Green Tail

Condensed Project Description | July 2025

Executive Summary

Green Tail is a UK-based business project. The project is well underway with the following progress made by the founder, Andrii and his core team:

1. Invested $150-200K in initial experiments to achieve a TRL 3/4 for our proposed manure processing methods.
2. Submitted documentation for an international patent to secure our technology and method.
3. Built a foundational business and financial plan for Stage I intending to commission the manure processing commercial plant in Q1 2030.

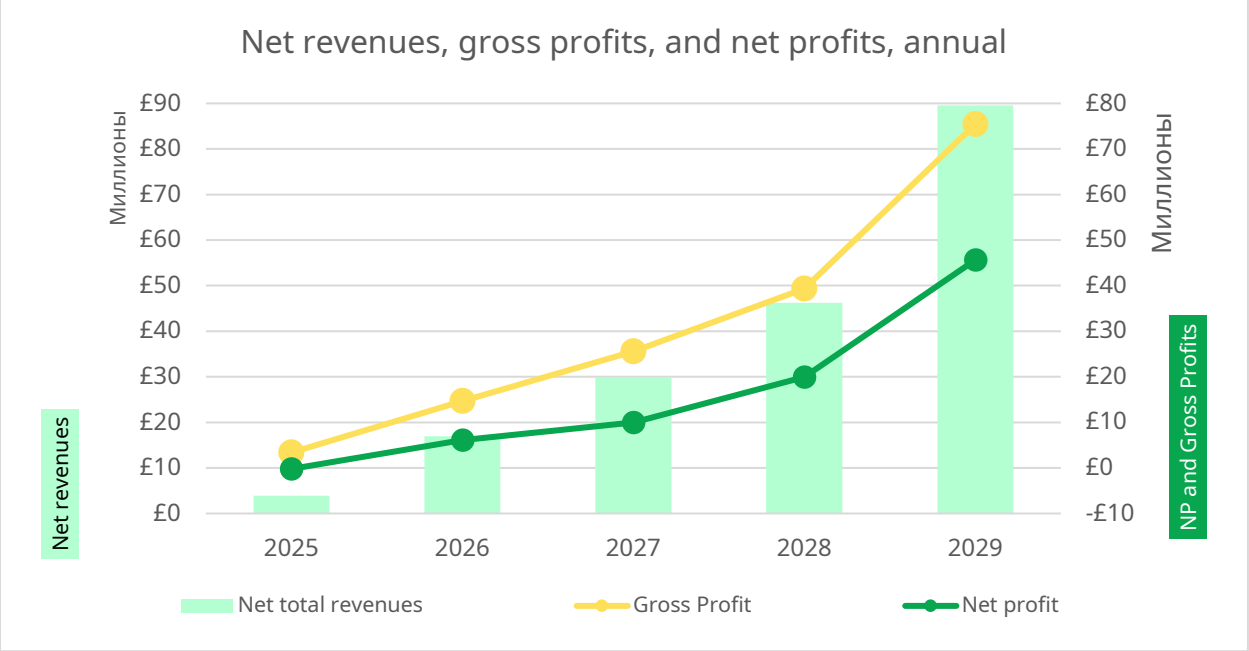
Andrii, the founder of Green Tail, brings over 30 years of expertise in agricultural technology, innovation, and entrepreneurship. With a background in agronomy and agricultural engineering, he has developed several groundbreaking technologies and tens of customs equipment units to optimise agricultural processes.

In this first Stage of the project, we are looking to raise £2.1 million, to:

1. Set up a PoC plant and start testing manure processing at farms and in a fixed setup.
2. Start preparation for the construction of the manure processing commercial plant.

Our manure processing operation will produce 4 sought-after products: potable water, organic fertiliser components, biogas and crystalline carbon (in the form of graphite). All these products will play an important role in the electrification of our economies, ensuring we will reach a point of carbon neutrality.

The expected financial performance in the horizon 2025-2029 can be observed in the chart below. We expect 2026 to be our first profitable year. An additional funding round is likely to occur sometime in 2027, for Stage II of the project.



Assuming an EV/EBITDA valuation of 12x, the company's value will be about £738 million at the end of 2029. We welcome any opportunity to discuss this further.

Project Overview

Opportunity

Green Tail has a long-term opportunity to become part of the global effort to decrease greenhouse gas emissions by converting manure into useful products.

In 2023, agricultural processes like crop and livestock production accounted for around 11% of global GHG[1] emissions. The agriculture industry is also the largest human-made source of methane (CH_4), a highly potent greenhouse gas, compared to carbon dioxide (CO_2)[2]. Only energy (20%) and industry (12%) produce more GHG than agriculture.

Our starting market, the United Kingdom is a big contributor to GHG emissions from agriculture. In 2021, the country emitted an estimated 47.9 $MtCO_2e$[3], out of the total 6.5 $GtCO_2e$ emitted worldwide. Methane represents 58% of total emissions – with an estimated 27.9 $MtCO_2e$. In a 2023 farm practices survey conducted by the Department for Environment, Food and Rural Affairs, more than 80% of farmers surveyed said they want or are taking action to reduce GHG emissions by recycling waste materials from the farm[4]. Green Tail wants to transform manure (waste material) into opportunity by producing a range of useful products: drinking water, organic fertilisers, green electricity and crystalline carbon. Based on the most recent data available, the UK produces at least 140 million tonnes of livestock manure per year with ~85% of that coming from cattle[5].

Our goal is to open a manure processing plant that can convert manure into useful products. However, this will require significant resources: capital and time.

Planned Products

As outputs of our manure conversion operations:

1. We will produce **potable water** by extracting and sterilising the moisture from livestock manure.
2. We will produce compounds for **organic fertilisers**, which are far superior and more sustainable than chemical fertilisers.
3. We will eliminate the methane emissions released from the manure during storage and fermentation to **produce biogas** and generate electricity for our plant, with the remaining electricity fed back into the grid.
4. We will produce **crystalline carbon** in the form of graphite. Graphite is used in many industries including battery production, electronics, steel production, and energy generation including nuclear and solar.

We believe our most evident competitive advantage will come from our organic fertiliser operation. At Green Tail, we are proud to offer an innovative organic fertiliser that represents a significant step forward in sustainable agriculture. Unlike traditional organic fertilisers, our product is available in water-soluble, granular, and liquid forms, enabling precise application methods such as fertigation and drip irrigation. This ensures

[1] Green House Gas
[2] Statista
[3] Metric tons of carbon dioxide equivalent
[4] gov.uk
[5] ResearchGate

efficient nutrient delivery, optimal absorption by plants, and reduced waste, ultimately boosting crop yields while safeguarding the environment.

What sets our fertiliser apart is its customisable formulations, which we tailor to meet the specific needs of different crops, soil conditions, and growth stages. By addressing these unique agricultural challenges, we help promote healthy plant development, maximise productivity, and increase profitability for farmers. Additionally, our production process achieves zero emissions, eliminating the greenhouse gases typically associated with manure decomposition and conventional fertiliser manufacturing[6]. This makes our fertiliser a cornerstone in the journey toward a decarbonised food value chain, perfectly aligned with global sustainability goals.

Our fertiliser also enhances crop quality by delivering essential macronutrients like nitrogen, phosphorus, and potassium, alongside micronutrients such as calcium, magnesium, zinc, and others. These nutrients improve the nutritional content of food while enhancing the appearance, shelf life, and resilience of crops against stress, pests, and diseases. By preventing nutrient runoff and nurturing long-term soil fertility, we support biodiversity and sustainable farming practices, ensuring the health of agricultural ecosystems.

We believe our organic fertiliser will stand out in the global market by offering a unique combination of precision, environmental sustainability, and adaptability. Its versatility will bridge the gap between traditional organic and synthetic fertilisers, making it a transformative solution for modern farming.

Technologies and Methods Used

At present, we believe the technologies and methods used to process manure are at TRL[7] 3 and 4. This means we have completed an experimental proof of concepts for some processes while for others, we have validated the technology in a laboratory. The next steps are:

- Validate the technology in a local environment (TRL 4), at farms/pyrolysis, as part of the PoC plant. This part is about manure processing, extraction and fractionation testing, and tests with dry residue to produce biogas and crystalline carbon.
- Validate the technology in a relevant environment (TRL 5), this is largely represented by the pilot with selected European farms to test our organic fertilisers.
- Demonstrate technology in a relevant environment (TRL 6) showing we can produce adequate potable water, organic fertiliser components, biogas and crystalline carbon in the form of graphite.
- The last three stages of TRL, 7 through 9, will be achieved once we build the commercial plant. Then, we will be able to demonstrate the system in an operational environment, qualify and complete it, and demonstrate its viability in an operational environment.

The big steps in our patented innovative method of manure processing are:

1. The manure is first processed to remove moisture.
2. The outputs are two parts: one **liquid** and one **solid**.
3. The liquid part takes the route to potable water. The process includes filtering, sterilisation, purification and reverse osmosis.
4. The solid part takes the route to organic fertiliser components, biogas and crystalline carbon. The process of obtaining organic fertiliser components includes crushing, supercritical CO_2 extraction, mixing, fractionation and then evaporation. A residual substance is also produced from this process. This residue is used to obtain biogas and crystalline carbon through pyrolysis.

[6] Further testing in the PoC Plant will confirm our method
[7] Technology readiness levels

Planned Operations

The PoC Plant

The plant will be modular, meaning only the equipment needed to produce extracts will be permanently installed on the site. The rest of the equipment will be mounted on semi-trailers so parts of the process – moisture removal, sludge removal, and obtaining concentrates post-osmosis will be carried out at piloted farms. The outputs obtained from piloted farms, namely 1) dry residue and 2) salt concentrate will be brought back to the plant to continue the conversion process in crystalline carbon and organic fertiliser components.

An important part of the proof-of-concept plant is the actual tests. The main activities here are:

1. Testing multiple **types of manure**, at least 5 (for example, cow, pig, birds, sheep) – which will take 6-9 months. These tests will be carried out at different pressures and temperatures.

2. Testing **manure processing** into potable water (extracted during moisture removal) and organic fertiliser components (salts).

3. **Extraction and fractionation testing** of the outputs from 2. to produce organic fertilisers for testing at 4., and the residue substance to be pyrolysed at 5.

4. Extensive testing with **pilot farms** in the UK and Europe on the topic of **organic fertilisers**. Several farms in different micro-climates and crops will be selected and reached out to. Farmers who use drip irrigation and the ones to grow their crops in greenhouses are our best match.

5. Experiments with **biogas and graphite production** at pyrolysis plants – these tests on dry residue will be carried out with the equipment manufacturers, at their locations. Quantitative and quantitative analysis of the components/mixture of gases obtained during pyrolysis is required to determine the purity of crystalline carbon and the caloric value of the biogas.

6. The results of 1. – 5. will provide the necessary **information required** to build our commercial plant, including qualitative and quantitative indicators of final products, final investment amounts, profitability and cash flow predictions, and even utilisation of resources and the factory itself.

Another important part of the proof-of-concept plant is equipment selection. We estimate this part will take 3-6 months and will be carried out in preparation for manure and manure processing testing, as well as extraction and product testing.

Considering Andrii Halushko's extensive experience in this space, the PoC plant components will be put together by him and two assisting engineers. The planned budget for the plant can be observed in the project budget section.

The Commercial Plant

The road to building a commercial plant starts with the proof-of-concept plant. This is a prerequisite to accurately determine 1) the expected key performance indicators of the commercial plant and 2) the design and final investment costs of the commercial plant.

The main steps we need to cover before we can start building the commercial plant are:

1. Run tests and experiments on manure processing to determine the quantitative and qualitative properties of planned products.
2. Run the pilot with selected farms to test the effectiveness and viability of the organic fertilisers we can produce from manure processing.
3. Confirm extraction and manufacturing of end-consumer products are efficient enough.

The commercial plant will be built closer to raw materials - livestock manure, somewhere in the rural UK. Several locations will be researched in due time. Once we have the definitive results from steps 1-3. from above, we can produce a design brief for a construction company.

By producing biogas from manure processing, we will be able to power at least part of the commercial plant, which will allow us to decrease our operational costs.

We have planned an approximate budget for the construction of the commercial plant – intending to process 2,000 tonnes of manure per day. This budget will be more accurate once we complete our PoC plant activities and milestones. The goal is to start commercialising products from processed manure in Q1 or 2030.

From a human capital perspective, besides the current team, we will need to expand our team. Below is the planned hiring plan, covering the project until the commercial plant is up and running:

1. 1 FTE organic chemist.
2. 1 FTE cosmetic pharmacist.
3. 2-4 FTE sales managers/business developers.
4. 2-4 FTE engineers.
5. FTEs[8] equipment operators.
6. FTEs[9] laboratory/manufacturing technicians.
7. 1 FTE operations manager.
8. Additional support staff for functions like marketing, accounting and taxes, and legal counselling.

The exact number of FTEs will be revised once we have the results of the PoC plant phase. **The exact budget required to build and commission the manure processing plant will be calculated in the 2nd round of fundraising.**

Supplier Network

The supplier network is a big component of our plan because of its importance to our business model. The founder's experience in agriculture plays a key role in deciding what suppliers to buy the necessary equipment from. The list below (not exhaustive) shows the research and/or contact we've made with several suppliers of equipment:

- Bauer, for moisture removal equipment.
- Farmet, also for moisture removal equipment.
- Alfa Laval, for sterilisation equipment.
- Azud, for filtration and sludge removal equipment.
- Liqtech, also for fine filtration equipment/components.
- Custom equipment for reverse osmosis.

[8] Number increases non-linearly as production ramps up
[9] Number increases non-linearly as production ramps up

- Mingyi Technology Co Limited, for crushing, supercritical CO2 extraction, mixing, fractionation, and evaporation of the solid part.
- Careddi, also for crushing, supercritical CO2 extraction, mixing, fractionation, and evaporation of the solid part.
- Custom equipment for pyrolysis, supplier to be determined.

Market Summary

Market Numbers

The following global numbers that speak volumes about the demand for our products, stand out:

For **drinking water**:

- The global urban population facing water scarcity is projected to increase from 933 million in 2016 to 2 billion in 2050[10].
- By 2025, 1.8 billion people will face what the Food and Agriculture Organization calls "absolute water scarcity"[11].

For **organic fertilisers**:

- The global market value of organic fertilisers stood at $8.3 billion in 2020, roughly $3 billion more than in 2015. The forecasted value of organic fertilisers worldwide will reach some $15.8 billion by 2026[12].
- The overall fertiliser market value, including chemicals, was estimated at $193 billion in 2021 and is expected to grow to $241 billion by 2030[13].
- The trend is that organic fertiliser will grow faster than chemical fertiliser as the agriculture sector aims to become more sustainable and environmentally friendly.

For **biogas**[14]:

- The global demand for biogas is forecasted to grow from 55 Mtoe[15] in 2020, to 192 Mtoe in 2030 and 325 Mtoe in 2040, signalling a long-term growth trend[16].
- Assuming a reduced gas demand, biogases will be able to cover up to 61% of gas demand in Europe, by 2050[17].

For **crystalline carbon**, in the form of graphite, the market potential is enormous:

- The 2022 supply of graphite was an estimated 1,110,000 tonnes. The 2035 forecasted demand for graphite is 7,210,000 tonnes[18].

[10] Nature
[11] UN Environment Programme
[12] Statista
[13] Statista
[14] experiments will determine what kind of biogas will be produced in our manure processing plant.
[15] million tonnes of oil equivalent.
[16] IEA, in the Sustainable Development Scenario
[17] EBA
[18] International Graphite

- The world graphite market is expected to grow to $21.6 billion by 2027[19].

Target Markets and Demand

Our core markets for products made from manure conversion are the:

- Potable water – the UK.
- Electricity – the UK.
- Organic fertilisers – global, focused on the most convenient and lucrative markets.
- Graphite – global, focused on the most convenient and lucrative markets.

Our core markets for CBD products are mostly Western countries: the UK, EU, US, Canada, Japan, Australia and New Zealand.

We believe the demand for products made by our manure conversion plant will be insatiable in the UK, among other markets. The table below shows key data supporting our hypothesis:

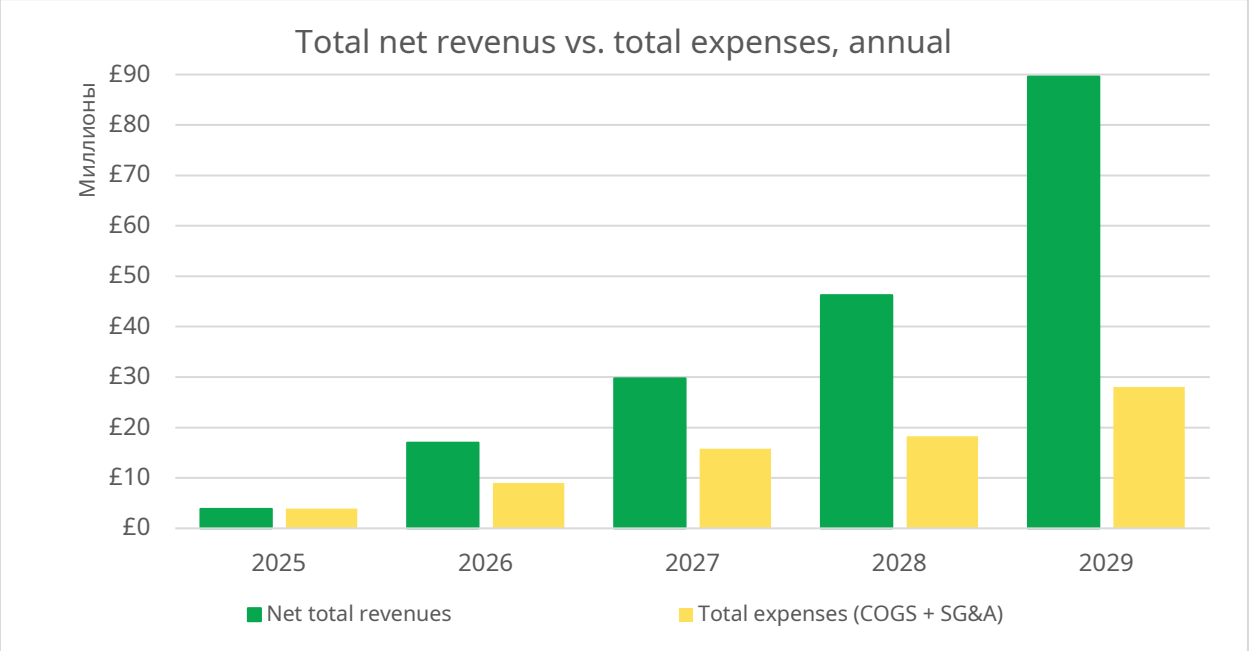
Product	Key data points for the UK	Demand for the UK
Drinking water[20]	5 billion litres of water per day	A gap of 5 billion litres of water per day between sustainable water supplies available and expected demand, by 2050
Fertilisers[21]	1,451 tonnes of chemical fertilisers	The UK consumed 1,451 tonnes of chemical fertilisers in 2021
	152% price increase	The price of British nitrogen-based fertilisers (ammonium nitrate)[22] increased by 152% between May 2021 and 2022
	97% of land uses	As of 2021, conventional practices that tend to use artificial fertilisers accounted for 97% of UK agricultural land uses
Methane (biogas)[23]	32%	32% of the UK's electricity generation mix is attributed to natural gas
		Biogas is not a pure green source of energy but will contribute significantly to our transition to a carbon-neutral energy mix.

[19] World Bank
[20] gov.uk
[21] UK Parliament Post
[22] Chemical
[23] NESO

Crystalline carbon (graphite)[24] [25]	700,000 tonnes 1,400% increase	Demand for graphite in battery manufacturing will reach 700,000 tones in 2025, up from 133,000 in 2018 Battery sector demand for raw material graphite to rise by more than 1,400% between 2020 and 2050

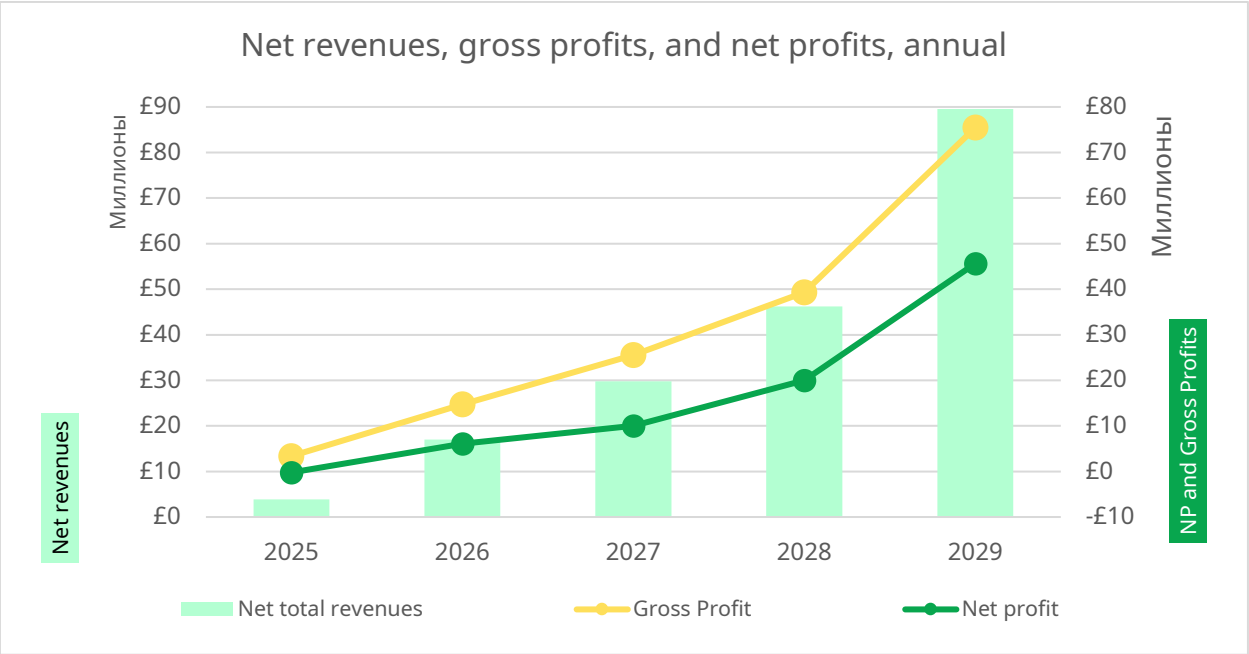
Projected Financial Performance

We expect fast-paced sales growth starting in 2026. Sales are forecasted to jump from £4.2 million in 2025 to £18.5 million in 2026. The forecast sales for FY 2029 are £93.8 million – roughly a 1% market share of the expected market value in our target markets. The net revenues vs total expenses forecast can be observed in the chart below:

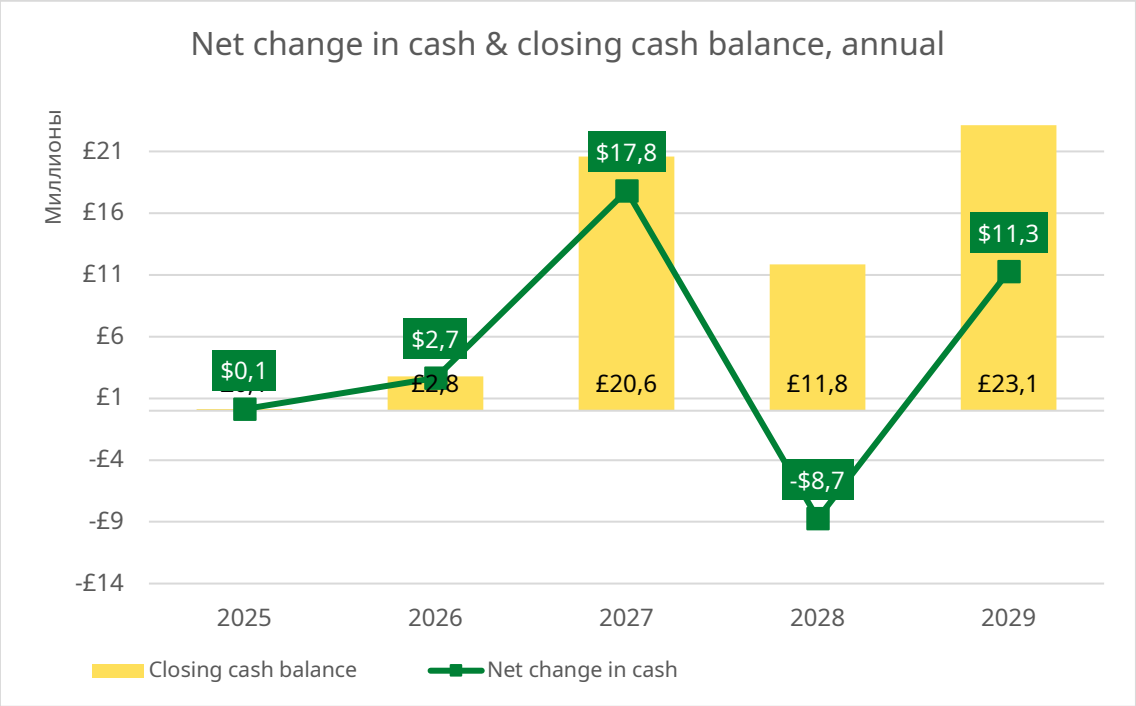


We forecast 2026 to be the first profitable year with £6.1 million in net profits. For 2026-29, the average net profit margin will hover around 41% annually. The expected retained earnings for 2025-29 are £81.5 million, money that can be used to reinvest or pay dividends to shareholders. The forecasted annual gross and net profits can be observed in the chart below:

[24] Statista
[25] International Graphite



From a cash perspective, assuming a capital injection of £2.1 million in 2025 and another £20 million in 2027, the forecasted closing cash balance on 12/31/2029 is £23.1 million. The exact amount to be raised in 2027 will be determined later when we will calculate the total budget required to construct and commission the manure-processing commercial plant. The cash flow forecast for 2025 – 2029 can be observed in the chart below:



Investor Proposal

In this first round, we are looking to raise £2.1 million for a runway of 24 months.

An additional round will likely happen in 2027. This time, we will raise around £20 million to build and commission the manure processing commercial plant – which is planned to open in Q1 2030. **The total construction budget for the commercial plant will be calculated for the 2nd round of fundraising**.

This is an excellent opportunity for early investors and Series A investors alike. The return on investment is significant. Assuming early investors inject £2.1 million today, for 10% of the company, and we project an EV/EBITDA valuation of 12x, the company's value will be about £738 million at the end of 2029. The early investor's share would be worth £73.8 million[26]. Even if the shares dilute to 5%, the investor's share is still £36.9 million, which is a 16.5x return before any taxes.

[26] Assuming no dilution from the 2nd round.

Competitors:

- https://www.icl-group.com/about-us/ from Israel.
- https://ecoculturebs.com/ from Spain.
- https://www.rosier.eu/fr/index from Belgium.
- https://www.yara.com/this-is-yara/yara-at-a-glance/ from Norway.

Properties	Green Tail UK	Yara Norway	Rosier Belgium	Ecoculture Spain	ICL Israel	Manure & manure pellets
Liquid fertilisers	✓	✓	✓	✓	✓	✓
Water-soluble crystals or powder	✓	✓	✓	✓	✓	✗
Granules	✓	✓	✓	✗	✓	✓
Balanced formula by plant species	✓	✓	✓	✓	✓	✗
Balanced formula according to plant development phase	✓	✓	✓	✓	✓	✗
Possibility to produce complex fertiliser according to individual farmer's recipe	✓	✓	✗	✗	✗	✗
Dosage accuracy during application	✓	✓	✓	✓	✓	✗
Sheet entry	✓	✓	✓	✓	✓	✗
Application with drip irrigation	✓	✓	✓	✓	✓	✗
Application before or at sowing	✓	✓	✓	✗	✓	✗
Precision farming	✓	✓	✓	✓	✓	✗
Impact on climate	**Minimum**	**Medium**	**Medium**	**Medium**	**Medium**	**High**
Environmental friendliness of production	**Maximum**	**Medium**	**Medium**	**Medium**	**Medium**	**Low**
Quality of the final product	**High**	**High**	**High**	**High**	**High**	**Medium**
Production of organic products	✓	✗	✗	✗	✗	✓
Application in plant stress	✓	✓	✓	✓	✓	✗
Application under conditions of soil moisture deficiency	✓	✓	✓	✓	✓	✗