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# Week 5 Workshop

COS10025 – Technology in an Indigenous context project

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# Acknowledgement of Country

We respectfully acknowledge the Wurundjeri People of the Kulin Nation, who are the Traditional Owners of the land on which Swinburne’s Australian campuses are located in Melbourne’s east and outer-east, and pay our respect to their Elders past, present and emerging.

We are honoured to recognise our connection to Wurundjeri Country, history, culture, and spirituality through these locations, and strive to ensure that we operate in a manner that respects and honours the Elders and Ancestors of these lands.

We also respectfully acknowledge Swinburne’s Aboriginal and Torres Strait Islander staff, students, alumni, partners and visitors.

We also acknowledge and respect the Traditional Owners of lands across Australia, their Elders, Ancestors, cultures, and heritage, and recognise the continuing sovereignties of all Aboriginal and Torres Strait Islander Nations.

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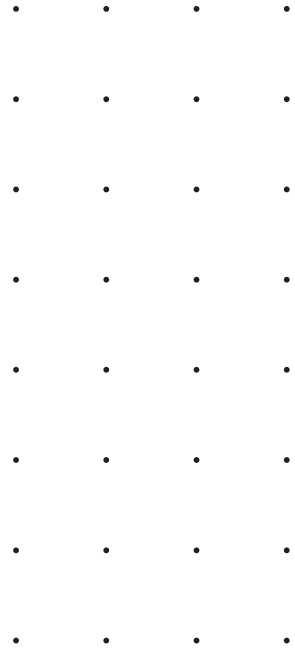


# Workshop 5

**The aim of today's class is to focus on development of design ideas and receive feedback from the facilitator.**

Assessment 1: Innovation concept report

Activity 1: Develop design idea for your team township challenge



# Assessment #1: Innovation Concept

- Team-based assessment
- Due date: 21<sup>st</sup> Apr 2023, 23:59 pm
- Marks allocated: 20% of your final mark
- Recommended word-count range: 800 words for each team member (4000 for 5 team members or 4800 words for 6 team members)
- Aim of this task:
  - Expects the team to deepen your research and explain your design ideas for a selected challenge
  - Each team should explain 5 design ideas for 5 team members or 6 design ideas for 6 team members



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# Assessment #1 – Part A

Assignment 1 – Innovation concept (team-based)

The Part A of Assignment 1

- Project Overview

A detailed description of the township, people, problem statement

- A brief introduction to the Identified Challenge/problem

The team should explain identified challenge with enough references (with research evidences)



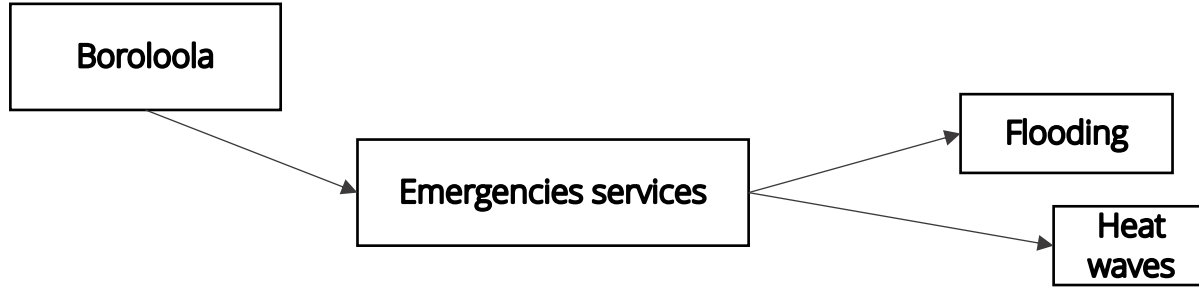
# Assessment #1 – Part B

Design idea 1

A description of the design idea

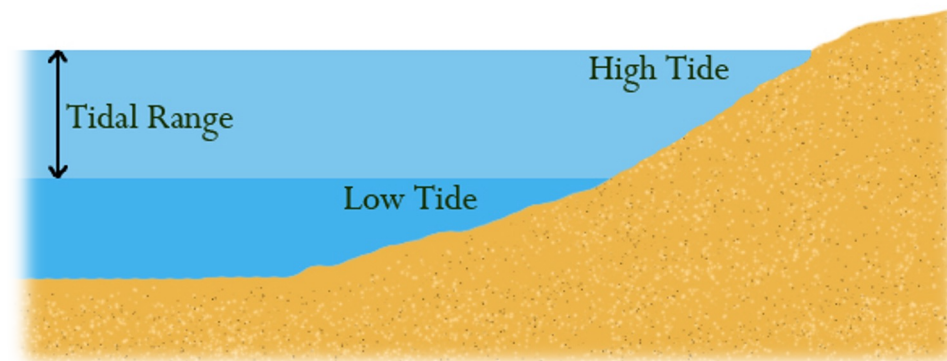
- Design idea - A detailed explanation of the design idea (any technical concept, devices, application)
- Design Specifications
  1. List of hardware and software requirements (Explain in detail each hardware/software required)
  2. Design functioning (explain in detail)
- Benefits of design idea
  1. What are the benefits of the design?
  2. How will it impact the community?
  3. How the design is culturally appropriate for the community/environment?
  4. How does the design idea benefit the community in accordance with the guidelines such as access & equity, health & safety, appropriateness, affordability, environmental health, and sustainable livelihoods (few based on the design idea)
- Constraints of design idea
  1. What are some of the potential challenges identified when using the design for present and future needs

# So, returning to our example...



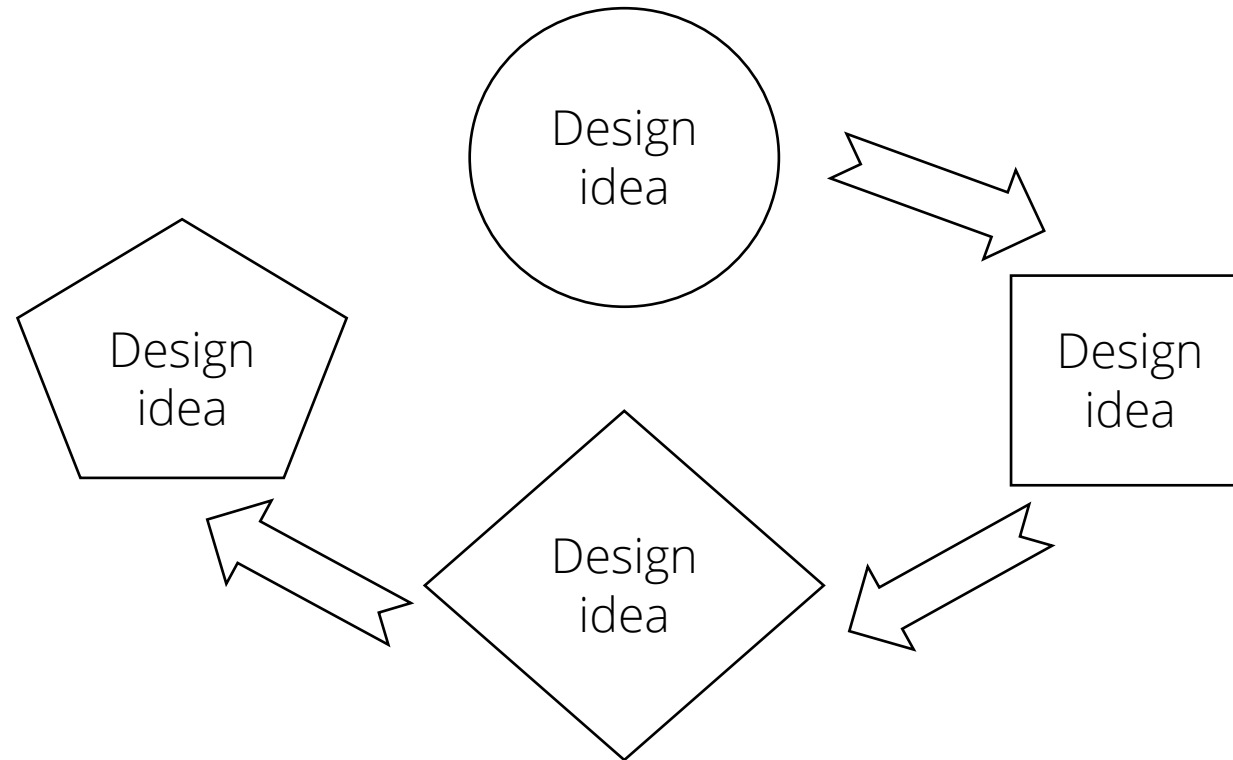
## Problem: Water level (flooding)

Riverine flooding can affect thousands of square kilometres for weeks or even months at a time



# Design reiteration

- Since flooding can affect vast areas, we are probably looking at a large number of sensors scattered over a similar range of distances
- Let's say, A wireless solution would be most appropriate
  - If there is LTE coverage, then LTE-M or NB-IoT might be appropriate
  - If there is no coverage, then LoRaWAN might be appropriate with a satellite backhaul
  - If delay is not an issue, then CubeSat might be appropriate
- Many options..



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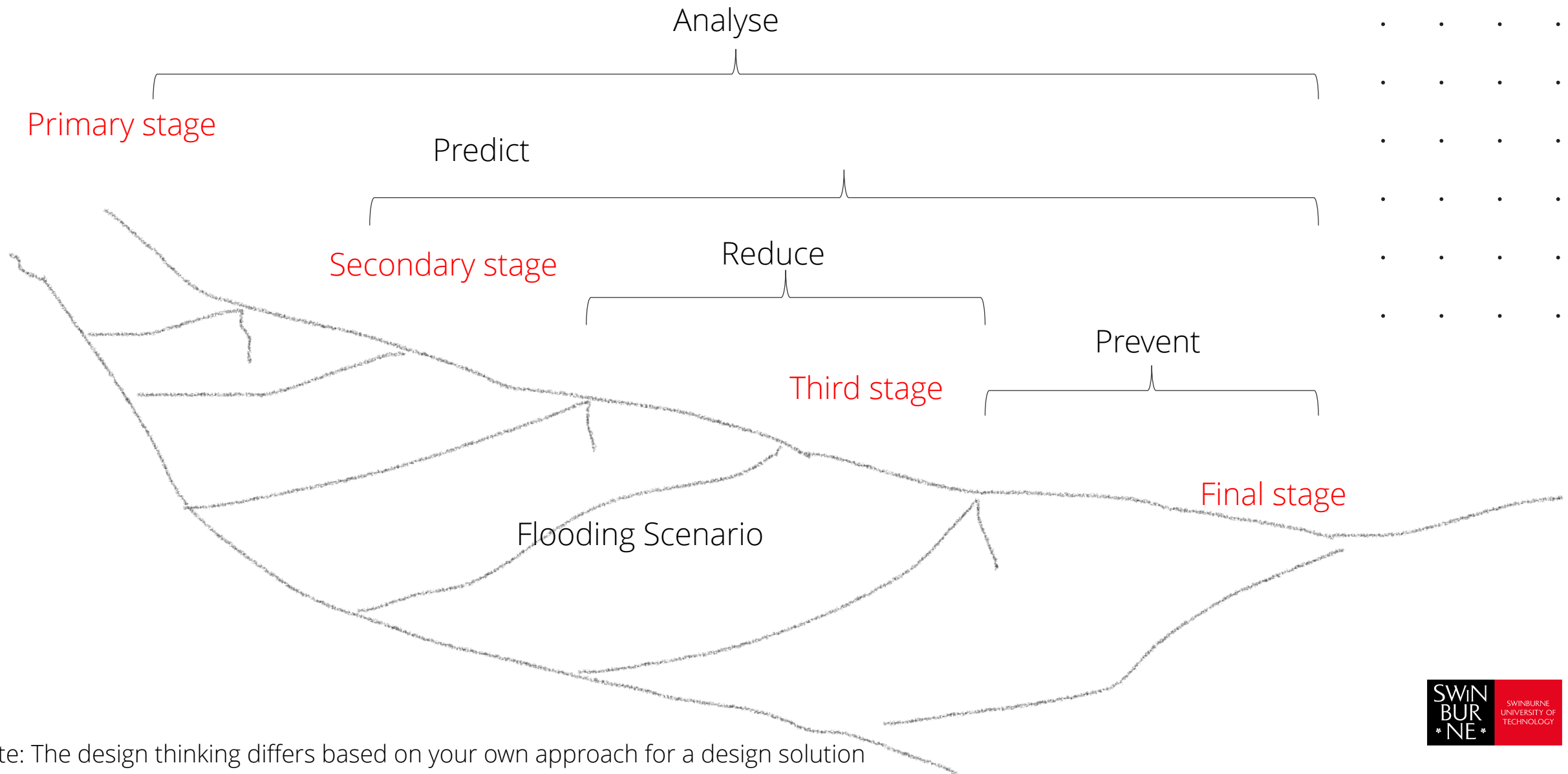


# Design idea (different approaches)

|  | Analyse<br><br>Analyse (24/7) the problem in different stages | Reduce<br><br>Reduce the problem with minimum or maximum impact in different phases | Eradicate<br><br>Remove it completely in some stages | Prevent<br><br>Prevent the problem to reduce the impact | Predict<br><br>Predict the problem before it occurs |
|--|---|---|--|---|---|
| Design 1<br>Analyse and Eradicate                      |   |   |  |   |   |
| Design 2<br>Reduce and Prevent and predict             |   |   |  |   |   |
| Design 3<br>Reduce and Prevent                         |   |   |  |   |   |
| Design 4<br>Analyse and Eradicate and predict          |   |   |  |   |   |
| Design 5<br>Analyse and Reduce and Prevent and Predict |   |   |  |   |   |

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# Design thinking using different approaches (an example)



Note: The design thinking differs based on your own approach for a design solution

# Develop design ideas for selected challenge

When your team comes up with a design idea, you have to use combination of technologies that solves the problem. It should be an appropriate design, easy to use, affordable, environmentally suitable, and sustainable solution.

The team must consider

1. What are the benefits of the design?
2. How will it impact the community?
3. How the design idea is **culturally appropriate** for the community?
4. Lastly while proposing a design idea please consider the guiding principles

# Guiding Principles

While proposing a design idea please consider the following guiding principles below

**Access and equity:** Access to services involves both household facilities and centralised public facilities. All households in the community should have ready access to basic services (preferably within the house itself). Services should also be provided for groups with special needs (such as the elderly, and disabled).

**Health and safety:** Services are lifelines for remote communities, often playing an integral role in emergency situations. Adequate technology is required for emergency and essential services between a community or regional centre.

**Environmental health:** Some infrastructure has potential consequences for public health and safety that should be considered when planning and installing services.

**Appropriateness:** The following factors should be considered when selecting appropriate infrastructure for remote communities: robustness, location, availability, expected lifetime, capacity requirements, and environmental impact.

**Affordability:** Up-front capital costs (for example, costs for designing, procuring, and installing infrastructure) and costs for operation and maintenance (such as costs for ongoing building, heating, cooling and equipment power costs, spare parts, and maintenance contractors) should be taken into account when selecting infrastructure and services for remote communities.

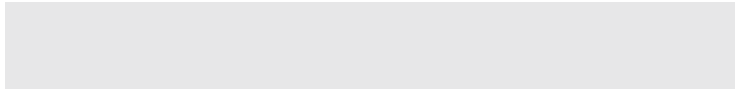
**Sustainable livelihoods:** Maintenance and provision of high-quality infrastructure are vital in remote areas, given the low population density, and the high cost and limited availability of other means of communication and transport (for example, roads, public transport, railways, air services).

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# Activity 1

Develop design idea for your team township challenge

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# 1<sup>st</sup> Activity

Aim : Develop design idea for your team township challenge

- Instructions :
1. Develop your team design ideas based on the identified problem.
  2. Each design idea should list combination of technologies/devices for a solution
  3. List each device properties and how it functions
  4. Use a smart tool (use shapes, draw in MS word or Power point) to create, visualise and design your team design ideas.
  5. Does the technology/device need any digital literacy for an end user?



Teamwork: 45 minutes

# Next week

- Continue working on analysing the hardware and software requirements for each design ideas (design concepts)
- Finalise Assessment 1 Innovation concept before the submission due end of week 7