

## **A STUDY OF THE ANCIENT IRRIGATION SYSTEM OF ANURADHAPURA**

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The oldest settlement evidence of Anuradhapura goes back to the early Iron Age and dates back to 900-600 BC based on radio carbon analysis (Daraniyagala S.U: 1992, page 709) The irrigation was the key factor for the evolution of the ancient village system which can be considered as a significant development in the Iron Age. There is archaeological evidence to prove that there were human settlements in Anuradhapura even before the arrival of king “Vijaya”. The excavations done in inner city (Athulunuwara) had found some pottery which proves that there were human settlements prior to ‘Vijayas’ arrival. Since they had a technology and civilization in clay pottery it might be assumed that they might have had the technology in irrigation and the concept of tanks too. The ideas on irrigation tanks had been spread later as large tanks and thousands of small tanks in each and every village in the later period of the Anuradhapura era. These tanks greatly influenced on the development of agriculture of the country. Canals and tanks were constructed by successive kings too.

Many scholars have done research on the tanks in Anuradhapura. Among them there are archaeologists, historians, sociologists, irrigation engineers, and anthropologists. R.L Brohier (1930) has studied the ancient irrigation system in Sri Lanka and revealed his findings in a book called “Ancient Irrigation Works of Ceylon”. H.W Coodrington through his books, “Ceylon Coins and Currency” and “Short History of Ceylon” has mentioned about a tax system related to the tanks. C.W. Nicholas also has done research on Sri Lankan Irrigation System. Since the Rajarata kingdom has been transferred to the South as a result of the foreign invasions and several other factors

many tanks have been ruined due to none maintenance. Under British rule, many of them have been renovated.

In the resent past local researchers have done research on irrigation on the basis of new scientific research methods. Specially, An Excavations have been conducted by Dr. Siran Daraniyagala and Robin Cunningham, in the inner city (Athulunuwara) of ancient Anuradhapura city and they found evidence of ancient water management system in the beginning of the first millennium B.C.

#### Objectives

To investigate the cascade system of irrigation in ancient Anuradhapura.

To investigate the water supply systems of the citadel and monasteries, of ancient Anuradhapura.

To investigate the irrigation system of agriculture of ancient Anuradhapura.

This study was done mainly based on the archaeological and literary sources. The historical resources, excavation reports, and interviews were the primary sources that have been used for the study. The prior research reports also have been used as secondary sources. It is noticeable that some basic elements like, Biso Kotuwa, Sorowwa, cannels and other elements related to the tanks have some timely changes even though the giant tanks are still remaining as originals. Yet, some small types of tanks are not visible as tanks, and need an exploration in recognizing. To observe such tanks, the literature and previous archeological research were used. The irrigation system and the cannels in and around the sacred city of Anuradhapura also were not visible and need a considerable effort in mapping. Hence, the study focused on much literature in searching the irrigation system in the particular area. Apart from that, the previous archaeological research was studied to assure the findings as well. Specially, the guidance and the knowledge of the adults around the area about these canals and irrigations were a great support to identify the particular places.

Ancient Scared City of Anuradhapura can be recognized as one of the most significant archeological sites in Sri Lanka as well as in South Asia. Dr. Siran Deraniyagala has done a research in the inner city (Athulunuwara) area

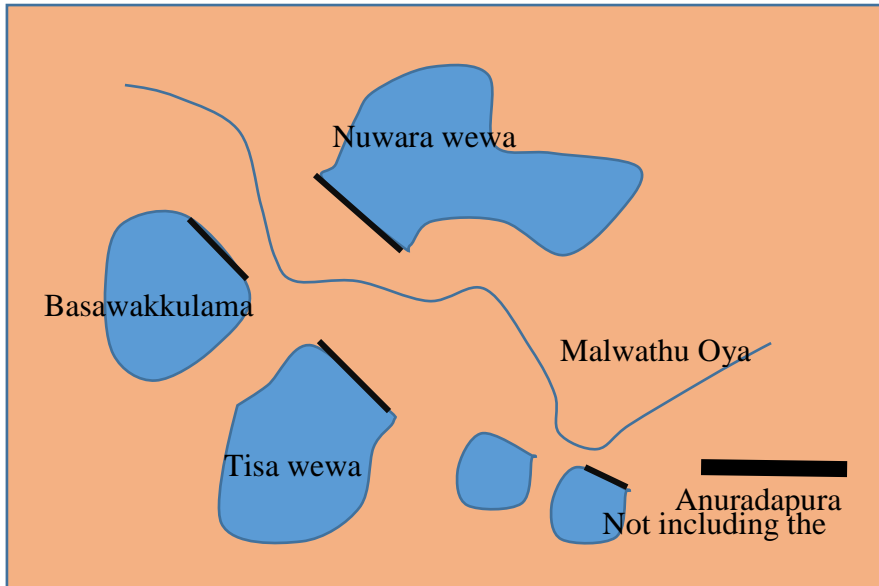
of ancient Anuradhapura city which is about 250 acres of land in size in 1960(Daraniyagala S.U: 1992, page 709) based on the number of research had been done by local and international research on the same matter. He has done an archaeological excavation and as a result more than 14 excavations have been done in the area since 1984 in a large scale using modern scientific research methods covering the 250 acres of land area. The findings of the researches that have been done reveal adequate evidence to explore the fact that there had been Human settlements and well developed irrigation system in the area.

King Vijaya who arrived in 6<sup>th</sup> century B.C ruled in Thambapanni, and his follower The King Panduwasadewa established his kingdom in Upathissa Gramaya, which was situated in the middle of the country giving up the Kingdom of Thammannawa. Next, King Pandukabaya after his summit made 'Anuradha Grama' which was situated around "Malwathu Oya" as his kingdom. (බස්නායක, එම්. ටී, 1997) The reason King Pandukabhaya moved his kingdom to the area could be the possibility of getting the needy water for agriculture. King Pandukabaya has made the 'Anuradha Grama' as a well-developed and well-guarded city. According to the Mahawansa the king also made three tanks named "Jaya Vapi", "Abhaya Vapie" 'Gamini Vapi' in order to supply the water to the inner city. 'Abaya Tank' is known as 'Basawakkulama tank' today. During the period of King Dewanamiyathissa, the necessity for the water of the city had been increased and 'Thissa Wewa' has been built accordingly. At the beginning the tank was small in size, and it has been enlarged in the period of King Dhatusena, bringing water from Kala Wewa through 'Jayaganga' (Yoda Ela). Through 'Halpanu Oya' canal from 'Malwathu Oya' water has been sent to the middle of the Anuradhapura ancient city and the need for the water of both 'Maha Sangha' and citizens were fulfilled with that water. Adequate archaeological evidences have been revealed by the excavations done in the area and there can be seen some ruins of the parts of irrigation system such as 'Biso Kotuwa' and 'Sorowwa'. Apart from that, there are some ruins of a brick made system which was used in purification of water. There is a special creation in the middle of the city which was used to get water to the Alms Hall. It was kind of a well and there

is a stair case from top to bottom of the well, that anybody can step down and get the water even though the level of the water goes down.

The archeological excavations further reveal that there was an underground drainage system, for getting water from Malwathu Oya, 'Thissa Wewa', 'Abaya Wewa' and 'Bulankulama Wewa'. It is considered that the Elephant Fountain (Eth Pokuna) in Abhayagiriya was watered by the 'Bulankulama Wewa'. There is a notice in one of the inscription of 'Ruwanweli Seya' of King 'Kanitta Thiisa' about some tanks named 'Mathaka Wewa', 'Asanaka Wewa', 'Gothika Wewa' and an Amuna. These tanks also might be filled by Malwathu Oya. According to the Dakkhina Thupa Puwaru Lipiya there were several tanks including an Amuna called "Rathakamawa". There is a notice in a Giri Lipiya in 'Purawasankulama' about a few tanks named 'Nakara Wewa', 'Bandakara Wewa', 'Watanakaraka Wewa', 'Salagala Wewa', 'Kada Wewa', 'Patagamaka Wewa', 'Nakara Wewa', 'Balaka Wewa', and 'Malaka Wewa' including an Amuna in the name of Barajaka Too (Brohier, R.L 1934). King "Mahasen" also continued the constructions of the Tanks and Gaminiwapi or Gaminithissa is one of them. Today the tank has been recognized as Perimiyanikulama in the North direction to the Anuradhapura city.

The tanks in small sizes might be enlarged later as the timely need. At first these tanks were created in natural places where the water gets collected which were created as a result of natural phenomena. The 'Nuwara Wewa' is one such tank which was a small tank at the beginning in the name of 'Nakara Wewa'. King II Moggallana also has built a tank across the "Malwathu Oya" in the same way. In this way in 5<sup>th</sup> and 6<sup>th</sup> century B.C. the ancient Anuradhapura city was facilitated with water by a well-developed irrigation system. In this system of irrigation, many tanks including Abhaya Wewa and many other canals, drains, amunu and creations were made to full fill the need of the citizens. In spite of that, the tanks were created in order to facilitate the agriculture outside of the city. As a whole, the water management system of ancient Anuradhapura city was well planned considering the factors like increasing population, the environment, the landscape, and the need.



**Keywords:** irrigation, tank, management, settlements

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