



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF COMMERCE, HUMAN SCIENCE AND EDUCATION**

**DEPARTMENT OF SOCIAL SCIENCES**

<b>QUALIFICATION: BACHELOR OF PUBLIC GOVERNANCE HONOURS</b>	
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<b>DURATION: 3 HOURS</b>	<b>MARKS: 100</b>

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
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<b>MODERATOR:</b>	Dr. A.Olivier (Stratex)

<b>INSTRUCTIONS</b>	
<ol style="list-style-type: none"><li>1. Refer to the case study "Neckertal Dam" to answer the questions. Annexure1: Separate document)</li><li>2. Answer any TWO (2) of the three questions provided.</li><li>3. Please write in legible handwriting and number your answers clearly.</li></ol>	

**THIS QUESTION PAPER CONSISTS OF \_2\_ PAGES (Including this front page)**



**Question 1**

a) What is a work breakdown structure? (10)

b) What is the function of a work breakdown structure (WBS) in project management (25)

(35)

**Question 2**

The purpose of the Project Charter is to commission a project, and appoint, and give authority to the Project manager.

Develop the Project Charter of the Neckertal Dam Project. Include all the elements that would be required in the Project Charter.

(35)

**Question 3**

In any project, there are challenges encountered in the planning and implementation of the project. Discuss the challenges and suggest methods as to overcome these challenges.

(35)



## **ANNEXURE 1**

### **Neckartal Dam: Making a Desert Bloom**

Salini Impregilo is building Namibia's largest dam to irrigate land for fruit cultivation.

In the southernmost region of Namibia, cranes, trucks and tractors are swerving, rumbling and ploughing to make a desert bloom. They are part of a project to build a dam that will capture the waters of a river and use it to irrigate the surrounding land to grow fruit. Part of the government's Green Scheme Policy, the Neckartal Dam project promises to create hundreds of jobs and generate millions of Namibian dollars for the economy of the Karas region and the country at large. This is the single largest infrastructure development project undertaken by the Namibian government, to date. In a budget statement made in May 2013 when work on the dam was just getting started, then-Finance Minister Saara Kuugongelwa-Amadhila highlighted the importance of the project and how it exemplified the government's efforts to improve the quality of life of its citizens. "Provision of bulk and potable water remains a core priority to ensure adequate supplies for households and industry," she said. "(One of the) major projects envisaged (is) the construction of Neckartal Dam." It is also envisaged, that the dam will provide hydro-electrical power to the region and will relieve the pressure on the Namibian electricity grid.

Fabrizio Lazzarin, project manager of Salini Impregilo SpA, was awarded the N\$ 2, 8 million building contract in 2013. Due to late and non-payment by government, Salini halted operations on more than one occasion meaning that the total completed cost of the dam (as specified in the Project Scope) will stand closer to N\$ 5, 7 million.

Having completed the excavation of some 800,000 cubic metres of earth and rock on the river bed and the construction of abutments on either side of it, workers have been building the foundation of the dam, one layer of concrete at a time with the use of earth-moving equipment. This method is called roller-compacted concrete (RCC), which is faster and economically advantageous in respect to other methods. The construction of the dam requires the diversion of the river in two phases. Phase I involves the construction of a temporary enclosure called a cofferdam on the left side of the river. Standing at a height of 10 metres, it will allow workers to complete the excavations in safety, prepare the foundations of the dam, start pouring the reinforced concrete and build a diversion culvert, which allows water to flow under its structure. Phase II will see the deviation of the river through this diversion culvert so as to allow workers to complete the job on the right side of the riverbed.

With a future height of about 80 metres and a crest length of 518 metres, Neckartal will be a curved gravity dam. It will have an intake tower housing pipes, valves and gates to bring the water captured by the future reservoir to a chamber with two 1.5-megawatt Francis turbines.

The future reservoir will have a holding capacity of 880 million cubic metres of water, the equivalent of 300,000 Olympic pools. Its surface area will cover nearly 40 square kilometres. In describing the project to Namibian President Hage G. Geingob during an official visit to the site in October 2015, Britton said the color of the water in the reservoir would be the deepest of blue. "It will be beautiful." Neckartal will take water from the reservoir to produce energy with its Francis turbines for a pumping station at an abstraction weir – an obstruction that allows some water to flow over it – located 13 kilometres downstream.

Running 360 metres in length and 9 metres in height, the weir will capture the water sent by the pumping station and send it another 10 kilometres along a steel pipe to a holding dam with a reservoir



with a capacity of 90,000 cubic metres. From there, the water will be directed to an irrigation system covering 5,000 hectares.

The project is far from being complete by Italy's Salini Impregilo but it has already made itself felt in the region by creating hundreds of jobs for the locals. Local consulting engineering firm, Knight Piesold were appointed to be responsible for all engineering work, and local professionals would therefore be not only used for the duration of the project, but will also be available for maintenance of the Dam, once completed. Nampower as the company providing the electricity for the project, also guarantees that local professionals will be available after project completion. Of the 760-odd people who work on site, 67% of them are from Karas region. Only 8% are foreigners. Then there are the subcontractors. So the total number of people working at the project has arrived at about 1,500 people.

Once Neckartal is complete and water starts to flow through the irrigation system, Britton expects the plantations will employ hundreds of people. With 5,000 hectares of land to be irrigated for fruit cultivation, Britton estimates that revenue and other spin-offs could amount to hundreds of millions of Namibia dollars. The land will be located to the north and south of Keetmanshoop, the biggest city in the region some 40 kilometres west of the construction site. Agriculture, along with forestry and fishing, is the main industry in Karas, employing 32.4% of the working population.

In February 2018, the Neckertal dam was said to be 96% complete, with an estimated date of completion by October 2018.

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