



SITE CAPACITY ASSESSMENT

Environmental and sustainability solutions provided to
BIRCH AIRFIELD COMPOSTING SERVICES LIMITED

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1.0 INTRODUCTION

Birch Airfield Composting Services Ltd (BACS) currently operate a green waste composting facility, where the treatment is via Open Windrow Composting, with a permitted throughput of 75,000 tonnes per year. BACS are seeking consent to vary their bespoke environmental permit to increase the throughput of material at the site from 75,000 tonnes up to 100,000 tonnes. In order to achieve this, the site boundary shall be extended to the southwest of the existing site, on which additional windrows will be located.

Table 1 - Annual receipt per waste type and stage

Process Type	Stage	Annual Receipt
Open Windrow Composting	Green waste sanitisation	100,000 tpa
	Green waste maturation	

The annual receipt limit for the external composting pad applies to the total material processed irrespective of treatment technique i.e. any material processed in open windrows will be limited to 100,000 tonnes per annum.

1.1 Demonstrating Operational Capacity

This document sets out the site operational capacity and infrastructure in order to demonstrate adequate capacity to process the proposed waste types via the proposed methods at the facility. This will include an assessment of the capacity of the external composting pad for the processing of all material in open windrows.

2.0 OWC DESIGN AND ASSESSMENT

The following section outlines the designed capacity of the open windrow composting (OWC) system against the proposed annual tonnage allowance for material reception and treatment.

2.1 Waste Reception

All incoming vehicles will enter the via the existing waste facility site entrance and to the new weighbridge which is situated at the entrance to the site. The site can receive waste Monday to Saturday. This provides 280 days of waste receipt (excluding Sundays, Bank Holidays and half days on Saturday). However, given that the composting process is continual, material can be held in process for 365 days per annum.

2.2 OWC Design Capacity

Green waste that is received on site is formed into windrows for sanitisation and maturation. The site has been sized to treat the proposed annual throughput of material. The OWC area is split into two areas both using an impermeable concrete processing pad with sealed drainage system.

The first is on the southern side of the existing site, which will become the central portion of the site following the expansion and the second being the extended area to the southwest of the existing site. The active OWC area on the existing site only takes up a portion of the existing site area and has an approximate length of 180m and width of 50m. There will be suitable gaps between windrows to ensure space for a defined path for turning/monitoring and litter picking. Using a basal windrow width of 5m, it is calculated that 34 windrows can fit on the pad.

The new OWC area in the extended section of the site has an area equal to that of the OWC area on the existing site i.e. 180m long by 50m wide. As such, with suitable gaps between windrows to ensure space for a defined path for turning/monitoring and litter picking and using a basal windrow width of 5m, another 34 windrows can fit on this pad.

The treatment capacity of the OWC areas excludes the areas of the wider site dedicated for material reception, shredding and screening and therefore represents the realistic working capacity.

The sanitisation and maturation process of green waste occurs over a period of 8 weeks or 56 days. Given that the composting process will be operational 365 days per year, there can be a maximum of 6.5 batches processed through each windrow per year.

The capacity assessment assumes a straight-line throughput of material.

2.3 Existing Pad Windrows Capacity Assessment

A calculation is provided below demonstrating the total annual capacity of the existing pad used on site for composting in tonnes of material per annum.

1. Windrow Volume: Width (5m) * Height (3m) * Length (50m) * Trapezoidal conversion (0.67) = **503m³**.
2. Number of windrows: **34**
3. Total Windrow Volume: No. of windrows (34) * Windrow volume (503m³) = **17,085m³**.
4. Daily Volume: Total windrow volume (17,085m³) / Composting period (56 days) = **305m³**.
5. Annual Capacity: Daily volume (305m³) * Waste density factor (0.6) * Operational days per annum (365) = **c. 66,815 tonnes**

The overall assessment therefore identifies that this sized windrow on this area of the composting pad is designed to be able to treat a straight-line throughput at maximum capacity throughout a given year of c. **66,815 tpa**. This figure does also not allow for mass reduction from the processing of waste through the OWC or for seasonal variation.

2.4 Extended Pad Windrows Capacity Assessment

A calculation is provided below demonstrating the total annual capacity of the existing pad used on site for composting in tonnes of material per annum.

1. Windrow Volume: Width (5m) * Height (3m) * Length (50m) * Trapezoidal conversion (0.67) = **503m³**.
2. Number of windrows: **34**
3. Total Windrow Volume: No. of windrows (34) * Windrow volume (503m³) = **17,085m³**.
4. Daily Volume: Total windrow volume (17,085m³) / Composting period (56 days) = **305m³**.
5. Annual Capacity: Daily volume (305m³) * Waste density factor (0.6) * Operational days per annum (365) = **c. 66,815 tonnes**

The overall assessment therefore identifies that this sized windrow on this area of the composting pad is designed to be able to treat a straight-line throughput at maximum capacity

throughout a given year of c. **66,815 tpa**. This figure does also not allow for mass reduction from the processing of waste through the OWC or for seasonal variation.

2.5 Total Open Windrow Treatment Capacity

The combined open windrows have a straight-line treatment capacity of approximately **133,629 tonnes per annum**. This demonstrates that the site has sufficient capacity to process the 100,000 tonnes of waste per annum that is being requested as part of this permit variation.

3.0 STORAGE AT ANY ONE TIME

The total amount of waste to be held on site at any one time is outlined below. This includes waste materials during the active composting phase only, including sanitisation and maturation. The processing throughput (tonnes per day) has been calculated for the shortest possible sequence of treatment techniques, i.e. 56 days for open windrow sanitisation/maturation.

Table 2 - Biological Treatment Calculation

Process Type	Process Stage Tonnage	Process Length (days)	Treatment Capacity (t/day)
Existing area OWC Sanitisation/Maturation – 50m long	10,251	56	183
Extended area OWC Sanitisation/Maturation – 50m long	10,251	56	183

Table 2 demonstrates that the facility has a capacity to treat more than 75 tonnes per day which is the threshold for treatment under the Industrial Emissions Directive above which a treatment facility is classified as an Installation.

3.1 Ancillary Storage

In addition to the materials that are actively being treated on site at any one time, there are ancillary storage areas on the site for materials awaiting processing or preparation for dispatch to end markets. These are identified in the table below.

Table 3 - Ancillary Storage Capacities

Storage Area	Storage Capacity (tonnes)	Maximum Duration (Days)
Waste Reception	1,000	2
Shredding	500	2
Screening	1,500	5
Product	5,000	365
Amendment Material	500	182
Waste Soils	10,000	365
Total	18,500	N/A

3.2 Operational Management

The increased composting capacity and extension to the site boundary is the core update to the site and has been accounted for in the site's Environmental Management System. The Standard Operating Procedures (SOPs) have also been updated to account for the increased capacity and extension to site boundaries. The operational management of the site and critical controls that are embedded into the Odour Management Plan are based on industry best practice through the PAS100/QP production process. These management practices will remain. The critical limits are detailed as per the SOPs and pile dimensions and spacing are consistent with current practices. As demonstrated above, there is sufficient spare capacity within the system to enable the treatment of the throughput without amending current and industry best practice operational techniques.