1.0 SILT TRAP

1.1.1 DESIGN OVERVIEW

The silt trap system is composed of a series of essential components, meticulously engineered to perform distinct functions, ensuring efficient sediment separation and water flow management. These integral components encompass:

1. **Energy Dissipator**: Strategically positioned at the inlet, the energy dissipator serves the critical purpose of mitigating water flow velocity to a subcritical level before it interacts with the primary structure. This reduction in kinetic energy minimizes potential erosion and turbulence effects, safeguarding the overall integrity of the system.
2. **Decant Water Pipe**: Functioning as a conduit for water transfer, the decant water pipe directs water from the upstream source to the energy dissipator. Its configuration facilitates controlled deposition into the energy dissipator, enabling optimal interaction between water and its subsequent flow-altering elements.
3. **Sluice Gates (Dual)**: The silt trap incorporates two distinct sluice gates, each leading into separate silt trap compartments. These gates provide selective control over water ingress, enabling tailored sediment deposition and facilitating efficient maintenance operations.
4. **Channel Flow**: Positioned at the terminal end of the silt trap, the channel flow design ensures the gradual transition of water into a subcritical flow state. This design consideration is vital to prevent sediment resuspension and optimize the hydraulic efficiency of the system, thereby facilitating its downstream movement.
5. **Second Splitter Box**: The secondary splitter box, a pivotal element in the trap configuration, allows for dynamic redirection of water flow. It provides the flexibility to channel water towards the designated return water dam, contributing to efficient water resource management and sediment containment.

Each of these components is characterized by unique design specifications, carefully selected materials, and precise dimensions. These attributes are tailored to ensure optimal performance, longevity, and resilience of the silt trap system while collectively addressing the intricate challenges posed by sediment-laden water flows.

1.1.2 POLLUTION CONTROL DAM - DOUBLE SILT TRAP AND DRYING BED

All dirty water draining to the RWD2 drains into a silt trap which is located in the middle of the two compartments in Figure 1-1. The silt trap has been designed to comfortably pass the 50-year storm event. A double silt trap measuring 25 m x 15 m x 1.5 m deep with a drying bed measuring 25 m x 4.7 m wide is located on the northern side of the return water dam. The double silt trap has been designed with sluice gates to control water flow into the relevant silt trap that is operational at the time.

Silt from dirty water runoff is captured in the silt trap, once the majority of silt is removed from the dirty water it is then directed into the return water dam. Cleaning of the silt trap is by means of a TLB. The silt trap has been designed for (8 t vehicle) or similar weight and type of vehicle. In the absence of a vehicle fleet list, the wheel loader considered in the design is a JCB-3CX series with a maximum bucket capacity of approximately 1.1 m^3 and a bucket width of 2.35 m. The vehicle and bucket specifications are to be confirmed with the final vehicle fleet.

Each of the compartments will need to be cleaned out as required based on regular inspections to ensure that no overflow occurs. The wet silt will be loaded onto an adjacent drying bed provided for this

purpose from where the dried-out silt must be regularly removed and appropriately dispatched to a dedicated stockpile.

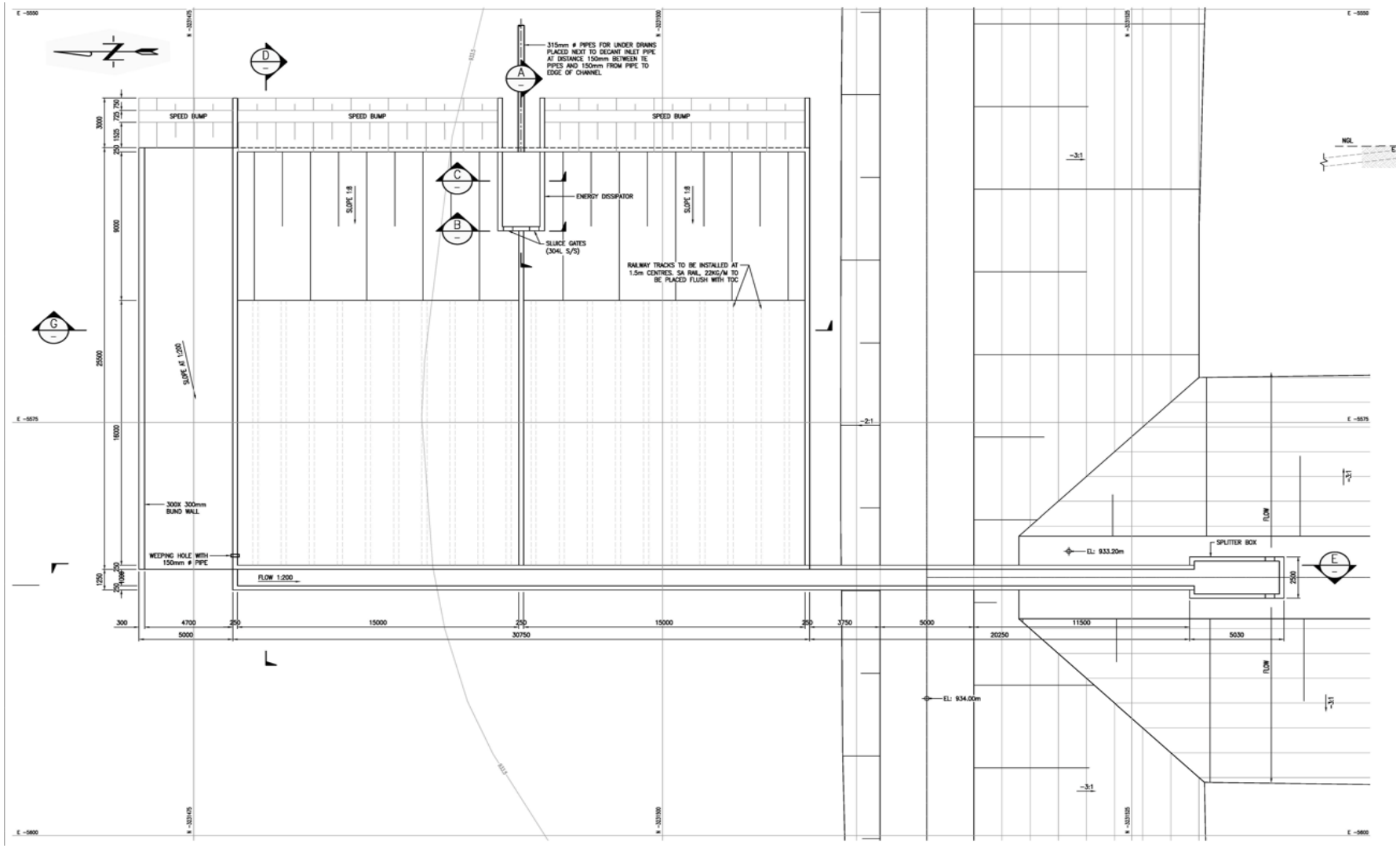

Figure 1-1 Double Silt Trap and Drying Bed at the Return Water Dam