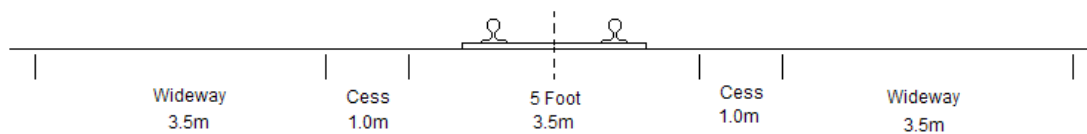


## **System overview.**

The Geismar weed killing train has been designed to apply weed killer to the operational railway at the desired rate through a range of speeds. The system is user friendly, accurate and simple to operate using proven technology combined with high quality design and manufacturing skills. Water consumption is minimised using a special type of nozzle which produces a rain type droplet that penetrates the plant and reduces drift. The conventional type spray jets required large volumes of water to combat drift which is a problem when spraying at speed.

The herbicide products are automatically mixed as required during the application process and so unused chemical remains in its concentrated state. Five zones can be treated, these are, – “Track”, “Left cess”, “Right cess”, “Left wideway” and “Right wideway” (See application zones diagram).

**Application zones diagram**



Application rates can be set to suit the products being used and the desired dosing rate, and the system keeps these rates correct through the varying speeds and zone selection. At the end of a spraying shift, the system is easily rinsed and shut down ready for the next shift.

The vehicle is equipped with four cameras, (two mounted on each end) which give the operators a useful view of the approaching cess and lineside without the need to lean out of the windows or excessive communication with the driver.

The system is supplied with water from Rail Tank Wagons (RTW's) via an interconnecting pipe between the RTW's and the weed killing train.

The existing steam heat pipe has been utilized to carry the water from the interconnecting water pipe to the spraying system within the coach via a 'Y' strainer located under the vehicle (See picture 1.1)



**Picture 1.1. “Y” Strainer.**

Electrical power is supplied from a three phase 28 KVA diesel generator (See picture 1.2) via a distribution board located in the operator’s compartment. Fuel for the generator is fed from the existing fuel tanks located under the vehicle.



**Picture 1.2. Diesel Generator.**

The herbicide storage tanks (picture 1.3) comprise of two tank units each having two 1000 litre (approx) compartments. Each tank unit sits within a spill tray. The tank compartments are replenished / emptied via a pump unit which draws the herbicide in from an external source. The replenishing hoses are fitted with quick release, dry break couplings to avoid spillage. The replenishing pumps are controlled from switches mounted on the high voltage electrical cabinet door (picture 1.4).



**Picture 1.3. Herbicide storage tanks.**



**Picture 1.4. Replenishing / emptying control switches**

The chemical mixing system is mounted on a frame situated adjacent to the herbicide storage tanks in the machinery compartment. The system has four injection pumps, a main water pump, product flow meters, a water flow meter, an accumulator tank, an injection manifold and a filter and mixing chamber. (Picture 1.5)

The system uses pneumatic diaphragm valves to control the flow of products within the system and a small compressor provides the air requirement for these.

The operator's compartment has two control stations which comprise of a rotating console for direction change. There is a master console and a slave console. The master console has additional features however both consoles function in the same manner. Each console has a video monitor linked to cameras mounted on each end of the coach for forward vision during the spraying operation.

Mounted on the wall in the operator compartment are the flow meter displays, (picture 1.6) which allow the operators to monitor flow rates and product usage.



**Picture 1.5. The chemical mixing system.**



**Picture 1.6. Flow meter displays.**

Herbicide product rate selection is set using switches mounted on the low voltage electrical cabinet within the machinery compartment and rates of between 2 and 10 litres are available to suit the products being applied. (See picture 1.7).



**Picture 1.7. Product rate selection switches.**