

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



## Introducing Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

The proposed development is made up of two facilities:

1

### Shireoaks Plastic Recycling Centre

The Plastic Recycling Centre will be run by Refiniti. The Shireoaks Plastic Recycling Facility will prevent up to 20,000 tonnes per annum of previously non-recyclable waste plastic from going to landfill.

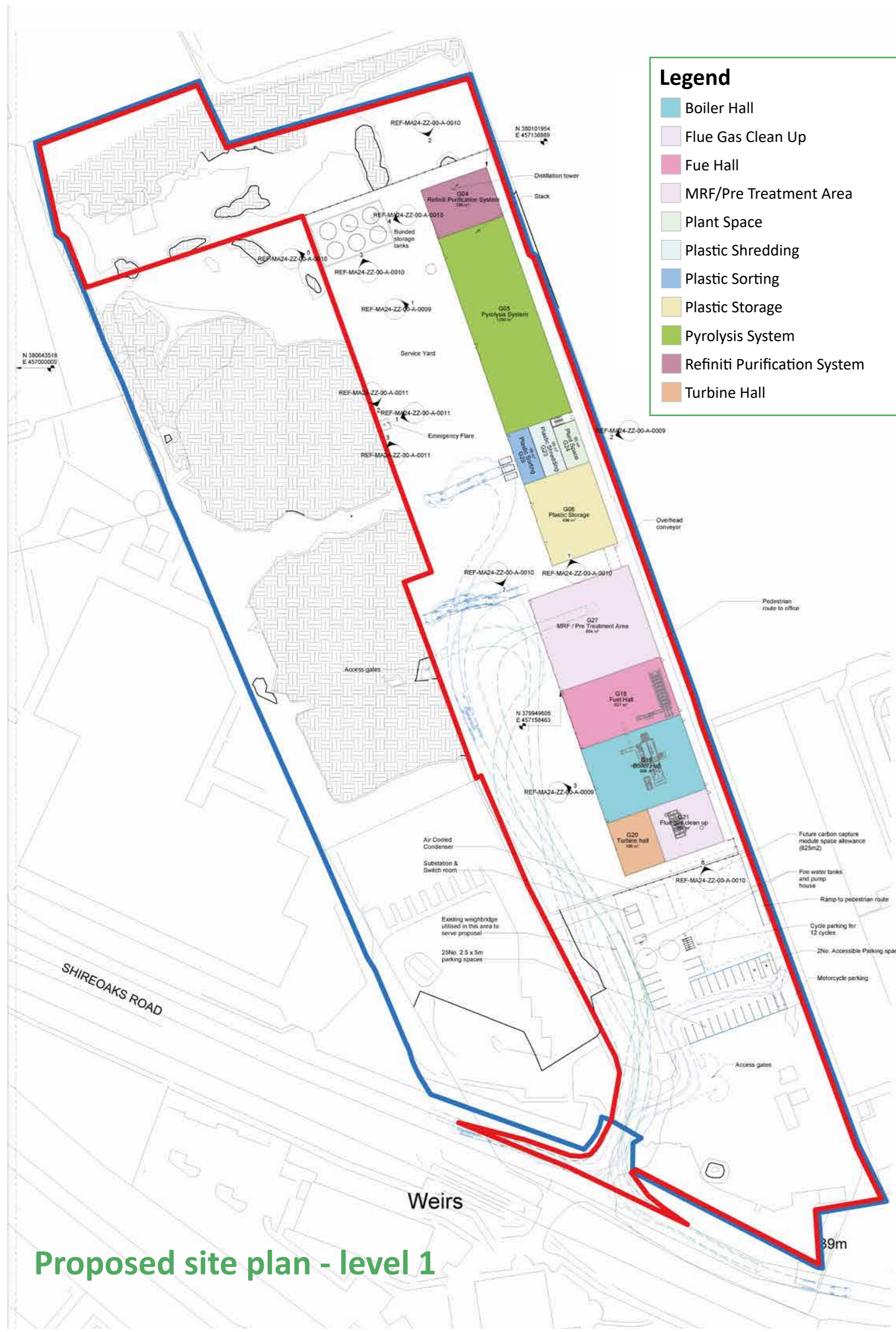
2

### Shireoaks Energy Recovery Centre

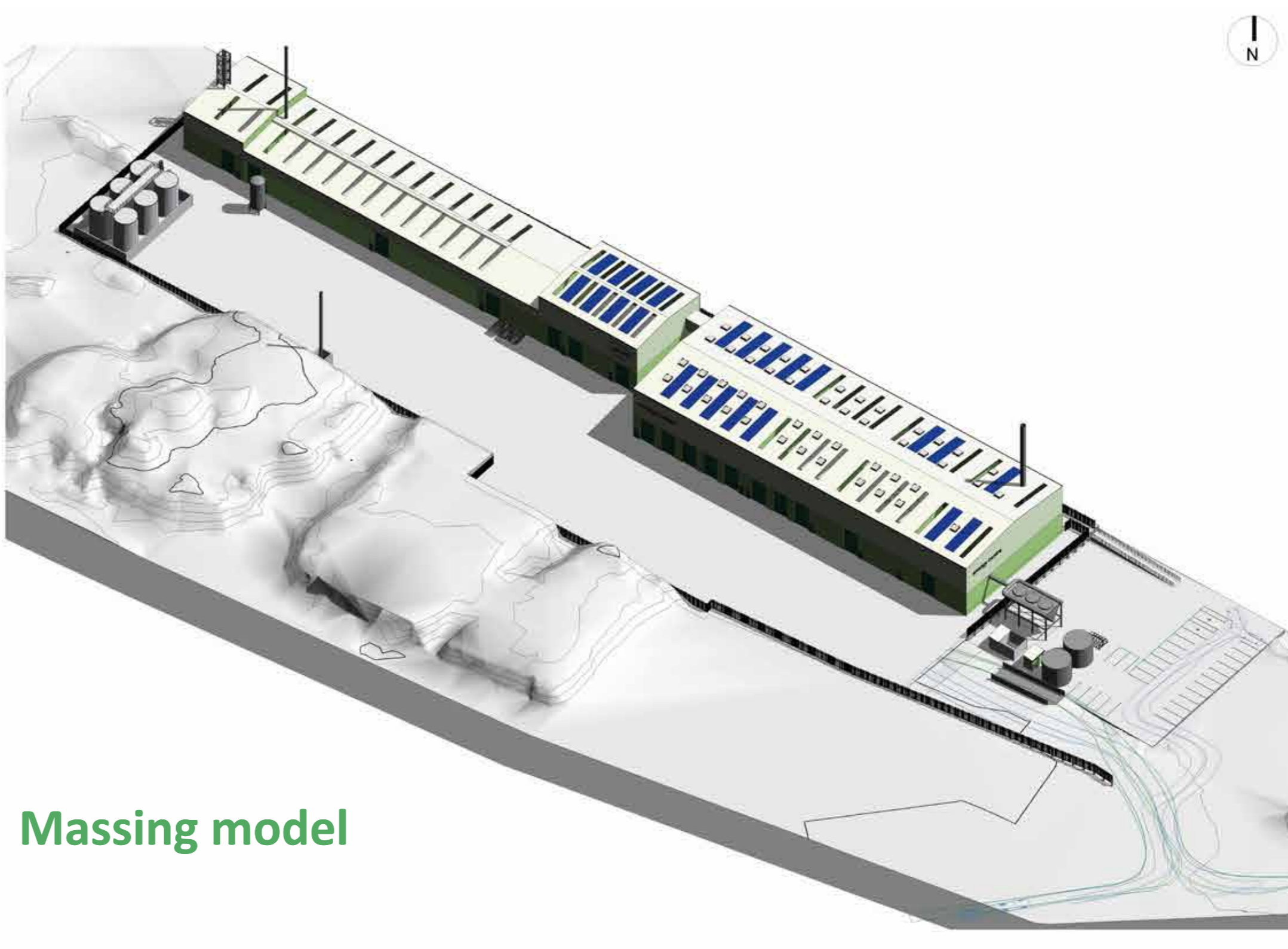
The Shireoaks Energy Recovery Centre will be run by Envale UK Limited. The Shireoaks Energy Recovery Facility will prevent up to 24,369 tonnes per annum of residual waste material (i.e. waste that cannot be recycled) from going to landfill, generating 2.5MW of electricity and 10MW of heat.

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

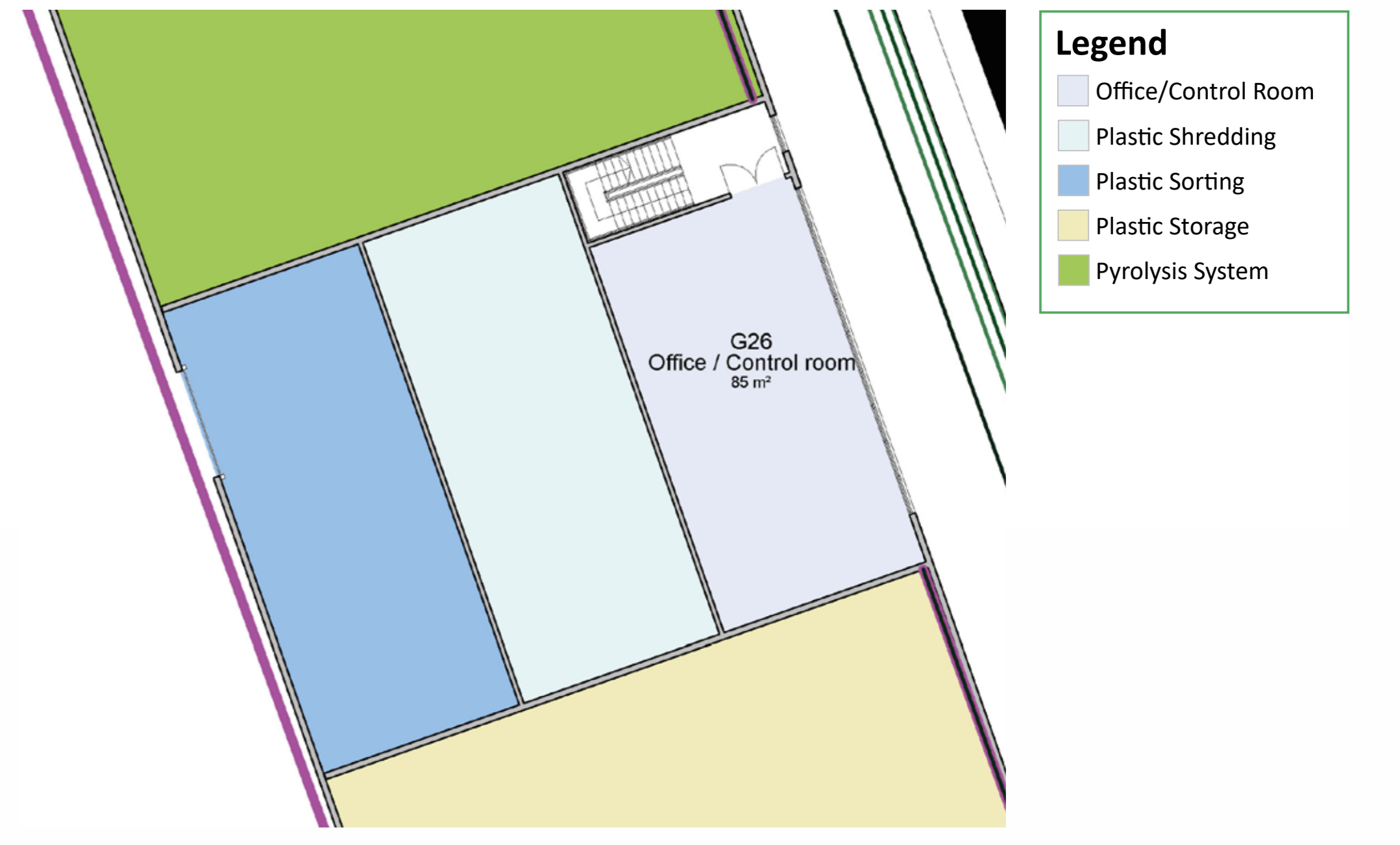
An answer to Nottinghamshire's plastic and residual waste problem



Proposed site plan - level 1



Massing model



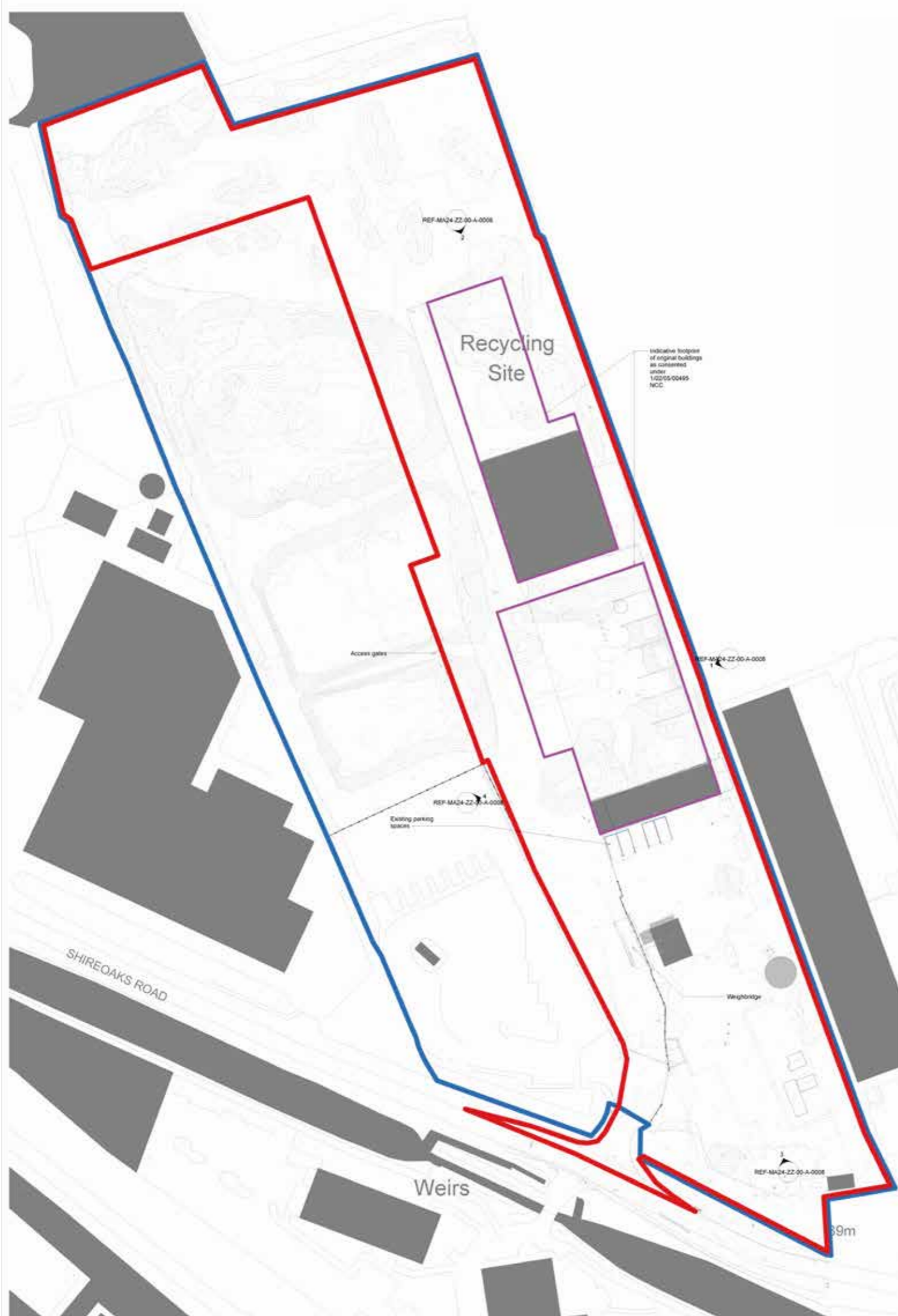
Level 2

## Timeline



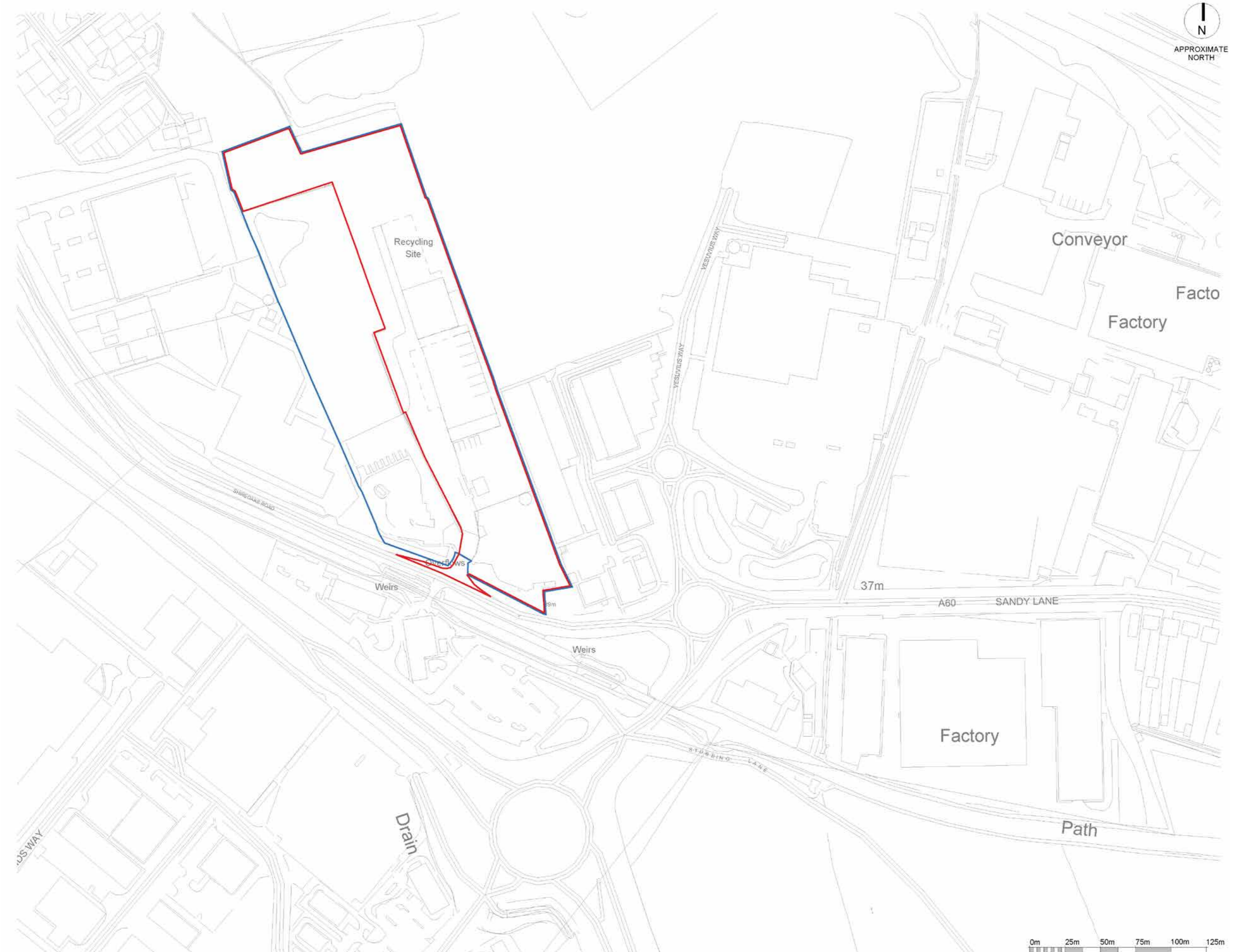
# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



Existing massing model

Existing site plan



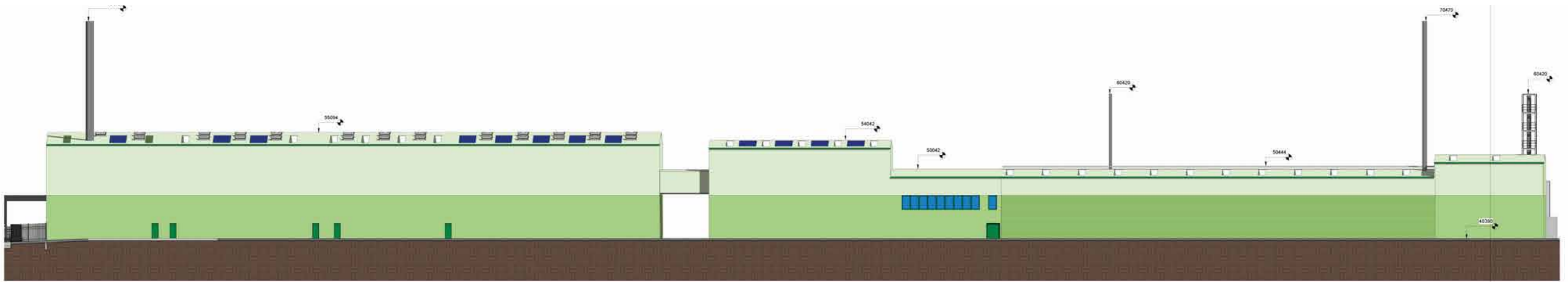
Site location plan

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

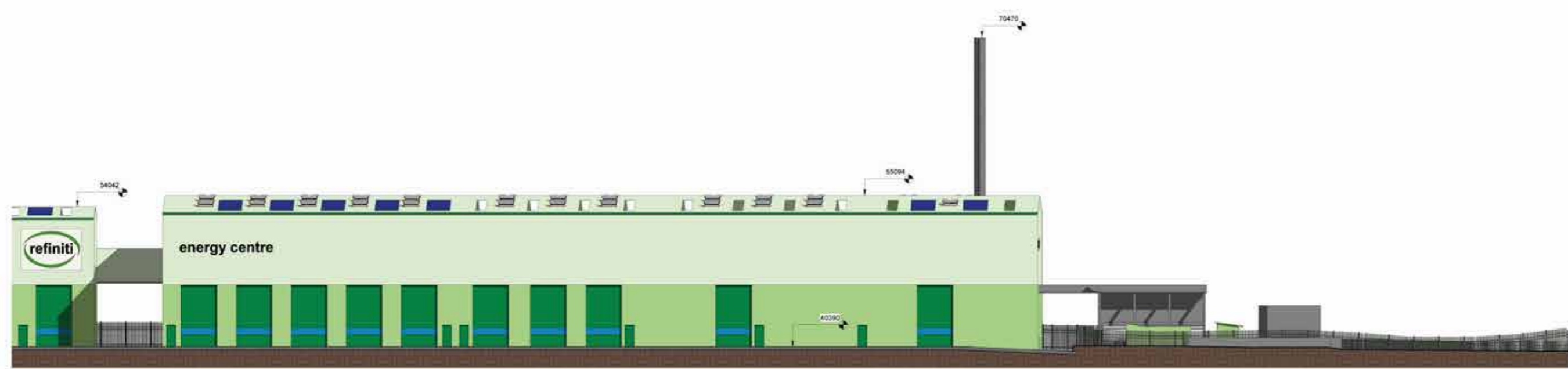
An answer to Nottinghamshire's plastic and residual waste problem



Proposed West Elevation



Proposed East Elevation



Proposed West Elevation B

## Shireoaks Plastic Recycling Centre

The Shireoaks Plastic Recycling Centre specialises in recycling plastic that doesn't fit the criteria for traditional recycling methods.

Our focus is on giving a second life to plastics that might otherwise be discarded, reducing the strain on landfills and lessening environmental impact. With advanced technology and innovative processes, we're committed to turning these discarded plastics into valuable resources.

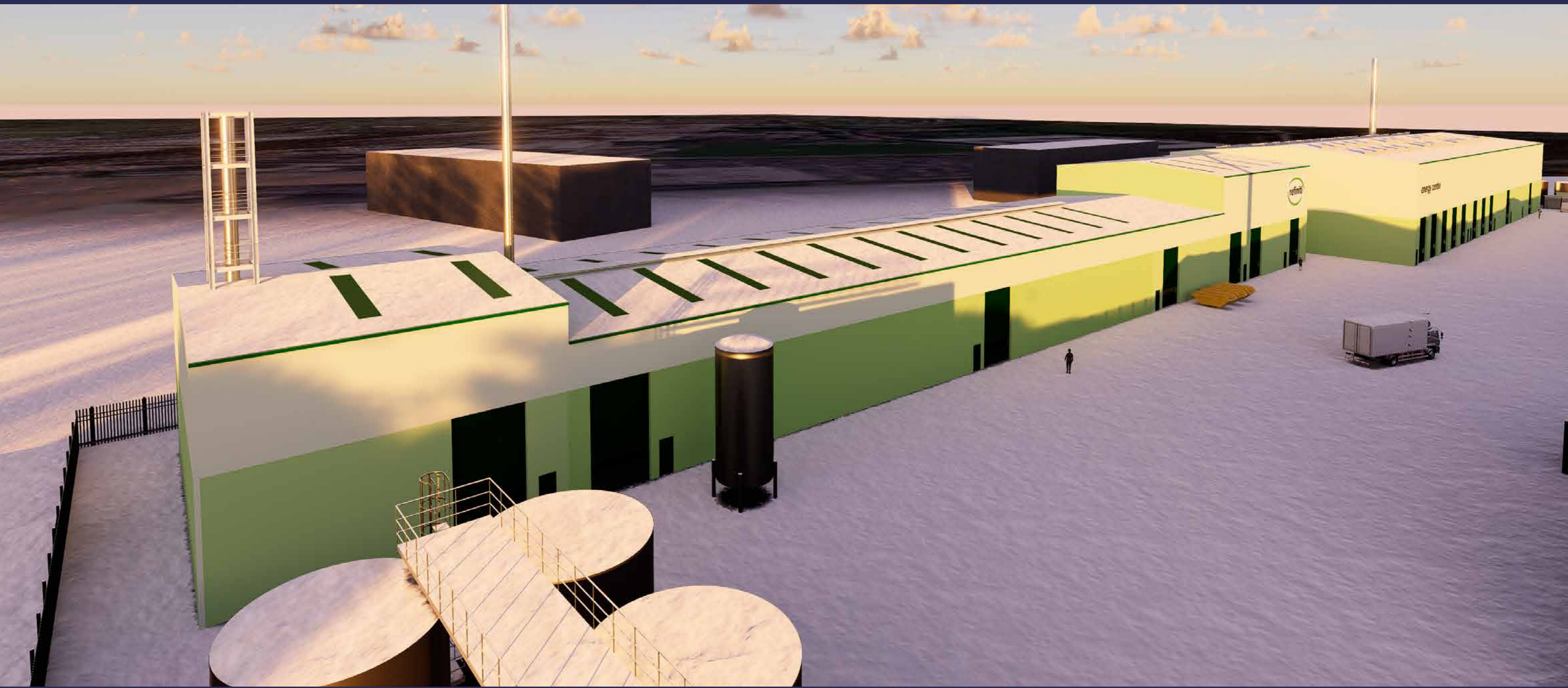
## What is the problem with plastics?

The UK produces more plastic waste per person than almost any other country in the world. Traditional mechanical recycling methods capture only a fraction of all waste plastic in the UK. The bulk of plastics that we consume defy mechanical recycling methods. We recycle just 45% of plastics in the UK. That means 55% of all our plastic waste ends up in landfills, and even the ocean.

Traditional recycling methods present the UK with a residual waste plastic problem for which a long-term sustainable solution is urgently required. In the world of recycling, the ultimate goal is the creation of virgin quality materials from post-consumer waste. Unfortunately, this is often not possible through the mechanical recycling because of contamination, composite materials and additives used in plastic. For residual plastics, advanced chemical recycling is the industry's only currently viable tool for recycling residual plastics. The Shireoaks Plastic Recycling Centre has the potential to overcome the issues of mixed and contaminated plastic waste to help create "as new" quality materials.

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



## How we transform 'non recyclable' plastics

Refiniti has developed a unique chemical process that transforms difficult to recycle plastic items (like cling film and shopping bags) back into raw materials that can be used again in the production of new plastic products, reducing reliance on fossil fuels and promoting the circular economy.

Pre-sorted waste plastics will enter the facility. This will come from a combination of sorted waste plastic from the proposed material recovery facility and pre-arranged deliveries of pre-sorted waste plastic from other waste management operators off-site. Once loaded onto the conveyor, the waste plastic will be delivered into a heated sealed pyrolysis chamber which is continuously monitored. Plastic is heated to around 500°C in the absence of oxygen. This causes the plastic polymer to "crack" into smaller molecules until it becomes liquid and gas hydrocarbons, similar to those used to make plastics in the first place. The hydrocarbon gas and liquid are then subsequently passed through a purification process within a distillation column where gas and liquid are treated and condensed into chemical feedstocks suitable for onward process in the plastic industry. The feedstock product will then be exported off-site to third parties to be used in the manufacturing of new PPT compliant plastic products, in replacement of crude oil.



### Pyrolysis

The plastic will be heated in a contained and controlled environment using high temperatures in the absence of oxygen to break down plastics into a mixture of gas and liquid.



### Purification

The gas and liquid are then treated to have impurities removed.



The end product from these processes will then be reused to produce new plastic.

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



*Plastic bags are hard to recycle, but can be transformed into reusable materials at the Shireoaks Plastic Recycling Centre.*

## About Refiniti

Refiniti is dedicated to finding answers to the plastic pollution crisis. Refiniti is a British company dedicated to tackling the difficult materials unsuitable for traditional recycling methods.

Refiniti was formed to bring forward leading technologies in the field of plastic chemical recycling. Refiniti aims to tackle the difficult materials unsuitable for traditional recycling methods and in doing so, complement rather than compete with mechanical recycling, to increase overall recycling rates of plastic waste.

Refiniti have developed unique methods to refine the liquid output of pyrolysis, this makes it easier for the petrochemical industry to utilise pyrolysis oils as a feedstock. This transformation will enable acceleration in the use of recycled hydrocarbons within the oil industry and reduce reliance on newly extracted oil.



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



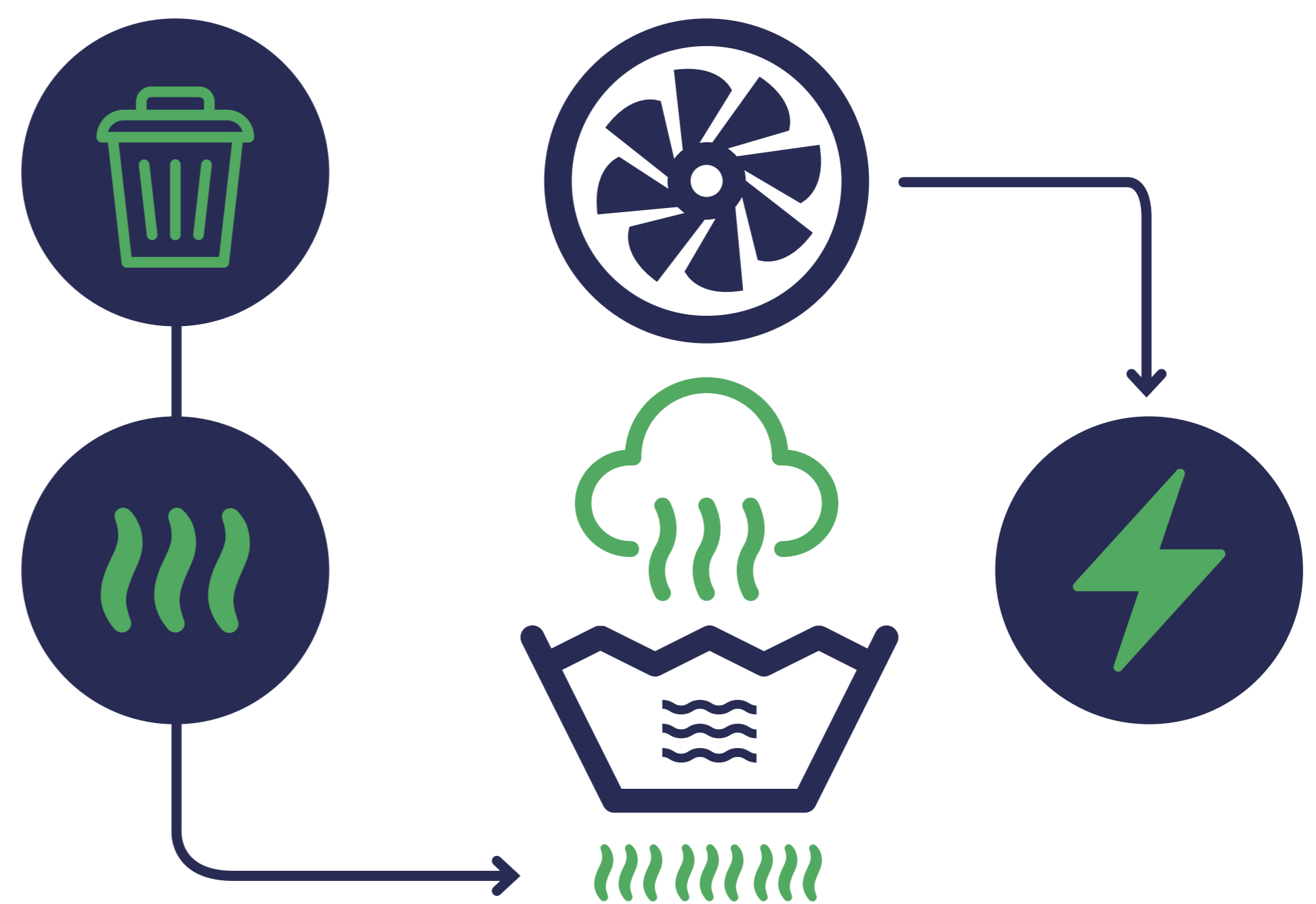
Providing enough electricity to power over 650 homes annually

## Shireoaks Energy Recovery Facility

The facility, that will be operated by Envale UK Limited, has the capacity to produce up to 2.5 megawatts of electricity, which could power over 650 homes annually. It also generates 10 megawatts of heat that could potentially be supplied to the surrounding area. The facility has the potential to export surplus electricity to the local power grid, enhancing energy security in Nottinghamshire.

## How does it work?

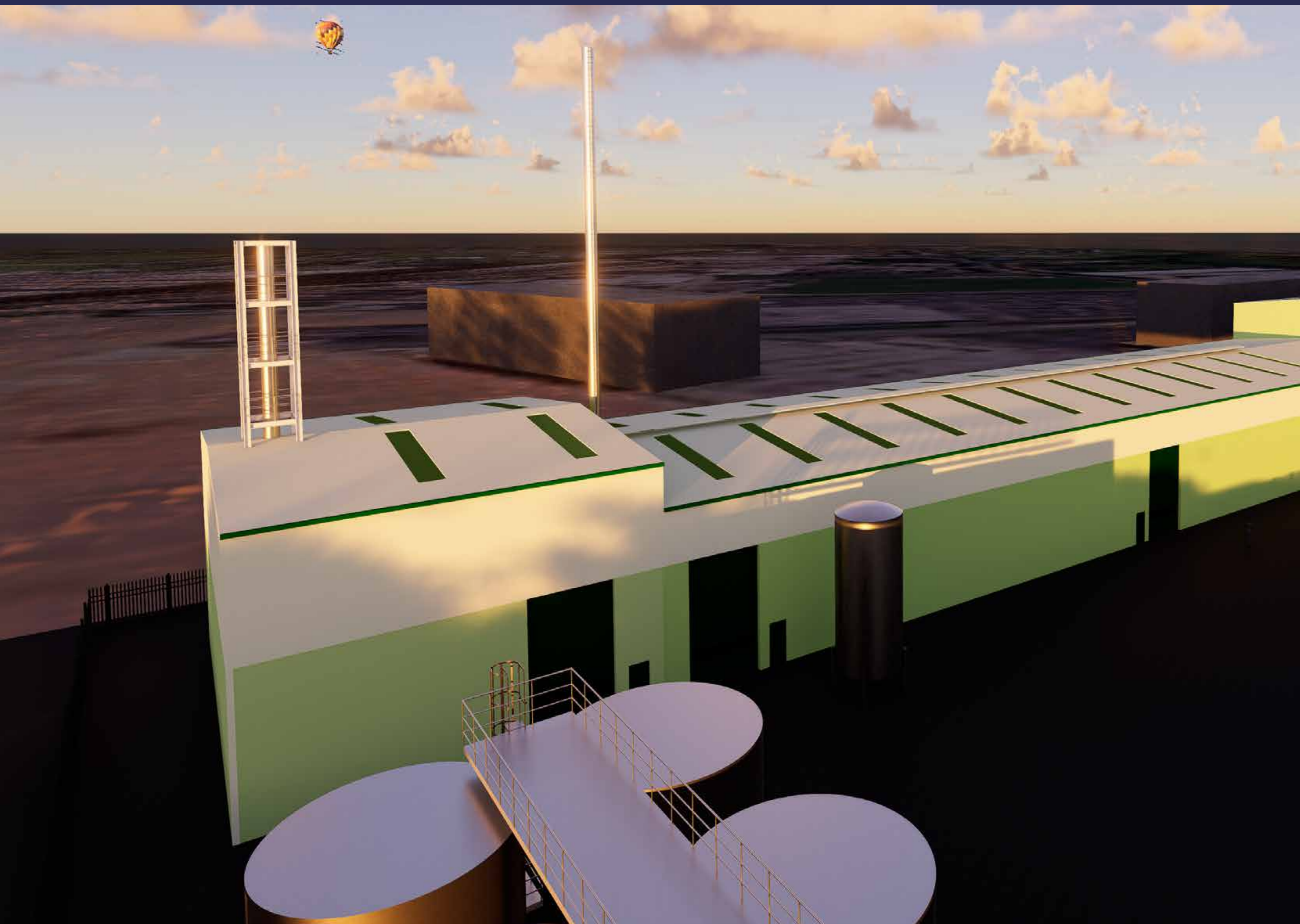
The Shireoaks Energy Recovery Centre will be housed within a proposed building which includes a materials recovery area / sorting area. Mixed non-hazardous, municipal, commercial and industrial waste will be received and sorted within the material recovery area (an operation previously granted planning permission). Residual waste plastic will be transported to the adjacent Shireoaks Plastic Recycling Centre for processing. Any leftover, residual waste materials unsuitable for recycling will be transferred to the proposed Shireoaks Energy Recovery Centre. The proposed facilities will reduce the sites requirement to export waste off-site, providing an on-site solution in accordance with the proximity principle and waste hierarchy.



The Shireoaks Energy Recovery Centre will recover combined heat and energy from non-hazardous, residual municipal and commercial and industrial waste – waste that would otherwise be disposed of in landfill. The heat from the waste combustion is used to boil water and generate steam which turns a turbine to drive a generator. The energy produced will offset fossil fuel use. The Shireoaks Energy Recovery Centre has the potential to provide heat and power to surrounding industrial users.

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem



## Benefits



### Recycling

- The Plastic Recycling Facility will take previously non-recyclable plastics and enable them to be re-used.
- Stop up to 20,000 tonnes per annum of non-recyclable plastic waste from going to landfill.
- Reduces quantities of fossil fuel-based waste plastic entering Energy Recovery Facilities.



### Economic

- The development will create approximately 80 jobs during construction.
- It will also create 30 new jobs during operation.
- The recycled plastic will contribute to the plastic manufacturing industry (plastic packaging tax).



### Energy

- Contribute to Nottinghamshire's energy security.
- Generates up to 2.5 Megawatts of electricity - enough to power over 650 homes per annum.
- Reduce Nottinghamshire's reliance on fossil fuels and help combat climate change by producing partially renewable energy.



### Biodiversity

- A 4,000m2 area of ecological and landscape enhancement to support local wildlife and deliver at least a +10% gain in on-site biodiversity.
- Wildflower seed planting and tree planting will occur in the buffer zone.



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

## Frequently Asked Questions

### Why are the facilities being built?

The facilities are being built to provide a solution to the plastic problem in Nottinghamshire and the rest of the UK and to also bolster energy security in Nottinghamshire. Shireoaks Plastics Recycling Centre will use a unique chemical process developed by Refiniti that transforms difficult to recycle plastic items into a recycled feedstock for onward plastic production and promote the circular economy.

### How long will this project take to build?

It will take approximately 18-24 months to build the facilities. Site working would typically be Monday to Friday and Saturday mornings only.

### Are facilities safe?

Safety of both workers at the facility and local residents are of paramount importance to Refiniti Ltd And Envale UK Ltd. The facilities will be operated in compliance with all regulations and in accordance with an Environmental Permit.

### How will traffic levels be impacted?

A Transport Statement and Construction Traffic Management Plan have been prepared to support the forthcoming planning application. The proposed development will allow the site to resume operations receiving 75,000tpa of non-hazardous municipal, commercial and industrial waste. The addition of the facilities will allow the site operator to treat residual waste arisings on-site, reducing exportation trips.

Mixed waste will be delivered to the materials recovery warehouse area via covered articulated lorry.

Access to the site is provided from an existing priority arrangement onto Shireoaks Road. The access has been designed to accommodate large vehicle movements and is in use by vehicles of this type.

### Why here?

The site has been carefully chosen by the applicants. The site is located on land at the former Worksop Recycling Facility, Shireoaks Road, Worksop, S80 3HA. The existing site is not operational and has fallen into a state of dilapidation following the breakout of a fire on site in 2014. The site has formal planning consent to operate as a waste transfer / recycling facility.

The site is not situated within an AONB, or any other landscape designation. The site is located within Flood Zone 1 - the area at least risk of flooding. As the site was previously used for recycling it ensures no new site will be developed for this proposal.

### Are the facilities noisy?

A Noise Impact Assessment has been prepared by the applicant to assess the proposed developments operational and construction impacts on the local noise climate. Noise has been included in the Applicant's Environment Statement following EIA scoping discussion with the Council. The site has been designed to minimise the levels of noise at the closest residential receptors by locating equipment within purpose-built buildings and locating any external plant away from residential properties. The Noise Impact Assessment finds that noise levels during construction and operation would remain below the existing background levels in accordance with British Standard guidance for all residential receptors.

# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

## Frequently Asked Questions

### How will the facilities impact air quality?

An Air Quality, Dust and Odour Assessment has been prepared by the applicant to assess the proposed developments operational and construction impacts on local air quality, dust and odour. Air quality has been included in the Applicant's Environment Statement following EIA scoping discussion with the Council.

The Environmental Quality Standards are not predicted to be exceeded at any sensitive human location within the assessment extents.

Impacts at ecological designations are predicted to be well below the threshold for Local Wildlife Sites and Nature Reserves and have been screened out as insignificant.

Measures have been incorporated into the scheme design to mitigate odour and dust emissions. The magnitude of dust and odour effects was considered insignificant at all receptors.

### Will the facilities harm wildlife?

An Ecological Impact Assessment will be undertaken which will provide biodiversity information. The site proposal includes a 4,000m<sup>2</sup> area of ecological and landscape enhancement to support local wildlife. The proposals will achieve a **+77.14%** net gain to habitat units and a **+743.92%** net gain in hedgerow units. This far exceeds the +10% gain required by the Environment Act. This gain has been calculated based on the Landscape Masterplan proposals. Biodiversity enhancement measures will include wildflower seed planting and tree planting in the buffer zone..

### How will these facilities directly benefit my community?

The facilities will provide a solution to Nottinghamshire's plastic problem and enhance energy security in Nottinghamshire. In addition, the facilities will create approximately 80 jobs during construction and 30 jobs during operation.



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

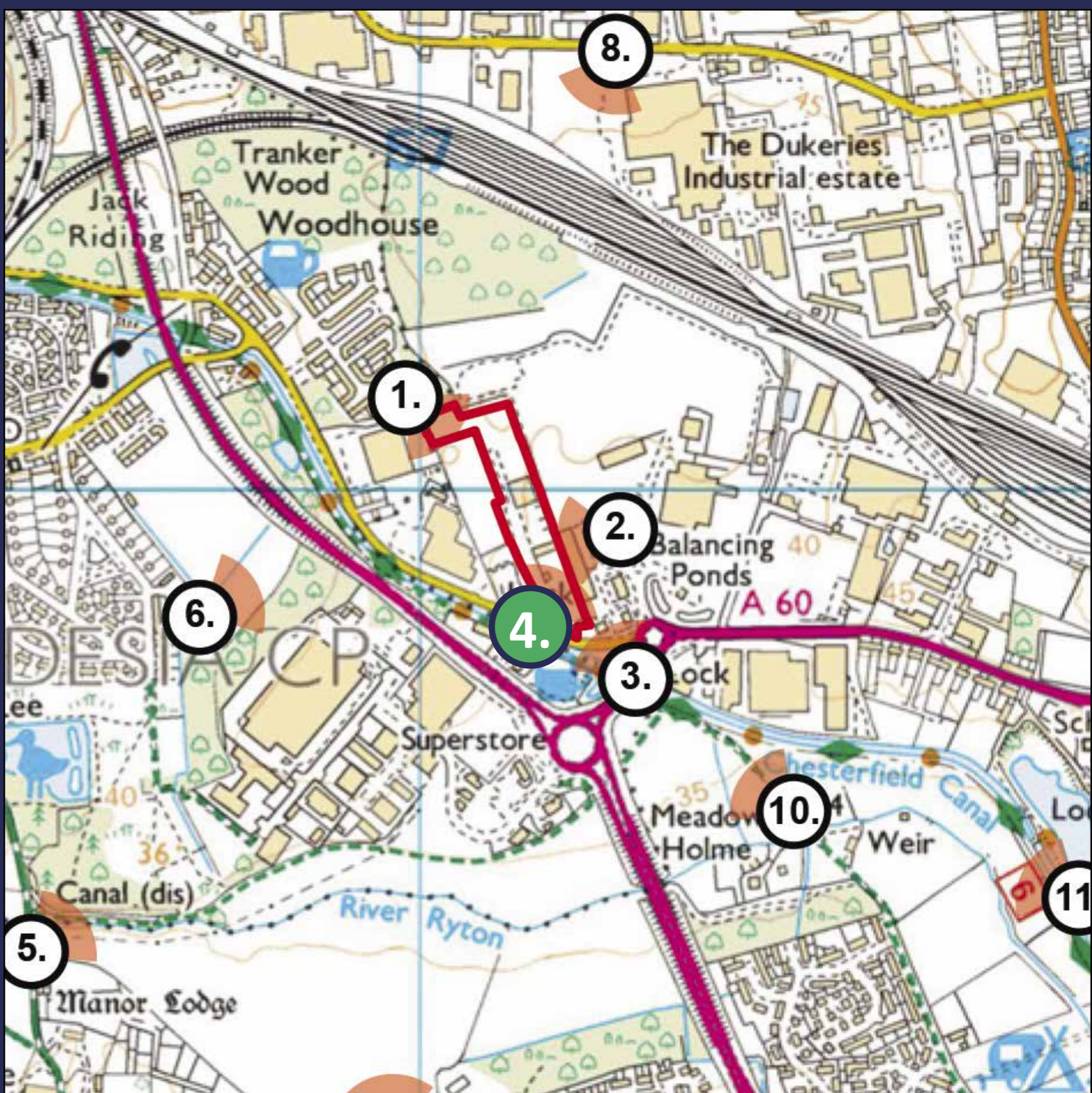
## Viewpoints



Viewpoint 4 - Existing



Viewpoint 4 - Proposed



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

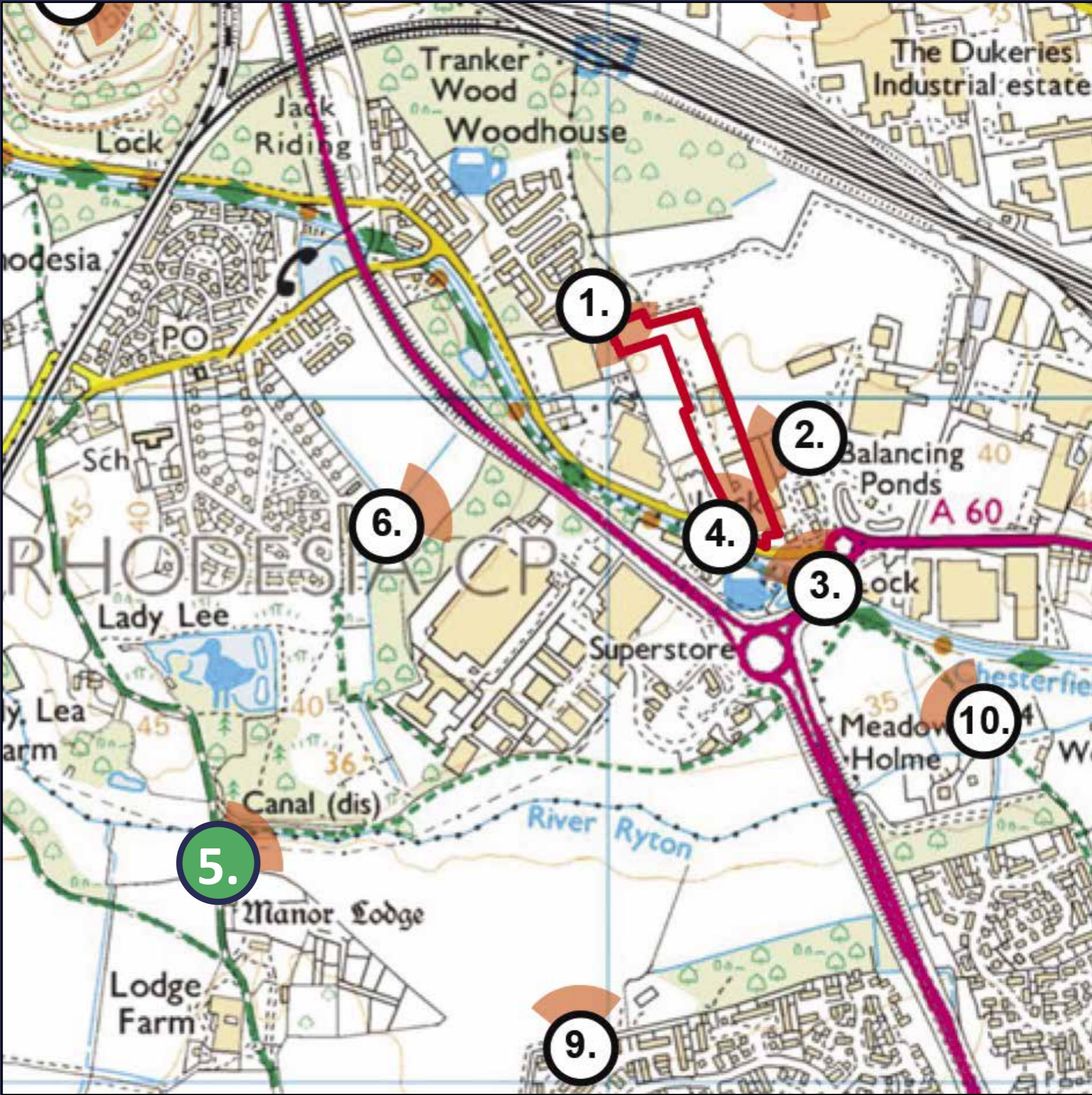
## Viewpoints



Viewpoint 5 - Existing



Viewpoint 5 - Proposed



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

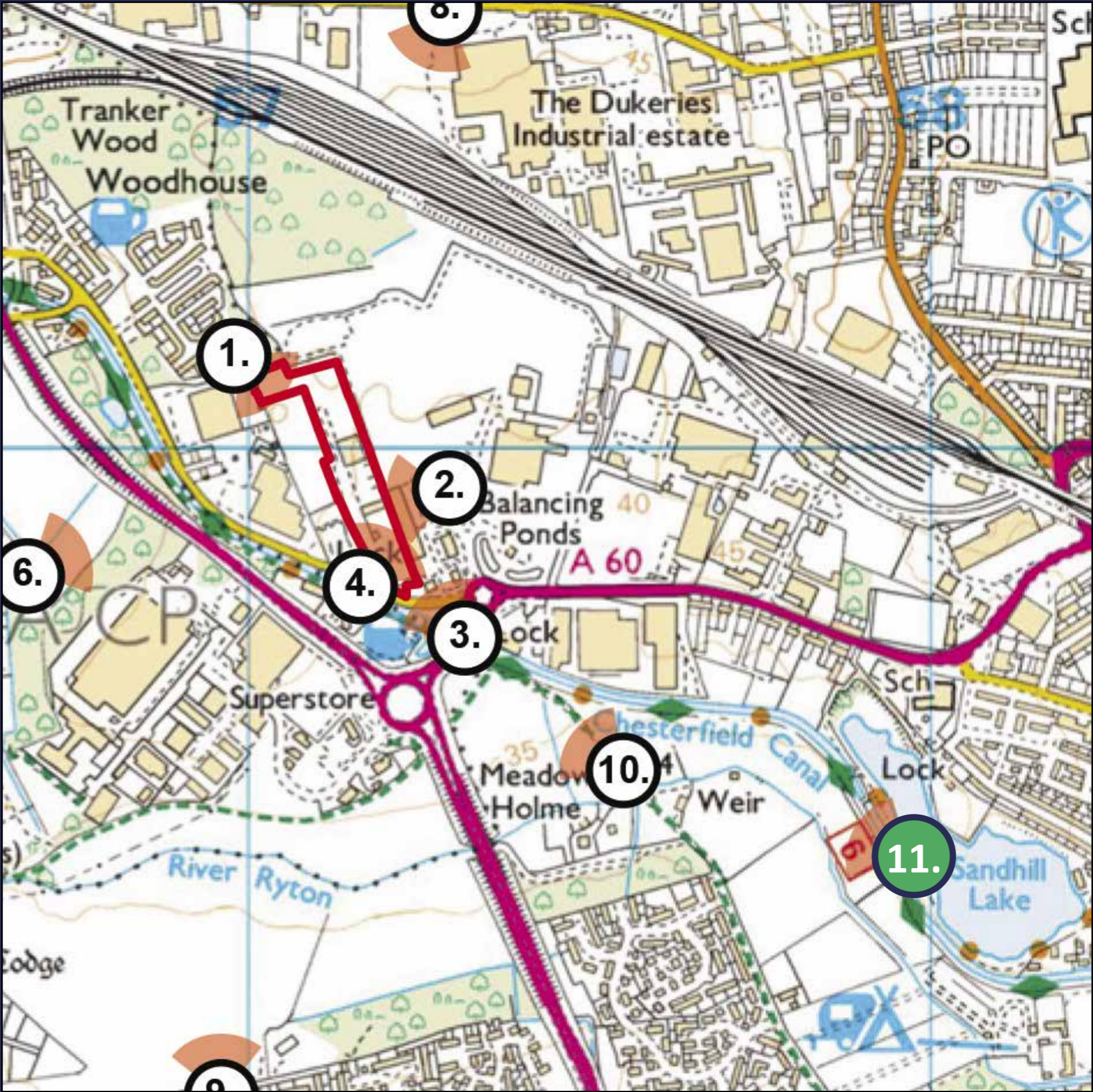
## Viewpoints



Viewpoint 11 - Existing



Viewpoint 11 - Proposed



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

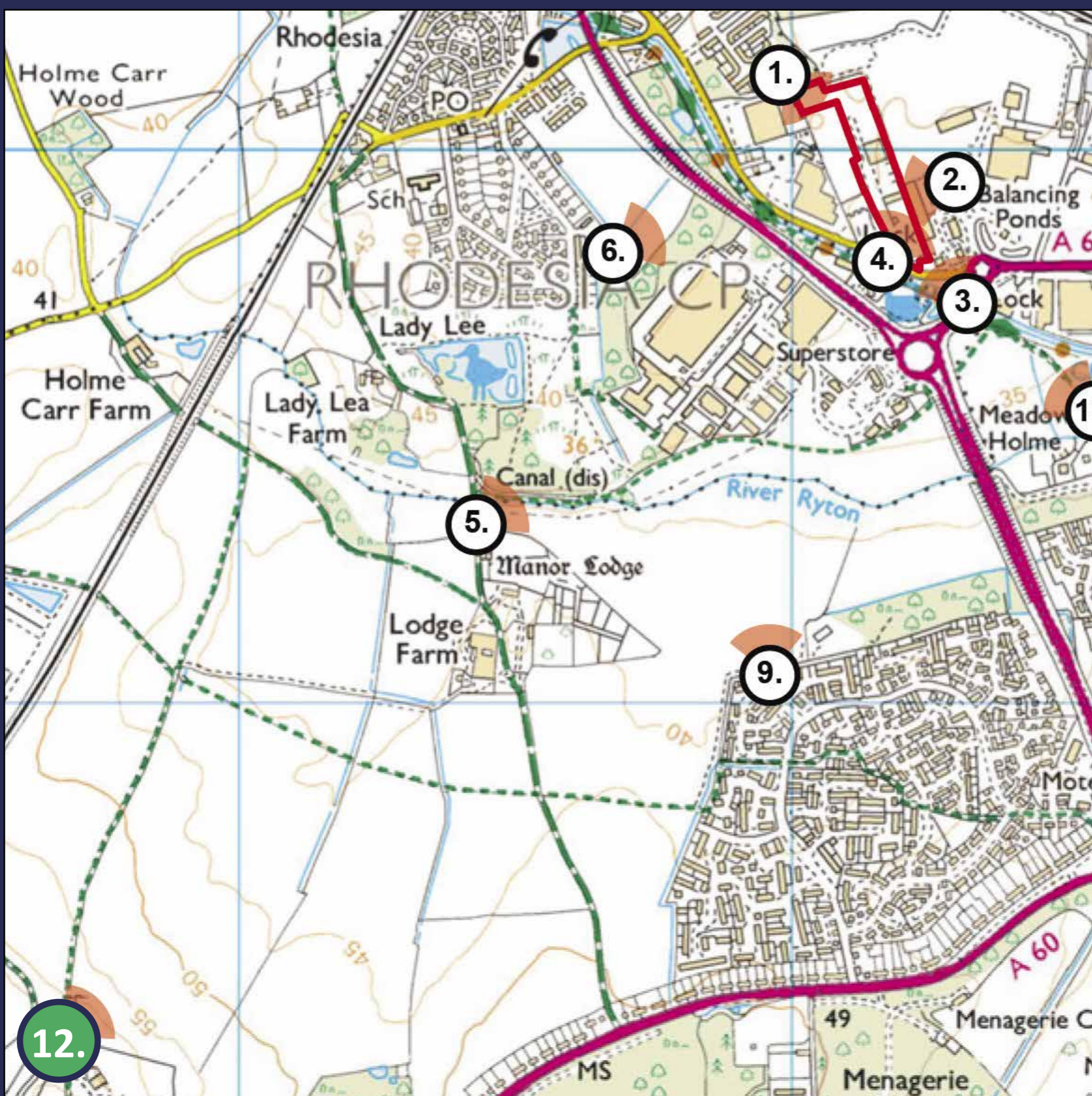
## Viewpoints



Viewpoint 12 - Existing



Viewpoint 12 - Proposed



# Shireoaks Plastic Recycling Centre & Energy Recovery Facility

An answer to Nottinghamshire's plastic and residual waste problem

## Viewpoints



Viewpoint 13 - Existing



Viewpoint 13 - Proposed

