



NUS146

Safety Inspection Procedure for Working on Poles

DECEMBER 2008

Amendments: None.



SUMMARY

Network Universal Standard NUS146 describes the decision making process to be used in deciding whether a pole is safe to climb, or to work on from an elevating work platform.

It applies to all personnel who are required to climb or work on poles and street lighting standards.

This Standard is not a stand-alone document and must be read in conjunction with NUS174 Environmental Procedures.

ISSUE

Ausgrid staff: for issue to all staff performing work associated with the handling, positioning, erection and removal of concrete, steel and wood poles; and for reference by technical and engineering staff associated with overhead mains and poles.

Where this standard is issued as a controlled document replacing an earlier edition; remove and destroy the superseded document.

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DISCLAIMER

As Ausgrid's standards are subject to ongoing review, the information contained in this document may be amended by Ausgrid at any time.

It is possible that conflict may exist between standard documents. In this event, the most recent standard is to prevail.

This document has been developed using information available from field and other sources and is suitable for most situations encountered in Ausgrid. Particular conditions, projects or localities may require special or different practices. It is the responsibility of the local manager, supervisor, assured quality contractor and the individuals involved to ensure that a safe system of work is employed and that statutory requirements are met.

Ausgrid disclaims any and all liability to any person or persons for any procedure, process or any other thing done or not done, as a result of this Network Standard.

INTERPRETATION

In the event that any user of this Standard considers that any of its provisions is uncertain, ambiguous or otherwise in need of interpretation, the user should request Ausgrid to clarify the provision. Ausgrid's interpretation shall then apply as though it was included in the Standard, and is final and binding. No correspondence will be entered into with any person disputing the meaning of the provision published in the Standard or the accuracy of Ausgrid's interpretation.

Network Universal Standard
NUS146
Safety Inspection Procedure for Working on Poles
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1 INTRODUCTION

This Network Standard applies to all staff, contractors, Accredited Service Providers (ASPs), Telecommunication workers and any other personnel who have authority to work on Ausgrid power poles. It also applies when Ausgrid's staff or Ausgrid's contractors work on privately owned power poles, or poles belonging to other Authorities when working on behalf of Ausgrid.

This Network Standard has been prepared on a consultative basis with the relevant staff, Unions and other organisations that access Ausgrid power poles in accordance with the principles of the Occupational Health and Safety Regulation 2001.

Ausgrid has a comprehensive inspection and maintenance program in place to maintain poles in a serviceable condition. This program however should not be relied upon to guarantee a pole's suitability to be worked on without a more immediate inspection because some pole failure mechanisms, such as termite attack and vehicle impacts etc, can affect a pole between scheduled inspections.

Accordingly, before working on any pole, personnel must satisfy themselves that it is safe to work on and in no danger of collapsing during the course of work. Where work carried out on one or more poles will change the loading on poles nearby during the course of the work, these other poles must also be inspected in accordance with this procedure to ensure they are not in danger of collapse. For example, when all conductors are removed from one or both sides of a pole, the pole or poles that will carry the conductor load during the course of the work must also be inspected.

Work on a pole includes linework either by climbing or elevating work platform (EWP), as well as substation, telecommunications, service and operating work which may be carried out from a pole platform, pole steps, ladder, EWP, etc.

Full pole assessment procedures involve the internal inspection of poles, the measurement of any internal defect, and calculation of residual strength. You must not carry out any procedure requiring boring of poles unless you are a trained and currently accredited Pole Inspector.

In this Network Standard, the term 'Pole Inspector' includes:

- a person who has passed an Ausgrid approved course in pole inspection, and
- is currently accredited by Ausgrid as a Pole Inspector.

2 REFERENCES

All work covered in this document shall conform to all relevant Legislation, Standards, Codes of Practice and Network Standards including but not limited to:

AS 1742 Manual of Uniform Traffic Control Devices

Electrical Safety Rules

NRS 102 Working on Poles with Mobile Phone Transmitter Installations

NS128 Specification for Pole Installation and Removal

NS145 Pole Inspection and Treatment Procedures

NS156 Working Near or Around Underground Cables

NUS174 Environmental Procedures

Occupational Health and Safety Regulation 2001

Roads and Traffic Authority Guide Traffic Control at Worksites

WorkCover Code of Practice for Working near Traffic and Mobile Plant

Current Network Standards are also available on Ausgrid's internet site at www.ausgrid.com.au.

3 GENERAL HEALTH AND SAFETY PRECAUTIONS

Work on poles is carried out in all types of terrain, from suburban to mountainous to coastal marine. It is therefore not possible to cover all specific safety precautions for every situation in this standard. The Occupational Health and Safety Regulation 2001 requires you to take all reasonable precautions to ensure the safety and welfare of yourself and your fellow workers. It also lays the responsibility of the safety of all people that enter the work site with the person in charge on the site.

Some important things to remember are:

- road safety and traffic control, including wearing of high-visibility vests when working on or near roadways
- electrical safety clearances
- personal safety items eg. face masks when drilling CCA poles, hard hat, gloves, and eye protection as required.
- environmental safety, preventing contamination of the surrounding environment

All relevant legislation, Ausgrid's Electrical Safety Rules and NRS 102 Working on Poles with Mobile Phone Transmitter Installations, must be complied with when working on poles.

3.1 Electrical Precautions

Electrical hazards can occur above or below ground level. The following clauses list examples of these hazards.

3.1.1 Step and Touch Voltages

Always be aware that voltage gradients are possible in the event of conductor breakage or insulation breakdown. It is important to consider step and touch voltages and take precautions to make sure they cannot hurt you.

3.1.1.1 Below Ground

Broken earth wires. Earth wires forming part of an earthing system below ground can be damaged in many ways. If a break is detected do not attempt to rejoin. Full phase to earth voltage can exist between the severed ends. Tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.

Be aware of below ground electrical installations, including communications cables that may be close to poles being worked on. Some communications installations can operate at 500 V. Underground power cables forming part of an underground to overhead connection (UGOH) can exist at a shallow depth near power poles. These cables can be easily damaged by digging implements and this may cause a hazardous situation. Refer to NS156 Working Near or Around Underground Cables.

Note: UGOH cables do not always run from the pole back to the adjacent Distribution Substation in a straight line, nor do they always radiate out from the pole at 90°, they sometimes coil around the pole to provide spare cable in case of a pole change over or re-termination and may be adjacent to poles that do not have these above ground cable installations (UGOHs) on them. Be sure of their location before excavating. Hand excavate carefully around these cables. If there is a risk of cable damage, do not proceed. The cable may have to be de-energised, or other precautions taken before work can proceed.

3.1.1.2 Above Ground

- Conductors not properly fixed to insulators (broken tie). The conductors may fall to the crossarm or to the ground when disturbed. If a conductor contacts the crossarm or pole, the pole may remain alive without operating any protection devices. Check to make sure that all conductors are properly attached to insulators. Treat streetlight conductors as alive at all times unless they are proven to be de-energised and isolated.
- Trees or other conductive foreign objects, eg pieces of fencing wire, in contact with conductors, metal conduits, or apparatus on poles may be alive. Check to make sure that no conductive objects are in contact with, or are likely to come in to contact with, live conductors.
- Low ground clearance of conductors. People or vehicles may come in contact with conductors (take particular care with vehicle radio aerials).
- Broken earth wires above the ground. Do NOT attempt to rejoin broken earth wires: full phase to earth voltage can exist between the severed ends. Tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.

3.2 Falling Objects

You must wear a hard hat when working at the base of a pole: note that when working bent over or just looking down, there is generally more of the body exposed to falling objects than for any other working position.

Some objects that you need to look out for are:

- loose sapwood
- loose streetlights
- loose nuts
- loose vertical construction
- tools left on crossarms



3.3 Operational Precautions

Traffic management requirements must be observed in accordance with legislative requirements and AS 1742 Manual of Uniform Traffic Control Devices, the WorkCover Code of Practice for Working near Traffic and Mobile Plant, and the Roads and Traffic Authority Guide Traffic Control at Worksites.

4 POLE CONDITION

The condition of a pole is described as serviceable, conditionally serviceable or condemned (unserviceable). A serviceable pole is defined as having greater than 50 per cent residual strength and is safe to climb and to work on. A conditionally serviceable pole has between 25 per cent and 50 per cent residual strength. A condemned pole has less than 25 per cent residual strength.

Note: The condition and rating of a pole relates to the structure as a whole, which includes a pole re-butt or pole reinforcement (eg a pole nail or splint), where applicable.

4.1 Conditionally Serviceable and Condemned Poles

These poles are not to be worked on unless they are adequately stayed or supported. They are identified by an industry standard orange band, with black crosses and Ausgrid's name on it, wrapped around the pole. When condemned they will have the orange band plus a cross 'X', marked with white paint or waterproof lumber crayon on 2 faces of the pole. The orange band will be located between 2.4m and 3.0m above ground, and the crosses approximately 1.5m above the ground on the road side and footpath side faces of the pole.

Note: The old system of defective pole identification consisted of a diagonal slash such as '/' or '\ (a slanted slash) using white paint or waterproof lumber crayon on 2 faces of the pole approximately 1.5m above ground. Poles found so marked must also be treated as defective.

These poles are not to be worked on unless they are adequately stayed or supported. They are identified by either an industry standard orange band with black crosses and Ausgrid's name on it wrapped around the pole, and '/' or 'X', or a diagonal mark such as '/' or '\ (a slanted slash), painted with white paint or marked with a waterproof lumber crayon., The orange band will be located between 2.4m and 3.0m above ground, and the slashes or crosses approximately 1.5m above the ground on the road side and footpath side faces of the pole.

4.2 Staying or Supporting Condemned Poles

Staying or supporting condemned poles can be accomplished by various methods, or by using a combination of methods, depending on the particular circumstances.

Condemned poles can be supported using an appropriate vehicle (eg Borer/Erector), lashing to a replacement pole or by utilising stays. Refer to NS128 Specification for Pole Installation and Removal for additional information on support methods.

5 PROCEDURES TO BE FOLLOWED BEFORE WORKING ON A POLE

Before working on a wood pole, you must follow the procedures described in the flow chart (Figure 1 below) and associated notes and the remainder of this Network Standard. The flow chart has been developed to help you make a decision about whether or not you should work on a pole.

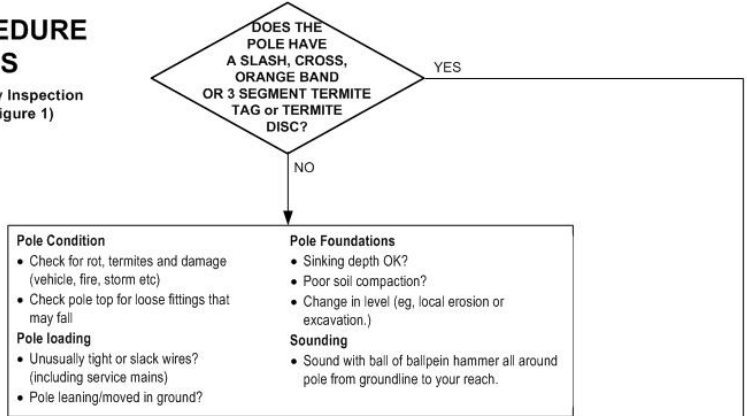
Refer to Section 6 for Rebutted and Reinforced Poles.

Refer to Section 7 for Pole Inspection Process - Steel, Concrete and Private Poles.

SAFETY INSPECTION PROCEDURE FOR WORK ON WOOD POLES

(For full details to Network Standard NUS 146 'Safety Inspection Procedure for Work on Poles', Section 4 - Notes to Figure 1)

STEP 1 ABOVE GROUND INSPECTION AND SOUNDING



- Examples of high pole stress work include:
- removing all wires in any direction.
 - adding or removing a wire (including service mains) whose pull is not supported by other wires.
 - rough movements that cause the pole to sway.

STEP 2 BELOW GROUND INSPECTION

STEP 3 BACK-FILL

REMEMBER:
DO NOT disturb termites.
DO NOT drill the pole.

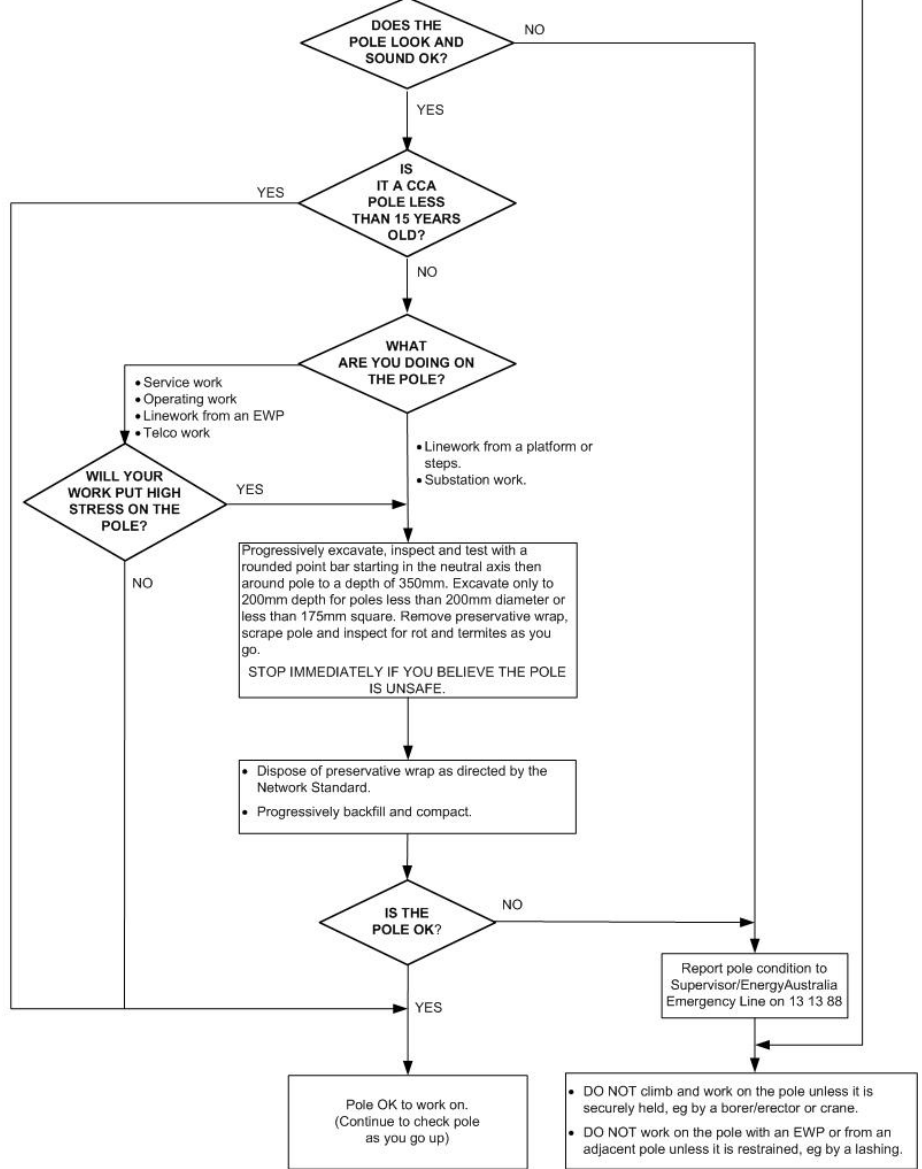


Figure 1 - Flowchart

Associated Notes to Figure 1 - Flowchart

Does the pole have an orange band, slash, cross, or termite disc or 3 segment Termite Tag?

You are looking for evidence that the pole has previously been identified as defective or as having active termites in the pole. Ausgrid use a single orange self adhesive band 75mm wide, encircling the whole pole, marked with Black 'X X X's and the organisation's name (see Figure 2 below), to identify defective poles, and the orange band plus two diagonal lines forming an 'X' to identify condemned poles.




A single slash mark as shown in Figure 4 below is the old defective pole marking and if found should be taken to also indicate a defective pole.

Poles known to have active termites are identified with a 3 segment Termite Tag as illustrated below in Figures 5 to 8, or with circular aluminium disc with a 'T' stamped into it, which was the old system prior to the introduction of the 3-segmented tags.





The pole must not be climbed, unless adequately stayed or supported, if:

- active termites are present as indicated by a Termite Tag with all 3 segments attached (see Figures 5 & 6 below), or a circular termite disc (previous system of identifying termite infestation), or
- you identify active termites during your inspection.

A Termite Tag with either the top only, or the top and the middle segments (T2) attached (see Figures 7 & 8 below) indicates the pole has been treated for termites and subsequently inspected and found free from active termites and in a serviceable condition.

Figure 2	Defective pole marking - Orange band	
Figure 3	Condemned pole cross (will have orange band above X)	
Figure 4	Old defective pole marking	

Segment Termite Tag:

Figure 5	<p>As found on a pole when termites are first identified. No treatment has been carried out. (no date stamped in top segment)</p> <p>Active termites in pole.</p>	
Figure 6	<p>Termite treatment has been carried out in the month and year stamped onto the top tag.</p> <p>Active termites in pole.</p>	
Figure 7	<p>Pole has been fully inspected and found to be free of active termites and in a serviceable condition.</p> <p>No active termites.</p>	
Figure 8	<p>12 month follow up termite inspection has been carried out and no active termites identified.</p> <p>No active termites.</p>	

5.1 Above Ground Line Inspection

a) Inspect pole for defects such as:

- vehicle damage
- loose pole cap
- lightning damage
- excessive splits (barrel checks)
- excessive knots and grub holes

- loose sapwood
- b) Inspect for fire damage (especially untreated burnt (charred) areas on CCA poles). All charred material must be removed to expose the remaining sound timber so that the external diameter measurement can be taken.

Important: Refer to Section 9 Burn or Burning CCA Timber Poles for precautions where exposure to burnt CCA is possible.

- c) Inspect for foundation failure. For example; washed away soil, or undercutting of ground line. Is there, or has there recently been excavation work in close proximity to the pole? An open trench within 1.5 metres of a pole has the potential to destabilise the pole.
- d) Is the pole leaning or has it moved in the ground? Has it moved due to excessive load or due to weakening of the pole below ground?
- e) Look for unusually tight or loose conductors, including service mains. This may indicate the pole is being held up by the conductors due to failure of the pole at or below ground line.
- f) Is the pole's sinking depth OK? Is the pole disc about 2 metres or less above ground (some smaller poles will have their disc about 2.3 metres above ground line). Is there a 'tide' mark on the pole indicating the ground line has been lowered due to road works or similar activities?
- g) Inspect for termite activity in wooden poles.
- h) Test wooden poles by sounding as part of the above ground inspection. Wood poles are also sounded as part of the below ground inspection if you perform one. Do not strike any pole with active termites in it. Any pole with active termites must be treated as conditionally serviceable and reported to your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.
- i) If you identify areas of a pole that require internal inspection, tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately to request an inspection by a Pole Inspector. These poles must not be climbed or worked on from an elevating work platform unless adequately stayed or supported.
- j) Inspect for excessive rot.

5.1.1 Does the Pole Look and Sound OK?

Continue with the inspection if the pole is considered satisfactory from the above ground line inspection carried out above. If not, do no further work on the pole and tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.

5.1.2 Is it a CCA Pole Less than 15 Years Old?

Work may proceed if the pole is CCA treated and less than 15 years old and has passed the above ground inspection. CCA treated poles under 15 years of age have proven sufficiently resistant to fungal decay and termite attack to not require excavation and below ground inspection. However, any pole with active termites must be treated as conditionally serviceable and reported. If the pole is not CCA treated or over 15 years old, further inspection is necessary.

CCA poles are a green colour with a natural round shape. Non CCA poles do not have the green colour and if they have been desapped by machining they may have an 8 or 16 sided shape. The age of the pole can be determined from the year of felling stamped into the pole disc. The year is indicated by 2 numerals only. Poles without a disc are over 15 years old.

Note: There are a small number of poles (approximately 59 poles with a 2003 year disc which were only installed in the Oatley district area) that have

been desapped by machining to an 8 or 16 sided shape but have been through the CCA treatment process. These poles must be treated as non CCA impregnated desapped durable poles because without the sapwood to retain the chemical there can be no effective protection for the pole.

5.2 What Are You Going To Do On The Pole?

The type of work you will be carrying out on the pole is indicative of the stress you will place on the pole. Telecommunications work, linework from an EWP, System Operation work and some types of service work may not place high stress on a pole, however you must carefully assess how you will carry out your work before you arrive at this decision. Most other types of work, eg linework from a platform, could stress a pole sufficiently that the pole may fail if in a weakened condition and therefore must be dug out and inspected.

5.2.1 High Pole Stress Work

Work that places 'high stress' on a pole includes:

- work where the pole's attached construction will be changed
- where the attached load on the pole will be changed
- where the direction of the attached load will be changed

For example, the addition of telecommunication cables such as Optus overhead infrastructure can significantly alter the resultant load on a pole, as can removing the conductors in any direction (regardless of the size of the conductor) and adding conductors where the pole is not supported against the pull.

Note: Upgrading a service is classified as 'High Stress Work' because cables must be released and pulled up.

Poles are placed under significant stress when personnel working near the pole head cause the pole to sway due to a dynamic load. A dynamic pole load is commonly generated when a pole's construction is changed. For example, a rocking motion is created by personnel using a hand saw near the pole head, or by trying to free an item of equipment attached to the pole, such as an old crossarm. Where a dynamic load is likely to be applied to a pole, the associated work is classified as 'High Stress Work'.

5.3 Below Ground Inspection of Unreinforced Wood Poles

If the flowchart has taken you to the point of requiring a below ground inspection then the following process is to be followed.

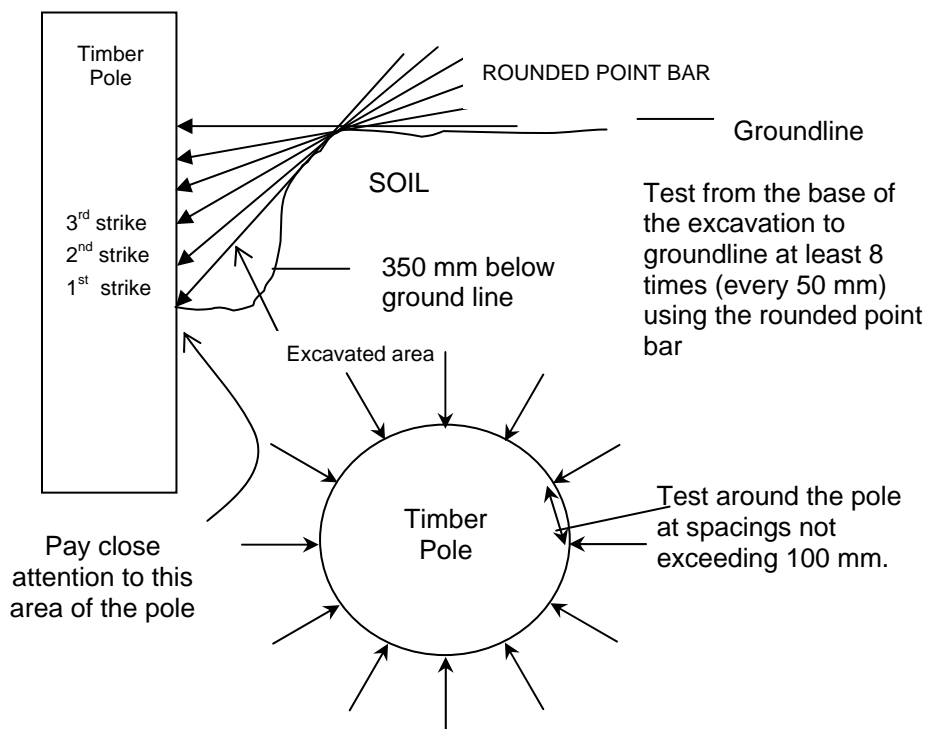
1. Poles with concrete or bituminous paving at ground level **MUST** have this material removed for a below ground inspection to be carried out. If this cannot be done these poles must be treated as conditionally serviceable and reported. You should be particularly wary of poles that have been concreted in at ground line. This practise encourages fungal decay and may hide a dangerous pole.
2. Do not fully excavate around a pole initially in case the pole has become dangerously degraded. Excavate only sufficient soil to allow an external inspection of a strip of the below ground section of the pole. The initial excavation should be at least 200 mm deep, but no further than 350 mm, and in the neutral axis of the pole.
3. Cut away any preservative wrap bandage (eg. Bioguard Bandage, Austplast Bandage) where fitted, to expose the below ground face of the pole. Refer Clause 5.4.
4. Use a rounded point bar to test the soundness of the exposed timber as explained in point 6 below. The rounded point bar is used to strike the pole from the bottom of the excavation up to ground line in 50 mm steps.

Note: Any loss of sound timber on the below ground section of the pole.

5. Assess any loss of sound timber. If the loss of sound timber is 10 per cent or more, of the ground line pole diameter on the excavated side of the pole, then the pole is to be treated as conditionally serviceable, backfilled and reported. For example: If a pole has an original ground line diameter of 300 mm, then a loss of 30 mm (10 per cent) on the excavated side would mean the pole would have to be rated as conditionally serviceable. Note that the depth of penetration of the bar indicates where the sound timber starts, and any soft or decayed timber must be discounted when assessing the reduced diameter.
6. Excavation should only continue where adequate sound timber is found. Conditionally serviceable or potentially dangerous poles must be backfilled and the situation reported to your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately for the attention of a Pole Inspector.
7. Where the initial excavation indicates adequate sound timber, carefully continue the excavation so the section of the pole between ground line and 350 mm below ground line is fully exposed. Remove any existing bandage and dispose of in accordance with Clause 5.4 below. The below ground inspection consists primarily of an impact test with a rounded point bar (5 mm point radius and weighing approximately 6kg), however it should be supplemented by sounding with a ballpeen hammer to as far below ground line as possible.

Procedure

Strike the pole firmly at the base of the excavation so the bar strikes the pole where it meets the soil. The bar should deflect off the pole if it is solid, with the point embedding itself into the soil at the base of the excavation. After testing at the base of the excavation, the bar should then be used to impact the pole immediately above this point, then test again every 50 mm up to ground line. The pole should be tested in this manner at least 12 times around its base ('hour' points), and no greater than every 100 mm apart.



You must pay particular attention to the area of the pole at, and below, the bottom of the excavation. If severe decay exists deep below the excavated area, there is often detectable decay near the bottom of the excavation. A pole with a significant defect below the bottom of the excavation may also be loose in the ground, and you should

be alert for any movement of the pole in-ground when struck with a bar at the base of the excavation.

By testing a pole in the manner described, the point of the bar will penetrate decayed timber to reveal the true extent of any sound timber, or lack there of. Also, where the pole sounds hollow, the bar should be driven vigorously into the suspect area. This will result in the bar penetrating a thin wall of sound timber or bouncing off if adequate sound timber exists.

This method of testing will identify timber degradation on the external surface of the pole, and internal defects close to the surface of the pole.

It is not necessary to hit the pole excessively hard unless a defect is suspected, in which case you may hit it as hard as you like. A bar with the correct point (5 mm radius) and weighing approximately 6kg, will bounce off sound hardwood timber, but will penetrate defects existing close to the surface of the pole. This procedure is critical to ensuring confidence in the soundness of the pole.

- a) Measure the minimum below ground diameter, discounting any decayed timber detected by the pointed bar.
- b) Inspect for fungal decay at the bottom of the excavation. If the pole is affected with fungal decay at a depth greater than 350 mm, treat the pole as conditionally serviceable and tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.
- c) If you are satisfied that the pole is serviceable, backfill the excavation in steps of 100 mm, ramming each level until fully reinstated. Reinstated the surface around the pole leaving it neat and tidy, and in an 'as found' condition.

5.3.1 Is the Pole OK?

Is the pole considered satisfactory from the checks carried out in accordance with Section 5?

5.3.2 Pole OK to Work on. Continue to Check Pole as You Go Up

Your checks so far have indicated the pole is satisfactory in the ground line area. However you must continue inspecting the pole by careful observation as you ascend, continually looking for evidence of rot or termites. Any loose pole steps should be investigated, as they may indicate internal fungal decay or termite damage. If a possible defect is detected, it must be further investigated by sounding with a ballpein hammer, or the problem reported and the pole treated as conditionally serviceable unless adequately stayed or supported.

5.4 Handling, Removal and Disposal of Used Bioguard Bandages

CAUTION

Precautions should be taken to avoid contact with the skin and eyes. When handling a Bioguard bandage or a Ausplast bandage synthetic rubber/PVC gloves must be worn.

Bioguard bandages previously applied to poles are to be removed as part of the below ground line inspection. The bandage will be replaced by the Pole Inspector at the next scheduled maintenance. However if the bandage is still substantially intact it may be reapplied back around the pole.

Note: Bioguard bandages that contain no residue from the chemical tablets are to be disposed of in general waste. A bandage containing chemical residue must be returned to Ausgrid's Chullora Store for recycling. Any residue that falls out of the bandage may be put back around the pole at the bottom of the excavation.

Ausmose 'Ausplast' bandage is commonly utilised instead of the Bioguard bandage where the ground is persistently wet. The Ausplast bandage is biodegradable and no waste is expected to require removal at subsequent inspections however the paper backing may require removal in order to inspect the pole below ground line if it has only been recently installed and not degraded.

6 REBUTTED AND REINFORCED POLES

6.1 Rebutted Poles

Inspect rebutted poles as follows:

- Inspect the pole and fittings above the steel sleeve for any signs of deterioration or damage. In particular sound the wood pole in accordance with Clause 5.1.
- Inspect the machined down timber immediately above the sleeve for any sign of fungal decay or termites.
- Inspect the timber visible through the three inspection holes for any sign of fungal decay or termites.
- Inspect the drain hole and clear out if blocked. The space between the top of the concrete and the bottom of the pole should be probed through the drainage hole for any signs of deterioration.
- Inspect the steel sleeve for any signs of corrosion or termite activity.
- Where sounding indicates a defect, treat the pole as conditionally serviceable. The timber within the sleeve should be inspected via the existing inspection holes in the steel sleeve. If fungal decay is detected or there are active termites in the pole, it must be treated as conditionally serviceable and referred to the Supervisor or local Customer Service Office.

6.2 Reinforced Poles

Inspect reinforced poles as follows:

- Visually inspect the steel splint or nail for signs of rust or damage. Confirm the bands around the splint and pole are tight, or that the nail is pulled tightly against pole by the bolts.
- Inspect the pole for active termites. You must pay particular attention to all checks and cracks in the pole, and along the edges of and behind the splint or nail.
- If no termites are found, thoroughly sound the pole from 300 mm above ground line to as high as you can comfortably reach, paying particular attention to the area around and above the top reinforcing bands or bolts.
- If sounding indicates a defect in the area of the pole at or above the lower attaching bands or bolts, treat the pole as conditionally serviceable.

7 POLE INSPECTION PROCESS

7.1 Steel Line Poles

Steel poles carrying distribution cables should be inspected by visually looking for rust around ground line and by striking it firmly with the flat face of a hammer so as not to damage the protective galvanised coating. The purpose of striking steel poles is to dislodge both internal and external rust and expose any perforations in the steel pole. Where rust is found above ground line the pole should be excavated to a depth of 100 mm and inspected for rust or damage. Where rust or damage extends beyond 100 mm excavate further to determine the full extent of the defect, but not beyond 350 mm. If any perforations are found in the steel pole it is to be treated as conditionally serviceable and reported to your Supervisor or Ausgrid's Emergency Line on 13 13 88 immediately.

Note: Do not strike the pole too firmly; it will only damage galvanised or painted surfaces. To detect defects in steel poles, a gentle tap is sufficient

7.2 Concrete Line Poles

Concrete line poles are visually inspected only. Concrete line poles are to be visually inspected above ground line for spalling of the concrete, vehicle or vibration damage and/or cracking. Spalling is the breaking off of pieces of the concrete pole surface due to weathering. It is generally caused by water infiltrating small surface cracks and causing the steel reinforcement to rust and swell. Poles showing evidence of spalling with exposed reinforcement should be treated as conditionally serviceable and reported to your Supervisor or Ausgrid's Emergency Line on 13 13 88 immediately.

7.3 Private Poles

Private poles can be of unknown construction and may not have been maintained to the same procedures as Ausgrid poles. Therefore, great care must be exercised when working around private poles. Private poles should be visually inspected and sounded above ground line as indicated above for wood, concrete or steel poles, and dug out as required.

All steel or wood direct buried private poles shall be visually inspected and sounded above ground line as indicated above for wood, concrete or steel poles, and dug out as required.

Steel or wood private poles considered to be in new condition (less than 5 years old), that are concreted in at ground line shall be visually inspected and sounded above ground line as indicated above for wood, concrete or steel poles. These may be climbed if assessed as safe.

Steel or wood private poles not considered to be in new condition (older than 5 years old), that are concreted in at ground line shall be visually inspected and sounded above ground line as indicated above for wood, concrete or steel poles. However, such poles are not to be climbed. Work on or near such poles should be completed from an EWP or similar vehicle. Services attached to such private poles are to be disconnected from the network supply pole first.

Steel rag-bolt mounted private poles are only to be climbed if an engineer's certificate is available and deems it safe to climb. Otherwise work on or near such poles should be completed from an EWP or similar vehicle. Services attached to such private poles are to be disconnected from the network supply pole first.

7.4 Wood Poles

Wood Poles less than 200 mm Diameter (or 175 mm square section) should be inspected as described in Clause 5.3 , but do not excavate deeper than 200 mm.

a) Inspect for termite activity.

Note: A private pole under 200 mm in diameter (or 175 mm square section) that is infested with termites is to be classified as condemned and the customer advised to replace the pole.

b) Test the remainder of the pole with a rounded point bar in accordance with Clause 5.3.

c) Inspect for external defects and investigate the extent of any found.

d) Inspect for fungal decay at the bottom of the excavation:

- If the pole is affected with fungal decay at a depth greater than 200 mm, treat the pole as conditionally serviceable and tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.
- If the below ground line external inspection reveals a diameter reduction of 10% or more, treat the pole as conditionally serviceable and tell your Supervisor or contact Ausgrid's Emergency Line on 13 13 88 immediately.

e) Backfill the excavation in steps of 100 mm and ram each level until fully reinstated. Reinstated the surface around the pole leaving it neat and tidy, and in an 'as found' condition.

8 STRESS TESTING A POLE

A simple stress test as outlined below is available for small lightly loaded poles where at least one conductor remains attached to a pole, or where a rope can be attached without climbing the pole.

Note: This test may provoke pole failure, so must not be used where any danger to people or property could result from the pole collapse. Therefore, before stress testing a pole, it must be clearly established that the collapse of the pole will have no significant consequences to the Distribution System. In other words there must be no danger of the pole collapse initiating adjacent pole failures or damage to attached services or point of attachments. Where there is risk of further damage and a pole's condition is suspect, it must be stayed or supported before climbing.

This test must not be relied upon if the loading of the pole is to be significantly altered, or if the pole is to be made free standing.

The test cannot take the place of below ground, pre-climbing inspection but can be used in addition to it.

8.1 Rope Pull Test

The rope pull method involves attaching a rope to the head of the pole and attempting to pull the pole over. The rope can be thrown over the head of the pole, or pushed over using a link stick or similar, but the pole must not be climbed.

Attach a rope to the pole close to the head. You must not climb the pole to attach the rope. You can pull on conductors still attached if you have cut them away from the remote end (prove them de-energised first). Do not stand in a position where you may be struck if the pole falls. Pull as hard as one person can at right angles to the direction of the mains, ie in a direction where movement of the pole is not restrained by wires or stays. However note that if mains are still attached to the pole you must ensure that adjacent poles cannot be damaged by collapse of the pole under test. Also be aware that if the pole does not break when pulled, it may whip back and fall in the in the opposite direction, so ensure that the fall line in the direction being pulled, and in the opposite direction, has been cleared and secured.

This test cannot take the place of below ground, pre-climbing inspection but can be used in addition to it.

9 BURNT OR BURNING CCA TIMBER POLES

Handling Copper Chrome Arsenate (CCA) treated timber that has been burnt, or attempting to extinguish CCA treated timber that is burning, presents hazards to the worker not found when working with other timber products.

Toxins normally locked in the timber cells during treatment are released, creating a hazard in the working environment. NS145 Pole Inspection and Treatment Procedures, Appendix C 'Burnt or Burning CCA Timber Poles' provides advice to those workers who, in the course of their duties, may be exposed to either burning or burnt CCA treated timber.

Avoid smoke fumes and contaminated charred material by staying well clear of the immediate area and up wind.

If you are required to be in the area when CCA treated timber is burning or while burnt material is being handled you must be appropriately trained.

In general no employee or contractor is to handle or disturb burnt CCA treated material unless:

- the burnt material can be moved or contained at that time (this may be either for safety reasons or work requirements),
- they have received the necessary training, and
- they have the required personal protective equipment.

Only appropriately trained workers should disturb CCA treated timber that is burning or has been burnt. However all burnt or partially burnt CCA treated poles must be immediately reported to the Ausgrid Supervisor / Contract Officer / Customer Supply Officer to ensure appropriate action is taken (ie containment / removal).



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