

The groundwater at Rome was notoriously unpalatable, and water from the Tiber was unsafe to drink. Aqua Appia, Rome's first aqueduct (312 BC) was commissioned by the censor Appius Claudius Caecus as a publicly funded major project.

By the late 3rd century AD, Roman aqueducts supplied Rome with water by a combined conduit length of 800 kilometres, of which only 47 km were carried above ground level by the familiar masonry supports. They supplied around 1 million cubic metres (ie 10,000 GigaLitres) a day; enough to supply a modern city of population of 10 million. The longest was the Constantinople (Turkey) around 500 km. Gradients for Roman Aqueduct were 1:4800 and typically around a metre wide and deep with a flow rate estimated to be about 35,000 m<sup>3</sup> /day (or 350GL/day) depending on the season .

With the fall of the Roman Empire, some aqueducts were deliberately cut by enemies but many more fell into disuse through lack of organized maintenance. Their failure had an impact on the population of cities; Rome declined from its high of over 1 million people in the Imperial era to as low as 30,000 in the medieval era.

The New Bradfield Scheme is very similar length, capacity and function to the Roman aqueducts being totally gravity fed. With an estimated fall of 1:5000, 100m from Hell's Gate over a distance of 500 km to the Lakes Buchanan and Galilee Storages, a wider, lined channel could easily provide the 20,000GL per annum. Harvesting the flow from streams along would be possible, or desirable helping to reduce flooding lower in the catchments and leading to potentially greater harvest rates. Spillways would dump the excess if the water level got too high.

As Sir Humphrey Appleby said about public projects ('Yes, Minister'): "Anything is possible for government, so long as it isn't the first time." The Roman Empire has done a similar-sized gravity-fed aqueduct system 2000 years ago.