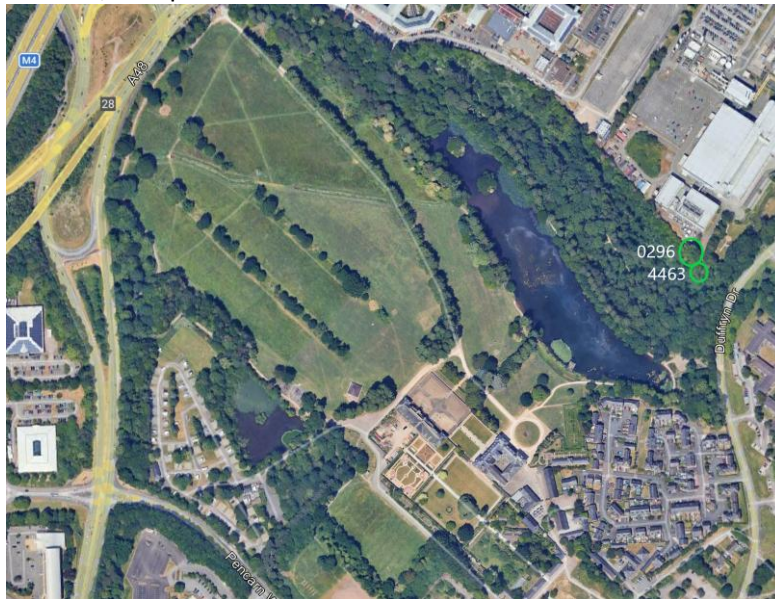


Recommendations following micro drill testing

Date: 30.03.2026

Reason for drills: Concern over the decay levels with a mature horse chestnut tree in failure range of the Tredegar House east boundary.

Location: Tredegar House, Newport.



Trees

- Two mature/veteran trees on semi-conductor plant boundary.
- Both trees historically crown reduced.
- Tag 0296 has a large dead and decaying rib on the south side of stem.
- Ivy on trees was severed during assessment.
- Both trees have normal resonance testing results other than tag 0296 around the decayed section.
- Drill tests indicate some internal changes in certain areas of stem cross section but overall, the trees have significant cross-sectional area.

Tag 0296 drill test notes

- Multiple drilling points at various depths (around 50 cm) on the tree's basal area, with assessments conducted on different sides (north, south, east, west).
- Data includes drilling depth, date, time, feed rate, and operational parameters such as speed, needle tilt, and offset.
- Each measurement records amplitude percentages indicating the severity of decay or defects, with specific notes on bark, decay, and wood quality.

- Some points reveal minor decay pockets or reduced wood quality, especially in the outer stem sections, consistent with natural aging or species characteristics.
- Notably, a decay cavity/rib extending up the trunk was identified. The decay rib was measured at approximately 11 cm depth on the south side, confirming internal decay.
- Overall, the assessments suggest the tree has localised decay and minor structural concerns but no immediate critical failure risk.
- The data supports ongoing monitoring and evaluation of the tree's health, emphasizing decay pockets and wood quality changes typical for its age and species.

General Information

- **Date:** 26.03.2026
- **Location:** Tredegar House
- **Species:** Horse Chestnut
- **Level:** Basal
- **Diameter:** 120.00 cm
- **Feed Rate:** 150 cm/min
- **Speed:** 3500 r/min
- **Client:** National Trust

Measurement Summary:

- Measurement No. 1**
 - **Level:** 1m
 - **Drilling Depth:** 50.25 cm
 - **Direction:** North
 - **Tilt:** -1°
 - **Wood Condition:**
 - Bark: 0.03 cm to 1.60 cm
 - Wood: 1.60 cm to 39.04 cm
 - Reduced Quality Wood: 39.04 cm to 49.94 cm
 - **Comment:** Minor wood quality changes observed after 39 cm depth. T/R Pass.
- Measurement No. 2**
 - **Level:** Basal
 - **Drilling Depth:** 50.30 cm
 - **Direction:** North
 - **Tilt:** -14°
 - **Wood Condition:**
 - No specific decay or reduced quality noted.
 - **Comment:** No significant issues observed.
- Measurement No. 3**
 - **Level:** Basal
 - **Drilling Depth:** 50.31 cm
 - **Direction:** East
 - **Tilt:** -13°
 - **Wood Condition:**
 - No specific decay or reduced quality noted.

- **Comment:** Small changes/decay pockets forming, which are expected for this tree species, age, and condition.
- 4. **Measurement No. 4**
 - **Level:** Basal
 - **Drilling Depth:** 50.28 cm
 - **Direction:** West
 - **Tilt:** -20°
 - **Wood Condition:**
 - Bark: 0.03 cm to 1.07 cm
 - Wood: 1.07 cm to 18.45 cm
 - Decay: 18.45 cm to 25.78 cm
 - Wood: 25.78 cm to 49.97 cm
 - **Comment:** Decay section observed from 18.5 cm to nearly 26 cm. Small decay pocket forming, which is expected for this tree species, age, and condition.
- 5. **Measurement No. 5**
 - **Level:** Basal
 - **Drilling Depth:** 50.29 cm
 - **Direction:** South
 - **Tilt:** -18°
 - **Wood Condition:**
 - No specific decay or reduced quality noted.
 - **Comment:** Small changes/decay pockets forming, which are expected for this tree species, age, and condition.
- 6. **Measurement No. 6**
 - **Level:** 1.3m (Into decayed section)
 - **Drilling Depth:** 11.22 cm
 - **Direction:** Into decayed section
 - **Tilt:** -8°
 - **Wood Condition:**
 - Significant decay observed throughout the drilled section.
 - **Comment:** Decayed section identified. Requires further monitoring and potential intervention.

Overall Assessment:

- The Horse Chestnut tree shows signs of minor decay and reduced wood quality in specific sections, particularly at deeper drilling depths.
- Decay pockets are forming, which is typical for a tree of this species, age, and condition.
- Measurement No. 6 indicates a significant decayed section at 1.3m level, requiring ongoing evaluation and recommended action to ensure the tree's health and safety.

Tag 4463 drill test notes

- The data includes multiple measurements taken at different depths and locations (basal, north-west, south), with details such as drilling depth, date, time, feed rate, and operational parameters like speed, needle tilt, and offset.
- All samples were collected on 26 March 2026, with consistent drilling speed and similar equipment settings.

- The measurements indicate no significant defects or decay in the wood, with minor changes observed at certain depths, particularly in the north-west sample.
- The assessment notes the absence of defects in the basal drill tests.
- Minor changes are present in the north-west sample after 42 cm depth, suggesting overall adequate condition of the wood.
- The data also includes amplitude readings across depths, used to evaluate wood integrity, with no major anomalies reported.

General Information

- **Date:** 26.03.2026
- **Location:** Tredegar House
- **Species:** Horse Chestnut
- **Level:** Basal
- **Diameter:** 110.00 cm
- **Feed Rate:** 150 cm/min
- **Speed:** 3500 r/min
- **Client:** National Trust

Measurements

1. **Measurement No. 7**
 - **ID Number:** TH HC 4463 Sample NW Basal
 - **Drilling Depth:** 50.28 cm
 - **Tilt:** -12°
 - **Direction:** North-West
 - **Offset:** 70 / 268
 - **Comment:** No defect shown.
2. **Measurement No. 8**
 - **ID Number:** TH HC 4463 Sample Basal E
 - **Drilling Depth:** 50.30 cm
 - **Tilt:** -19°
 - **Direction:** East
 - **Offset:** 68 / 270
 - **Comment:** No defect shown.
3. **Measurement No. 9**
 - **ID Number:** TH HC 4463 Sample Basal S
 - **Drilling Depth:** 50.28 cm
 - **Tilt:** -17°
 - **Direction:** South
 - **Offset:** 66 / 315
 - **Comment:** No defect shown.

Amplitude Analysis

- **Measurement No. 7:** Amplitude shows consistent levels with a slight increase near the end of the drilling depth.
- **Measurement No. 8:** Amplitude remains consistent throughout the drilling depth.
- **Measurement No. 9:** Amplitude is consistent with no significant variations.

Assessment

- **Measurement No. 7:** Bark from 0.03 cm to 2.87 cm; wood from 2.87 cm to 49.97 cm.
- **Measurement No. 8:** Bark from 0.03 cm to 2.87 cm; wood from 2.87 cm to 49.97 cm.
- **Measurement No. 9:** Bark from 0.03 cm to 1.59 cm; wood from 1.59 cm to 49.90 cm.
- All measurements indicate no defects in the wood.
- The amplitude graphs show consistent readings, confirming the integrity of the wood samples.
- The Horse Chestnut tree at Tredegar House appears to be in good condition based on the provided data.

Conclusion

Overall, the trees were not found to be excessively decayed. They are actually pretty good for the age, species and overall condition of the trees. However, the infrastructure beyond the boundary fence are high value targets that must not become damaged due to failing trees. The likelihood of either tree failing at the base and into the semi-conductor plant is low based on the findings of the drill tests. Limb/stem failure from either tree is more likely so I therefore make the following recommendations.

Recommendations

Tag 0296

1. Retain all dead sections on woodland side.
2. Reduce west, north upper and east crown leaders by a further 4-6m at suitable lateral branches.
3. Retain all inner crown epicormic shoots.
4. Potential long term to reduce to ecological pollards at approximately 8-10m.

Tag 4463

1. Retain all dead sections on woodland side if present.
2. Reduce west, north upper and east crown leaders by a further 4-6m at suitable lateral branches.
3. Retain all inner crown epicormic shoots.
4. Potential long term to reduce to ecological pollards at approximately 8-10m.