Traffic Light Challenge: Mission Ōtautahi

Context: You're junior engineers hired by **Waka Kōtuhi** (our fictional traffic team) to audit an intersection in Christchurch and pitch a greener upgrade. Work in pairs: **Navigator** (maps & photos) and **Analyst** (numbers & notes). Swap halfway.

What to hand in: A 5-slide presentation using Google Slides, with your answers, photos/screenshots, calculations, and **references**.

Initial Task:

Create one Google Slide for your team. Share the Slide. Complete the following:

Link to Slide	

Team Member	**Role at Start**	**Team Member Strengths**
Your name		
Name of other team member		

Slide 1 – Title & Intro

Research task:

- Find a clear photo of a NZ traffic light (your own or copyright-friendly). Caption where it is and what each light means.

Slide content:

- Title: *Traffic Light Challenge: Mission Ōtautahi*
- Names: Navigator & Analyst
- Traffic light photo
- 1–2 sentences explaining what your investigation is about.

Slide 2 – Spot & Count

Research task:

- Use Google Street View at **Greers Rd / Memorial Ave**. Count every bulb/lens at the intersection (vehicles + pedestrians).
- Tally them by direction (North / South / East / West + Ped).
- Work out how many bulbs are lit at the same time during a normal green phase for one direction. Explain your assumption.

Slide content:

- Screenshot or sketch from Street View
- Tally of bulbs
- Number of bulbs on in one phase
- 1–2 sentences explaining your assumption.

Slide 3 – Old Bulbs (Incandescent)

Research task:

- Find an incandescent traffic bulb online. Record **price, wattage, lifespan**. (If none, use 100W.)
  Using the number of bulbs from Slide 2, calculate total watts used in one phase.
  Formula: **Total Power (W) = number of bulbs × wattage**

Slide content:

- Product photo/specs of incandescent bulb
- Wattage, lifespan, price
- Calculation of total watts in one phase
- Clear working show

Slide 4 – LED Upgrade

Research task:

- Find a LED traffic module online. Record **price, wattage, lifespan**.
- Recalculate total watts for one phase using LED.
- Work out **power saved = Old – LED**.
- *Stretch:* Estimate annual energy (kWh) if that phase runs 8 hrs/day.
  Formula: **kWh/year = (Watts × hours/day × 365) ÷ 1000**

Slide content:

- Product photo/specs of LED module
- Wattage, lifespan, price
- Calculation of watts in one phase
- Power saved
- (Optional) Annual energy saving

Slide 5 – Big Picture & Reflection

Research task:

- Research how many signalised intersections are in Christchurch.
- Estimate total city-wide power saved by switching to LEDs (show assumptions).
- Reflect: Write 6–8 sentences on whether fewer bulb-changing jobs are good, bad, or mixed. Consider safety, cost, environment, and new jobs.

Slide content:

- Map or image of Christchurch intersections
- Number of intersections
- Estimate of city-wide power saving
- Reflection paragraph

- References (at least one)

Evidence & Referencing (must do)

- Paste photos/screenshots (Street View, product listings).
- Add a short references list (titles + links or sources).

Extra Info

Slide Theme: *Traffic Light Challenge*

🎨 **Colours**:

- Dark Grey/Black (background, like road)
- Red (#D32F2F) for headings/numbers
- Amber (#FBC02D) for highlights/bullets
- Green (#388E3C) for savings/positive outcomes
- White for text

🖼️ **Fonts**:

- Headings: *Oswald* (bold, clear)
- Body: *Roboto* or *Arial*
- Numbers: bold, larger

🔲 **Layout Tips**:

- One image + one text box per slide.
- Show working in boxes.
- Use traffic light icons for bullets.
- Map of Christchurch on Slide 5 for impact.

💡 **Final Tip:** End Slide 5 with a green tick ✅ and a slogan like *“LEDs = Bright Future”*.

Example: Slide 1 Layout

Background: Dark grey
Title (right, red font): *Traffic Light Challenge: Mission Ōtautahi*
Photo (left): NZ traffic light
Names: Navigator [Name], Analyst [Name]
Green bar (bottom): *Investigating energy use and savings in Christchurch traffic lights*