TASMANIAN PLANNING COMMISSION

Our Ref: DOC/22/132685
Officer: Michael Hogan
Phone: 6165 6827
Email: tpc@planning.tas.gov.au

Danielle Gray
Gray Planning
224 Warwick Street
WEST HOBART TAS 7000

Dear Ms Gray

Clarence Local Provisions Schedule
Draft amendment PDPSAMEND-2021-022808
Apply airport obstacle limitation area overlay to land around Cambridge Airport

I refer to you email dated 29 November 2022, requesting a hearing to discuss the information and format of mapping to be provided in response to the direction from the Commission on this matter.

In summary, the Commission has requested information to enable it to understand how the proposed overlay affects the building heights on properties adjoining the airport, as a result of limitations on height that would be imposed if the overlay proposed by the airport operator was approved. The Commission also needs to understand the accuracy and veracity of the data that is used for this analysis and mapping.

The Commission will use this information to inform adjoining landowners so that the hearing is based on accurate information. The mapping must be presented in a manner that is clear understood by adjoining landowners.

The Commission delegates have considered your request and appreciate the need for clarity in how this mapping is undertaking and presented.

Attached is an outline of the technical specifications for data, analysis and mapping that the Commission believes would be acceptable. This specification should address the matters you have raised.

Given the nature of your enquiry, the Commission believes a hearing on this matter is not required.

If you require further technical advice on this matter, please contact, Simon Gatenby, Simon.gatenby@planning.tas.gov or 6165 6834.

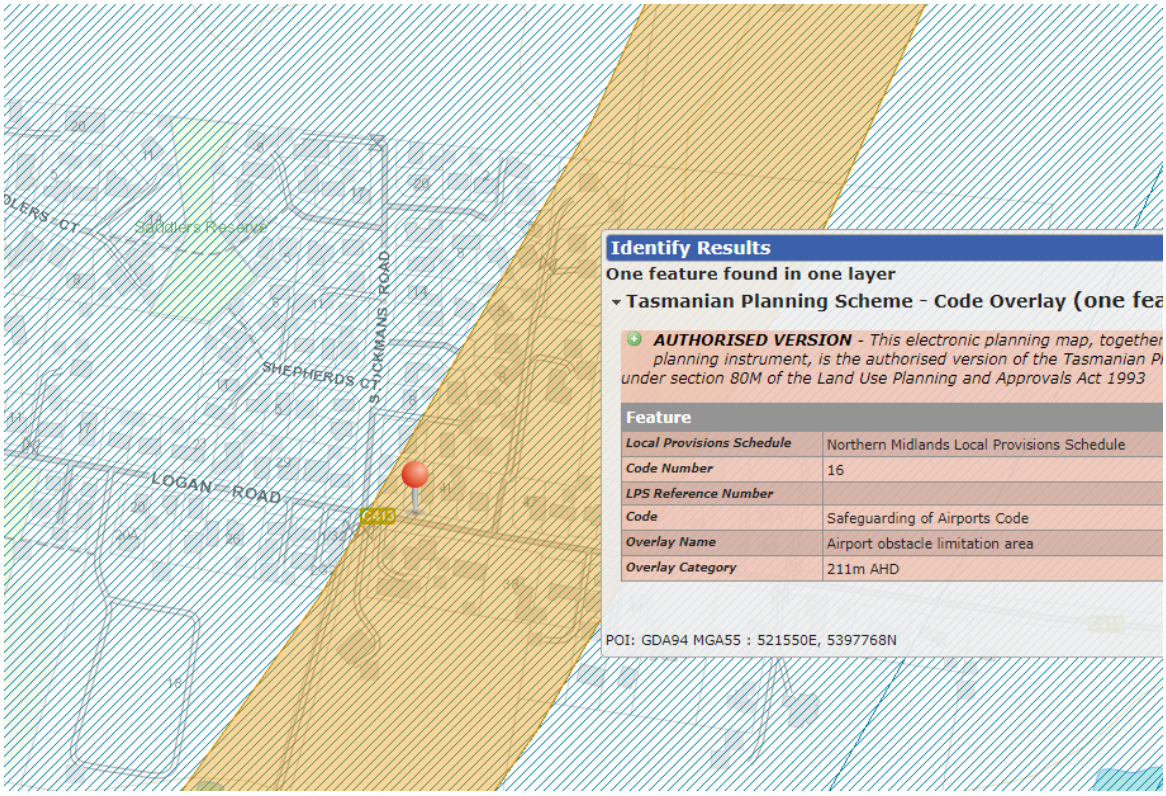
Yours sincerely

John Ramsay
Executive Commissioner

Attachment – OLS and Height limit map technical specifications

I. A revised proposed survey plan that confirm all key AHD values, with OLS values and extents adjusted accordingly to reflect accurate ground levels.

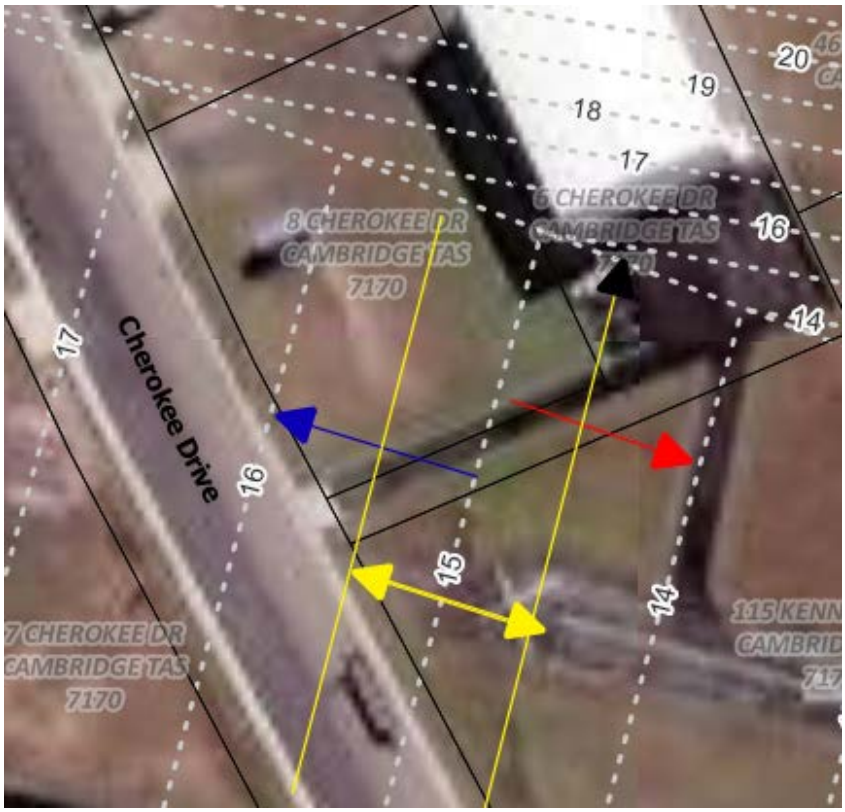
To be suitable for the planning overlay, the obstacle limitation area must specify the AHD height limit within that area, and must be mapped as polygons rather than contour lines. It has been noted in the submission by Gray Planning (18th Nov) that to address the need of reflecting the sloped transitional surface, the use of 1m intervals more accurately 'steps' the height limitations in close proximity to the runways. This would be the most suitable way to map the incremental values as required.



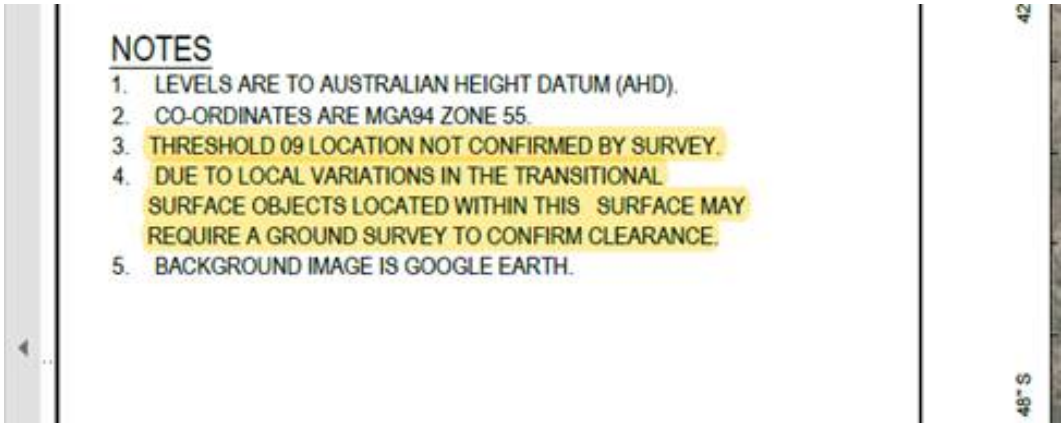
Airport Obstacle Limitation Area overlay

The format which has been provided in the survey plan (of contour lines) requires conversion to polygon areas, and would be preferable to receive this in a GIS format to ensure that any conversion of the data does not produce any spatial inaccuracies.

To digitise the correct height values proposed in the survey plan provided as this, it must be established whether the mapped height value runs outwards to the next increment (ie 15m AHD area runs in direction of blue arrow up to the 16m AHD increment), or conversely, the height value runs inwards (as with red arrow), or alternatively the limitation area extents would have to be re-mapped to better fit with the OLS contours provided (example in yellow where the 15m OLS area is equidistant of the mapped contour).



Additional to this, it was noted in the survey provided that the AHD value for Threshold 09 was **not** confirmed by the survey (which is the runway end that is in close proximity to recently subdivided parcels around Cherokee Drive). The value used at this location appears to be an outlier with the 2019 LiDAR elevation model (highlighted red), which exceeds the vertical accuracy of the LiDAR survey (±0.3m).


NOTES

1. LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
2. CO-ORDINATES ARE MGA94 ZONE 55.
3. THRESHOLD 09 LOCATION NOT CONFIRMED BY SURVEY.
4. DUE TO LOCAL VARIATIONS IN THE TRANSITIONAL SURFACE OBJECTS LOCATED WITHIN THIS SURFACE MAY REQUIRE A GROUND SURVEY TO CONFIRM CLEARANCE.
5. BACKGROUND IMAGE IS GOOGLE EARTH.

(Excerpt from Airport Surveys Map).

Comparison of height data between survey levels in plan and LiDAR derived elevation:

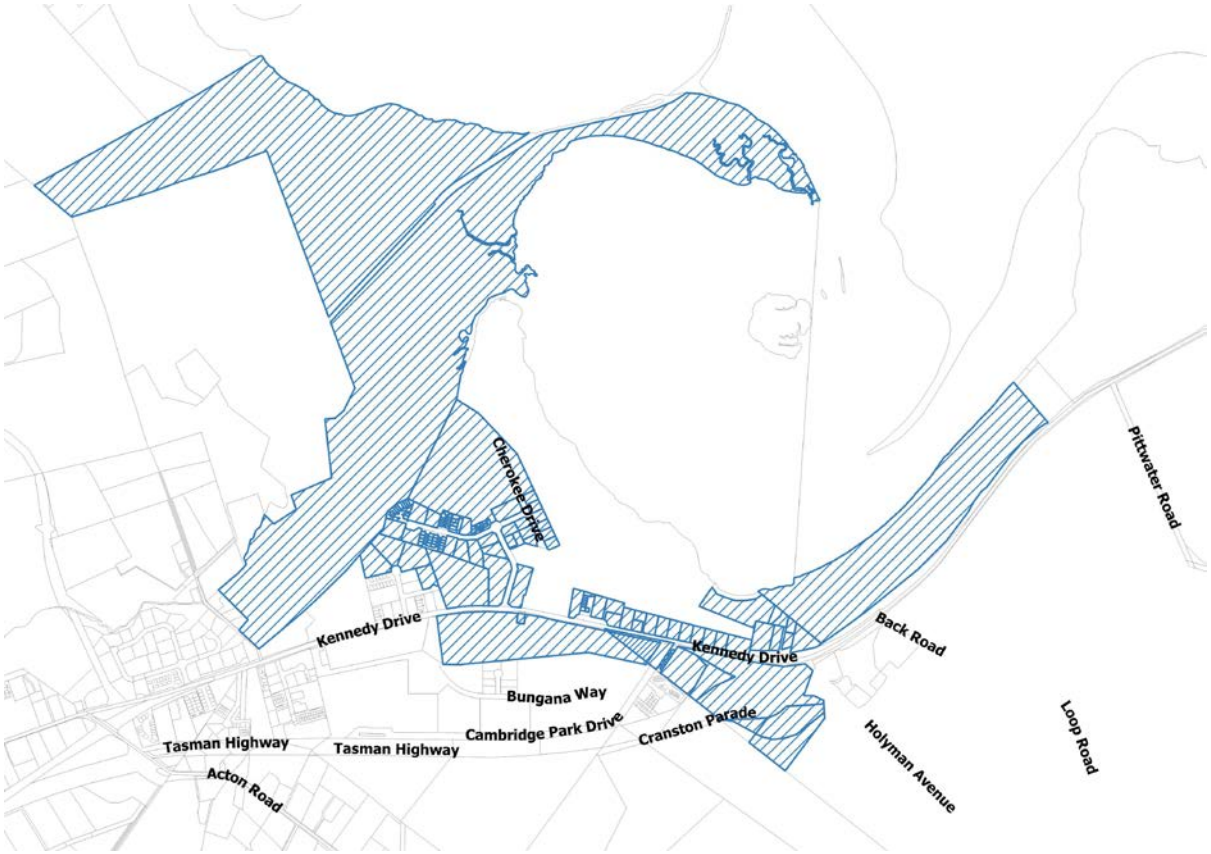
E	N	LOCATION	SURVEY LEVEL (AHD m)	2019 LIDAR AHD(m)	DIFFERENCE (m)
538799.333	5258320.272	CTRL PT RL 10.2	10.2	9.949999809	-0.25
538910.178	5258154.745	09 THRESHOLD	12.8	13.63000011	0.83
539506.342	5257992.652	27 THRESHOLD	8.964	8.930000305	-0.034
539373.573	5258087.429	30 THRESHOLD	10.216	10.14999962	-0.066
538711.739	5258794.461	12 THRESHOLD	5.114	5.059999943	-0.054

Most of these thresholds fall within the (±0.3m) of the LiDAR elevation model for the area, however the unconfirmed survey level for Threshold 09 appears to exceed this.

Considering that the mapping and documentation provided has indicated the need for stringent height limitations for nearby areas, please ensure the height values are as accurate as possible. Where adjustments may be required to any ground height anomalies, this should also be reflected in the values and/or the extent of the height limit areas, even if only small increments.

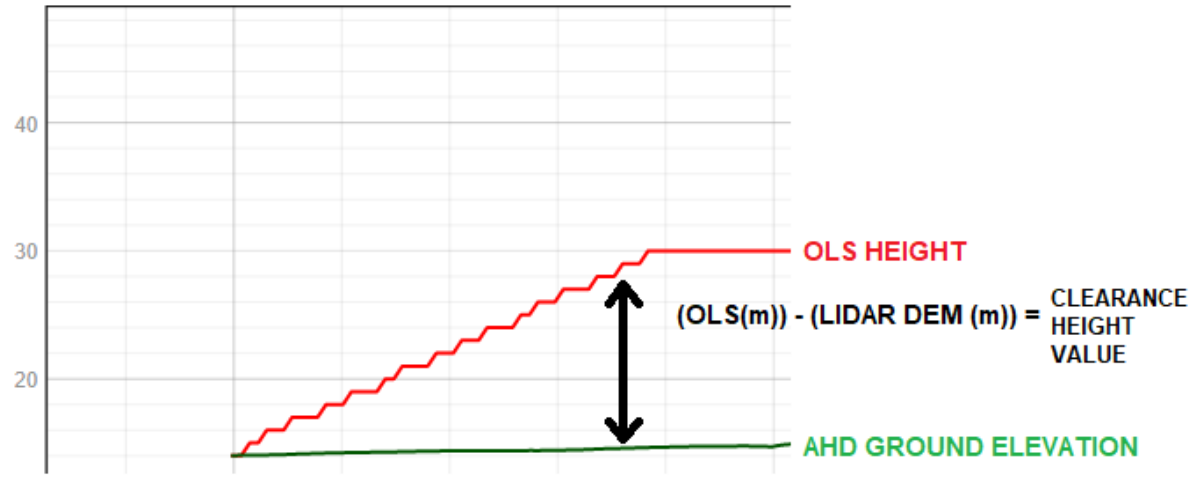
II. A further map that indicates building height limits, including the maximum and minimum height limits within each parcel, on all properties/lots surrounding the airport property

Once a map has been created to determine the areas of height limit (OLS areas), a further map should be produced to show the residual heights for parcels in the near vicinity of the airport.



Parcels in near vicinity of Cambridge Airport

The basis of this is the height limit is the residual height between the OLS height less the ground elevation height. i.e an OLS height of 25m AHD with a ground surface height of 13.1m would create a height limit of 11.9m.



As there may be variation within a parcel (considering both undulating land and small height increments within the transitional surface are possible), it is important that the range and extent of height values within a parcel is reflected in any map produced.

This task would likely require using GIS software to calculate the difference between the two spatial layers. An example method is provided below.

The layout and style for the output map (or map series) should ensure that each landowner can legibly identify their parcel and be informed of the range of height limits within their parcel. It is recommended that an output map be done in a series, or if as a single map there is annotation to correspond to the information required.

III. The data that is relied on to establish the building heights

Please detail what data was used to establish height values (for both the OLS map and for determining the residual clearance heights). For example, using confirmed survey AHD levels and the Clarence 2019 LiDAR digital elevation model for subtracting acceptable height values based on the OLS. A low accuracy digital elevation model (such as the 25m Statewide DEM) will not provide the precision that is required for demonstrating permitted height levels in land parcels.

If an alternate method than what is detailed below is used to map the building height limits for the nearby parcels, a brief description of the method used would be appreciated.

EXAMPLE GIS BASED METHOD FOR MEASURING RESIDUAL HEIGHT LEVEL (OLS TO DEM)

Once correctly digitised to a polygon based layer, convert the OLS values into a raster dataset (similar to an elevation model itself (**Fig.1**), depicting OLS values rather than AHD), and use **Raster calculator** function to create a further dataset derived from subtracting an elevation model with the same extent (such as LiDAR derived elevation layer (**Fig.2**) from the OLS model. The resulting data is the residual clearance height (**Fig.3**).

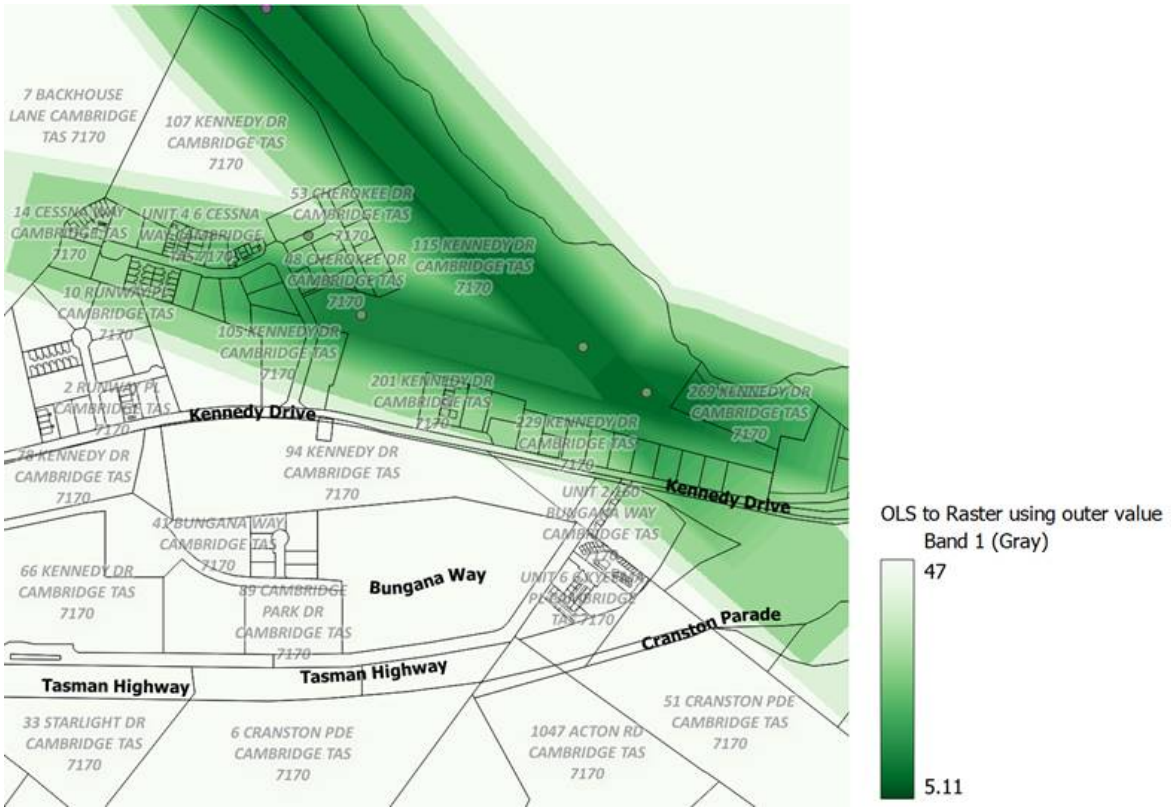


Figure 1. Sample of OLS values converted to a raster model (unconfirmed data)

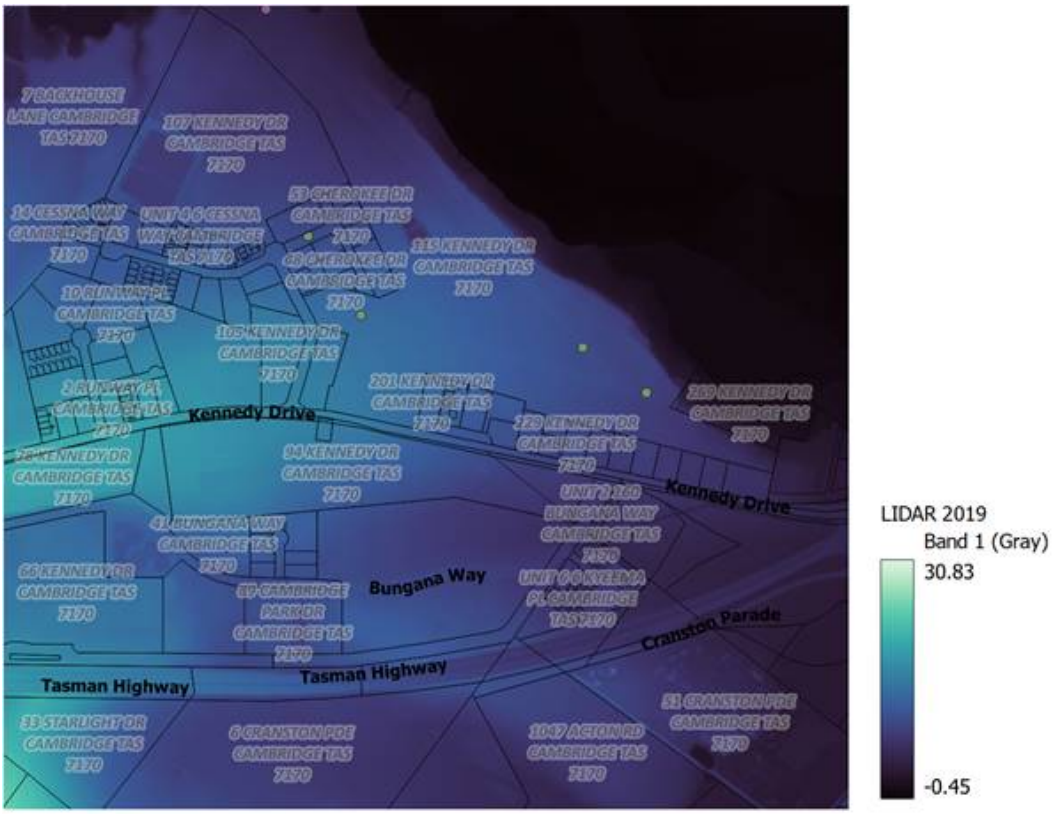


Fig. 2 DEM Clarence 2019 LiDAR elevation

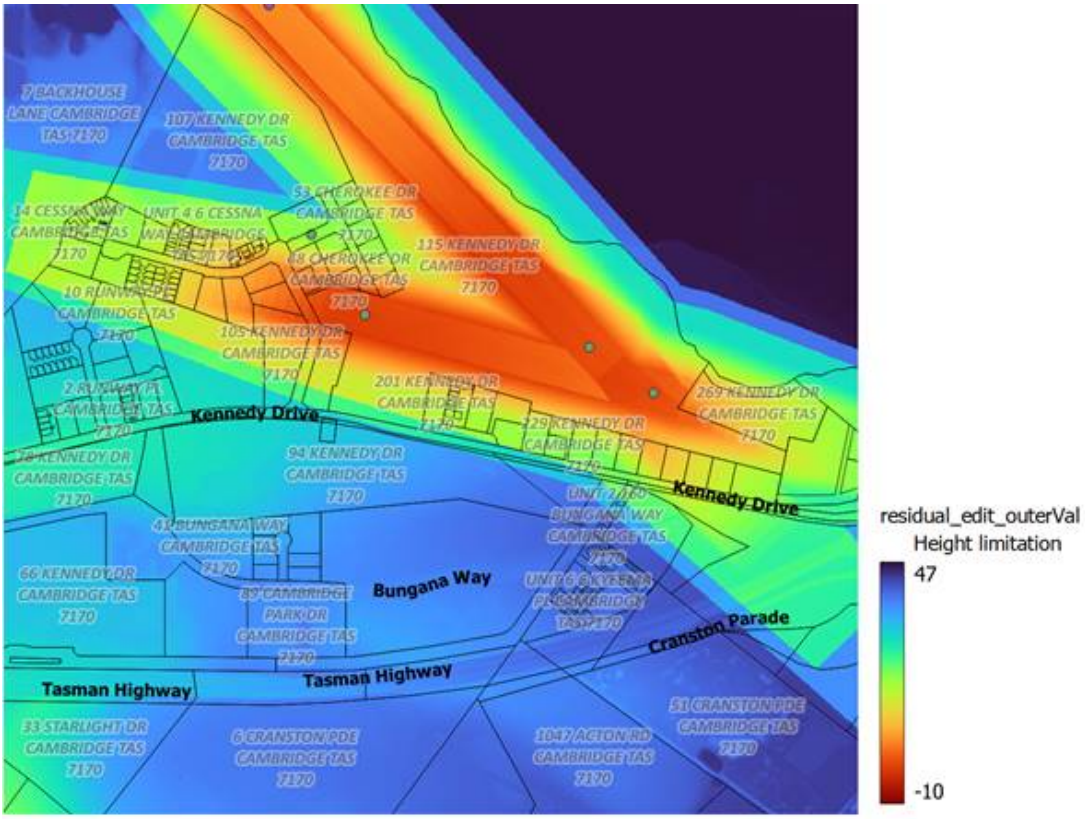


Fig. 3 – Residual height derived (OLS minus DEM)

This can be analysed in relation to the adjacent parcels (using **Zonal Statistics** function, with the input feature zone data being the nearby parcel cadastral polygons, and the input raster data to analyse being the output residual height raster layer. Other methods of evaluating and displaying the **height limit results per parcel** may be used.

- Observations of what the prevalent height limits in a parcel would be also helpful information. In this example an additional process of calculating the interquartile range of height values within the parcel show the distribution of height values was used. Other methods may also be suitable

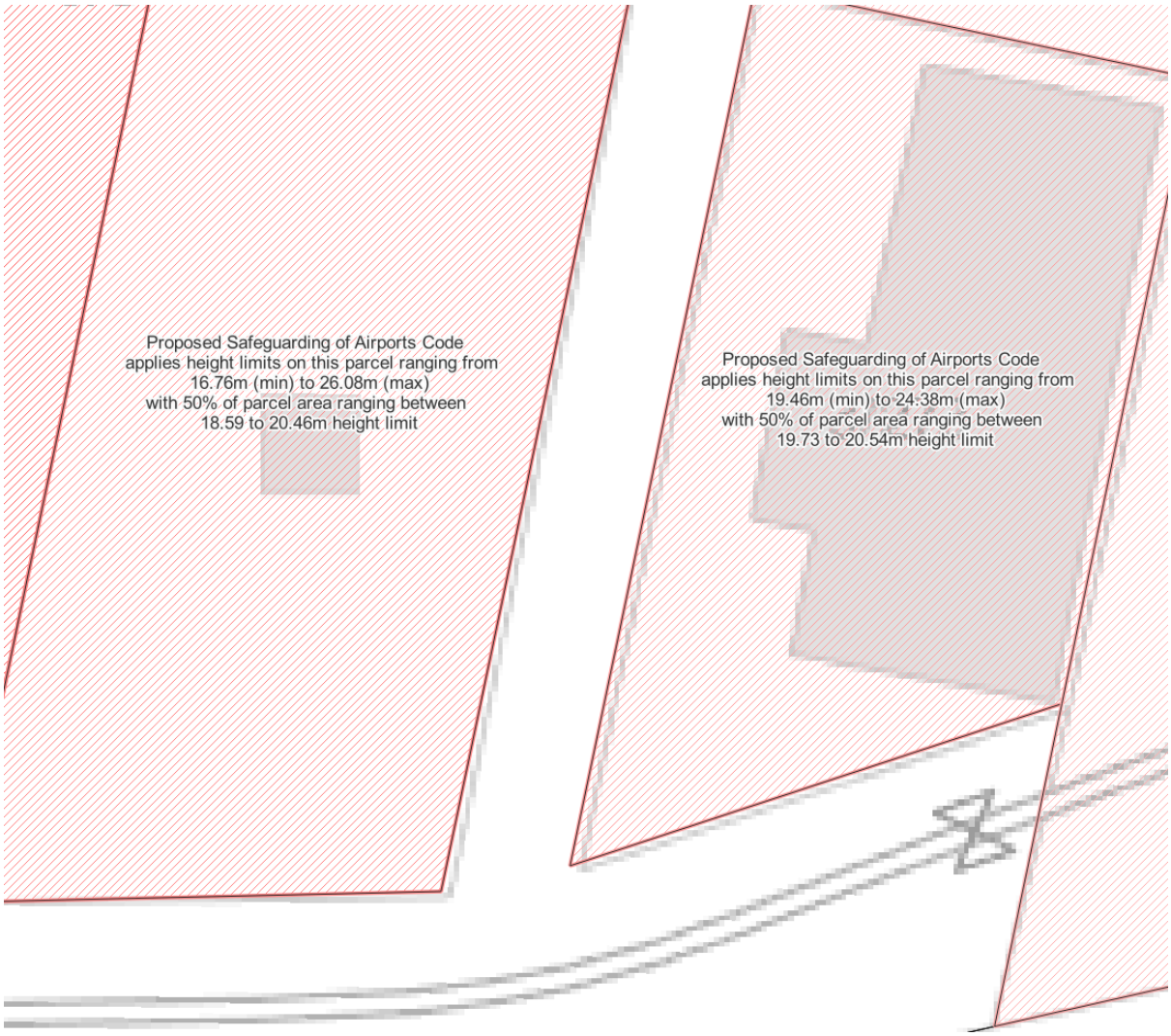


Fig.4 – Sample excerpt of height limitation map using statistics obtained from analysis. The layout and style of the mapping requested may differ from this, as it will need to legibly display the resulting height maximum and minimum values for each parcel, whether annotated or numbered with an appending table of information.