STATE CORONER'S COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the death of Kenneth Eberle
Hearing dates:	31 May, 1 June 2018
Date of findings:	21 September 2018
Place of findings:	State Coroners Court, Glebe
Findings of:	Magistrate Russell Deputy State Coroner
Catchwords:	CORONIAL LAW – Tree fall onto highway; Council tree management, maintenance and inspection systems
File number:	2016/14227

Representation:	Counsel Assisting the Coroner: Mr Jake Harris of Counsel Instructed by Ms Clare Skinner Crown Solicitor's Office Penrith City Council: Ms Kirsten Edwards of Counsel Instructed by Mr Matthew Bullivant Penrith City Council
Findings:	Kenneth Eberle died on 14 January 2016 on the Great Western Highway beside Dukes Oval at Emu Plains. The cause of Mr Eberle's death was a blunt force injury to his head. That injury was the result of a tree falling on the car in which he was a passenger as it proceeded along the Great Western Highway at Emu Plains.
Recommendations:	I recommend to the Mayor and Councillors of Penrith City Council that: 1. *Penrith City Council adopt, and continue to implement, an appropriate tree management plan incorporating the principal features of Council's Draft Street and Park Tree Management Plan, identified by its issue date of 26 March 2018, suitably amended to provide for the frequency of assessment of trees to be based on risk and for persons performing those risk assessments to be qualified to at least Australian Qualification Framework Level 5 and to hold a Tree Risk Assessment Qualification or similar.*

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Background

Kenneth Eberle was, at the time of his death, 63 years old. He was born in Bowral and grew up in the Mittagong area and in Canley Vale. He had two brothers, Raymond and Allen, and two sisters, Lynette and Christine.

He had been employed since he was about 16 or 17 years old and had worked in a lighting store and as a truck driver.

At the time of his death, Mr Eberle had known his wife, Christine, for about 46 years. They met through mutual friends at their schools and were married for over 40 years. They had two children, Todd and Brooke.

In the course of the inquest, Mr Eberle's daughter, Brooke, spoke eloquently of the family's pain at the loss of their clearly very much loved husband and father, a man whom Mrs Eberle described as one of strong 'old school' moral values who liked to build things and who enjoyed a quiet and simple life. In his later years, following injury and illness, he was stoic in the face of considerable physical pain and continued to work to support his family.

Mr Eberle died on the afternoon of 14 January 2016 on the Great Western Highway at Emu Plains. He was the front seat passenger in a Jeep Cherokee driven by his wife. They were returning from a visit to their doctor's surgery in the Emu Plains shopping complex. As Mrs Eberle was driving towards Penrith along the Great Western Highway, a tree fell onto the highway crushing the roof of their vehicle and killing Mr Eberle.

Mrs Eberle heard what she described as 'a loud bang on the roof of the car'. She said:

> *I knew soon after that Kenneth had gone. Everything went silent, I could feel that it was raining on my feet but I could not hear anything until a man was yelling out asking if we were ok. I kept blacking out and I remember everything in bits and pieces.*

Ambulance officers, who arrived at the scene shortly after, confirmed that Mr Eberle had died.

Mrs Eberle was pinned against the steering wheel and suffered a fractured left shoulder blade, fractured ribs and extensive bruising. It took some time for emergency services to free her from the vehicle. She was flown in a Careflight helicopter to Westmead Hospital.

The evidence establishes that Mrs Eberle was driving carefully, attentively and within the speed limit, at about 50 to 55 kph. It is likely that the headlights of the vehicle she was driving were illuminated. Those lights activate automatically in low light. Mrs Eberle had no warning that the tree would fall and was unable to take any evasive action.

Maintenance and inspection of that and other trees on public land within the Penrith City Council ('the Council') area is, and was at the time of Mr Eberle's death, the responsibility of the Council. The focus of this inquest has been to establish why the tree fell, whether the Council's system of maintenance and inspection of trees was adequate in the time leading up to 14 January 2016, and whether it is adequate now.

Functions of the Coroner

Section 81 of the *Coroners Act 2009* sets out the principal functions of a Coroner conducting an inquest. Those are to record the identity of the person who has died, the date and place of death, and the manner and cause of death.

Section 82 of that Act empowers a Coroner to make necessary or desirable recommendations in relation to any matter connected with the death.

Findings as to identity, date and cause of death

Kenneth Eberle died on 14 January 2016 on the Great Western Highway beside Dukes Oval at Emu Plains.

The cause of Mr Eberle's death, as described by Dr Kendall Bailey, forensic pathologist, was a blunt force injury of the head.

That injury was the result of a tree falling on the car in which he was a passenger as it was driven along the Great Western Highway at Emu Plains.

Why did the tree to fall?

Location

The tree fell on the Great Western Highway about 100 metres west of Nepean Street. At that location there are sporting fields on either side of the road. Dukes Oval is on the northern side of the road.

As at 14 January 2016, 37 mature trees of the species *Eucalyptus saligna*, known as Sydney Blue Gum, stood along either side of the Great Western Highway at that location. A single row of those trees ran along the Great Western Highway beside a path adjacent to Dukes Oval. The tree which killed Mr Eberle (for clarity and consistency hereinafter called Tree 1) came from that row of trees and was one of two which fell in the immediate vicinity. The second tree (Tree 2) stood to the east of Tree 1.

Trees 1 and 2 were isolated in the sense that they stood unprotected between the flat Dukes Oval immediately on their northern side and the road reserve and road immediately on their southern side. In that position, they each were exposed to the full force of northerly or northwesterly winds gusting across Dukes Oval.

Those two trees fell as the Eberles' car was passing Dukes Oval. They had been uprooted. Tree 1 fell at an angle to the road, in a south-easterly direction. Part of the

upper trunk of the tree and the majority of its crown fell on the roadway, crushing the Eberles' vehicle. Tree 2 fell directly across the road in front of the vehicle.

The weather in the lead up to, and on the afternoon of, 14 January 2016

The Bureau of Meteorology ('the Bureau') does not have a weather station at Emu Plains and is unable to provide specific data for the area. The closest weather station is the Bureau's Penrith Lakes Automatic Weather Station ('AWS'), which is 4.3km north-east of the location at which Mr Eberle was killed.

For 14 January 2016, Penrith Lakes AWS recorded a maximum temperature of 40.7°C at 1:43pm and no rainfall. It recorded the maximum wind gust for 14 January 2016 as 72 km/h at 2:21pm.[1] There is no doubt that those observations do not reflect the severity of the storm which occurred in the area of the Great Western Highway at Emu Plains on the afternoon of 14 January 2016.

Thunderstorms are localised in nature. Effects of topography and terrain can result in that localised weather, including the intensity of a storm system, not being detected by, what the Bureau itself refers to, as a 'sparse observation network'.[2] Higher wind speeds than those recorded at Penrith Lakes AWS were reported, on 14 January 2016, by Camden Airport AWS (96 km/h at 2:13pm), Bankstown Airport AWS (107 km/h at 3:10pm), and Sydney Airport (120 km/h at 3:20pm).

Constable Michael Kovacs, who working with Constable Christy Smith and in the Emu Plains area on the afternoon of 14 January 2016, and who attended the scene, described the day as hot. He said that, at about 1:40pm, a severe storm developed over the Blue Mountains and moved in a generally easterly direction. He said, 'it generated "tornado" like conditions with heavy rain, hail and winds in excess of 100 [kph]'. He also said that, as he and Constable Smith made their way to the accident scene, they were 'hampered by heavy rain, hail and strong wind' and that, as they approached, he noticed 'a significant amount of debris on the road including tree branches, steel cladding and plastic sheets which had either fallen from trees or been dislodged from surrounding properties'.

Similarly, Constable Smith, who was the officer in charge of the coronial investigation, said that, at '[a]bout 2:15pm, it began raining heavily, light small hailstones, thundering, light[n]ing and a wind speed in excess of 100 kilometres per hour. These conditions came on very quickly.' She said she had 'never seen anything like it'.

Senior Constable Glenn Gribble observed that, as he drove towards the accident scene, rain was 'as hard as I believe I have seen in many years. Wind gusts that I

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[1] That measurement, recorded at half hourly intervals, gives the strongest three second mean wind speed observed in the 24-hour period. The Beaufort scale is based on 10-minute mean wind speeds and, therefore, the descriptive terms which relate to specific wind speeds, such as gale with reference to speeds of 63 to 75 km/h, have no direct relationship to the observations above.

[2] Email from Ms Lorien Martin, Climate Data Services, Bureau of Meteorology, 16 May 2018.

would approximate approaching 100 km/h crossed the motorway … I would describe the weather as very violent and [its] onset very sudden.'

Similar observations were made by other witnesses in the vicinity. Mr Michael Wyrzuc described a sudden onset of heavy rain strong winds and a lot of debris blowing around. Ms Christine Bell, who observed a sudden change in the weather as she waited to turn into the Great Western Highway at its intersection with Russell Street, said that her car was shaking with the force of the wind and it was 'absolutely pouring down with dust everywhere. I have never seen anything like it.' Her daughter, Ms Brittany Bell, who was driving a vehicle in front of her mother, said the wind was very strong. She said her car was shaking and that 'rubbish was flying around'.

In a statement prepared in February 2016, Mrs Eberle said that as she was driving along the Great Western Highway the rain was coming down heavily. She said there was a lot of water on the road, that she saw bark falling from the left side of the road and that it was 'very windy'. There was a 'whirl of wind' on the road in front of her and Mr Eberle said to her, 'be careful of the wind'.

A large number of trees fell in that storm. Ms Christine Bell said that 'trees were down everywhere'. Her daughter noted that 'several trees had fallen over which were on the roads and the sides of the roads'.

John Gordon, then Parks Manager and now Manager, City Presentation at the Council, reported:

> *As a result of the weather event on the afternoon of 14 January 2016, the Council received 126 work requests for fallen trees/branches across the local government area…. In total there were … reports of 41 trees that had failed* [by which I understood Mr Gordon to mean fell or came down].

Mr Gordon further reported that, in the suburb of Emu Plains, four other trees had failed: two on Pyramid Street, approximately 330m from Trees 1 and 2; one on Fitzroy Street, approximately 300m from Trees 1 and 2; and one on Watsonia Street, approximately 600m from Trees 1 and 2.

On that day, across Sydney, there were 2189 calls to the SES relating to trees, 1298 of which related to a tree down.[3]

The storm, then, was a violent one and the wind very severe. It travelled in a northerly or north-westerly direction, unimpeded, across the open space of Dukes Oval before reaching Trees 1 and 2. Clearly the severe wind was the proximate cause of those trees falling.

Other factors may have made the trees more vulnerable to such an event.

[3] Bureau of Meteorology Monthly Climate Summary for Sydney Monday, 1 February 2016.

January 2016 rainfall

In January 2016 rainfall was 'more than double the historical average'. As recorded at Observatory Hill, it was 'the wettest January since …1988 and the tenth-wettest January on record'. The number of days of heavy rain was equal to the second highest number on record for January. At locations to the west, including Strathfield and Parramatta, it was the wettest January on record.[4] In the Penrith area there was high rainfall over a number of days in the two weeks preceding 14 January 2016.

Danny Draper, consulting arborist, noted in his expert report:

> *[There] was sufficient lead time for some of the water to percolate into the upper soil profile and [act] to lubricate the soil particles reducing shear stress as soil cohesion … within the root plate of each tree assisting in tree failures.*

It is possible that a lack of cohesion in the root/soil system of the trees was a factor in the trees falling.

Age of the trees

There is some difference between the expert reports of Catriona Mackenzie, arboriculturist, horticulturalist and landscape designer, on the one hand, and Mr Draper and Mr Gordon on the other, as to when Trees 1 and 2 were planted.

In her report, Ms Mackenzie juxtaposes a 'Nearmap' image of December 2015 with an image from NSW SIXMaps of 1943. Those photographs would appear to support her view that the trees were planted after that image was taken in 1943. Ms Mackenzie described the trees as 'ageing tree[s] growing in less than optimum conditions'.

Suitability to local conditions

Sydney Blue Gums are not local to the Penrith area. They naturally occur in deeper soils nearer to the coast, which experience a significantly higher rainfall. Mr Draper's evidence was that the species is not well suited to the conditions in which the trees along Dukes Oval were grown. He described the soil there as comprising 'loose reddish brown loamy sand'. In such soil, he said, 'roots are common near the surface but rare at depth'. [5] The limitations of such soils are that they are of 'very low fertility' and have a '[l]ow available water capacity'.

Ms Mackenzie agreed with Mr Draper's opinion that the species is not well suited to the soils or climatic conditions of the area where Trees 1 and 2 were grown, and that that unsuitability rendered them vulnerable to drought stress and predation by pests and diseases.

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[4] *Ibid*.

[5] Quoting a paper by Bannerman SM and Hazelton PA, *Soil landscapes of Penrith 1:100,000 sheet*, Department of Conservation and Land Management, Sydney, Australia, 1990.

State of Trees 1 and 2

Neither Mr Draper nor Ms Mackenzie were able to examine Trees 1 and 2. Mr Draper, on 29 January 2016, visited the site at which the trees had been growing and examined that location. Otherwise, he relied on the extensive photographs of the trees taken by police on 14 January 2016. Ms Mackenzie, who had access to Mr Draper's report, formed her opinions as to the state of Trees 1 and 2 by reference to that report, the police photographs and her review of the *Google Street View* images of 15 October 2015. She formed the opinion:

> *[T]he trees had relatively vigorous growth and would be considered to be of average (as opposed to declining, poor, or excellent health (vigour)[)] for the species in these growing conditions.*

In his report, Mr Draper observed that:

> *[T]he root plate of Tree 1 appeared symmetrical and had well-developed sinker roots.*

He did not, in his report, identify any evidence of disease or pre-existing wound on Tree 1. Ms Mackenzie formed a similar view. She stressed that she did not see the tree itself and could not assert that it was not damaged but, on the material available to her, she could not identify any evidence that Tree 1 was other than a healthy tree with relatively vigorous growth for its growing conditions. She could not identify any pre-existing damage to its roots.

Tree 2, on the other hand, exhibited clear evidence of damage and decay. Mr Draper saw evidence of 'a basal trunk wound' on the north side of Tree 2. The dead tissue of the wound was stained by kino exudate (sap). Mr Draper thought that the tissue showed signs of being disrupted by borer activity consistent with the Longicorn Borers which, he noted, 'pupate by tunnelling in live vascular cambium causing the tissue to die'. The associated tissue death at the root crown corresponded with the death of the supporting lateral root and sinker roots to the north of the tree and 'an inability to grow new roots on [that] north side'. The tree 'exhibited only minor root growth on [that] side of the root crown'. It did not appear to have any significant root system extending under the path, which 'was not disrupted by its collapse to the south'.

In her report, Ms Mackenzie explained that 'wounding is often the precursor to colonisation of damaged tissue by decay organisms, which eventually manifests its presence by identifiable anomalies, such as bark dieback and discolouration', as observed by Mr Draper on Tree 2.

Possible causes of wound damage to Tree 2

Ms Mackenzie was unable to say what, precisely, may have caused any initial wound or wounds to Tree 2 rendering it vulnerable to decay organisms.

Mowers

One possible cause she identified was the use of large mowers which move around the bases of the trees. The action of these mowers can scalp the roots or the buttress of the trunk where it meets the root.

Footpath

Another potential cause of root damage is work performed close to the tree, which could cut its roots or damage them.

An asphalt footpath with brick edging was laid around Dukes Oval and beside the trees in the 1970s. Mr Gordon said that the Council does not have records of the extent of the excavation undertaken for that path or the extent to which those works impacted on the root systems of the trees. The original path was resurfaced in concrete in late 2013 ('the 2013 work').

As I understood her evidence, Ms Mackenzie was of the view that, as the work was within the structural root zone of the trees,[6] the earlier construction of the path had the potential adversely to affect the tree root system as did the resurfacing in 2013. The paucity of records and length of time which had elapsed since the original work meant that Ms Mackenzie's focus, with respect to the path, was on the 2013 work.

The 2013 work appears to have involved some compaction. That and the laying of concrete itself, in the opinion of Ms Mackenzie, had the potential to reduce oxygen to the roots of trees, particularly those roots in the upper 500 mm of soil depth, such as the bulk of these were likely to have been. In addition, anything driven into the ground to support work on the footpath, such as a dowel, had the potential to impinge upon the main woody roots that anchor the tree.

For those reasons, Ms Mackenzie was of the opinion that an arborist should have been consulted to give some advice which would guide work performed so close to the trees. That might, for example, have involved 'a gentle hand excavation' to identify those points where something could be driven into the ground without it being driven through the tree roots.[7]

Ms Mackenzie, who has substantial experience in the work of local councils in tree management, acknowledged that 'in the past' it was not the common practice of councils to involve an arborist when commencing or contemplating work such as a

[6] The structural root zone is, in accordance with Australian Standard 4970, the area required for tree stability. Ms Mackenzie said that trees require a radius of at least 3 – 3.3 metres.

[7] In this regard Ms Mackenzie drew attention to Section 3 of the AS 4970 on the Protection of Trees on Development Sites which sets out what is required of a project arborist in respect of encroachments, both major and minor, into the Tree Protection Zone which is defined, in that Standard, as 'a combination of the root area and crown area requiring protection' and encompasses the structural root zone. There is no suggestion, on the evidence, that it a project arborist was engaged to advise on the resurfacing of the footpath in 2013. It would be inappropriate, however, within the scope of this inquest, to form a positive conclusion that the works in 2013 constituted a breach of the relevant Australian Standard.

footpath in a structural root zone or tree protection zone.[8] She has seen significant problems arise as a result. Her strong impression is that councils are now 'getting better at it'.

Although it had the potential adversely to affect the root systems of the trees, Ms Mackenzie did not conclude that the work done in 2013 had caused the damage to the root system of Tree 2. Although she could not say definitively, it was her considered opinion that the damage observed to the root system of Tree 2 was likely to predate the 2013 works. The damage done was of an extent which, on balance, suggested to her that the pathogen had been introduced at a much earlier time.

Tree 1 did not have root damage discernible on the police photographs. Its roots extended under the path which acted to anchor the tree and affect the angle at which it fell. There is no basis, in the evidence, on which to conclude that work on the path in 2013, or at any time, damaged the root system of Tree 1. It was Tree 1 which fell onto the car Mrs Eberle was driving, killing Mr Eberle.

The relevance of the compromised state of Tree 2 in the time immediately leading up to 14 January 2016, for the purposes of this inquest, is in so far as it informs a consideration of the Council's systems of tree management, maintenance and inspection during that time. I will return to those 'systems' below.

Effect of engaging a project arborist

In the context of Ms Mackenzie's opinion about the need for a consulting arborist in relation to the footpath works in late 2013, it is clear that the presence of such an arborist at the site, at that time, would have represented an opportunity to identify damage to, or decay in, the trees. It was Ms Mackenzie's opinion that at least the basal wounds on Tree 2 would have been visible to a competent arborist in 2013 and '[w]ould very likely have been a trigger for gathering a bit more information about the tree or perhaps doing a very minor root mapping exercise'. She could not, however, say what level of risk a competent arborist would, in 2013, have assigned to the tree and she could not say that an inspection in 2013 would inevitably have led to the removal of Tree 2. Ms Mackenzie acknowledged that she was not in a position to know what observations, if any, a competent arborist would have made about Tree 1 in 2013.

I cannot conclude that a one-off inspection of the trees in 2013, even by a competent arborist, should properly have led to any action on the part of the Council which would have prevented Tree 1 falling on 14 January 2016 with its tragic consequence.

The evidence suggests, however, that one-off inspections are not the most appropriate way for a council to manage its trees. This is discussed below.

[8] See footnotes 6 and 7.

Was the Council's system of management, maintenance and inspection of the trees before January 2016 adequate?

As at January 2016, the Council was heavily reliant, for the monitoring of the trees for which it was responsible, on any observations made and reporting done by Council staff who undertook maintenance work in the vicinity of trees. Any such information was identified in a Site Risk Assessment report. The system was essentially haphazard (Mr Gordon described it as 'reactive') and relied on staff who had no specific qualifications in arboriculture making observations and conveying them to a coordinator, who would then undertake an assessment. The coordinator was not required to have any specific qualifications in arboriculture.[9]

Mr Gordon explained the process as follows:

a. *When staff commenced work on a site they completed a Site Risk Assessment. This assessment includes a visual assessment of trees. If staff identify any issues with the tree they forwarded a memorandum with details of the issues to their Co-ordinator. Any identified issues should be recorded on their site risk assessment.*

b. *The Co-ordinator attends the site and undertakes a detailed assessment in accordance with Council's standard Tree Inspection and Assessment form… This form considers and scores the following variables:*

    i. *Location: trees near schools, childcare centres, the CBD or high profile areas score highest.*

    ii. *Traffic Volume: the risk is greater when traffic volume increases.*

    iii. *Condition of Tree: considers whether the tree is unstable, dead, damaged (and the extent) and assesses the risk.*

    iv. *Pedestrian Volume: the higher the pedestrian volume the greater the risk.*

    v. *Height of Tree: the higher the tree the greater the risk.*

    vi. *Safety Concerns.*

c. *Each of these variables is then scored. Scores are then tabulated and a determination is made to remove, prune, treat or undertake other remedial works. The tabulated scores are then used to determine priority actions aligned to safety concerns and available resources. The higher the score, the higher the risk and remedial action is planned based on this assessment.*

[9] A number of the coordinators did have horticulture qualifications.

…

e. *In addition to trees located on a 'worksite' (oval, park, reserve, bushland area), Council also has many trees located in road reserves across the City. Council relies on the observations of staff (when undertaking their duties) or reports from the community to undertake maintenance of these assets.*

Although Mr Gordon described the process of a site risk assessment to include a visual assessment of trees, nowhere is that stated in the Site Risk Assessment *pro forma*, which used the generic term 'hazard' and directed a worker's attention to a range of hazards, many which were work related hazards. The document made no specific mention of trees.

The expectation that staff would 'keep an eye on the trees' was never formalised into any written instruction and there was no prompt on the form itself. Mr Gordon explained it in the following way:

> *I suppose it's part of an accepted practice that staff through inductions and through training are asked to look broadly at sites when they go there ... not only for their own worker safety but also for broader public safety and part of that is observing the general conditions around the reserves on which they work and it is expected that they would include trees as part of that visual assessment*.

As at January 2016, there was no regular system of inspection. The 'system', such as it was, relied on maintenance and other staff, unqualified in arboriculture, who were at an oval or elsewhere to do an unrelated job, observing an obvious problem with a tree (or other hazard) and reporting it on a document which drew their attention to a number of other specific hazards but did not specifically mention trees.

If that hurdle had been overcome and a tree had been identified as a potential hazard, a coordinator, often one qualified in horticulture but unqualified in arboriculture, would complete an assessment and record that assessment on the Tree Inspection and Assessment form. That form, as Ms Mackenzie noted:

> *[Did] not include any category that deal[t] with identifying any changes to the trees growing environment that may affect the stability of the tree, such as demolition and/or construction of structures near the tree, installation of services, removal of nearby trees (exposure), changes to the soil hydrology, and so on.*

It was Ms Mackenzie's view that these are crucial elements that must be taken into account when undertaking tree risk assessments.

Ms Mackenzie further noted:

> *Unless the co-ordinator is an AQF [Australian Qualifications Framework ('AQF')] Level 5 arboriculturist it is doubtful they would have the ability to recognise some of the less obvious signs of new or progressing defects, or*

recent changes near a tree, that could indicate a tree at a higher than normal risk of failure.

Ms Mackenzie's opinion was that trees need to be inspected at appropriate intervals which:

> *… may be as little as 12 months apart, or could be 3-5 years, depending on the previous inspections, risk ratings and the works, if any, recommended to manage tree risk.*

Those inspections should be programmed and completed by a competent arboriculturist, she said, and 'should be "stand-alone" and not be secondary to, or included with, general park maintenance works'. She noted:

> *Staff on site for work, such as mowing, picking up rubbish and the like, are not likely to be focused on trees to any great extent. Considering, in this case, the number of trees around the oval prior to the incident would have been more than 100 mature trees, it is difficult to imagine the staff would have the time to even perform a basic 'walk-by' assessment of all those trees and still perform their normal duties at the site.*

It is abundantly clear that that system of maintenance and inspection of the Council's trees, in place in the period leading up to January 2016, was inadequate to identify trees which were a potential hazard. So much is accepted by the Council.

Is the proposed system adequate?

The Council has been working on a Street and Park Tree Management Plan ('the Plan') for some time. A draft Plan was considered by Council in July 2015. The Plan has since undergone a number of iterations and was delayed, among other things, by a substantial restructure of the Council. At the time Mr Gordon's evidence was heard, it was yet to be finalised. He expressed an intention to incorporate into that plan a number of suggestions made by Ms Mackenzie in the context of these proceedings.

Work in the tree protection zone

The proposed Plan incorporates specific reference to the Australian Standard 4970 as it relates to work in a tree protection zone and, in particular, the requirement in that Standard for a project arborist to be involved in specified circumstances. Mr Gordon's evidence was that he has stressed the requirements of Australian Standard 4970 to staff. The rigorous implementation of that Standard would make it less likely that Council trees would sustain damage as a result of nearby work.

Inventory and management

In accordance with the Plan, Council trees are to be regarded as assets of the Council. It is proposed that a tree asset inventory[10] will be created and that each tree within the Council's area of responsibility will be examined periodically. As I understood Mr Gordon's evidence, it was that the Plan, in a further revised form, will provide for the development of a classification system for trees based on risk. That classification system, it is envisaged, would govern the frequency with which particular classes of trees are to be assessed and the nature of that assessment. The frequency would depend *inter alia* on the outcome of previous inspections, including risk ratings and whether work had been recommended to manage a particular risk.

Ms Mackenzie stressed the importance of inspections being undertaken by 'skilled, qualified arboriculturists'. Ms Mackenzie said that, in addition to AQF 5 qualifications, it was important that those persons held a Tree Risk Assessment Qualification ('TRAQ') or a Quantified Tree Risk Assessment qualification ('QTRA'). Mr Gordon's evidence was that the Council will engage a panel of AQF Level 5 arborists 'to inspect trees in high risk areas, carry out any remediation or removal of those trees and indicate a timeframe for re-inspection'. In the engagement of those persons, preference will be given to those people who have attained the TRAQ certification.

According to Mr Gordon, the Council anticipates the employment of a Public Spaces Tree Officer who holds a minimum AQF Level 5 qualification and who will be responsible for implementation of the Plan. The Public Spaces Tree Officer will report to a Parks and Open Space Asset Coordinator (a position which has already been filled). That person is to be responsible for ensuring that the Plan is managed and implemented. The Council is also in the process of procuring a 'mobile technology platform', which will, it is anticipated, *inter alia*, allow staff ready field access to the inventory.

Ms Mackenzie's evidence, which I accept, is that the Plan with those additions outlines a proper scheme for the management, maintenance and inspection of trees for which the Council has responsibility.

Through the evidence of Mr Gordon, I can accept that the Council has demonstrated a commitment to adopt and implement an appropriate Street and Park Tree Management Plan. That Plan, however, has been under consideration, in one form or another, since 2015 and was, at the time at which Mr Gordon gave evidence, despite steps already taken towards its implementation, still not finalised.

Mr Gordon was clearly shaken by the death of Mr Eberle and the manner in which it occurred. It is clear that Mr Eberle's death has weighed upon his consideration of Council's responsibilities in respect to the management of its trees, and upon his and

[10] As I understood Ms Mackenzie's evidence, it was her opinion that the initial assessment should, at a minimum, be 'a detailed visual inspection of a tree and surrounding site, and a synthesis of the information collected'. This is in accordance with the category *Level 2: Basic assessment* used by the International Society of Arboriculture.

other Council employees' determination to implement an appropriate scheme to ensure that those trees are properly managed. Nonetheless, I propose to recommend to Council that it adopt, and continue to implement, an appropriate tree management plan incorporating the principal features of the Plan, identified by its issue date of 26 March 2018, suitably amended to provide for the frequency of assessment of trees to be based on risk and for persons performing those risk assessments to be qualified to at least AQF Level 5 and to hold a TRAQ qualification or similar.

Would an adequate system of management, maintenance and inspection have identified a problem with Tree 1?

Tree 1 was not growing in optimal conditions. It was of a species not well suited to the climate and soils of the location. It, and other Sydney Blue Gums at the location, were, in Ms Mackenzie's words, 'ageing' (although the significance of her use of that term was not explored). Tree 1 was exposed to the full force of northerly winds racing across Dukes Oval.

There was no damage to the trunk or root system of Tree 1 apparent from the police photographs. Ms Mackenzie's opinion was that, in inspecting a tree, in addition to a consideration of damage, a competent and qualified arborist would take into account such features as its 'age, size and location', its history, its 'suitability for the soil characteristics, topography, aspect and [climatic] conditions', and the presence nearby of a major road and pedestrian footpath. It is not possible to know what opinion a competent and qualified arborist, inspecting Tree 1 in 2013, 2014 or 2015, would have formed as to the risk posed by that tree. There is no evidence that any such inspection or risk assessment was ever undertaken.

In the aftermath of Mr Eberle's death, the Council engaged Mr Draper, an AQF Level 5 qualified arborist, to carry out an assessment of Trees 1 and 2 as well as other trees in the immediate vicinity of the location at which Trees 1 and 2 had stood. That assessment involved, in addition to Trees 1 and 2, 35 other Sydney Blue Gums. Mr Draper recommended that, of those remaining trees, 25 should be removed as a matter of priority. Of those trees marked for removal, Mr Draper assessed three to be a high risk and one to be an extreme risk. For the remainder, the risk profile was assessed as moderate or low. As a result of that report 25 trees on both sides of the Great Western Highway were removed.

The Council had its tree preservation officer, an AQF level 5 arborist, assess all of the trees located on road reserves owned by the Council. As a result of that assessment 72 street trees were removed.

It is true that the removal of 25 of 35 trees in the near vicinity of where Trees 1 and 2 stood represents the removal of a very significant proportion of those trees. The fact that 25 trees were removed and that three of those trees had reached a stage at which they were assessed as being high risk and one at which it was assessed as extreme risk[11] may well reflect the acknowledged fact that the Council's 'system' of

[11] With a basal wound and significant areas of deadwood.

management, maintenance and inspection at the time was inadequate. Nonetheless, I accept Ms Edwards' submission that Council staff were deeply affected by the death of Mr Eberle and that the removal of 25 of 35 trees may have reflected a heightened caution, the product of that context. The evidence does not permit me to draw a conclusion from the removal of those trees that, prior to 14 January 2016, a competent system of inspection would have identified Tree 1 as a tree in need of significant management or removal or would have led to the removal of 25 other trees in the near vicinity.

Conclusion

It is not possible to say that a proper system of tree inspection would have identified Tree 1 as a significant risk. It was a mature or ageing tree which was not growing in optimal conditions and was exposed to the full force of unimpeded winds racing across Dukes Oval. There is, however, no evidence that it was exhibiting any sign of damage or decay.

It is trite to observe that trees, in this country, are an important, if not essential, part of cityscapes but that their presence inevitably involves some risk. It is the responsibility of councils to manage that risk and to take action when appropriate.

It could not be said that the Council, in the time leading up to 14 January 2016, had done all it properly could to identify trees at risk. The evidence suggests that the system now proposed by the Council, on the other hand, is an organised, coherent and responsible one. Indeed, Ms Mackenzie's opinion was that that system, if implemented, would, in all likelihood, put the Council at the forefront of councils in their response to tree management, maintenance and inspection obligations. For the reasons which I have given, I intend to recommend that the Council adopt and implement that system.

All of that, of course, is no comfort to Mrs Eberle, Todd or Brooke who have sustained the terrible loss of a loved husband and father.

Findings

Kenneth Eberle died on 14 January 2016 on the Great Western Highway beside Dukes Oval at Emu Plains.

The cause of Mr Eberle's death, as described by Dr Kendall Bailey, forensic pathologist, was a blunt force injury of the head.

That injury was the result of a tree falling on the car in which he was a passenger as it was driven along the Great Western Highway at Emu Plains.

Recommendation

I recommend to the Mayor and Councillors of the Council that:

> *Penrith City Council adopt, and continue to implement, an appropriate tree management plan incorporating the principal features of the Council's Draft*

Street and Park Tree Management Plan, identified by its issue date of 26 March 2018, suitably amended to provide for the frequency of assessment of trees to be based on risk and for persons performing those risk assessments to be qualified to at least Australian Qualification Framework Level 5 and to hold a Tree Risk Assessment Qualification or similar.

I close this inquest.

Magistrate P Russell

Deputy State Coroner

Glebe

21 September 2018