

# DERL Overview

January 2011



## Inputs - Waste

---

### Municipal Solid Waste

- Includes some commercial and civic amenity waste streams
- DCC, Angus and others.
  - Up to 2,200 T per week

### Clinical Waste (currently not in use)

- Predominantly medicines
  - Target 10 T per week

## Outputs - Electricity

---

- On full load of 17.0 MWth per boiler the steam turbine generator can produce up to 11 MW gross
- 7MW exported to National Grid
  - Enough to supply 14,000 homes, i.e. 1/5<sup>th</sup> of Dundee population
- DERL uses 2.2MW to power the plant
- Export about 500kWh per tonne of waste received

## Outputs - Metals Recovery

---

- Ferrous Metals
  - Recovery rate approx 3.9% by weight of incoming waste
    - sold on for recycling
  
- Non-ferrous Metals
  - Recovery rate approx 0.4% by weight of incoming waste
    - sold on for recycling

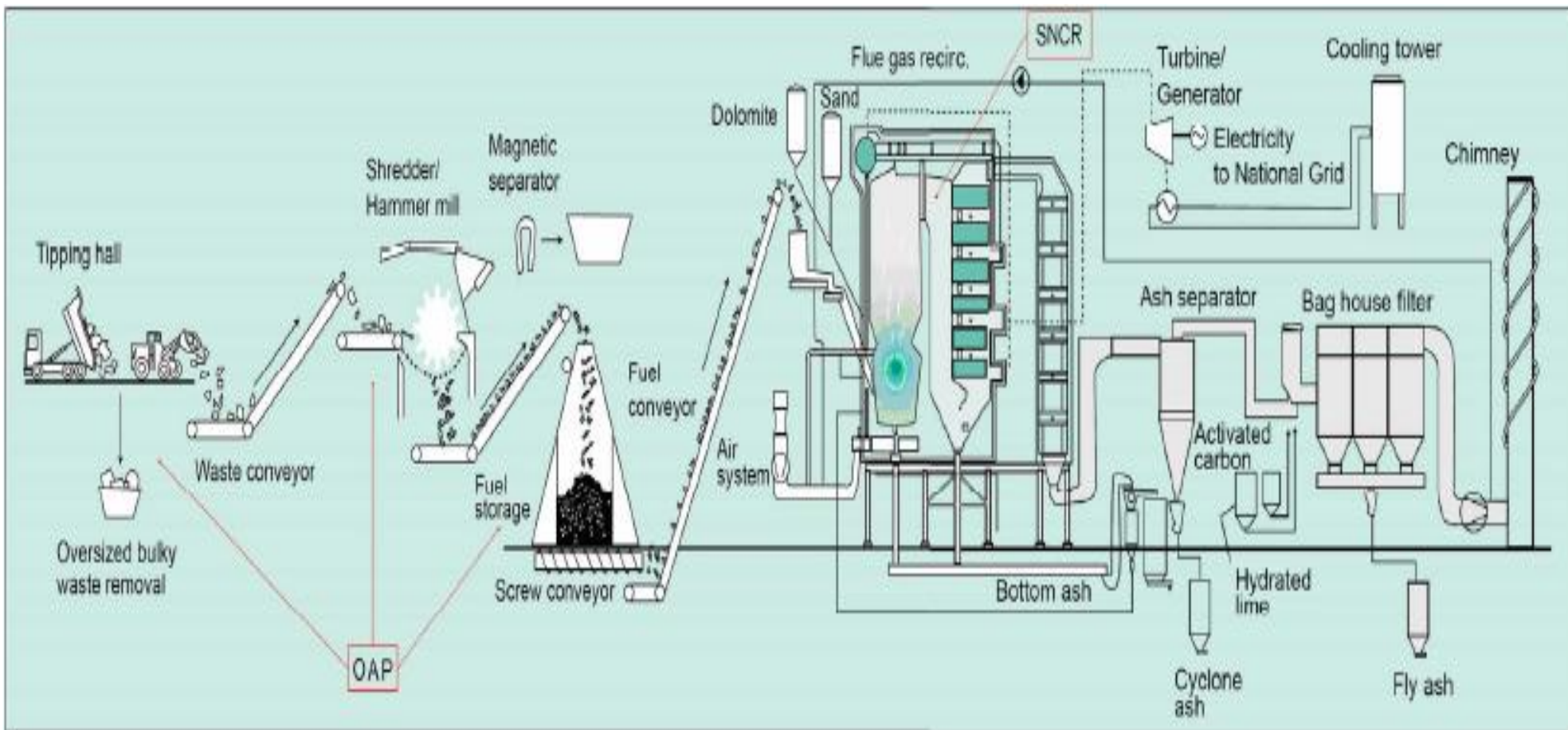
## Outputs - Ash

---

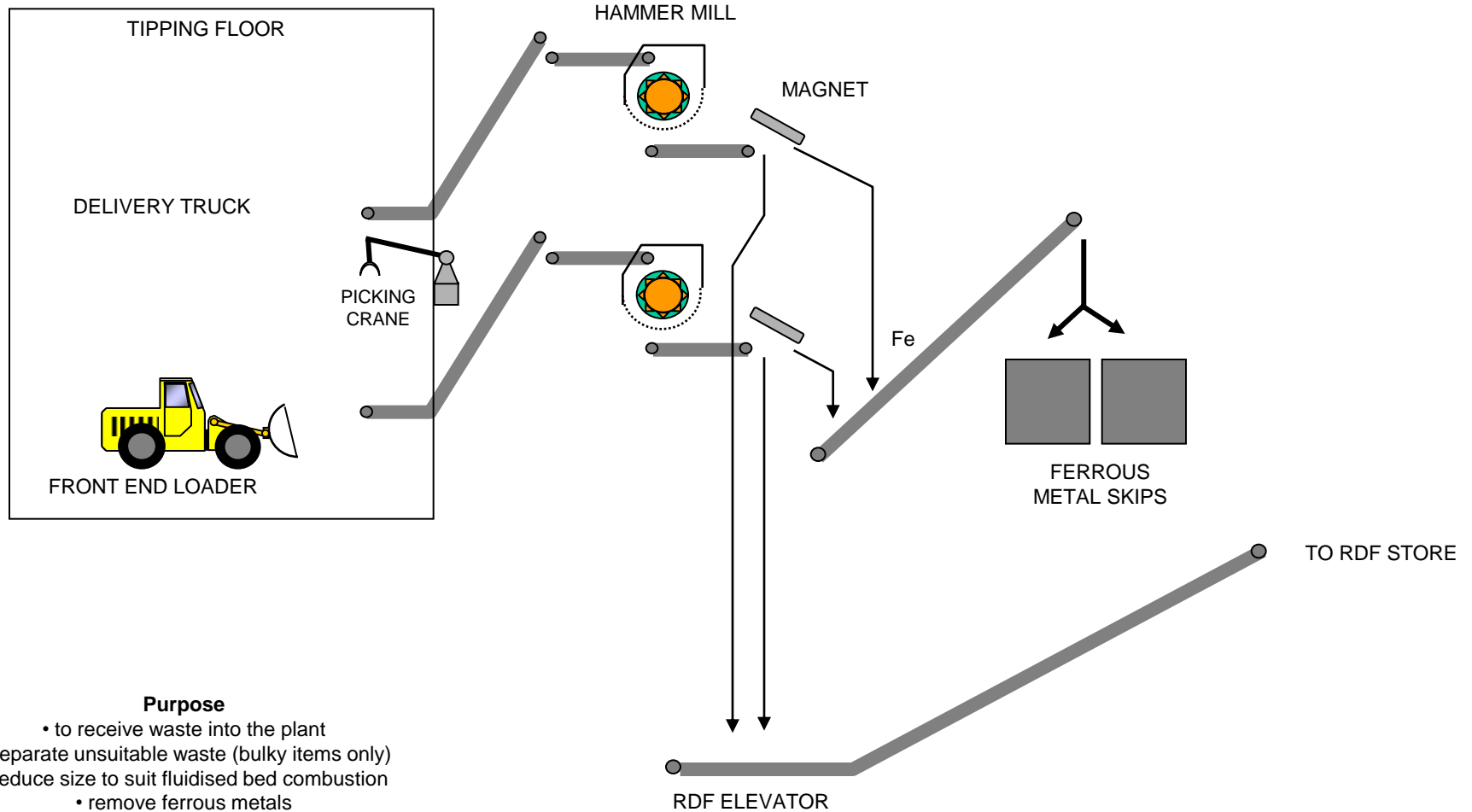
- Bottom Ash: 2 tonnes / hr
  - recycled and used in road stone preparation and manufacture
- Cyclone Ash: 1 tonne / hr
  - treated with the filter ash prior to disposal in landfill
    - work is well advanced to use this in the production of bituminous macadam.
- Filter Ash : 0.6 tonnes / hr
  - treated prior to disposal at landfill



# DERL EfW Process



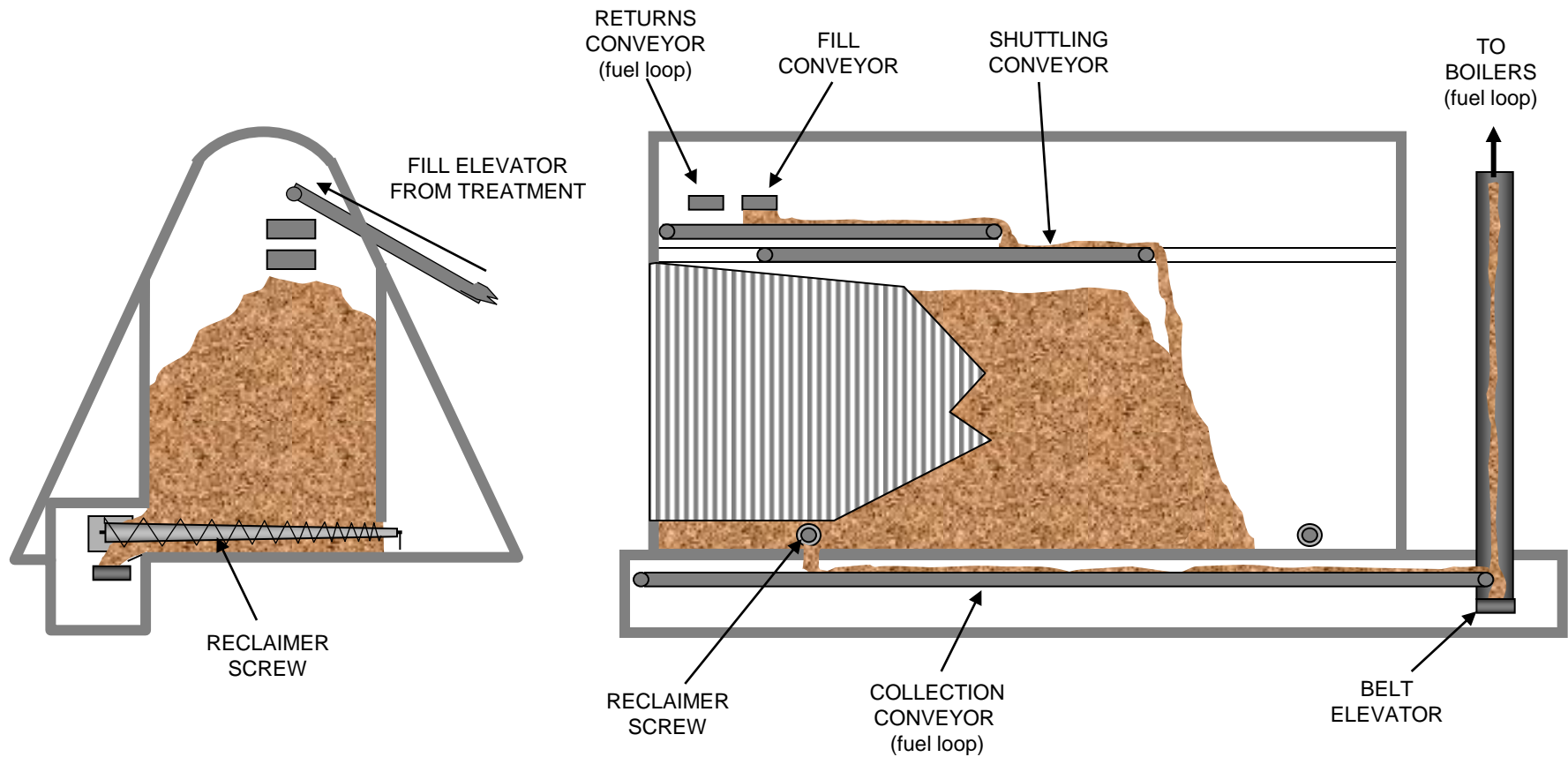
# Waste Fuel Treatment



### Purpose

- to receive waste into the plant
- separate unsuitable waste (bulky items only)
- reduce size to suit fluidised bed combustion
  - remove ferrous metals
- deliver prepared fuel to RDF store

# RDF Fuel Store

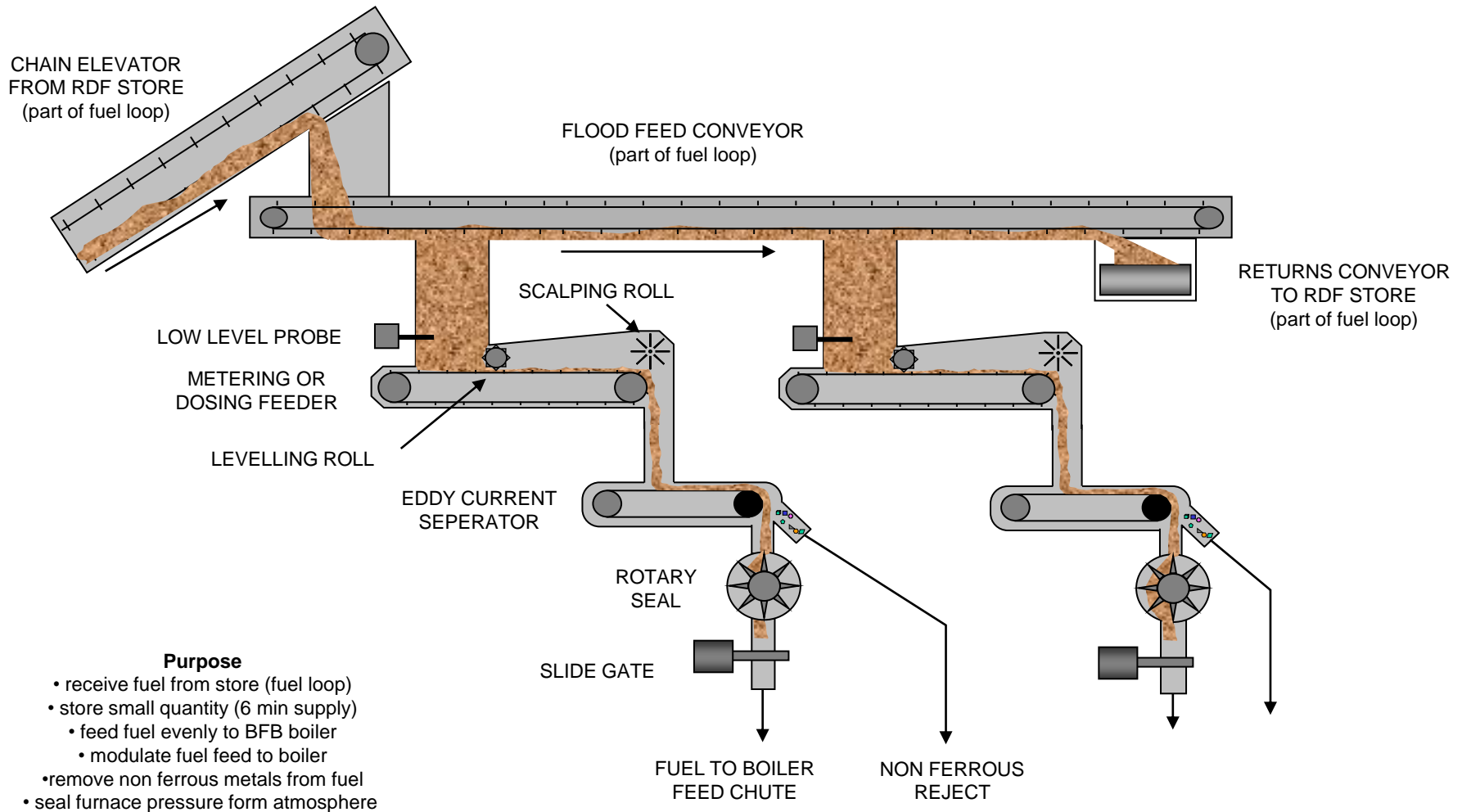


## Purpose

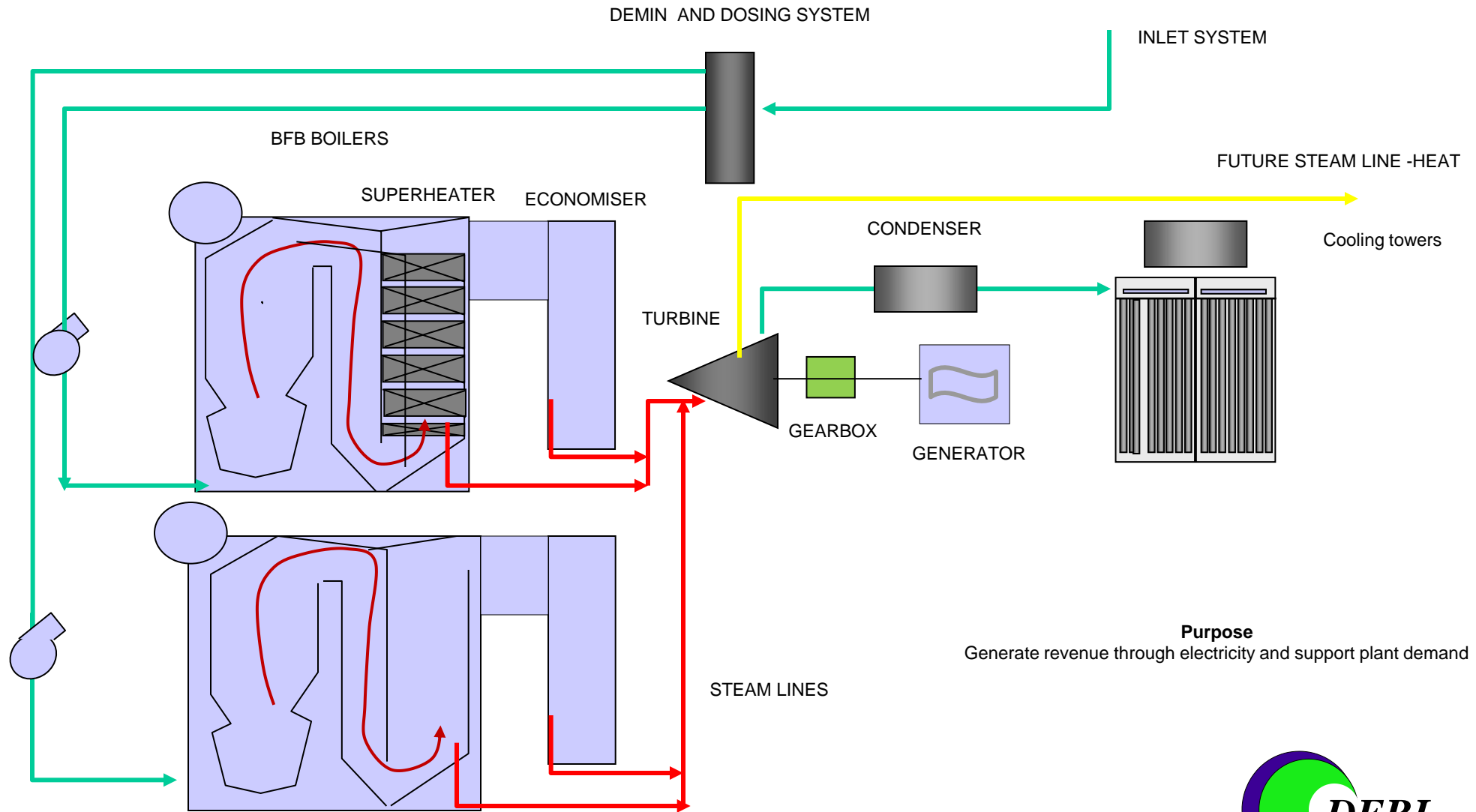
- receive prepared waste from tipping floor
  - store approx 2 days waste fuel
- recover fuel from store on demand



# Boiler Fuel Feed System



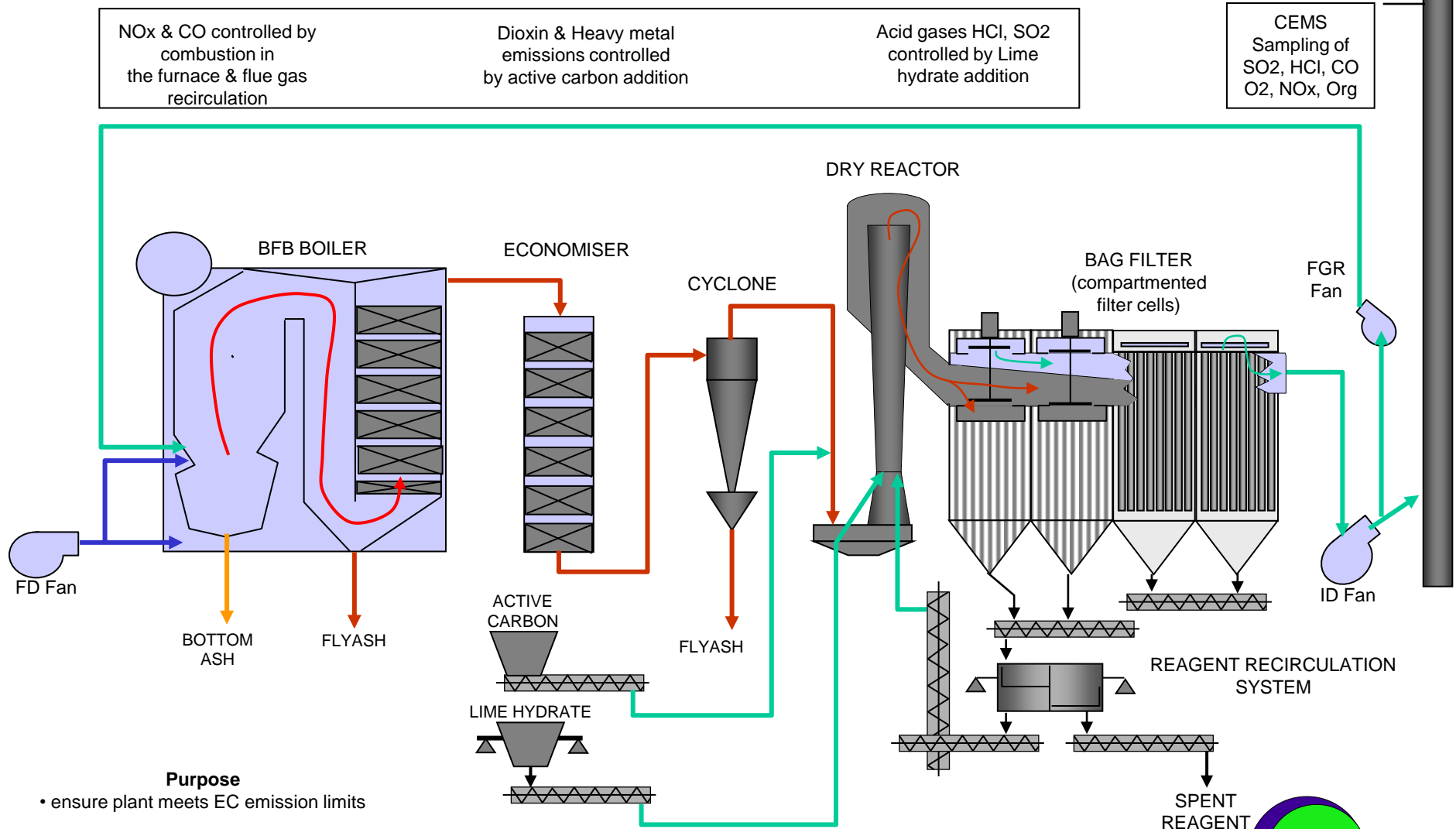
# Steam Turbine



**Purpose**  
Generate revenue through electricity and support plant demand

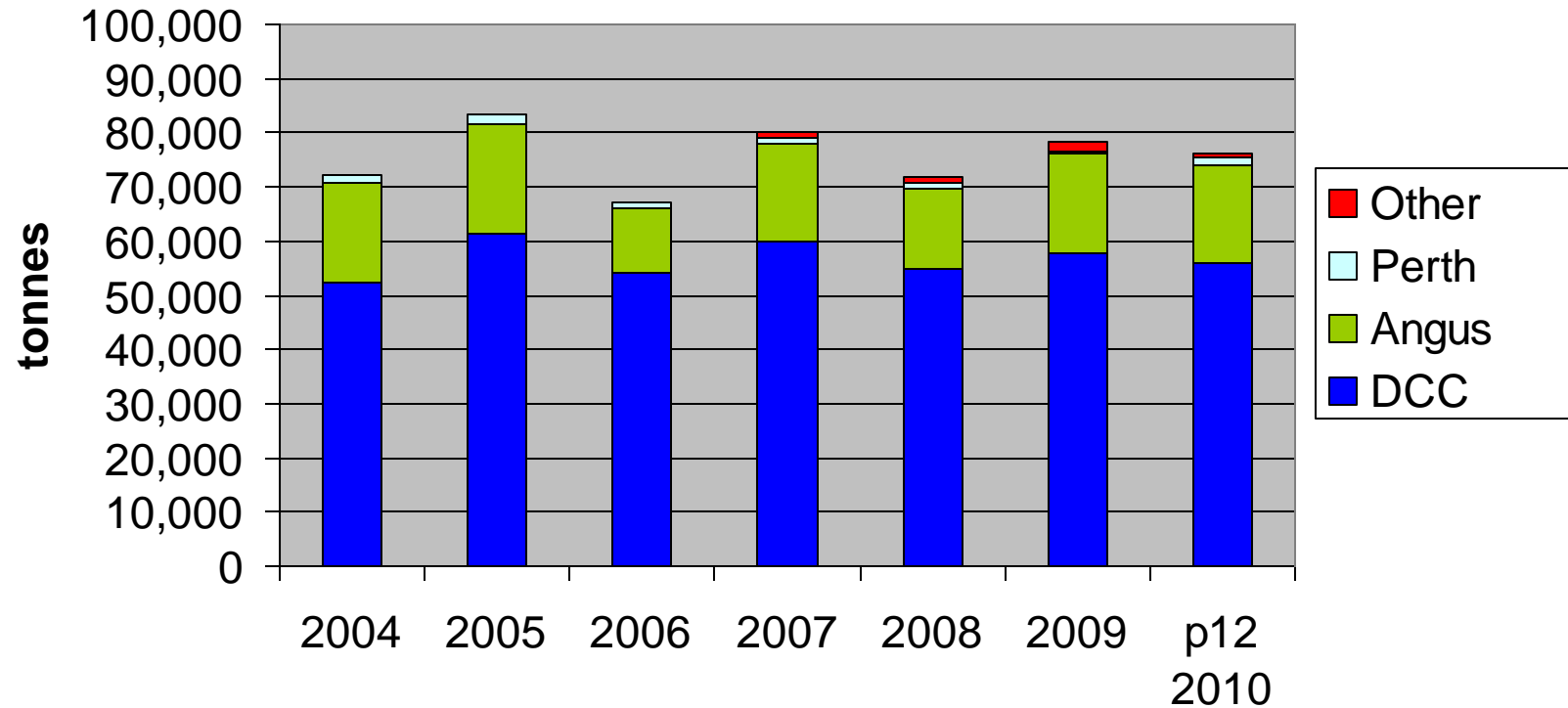


# Pollution Control



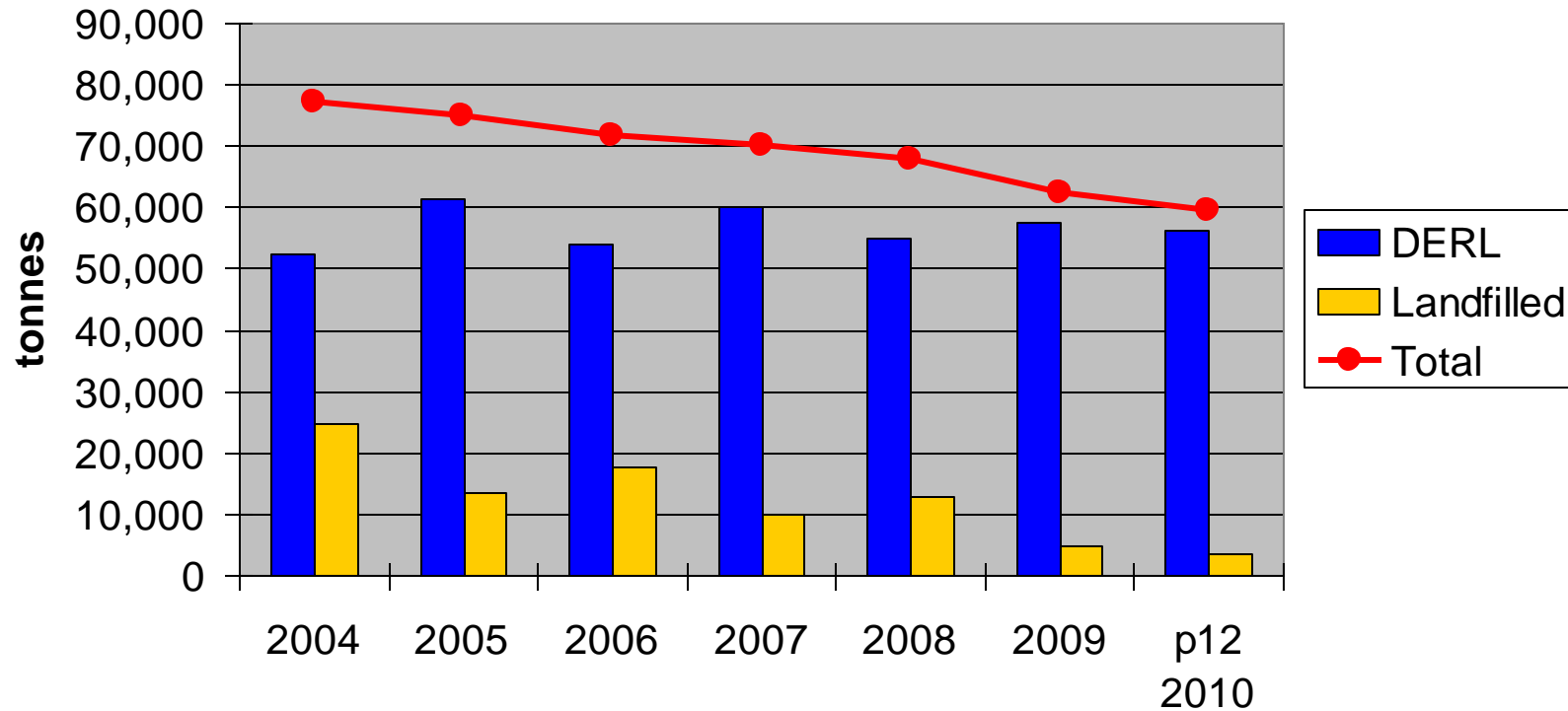
# MSW processed

## DERL - MSW Processed



## MSW Performance - DCC MSW Disposal

### DCC MSW Disposal



## Future Challenges

---

- Heat and Power Plan
  - SEPA varied PPC Permit – DERL appeal unsuccessful
- Zero Waste Plan
  - Effect on existing waste intake and contracts?
  - Possible extension of DERL catchment area
- Plant Lifetime Extension
  - Engineering Consultancy Study underway



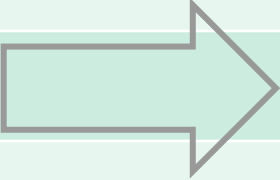
## Combined Heat and Power

---

- Good Quality CHP Index
  - Favours 'low grade' heat use
  - Difficult to achieve rating without customer demand
- District Heating
  - Possible heating circuit for local infrastructure
  - Sources of true 'waste heat' exist – FG condenser, BA cooling, blowdown and LP turbine exhaust – total c. 4MW
- Industrial Energy Supply
  - Engineering Consultancy Study underway
  - Steam export for base load process use
  - Possible electricity export - once SRO contract terminates



---

Every tonne waste DERL processes	Produces
	150kg bottom ash (recyclable)
	80kg cyclone ash (recyclable)
	50kg filter residue (landfill)
	3.5kg non ferrous metal recycled
	40kg ferrous metal recycled
	500kWh export electricity