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ASSESSMENT OF TREES AND THEIR POSSIBLE IMPLICATION IN STRUCTURAL DAMAGE

JANUARY 23, 2025

JADE LOW

178 Camden Road, Camden, London, NW1 9HG

Arboricultural Association Technician Member

City & Guilds | NPTC | trust INSURANCE

LANTRA AWARDS APPROVED

Assessment of Trees and their Possible Implication in Structural Damage

For

Jade Low

Report by

Luke Butler

Cert Arb L4 (ABC)/Tech Cert (ArborA)

TechArborA

Butlers Trees LTD

Letchworth Garden City

Hertfordshire

Company number **12650525**

Assessment of Trees and their Possible Implication in Structural Damage

Survey Site Address	178 Camden Road, Camden, London, NW1 9HG
Client	Jade Low
Date of Report	23/01/2025

Contact details

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Client		
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Camden Council		
London Borough of Camden 5 Pancras Square c/o Town Hall, Judd Street London WC1H 9JE		**T**: 020 7974 4444 **E**: planning@camden.gov.uk **W**: www.camden.gov.uk/planning

Issue and Revision Record

Description	Issue/Revision No.	Date	Author
Visual Tree Inspection	1	8th of January 2025	Luke Butler
Report	1	23rd of January 2025	Luke Butler

TABLE OF CONTENTS

1. Statement of Instruction

1.1. Instruction was received from the client, Jade Low, on the 5th of January 2025 to undertake a tree assessment related to potential implication in structural damage to the property of 178 Camden Road, Camden, London, NW1 9HG. This instruction followed an application made by an occupant of the adjacent property, 180 Camden Road, to remove the tree.

1.2. The client's instruction allowed for the following;

1.2.1. Attend site and undertake a survey and categorisation of trees present.

1.2.2. Identify species of the trees present and describe the overall condition, age and safe life expectancy.

1.2.3. Produce a report discussing the potential of the trees to cause damage to structures on site.

1.3. I have reviewed the application on Camden council's website, 2024/5347/T, submitted by Crawford & Co, and its attached documents.

2. Site Details

2.1 The site is situated on the south side of Camden Road, north-east of Camden Town.

2.2 The site comprises a single building containing four flats. The property is semi-detached with no.176 adjacent and was built c.1840.

2.3 The site is generally level.

2.4 Seven trees are located at the front of the property with one located in the rear garden. See attached Site Map.

2.5 The tree T1 in the following report is subject to a Tree Preservation Orders.

2.6 The trees lie within a designated conservation area, 'Parkhill'.

2.7 The approval of Camden Council will be needed before carrying out any work on the trees that are subject to a Tree preservation Order or lie in a Conservation Area.

2.8 Further guidance can be found here.

3. Brief explanation of tree root and foundation interactions

3.1 Tree roots utilize large amounts of water in their growing seasons. On shrinkable clay soils, this action can induce soil drying which can cause resultant volumetric change in the subsoil. Subsoil is the soil below the topsoil layer, usually under the top 15cm. In the dormant season, trees are less active and do not utilise as much water as they would during growing seasons. Given sufficient winter precipitation, the subsoil can re-hydrate and expand. If the building foundations located in the zone of influence do not extend below the affected area, then building movement can result. Actively growing trees demand more moisture and can induce a persistent soil moisture loss

which prevents the soil from re-wetting fully each winter. Continued downward movement of the foundations can result should this occur.

3.2 Where a persistent moisture loss has developed over time, particularly in a shrinkable clay soil of high bulk density and low porosity, buildings can be damaged by ground heave. Heave is the result of excessive soil re-hydration and expansion following the removal or death of a tree, which pre-dates the construction of the building. This is the most common occurrence of heave.

3.3 The effect of tree roots on soil moisture varies considerably. Factors that influence this include: species, size, age, soil type and building proximity.

3.4 Should subsidence occur and be directly linked to water uptake by trees, then removal is usually the only effective solution. Pruning in the form of crown reduction can reduce water uptake in the short term, although if this is to be relied upon in order to maintain reduced levels of water usage, then a regular (yearly) pruning cycle is essential. Certain species respond to heavy pruning by producing multiple new shoots, often with juvenile foliage. This growth and foliage can be exceptionally effective in transpiring water to the atmosphere.

3.5 Tree roots do not generally conform to set patterns of growth, but will develop where conditions for growth are best. While a diagram may show a circular root area, this is unlikely to be accurate due to environmental factors, such as footings or boundary walls. Trees also vary in their rate of water usage at different life stages. A young actively growing tree may utilize appreciably more soil moisture than a large tree which is at a more mature state of life.

3.6 Trees can cause damage to buildings by two primary means. These may be described as direct and indirect damage. Direct damage is the result of physical forces induced by the trees' growth upon a built structure. This usually occurs when trees are within half a metre of a building or other hard landscape features. Expansion of tree parts, specifically the stem and buttresses, is capable of causing damage by way of uplifting or pushing walls of light structures without sufficient foundations or strength. Indirect damage most commonly occurs when trees are growing in a shrinkable soil type close to buildings built on insufficient footings. Trees consume water at different rates depending on species and those that extract more than others can create a soil moisture deficit. This reduces soil volume over time, which can induce movement of building foundations.

4. Survey Limitations

4.1 This survey details the condition of the trees when the assessment was undertaken. Inevitably their condition will change over time. Accordingly, the client is advised that they should have trees in their ownership or for which they are responsible routinely inspected by a competent person so their condition can be regularly assessed.

4.2 Other than the enquiries made on the British Geological Society's website, no assessment of the site's soil or its composition was undertaken.

4.3 No specialist decay diagnostic equipment was used during the survey.

4.4 The survey was undertaken from ground level. No aerial inspection of the trees surveyed was undertaken. If such an investigation has been identified as being required, this will have been detailed as a Preliminary Recommendation.

4.5 No tree samples were taken for this report.

4.6 The Tree Preservation officer from the Local Planning Authority should be consulted before any work is carried out on site.

4.7 Before any work is carried out on site, the trees should be inspected for any activity of any protected species and a written record kept. Under the Wildlife and Countryside Act 1981 it is an offence to destroy or disturb nesting birds, if nesting birds are discovered or suspected no works can proceed and the Local Planning Authority (LPA) and Local Wildlife Trust must be notified for advice as to how to proceed.

5. Observations

5.1 Within the inspection area, eight significant trees have been identified. (Significant trees are trees with a diameter of more than 75 millimetres at 1.5 metres from ground level).

5.2 Two trees within the proposed area are a species of Tree of Heaven, *Ailanthus altissima.*

5.3 Five trees within the proposed area are a species of Cherry Laurel, *Prunus laurocerasus.*

5.4 One tree within the proposed area is a species of Lilac, *Syringa.*

5.5 All eight trees are located within 178 Camden Road property boundaries.

5.6 Two stumps are located in the rear garden. One is an old bay tree producing new growth from the stump.

5.7 There are no signs of subsidence or heave impacting the semi-detached buildings nos. 178 and 176 Camden Road, though no.176 has erected scaffolding around the property to undertake unknown maintenance as can be seen in pictures in the Appendix.

5.8 There are no signs of cracking on the front boundary wall adjacent to the pavement of Camden Road.

5.9 There is cracking evident to the shared boundary wall, close to the gated entrances of no.180 and no.178, near to T6.

5.10 No.180 Camden Road has a side extension on its west flank with a flat roof. The main door and stairs appear to have been moved from their original location to the extension when comparing to its semi-detached neighbour. This was approved by Camden Council in Aug 1990 under application 9003188.

5.11 The front part of the extension, comprising the stairs, pillars and porch area in front of the main door, have come away from the rest of extension. This can be observed from within the garden area of no.178 and can be seen in photos in the Appendix.

5.12 T1 is a large mature Tree of Heaven that sits in the north west corner of the property, adjacent to the pavement of Camden Road. It is a healthy tree with good crown vitality. It has no visible brackets or lesions on it. The tree can be seen 100m from the north along Camden Road and 50m south along Camden Road, adding to the green frontage and characteristics of the road.

5.13 T2 to T6 are Cherry Laurels located on the front of the property adjacent to the pavement of Camden Road. T4, T5 and T6 sit in a separate raised planter left of the gate as you walk in to the property.

5.14 T7, a Lilac, is in its own raised bed approx. half way along the shared boundary wall with no.180.

5.15 T8, another Tree of Heaven, is located in the rear garden and adjacent to the shared boundary wall with no.176. This tree has been recently reduced by approx. 30%. It has a lean of approx. 25 degrees at 1.5m away from the building towards the centre of the rear garden of no.178. There is some cracking on the shared boundary wall but this is not consistent with characteristics of subsidence or heave and appears more likely due to the growth of the tree in close physical proximity to the wall.

5.16 T9 is a felled Bay tree that has some new growth around its stump. Ecoplugs have been applied to the stump and to a second stump, possibly an Ash stump. There is no growth from the second stump.

6. Discussion

6.1 T1 is the tree identified in Camden Council application ref 2024/5347/T. The Applicant, Crawford & Co, are suggesting that the Tree of Heaven is the cause of subsidence to the building no.180 Camden Road. The report mentions the soil as being ‘stiff brown sandy fine to medium gravelly silty clay’. The British Geological Survey website states that the area is London Clay Formation, made up of clay, silt and sand. The report makes no mention of the percentages that make up the soil samples so the Plasticity Index of the soil and whether it has adequate shrinkage capacity for subsidence cannot be determined against these samples, though it is likely there is some potential for subsidence to occur on this soil type.

6.2 The Richardson’s Botanical Identifications report attached to the application shows the results of the root samples taken. The first sample result shows that it is not related to the tree with no conclusive evidence that they are roots from the Tree of

Heaven. The second sample was found to be poor quality and possibly a twig instead of a root and not related to a Tree of Heaven. The third sample was also poor and not related to the Tree of Heaven. The Crawford & Co report does acknowledge the small sample sizes and that the samples cannot be clearly related to any nearby vegetation. Further it also notes that the estimated stem diameter for T1 is 650mm, but does not state the root radius. The radius of the roots can be calculated by multiplying the stem diameter by 12, as shown in BS5837 section 4.6 Root Protection Area. This would give the root radius a size of 7.8m. The report mentions the building is 12m away from the stem of the tree and that damage is caused when roots cause damage at up to 3m from the building. The trial holes would be highly unlikely to encounter roots of T1 as they are too far away to appear within the trial holes. Even with my own root measurements of 9.72m, the trial holes are still too far away to be able to acquire samples.

6.3 Level monitoring has been undertaken since 2020 with two sets of information. The first is from August 2021 to May 2022 and shows the levels dropping between October 2021 and March 2022. This seems to be the opposite of what we should see with subsidence and suggests that there are other factors influencing the results. As other trees have been recently removed from the rear of both no.178 and no.180, this could be one reason for the inconclusive results. The second set of data from July 2022 to August 2023 shows a more normal set of results in relation to subsidence.

7. Conclusions and Recommendations

7.1 All the trees in this report appeared healthy. Some minor pruning could be undertaken of the Cherry Laurels across the frontage to keep them from encroaching on the pavement.

7.2 I believe that there is inadequate evidence to justify the removal of the tree T1, and recommend that the following steps are taken to better determine if T1 is the cause of damage to no.180:

7.3 As the root samples were of poor quality, it is my recommendation that better samples are sought to fully determine if the roots from T1 extend close enough to the property of no.180 to cause subsidence issues. This would probably involve digging trial pits in the front garden.

7.4 Initiate another level-monitoring programme as soon as possible in order to establish whether the building movement is seasonal or not.

7.5 Undertake soil testing by way of new trial pits to establish the exact soil type beneath the foundations. If it has a moderate to high clay content it will be shrinkable.

7.6 If the trees are shown to be the cause after the additional information is provided, then there are some remedial options. These are in order of preference in relation to impact to the tree;

7.6.1. Reduce the size of the crown of the tree. This will have to be done regularly to reduce root growth and the chance of the tree causing subsidence.

7.6.2. Install a root barrier between the tree and the foundations of no.180. This would probably be best placed adjacent to the boundary wall of no.178 and no.180.

7.6.3. Underpin the extension increasing the depth of the foundations of no.180.

7.6.4. Remove the tree. This should be done in stages to prevent any long-term effects such as heave.

8. Appendix

Appendix A – Tree Data

Tree No.	Species	Age	Stem		Height (m)	Crown (m)			Root Protection		Physio-logical Condition	Structural condition		Recommendations and comments	Category, Life Expectancy, Work completion date
			No.	Diameter (mm)			Spread	Clearance	Radius (m)	Area (m^2)					
T1	Tree of Heaven *Ailanthus altissima*	M	1	810	16	N E S W	8.5 8 7.5 7.5	6	9.72	296.81	G	C S B	G G G	Large mature tree in the front west corner of the property. Single stem with a union at ~2m that forms 2 stems. Has been previously reduced a number of times due to previous pruning cuts around the crown. South side is within one metre of both 178 and 176. No obvious damage to front wall adjacent to footpath. Minor lifting of path from front gate to main entrance.	A2 40+
T2	Cherry Laurel *Prunus laurocerasus*	SM	3	80-100	3	N E S W	3 2 3 2	1	1.08	3.66	G	C S B	G G G	At the front of the property adjacent to T1. Regularly pruned to keep it to size and from encroaching pavement.	A2 40+
T3	Cherry Laurel *Prunus laurocerasus*	SM	8	75-110	4.5	N E S W	2 1.5 13 1	2	1.14	4.08	G	C S B	G G G	Tallest of the laurels at the front of the property.	A2 40+

Tree No.	Species	Age	Stem		Height (m)	Crown (m)			Root Protection		Physio-logical Condition	Structural condition		Recommendations and comments	Category, Life Expectancy, Work completion date
			No.	Diameter (mm)			Spread	Clearance	Radius (m)	Area (m^2)					
T4	Cherry Laurel *Prunus laurocerasus*	SM	1	110	4	N E S W	2 1 1 1	2	1.32	5.47	G	C S B	G G G	In small raised planter bed to the left of the gate when looking at the front of the house from the street. In planter with two other laurels.	A2 40+
T5	Cherry Laurel *Prunus laurocerasus*	SM	2	75-85	4	N E S W	2 1 1 1	1	0.96	2.90	G	C S B	G G G	In small raised planter bed to the left of the gate when looking at the front of the house from the street. In planter with two other laurels.	A2 40+
T6	Cherry Laurel *Prunus laurocerasus*	SM	3	85-110	4	N E S W	2 1 2 1	1	1.2	4.52	G	C S B	G G G	In small raised planter bed to the left of the gate when looking at the front of the house from the street. In planter with two other laurels.	A2 40+
T7	Lilac *Syringa*	SM	1	120	3	N E S W	1 1 1 1	1	1.44	6.51	G	C S B	G G G	Main stem topped at approx. 1m. Most growth is epicormic from the base. Is planted in a small 'planter' bed adjacent to the wall with 180, close to the main entrance stair case.	A2 40+

Tree No.	Species	Age	Stem		Height (m)	Crown (m)			Root Protection		Physio-logical Condition	Structural condition		Recommendations and comments	Category, Life Expectancy, Work completion date
			No.	Diameter (mm)			Spread	Clearance	Radius (m)	Area (m^2)					
T8	Tree of Heaven *Ailanthus altissima*	M	1	695	18	N E S W	4 7 7 7	4	8.34	218.52	G	C S B	G G G	In rear garden, close to the building. Garden has been recently cleared for landscaping works and tree has been reduced by around 30%. Small pocket at the base on the north side, holding a little bit of water. Lean to the west away from the building. Initially 45 deg, to 25 deg at 1.5 to 12 at 2m. Shared garden wall with 176 has cracking in various places, likely from the growth of the tree pushing against the foundations. Steps down into bottom flat. Wall beneath tree shows some potential subsidence cracking, though very minor Old branch failure wound at approx. 6m on west stem. possible rot pocket forming.	A2 40+
T9	Common Ash *Fraxinus excelsior* Bay tree *Laurus nobilis*	Unk	2	Unk	n/a	N E S W	n/a	n/a	n/a	n/a	n/a	C S B	n/a	Ash tree and bay tree removed possibly for landscaping works to take place. Both trees have been ecoplugged but the Bay is putting out new shoots from the remaining stump.	A2 40+

Appendix B – Explanatory notes

Tree No. - Sequential reference number give to each tree or tree group identified in the survey.

- **T** – Individual Tree.
- **G** – Group of trees (a group of similar trees of similar condition).
- **R** – Row of trees.
- **H** – Hedgerow.

Species - Species of tree shown as its common name with its scientific name in italics below.

Age - The point in its life span at which the tree is estimated to be

- **Y -** Young – First 10 years of growth.
- **SM -** Semi Mature - Less than 1/5 of life completed.
- **M -** Mature – 2/5 – 5/5 of life completed.
- **OM -** Over Mature - more than 5/5 of life completed and declining.
- **V -** Veteran – Veteran trees have no precise definition but are trees considered to be of biological aesthetic or ecological value because of their age.

No. of stems - Number of stems measured at 1.5 metres above ground level.

Stem diameter - Measured at 1.5 metres above ground level in accordance with the conventions detailed in British Standard 5837:2012 and recorded in millimetres.

Crown Spread - The spread of the tree's crown as measured at the points of the compass and expressed in metres.

Crown clearance - The distance from crown level to the base of the crown expressed in metres.

Height - Estimated height of tree expressed in metres.

Physiological Condition - The physiological condition of the tree/s. -

- **G -** Good.
- **F -** Fair.
- **P -** Poor.
- **D -** Dead.

Structural Condition - The structural condition of the tree/s -

- **G -** Good.
- **F -** Fair.
- **P -** Poor.
- **VP –** Very poor.

Recommendations and comments - Recommendations for actions required and comments on physical attributes of the tree/s.

Root Radius – The radius of the root area from the centre of the stem in metres. This is worked out using the stem diameter and multiplying by 12.

Root Area – The square metre area of the root zone in metres squared. This is worked out using the root radius with the formula $A = \pi r^2$. This gives a circular area for the root zone, but with other inhibiting factors such as pavements, walls or other trees, it will never be a true circle.

This following section is coloured with a traffic light system to visually show which is most urgent, red being the most urgent and requiring immediate attention, yellow requiring attention in the short term and green requiring no immediate attention.

Category - A category ascribed to the tree based on the definitions outlined in BS5837:2012.

Category (A): Trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution and may comprise:

1. Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features.
2. Trees, or groups of trees which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance.
3. Trees or groups of significant conservation, historical, commemorative or other value (e.g., Veteran or wood-pasture trees).

Category (B): Trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution and may comprise:

1. Trees that might be included in the high category but because of their numbers or slightly impaired condition, are downgraded in favour of the best individuals;
2. Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site;
3. Trees with clearly identifiable conservation or other cultural benefits.

Category (C): Trees that could be retained and are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established or are young trees with a stem diameter below 150 mm and may comprise:

1. Trees not qualifying in higher categories;
2. Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit;
3. Trees with very limited conservation or other cultural benefits.

Category (U): Trees that are considered to have no significant landscape value, but it is not presumed that there is any overriding need to remove them unless stated otherwise in the description and recommendations. Trees within this category are:

1. Trees that have a serious irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees;
2. Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; Trees infected with pathogens of significance to the health and or/safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality

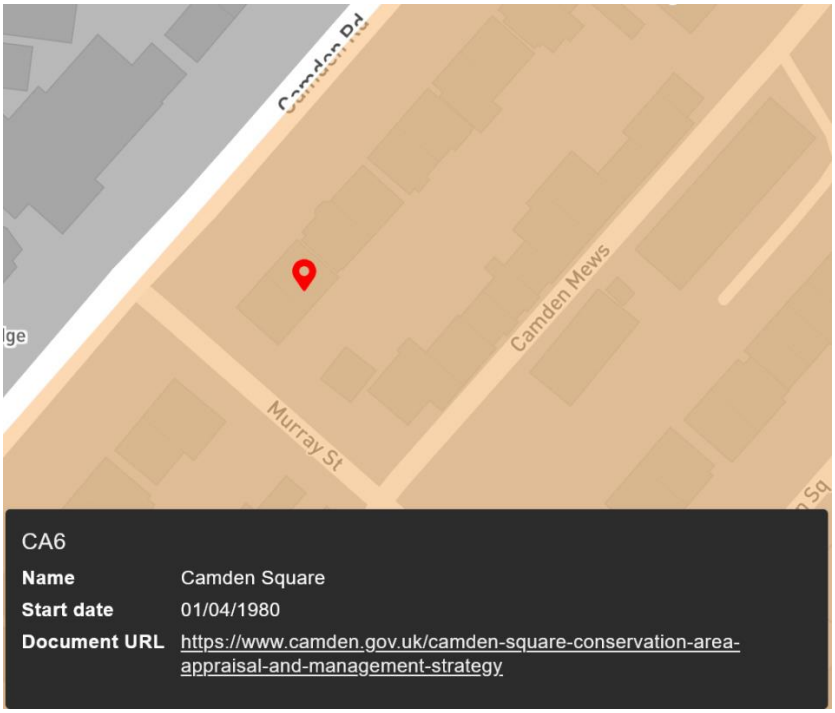
Life expectancy - an estimate based on the tree's condition as to how long the tree is likely to be able to be retained and expressed in years (<10, 10+, 20+, 40+).

Work Completion date – The date by which work that has been recommended should be completed by.

Appendix C – Pictures

Site Plan – Tree locator circles are not to scale and should not be taken as such.

Conservation Map

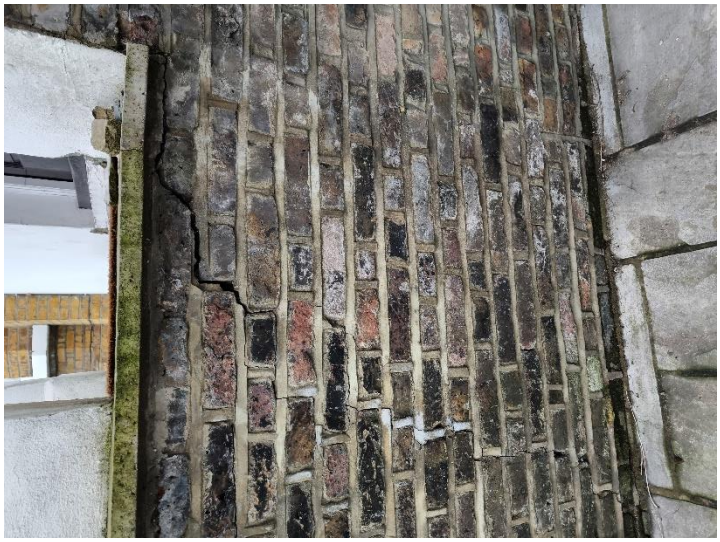


T1- T6 (right to left)

T8

Wall next to T6

Main door entrance to no.180



Appendix D – Web Information & Bibliography

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https://www.gov.uk/guidance/tree-preservation-orders-and-trees-in-conservation-areas

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Management of Health and Safety at Work Regulations 1999.

The Town & Country Planning Act 1990, The Town and Country Planning (Trees)(England) Regulations 2012, The Planning (Listed Buildings & Conservation Areas) Act 1990.

Wildlife and Countryside Act 1981.

Appendix E – Qualifications and Memberships

2020 - SEG Awards ABC Level 4 in Arboriculture

2019 – Lantra awards for Professional Tree Inspection

Practical Arboriculture Qualifications (NPTC)

Technical Member of the Arboricultural Association – Member number – TE7969.