There are three different types of 'waste' processing within the canteen system. Raw food scraps from preparation go directly into a traditional composting system to be used as fertile soil for the gardens.

A fermentation 'bokashi' system is used to process cooked food waste, which is then added to the compost.

Water waste including excrement goes through a seven stage filtration process that finishes with three wetland plant filters in the garden. Grey water enters the process at this wetland stage. This water's then ready to use for plant irrigation.

Each of the eating units are indoor food production stations. As well as germinating plants for the external gardens they also produce vegetables and herbs that need a warmer environment to grow in.
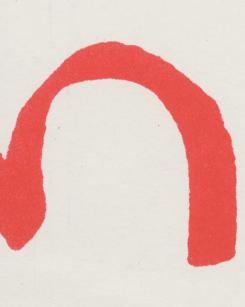
Each unit is a micro-system working within a macro system. Harvested rain water from the greenhouse roof is used as an independent input. Mushrooms are grown in waste coffee grains, the heat from this process is used to accelerate the germination process.

The environment is designed by the needs of the plants as well as the people. Sitting within a living greenhouse makes for a unique dining experience.

Where's the energy from?

25% of a commercial restaurants energy bill goes on the heating and cooling of spaces. Having the canteen situated in the greenhouse and the storage underground will mean a lot of the heating and cooling can be achieved passively.

Methane produced from the waste water filtration process is used as cooking gas. Solar panels are used as water heating.

Although additional water heating and gas may be needed a clever menu will also try to reduce this.

Prepared food is then placed into containers on the same level as the canteen. Some of which is then assembled by the customer, a truly self service system. The meal is paid for and the customer makes their way to the seating areas.

No waste means reusable cutlery and plates no plastic bottles or paper cups everything is washed after use.

What's on the Menu?

The menu will reflect the seasonally grown food and act as an educational tool in itself. Soup is always on the menu as a completed meal that can easily use supermarket surplus.

Simple nutritional meals are prepared that need minimal cooking processes to minimise excessive use of energy.

You then make your way into the greenhouse-canteen. At its centre, clearly on display below you is the cooking and preparation area.

The fresh ingredients used from the garden are visible through transparent containers. Any additional ingredients needed for cooking are gathered from local supermarket surplus. Any waste from the preparation process flows into the compost.

The storage system is also accessible to students. Date staged refrigeration allows for students to purchase almost out of date food directly from the canteen, acting as an additional source of income for the canteen.

The Ugly Kitchen

Today's kitchen is an ugly place, they are the waste production centres of the modern home and institution. The KABK canteen is a prime example of a wasteful system that is sustainable only in economical terms. What would a waste-free canteen look like? Is it possible?

'The Ugly Kitchen' explores the outcome of a canteen design that closes the loop on waste and focuses on the social and educational benefits of growing and cooking food.

As a means to educate, the flow into the canteen primarily follows the journey of the food. You enter through the external garden that surrounds the kitchen and eating spaces.

These external garden units are composed of specific growing structures and orientated with beds running from west to east to best utilise the sun.

Each unit functions as an allotment that can be run by students, with the opportunity to keep surplus food for themselves.

It would utilise collected grey water and compost from the canteens food waste. (See stage 5)