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# To explore various corrosion detection methods at the critical zone of lighting poles made of ferrous metal

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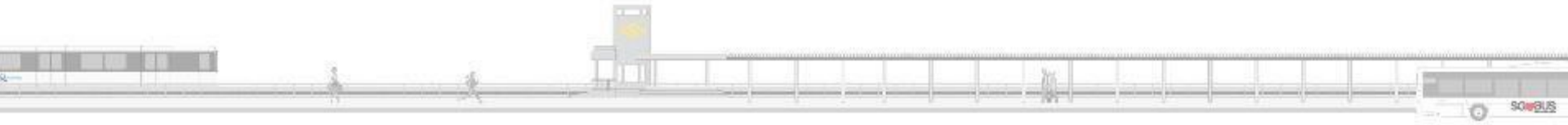


# Background

- The LTA maintains more than **110,000** street lights along public roads in Singapore.

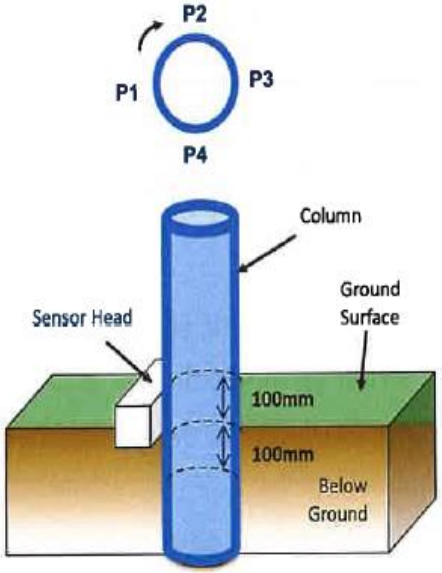
- As part of the maintenance regime, street lamp poles are tested for structural integrity when they reached **five (5)** years old onwards.

- Planted and Flanged-mounted lamp poles are tested.

- Currently, the LTA's street lighting contractors propose the **Relative Loss of Section (RLS)** Technique.

- This method cost about **$30** per test.

# RLS Technique




- **Non-destructive test**
- Requires **no excavation** or internal access
- **Pulse induction technique** to induce electromagnetic field in the target areas
- Results are measured in **LSU (Loss of Section Unit)**, which interprets corrosion levels into **five classes** and provides **recommendation in specific timeline** for replacement or next test interval

# RLS Recommendations

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2.3 Base - visual observations

Additionally, the portion of the base ground level to *plus* 300mm is visually inspected and classified A to G.

A. Free from defects
B. Visible loss of paint/coating only
C. Surface corrosion only
D. Pitting/flaking. Minor loss of section
E. Extensive corrosion. Major loss of section
F. Hole visible within base/root of unit
G. Impact damage
   1. Minor
   2. Significant
   3. Major

# RLS Recommendations

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| Classification | Average LSU's | Visual Categories | | | | | |
|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F |
| 1 | 0 to -10 | Retest in 4 years | | Retest in 2 years | Retest in 1 year | Replace within 1 month | |
| 2 | -11 to -16 | Retest in 2 years | | Retest in 1 year | | Replace within 1 month | |
| 3 | -17 to -24 | Replace within 3 months | | | | Replace within 1 month | |
| 4 | -25 to -50 | Replace within 1 month | | | | | |
| 5 | > -50 | Immediate removal or making safe the unit | | | | | |

# Problem

- There is **only one company in Singapore** specialising in the RLS Technique service
- **Lack of competitors**
- Testing is set at **fixed intervals** with a buffer of up to 1 year

# Proposed Solutions

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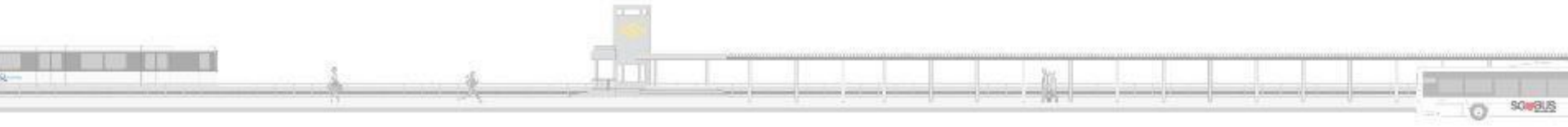
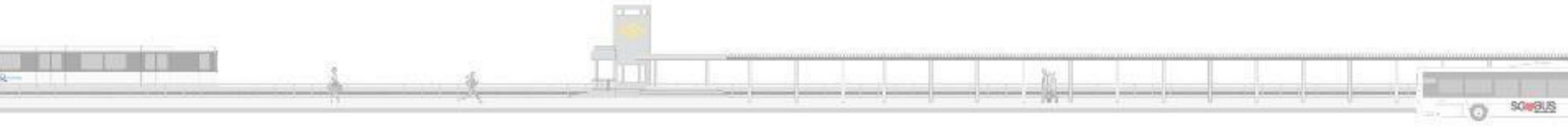
- **Any other methods** available that could test the structural integrity of lighting poles and produce **similar if not better results**?
- Other methods should also be a **non-destructive test**
- Are there solutions that could **eliminate the need for interval testing** and **provide active feedback** of the lighting pole's structural integrity?

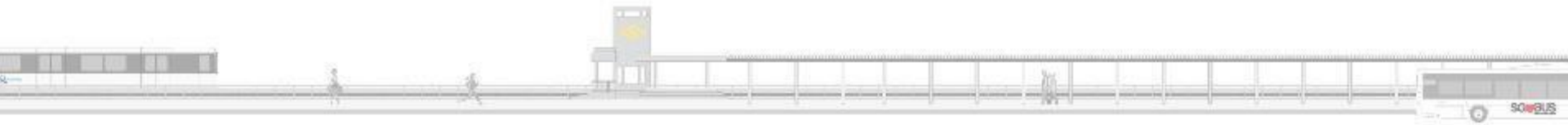


# Timeline

- Q2 2020 – Proposed Prototype
- Q4 2020 – Pilot Deployment
- Q2 2021 – Full Implementation



| Evaluation Criterion | Weightage (%) |
|---|---|
| 1. Technical feasibility of solution | 30 |
| 2. Innovation | 20 |
| 3. Economic Feasibility and Commercialization Potential (Include development cost and final product cost) | 30 |
| 4. Capacity and Expertise to Execute Project | 20 |
| Total Score | 100 |



# The End

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# THANK YOU