

## Background:

- Surveying is a critical component of land development, infrastructure planning and environmental management.
- The negative environmental impact of conventional land surveying techniques is a growing concern in the face of today's pressing environmental challenges, see fig 1.
- The aim of my research was to investigate ways in which to improve sustainability of surveying and produce sustainable solutions.

## Question:

What environmentally sustainable surveying materials, practices and alternatives can be implemented to reduce the environmental footprint of land surveying?

## Internship and Methods:

Guided by 1 Alliance Geomatics, this project was completed in two main steps:

- Research: Identified sustainable practices and alternatives through a literature review and various industry consultations.
- Application: Implemented these practices whilst completing the internship, gaining hands-on experience.



Fig 1: This shows some typical land clearing in the survey world, which is quite excessive.

## Results:

### Unsustainable Practices:

**Survey Materials:** Traditional survey materials, notably plastic ribbons and toxic survey paint, are significant environmental pollutants.

**Land Survey Techniques:** Conventional methods often involve extensive land clearing, adversely affecting ecosystems and wildlife habitats.

### Sustainable Alternatives:

**Eco-Friendly Materials:** Proposed replacements include biodegradable natural fibre ribbons and eco-friendly survey paint, see fig 2.

**Innovative Survey Techniques:** Adoption of non-invasive methods such as LiDAR and aerial (drone) imaging reduces ecological disruption.

**Environmental Stewardship:** Emphasizes the importance of sustainable practices in surveying for reducing the construction industry's carbon emissions and promoting ecological conservation.



Fig 2: Below the tripod on the right of the photo there is a wooden marking stake and some biodegradable ribbons tied onto it. There is also blue eco-friendly survey paint showed in the image on the black wall.

## Implications:

This research emphasizes the critical role of sustainable surveying in mitigating ecological disruption, moving beyond the sole focus on carbon emissions. It highlights the potential of sustainable practices to:

- **Reduce Ecological Disruption:** By implementing eco-friendly survey techniques, we contribute to preserving ecosystems disrupted by traditional methods.
- **Industry-Wide Impact:** While surveying forms a small part of the construction industry, adopting sustainable alternatives has significant implications for reducing the industry's environmental footprint, which accounts for a substantial portion of global carbon emissions.
- **Organizational Benefits:** Sustainable practices not only address environmental concerns but also offer long-term benefits for organizations, including enhanced efficiency and reputation, and economic benefit, see fig 3.

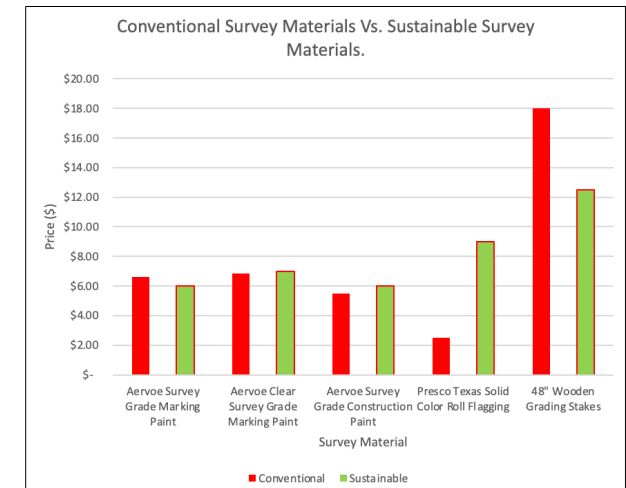


Fig 3: Price differential between conventional survey materials and sustainable survey materials. It is clear to see that there is not much price difference, therefore sustainable materials should be implemented.

## Acknowledgements:

I would like to thank 1 Alliance Geomatics for the opportunity to intern at your amazing company. I would also like to thank my family and friends for all the help along this incredible journey!