

ENGINEERING FOR PEOPLE

DESIGN CHALLENGE

LEARNING OUTCOMES

At the end of today's lecture you will:

- Know about Engineers Without Borders UK and how you can get involved
- Have an understanding of the Engineering for People Design Challenge and the skills that you will gain as a result of participating
- Have been introduced to the town of Lobitos in Peru and some of the challenges its community are currently facing
- Have been provided with some hints and tips to help you follow the design process
- Be able to ask any questions you have

REFLECTIONS?

VIDEO REFLECTIONS

- Engineers need to have a broader mindset
- Engineers need to be able to appreciate social, environmental and economic factors
- Engineering is pivotal to society and transforms people's lives
- Engineers have to understand the great responsibility they hold



UK

ENGINEERS

WITHOUT BORDERS

OUR WORLD IN 2050

80%
increase in
energy demands


70% of an estimated

9.2
billion
will be living
in cities

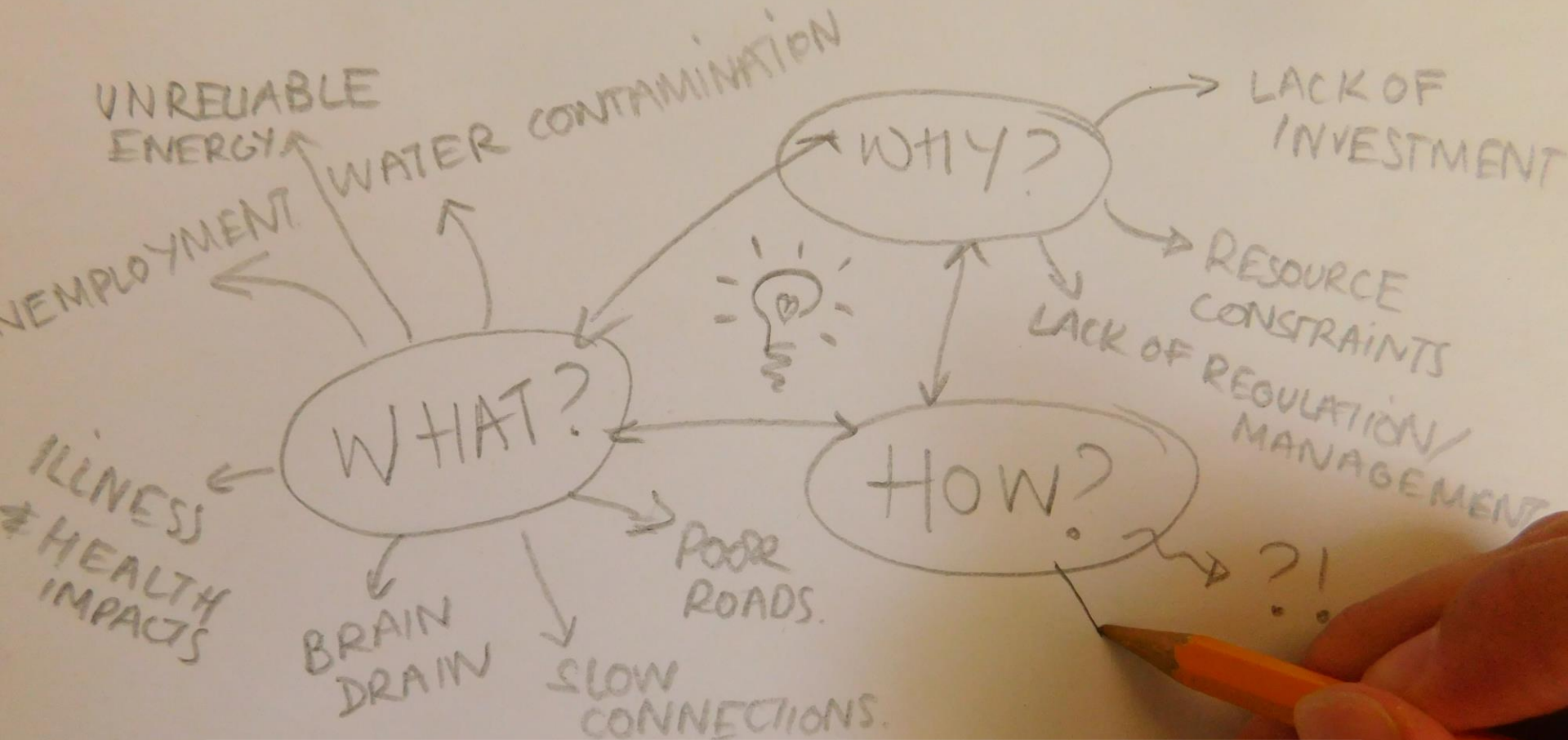
3 BILLION
people will still live on
LESS THAN

\$2
per day

We want
engineers, everywhere, to apply a globally
responsible mind-set to all that they do
and invest their skills and talent in
**engineering that benefits our
global community.**

**As an engineer,
you will make a difference**

GET READY



ENGINEERING FOR PEOPLE

DESIGN CHALLENGE

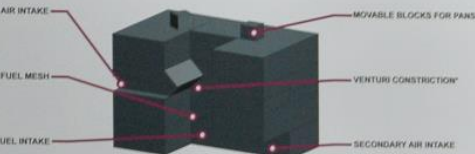
ENGINEERING FOR PEOPLE DESIGN CHALLENGE LEARNING OUTCOMES

- An appreciation of the importance of placing people and context at the heart of design
- An understanding of the social side of engineering
- An understanding of globally responsible engineering
- A greater understanding of how engineering can play a role in overcoming global challenges
- Development of your professional skills, including team work, project management, communications and working through the engineering design cycle

As the temperature increases, the process moves through stages of combustion. With each new stage of combustion, by products are broken down to release heat and other molecules.

Using a stove which implements fluid mechanics and materials science, our team devised a stove which could be sustainably and cost-effectively made, which would produce a much more efficient combustion, whilst still using the same fuel that is currently used in Bambar.

Due to the increased efficiency of the fire, it produces a much cleaner burn, as the harmful gases are combusted at higher temperatures. This in turn reduces the amount harmful gases emitted by the cooking facilities, improving the quality and longevity of life for those who breathe them in daily.



As the venturi constriction narrows, the flow of air remains the same from behind, the velocity increases - resulting in a low pressure area. By opening the variable air intake, oxygen rushes in due to the pressure difference from the atmosphere and that of the constriction. This allows gases from the fuel to combust more efficiently at a higher temperature - reducing or even removing the smoke from the output of the motor.

A pictorial manual can be used to instruct anyone how to create the stove.

Efficient use of available timber dimensions

Timber moulds are reusable and have easily replaceable parts

On average, a household in Bambui will earn around 500CFA per day which is approximately 97 pence.

Due to this very low household income, the design had to have a very low cost, to make it desirable and affordable for everybody in Bamui.

The overall material cost for one concrete stove was estimated to be:

2350CFA or just £2.84



Current Cooking Facilities



Traditional method of flathowed



THE COMPETITION



SO WHAT'S THE PRIZE?

ENGINEERING FOR PEOPLE DESIGN CHALLENGE

2015/16

4,700 STUDENTS

26 universities

9 DESIGN
AREAS

1 partner

80 team reports reviewed

80 FINALISTS

60 volunteer reviewers

36 FINAL
TEAMS

18 JUDGES

3 prizes

**This year, your
challenge is based in**

LOBITOS, PERU

LOBITOS, PERU



OVERVIEW OF PERU

- Located in Western South America
- Population 31,151,643
- GDP 2015 estimates: \$403.322 billion/\$12,638 per capita
- As of 2011 Peru is one of the fastest-growing economies
- According to 2010 data, 31.3% of its total population is poor, including 9.8% that live in extreme poverty
- An extremely bio diverse country with varying habitats
- Corruption an issue throughout Peru

WHERE IS LOBITOS?



Ecuador

Colombia

Peru

Bolivia

Chile

Argentina

Brazil

Paraguay

Uruguay

RR

AP

AM

PA

MA

CE

RN

PB

PI

PE

AL

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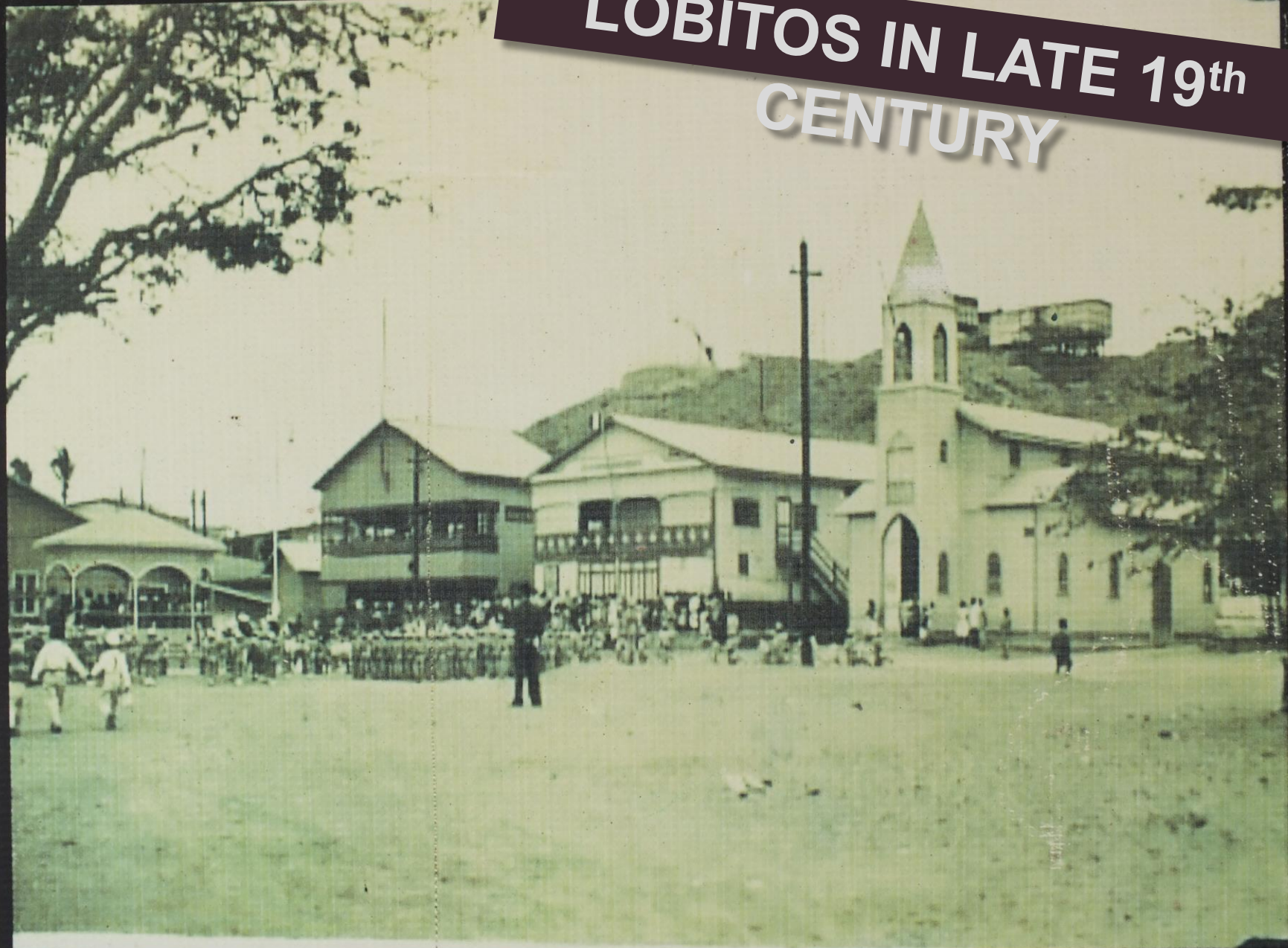
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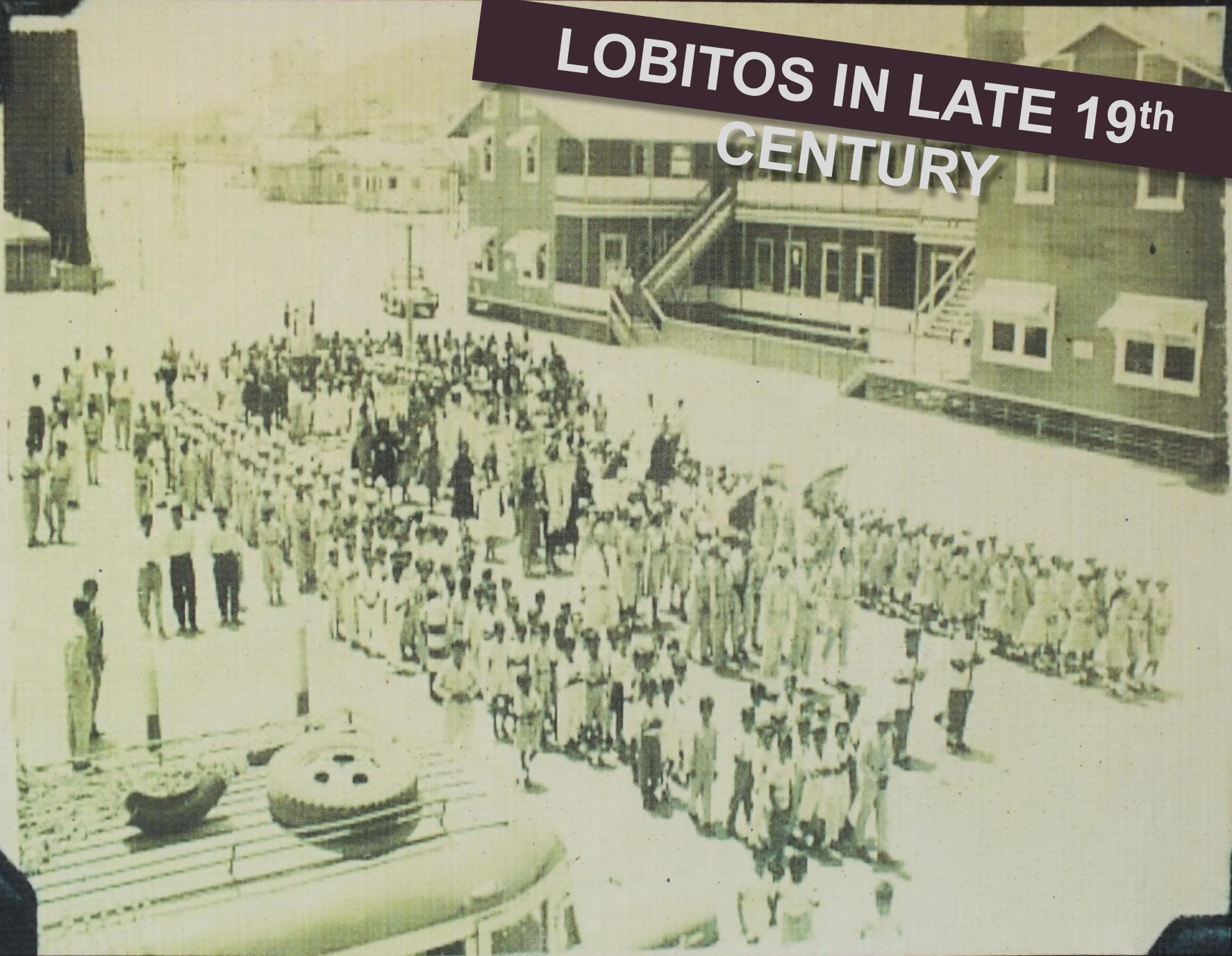
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LOBITOS IN LATE 19th CENTURY



LOBITOS IN LATE 19th CENTURY



LOBITOS IN LATE 19th CENTURY



AMPAMENTO , IDENTIFICÁNDOSE COMO PRIN

LOBITOS TODAY





Key

-  Castilla y Zarumilla
-  Barrio Centro
-  Primavera
-  Bella Vista
-  Nuevo Lobitos

WHAT YOU MUST CONSIDER

1. Understand the context
 2. Define the problem and the design criteria
 3. Explore lots of options/solutions
 4. Justify your recommendation
 5. Think about how your solution could be implemented
- More guidance on the Engineering for People Design Challenge website

ENGINEERING FOR PEOPLE DESIGN CHALLENGE WEBSITE



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Home - Engineering for People Design Challenge - 2016/17 Challenge - Water

Water is an essential resource for people. It is also used in industrial processes, producing food and generating energy so it is vitally important in human development.

People need to consume between one to three litres of water a day to stay healthy. This is dependant on the climate, their physiology and their levels of activity. Drinking water needs to be free from hazardous contaminants so effective water treatment is as important as access to water. Water infrastructure is used to collect and distribute water from where it originates, treat it to make it safe for human consumption, and, increasingly to recycle water for other purposes before treating the wastewater for release back into the natural environment. In Lobitos, water is a scarce resource due to the desert climate and increasing demands on the water source. Water quality is also an issue due to contamination. What ideas can you suggest to improve the situation?

[DOWNLOAD THIS INFO](#)

WATCH THIS VIDEO AND READ MORE BELOW TO GET TO GRIPS WITH THIS CHALLENGE AREA.

ENGINEERING FOR PEOPLE DESIGN CHALLENGE FORUM



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FORUM

Welcome to the Engineering for People Design Challenge Forum!

The Forum is a platform where you can ask us questions about the design areas and have discussions with other participating student teams.

You can search previous discussion threads, post your own and respond to others. Just remember this forum is shared with all participating student teams and academics, so please respect the community you are a part of.

We aim to respond to your questions within 5 working days.

SEARCH

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make a difference



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