ENLARGEMENT OF HARPERS 3 RESERVOIR

In 2013, St Helena suffered from a serious drought situation. Since then we have introduced key measures to optimise the use of our water resources, whilst simultaneously working on a programme of preventative maintenance and system upgrades to increase water capture, improve storage capacity and reduce leakage.

Through this on-going water system improvement programme, we have redesigned and replaced a number of water abstraction systems; relined the Scott's Mill Reservoir and our largest project to date is the expansion of the Harpers 3 Reservoir. This project will increase the capacity of the Harpers 3 Reservoir from 8,000 cubic metres to around 20,000 cubic metres. The construction works commenced in January 2016 and significant progress has been made to date.

This is a large scale project with a number of engineering and practical challenges. There are far-reaching and long-term impacts for both Connect and consumers in the Redhill Water Supply Area and we'd like to give you an update on how things are progressing.

As with a project of this scale, the construction of the reservoir will consist of a number of key steps:

Step 1 – Empty the reservoir and remove the existing lining. From an engineering perspective on Island, works to a reservoir are best completed during the dry season. This requirement was carefully considered, as this is also the time of the year when we need to focus on preserving water supplies to ensure that there is enough water to last until the winter rains arrive. The water in Harpers 3 was drained into Scott's Mill Reservoir and prioritised for use, to ensure the water was not lost. The Scott's Mill Reservoir was relined in advance of this to ensure no water was lost through leaks.

Step 2 – Clear the works area on site. This involved clearing vegetation on and around the site to facilitate setting out (surveying) of the works and construction of the reservoir.

Step 3 – Construction. In order to optimise the enlargement of the reservoir, detailed engineering designs were prepared, which focussed on three construction objectives: making the reservoir deeper – by excavating down a further 2 metres; raising the reservoir embankment by approximately 2 metres; and expanding the old reservoir walls outwards towards the east, south and west. These objectives ensured the reservoir can be enlarged to two and half times its previous size. There is a further objective to provide subsoil drainage to the reservoir to ensure its long-term safety.

Although excavating a bigger hole in the ground appears easy, it requires sound engineering to ensure the end result will meet the objective of increased storage and improved water security. Every stage during construction will be carefully monitored, works properly measured and compaction tests being carried out to ensure built strength and stability. The embankments of the reservoir are compacted in layers, which are similarly tested to the work undertaken when Dry Gut was filled to safely allow airplanes to take off and land. Retaining walls will also be built where the reservoir is being cut into the eastern and western banks of the site, to prevent land slip and to aid future stormwater drainage around the reservoir.

Project progress – Since the start of the project, satisfactory progress has been made. We have had more rain than would usually be expected at this time of the year and this has made conditions less than ideal at times. Once the reservoir construction is complete, the works will be inspected by and signed off by specialist consultant engineers. The excavated reservoir will then be lined with a Butyl lining, which will ensure the reservoir remains water tight, with the new lining expected to last around 30 years.

And finally, we wait for the rains to come and fill up the finished reservoir – that's the part we really have no control over at all!

15 March 2016