#### CASE STUDY

#### Plowman Craven

#### **Lovell Telescope**

Client: SDA Consulting LLP on behalf of The University of Manchester



The Lovell Telescope, located at Jodrell Bank Observatory, is a pioneering 76-metre radio telescope. Operational since 1957, it has contributed to major space discoveries and remains an icon of British scientific innovation and research.

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The **Lovell Telescope** has played a key role in

space exploration and remains fully operational. It is recognised as a UNESCO World Heritage Site, and symbolises scientific innovation and human curiosity.



### Mapping the Legacy

SDA Consulting LLP specialises in providing consultancy services for construction and surveying projects, often involving complex and high-profile structures. On this occasion, their overall objective was to capture comprehensive data on the Lovell Telescope to enable future works, and commissioned Plowman Craven to undertake the complex task. To achieve this, Plowman Craven carried out a range of specialist surveying services, including:

- Detailed laser scanning of both external and internal structures
- Topographical survey and LOD2/3 BIM Model to support planning applications and data for university research
- High-risk site working at extreme heights

### Comprehensive Surveying and Modelling for Planning and Research

The project involved scanning both the external and internal structures of the telescope, including the dish and any additional rooms. The goal was to provide a topographical survey, a Level of Detail (LOD) 2/3 model, and 2D unannotated views for plans, sections, and elevations.

The data was required to serve various purposes, including supporting planning applications and potentially benefiting the university with valuable data for future projects.



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## Navigating High-Risk Challenges

The Lovell Telescope is an operational structure in constant use, with high operational demands. The site is exposed to high-risk factors, including working at extreme heights - up to 85-90 meters on the outer dish. In addition, there are significant environmental challenges such as high winds and narrow walkways and platforms. The worksite required heightened Health & Safety measures, including harnessing for all team members and equipment while working externally at height.

## Delivering Precision: Advanced Surveying Solutions

To meet the client's needs, Plowman Craven undertook the following:

- Laser Scanning: The entirety of the Lovell Telescope, including the dish and internal rooms, was laser scanned using P40 and RTC laser scanners. The scan captured full-colour data, supported by 360° photography to provide a detailed, high-resolution representation of the structure.
- **Topographical Survey:** A survey was conducted up to the fence line around the telescope site, providing detailed ground-level data.
- Point Cloud and GPS Tied Data: The point cloud data was aligned to the Ordnance Survey grid and datum using GPS to ensure accurate positioning.
- **Revit Model:** A comprehensive Level of Detail 2/3 (LOD2/3) Revit model was developed for the telescope and its supporting structure, incorporating key features such as the ground-level track, telescope roller, internal lift, and control room spaces on the support arms.
- **360° Photography:** The digital model was complemented by 360° photography and point cloud data, providing an accurate and visually rich representation of the telescope and its surrounding environment for enhanced visualisation and planning.



# Delivering Long-Term Value Through Collaboration

Plowman Craven delivered the exact survey data requested by the client, fulfilling all aspects of the project. From initial deployment to site to final delivery of the model took just 12 weeks.

The client received a high-quality set of deliverables, including a detailed 3D model, topographical survey, and annotated visual representations of the Lovell Telescope, helping them meet their objectives for planning applications and future use.

One of the key strengths of this project was the collaboration between the survey team and the client. Understanding the client's requirements was crucial in ensuring that the data captured met all expectations.

The clear communication and right-first-time approach ensured that the deliverables were in line with the client's specifications.

Plowman Craven's expertise and ethos contributed to the success of our project, while the comprehensive nature of the deliverables will help to ensure Manchester University's long-term needs can be met. Plowman Craven's ability to provide a "one-stop shop" for all surveying needs made the process efficient and seamless, and we now have the essential data we need for planning applications moving forward.

> Jonathan Turner – Partner -SDA Consulting



If you would like to discuss any of the points included in this document or would like further details, then please contact:

For and on behalf of:

Plowman Craven

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