

Towards a Municipal Waste
Strategy for Newcastle Council
2005 - 2025

Views on technologies for residual treatment technologies

Residual treatment technologies

Treatment types:

- Mechanical biological treatment (MBT) – including anaerobic digestion &/or composting
- Energy recovery:
 - ‘energy from waste’ incineration
 - advanced thermal treatment (e.g. gasification)
- Autoclaving

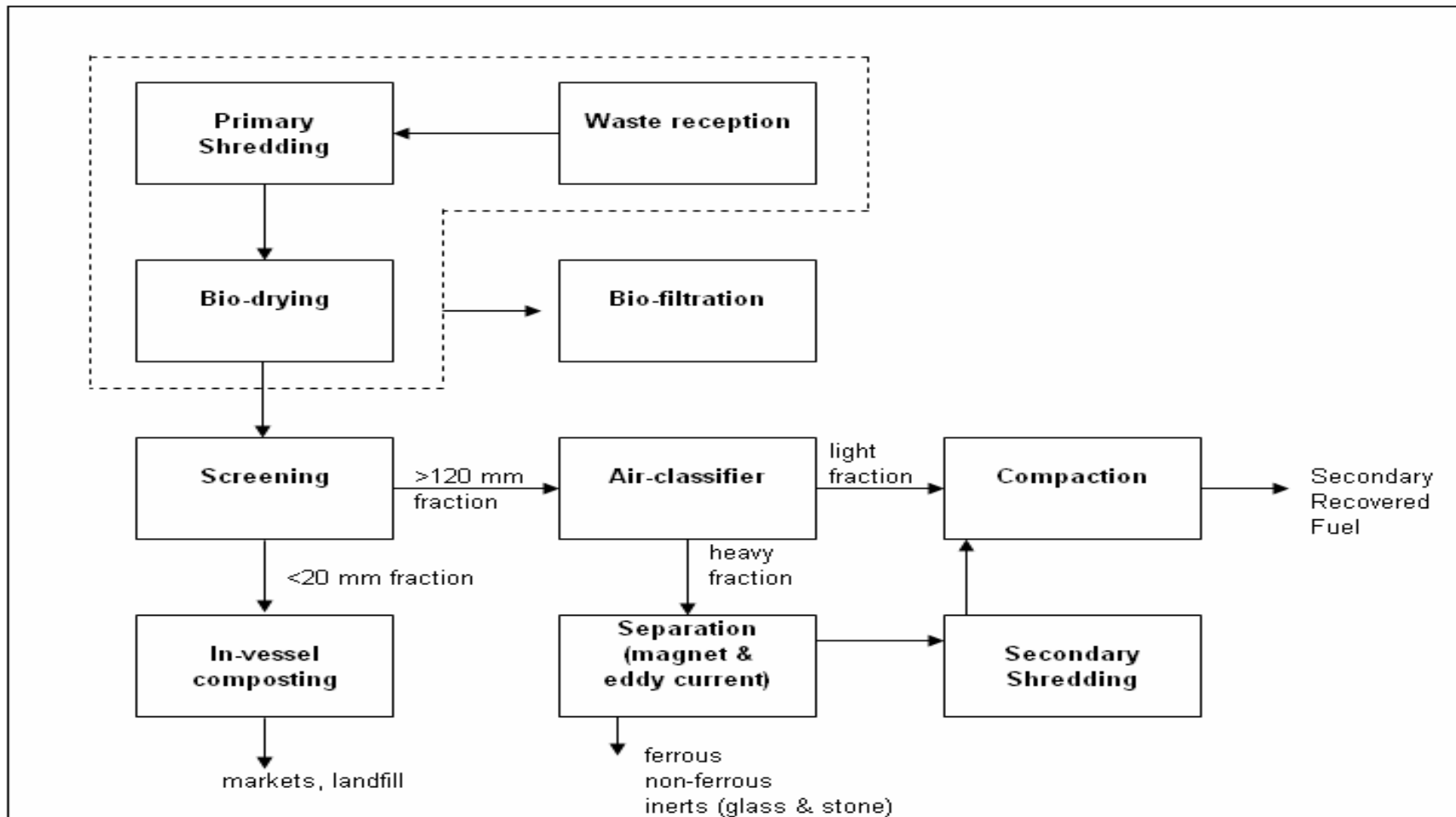
Issues to bear in mind:

- Output material
- Markets for output material
- Risks
- Emissions
- Flexibility
- Costs
- Regional context

Key technology considerations

- no environmental ‘free lunch’ solutions
- highly improbable that recycling can deliver in isolation
- costs are indicative and HIGHLY location-specific
- important role for technologies to manage residual waste
- best approaches likely to be integrated ones
- a range of technologies exist
- waste treatment needs joining-up with regional resource requirements
- proximity: to waste, to reprocessors & markets

Mechanical biological treatment (MBT)

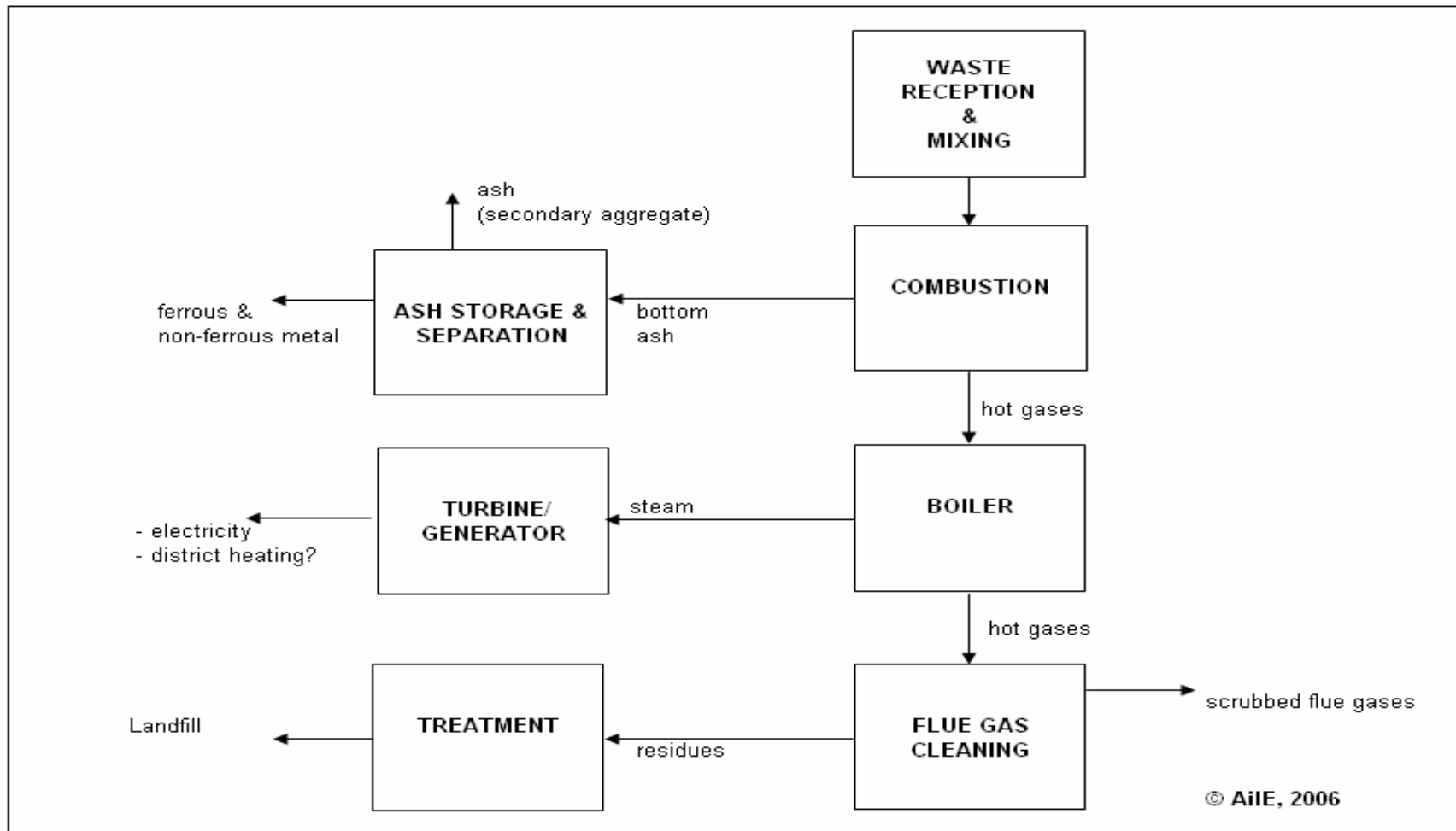


MBT: issues to consider

Treatment type:	<p>‘simple systems’: natural drying & volume reduction</p> <p>‘complex systems’: addition of anaerobic digestion and/or composting, or Secondary Recovered Fuel (SRF) production</p>
Output material	dry recyclables (e.g. metals); organics; and SRF (e.g. paper/card, plastics)
Markets	<ul style="list-style-type: none"> • lower quality compost-like material (e.g. landfill engineering) • SRF: existing (e.g. cement kilns) or dedicated plant (e.g. gasification) • Recyclates to reprocessors
Risks & public perception	<ul style="list-style-type: none"> • future use of low quality compost? achieving LATS targets? • “Good” public perception?
Emissions, nuisances	<ul style="list-style-type: none"> • bio-aerosols through composting • noise through mechanical separation • transport movements
Flexibility	Process fairly flexible to changes in tonnage
Costs (£/t)	£38-73 dependent on market outlets, in particular for SRF
Regional context	<ul style="list-style-type: none"> • Potential for partnership facility • SRF to a regional facility?



'Energy from Waste' incineration

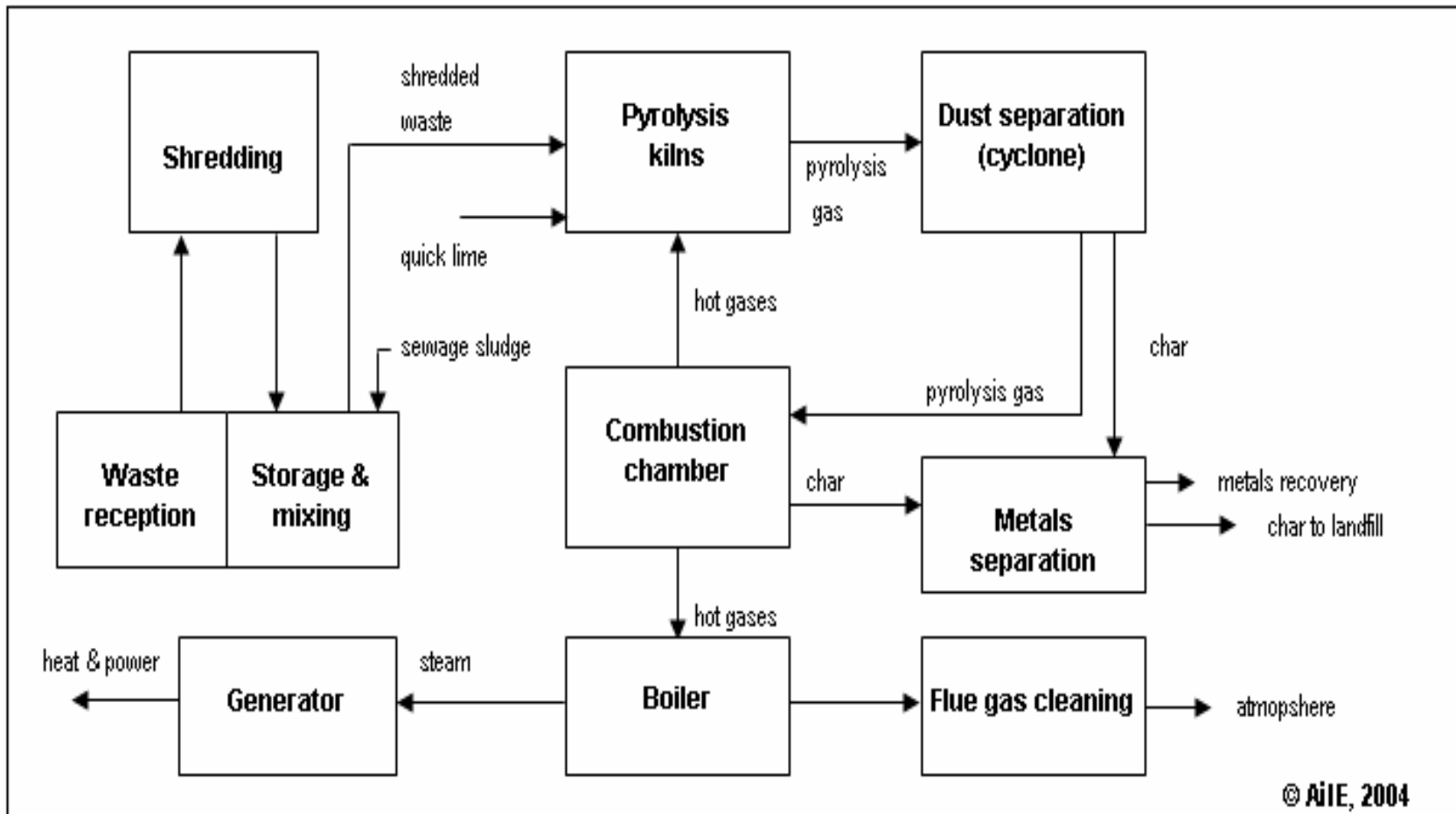


EfW: issues to consider

Treatment type	combustion of mainly unsorted waste at high temperature
Output	electricity, heat, metals and bottom ash
Markets	<ul style="list-style-type: none">• electricity; heat contracts more difficult• metals for recycling• bottom ash for use as road aggregates, or landfilled
Emissions, nuisances	<ul style="list-style-type: none">• strictly controlled & regulated: fly ash (hazardous waste) landfilled• high chimney• transport movements
Risks & public perception	<ul style="list-style-type: none">• proven technology• historically “bad” public perception regarding emissions
Flexibility	inflexible on capacity; should be sensitively sized on residuals
Costs (£/t)	£45-70: dependent on plant scale
Regional context	Potential for partnership facility

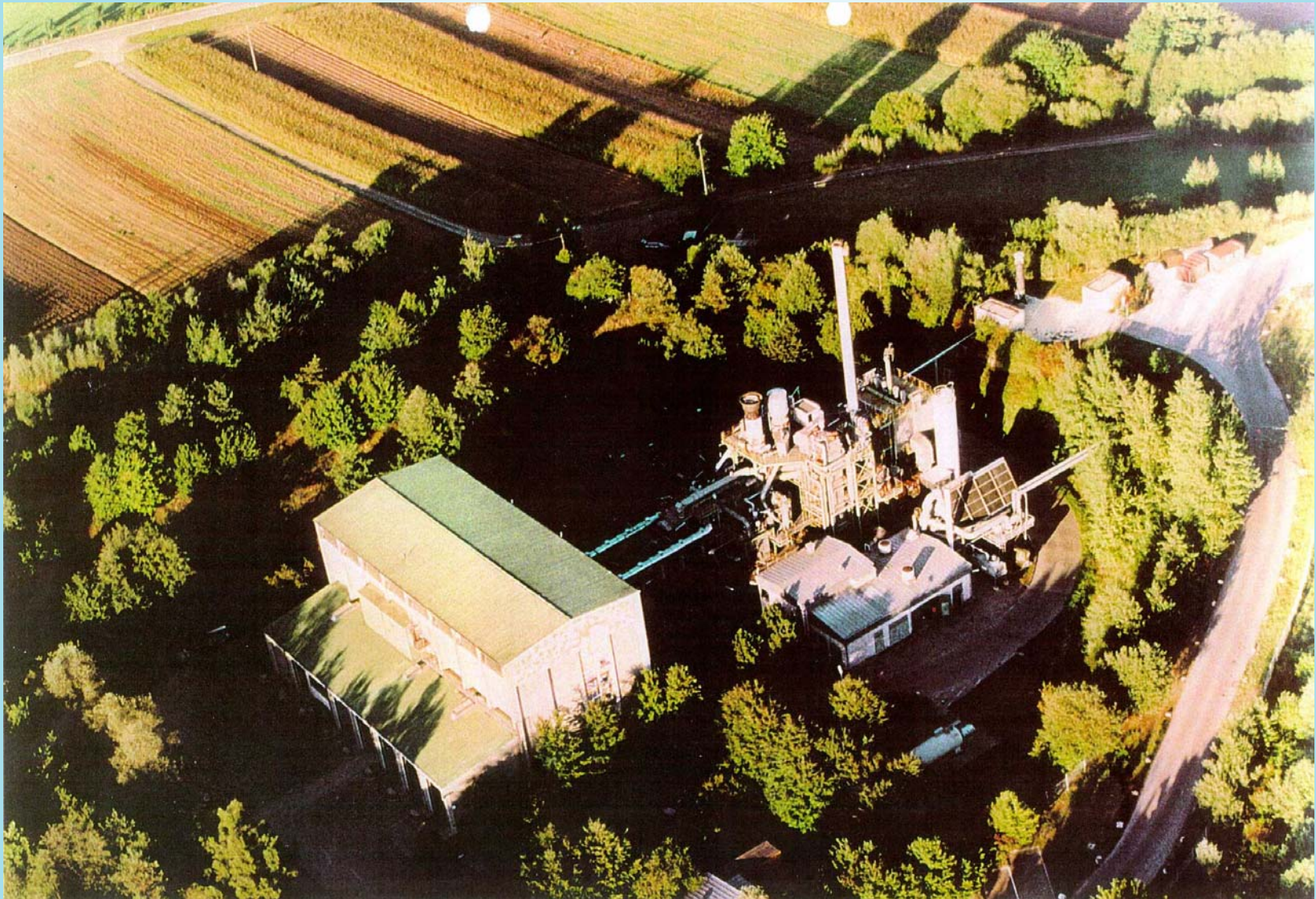


Advanced thermal treatment: pyrolysis

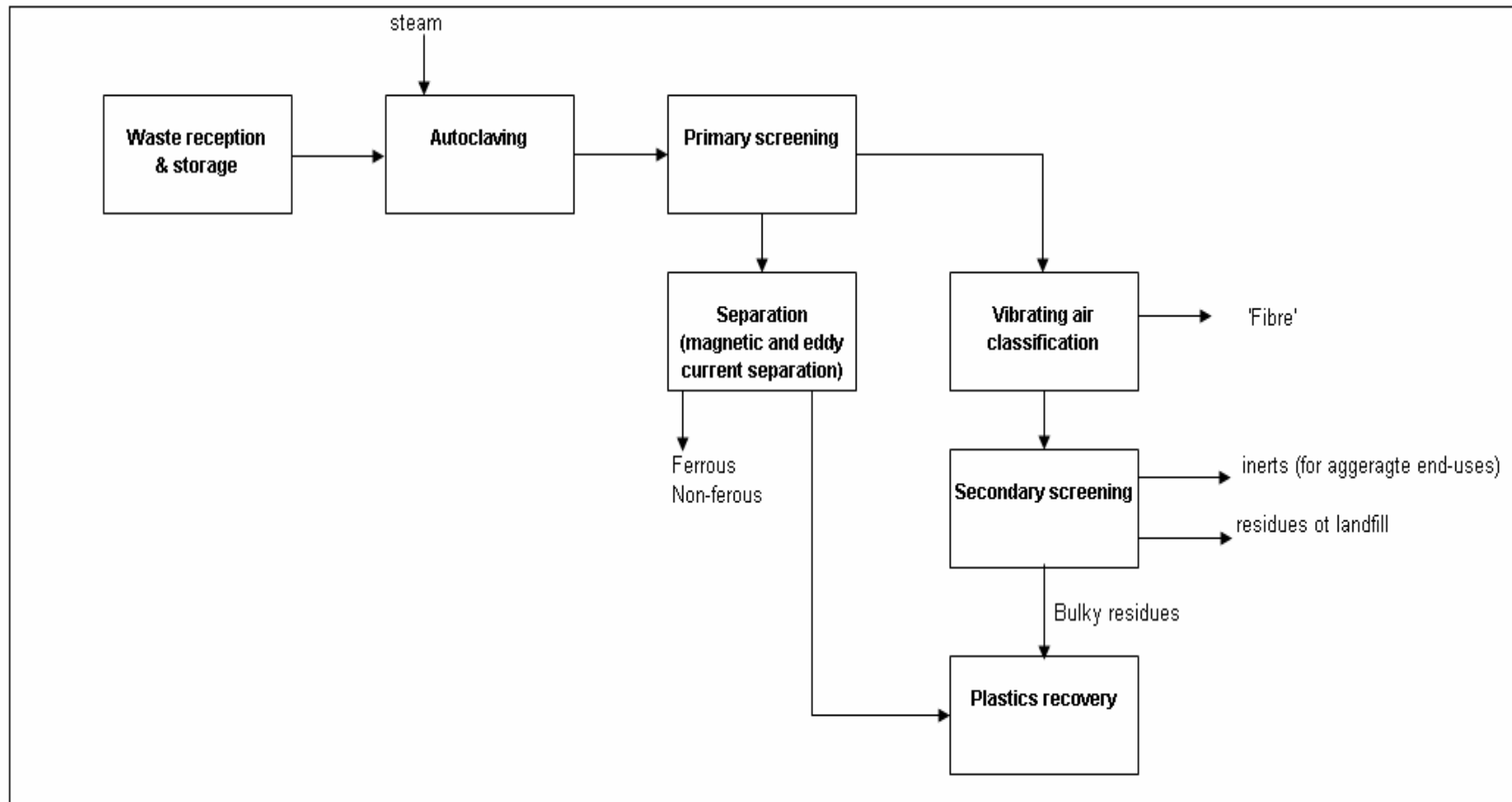


Advanced thermal treatment: issues to consider

Treatment type	involves thermal breakdown of waste into intermediaries - current UK interest focuses on pyrolysis and gasification
Output	dependent on plant configuration, but mainly a fuel, or electricity & heat; metals recovery
Markets	<ul style="list-style-type: none">• electricity; heat contracts more difficult• metals for recycling• reduced levels of bottom ash - use as road aggregates, or landfilled
Emissions, nuisances	<ul style="list-style-type: none">• strictly controlled & regulated• medium chimney• transport movements
Risks & public perception	<ul style="list-style-type: none">• to new to the UK market to fully assess?• less proven than incineration
Flexibility	typically smaller scale than incineration, more modular technology
Costs (£/t)	highly dependent on configuration
Regional context	likely to be sub-regional



Autoclaving



Autoclaving: issues to consider

Treatment type	Via application of steam under pressure
Output	pre-treatment to biological treatment (e.g. anaerobic digestion), SRF production, materials recovery, waste volume reduction
Markets	<ul style="list-style-type: none"> • lower quality compost-like material (e.g. landfill engineering) • SRF: existing (e.g. cement kilns) or dedicated plant (e.g. gasification) • recycle reprocessors
Emissions, nuisances	<ul style="list-style-type: none"> • particulates • transport movements
Risks & public perception	<ul style="list-style-type: none"> • relatively 'new' waste technology, so perception issues not yet 'surfaced' • markets for SRF difficult
Flexibility	flexible on capacity
Costs (£/t)	£40-75 dependent on configuration & treatment level
Regional context	Potential for partnership facility