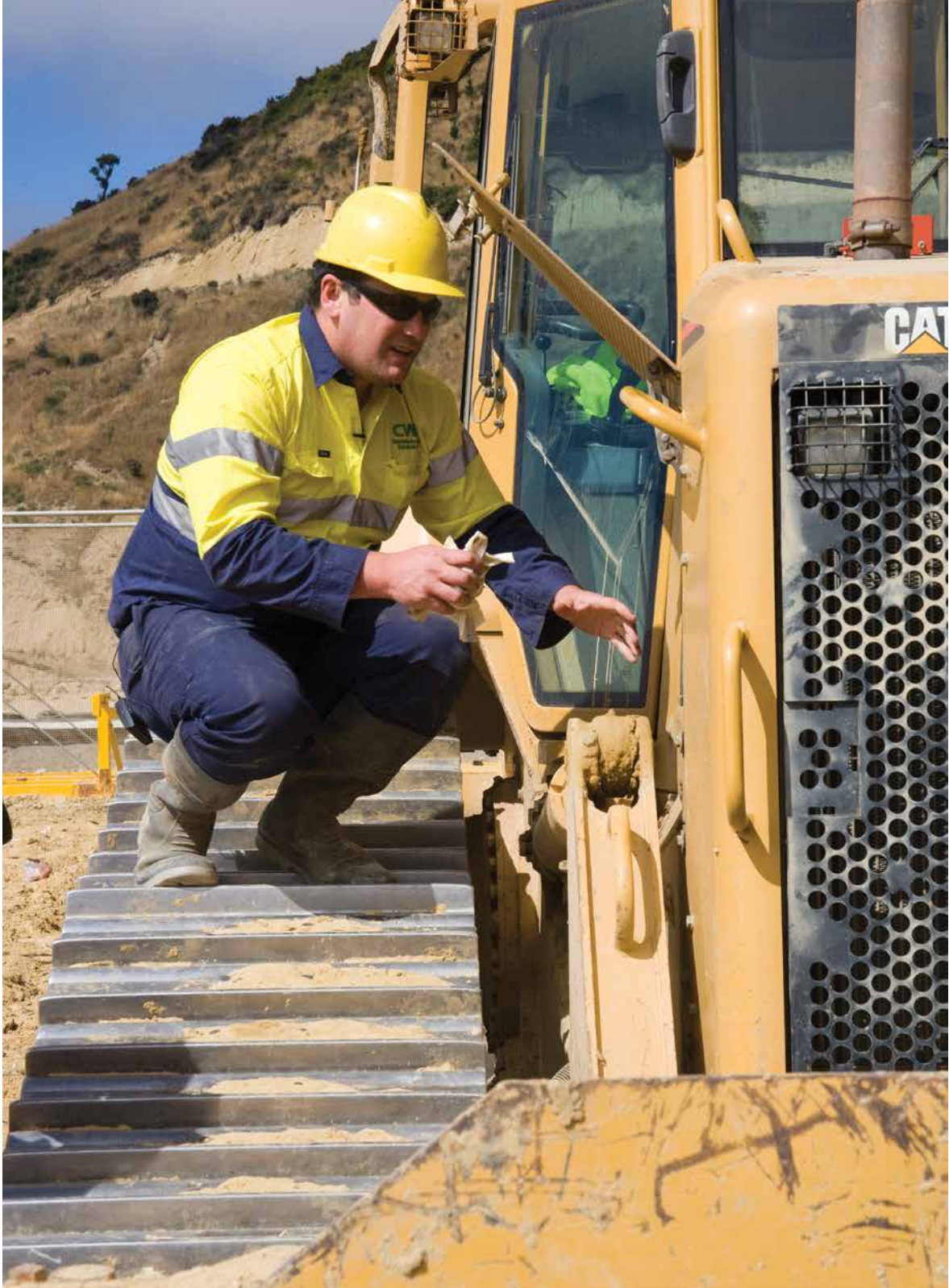
- Dr Mark Milke,  
Canterbury University, *environmental engineering reviewer*
- Dr Bruce Riddolls,  
Riddolls Consultants Ltd, *engineering geology reviewer*



Tipper truck in truck wash at Kate Valley – 2008.



Landfill Supervisor Ernie Hicks undertaking pre-start checks.



## Real Estate Programme



New cell 1B at Kate Valley, which was commissioned in May 2015, ready to receive waste – 2015.

In July 2000, TCL purchased the 2757 hectare Tiromoana Station from Southern Capital Ltd. In October 2003, the adjoining 570 hectare Mt Cass Station was purchased and incorporated into the TCL farming operation carried out through Tiromoana Station Limited. In 2007/08, TCL commenced a programme for the sale of surplus land.

### Mt Cass

When TCL purchased the Mt Cass Station, the property was already subject to an easement in favour of Mainpower, giving Mainpower the rights to pursue the development of a wind farm along the Mt Cass ridge. Following Mainpower advising TCL in 2007 that they intended to proceed toward development of a wind farm, an agreement was reached with Mainpower to sell them approximately 160 hectares of land on Mt Cass Station. The land covered that part of TCL's property specified in the easement as intended to be developed as a wind farm.

### West Farm

TCL completed the sale of 1350 hectares known as the West Farm in late 2009. The balance of the 950 hectares of farm land owned by TCL is currently leased to the purchaser of the West Farm. TCL ceased being directly involved in farming from 2010.

## Construction Programme

Since the landfill opened on 9th June 2005 with Cell 1A, several additional cells have been constructed. Cells 1B, 2A, 2B, and 4A have been constructed in the period.

As a result of higher than expected waste volumes for disposal during 2005 to 2008, TCL accelerated the cell construction programme to provide absolute assurance of availability of airspace.



View across cell construction zone to access road and container park.



# Board of Directors

## Board of Directors

### June 2005

Mr D O'Rourke (*Chairperson*)

Mr G H Clemens

Mr R J Brine

Mr R J Harris

Mr M Hope

Mr W G Cox

Mr J Fulton

Mr R Wickham

## Current Board of Directors

### June 2015

Mr W G Cox (*Chairperson*)

Mr D East

Mr R Davison

Mr T McIntyre

Mr I Kennedy

Mr G James

Mr T Nickels

Mr B McKenzie

## Other Directors between

### June 2005 and June 2015

Mr G P Pierce (26/10/05 - 27/4/07)

Mr G S Campbell (3/7/06 - 20/2/08)

Ms S A Buck (12/2/07 - 11/4/14)

Mr S G Kirk (27/4/07 - 19/9/07)

Mr P W Bishop (27/4/07 - 19/9/07)

Ms J A Burgess (19/9/07 - 2/3/12)

## Other Directors between

### incorporation and June 2015

Ms N A Allan (31/3/99 - 19/11/01)

Mr J A Jamieson (31/3/99 - 19/12/02)

Mr K R Ellis (31/3/99 - 27/11/01)

Mr P S Drummond (31/3/99 - 27/11/01)

Mr W E Woods (19/11/01 - 16/03/05)





View eastwards from western end of Kate Valley towards the gas platform.

As a result of higher than expected waste volumes for disposal during 2005 to 2008, TCL accelerated the cell construction programme to provide absolute assurance of availability of airspace.





# Kate Valley Landfill Timeline



## 2005

**May:** Kate Valley Landfill Community Liaison Group established.

**May:** First public open day at Kate Valley held.

**June:** Kate Valley Landfill opened on 9th June.

**October:** Kate Valley Landfill Community Trust established.



## 2006

**March:** Banks Peninsula District Council merged with Christchurch City Council.

**April:** Kate Valley Landfill officially opened.

**April:** Mt Cass Walkway officially opened.

**April:** Second public open day at Kate Valley held.

**July:** Transpacific Industries merger with Waste Management NZ to form Transpacific Waste Management NZ.

**August:** QEII open space covenant registered on Tiromoana Bush.

**November:** NZ Engineering Excellence Award for Infrastructure and Utilities awarded to Kate Valley landfill by IPENZ.



## 2007

**April:** Fulton Hogan sale of Envirowaste Services Ltd to private equity.

**July:** Part of Mt Cass Station land sold to Mainpower.

**August:** Gold Award of Excellence from Association of Consulting Engineers NZ awarded to Kate Valley Landfill.

**September:** CWS won Champion Canterbury Award for medium/large service category.

**September:** Woodend School Goodwill Agreement signed.

**September:** Transpacific Waste Management purchase of balance of CWS Ltd shares formerly held by Envirowaste Services.



## 2008

**April:** Tiromoana Bush Walkway officially opened by Minister of Sport and Recreation.

**May:** CWS launch contractor for Ministry of Transport heavy vehicle productivity trial.

**May:** Balance of TCL owned farming land leased to Organic Farm Holdings Ltd.

**June:** Surplus land sold to Organic Farm Holdings Ltd.

**November:** Impact of Global Financial Crisis reflected in reducing waste volumes.

**November:** 1 millionth tonne into Kate Valley Landfill.



## 2012

**December:** 2 millionth tonne into Kate Valley Landfill.



## 2013

**January:** Start of Emissions Trading Scheme.

**January:** Commissioning of large landfill gas flare station.

**April:** Third public open day at Kate Valley.

**June:** Wash Creek Block sold to Organic Farm Holdings Ltd.



## 2014

**July:** Beijing Capital Group purchase of Waste Management NZ from Transpacific Industries.

**November:** First 1Mw generator commenced generating power for national grid.



## 2015

**February:** Second 1Mw generator commenced generating power for national grid.

**June:** LEARNZ education programme live to classrooms.



**2009**

**July:** Government Waste Levy commenced on 1st July.



**2010**

**May:** Heavy vehicle high productivity law change allows 50 tonne truck weights.

**September:** Earthquake placed huge demand on landfill for several weeks requiring long hours of operation.

**September:** CWS won Champion Canterbury Award for medium/large service category.



**2011**

**February:** Earthquake placed huge demand on landfill for several weeks requiring long hours of operation.

**June:** Amalgamation of CWS Ltd into Transpacific Industries.



In late 2010 and early 2011, the landfill was required to accept large volumes of putrescible waste that urgently needed to be removed from Christchurch following the major earthquakes in the region.

