# Adaptive Management Plan – to address Bromley odour issues

Christchurch City Council facilities located at Metro Place, Bromley

## Overview

Bromley is a residential suburb that lies to the east of the city centre, mostly between Pages Road and the Avon-Heathcote Estuary/Ihutai and tidal mudflats. The suburb is home to many businesses and industrial facilities including:

- Council's wastewater treatment plant with adjoining oxidation ponds.
- A large industrial area with up to 60 odour producing businesses.
- Two Council-owned resource recovery facilities – the transfer station and the Organics Processing Plant (OPP) – both are located on Metro Place. The transfer station is contracted to be operated by EcoCentral Ltd (ECL) and the OPP is operated by Living Earth.

The issue of unidentified, offensive, chronic and acute odour in parts of Bromley has been a persistent and longstanding issue for the community. Over the years there has been a constant flow of complaints from residents about odour that have been investigated, but no one source identified or resolutions found. Environment Canterbury (ECan) and the Council also have a long history of working together to try and locate and identify the sources of odour in Bromley.

During the month of March 2020, ECan undertook a pilot study to determine sources of odour in the area. This included crowd sourcing data from the 'Smelt-It' application, stationing two officers at the OPP and engaging an independent odour assessor. Through this process it was determined by ECan that odour emanated from both the OPP and transfer station and was travelling beyond the site boundaries. This odour was considered offensive and objectionable by the ECan officers and the Bromley community.

Based on the information provided through the pilot study, Christchurch City Council along with its contractors ECL and Living Earth will develop a range of odour mitigation actions to address any offensive and objectionable odours discharged from the two facilities located on Metro Place. An independent review of the pilot study findings is underway, and this will help determine any operational changes needed at both facilities.

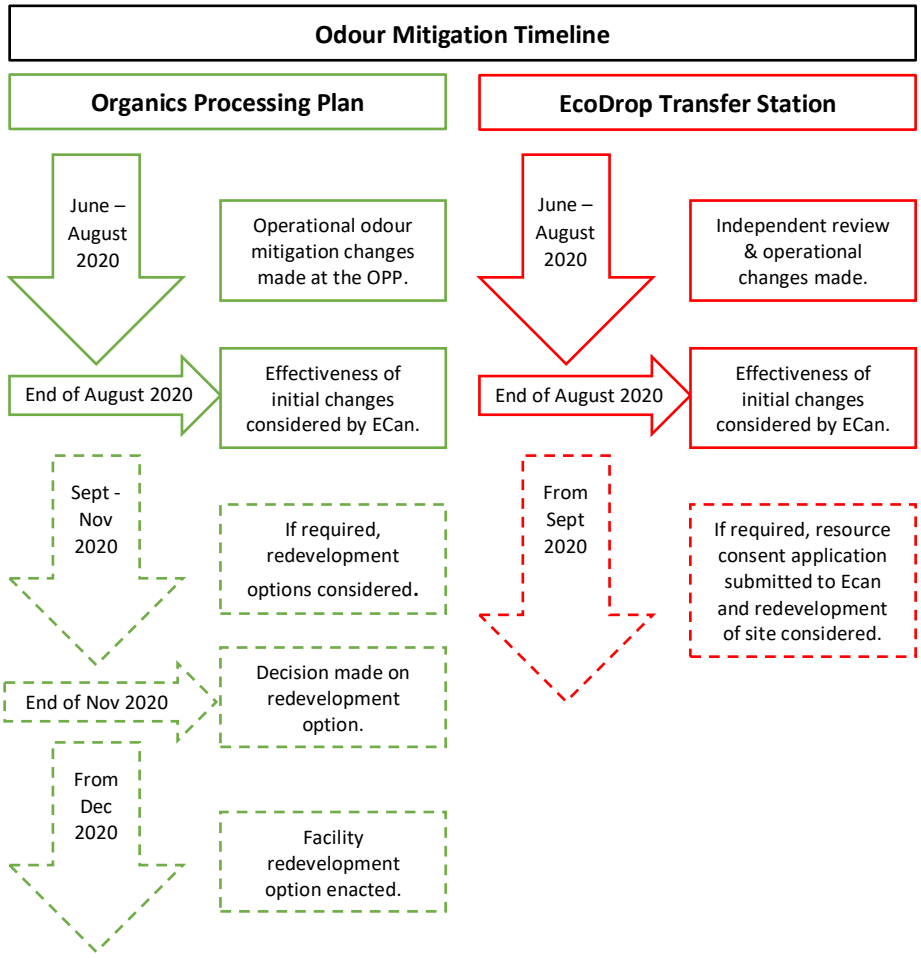
## Objectives

1. Understand the sources of odour at each site.
2. Reduce adverse environmental impacts from both Council-owned facilities.
3. Address community concerns and keep the community informed of key milestones and activities.

The options for mitigation at the two facilities fall into two categories – operational short-term changes and medium to long-term redevelopment options. All operational changes will be made by the end of August 2020. EcoCentral has also requested an independent review of ECan's pilot study data and onsite processes to assist with these changes. At this stage, the effectiveness of these changes will be considered by ECan and are based on an agreed monitoring programme. If the changes are unsuccessful, the Council will use the following three months to consider longer term options. An outcome will be presented to the Council by the end of November 2020. We understand that at this stage ECan will be seeking to review the transfer station's requirements to hold a consent.

Throughout this process the Council understand ECan will:

- Provide data from Smelt-It via email notifications (weekly).
- Provide full details of odour assessments of officers when requested.
- Provide any reporting under this project by independent odour experts or other specialist contractors.
- Engage in good faith negotiations on reasonable monitoring process.
- Allow the Council and its contractors to move through options outlined in this plan without taking enforcement action.




The Council and ECan will proactively share project-related reports with each other, and hold a regular monthly review on the progress on odour mitigation and monitoring. Both the Council and ECan will provide updates to the community following these meetings. They will take place on:

- 7 July 2020
- 4 August 2020
- 8 September 2020

The progress of the mitigation efforts at the EcoDrop transfer station will be reviewed by the Council and ECan on a fortnightly basis to determine whether it can continue operations under the permitted activity rules.

# Part A – Organics Processing Plant

Living Earth operate the Council-owned OPP under contract which expires in 2024. The site operates under a resource consent (CRC080301.1) issued by ECan for discharge to air, which expires in 2033.

The OPP processes Food Organics and Garden Organics (FOGO) from the city's kerbside collection, as well as commercial food waste, through 18 aerated tunnels to produce organic certified compost. The plant also composts green waste from the neighbouring Metro Place transfer station, river weed and commercial green waste in outdoor windrows. The organic oversize fractions that remain after final product screening is added back into the process to further breakdown. The consent allows for a total 120,000 tonnes of material to be processed annually, including 90,000 tonnes through the tunnels and 30,000 tonnes of green waste to be processed outdoors. The OPP accepted its first FOGO material in 2009 and the site has been used to compost green waste in outside windrows since 1994.

Tonnages for the 2018/19 financial year were:

| Incoming Material Source | Tonnes (FY18/19) |
|---|---|
| Council Kerbside FOGO | 51,706 |
| Green waste from Metro Place Transfer Station | 7,215 |
| Riverweed | 635 |
| Commercial food waste | 3,646 |
| Other green waste | 6,322 |

Site operations:

- Receive incoming FOGO material in processing hall.
- Receive incoming green waste outside.
- In-vessel composting of all FOGO (air is treated via a biofilter to mitigate odour).
- Windrowing of green waste.
- Maturation of in-vessel output product in outside windrows (includes turning).
- Screening of finished compost under cover (processing air treated by biofilter).
- Loading of finished compost for transport offsite.

ECan's onsite investigations have identified the following sources of odour onsite:

- Odour from the processing hall and biofilter is minimal.
- Onsite activity makes minimal difference to odour emissions.
- Maturing compost odour that is present beyond the site boundary.
- Increased odour reports from the Bromley residential area happen predominant with wind directions of between 45˚ to 90 ˚ (East to North-East) at a speed of one to five metres per second.

ECan will provide direct notification to Living Earth and the Council each time odour is substantiated beyond the site boundary. ECan will detail the time, date and place the odour was detected as well as the strength and hedonic tone of the odour.

An independent review of the Living Earth facility's Environmental Management Plan by a suitably qualified expert is being commissioned. A timeframe for this will be advised to ECan once the qualified person is engaged by Living Earth.

# Existing odour mitigation

Living Earth already operates best practice odour management and utilises mitigation methods, such as:

- Treating all air from processing hall, tunnels and screen shed through biofilters.
- Compost blend design to reduce risk of odour (Carbon:Nitrogen ratio, porosity, water content).
- Tunnel blending during in-vessel phase.
- Operational planning based on climactic conditions.
- High levels of staff training, including staff with 'calibrated nose' certification.
- Onsite management to reduce risk of compost becoming anaerobic.
- Boundary tree plantings.
- Boundary and portable misters including odour treatment.

The plant is operating as designed and proposed when resource consents where granted.

# Identified improvements

**Short-term**

- Odour treatment
    - This will involve changing the treatment used, as well as how and when it's applied.
    - Investment in the upgrade of existing treatment systems and the hire of additional misters.
- Monitoring and data collection
    - The Council has already invested in a series of electronic odour monitoring devices. These devices known as electronic noses, can be used to track odour generated across high-risk activities and measure odour levels.
    - The Council has been working with the service provider (Envirosuite) to develop a bespoke monitoring trial, which will include the three current fixed devices and a number of portable odour monitors to gather quantifiable data on odour from the site. The trial is for a two month duration, with option to extend if required. The trial will begin by the end of June 2020.
- Operational process
    - Further review and restrictions on the frequency and timing of various onsite activities such as windrow turning to mitigate odour.
- Odour characteristic adaptation
    - Review and amend the compost recipe – based on a closer examination of the product profile to achieve a more favourable odour tone.

**Medium to long-term**

- Plant upgrade
    - Upgrading all, or some, tunnels to allow for higher-aeration in-vessel processing. This has the effect of increasing the stability of the compost at the end of the in-vessel processing time.
- Planting and raised bunds, especially offsite along the Dyers Road boundary
    - Additional planting on the boundary, as well as in locations identified in red below, could assist dispersing wind and odour from residential areas. As a mitigation treatment, these plantings would take a long time to mature and are not guaranteed to be successful. The farmland to the south of the OPP is Council-owned and leased by the Parks and Reserves Team for cattle grazing.


- Review options considered in a 2015 report into alternative approaches, below. *(Note: Included cost estimates are outdated and further potential redevelopment options may now be available to the Council)*:

| Option | CAPEX | OPEX per year |
|---|---|---|
| Cover larger and higher risk KSO windrows with a shelter | $5,400,000 | $320,000 |
| Cover larger and higher risk KSO windrows with a GORE® cover | $10,600,000 | $90,000 |
| KSO composted in tunnels and matured at a new site | $12,600,000 | $5,000,000 |
| Increase tunnel capacity to eliminate KSO windrows | $49,500,000 | $30,000 |
| Relocate facility to a new site | $53,000,000 | $1,700,000 |
| Shut down and dispose to landfill | $300,000 | $6,300,000 |

**Proposed approach**
Short-term actions will help us develop a more detailed understanding of the process, and which processes are emitting odours. These actions are unlikely to significantly reduce the total odour emitted, although they may be effective at reducing the unpleasantness of the odour produced.

If operational changes prove insufficient, the Council will review options for redevelopment of the OPP, such as converting the existing tunnels to increase aeration.

Increased plantings, especially offsite along Dyers Road, could also reduce the impacts of odour on the residential areas. While plantings can take a long time to establish, they could be beneficial in conjunction with other changes.

## Part B – Transfer Station

EcoCentral operate the EcoDrop transfer station and recycling centre. The site is Council-owned and contracted to ECL under contract which expires in 2024. The site operates as a permitted activity under existing use rights in the regional plan. It should not produce offensive and objectionable odour beyond the site boundary.

The operation includes the receipt and consolidation of municipal solid waste, commercial waste, hardfill, asbestos, hazardous substances, reusable materials and recycling.

The site receives approximately 40,000 tonnes of refuse per annum.

Site operations:

- Receive incoming waste material (tipped at pit edge).
- Consolidation of waste on tip floor prior to compaction and transport to landfill.
- Collection and aggregation of recyclable and reusable items and hazardous substances at the recycling centre.
- Collection and aggregation of asbestos and divertible waste materials including scrap metal plasterboard and hardfill.
- Compaction of waste into approved transport containers which are transported to regional landfill.

Environment Canterbury's onsite investigation have identified the following sources of odour onsite:

- Odour was reported as predominantly a distinctly rubbish-type smell.
- Increased odour reports from the Bromley residential area happen predominantly with wind directions of between 45˚ to 90 ˚ (East to North-East) at a speed of one to five metres per second.
- Odour was more offensive when mixed with odour from the OPP.
- Potential correlation with kerbside collection days and increased complaints, with higher Smelt-It reports the day following the collection days in the area.

ECan will provide direct notification to ECL and the Council each time odour is substantiated beyond the site boundary. ECan will detail the time, date, place, the odour was detected as well as the strength and unpleasantness of the odour.

## Existing odour mitigation

- Incoming refuse is transferred into sealed vessels via the site compactor to reduce accumulation of waste on the pit floor.
- Waste is cleared from the pit floor as quickly as possible and contained for transport.
- The refuse pit building is enclosed on the prevailing wind side to minimise odour being carried by the wind.

## Identified improvements

**Short-term**

- Independent expert review of ECan data and onsite activities in order to provide further recommendations on odour management.
- Reduced accumulation of waste.
    - Clearing waste from the pit floor into sealed compactors more quickly.
    - Any refuse with a noticeable odour is prioritised for compaction into sealed vessels.
    - Ensuring all waste is cleared each evening.
- Improved monitoring.
    - The transfer station may utilise the Envirosuite trial outlined for the OPP or other systems as recommended by expert assessment.

**Medium to long-term**

- Boundary or site misters and odour suppression.
    - These are already in place on the boundary of the OPP, but could be extended to include the transfer station boundary.
- Plantings and raised bund for screening and odour dispersion.
    - Further to the off-site plantings outlined for the OPP, the transfer station could also increase plantings on its boundary. Plantings would particularly work on the western edge of the site, as they were reduced when Dyers Road was widened.
- Enclosing the tipping face.
- Plant upgrades including compactor upgrades for faster loading of product into enclosed containers.
- Site reconfiguration considerations.

**Proposed approach**

The city has three EcoDrop facilities accepting very similar material to the Metro Place facility. The site at Styx Mill in the north of the city is also located in close proximity to residential properties, but does not receive high levels of odour complaints. This provides a useful framework to follow to mitigate odour at the Metro Place facility. It also provides us with confidence that the techniques used at Styx Mill may also be effective at Metro Place. Predominantly, this is to ensure material is quickly cleared into compactors as well as mature boundary plantings.

An independent review will also be completed of ECan's pilot study data and onsite processes to assist with this process.

Boundary misters and odour suppressants, as well as increased monitoring through Envirosuite, may assist mitigating odours, especially while new plantings are maturing.

Site development and upgrades will produce the most significant results in respect to minimising odour, but may not be required if the site can be improved to a similar level as Styx Mill.

# Investment case

The investment decisions required to address the potential options are critical to the success of this adaptive management plan. To ensure chosen mitigation treatments are both effective and achievable, further investigation into each option needs to be undertaken. Investment decisions are to be based on verifiable data and demonstrable outputs in managing offensive odour.

Next steps are as follows:-

- Development of an agreed baseline with ECan
    - Improvements need to be measurable and attainable
    - Understanding ECan's expectations is central to moving forward
- Improved monitoring and data analysis
    - Based on agreed methodology with ECan, we can invest wisely in monitoring equipment and analysis software e.g. Envirosuite
- Short- term operational changes
    - Our contractors will be able to implement operational changes with their efficacy tested through the agreed methodology
- Plantings
    - Improved plantings should be explored for both sites as well as new offsite options

- Option feasibility study
    - If required redevelopment options will need to be assessed for both sites including costing, funding option and potential contract extensions.

# Summary

We are committed to resolving the odour issues identified in Environment Canterbury's recent pilot study, acknowledging the need to include the observational data from the pilot study as a benchmark for determining the effectiveness of odour mitigation practices across each site.

The Council will ensure the Bromley community is updated throughout implementation of this plan. Working with our contractors, we aim to address the concerns raised in the ECan pilot study and demonstrate best practice odour management to the Bromley community.

We will fast-track the development of above actions to form a robust and effective management process, working with ECan to ensure compliance across the two sites.

| Acceptance | | | |
|---|---|---|---|
| For and on behalf of Environment Canterbury:<br>  <br>(Signature) | | For and on behalf of Christchurch City Council:<br>  | |
| Name: | Paul Hulse | Name: | Helen Beaumont |
| Position: | Manager – Zone Delivery | Position: | Head of Three Waters and Waste |
| Date: | 22 June 2020 | Date: | 22 June 2020 |