Spatial Services

Spatial Digital Twin: Visualising the Busby Street Planning Proposals

DCS Spatial Services Case Study

NSW GOVERNMENT

Introduction

Bathurst Regional Council partnered with DCS Spatial Services to deliver two planning proposals for a local residential development.

The proposals seek to rezone land at 50 and 34 Busby Street, South Bathurst, to medium density. This change would enable the construction of townhouses, an apartment building and related planning provisions.

The project aims to revitalise long vacant sites, increasing the diversity of housing close to essential services and protect the existing character and heritage values of the South Bathurst area.

Challenges

Bathurst Regional Council faced significant challenges in the community consultation process for these proposed building developments. The council needed an effective platform to help the community visualise the proposals and understand their potential impacts. To do this, it required accurate, authoritative 3D imagery, design models and spatial data presented in a clear, unbiased way to promote meaningful feedback.

It was important to be able to demonstrate the building developments as a 3D model so that the community could see potential environmental, visual and shadowing impacts from the proposed building heights.

Without an accessible, easy to understand 3D format, the council faced multiple risks including:

1. Reduced clarity for the community
2. Difficulty comparing and revising options
3. Challenges comparing compliance with planning controls
4. Less informed feedback during consultation
5. Reduced trust between council and the community
6. Inability to make informed decisions.

Data inconsistencies added further complexity. One set of development data required geolocation and scaling, while the other needed extensive filtering, positioning and 3D scaling before it could be used in a single cohesive model. Therefore the challenge of inconistent data needed to be addressed to ensure that an accurate model could be created of the proposed development.

Solution

DCS Spatial Services delivered several solutions to address Bathurst Regional Council's challenges.

To support this project, high resolution imagery was acquired through the Remote Sensing Services and Equipment (ReSSE) Scheme, managed by DCS Spatial Services. A specialised third party vendor was engaged to capture new aerial imagery covering extensions to the Bathurst CBD and areas relevant to the proposed developments. The new data complemented the CBD imagery previously captured for the Bathurst Digital Twin project.

We used the Feature Manipulation Engine (FME) and ArcGIS Pro to scale, position and clean the data before publishing it in a consistent format. Using ArcGIS online, our spatial technicians built the web application that hosted the digital representation of the proposed developments. Within this web application, we deployed tools from the Spatial Digital Twin, including line of sight analysis, time and date-enabled overshadowing and slicing tools to view inside the proposed buildings.

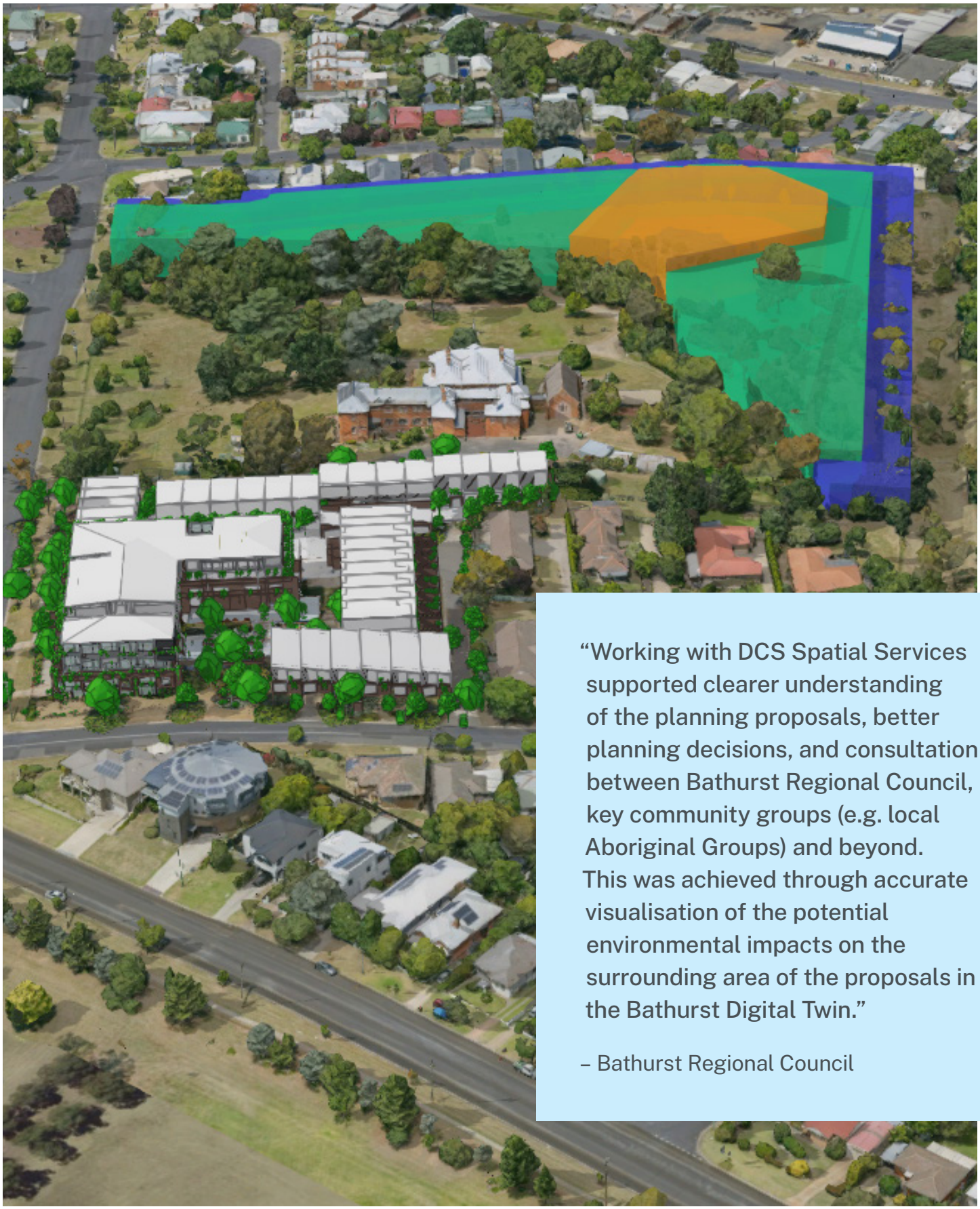
For 50 Busby Street, a scaled 3D model was produced using the data provided. For 34 Busby Street, we created a building envelope and generated building footprints from a supplied PDF to maximise the available spatial planning data.

The project incorporated imagery, cadastral and positioning data from the Foundation Spatial Data Framework (FSDF), ensuring the model was built on accurate, current and authoritative data. Use of the NSW Cadastre provided consistent scaling across affected land parcels, while alignment with state survey marks ensured the 3D model matched the NSW positioning network

All data was hosted within our secure portal environment, enabling updates to become automatically visible on the platform. This approach supported consistent governance and allowed the solution to be reused for future development projects.

Bathurst Regional Council supplied additional information, which was integrated into the council's Your Say platform to enhance community engagement and support meaningful public feedback.

Scaled 3D modelling visualising the proposed development at 50 Busby Street.



"Working with DCS Spatial Services supported clearer understanding of the planning proposals, better planning decisions, and consultation between Bathurst Regional Council, key community groups (e.g. local Aboriginal Groups) and beyond. This was achieved through accurate visualisation of the potential environmental impacts on the surrounding area of the proposals in the Bathurst Digital Twin."

– Bathurst Regional Council

Combined model of both proposals, featuring full shadowing at a point in time generated through the platform's Shadow Cast tool.

Project outcomes

Bathurst Regional Council utilised DCS Spatial Services knowledge and expertise in spatial data and GIS to provide a comprehensive solution to the challenges they faced during the planning and development process.

DCS Spatial Services delivered a detailed and informative 3D model underpinned by accurate and authoritative imagery and spatial data. The model provided clear insight into potential visual, environmental and shadowing impacts from the proposed developments.

The model offered an honest and unembellished depiction of the developments, including their relationship to surrounding heritage items and the existing character of the area. This level of transparency was critical in facilitating informed and meaningful community input. Presenting this information in an accessible format improved the community consultation process and supported informed decision-making.

A consistent theme emerging from the public exhibition was concern regarding scale, massing and visual impact, particularly in relation to nearby heritage buildings. The ability for stakeholders to visualise these impacts through the digital twin gave clarity and weight to these concerns.

In response, Council adopted an iterative approach during the exhibition period. A revised height envelope for the 34 Busby St site was delivered after considerable community feedback on the impact of the original height proposals.

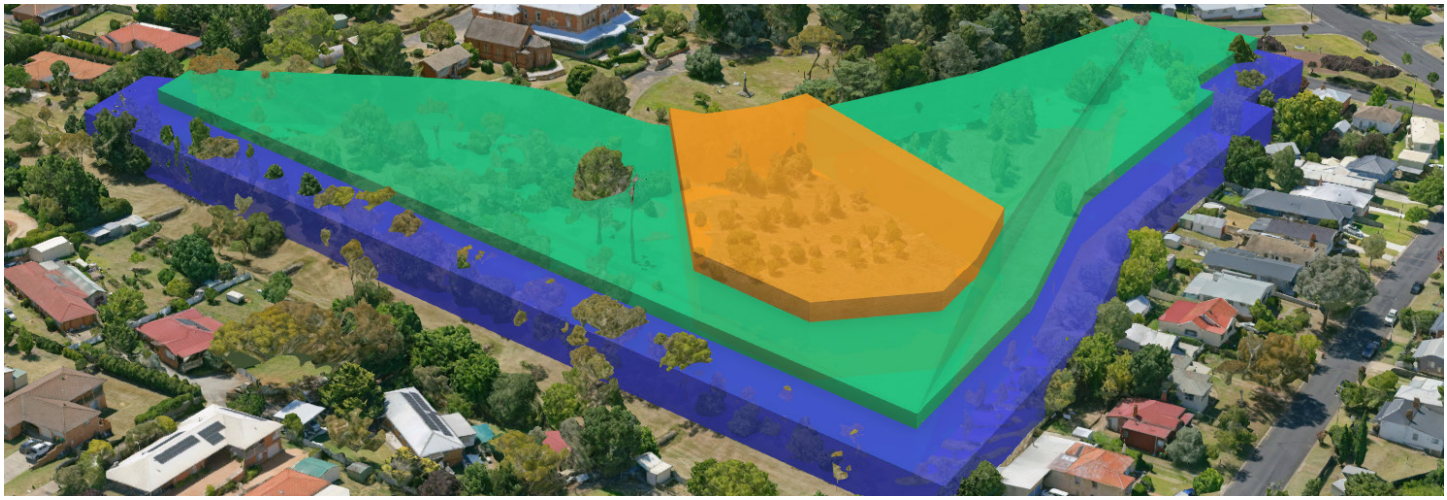
We then readjusted the height envelope within the 48 hours of the request coming from the council.

The completion of this project ensured:

- clearer public understanding of the proposed development
- stronger engagement and higher-quality community feedback
- easier assessment of height, visual impacts, shadow and line-of-sight considerations
- compliance with evolving digital planning requirements.

Ultimately, through this enhanced consultation process, Council rejected the planning proposals based on the community feedback provided. Instead adopting planning proposals that introduce amendments that reflect a clear response to the issues raised. The approved outcomes reduced the bulk and scale relative to the exhibited proposals, achieving a more desirable outcome with a more appropriate relationship with the heritage context and surrounding neighbourhood character.

This project demonstrates how DCS Spatial Services uses authoritative spatial data to support local government with tools, products and services that strengthen community engagement and local development. It also highlights the growing real world value of high quality spatial data.



3D model of 34 Busby Street showing the building envelope and generated building footprints.

Resources

You can view the envisaged master plan model for 50 Busby Street on the **Bathurst Digital Twin**, alongside the building envelopes and master plan footprints for 34 Busby Street.

Learn more about the Foundation Spatial Data Framework (FSDF):
https://www.spatial.nsw.gov.au/what_we_do/what_is_fsdf

Become part of the ReSSE through DCS Spatial Services Imagery & Elevation Data Coordination Program:
https://www.spatial.nsw.gov.au/__data/assets/pdf_file/0017/233216/DCS_Spatial_Services_Accessible.pdf

Explore the DCS Spatial Services website: **https://www.spatial.nsw.gov.au/**

Contact us

Want to see how spatial data can strengthen your next project? Connect with us here:
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