

6.0 Engineering Assessment – Junctions 12 to 15

Snap Shot – Junctions 12 to 15

- Problem has been quantified, now look at potential design/buildability problems
- Snap shot has been identified to provide Transport Scotland with a feel for the extent of the issues that will need to be addressed
- A mobile laser scan survey was undertaken between junctions 12 to 15 to allow detailed cross sectional information to be obtained



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Mobile Laser Survey

- Removes risks from surveyors/ operatives
- Avoids disruptive and costly traffic management
- Rapid data collection of all features
- Travelled 45-50mph
- Three runs each way to maximise cover
- Time on site approximately 4 hours



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Mobile Laser Survey

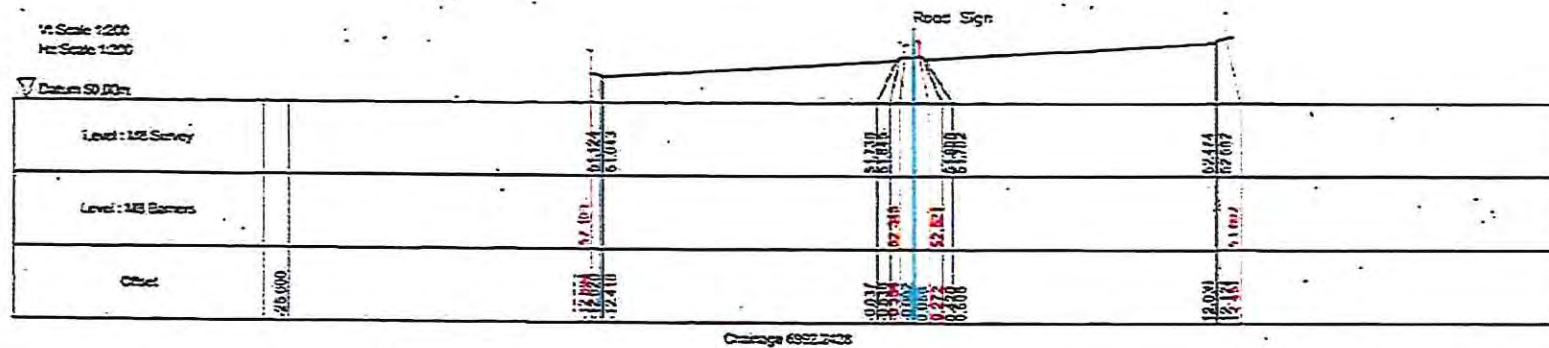
- 26 GB of data collected
- 875million coordinated points
- Only a small percentage of what is available has been extracted for the purposes of this workshop.



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Mobile Laser Survey

- Survey team produced cross sections every 10m
- Cross sections were also obtained at every piece of street furniture.
- A sample of the output is shown below:



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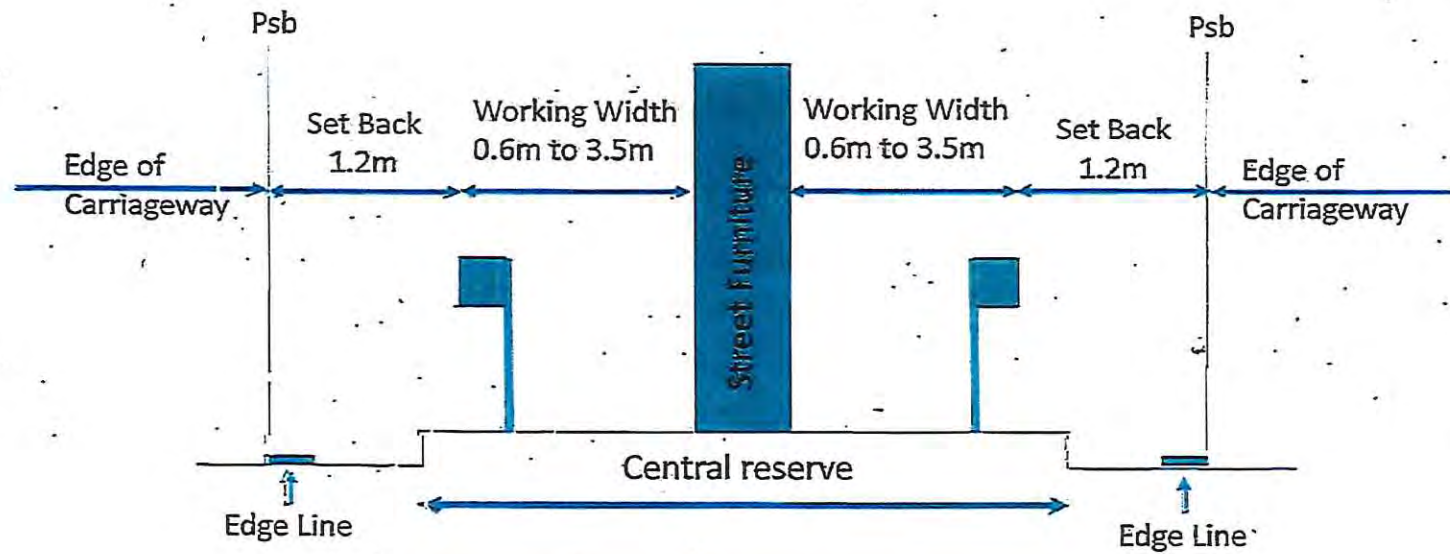
Street Furniture

There are 127 pieces of street furniture within junctions 12 to 15 consisting of the following:

- 5 road signs
- 13 Gantries
- 48 High Masts
- 58 Electrical Cabinets
- 1 Disused concrete foundation
- 2 Bridge Priers



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Psb = Point from which the set back is measured. For a central reserve the trafficked edge of the edge line or the kerb face where there is no edge line

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Working Width

- 37 locations where the available working width is less than 0.6m (WW1)
- 112 locations where the available working width is less than 0.8m (WW2)
- 140 locations where the available working width is less than 1.0m (WW3)
- 144 locations where the available working width is less than 1.3m (WW4)

- Existing barrier is Open Box Beam, post spacing of 1.2m/2.4m, WW4 or WW5 (1.3m. or 1.7m).

- Current system does not meet working width requirements at all 144 street furniture locations.

- New system - Departures will be required regardless of product used.



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Set back

- Assuming an edge line width of 200mm and the existing hardstrip is 500mm
- There are 5 locations where the 1m setback is currently not achieved at street furniture locations only
- There are 25 locations where the 1.2m setback is currently not achieved at street furniture locations only
- Departures would be required



7.0 Buildability Constraints – Junction 12 to 15

Utilities

Within the central reserve there are the following utilities:

- Scottish Water (both sewers and water mains)
- BT
- Scottish Gas
- SP Energy – Electrical Cables
- High Mast and Gantry Cables (trial holes)
- Road Drainage

During the construction process there may be a requirement to get these utilities protected or diverted. Involvement from the utility companies will be necessary.



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High Masts/Gantries

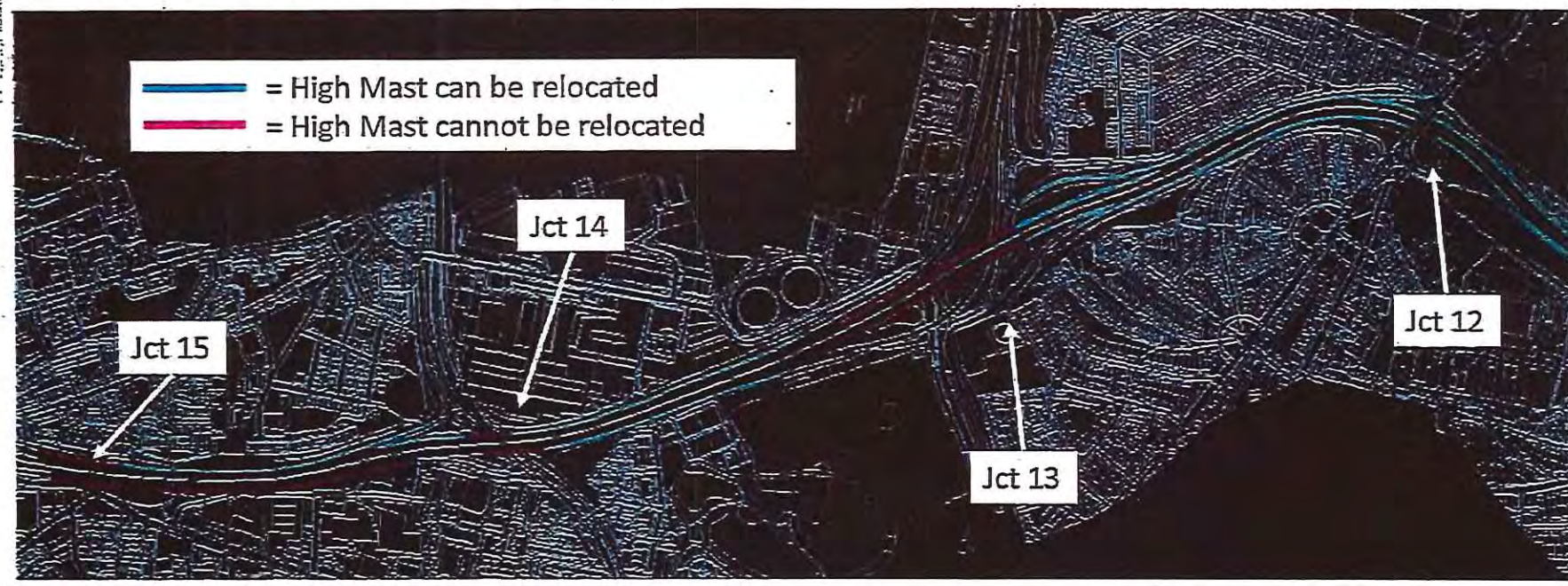
- High masts and gantries within the central reserve reduce the available working width.
- High masts maintenance strategy report will look at the feasibility of relocating the high masts.
- Gantries will remain and will be considered within the design



7.0 Buildability Constraints – Junction 12 to 15

High Masts

- This diagram indicates where it would be physically possible to relocate the high masts onto the verge between junctions 12 to 15



7.0 Buildability Constraints – Junction 12 to 15

High Masts

- 46 high masts within the centre reserve red zone
- 17 cannot be relocated
- Only “insignificant” issues in all 46 masts relating to their condition
- Only 2 are over 25 years old, 37 are between 10 and 25 years old and 7 are less than 10 years old
- The high masts at this locations are deemed to be in a relatively reasonable condition and would not be relocated.



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Traffic Management

- Significant factor in construction of the works.
- SIAS modelled worst case scenario - 2 offside lanes closures between junctions 12 to 15.
- Queue lengths and journey times obtained



7.0 Buildability Constraints – Junction 12 to 15

Traffic Management - Queue Lengths

Time	AM M8 to M8 East Queuing Length (km)	AM M8 to M8 West Queuing Length (km)
07:00	0.1	0.4
07:30	0.8	4.0
08:00	4.2	6.6
08:30	7.0	9.4
09:00	12.8	15.7
09:30	15.2	21.0
10:00	16.5	21.9

