BETTER FLOOD MANAGEMENT WITH CHANGI'S NEW, BIGGER RESERVOIRS

Little is known about the existence of Changi Airport's two reservoirs. Located at both the northern and southern ends of the Changi airfield, the North Creek and South-end Reservoir (SER) play a crucial role in ensuring that the airport remains flood-free, by collecting rainwater that runs off operational surfaces, and subsequently discharging it into the sea.

Managing flood risk is an important aspect of Changi Airport's safety regime. Situated in the tropics, Singapore often experiences sudden storms which can cause water build-up in a very short time. The Changi Airport airfield can thus become flooded without a robust drainage system. Flooding can impede the airside operations of ground handlers and also impact flight operations by reducing the visibility of ground pavement markings which are crucial for guiding pilots. Hence, CAG seeks engineering solutions – such as the two reservoirs mentioned above – to mitigate these risks.

As part of Changi Airport's development and expansion plans, the existing SER needs to be relocated to make way for the construction of new aircraft parking stands as it occupies land suitable for aircraft bay development. Shifting the reservoir to an area where the surface ground is unsuitable for any vertical development frees up usable land space and allows CAG to optimise land use and develop necessary infrastructure to manage increasing air traffic. CAG consulted and worked with professionals from the Nanyang Technological University and National Environment Agency to study how the reservoir shift would affect operations at Changi. More importantly, CAG also carried out risk assessment to mitigate potential risks to ensure that all aspects of the relocation such as water storage capacity, ground user's safety and aircraft operations area were addressed.

THE NEW RESERVOIR BEING CONSTRUCTED. ITS WATER HOLDING CAPACITY WILL BE THREE TIMES LARGER AND FITTED WITH PUMPS FOR BETTER FLOOD PREVENTION

By the end of 2014, the SER will be completely backfilled. In its place will be a new and bigger reservoir west of the current site. The new reservoir will be three times bigger, in terms of water holding capacity, large enough to hold an equivalent of 216 Olympic-sized swimming pools. Changi will also have its first drainage pumping station to house six industrial pumps. Unlike the current reservoir which releases stored water into the sea by opening a tidal gate, the new reservoir uses industrial storm water pumps to discharge rainwater collected at a controlled rate, at predetermined timings. This is to comply with new guidelines on flood management where all collected surface storm water run-off is not immediately discharged so as not to put the handling capacity of the public drain system under stress.

In addition, adopting a mechanical engineering-designed 'controlled-discharge' concept also means that water collected in the new reservoir can be pumped empty, enabling the new reservoir to be ever-ready to collect potentially 540,000 cubic meters of rainwater at any one time and further reduces the risk of flooding at Changi Airport.

CHANGI AIRPORT'S CURRENT RESERVOIR LOCATED AT THE SOUTHERN-END OF THE AIRFIELD. THIS RESERVOIR WILL BE BACKFILLED BY END 2014 TO MAKE WAY FOR THE CONSTRUCTION OF NEW AIRCRAFT PARKING STANDS