

This QRG will demonstrate how to verify the pole strength for existing poles located on the Ausgrid network as part of the design process.

Neara Auto-model - Pole Selection Process

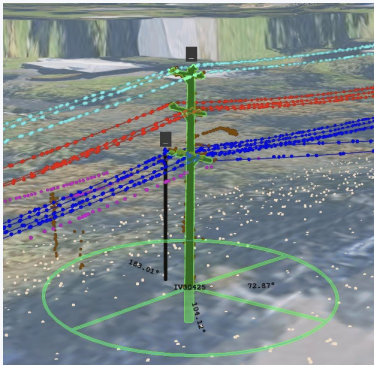
When Neara creates the Ausgrid Auto-model, they apply a logic to select the pole size and capacity deemed most appropriate for that location. In most cases, the auto-model can arrive at a suitable outcome by applying the logic outlined below. While this approach can expedite the verification process, responsibility remains with the designer to confirm and select the pole size to be analysed, ensuring it accurately reflects the pole installed in the field.

Auto-model logic applied by Neara:

- For timber poles where Custom Pole Strength (CPS) can be calculated, use Ausgrid-labelled poles.
- a. Select the pole length that satisfies LiDAR height-above-ground and minimum embedment of 10% + 0.6m
 - b. Calculate the CPS using the following inputs:
 - i. Modulus of rupture: assign based on SAP pole species — S1 (100 MPa), S2 (80 MPa), or fallback (80 MPa).
 - ii. Ground line diameter: assign from SAP data.
 - iii. Wall thickness: set to 0.5 × ground line diameter (assumes no internal defects).
 - iv. Pole strength selection: determine using the calculated maximum tip load. Round the CPS result down to the next discrete pole size for the relevant length, then use this value to select the pole strength candidate as follows:
 - i. If CPS ≥ 48 kN, round down to AG_T_(LENGTH) m_48 kN for that length.
 - ii. If CPS ≥ 32 kN and < 48 kN, round down to AG_T_(LENGTH) m_32 kN for that length.
 - iii. If CPS ≥ 24 kN and < 32 kN, round down to AG_T_(LENGTH) m_24 kN for that length.
 - iv. If CPS ≥ 16 kN and < 24 kN, round down to AG_T_(LENGTH) m_16 kN for that length.
 - v. If CPS < 16 kN, allow the calculated CPS strength to persist and use a Neara-labelled pole (Neara – (LENGTH) m – Wood – S1/S2).
 - c. If no ground line diameter is available from Ausgrid SAP data, if CPS <16kN, or if no suitable Ausgrid pole exists in the library, default to a Neara-labelled pole (Neara - (LENGTH)m – Wood – S1/S2).

Ausgrid Design Template - Determining and Verifying Timber Pole Strength

In the Ausgrid **Design Template**, each pole will have been configured as a specific size from the Ausgrid pole library based on the logic described above. However, this configuration must still be verified. The steps in this QRG describe this process. Also note, as part of the Verification process, site measurements of the pole diameter must also be collected – remember to test the pole for voltages before touching the pole.



General

Structure

Materials

Type

AG_T_14.0m_48kN_Ult. (12kN)

Sinking Depth

1.93 m

Height above ground

12.07 m

Vertical Offset ?

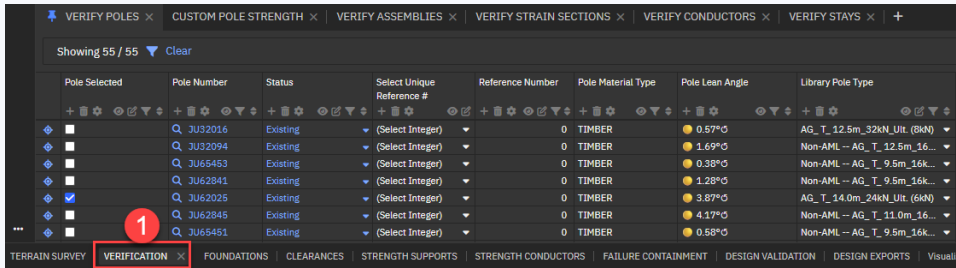
0 m

☐ Lock attach heights

☐ Custom Pole Strength ?

Determining and Verifying Existing Timber Pole Strength

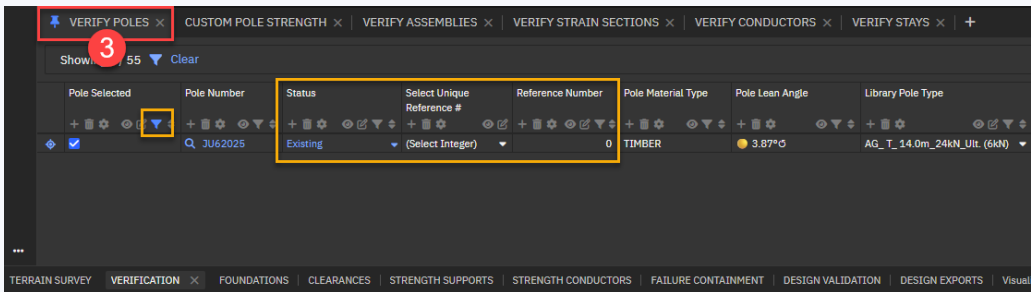
1. Click on the **VERIFICATION** workspace.



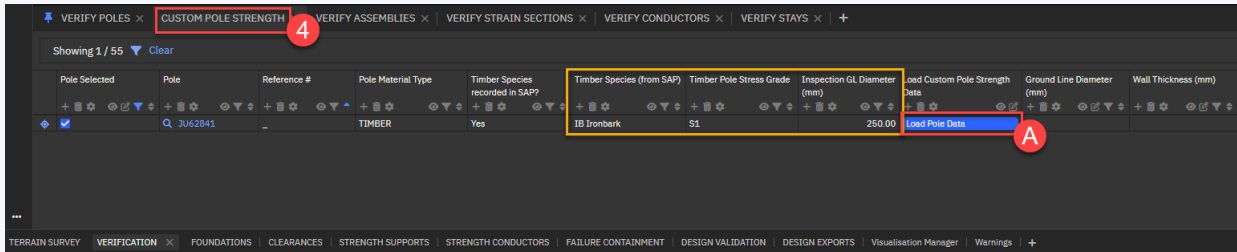
2. In the **Perspective, Plan** or **Profile** view, select the pole to be verified.



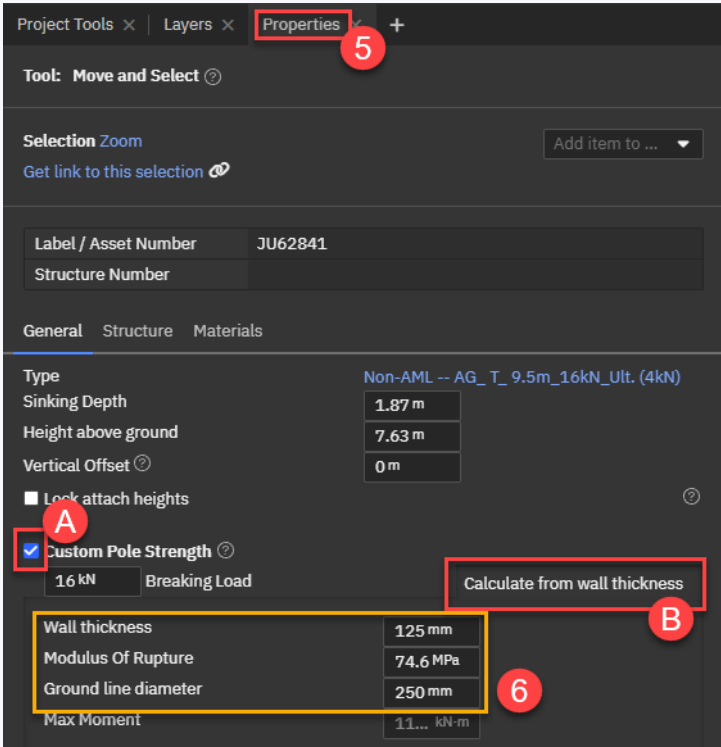
3. Click on the **VERIFY POLES** report. Filter the **Selected** pole, update the **Status** (if required), and assign a **Reference Number**.



4. Click on the **CUSTOM POLE STRENGTH** report. Filter the **Selected** pole, and confirm the **Timber Species**, **Timber Pole Stress Grade (S1 or S2)**, and the **Inspection GL (Groundline) Diameter**.
A) If the values are valid, click the blue **Load Pole Data** button. If some values are blank, try reloading the **SAP Pole Details** dataset.



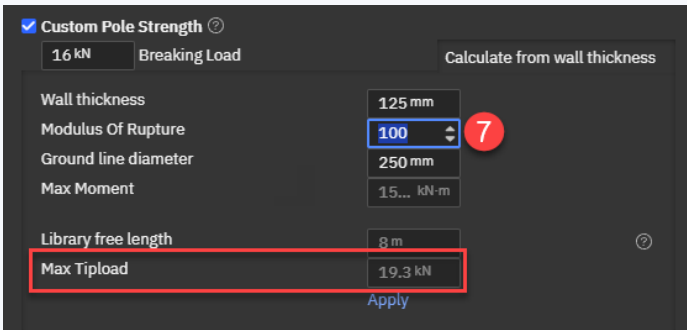
5. Click into the **Properties** Panel, then:
- A) Tick the **Custom Pole Strength** tick box, and
- B) Click the **Calculate from wall thickness** 'button'.



6. Confirm these values are as shown in the **CUSTOM POLE STRENGTH** report:
- **Ground line diameter**
- **Wall thickness** (check this is half of the Ground line diameter)
- **Modulus of Rupture** (S1 = 100MPa and S2 = 80MPa)

In the example above, the **Modulus of Rupture** needs to be updated to 100MPa to reflect the S1 pole stress grade.

7. Update values if required, then note the **Max Tipload** value displayed – this is the calculated ultimate tip load of this pole (19.3kN in this example below).



Round down the **Max Tipload** value to the nearest discrete pole size. In this example, round down to a 16kN pole.

As this **Max Tipload** value aligns with the value selected by the Auto-model, the desktop verification process has been completed. Complete a site visit to confirm the ground line diameter, and skip to **Step 11** in this QRG. However, if the calculated strength value is different to the auto-model, continue to **Step 8**.

8. If the calculation in **Step 7** results in a different pole strength, the correct pole will need to be selected from the Pole Library.
- As an example, let's say the pole was calculated as a 24kN ultimate. To make this change:
- A) **copy** the **Height above ground** of the existing pole
- B) select the pole **Type** in the **Properties** panel.

Project Tools x Layers x Properties x +

Tool: Move and Select ?

Selection Zoom Add item to ...

Get link to this selection ?

Label / Asset Number JU62841

Structure Number

General Structure Materials

Type Non-AML -- AG_ T_ 9.5m_16kN_Ult. (4kN) B

Sinking Depth 1.87 m

Height above ground 7.63 m A

Vertical Offset ? 0 m

☐ Lock attach heights ?

9. Make sure that the **Wood Pole** library is selected (these contain Ausgrid-verified pole models) :
- A) type the pole length or strength into the search bar,
- B) click **Use** on the required pole,
- C) a pop-up window will appear. Click on **Remove** as we no longer need the custom pole strength calculated values.

Import Export Remove Unused

Wood Pole Concrete Pole Steel Pole Composite Pole Generic

+ New Pole Type

Q 9.5 A

Showing 6 / 65 items

AG_ T_ 9.5m_24kN_Ult. (6kN)

AG_ T_ 9.5m_32kN_Ult. (8kN)

Non-AML -- AG_ T_ 9.5m_16kN_Ult. (4kN)

AG_ T_ Desap_9.5m_24kN_Ult. (6kN)

AG_ T_ Desap_9.5m_32kN_Ult. (8kN)

AG_ T_ 9.5m_48kN_Ult. (12kN)

Use B

Custom strength parameters X

Pole type changed.
Remove custom strength parameters?

Keep Remove C

10. **Paste** the **Height above ground** (copied from the original pole) into the new pole **Properties**.

General Structure Materials

Type AG_ T_ 9.5m_24kN_Ult. (6kN)

Sinking Depth 1.55 m

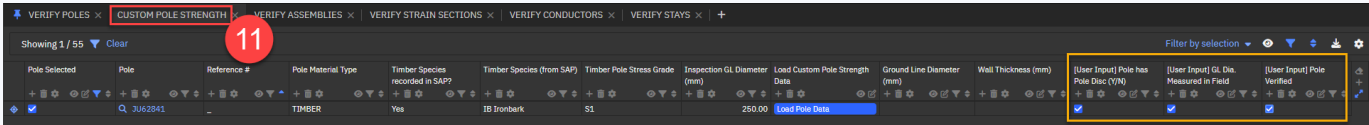
Height above ground 7.95 m 10

Vertical Offset ? 0 m

☐ Lock attach heights ?

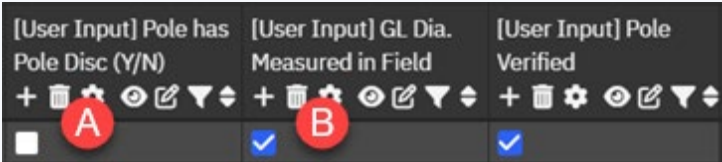
☐ Custom Pole Strength ?

11. Finally, to aid in keeping track of verified poles and the method used to confirm the details, set the pole verification status using the **User Input** fields (tick boxes) at the right-hand end of the **CUSTOM POLE STRENGTH** report:

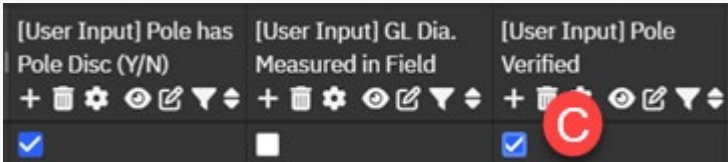


Following a site visit, a designer may:

- A) record whether a **Pole has Pole Disc**.
Note: a pole disc may be used as verification of a pole’s strength.
- B) record whether they measured the groundline diameter of the pole - **GL Dia. Measured in Field**.
Note: it is a requirement that pole groundline diameter is validated on site as part of the verification process. A desktop review for the purpose of verification is preliminary, and should not be used to finalise the verification process.



- C) Once the pole verification process is complete, select the **Pole Verified** tick box.



This confirms that the pole is verified and ready for further analysis.