

8. FORMER LANDFILLS AND OTHER FILLED SITES

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The purpose of this report is to seek direction from the Council on:

- (a) some general issues regarding former landfills and other filled sites; and
- (b) specific questions which have been raised by residents in the Sandilands area.

This report is supplemented by a report in the public excluded section of the agenda. The public excluded report contains legal advice on the various issues relating to former landfills and other filled sites.

BACKGROUND

Although landfills have been created within Christchurch for well over 100 years, the extent of issues associated with landfills are only now becoming clear.

There are approximately 120 known former landfill sites within the Council's district. Some of these remain in Council ownership. The balance have been closed and sold. The Council's investigations to date suggest that there are approximately 1,000 separate residential land parcels located on former landfills which were originally owned by the Council or its predecessor Councils.

The majority of the Council's landfills were closed between 1940 and the mid-1980s. Some Council landfills are considerably older and, for some landfills, the precise closure dates are unknown. The earliest closure date is 1903, and the latest is 1988.

At the time when the Council or its predecessor Councils closed the landfills, it did so in accordance with the standards of the time. However, as knowledge and experience of post-closure issues has progressed, the standards have changed. The Council now is aware, for example, that certain health and safety issues may arise in relation to sites that were former landfills. This awareness has not always been the case.

Recognised environmental guidelines, which include allowances for potential health risk components, are now in place. These values are often derived from what are arguably theoretical calculations and can be easily exceeded in certain circumstances. For example, tests will often read high if they are taken where there are lead head nails left by builders or domestic ashes buried in gardens (which was previously a common practice).

The Council's investigations into former landfills, and their associated potential effects first came to the fore in August 2001 when the Council commissioned Montgomery Watson Harza (MWH) to carry out soil tests at Lyn Christie Place as part of the Council's housing asset management plan. The Lyn Christie Place complex comprises Council-owned rental housing units.

COUNCIL-OWNED SITES

Lyn Christie Place

Investigations

Lyn Christie is an elderly persons' housing complex built in 1974 on land owned by the Council and informally filled by others prior to Council ownership. The housing development attracted a low interest Government loan on the basis that the foundation design was approved by the then Department of Health. The perimeter foundation walls of the units are piled, with the unpiled concrete floor slab resting on the perimeter foundation.

Over the years, settlement of the land has occurred with slumping of the floor slabs (to varying degrees) and resultant structural damage to the internal walls, with gaps between the skirting and floor, jammed doors etc.

As part of the Council's housing asset management plan development, the Property Unit commissioned MWH to undertake some exploratory drilling to ascertain the potential causes of the slumping and property damage. This was done with a view to considering best long term asset maintenance and redevelopment options.

The tests found that the complex was built on approximately two metres of fill and that the surface soils contained levels of Polycyclic Aromatic Hydrocarbons ("PAHs") above recommended guidelines. This information presented two key issues, namely:

- (a) the health and safety of the Council's tenants; and
- (b) the likely issues for neighbouring properties.

Health and Safety of the Council's Tenants

Dr Mel Brieseman, Medical Officer of Health at Community and Public Health (CPH), was immediately contacted to give ongoing advice and assistance regarding public health matters.

PAHs are formed as a result of incomplete combustion of organic matter and have been found to be carcinogenic in laboratory tests. PAHs can be ingested or absorbed through the skin, making children particularly susceptible because of their potentially high level of contact with soil containing PAH contaminants.

A soil remediation plan was agreed with CPH and Environment Canterbury, which would minimise human contact with the soil. This involved removing soil in all ornamental and vegetable gardens to a depth of 0.5m, replacing the contaminated soil with clean soil over an impervious membrane material and installing an automatic irrigation system on all lawns to mitigate soil dust nuisance during the summer months.

This soil remediation work has been completed. An injection of quick setting resin has also made to the Lyn Christie Place floor slabs, to ensure their structural integrity.

Likely Issues for Neighbours

Section 44A of the Local Government Official Information and Meetings Act 1987 requires the Council to note in any Land Information Memoranda (LIM) reports information which identifies the "likely presence of hazardous contaminants" where that information is "known" to the Council. Section 44A also specifies that a territorial authority may include such other information as the territorial authority considers relevant.

In this instance, soil tests taken within the perimeter boundary of the Lyn Christie complex showed elevated levels of contamination. Accordingly, MWH advised the Council that it was likely that they would also find contaminants on the properties adjoining or close to the Council's Lyn Christie Place complex.

The Council's files relating to properties adjoining or close to the Lyn Christie Place complex were noted as being likely to contain hazardous contaminants, and affected landowners were advised accordingly by letter. Landowners were also advised that the Council would be happy to update its records on receipt of any reports which specified that the landowners' property did not contain hazardous contaminants.

Investigation of other Council-owned sites

As a result of the investigations at Lyn Christie Place, it was deemed prudent to test other Council housing sites that were either built on former Council landfills or had historic/anecdotal records of being built on "informal" landfill or similar sites (such as former gas works) that had the potential to test positive for contamination.

The sites tested were:

Sandilands
Captain Thomas Courts
Avonheath Courts
Louisson Courts
Walsall Street
Shoreham Courts

Contamination identified

Contaminants were detected at six complexes. Most of the sites were marginally above the accepted guidelines, but some of the Council-owned units within Sandilands contained relatively high levels of some contaminants.

Remediation of Council-owned sites

In September 2002, the Council received a report in regard to various works at its housing sites. These works have been carried out in consultation with CPH and Environment Canterbury. The following is an update on progress:

- remediation at Lyn Christie Place has been completed, and a site management plan has been prepared by MWH.
- remediation at Sandilands has been completed, and a site management plan has been prepared by MWH.
- a remediation plan for Louisson Courts has been approved by CPH and Environment Canterbury. A tender has recently been approved and Works Infrastructure Limited has commenced remediation work.
- Walsall and Avonheath both have plans and specifications developed, and City Care's tender has been accepted.
- Plans and specifications have been developed for Shoreham and have been sent out for tender.
- Environment Canterbury has reviewed the remediation plan for Captain Thomas Courts, and has requested further testing.

In terms of remediation costs, the Council has approved a budget figure of \$815,000 to deal with all soil contamination issues on the seven Council-owned sites identified in this report as containing some contamination. Current projections are that this budget will be sufficient.

PRIVATELY-OWNED SITES WITHIN SANDILANDS

Sandilands is a 12.5 hectare area in Wainoni/Aranui, formerly a Council landfill dating back to 1870. The landfill was closed in 1942. Sandilands was the only site where heavy metals, identified during testing, were of concern in terms of potentially adverse health effects on children under five.

Although the Council owns some properties within Sandilands, the vast majority are in private ownership. A plan of the Sandilands block is attached as Appendix 1, with the Council-owned properties shown in black.

As a result of the relatively high levels of contamination evidenced in Council-owned Sandilands properties to the east of Griffiths Avenue (it should be noted that the Council-owned properties to the west of Griffiths Avenue have tested below the threshold for contaminants), CPH requested that the Council use its best endeavours to undertake soil testing of private properties along Griffiths Avenue and north of Rudds Road (being the properties which back onto Linfield Park).

This request was based on a need to ensure that there were no immediate health issues for residents within the Sandilands block. The aim was also to get a better understanding of the nature and spread of contamination, given that the Council properties were not necessarily juxtaposed and given the relatively high levels of contamination found on some Council properties.

A number of private property owners were approached on the basis of the Council undertaking soil testing at its cost, but with the proviso that landowners first sign a consent form acknowledging that (among other things) if contamination was found then the Council would need to disclose that information on any LIM reports, in accordance with the Council's statutory obligations.

Six owners agreed to their properties being tested. Although five of the six properties showed contamination at levels above accepted guidelines for some contaminants, the Medical Officer of Health considered that the results did not present any immediate health risks to residents living on those five properties.

The Medical Officer of Health advised that Sandilands does not constitute a public health issue, as it is a local situation rather than a general health problem, but that people need to be aware of the possibility of contamination through the appropriate annotation of LIMs.

Following the testing of the six private properties, the Council called a meeting of the tenants of its Sandilands housing, supplemented by an invitation to owners of those private properties offered testing, to outline the issues. At that meeting, tenants and residents of tested properties were advised to wear gloves whilst gardening, not to eat vegetables grown on their properties, and to minimise opportunities for children under five to be exposed to contact with soil.

The residents of various private properties at Sandilands have now raised the following questions:

- (a) Will the Council reduce rates in recognition of any perceived reduction in their property values?
- (b) Will the Council make a definitive statement regarding health and safety on the LIM reports for all properties within Sandilands? In particular, will the Council amend its standard LIM statement to record that Sandilands is not a health problem?
- (c) Will the Council pay for ongoing blood tests for those living on private properties tested by the Council?
- (d) Will the Council ensure that the easement running along the rear of Rudds Road properties is maintained so as to minimise dust nuisance?
- (e) Will the Council clean up private properties within the Sandilands area to a similar level to the Council's housing units within Sandilands?

The Council needs to decide:

- (a) how it wishes to reply to the above five questions; and
- (b) whether anything more should be done at Sandilands, other than ensuring that LIM reports are appropriately noted with matters suggested by the Medical Officer of Health and in accordance with the Council's statutory obligations.

PRIVATELY-OWNED SITES OUTSIDE SANDILANDS

Former landfills

The issue of residential properties built on old closed landfills is an issue that is repeated around the city. This is probably because the alluvial gravels of the Christchurch area provided sources of gravel as the city developed, and following extraction these pits were filled either formally or informally, sometimes with refuse or materials other than hard fill. Sand hills and gullies on the eastern side of the city also provided opportunities for the disposal of refuse.

The Council has developed a database of closed landfills, although Council officers are currently in the process of undertaking a review of that data to ensure that it is up to date. Much of the information that the Council holds in relation to closed landfills covers a wide range of areas of land that have been filled in a range of manners, including with appropriately engineered hardfill, with uncontrolled hardfill, and with refuse and other material.

At this stage, there remains approximately 1000 residentially zoned parcels of land that are either known to be or suspected to be filled with refuse or material other than inert material or hardfill. That number is likely to reduce further as Council officers more closely review the Council's database. Although all of the 1000 residential sites present some potential for contamination issues, the degree of contamination will depend on what was disposed of, and the depth and type of material used to cover that material prior to the land being developed.

In relation to privately-owned sites outside Sandilands, the Council needs to decide on what steps are appropriate in relation to those properties which the Council knows or suspects to be located on

former landfills. However, any decision that the Council makes with respect to land in the Sandilands areas could be regarded as having a precedent effect in other parts of the city.

Other filled sites

Council records indicate that there are approximately 9500 land parcels on which there is fill (not being refuse landfill). A large number of these have been filled as part of subdivision and contain controlled fill, such as hardfill or inert fill. In that case, they are unlikely to create the same issues which are potentially associated with former landfills. However, the Council still needs to review the information held in relation to these sites and ensure that up to date information is provided on LIMs and Project Information Memoranda (PIMs).

WORK BY ENVIRONMENT CANTERBURY

Both the Christchurch City Council and Environment Canterbury (as a Regional Council) have responsibilities under the Resource Management Act 1991 with regard to contaminated sites. It is one of those areas of overlap where the respective roles of regional and district councils are not entirely clear. Environment Canterbury, like many other regional councils and in co-operation with Ministry of the Environment, has for some time been developing a register of potentially contaminated sites. This work predates the Council's Lyn Christie work.

As part of the work being undertaken by Environment Canterbury, it has obtained information from the Christchurch City Council concerning land that has been filled, and is also in the process of developing a register of closed landfills. The more recent work carried out by Christchurch City Council officers has left officers questioning the quality of data that was originally given to Environment Canterbury. Council officers will work with Environment Canterbury to ensure that the information that Environment Canterbury holds is the same as that held by the Christchurch City Council.

DISCUSSIONS WITH MEDICAL OFFICER OF HEALTH

Throughout the whole process of investigation and remediation, the Council has consulted with and has been advised on health issues by Dr Mel Brieseman, the Medical Officer of Health at CPH.

Dr Brieseman has:

- (a) attended tenant and public meetings;
- (b) had input into and signed off on the remediation plans for the various Council-owned housing complexes; and
- (c) given advice on health issues to the six private property owners at Sandilands whose properties have been tested by the Council, advising that soil contamination on private property is a private rather than a public health issue.

A letter from Dr Brieseman encapsulating these various matters from a health perspective is attached as Appendix 2.

CONCLUSION

The above issues are not easy to deal with. Although there are other instances of building taking place on landfills elsewhere in New Zealand and around the world, there appears to be very little precedent regarding how these matters should be addressed. They arise principally through the increase in knowledge and experience of potential issues associated with former landfills.

Although the Council is dealing with an essentially historical situation, it needs to decide how to address the potential issues associated with former landfills in light of the current knowledge and the Council's present statutory obligations.

Recommendation: That the Council consider its proposed course of action in light of the advice contained in the public excluded section of this report.