

Hornby Community Centre Summary report - landfill gas screening assessment

Introduction and objectives

Tonkin & Taylor Ltd (T+T) has completed a landfill gas screening assessment on behalf of Christchurch City Council at the site of the proposed Hornby Community Centre at Kyle Park in Hornby.

The purpose of the landfill gas screening assessment was to identify whether landfill gas is present within the landfill material beneath the site, and what landfill gas management measures would need to be considered during the design of the Community Centre to protect future users of the facility.

In March 2020, T+T prepared a report for Council entitled Landfill Gas Risk Screening - Kyle Park (T+T ref 1003207.6000). This summary report presents an overview of the key aspects of the March 2020 report.

Assessment methodology

As there are no New Zealand-specific guidelines relating to the assessment and management of landfill gas risks for buildings, it is industry practice to adopt the guidelines set out in CIRIA (UK) document CIRIA C665 - Assessing risks posed by hazardous ground gases to buildings.

CIRIA 665 provides a risk screening methodology that identifies the landfill gas mitigation measures that may be required to reduce risk to future site users depending on the nature of future site use and the levels of gas detected. CIRIA 665 also provides guidance and how, when and how often landfill gas data should be collected.

T+T has completed landfill gas monitoring and risk screening in accordance with CIRIA C665. This included the installation of four landfill gas monitoring wells at the proposed Hornby Community Centre Site.





T+T collected landfill gas readings from the four monitoring wells on nine occasions between April and November 2019. As often as conditions allowed, monitoring was undertaken during atmospheric conditions which were most favourable for landfill gas generation and migration.

The data collected includes the levels of various gases and gas flow, that indicate the level of risk that landfill gas poses.

Findings

As was expected, landfill gases including methane, carbon dioxide and hydrogen sulphide were detected in the monitoring wells. However, as is typical of landfills of this age, the rate at which landfill gas is being generated in the landfill materials is low.

Overall, following the risk screening methodology in CIRIA C665, the site is assessed as being a low risk site.

For low risk sites, CIRIA C665 recommends that measures are incorporated into the design of the building to prevent gases accumulating beneath the building and entering and accumulating within the building. For low risk sites, gas control measures would typically include:

- A methane resistant membrane (similar to a damp-proof membrane) that acts as a barrier beneath the building;
- A venting layer beneath the building slab to prevent the accumulation of gas and that allows for gas to be vented to atmosphere in a controlled way; and
- Gas monitoring inside the building to confirm that the works are successful.

Similar measures have been implemented at numerous sites in Christchurch and throughout New Zealand. Further development of the LFG protection measures will occur as building design progresses.

