Asset Management Plan Update
Marlborough Lines Limited

1 April 2019 to 31 March 2029

Submitted in accordance with Information Disclosure 2012

Marlborough Lines

Contents

1. Introduction

1.1. Purpose of the AMP Update

The purpose of this Asset Management Plan (AMP) update is to reflect any material changes in Marlborough Lines Limited's (MLLs) asset management for the planning period from that outlined in the 2018 AMP[1]. This AMP update covers the period of 1 April 2019 to 31 March 2029. MLL has previously disclosed an AMP update on 31 March 2014 and 31 March 2017.

For the purposes of this AMP update, the interpretation of material change[2] is any significant deviation from the full AMP published 31 March 2018 (2018 AMP). Rescheduling projects, re-categorisation of expenditure types, minor adjustments to forecast amounts and values for example, are not deemed by MLL to be material changes.

MLL's AMPs are disclosed in accordance with regulatory requirements, but more importantly, they underpin MLL's strategy for managing its assets to meet consumer demands.

1.2. Information disclosure requirements

Section 2.6 of the Commerce Commission's Information Disclosure Determination 2012 (ID 2012), requires that Electricity Distribution Businesses (EDBs) disclose a full Asset Management Plan (AMP) one year after the start of the Default Price Path (DPP) and two years before the start of the next DPP period. In the other years EDBs may elect to complete and publically disclose an AMP update which presents less information than a full AMP, to reduce compliance costs.

MLL, in accordance with clause 2.6.3(1) produced a full AMP for 31 March 2018; this allows for the disclosure of an AMP update for 31 March 2019 based on the aforementioned provision. As such, we have elected to prepare an AMP update. We consider this approach appropriate considering the lack of material changes from the 2018 AMP.

1.3. Structure

This AMP update has been prepared in accordance with the requirements set out in Section 2.6 of ID 2012. This AMP update is much more concise than the 2018 AMP. Where further detail is sought, the reader is encouraged to view the 2018 AMP.

This AMP update reports on the following:

- Section 2 - Material changes that have occurred from the 2018 AMP, for the following:
    - Network development plans;
    - Lifecycle asset management; and
    - Asset management practices.

[1] MLL's Asset Management Plan 1 April 2018 to 31 March 2028, available from https://www.marlboroughlines.co.nz/About-us/Disclosures/Asset-Management.aspx

[2] A material project and programme by definition "means projects or programmes with actual forecast total expenditure greater than the materiality threshold that is developed by the EDB" (Information Disclosure, 2012).

Where applicable, Section 2 also provides the reasons for any material changes presented in the Report on Forecast Capital Expenditure (Schedule 11a of the AMP update) and Forecast Operational Expenditure (Schedule 11b) from the 2018 AMP schedules.

- Section 3 - An overview of any changes between the schedules accompanying this AMP update to those disclosed with the 2018 AMP. The schedules include:
    - Schedule 11a – Forecast Capital Expenditure
    - Schedule 11b – Forecast Operational Expenditure
    - Schedule 12a – Asset Condition
    - Schedule 12b – Forecast Capacity
    - Schedule 12c – Forecast Network Demand
    - Schedule 12d – Forecast Interruptions and Duration

The completed schedules themselves are appended to this AMP update.

2. Material Changes

This section provides a summary of material changes to the network development plans, lifecycle asset management and asset management practices at MLL. The schedules relating to this are summarised in Section 3 (with the schedules themselves disclosed separately with this AMP update).

MLL consider that the forecasts set out in the schedules provide an accurate summary of the expected required investment and network performance for this planning period.

2.1. Network development plans

Relative to our 2018 AMP, there are no material changes to our forecast capital expenditure.

Further information on the current year's capital expenditure, plus minor changes to forecast amounts for the planning period is outlined in Section 3.1.

2.2. Lifecycle asset management

For the planning period covered in this AMP update, there are no material changes for lifecycle asset management.

2.3. Asset management practices

There are no material changes to the organisation's asset management practices from the 2018 AMP.

3. ID schedules

This section provides details on the ID Schedules which are disclosed with this AMP update. Where there are changes to information in this year's schedules from the 2018 AMP, or where there are significant variations between the 2018 AMP forecast costs vs the actual costs for the current disclosure year, these have been identified and are accompanied by explanatory notes.

3.1. Schedule 11a – Forecast Capital Expenditure

3.1.1. Current year

The values for the current year (i.e. regulatory year finishing 31 March 2019) will be higher than the values forecast in the 2018 AMP. This is largely due to:

- Higher than anticipated costs associated with the construction and development of the new Renwick Zone Substation[3]:
    - for installation of 11kV and 33kV underground cables associated with the project;
    - for the zone substation building itself; and
    - higher equipment purchase costs than initially allowed for in the budget.
- Higher non-system capital expenditure than forecast.

3.1.2. Forecast years – regulatory years 2020 to 2029

System Capex

There are no material changes to projects or programmes for years 2020 to 2029. The forecast values may vary slightly from the 2018 AMP due to the rescheduling of projects that were not completed this regulatory year, or reordering of projects over the forecast period.

There is a small lift in capex across the planning period to allow for a programme of 11kV air break switch replacements and a gradual increase in treated pine (softwood) pole renewals. A summary of the forecast capital expenditure is included in

Figure 1, compared against the 2018 AMP forecast values.

[3] The new Renwick Zone Substation is being constructed due to:

- the location of the existing construction being situated directly on/adjacent to the Wairau Fault trace;
- there was minor damage to the existing Renwick Zone substation building arising from the November 2016 Kaikoura (Hanmer) earthquake; and
- the existing Renwick Zone substation comprises aged infrastructure including overhead 33kV switchgear.

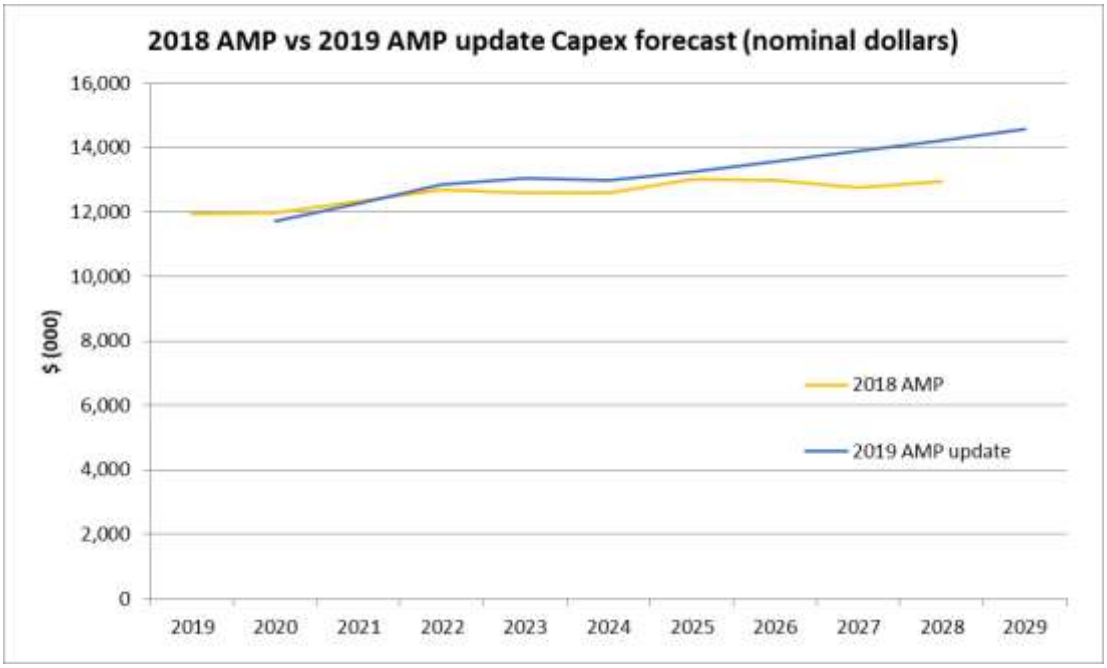

Figure 1 – 2018 AMP vs 2019 AMP update Capex forecasts (nominal dollars)

During the 2019 regulatory year surveillance indicated an issue with a type of insulator on overhead 11kV air break switches. MLL will continue to inspect these 11kV air break switches and where deemed appropriate will replace those that have the potential to impact on safety and/or reliability through failure.

MLL will be looking to commence a programme on renewal of its softwood poles. While the assessed condition values of these appear to place the softwood poles in good 'health' currently, a significant portion of MLL's treated pine poles are in the order of 45 years old. Phasing in a renewal programme incrementally is deemed a more appropriate mechanism of expenditure rather than renewing a significant portion of the fleet over a shorter period of time.

Not included in the capital forecast are projects which could materialise as a result of large scale customer developments. MLL has elected to omit these due to the uncertainty surrounding these projects. MLL is considering how these projects might impact on the network, and what additional capital expenditure may be required to facilitate these developments (and how those costs should be recovered).

Irrespective it is considered the proposed requirements can be readily accommodated within the network.

Non-system Capex

The values forecast for non-system capex are relatively consistent throughout the planning period. MLL may consider 'one-off' large non-system capital expenditure items such as upgrading its asset management system (as was outlined in the 2018 AMP), however, due to the uncertainty around the requirement for this at this time, items such as this have been omitted from the forecast schedule. This will be revisited in the 2020 Asset Management Plan.

3.2. Schedule 11b – Forecast Operational Expenditure

The forecast actual operational expenditure for the current financial year is in line with the forecast value from the 2018 AMP.

There are minor changes to the forecast operational expenditure for the planning period from those set out in the 2018 AMP. These are summarised in Figure 2.

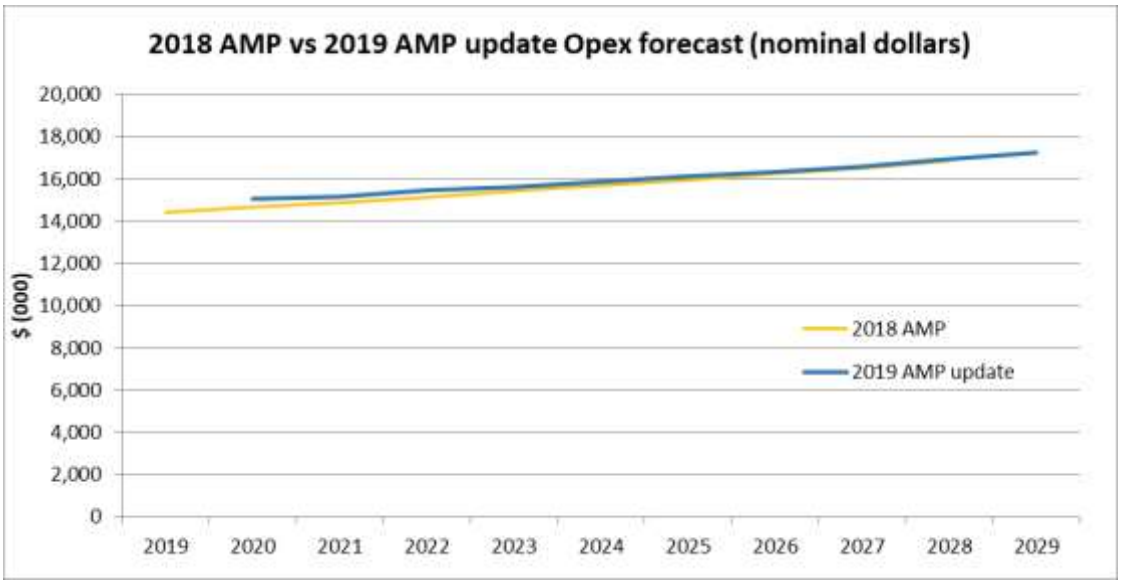

Figure 2 – 2018 AMP vs 2019 AMP update Opex forecasts (nominal dollars)

3.3. Schedule 12a – Asset Condition

There are minor changes to the asset condition values from those presented in the 2018 AMP. This is largely a result of:

- The work on assets undertaken throughout the 2019 regulatory year, as well as ongoing efforts to improve the quality of data being held by MLL.
- The first year that the schedules require condition scores based on Asset Health Indicators (AHIs).
- Assets of 'unknown' values were omitted from the count and spread across the H scores in the 2018 AMP schedule, whereas they have been included in the schedule for this AMP update.

It should be noted, that MLL used the new version of Schedule 12a in the 2018 AMP which required condition of assets to be based on the AHI scoring system (H1 to H5) instead of the (now) legacy Grade 1 to Grade 4 scoring system.

For the sake of consistency in reporting across all asset classes the Electricity Engineers' Association (EEA) age based methodology from their Asset Health Indicator (AHI) Guide (2016) has been adopted for defining AHI scores. The exception to this is power transformers, and poles (refer below).

The below subsections provide more detail on where there are discrepancies between the 2018 AMP published schedule AHI values and this year's schedule values, and the reasons for those discrepancies.

3.3.1. Poles

The AHI scores for poles have been assigned based primarily on the EEA's AHI guide age based methodology. However, in early 2018, MLL adopted the EEA's AHI condition assessment criteria. Over 4,700 poles were inspected in 2018 using this method, and for those poles, these condition assessed AHI scores have been used in place of the age based AHI scores.

The EEA's AHI guide age based methodology returns a significant portion of MLL's softwood poles (of which there are approximately 10,200 on the network) in the H2 range. MLL believes that this figure is potentially misleading. In 2018, MLL inspected 900 softwood poles and assigned them an AHI score based on the EEA's condition assessment criteria for wooden poles. These condition values generally place the softwood poles in much better condition than what the age based criteria does for those same 900 softwood poles. This is summarised in Figure 3.

Comparisons of AHI scores using both the age based and condition based methodologies have been made for other pole types also (Appendix 1). These comparisons, particularly for reinforced concrete poles for which there is a large population size, indicate that the age based methodology tends to result in lower AHI scores than the condition based methodology.

Accordingly MLL has based its position utilising a representative sample of its poles from condition assessments undertaken in 2018 and adopted the AHI scores from condition assessment data in Schedule 12a as opposed to age based AHI scores which have typically been adopted for other asset types. Taking this approach means that the AHI scores in this year's schedule differ substantially from those published with the 2018 AMP. But in MLL's view is more accurate.

The comparison undertaken is not to question the age based methodology for poles, but reflects the quality of the poles, the Marlborough environment, and that the maximum practical life (and onset of unreliability) for poles in this environment (which is characterised by

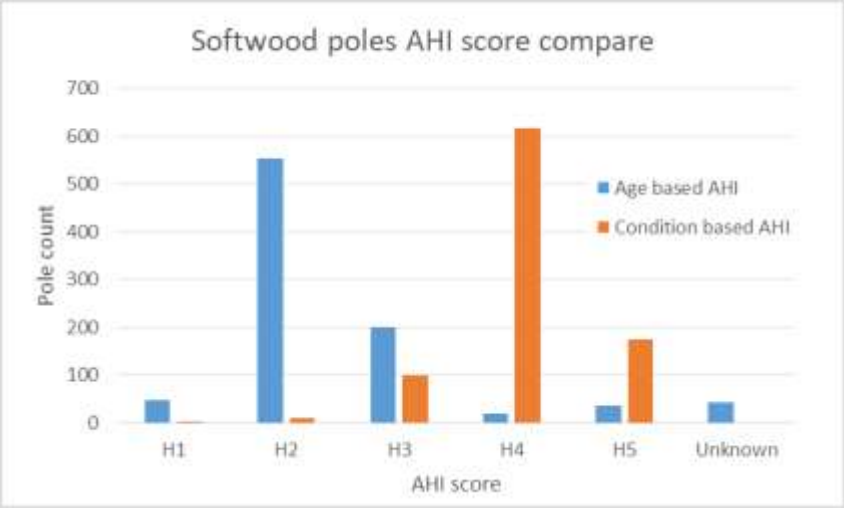

Figure 3 – Comparison of softwood poles AHI scores for EEA's age based and condition based methodologies

relatively dry conditions) may be greater than that for other regions of New Zealand which experience different conditions.

It is salient that MLL's position is based on surveillance and experience which enables determination of an informed objective assessment.

In the 2018 schedule, MLL placed stay/stub and iron rail poles into the 'Other' poles category. These poles (which made up over 6% of the poles) have now moved into either 'Steel and Concrete' or 'Wooden'.

3.3.2. Conductor

The H1 Sub-transmission overhead conductor is the section of line between Leefield Zone Substation and Trustpower's Waihopai hydro-generation facility in the Waihopai Valley. MLL has planned to renew the steel towers supporting this conductor in the planning period, and will replace the conductor at the same time.

A significant percentage of low voltage overhead conductor is listed as 'unknown' date. The origins of this is that the dates were not known (or not recorded at least) at the time assets were created in the original asset management 'system' and have not been populated since then. For assessing condition (age) of sections of line, MLL typically relies on the pole data where date records are generally accurate and conductor dates would typically reflect the dates of the poles supporting them. MLL will progressively populate the dates of conductor records for completeness.

It should be noted that no age based criteria is specified for conductor in the EEA's AHI Guide (2016). MLL has chosen to adopt what it considers to be relatively conservative values (based on surveillance of the network and experience) taking into account safety issues together with potential unreliability. In practical terms this provides slightly more conservative ages than those adopted in the 2018 AMP and so some minor variations in AHI scoring has resulted.

3.3.3. Cable

The change in sub-transmission cable AHI score H4 in 2018 to H5 in this year's schedule is due to a section (approximately 1km in length) of cable which was wrongly classed as PILC in 2018 when instead it should have been classed XLPE. This has been corrected, and results in only one small section of PILC cable assessed using the age based AHI scoring criteria.

3.3.4. Switchgear

There are changes in the AHI values assigned to switchgear for this year's schedule from the 2018 AMP's schedule. This is due to a difference in interpretation for allocating various assets across the different asset classes as defined in the Schedule. Misinterpretation has arisen due to 33kV switches which are not at zone substations needing to be included under zone substations in the schedule (i.e. there is currently no allowance for sub-transmission (33kV) switchgear outside of zone substations).

3.4. Schedule 12b – Forecast Capacity

There are only minor changes to the forecast capacity values in this AMP update from the 2018 AMP. The differences have resulted from temporary network reconfigurations during planned capital works. Minor changes are also apparent in installed capacity and utilisation due to changes to proposed capital projects, and additional load data collected over the year resulting in minor adjustments to forecast trends over the planning period.

3.5. Schedule 12c – Forecast Network Demand

There are only minor changes to the forecast network demand values in this AMP update from the 2018 AMP.

Consumer Connections

MLL is experiencing a gradual but steady increase in the number of new connections relative to recent years. This is mostly driven by recent residential subdivision developments in the wider Blenheim area, as well as increased development of the viticulture industry within areas of Marlborough.

The number of new consumer connections installing distributed generation (DG) as well as the number of existing consumers installing DG is increasing, but not at the rate forecast in past disclosures. As such, the number of DG connections is slightly lower than previously forecast. The actual capacity of DG installed can vary from that forecast due to consumers installing large diesel DG to offset peak demand and/or provide backup supply for example.

System Demand

Forecast system demand is significantly higher than what has been forecast in previous years. This is largely a response to a recent change in the Upper South Island (USI) load management methodology, resulting in higher peaks at the Blenheim Grid Exit Point (GXP).

The electricity demand is increasing as well as distributed generation. However, MLL believes that the rate of demand growth will exceed that of DG growth and therefore incremental increases of system demand (through the GXP) are anticipated over the planning period.

The limited extent of generation within the MLL network together with the electrical demand of the existing consumer base connected to the MLL network means there is no opportunity to export electricity into Transpower's system via the GXP, nor do any interconnections with other EDBs exist.

3.6. Schedule 12d – Forecast Interruptions and Duration

Forecast interruptions and durations are included in Schedule 12d for the reporting period. There are no changes to the forecast values in the 2018 AMP schedule.

MLL believes that holding the existing forecast planned and unplanned SAIDI values is appropriate. While MLL acknowledges that it is investing to improve the quality of supply, there are factors outside of MLL's control which can result in outages to the Network (such as vehicles impacting power poles for example – these have contributed approximately 15% of unplanned SAIDI minutes through to early March). Additionally, safety measures adopted by MLL (such as opening switches if there is suspicion of a 'line down' for accidents and at times of high fire risk) have and will likely continue to contribute to the unplanned SAIDI figure.

For the year ended 31 March 2018, MLL recorded 121 minutes of SAIDI total, with 60 minutes of unplanned SAIDI. For the current year, MLL is expecting[4] to exceed its unplanned outage forecast of 80 minutes. 4.2 minutes of this unplanned SAIDI to date can be attributed to operating devices (i.e. opening circuit breakers/reclosers) due to reports of lines down – in many instances, these were 'false alarms' and the lines on the ground reported by the public were telecommunications overhead lines. MLL's policy is to open devices to isolate feeders in the interests of public safety where there are reports of 'lines down'. This policy will impact on the SAIDI, and potentially SAIFI, values.

Other significant contributors to the unplanned SAIDI minutes for the year include two major outages arising from storm (extreme wind) events, as well as a relatively high number of vehicles impacting power poles as mentioned above.

Overall for the period 1 April 2018 to February 2019, 55% of the interruptions to the network have related to external factors.

Planned outages in the current year are expected to be approximately 49 minutes, this is below the forecast value of 65 minutes. This has resulted in an overall combined SAIDI figure of 135 minutes (planned and unplanned outages) which is lower than the 2018 AMP forecast value of 145 minutes. Management of planned SAIDI is carefully undertaken with consideration of alternatives for larger planned events, including the use of mobile generators to minimise disruption to consumers.

[4] As at the end of February, the unplanned SAIDI was 79 minutes.

Appendix 1 – AHI score comparisons for poles

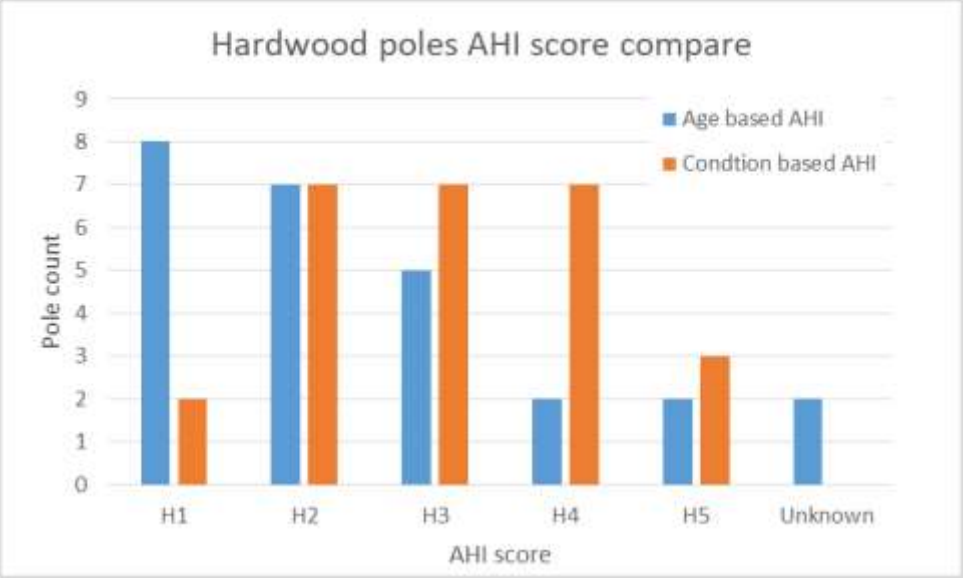

Figure 4 – Comparison of hardwood poles AHI scores for EEA's age based and condition based methodologies

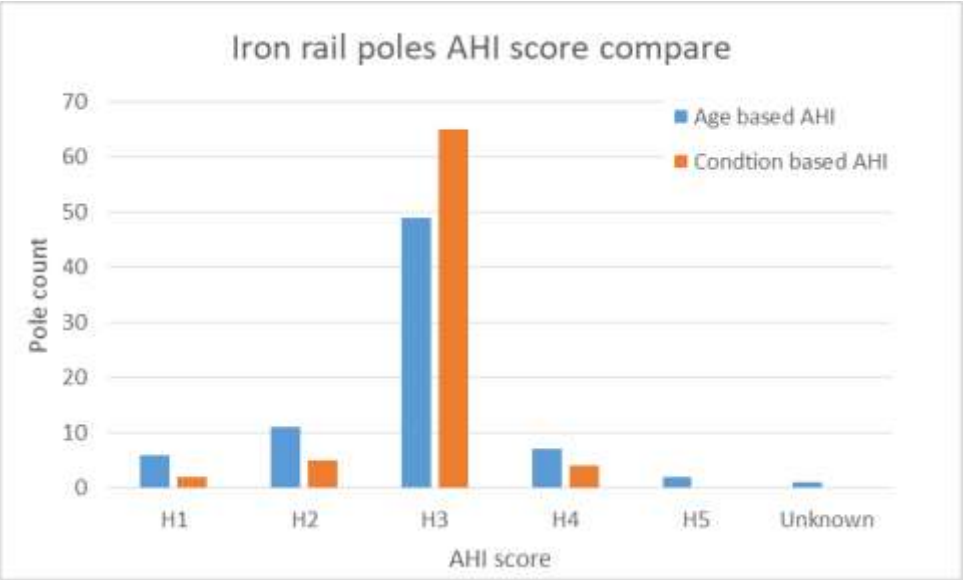

Figure 5 – Comparison of iron rail poles AHI scores for EEA's age based and condition based methodologies

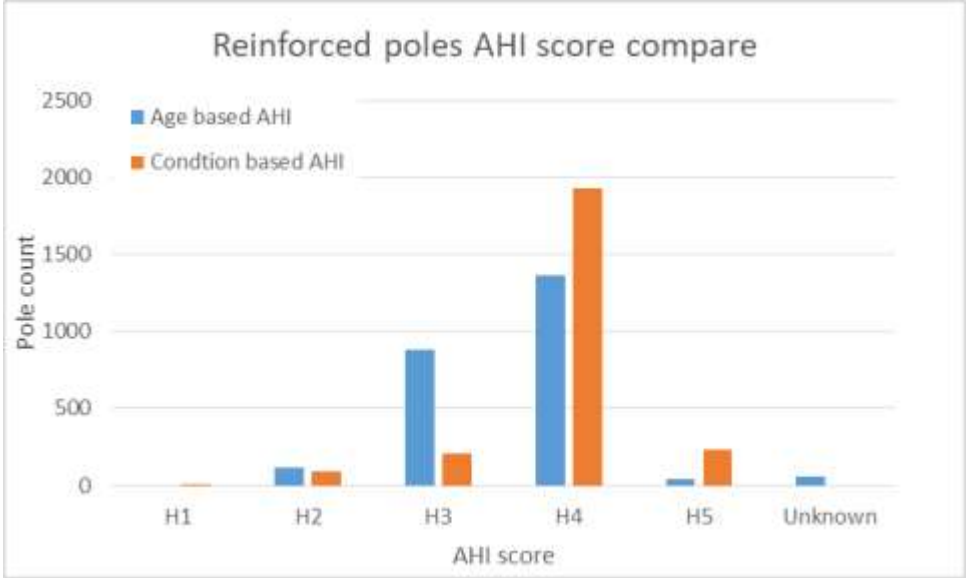

Figure 6 – Comparison of reinforced concrete poles AHI scores for EEA's age based and condition based methodologies

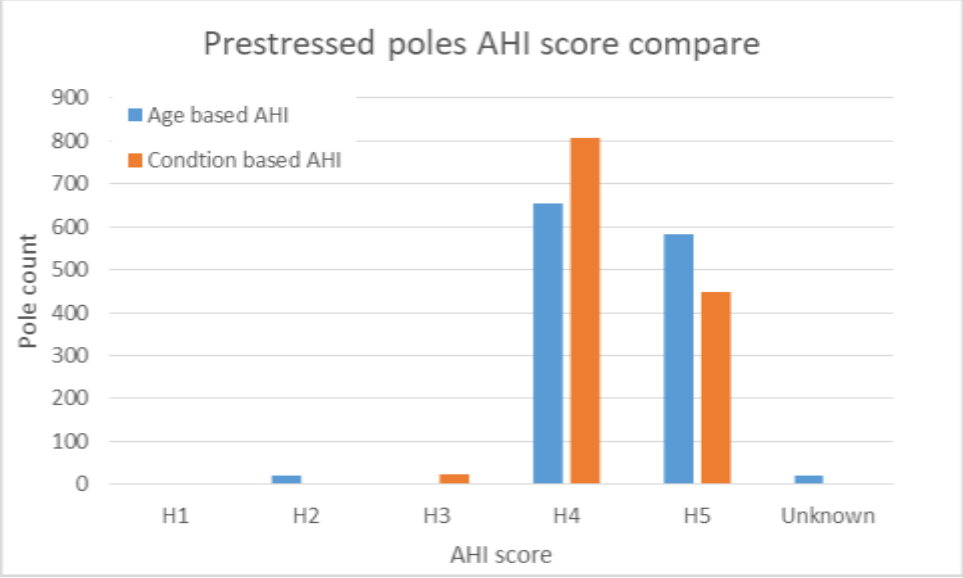

Figure 7 – Comparison of pre-stressed concrete poles AHI scores for EEA's age based and condition based methodologies

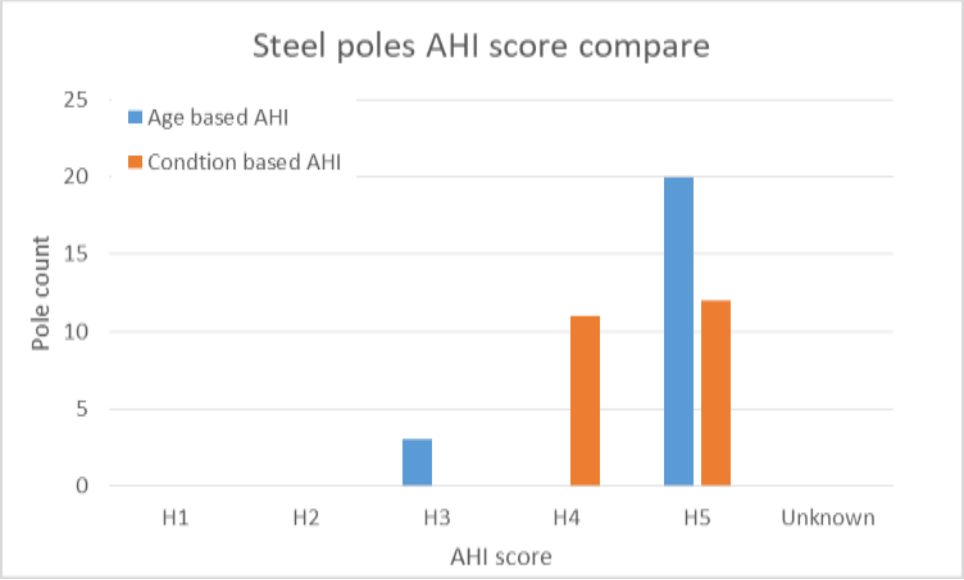

Figure 8 – Comparison of steel poles AHI scores for EEA's age based and condition based methodologies

Appendix 2 – Softwood poles age profile

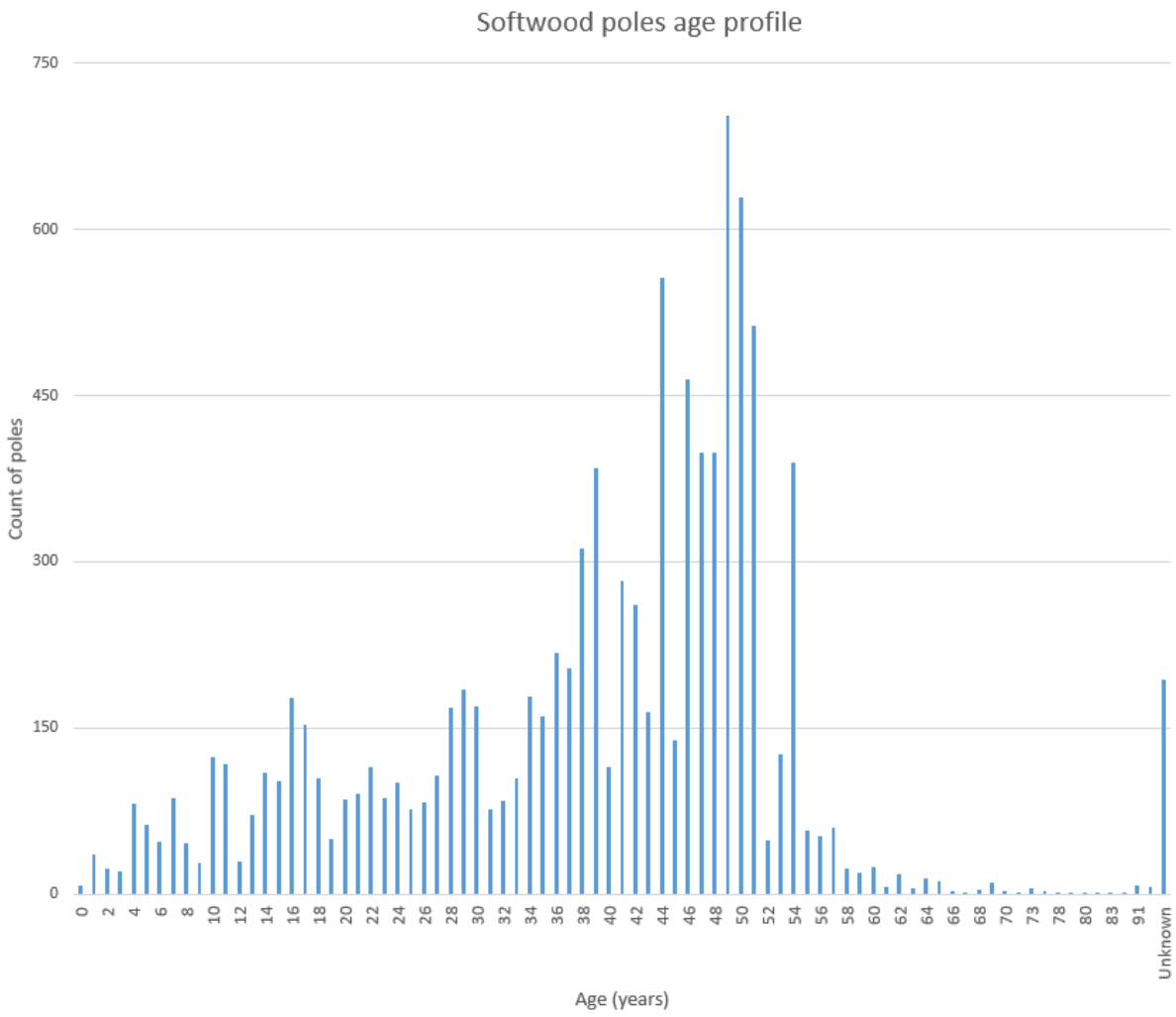

Figure 9 – Softwood pole age profile