

RC 5/25 marks

Context The Queensland Water alliance requires a water tower to be built and easily portable to remote areas of Queensland. It is required to be stable, cost-efficient and easy to build.

Aim The aim of this report is to design and construct a solution for the base of a water tower to ensure that the tower supports the mass of the required tower

Success Criteria The water is position on level ground 12000L tank is 2.5 m in diameter 12 m high No larger than 3 x 3 m Prototype Hold 40kg Use less than 10 lengths of 915\*6\*6 1:30 Balsa wood prototype needs to be drawn designed and constructed

- Research - Engineering technology Triangles are good for distributing force when pushed on its points, making it good for designing objects under strain. - Mechanics The tower needs to support high amounts of compressive and tensile forces in the individual braces, Cross braces will also need to be implemented to reduce the deflective forces. - Materials Water towers are required to be built of non-porous (materials that don't let water through); They also require materials that don't rust, often using steel and other metals.

However the task requires that the prototypes be built of balsa wood due to its portability and ability to manipulate. Balsa wood is also good due to it having a tensile strength of 1MPa

- Analysis

- Mathematics - Calculating material - Calculating average density of pieces - Calculating predicted mass

- Simulator and drawn designs

- Success criteria

Synthesis and evaluation - Evaluate design Evaluation and success criteria Recommendations

Communication Captioning images Referencing properly