Topic 2- Milestones of Hong Kong Water Supply (Key Stage 1)

English voice over script and super:

Super: Topic 2 Milestones of Hong Kong Water Supply Key Stage 1

FVO: Topic 2 Milestones of Hong Kong Water Supply Key Stage 1

Boy: Wow! Look at this marvelous Water Resource Museum in the middle of the sea! Dave, any special here?

Super:
Water Resource Museum
160 years of water supply history
Water supply challenge

Water Save Dave: This Water Resource Museum showcases one hundred and sixty years of Hong Kong's history in the evolution of water supply, displaying technical difficulties, natural challenges and ways to overcome them. It is really informative!

Boy: It sounds interesting. Let's start our visit before it gets late.

Water Save Dave: Wait a minute, let me ask you something first. How did people in Hong Kong collect drinking water one hundred and sixty years ago?

Boy: Ah... I guess people collected drinking water from water wells, just like I have seen from the ancient films.

Water Save Dave: Correct! Once upon a time, people lived with underground water collected from water wells, alternatively they used water from water streams. However, as population increased, the limited number of wells and streams was not sufficient to meet the needs. As a result, Hong Kong Government financed the digging of five wells to provide water to the public for free and hence, Hong Kong's history of water supply began…

Boy: But only five wells! Were they enough to satisfy needs?

Water Save Dave: You are quite insightful. Five wells were insufficient to meet the needs. As population grew, digging more wells was not going to solve our water shortage problem. In addition, the water from wells was easily contaminated by the surface runoff, therefore people got sick after drinking the polluted water. As a result, the Hong Kong Government started finding solutions for the water supply in Hong Kong.

Boy: What kind of solutions did the Government find?

Water Save Dave: Let's take a look at the first exhibition zone and find out how the Government overcame the challenge.

Video

Super:
Pok Fu Lam Reservoir
Former Watchman's Cottage
Gauge Basin
4 Masonry Bridges

Video Ended

Boy: I see, they built a reservoir to solve the water shortage problem.

Super:
Geographical Environment
Year 1863
Pok Fu Lam Reservoir

Water Save Dave: Correct. There is a natural valley in Pok Fu Lam which is geographically suitable for rainwater collection. That's why the Government chose to build a reservoir there! Our first reservoir was completed in 1863 after three years of construction.

Boy: Here it also states that Pok Fu Lam Reservoir underwent expansion to increase the capacity soon after its completion.

Super:
3 to 4
Year 1877

Water Save Dave: Yes. The storage capacity of the original Pok Fu Lam Reservoir was too small which was only equivalent to the size of three to four swimming pools. Soon the Government noted the need to add another reservoir upstream and raise the level of the dam. By 1877, the expanded Pok Fu Lam Reservoir was completed, and it became the Pok Fu Lam Reservoir we see today.

Boy: Was that expansion enough to meet the water needs of our forefathers?

Super:
"Tai Tam Valley Scheme"
Filter tank
Filtered water

Water Save Dave: Unfortunately, not. Compared with the rapid growth of population, Pok Fu Lam Reservoir was still considered inadequate to fulfill Hong Kong's water demand. Therefore, the Government commenced the construction of the Tai Tam Reservoir after a few years, which was named the Tai Tam Valley Scheme. The storage capacity was 4 times the capacity of the Pok Fu Lam Reservoir. Besides the reservoir, a filter tank was also built, and it was the first time that filtered water was supplied in Hong Kong. After the completion of the Tai Tam Valley Scheme and its expansion, it became the Tai Tam Reservoirs we see today. It was such a massive project at the time.

Boy: So, was the water shortage problem solved?

Water Save Dave: Let's visit the next exhibition zone to find out more.

Boy: Oh dear! In the picture, I can see someone start a fire. Why was that?

Water Save Dave: That was really tragic! During the 1890's, Hong Kong suffered from a severe plague. This picture documented domestic furniture and personal belongings were burnt to stop the spread of the plague. Unfortunately, over thousands of lives were taken.

Boy: Oh my goodness... I didn't know something that serious had happened. But how was it related to water supply?

Super:
Deteriorating hygiene conditions
Insufficient water supply
Report
Chadwick
Year 1902
Water policy reform proposal

Water Save Dave: Never underestimate the importance of water supply. Deteriorating hygiene conditions and insufficient water supply were the causes for a wide spread of plague. As a result, a British engineer, Chadwick, submitted a recommendation on the reformation of water supplies in 1902.

Boy: What did Chadwick recommend?

Super:
Directions of water supply service

Water Save Dave: Basically, Chadwick recommended the following to ensure quality of drinking water: setting up a dedicated department to supervise water supplies, closure of all existing water wells etc.

Water Save Dave: His recommendations set the foundations for a Twentieth Century Water Supplies and made great contributions to the forthcoming Water Works development. In addition, the Government kept searching for sites to construct reservoirs in order to cope with the growing water demand.

Boy: Besides Pok Fu Lam Reservoir and Tai Tam Reservoir, what other reservoirs did the Government build?

Water Save Dave: Let's check them out in the next exhibition zone. Look at this map. It should give you the answers.

Boy: Wow! We have got reservoirs all over Hong Kong Island, Kowloon and New Territories!

Super:
Water Gathering Ground
Impounding Reservoir
Kowloon Reservoir
Shing Mun Reservoir
Shek Pik Reservoir
17 in total

Water Save Dave: Yes. Apart from Pok Fu Lam and Tai Tam, the Government also built reservoirs in Kam Shan, Tai Lam, Sai Kung etc., such as Kowloon Reservoir, Shing Mun Reservoir, Shek Pik Reservoir etc. In total, there are 17 reservoirs in Hong Kong!

Boy: Wow! That's a lot! Is there any particular reservoir we need to know among them?

Super:
The Plover Cove Reservoir
Largest in size
First reservoir in the sea in the world

Water Save Dave: Indeed. The Plover Cove Reservoir completed in 1968 is not only the reservoir with the largest area in Hong Kong, but it is also the first reservoir built in the sea in the World.

Boy: Wow! Really incredible!

Super:
The High Island Reservoir
Completed in 1978
The last reservoir
Built in the sea centre
Largest in capacity

Water Save Dave: Besides the Plover Cove Reservoir, High Island Reservoir is also worth knowing. It was completed in 1978 and it is the last reservoir that has been built by the Government up to this day. In addition, it is the reservoir with the largest capacity in Hong Kong, almost 20% more than the Plover Cove Reservoir!

Boy: One is the largest in size and the other is the largest in capacity, we definitely need to know them well!

Super:
Pok Fu Lam Reservoir
Year 1863
The High Island Reservoir
Year 1978

Water Save Dave: The era of reservoir construction lasted more than one hundred years, spanning from 1863 to 1978.

Boy: Well I suppose Rome wasn't built in a day....

Water Save Dave: Unfortunately, Hong Kong experienced droughts throughout the past hundred years and a lot of people suffered. Why don't we check this out in the upcoming exhibition zone?

Boy: There are so many people in the picture! What were they doing?

Water Save Dave: In 1929, there was a serious drought in Hong Kong, people shown in the picture were lining up to get water. The rainfall was very low at that time, most of the reservoirs dried up even when it was in the rainy season.

Boy: What? I can't believe Hong Kong had droughts!

Super:
Water Rationing
Kowloon
Hong Kong Island
Hong Kong
Shanghai
Japan
Zhuhai

Water Save Dave: Yup. The Government implemented a lot of emergency measures such as water rationing, using water boats to convey fresh water from Kowloon to Hong Kong Island, importing water from other regions like Shanghai, Japan and

Zhuhai, in the hopes of alleviating the serious water shortage problem. The drought impressed upon the Hong Kong people the importance of water for human life, the Government also had to think about long-term solutions to address the water shortage problem.

Boy: So, what kind of strategies did the Government develop?

Water Save Dave: Look over there!

Boy: Wow! What a huge water main! It is taller than a door!

Super:
Year 1960
2.4m

Water Save Dave: In order to avoid the sole reliance on the erratic rainfall for water supply, the Hong Kong Government decided to import water from Chinese Mainland in 1960, through a huge water main with a diameter up to 2.4 metres.

Boy: Oh! Imported water from Chinese Mainland is that Dongjiang water?

Super:
Year 1963
“Dongjiang-Shenzhen Water Supply Scheme”
Hong Kong
Dongjiang

Water Save Dave: You’re right. After several rounds of negotiation, consensus was finally made in 1963 on the Dongjiang-Shenzhen Water Supply Scheme. Since the construction took a long time to complete, Hong Kong experienced another severe drought prior to the completion of the water supply infrastructure.

Boy: What was it like?

Super:
May 1962- April 1963

Water Save Dave: From May 1962 to April 1963, the recorded rainfall was substantially less than the average annual rainfall, and the storage levels of Hong Kong's reservoirs dropped to barely over half of their total storage capacity. Let's check out this infographic from this newspaper cutting.

Boy: From what I see, the Government implemented a drastic water rationing plan only allowing 4 hours of water supply on alternate day from 16 May. However, on 1 June, the amount of water recorded at the reservoirs was less than 20% of their capacity, as a result water rationing for only 4 hours every 4 days was imposed. Residents were carrying buckets to line up on the street in order to get water! I can't imagine what kind of life that had been.

Super:
Agriculture and fisheries
Business

Water Save Dave: Life was really tough. Fishermen and farmers also suffered a lot. In addition, the drought and extreme hot weather caused widespread diseases.

Boy: This drought sounds scary.

Super:
High Island Reservoir
Desalination technology

Water Save Dave: Having learnt from this experience, in addition to the construction of the High Island Reservoir, the Government had also been actively doing some research on desalination, hoping to develop new water resources.

Boy: What is desalination?

Water Save Dave: Good question. Let's take a look in the next exhibition zone.

Super:
Year 1975

Water Save Dave: Desalination means converting non-potable, highly salty seawater into fresh water. The plant shown on the panel is Lok On Pai Desalter which came into

operation in 1975, and it was the largest desalination plant in the world at the time.

Boy: Sounds awesome! If desalination works, and given that most of the Earth's surface is covered by oceans, Hong Kong should no longer worry about water shortage.

Super:
Seawater resources
Diesel
Seawater
Occasionally relieve water shortage
Low usage rate
Year 1982

Water Save Dave: Even though our Earth is mostly covered by oceans, the operation cost for desalination was high and it was not sustainable because the technology of desalination at that time drew energy from burning diesel to distill the seawater. Therefore, it was only used intermittently to augment supply under water shortage and thus the usage of the plant was low. The situation worsened towards the early 1980s due to the oil crisis, the Government finally closed down the Desalter in 1982.

Boy: What a pity, it's just used for a short time only!

Super:
Drought in 1977

Water Save Dave: Even though the Lok On Pai Desalter only lived a short life, it timely alleviated the impacts of the serious drought in 1977. It is not entirely without contribution. Also, the Government keeps developing the technology of desalination, so previous experience can be also utilised for future desalination development.

Boy: But Dave, you just mentioned the cost of desalination was high and inefficient. Why did the Government keep on doing research on this water resource?

Super:
Technology
Reverse osmosis
Tseung Kwan O

Water Save Dave: As technologies have been improved, there is a cheaper and more sustainable way to desalinate seawater which is reverse osmosis. It greatly reduces the cost for desalination. A new desalination plant is going to be built in Tseung Kwan O.

Boy: Besides desalination, are there any other means of water supply?

Super:
Reclaimed water

Water Save Dave: Yes. One of them is reclaimed water.

Boy: Reclaimed Water? What is it?

Super:
Clean
Odourless
Poisonous substances
Safe

Water Save Dave: Reclaimed water is highly treated wastewater. It is clean, odourless, free of poisonous substances and safe to be re-used for non-potable uses.

Boy: So reclaimed water is the recycling of used water? This is a good idea, but what is the application of reclaimed water?

Super:
Precious and limited
Needs of fresh water
Environmental pollution

Water Save Dave: There are many applications of reclaimed water, such as car or street washing. Since fresh water is a precious resource, the use of reclaimed water helps relieve demand for fresh water, as well as reduce adverse environmental impact.

Boy: Wow! There are lots of advantages of using reclaimed water. But are there any other means of reducing fresh water consumption?

Super:
Year 1957
New Territories
Kowloon
Hong Kong Island
Lantau Island
Current supply area
Planned supply area
Private supply area

Water Save Dave: Of course. Seawater for flushing is another example. The Government took advantage of the peninsular geography of Hong Kong and implemented seawater flushing for high density areas in 1957. It was a big step towards sustainable development and environmental protection.When that plan slowly became successful, the Government gradually extended the use of seawater for flushing to different areas in Hong Kong. Up to this day, Hong Kong is one of the few places in the world widely using seawater for flushing.

Boy: Is seawater used for flushing in the entire Hong Kong?

Super:
85%
Inland areas
Fanling
Sheung Shui
Remote
High altitudes
Fresh water flushing
Reclaimed water supply system
Seawater supply system
Nearly 90% of the population

Water Save Dave: Not quite. Despite the fact that the seawater supply coverage has been expanded to 85% of the Hong Kong population, some areas such as Fanling, Sheung Shui and areas which are distant from the coast or located in high altitudes are still using fresh water for toilet flushing. If the reclaimed water supply system is fully established, it can jointly benefit 90% of the Hong Kong population with the seawater supply system to replace fresh water for toilet flushing. Then more fresh

water can be saved.

Boy: Excellent! Fresh water is precious and I hope these measures can reduce the exploitation of fresh water resources.

Water Save Dave: I concur with your points. The Government keeps developing the technologies of desalination and reclaimed water in order to protect our environment, and achieve sustainable water supply by exploiting new water sources which are not susceptible to climate change.

Boy: So which Government department is responsible for all these water supply developments?

Water Save Dave: Look it up.

Boy: Water Supplies Department?

Super:
Managing fresh water
Seawater supply systems
Develop water sources
Promote and educate Water conservation

Water Save Dave: Yes, Water Supplies Department plays a vital role in the daily life of Hong Kong's residents. Besides managing fresh water and seawater supply systems, WSD also researches different water sources and promotes education on water conservation. Today's museum tour is also designed by WSD.

Boy: I now understand that it is not a small task to overcome challenges for Hong Kong's water supply in the past. From an environmental point of view, we really need to cherish our water resources on Earth through water conservation.

Super:
Water does not come free from a tap
Let's cherish water from today!

Water Save Dave: Yes, only through water conservation can we live up to the efforts of our forefathers. We are now at the end of our tour, shall we recite together?

Water Save Dave: Water does not come free from a tap. Let’s cherish water from today!