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Site Capacity Assessment

v1.0

Environmental and sustainability solutions provided to
Newbourne Farm Composting Limited



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REVISION LOG

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1.0 INTRODUCTION

Newbourne Farm Composting Limited (hereon referred to as 'Newbourne Farm') currently operate a source separated green waste composting facility, where treatment is via a continuous turned block with a permitted throughput of 25,000 tonnes per annum. Newbourne Farm are seeking consent to vary their current bespoke installation environmental permit to increase the throughput of the site from 25,000 tonnes per annum to 40,000 tonnes per annum and to allow for the acceptance onto site and subsequent physical treatment of inert soils.

Table 1 – Annual Receipt per Waste Type and Stage.

Process Type	Stage	Annual Receipt
Continuous Turned Block	Green Waste Sanitisation	40,000 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 a continuous turned block will be limited to 40,000 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 the continuous turned block.

2.0 CONTINUOUS TURNED BLOCK DESIGN AND ASSESSMENT

The following section outlines the designed capacity of the continuous turned block system against the proposed annual tonnage allowance for material reception and treatment.

2.1 Waste Reception

All incoming vehicles will enter the via the waste facility site entrance and to the weighbridge which is situated at the entrance to the site. The site can receive waste Monday to Sunday. This provides 365 days of waste receipt. Given that the composting process is continual, material can also be held in process for 365 days per annum.

2.2 Continuous Turned Block Design Capacity

Green waste that is received on site is formed into batches on the continuous turned block for sanitisation and maturation. The site has been sized to treat the proposed annual throughput of material. The continuous turned block is situated on an impermeable concrete processing pad with a sealed drainage system.

The active continuous turned block area only takes up a portion of the site and has an approximate length of 50m and width of 48m. Each batch is approximately 50m in length, 12m in width and 5m in height, therefore it is calculated that 4 batches can fit on the pad.

The treatment capacity of the continuous turning block area excludes the areas of the wider site dedicated for material reception, shredding, soil blending and screening and therefore represents the realistic working capacity. The sanitisation and maturation process of green waste occurs over a period of 9 weeks or 63 days. Given that the composting process will be operational 365 days per year, there can be a maximum of 5.7 batches processed per year.

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

2.3 Continuous Turned Block Capacity Assessment

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

1. Batch Volume: Width (12m) * Height (5m) * Length (50m) = **3,000m³**.
2. Number of batches: 4
3. Total Block Volume: No. of batches (4) * Batch volume (3,000m³) = **12,000m³**.
4. Daily Volume: Total windrow volume (12,000m³) / Composting period (63 days) = **190m³**.
5. Annual Capacity: Daily volume (190m³) * Waste density factor (0.6) * Operational days per annum (365) = **c. 41,610 tonnes**

The overall assessment therefore identifies that this sized block 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. **41,610 tpa**. This figure does also not allow for mass reduction from the processing of waste through the continuous turned block or for seasonal variation.

This demonstrates that the site has sufficient capacity to process the 40,000 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 onsite 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. 63 days for continuous turned block sanitisation/maturation.

Table 2 - Biological Treatment Calculation

Process Type	Process Stage Tonnage	Process Length (Days)	Treatment Capacity (t/day)
Continuous Turned Block	7,200	63	114

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.

4.0 CAPACITY CONCLUSIONS

The theoretical maximum capacities of the composting process on site are as follows:

- Continuous Turned Block: **41,610tpa**

Newbourne Farm proposes a maximum throughput of green waste of 40,000 tonnes per annum. Therefore, the composting system has sufficient capacity to process the proposed annual tonnages and, it can be determined that Newbourne Farm has a sufficient maximum theoretical capacity on site to process the proposed capacity increase as per the permit variation.