

Before the Independent Hearings Panel
at Christchurch

under: the Resource Management Act 1991 and the Canterbury Earthquake (Christchurch Replacement District Plan) Order 2014

in the matter of: Submissions and further submissions in relation to the proposed Christchurch Replacement District Plan

and: The Chapter 21: Specific Purpose (Burwood Landfill and Resource Recovery) Zone **Stage 3** proposal

and: **Burwood Resource Recovery Park Limited**
Submitter 3444

Statement of evidence of Gareth Stewart James

Dated: 24 November 2015

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STATEMENT OF EVIDENCE OF GARETH STEWART JAMES

My Background and Role

- 1 I am the General Manager South Island for Waste Management NZ Limited (*WMNZ*), and also a Director of both Transwaste Canterbury Limited and Burwood Resource Recovery Park Limited (*BRRP*).
- 2 I was closely involved with the establishment of the BRRP immediately following the February 2011 earthquake, and have been responsible to the Managing Director of WMNZ for the site development and operations since that time.
- 3 The BRRP Operations Manager reports directly to me, and through me, also reports to the BRRP Board.

BRRP Limited

- 4 BRRP is a wholly owned subsidiary of Transwaste Canterbury Limited, a joint venture between national recycling service provider WMNZ, Christchurch City Council (*CCC*), and Waimakariri, Selwyn, Ashburton and Hurunui District Councils.
- 5 BRRP has worked closely with CCC and the Canterbury Earthquake Recovery Authority (*CERA*), to deliver a low risk solution that addresses the enormous scale of managing the earthquake waste volumes, as well as deriving best value from safety, economic, environmental and cultural perspectives.

Background

- 6 BRRP was established urgently following a request from Civil Defence immediately after the February 2011 earthquake, to manage the receipt and resource recovery processing of mixed demolition material arising from the earthquake.
- 7 CCC gave permission for specific areas of the Burwood landfill site (the *Burwood Site* or *Burwood*) to be used by BRRP for the recovery and recycling operation, and entered into a contract with BRRP for the management of all earthquake waste related operations on the Burwood site.
- 8 This enabled the Burwood site to be safely developed without delay as the primary area for stockpiling material to cater for the urgent removal of earthquake waste from the city and surrounds. The BRRP operation at Burwood has been receiving and stockpiling earthquake waste since 7th March 2011, only 13 days after the earthquake.
- 9 Resource consents for the recovery and recycling operation were granted in 2012 after consultation with the local community and interested stakeholders.

- 10 Waste Management NZ (at the time Transpacific Industries NZ Ltd) developed a state-of-the-art construction and demolition waste resource recovery plant at Burwood for BRRP, named "The Recoverator", and commenced operation of the plant in May 2013. The plant is thought to be one of the largest facilities of its type in the southern hemisphere.
- 11 The site in Burwood was identified immediately following the earthquake by Civil Defence as an ideal location for receipt and processing of earthquake waste. The site had been used in this way for smaller volumes following the September 2010 earthquake.
- 12 Initially the site operated under Orders in Council. The site currently operates under two resource consents (one to BRRP and one to CCC) (*the Consents*). The Consents were granted in September 2012 on a controlled, non-notified basis, have a duration of five years, and will expire in September 2017. That timeframe was based on an expectation that the site would be unlikely to take more than 750,000 tonnes of demolition waste.
- 13 The site is the former Christchurch municipal waste landfill, which operated from 1985 to 2005, when it closed the day before Kate Valley landfill opened. The landfill was originally situated in this location because of the underlying geology, which protects the deep groundwater aquifers through a series of confining impermeable layers at shallower levels.
- 14 In addition, the site's location reasonably close to the city, good access routes, existing landfill consents, and the surrounding forest buffer between the landfill area and nearby residential areas, made the choice of the Burwood forest area for the earthquake recovery use a simple one for Civil Defence.
- 15 It had been intended by Civil Defence that there would be one or two more similar sites for earthquake waste processing established in other parts of the City, but due to difficulties finding sites with suitable conditions, and the large financial risks associated with the work, no other significant earthquake waste processing sites were ever established.
- 16 Civil Defence, and CERA following, have both been strongly supportive of having a facility like BRRP available to assist the earthquake recovery. The need for such a facility to enable rapid removal of such waste from demolitions, and relatively low cost of disposal compared to alternatives, was seen as critical to the rebuild process. The Minister of Earthquake Recovery and the Minister for the Environment were both closely involved in assisting CERA, Environment Canterbury (*ECan*), CCC and BRRP to obtain streamlined processes for resource consents for the earthquake

waste receipt and processing operations, and the residual waste disposal in the Burwood landfill.

- 17 Those needs are still immediate for reasons I discuss below. However, I understand that certain provisions in one of the Orders in Council amended the CCC City Plan so that the Consents were available on a controlled, non-notified basis, and that these provisions are not likely to survive the Coming Christchurch Regeneration Bill. If this means that BRRP's consents will revert to higher pre-earthquake standards, then the need for relief (a special purpose zone and controlled, non-notified consents for BRRP's Burwood operations), are all the more important.

BRRP Overview

- 18 BRRP aims to deliver the best possible outcomes from the Christchurch demolition and rebuilding programmes, by:
- 18.1 maximising the recovery and re-use of valuable and necessary materials;
 - 18.2 reducing the volume of residual earthquake waste to landfill;
 - 18.3 avoiding using valuable air space in the highly engineered municipal waste landfill at Kate Valley for the relatively inert residual waste from demolition and construction; and
 - 18.4 minimising costs for all involved in the Canterbury recovery.

BRRP Functions

- 19 The functions of BRRP are:
- 19.1 To cater for rapid removal of earthquake waste material from the city through operation of the Burwood site, as the staging area for initial stockpiling of mixed demolition and construction material, and later resource recovery operations;
 - 19.2 Acceptance of mixed earthquake waste material for resource recovery processing; and
 - 19.3 Disposal of residual earthquake waste with no reuse potential in a special landfill developed for the purpose adjacent to the closed Burwood landfill.

The size of the Task

- 20 Christchurch was hit by a second major earthquake on 22 February 2011. This quake destroyed much of the CBD and large parts of the eastern suburbs. A large proportion of the mixed material from the deconstruction and reconstruction of these buildings has been, and continues to be, deposited at BRRP for processing and recovery of

any useful materials. It is now expected that the site will receive a minimum of 1,000,000 tonnes of earthquake waste material, up from the original estimate of 750,000 tonnes that formed the basis for the Consents. That increased estimate has largely arisen because the original estimates were uncertain.

- 21 Since receipt of material commenced in March 2011, around 700,000 tonnes of material inwards have been received. Of this, approximately 110,000 tonnes have been recovered for reuse, 250,000 tonnes of residual waste landfilled in Cell A, and just under 340,000 remains in the stockpile for processing.
- 22 Around 335,000 tonnes is still expected to come from the earthquake demolition processes occurring across Canterbury. While it is not possible to be exact in this estimate, as no one party has the necessary data, it has arisen from discussions with demolition and haulage contractors advising of the work ahead of them. A lot of this work is held up pending completion of negotiations between insurance companies and building owners.
- 23 Our expectation is that the earthquake waste will continue to arrive at BRRP, albeit at ever decreasing volumes as the demolitions wind down, until around mid-2020, when the progressive restoration of the site will take on an increasing proportion of site operations.

Composition of Earthquake Waste Material

- 24 BRRP caters for the mixed unsorted earthquake waste material. This arises primarily from the demolition and reconstruction of buildings. The earthquake waste received tends to be the remnants after demolition or construction contractors have recovered any valuable materials, such as metals. Most of the heavy waste material, such as clean concrete and brick is taken to Lyttelton Port reclamation site, or other cleanfill sites around the city, leaving essentially the lighter internal mixed structural, claddings, and decorative contents of empty buildings to be sorted at Burwood.

Earthquake Waste Receipt Process

- 25 Trucks carrying earthquake waste are weighed upon entry to the Burwood site, and the documents relating to the nature of the material and its origin are checked. After arriving at the remote stockpile site, each truck load has a visual inspection to ensure it contains the correct type of material able to be accepted at the site. This is undertaken by a "spotter" standing on an elevated tower, enabling the visual inspection of the truck load contents.
- 26 The spotter then directs the truck to the specific location within the stockpile zone where the material is to be tipped. For any one stockpile area, there may be several "faces" being developed at a time, set apart from each other, so that trucks have minimum delay

waiting to tip. This process occurs for 12 hours per day, five days per week, including in the dark in winter.

Stockpiling Process

- 27 The stockpiling of the material is performed with care, to preserve the recovery potential of the materials. A bulk pre-sort occurs upon tipping, before the material is stockpiled. Excavators pull out any bulk metals and other massive objects or obvious waste, before carefully placing the balance of the material into a stockpile that is up to 20 metres in height, and that covers an area of 6.5 hectares.

Material Sorting Process

- 28 BRRP has used a three stage sorting process for the mixed earthquake waste material up until the recent cessation of operations following the timber stockpile fire in August 2015.

28.1 Stage 1: - Heavy pre-sort of material as it arrives at the stockpile site.

- (a) Using stockpiling excavators to pull out large items during the material receipt process.
- (b) Excavators and bulldozers then place the material safely into the stockpile.

28.2 Stage 2: - Bulk coarse sort through "mining" of the stockpiles.

- (a) Using large excavators with grapples or grab buckets to pull out large materials, such as concrete, steel, treated timber, large masonry.
- (b) Removal of obvious waste materials from the stockpile prior to the Stage 3 finer sort process using Dump Trucks and loaders.

28.3 Stage 3 – The Recoverator - fine sort of material.

- (a) The residual from the bulk coarse sort went through a combination mechanised and manual state-of-the-art sorting process, including automated recovery of selected material types by a variety of screens and mechanical/electrical devices, assisted by a manual picking line.
- (b) The material received direct from the stockpile was put through a high powered shredder to reduce items to a size that can be readily manually picked off the sort line.

- (c) Prior to going across the sort line, the material is screened to remove the small particle size fraction under 65mm (to hardfill/soils).
 - (d) Magnets are used to recover ferrous metals, and eddy current separators used to collect non-ferrous metals.
 - (e) Staff on an elevated conveyor sorting line remove fibre (cardboard, paper), fittings, plastics, and gib/plaster board.
 - (f) Timber is recovered from a scraper bath, which separates the floating timber from the rubble and hardfill materials which sink in the water bath.
 - (g) Fine material, predominantly soils, are recovered.
 - (h) Residual is taken by Dump Truck to the Area A landfill for disposal.
- 29 Prior to August 2015, the main product from the Recovernator sort process was clean shredded mixed treated and untreated timber, destined for eventual use as a fuel in suitable furnaces. This had been stockpiled in a separate banded area adjacent to the residual waste landfill in Area A, waiting for volumes to become significant enough to attract bulk potential users.
- 30 This material caught fire from assumed spontaneous combustion in August 2015, and approximately 80,000 tonnes of carefully recovered timber was destroyed. The material had no financial value, as BRRP were prepared to make it available free of charge to potential users provided the material was reused.
- 31 This has caused a revision of sorting operations, to ensure that future fire risk is minimised. The sorting process moving forward will now be confined to predominantly Stage 1 and 2 only, with the Stage 3 process only being used if these are deemed to be significant recoverable content merit for any part of the waste stream.
- 32 Timber, apart from any substantial reusable timber beams, will thus no longer be recovered or stockpiled, and will be residual waste. This is another factor that has contributed to increased estimates for the tonnage to be landfilled on the Burwood site.
- 33 The sorting process will also be accelerated, through increasing the Stage 2 sorting capacity, to minimise the time it will take to process the remaining earthquake waste.

- 34 Around twenty staff are expected to be involved in the processing operations, along with a range of mobile plant such as loaders, excavators, dump trucks and bulldozers.

Residual Waste

- 35 The resource recovery process cannot turn all stockpiled material into a reusable resource, and there is a residual proportion of material that cannot be further sorted economically or safely. This residual must be disposed of in a modern sanitary landfill.
- 36 A new landfill for the relatively inert waste materials from the earthquake debris was constructed in Area A close to the sorting plant, and adjacent to the former Christchurch municipal waste landfill, which closed in 2005. This new landfill closed in August 2015, around eight months before it would have reached full capacity. The closure was undertaken as part of the preventative work in ensuring any future fire in the adjacent timber stockpile would not spread outside its bunded area.
- 37 This closed down the consented airspace for the residual waste arising from the sorting operations, and therefore required the sorting operations to temporarily cease until a replacement disposal site could be consented.
- 38 Earthquake waste continues to be received at the site, at between approximately 1,000 to 1,600 tonnes per week, and is expected to continue for many months until all earthquake-related demolitions have been completed in the Canterbury area. This waste is being added to the stockpile until the site has a residual waste disposal site available again after consents have been secured and the new landfill area has been constructed.
- 39 The current anticipated total volume likely to be received at BRRP is now estimated at 1 million tonnes, considerably more than the 750,000 tonnes originally envisaged at the time of the application for the existing resource consents.
- 40 The Burwood site has been receiving mixed building demolition material since March 2011 and the recycling process was originally intended to be complete within five years of commencement of processing and the site left in its original condition.
- 41 However, it is now clear that the volume of material needing to be processed at Burwood is much greater than originally expected, and both the time required to undertake the processing and the disposal capacity required for residual waste, will exceed the existing consent limits.

- 42 Since receipt of material commenced in March 2011, around 700,000 tonnes of material inwards have been received. Of this, approximately 110,000 tonnes have been recovered for reuse, 250,000 tonnes of residual waste landfilled, and about 340,000 remains in the stockpile for processing.
- 43 For most of the period of operation of the sorting plant, the incoming material has been the detritus of Red Zone houses, after the main valuable recoverable materials have been stripped on site. This has meant that recovery rates of reusable material to date have been lower than originally hoped for.
- 44 However, most of the material brought to the site in the first few months is expected to have a higher recoverable material content than the material already processed. The recovery rate is therefore expected to increase as this older material is processed.
- 45 A further 300,000 tonnes of earthquake waste material is expected to be brought to BRRP over the next four to five years. This means that something in the order of 640,000 tonnes of material, less whatever recyclables can be recovered, will need to be accommodated in the new landfills proposed in Area A expansion and Area G.
- 46 These new landfills will have a different design to the original Area A landfill, in that they will be designed as normal anaerobic decomposition landfills, rather than the aerobic style of the original Area A site. This approach has been taken to minimise fire risk, by using higher levels of compaction using heavy specialised compactor vehicles, void filling, and weekly covering with soil material, to create a decomposition environment with minimal oxygen. The cells within the landfills will also be compartmentalised with separating soil and concrete bunds, to minimise potential combustible areas while the cells are being filled.
- 47 After final capping and closure, these new cells will have landfill gas collection wells installed, as while there is no putrescible waste in the material, the timber component will decompose slowly and produce low volumes of gas which will need collection and destruction by flaring. The gas volume and quality is unlikely to be high enough to utilise it for power generation, as is done with the landfill gas from the former Burwood municipal waste landfill.

Alternative options considered

- 48 Because of the pre-sorting by demolition contractors, the material reaching BRRP is essentially waste that would in normal circumstances be destined for landfill. The only consented landfill within reasonable distance of Christchurch, and with capacity to handle the very large volumes of earthquake waste, is Kate Valley

landfill, some 70km north of the City. Kate Valley is one of the best landfills in the world, and is designed to safely handle normal municipal solid waste, requiring high environmental standards.

- 49 The residual waste that comes out of the BRRP recovery process is relatively inert, and has few if any of the environmentally challenging properties of municipal solid waste that require containment in a modern hi-tech landfill, such as Kate Valley Landfill.
- 50 Filling Kate Valley's valuable and expensive landfill airspace with this inert material would be a waste of the state-of-the-art Kate Valley environmental systems.
- 51 It is also considerably cheaper for the community, in demolition material disposal costs, transport emissions, reduction in truck movements, and in saving of valuable Kate Valley airspace, for the inert material from the BRRP recovery process to be landfilled on site at Burwood.
- 52 Burwood is a closed landfill, which operated from 1985 to 2005, taking municipal solid waste from Christchurch and surrounding districts.
- 53 Utilising undeveloped areas of the former Burwood landfill for disposal of inert material from the BRRP sorting process, developed to modern standards as essentially new separate landfills just for demolition waste, helps to keep the gate charge at BRRP to the lowest possible level, and thus assist in the earthquake recovery.
- 54 It is also important in this discussion to understand the capacity limitations of Kate Valley Landfill and the potential effects on both the earthquake recovery process and the Kate Valley landfill itself.
- 55 Kate Valley Landfill can only handle around 400 additional tonnes per day over and above its normal municipal waste daily loading. This is due to a number of site geography physical constraints.
- 56 Normal road trucks cannot safely access the landfill tipping face due to steep and slippery terrain, and specialised all-terrain vehicles must be used to transport the waste to the face. This involves the transfer of waste from road haulage vehicles to the tipper vehicles via a container park.
- 57 The container park is fixed in size, limiting the number of truck and trailers that can be unloaded at a time.

- 58 There is a maximum landfilling rate per hour due to the physical size of the access route and tipping area, and the time necessary to transport waste from the container park to the tipping face.
- 59 The landfill was designed to have the most efficient transport and landfilling process for the expected volumes of municipal waste. It was never envisaged that it might have to cope with prolonged volumes two to three times its normal daily volume, which would have been the case if the earthquake waste had gone to Kate Valley.
- 60 If all the demolition waste that is left on site and is expected to still arrive had to go to Kate Valley, it would have had to be rationed to a daily maximum of 20 truck and trailer trips. For the material in the current stockpile (approx. 340,000 tonnes), plus the 300,000 tonnes still expected to come to the site, it would take around 64,000 truck and trailer movements at 20 tonnes payload to shift the material to Kate Valley, and around 6.5 years to complete the relocation of the waste.
- 61 In addition to these significant benefits of avoiding use of Kate Valley for unnecessary inert waste disposal, there is also a benefit through not reducing the life of this expensive and highly engineered site. The effect on the Kate Valley Landfill life span of accepting the potential demolition waste volumes remaining would be to reduce its effective life by two years.

Dust

- 62 Dust monitoring has been a condition of consent and a particulate monitoring station has been operating near the BRRP entrance gate for the duration of work on the site to date. This effectively measures dust from the traffic entering the site and from the road, as it is a long distance from the BRRP operating sites.
- 63 The large forest buffer between the BRRP Area B operations and residential areas, means that the limited amount of dust that can be created from the stockpile and sorting operations in dry conditions, has no impact on residential areas.
- 64 Staff working on the site wear appropriate personal protective equipment, including masks, when there is any potential exposure to dust. Regular dust exposure monitoring of staff using wearable meters is carried out. There have been no issues of concern to date.

Noise

- 65 Similarly, the large forest buffer distance to residential areas means that no noise impacts have been evident in those areas.

Odour

- 66 Because the earthquake waste contains no organic putrescible waste, there is no odour created through any of the sorting or landfill processes.
- 67 With the change to anaerobic condition landfill, the decomposition of the timber may create odours, but this will only occur within the landfill after it is capped, so there will be no opportunity for the odour to escape to atmosphere.

Community Liaison

- 68 BRRP offered during the original consent process to establish a Community Liaison Group (CLG) comprised of representatives from the local residents groups. This CLG meets every three months, and is attended by staff from BRRP, CCC, ECan and occasionally CERA.
- 69 The purpose of the CLG is to provide a regular forum for communication between residents and site management and consent authorities. The CLG receives a briefing on any complaints that have been made in the period, and actions taken in relation to these.
- 70 The CLG has been very effective in communicating issues and working with site management to resolve these. The process and timetable used by the applicants for the extension of resource consents was changed substantially from initial plans following advice from the CLG.

Health and Safety

- 71 The scale of the operation, the nature of the site and materials to be handled, mean that there are serious safety risks and hazards to be managed.
- 72 A Health and Safety Plan for the BRRP operations has been developed and is operational. All staff on site are involved in Health and Safety monitoring and reviews, and all are trained in first aid, fire suppression, and evacuation procedures. Strong emphasis is also given to dust control, and use of protective equipment, such as safety glasses, dust masks, and personal protective equipment. Visitor access onto operational sites is strictly controlled.
- 73 In addition, the site has developed Traffic Management Plans, a Fire Plan, Air Quality Plan, and an Emergency Management Plan.
- 74 The safety track record of the site since commencement of operations has been superb, especially when considering the high truck volumes in the early days after the earthquake, combined with the extensive recreational use of the forest by city residents.

Dated: 24 November 2015

Gareth Stewart James