

Rookery – EfW Reason for Building Size

The building is sized to encapsulate the process within. The largest piece of equipment is the boiler and grate and this primarily dictates the size of the building.

The boiler is designed to meet the stringent requirements of the Waste Incineration Directive (WID), in all aspects.

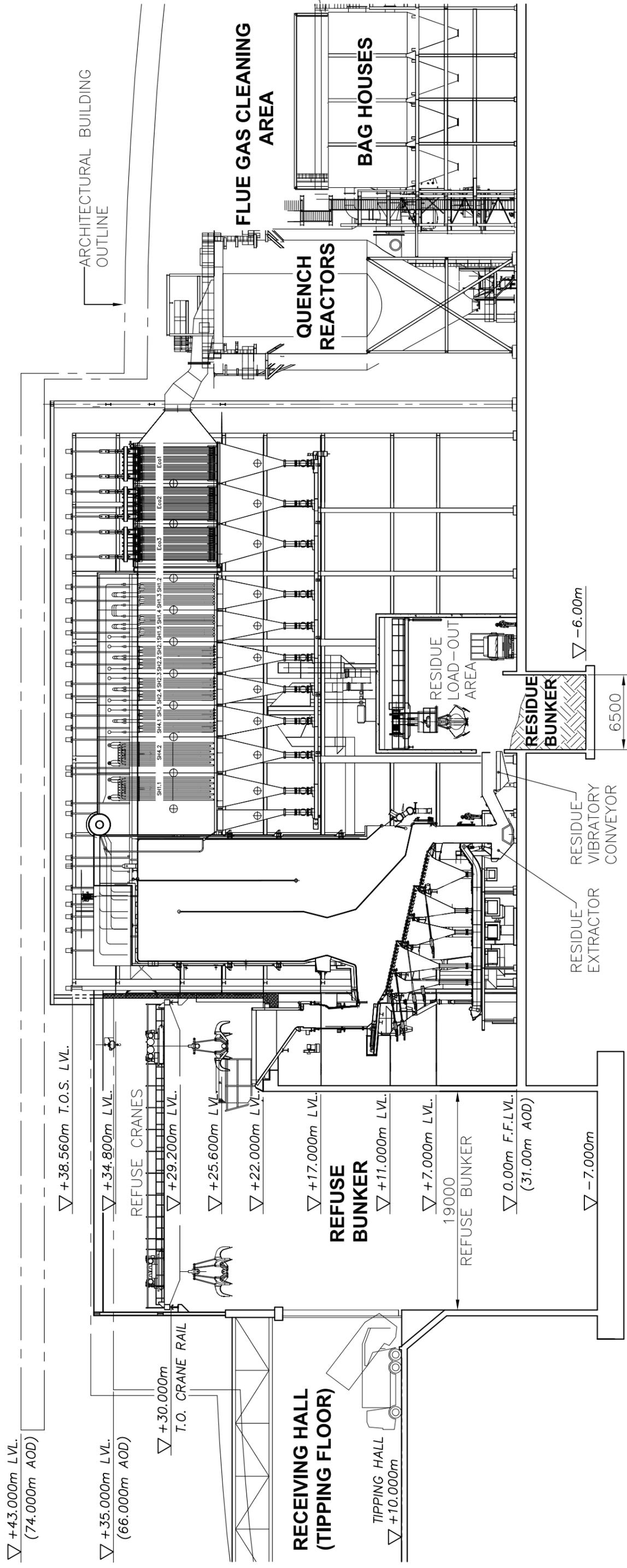
“Incineration plants shall be designed, equipped, built and operated in such a way that the gasses resulting from the process is raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even under the most unfavourable conditions, to a temperature of 850 C, as measured near the inner wall or at another representative point of the combustion chamber as authorised by the competent authority, for two seconds.”

So what does this mean?

This means that the combustion gasses that are produced in the combustion process on the grate must remain in the combustion chamber of the boiler for a period of at least 2 seconds. So as the gasses rise above the grate they must remain within the combustion chamber for this period and always above a minimum temperature of 850C. The height of the combustion chamber / boiler is therefore designed to ensure that these conditions are achieved.

- The height of the boiler as designed for the Rookery EfW proposal is shown on the attached drawing. It can be seen that there is little space above the top of the boiler and boiler support structure and the boiler house roof, the space provided here is required for maintenance access.
- The other limiting factor is the grate and ash discharge located at the bottom of the boiler.
- Covanta have, with the grate and boiler manufacturer designed the boiler and grate to provide a reduction of 4m in the height of the boiler house.
- The length of the boiler is also dictated by the boiler and the Flue Gas treatment plant.
- The boiler is designed to provide sufficient heating surface within the combustion chamber, the boiler heating surface, the Superheater and the economiser, to ensure that the heat produced is absorbed to produce superheated steam and to ensure that the exit temperature of the economiser is suitable for entering the Flue gas treatment plant.
- The size of the Flue gas treatment plant is a function of the mass flow of the combustion gasses produced on the grate.

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Note! The Details shown on this drawing are indicative

ROOKERY SOUTH - PART SECTIONAL ELEVATION THROUGH PLANT