



FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 12th, 13th, 14th, 15th and 16th days of September 2011, the 31st day of October 2011, the 1st and 2nd days of November 2011 and the 10th day of May 2012, by the Coroner's Court of the said State, constituted of Mark Frederick Johns, State Coroner, into the death of Rebecca Anne Penfold Jolly.

The said Court finds that Rebecca Anne Penfold Jolly aged 20 years, late of 506/191 Greenhill Road, Parkside, South Australia died at the Royal Adelaide Hospital, North Terrace, Adelaide, South Australia on the 11th day of January 2010 as a result of head and vertebrae injuries. The said Court finds that the circumstances of her death were as follows:

1. Introduction and cause of death

- 1.1. Rebecca Jolly was 20 years of age at the date of her death on 11 January 2010. She was driving in a westerly direction on Greenhill Road at approximately 9:15pm on 9 January 2010, near the corner of Strathspey Avenue and Greenhill Road, Hazelwood Park when a large grey box gum tree dropped a 7 metre limb which collided with Ms Jolly's car. The branch crushed the roof of the car and rolled off. The car veered across the eastbound lanes of Greenhill Road and collided with a fence and two unoccupied cars. Ms Jolly suffered severe head and vertebral injuries and died in the Intensive Care Unit of the Royal Adelaide Hospital (RAH) two days after her admission. A review of her RAH clinical notes¹ was conducted by Dr Carl Winskog

¹ Exhibit C15

of Forensic Science South Australia who expressed the opinion that Ms Jolly's cause of death was head and vertebrae injuries², and I so find.

2. Burnside Council responsibility for land upon which the tree was situated

- 2.1. The tree from which the branch dropped onto Ms Jolly's car was situated upon the public land forming the roadside verge on the southern side of Greenhill Road to the immediate west of the intersection of Greenhill Road and Strathspey Avenue, Hazelwood Park. A number of photographs depicting road level views and aerial views of the location of the tree were tendered as exhibits in this Inquest³.
- 2.2. The tree from which the branch dropped is a grey box gum tree which comprises one of a small group of trees in front of 506 Greenhill Road, a property owned by Mrs Pat Thomas and her husband. Mrs Thomas gave evidence in the Inquest and I will come to her evidence presently. The front fence of Mrs Thomas' residence is a brushwood fence. The distance between her fence and the gutter on the southern side of Greenhill Road is approximately 8 to 10 metres by my estimation. Immediately to the north of Mrs Thomas' brushwood fence is a bituminised footpath of the kind typically found in suburban Adelaide. Between the northern edge of that footpath and the gutter edging Greenhill Road, is a roadside verge upon which the group of trees, including the grey box, were standing. The grey box which dropped the limb upon Ms Jolly's car has, in the course of the Inquest, been referred to as the subject tree and I will employ that language in this finding. The group of trees comprised two reasonably mature grey box trees and one very spindly grey box that was close to Strathspey Avenue and was subsequently removed. That smallest grey box played no part in the events I am about to describe and will not be further referred to. The other tree in the group is a river red gum to the west of the grey box trees and also in front of 506 Greenhill Road. Therefore, the position as it stands today is that there is the subject tree and another grey box, together with a river red gum. The river red gum is also irrelevant for the purposes of this finding. The subject tree is a significantly larger grey box than the other grey box. The subject tree has a circumference greater than 2 metres when measured 1 metre above ground level and the other tree, which I will refer to as the adjacent grey box tree, has a circumference of less than 2 metres at 1 metre above ground level⁴. The subject tree is the closest of the two grey box trees

² Exhibit C3a

³ See for example Exhibits C11d, C14b, C14g, C17a, C19a, C19b, C26a, C26e, C26f, C27b and C28b

⁴ Exhibit C27b

and the river red gum to Greenhill Road, being approximately 3 metres south of the gutter on Greenhill Road. The adjacent grey box is approximately 5 metres from the gutter line on Greenhill Road and closer to Strathspey Avenue, that is, further east of the subject tree. In summary, the subject tree is a mature and quite large grey box. The adjacent grey box is reasonably mature and substantial, but not as large as the subject grey box.

3. The subject tree and its structure

- 3.1. As I have already commented, the tree is quite old. There are three stems emanating from ground level. One of them is significantly larger than the other two and this is probably the original trunk of the tree. The other two stems have probably arisen from epicormic growth which has matured into significant diameter stems in their own right. Mr Thornton was an arboricultural consultant who gave evidence at the Inquest. His report⁵ usefully summarises the sizes of these respective stems in paragraph 3.7 as follows:

'The tree is a mature/over mature Grey Box that is approximately 13 metres tall, with stem circumferences of 3.70, 1.38 and 1.17 metres when measured at 1 metre above ground level.'⁶

- 3.2. The largest of those stem circumferences belongs to what I have described as the original stem of the tree. That main stem, if I may so describe it, divides to form two main leaders approximately 5 to 6 metres above ground level. These two main leaders figured very significantly in evidence at the Inquest. One of the leaders grew in a southerly direction and the other grew in a northerly direction. The leader which grew in the northerly direction, grew over Greenhill Road and it was this leader which failed on the night of 9 January 2010, resulting in Ms Jolly's death. The southern leader grew in the opposite direction, that is away from Greenhill Road and over the footpath towards the house of Mrs Thomas. That southern leader had also failed at some time prior to 9 January 2010. There was no dispute that the failure had occurred prior to that date, but there was much controversy in the course of the Inquest as to when that failure occurred. It is plain however that the southern leader had failed and was absent at the time of the failure of the northern leader on the night of 9 January 2010.

⁵ Exhibit C27b

⁶ Exhibit C27b, page 5

4. The Major Crash investigation

4.1. The Major Crash Investigation Unit (MCIU) within South Australia Police investigated Ms Jolly's death. The investigation was conducted with commendable diligence. In the course of the investigation, MCIU commissioned an expert report from consulting arborist, Mr Kym Knight. That report was admitted as Exhibit C26 and Mr Knight gave evidence.

4.2. In the course of the MCIU investigation, Brevet Sergeant Lovell forwarded an email to the City of Burnside being the local council for the area in which the subject tree was situated. Brevet Sergeant Lovell posed a number of questions for the purposes of his investigation. The email was sent on 19 January 2010. The City of Burnside, acting through Mr John Draper who was then the Acting Manager, Open Space and Recreation, responded by letter dated 25 January 2010 to Brevet Sergeant Lovell. The letter confirmed that the tree grew on council owned road reserve. It advised that the tree was part of roadside vegetation and that the council operated a 'reactive' system of maintenance based on a request system. In other words, when a problem with a tree was brought to council's attention, the council would conduct whatever works were necessary as a result of the matter being brought to its attention. At that time the council would undertake such works as were required. Significantly, the letter says:

'In recent times council will inspect the whole tree in question and undertake a more detailed examination of any issues that may be obvious and proceed with additional work if required or requested.'

4.3. Paragraph 4 of the letter was subject of a considerable amount of evidence at Inquest and I will quote it in its entirety:

'Does the council have an individual record relating to the trees' maintenance? If so, what is the maintenance history of the tree?'

The tree as well as the smaller adjacent tree were the subject of an incident that occurred on or around 6th August 2009 (action request no. 1092515). A section of the tree failed and brought down small branches and some trunk sections of the smaller adjacent tree. There was a branch that still remained attached in the crown and posed a potential risk of failing. The incident was brought to council's attention by a member of council's staff. Council staff attended the scene and minor branch pruning and limb removal was undertaken on that day. The tree was further inspected by John Draper on 19th August 2009 and no further works were required at the time. It was determined that the tree was an aged specimen that would be retained for its biodiversity value and allowed to

redevelop epicormic shoots that could be allowed to redevelop over the short term. The tree would then be reinspected and further pruning undertaken on its crown if required (see attached copies of action request and correspondence between council staff).'⁷

4.4. Paragraph 5 of the letter deals with the question posed by Brevet Sergeant Lovell:

'Does the council have a record of any complaints relating to the tree?'

The response by Mr Draper included the following:

'Not specifically to do with the subject tree. Apart from the earlier incident (August 2009) there have been no recorded complaints or incidents raised with regards to the subject or adjacent tree.'

I also note the following paragraph of the letter:

'The subject tree was included in a follow-up inspection of the earlier incident that resulted in sections of the main trunk and small diameter branches to fail. The inspection recommended no immediate action other than to reinspect the tree after epicormic shoots were allowed to develop further. The tree was to be re-pruned at a later date to create a more appropriate crown size for the available area on the road reserve.'⁸

4.5. There was much debate in the course of the Inquest as to the proper interpretation of Mr Draper's letter to Brevet Sergeant Lovell. In particular, the passages which have been set out above were closely examined. Mr Draper gave evidence at the Inquest and was closely questioned on the contents of the letter. I will come to his evidence later in this finding. For present purposes, it is sufficient to note that Mr Draper has referred to 'the tree', 'the subject tree' and the 'adjacent tree'. It is plain that when he is referring to the 'adjacent tree', he is referring to the tree to the east and south of the subject tree which I have earlier referred to as the adjacent tree.

5. Council's internal records concerning 6 August 2009

5.1. It is clear that there was an attendance by council staff at the site of the trees on the corner of Strathspey Avenue and Greenhill Road on 6 August 2009 in response to a tree failure. The details of the action taken and the trees affected by the event were hotly contested at the Inquest. For present purposes, I merely set out the council's documentary material relating to the event. These documents form part of Exhibit C17.

⁷ The letter appears in its entirety as part of Exhibit C17

⁸ Exhibit C17

- 5.2. The first document is an internal City of Burnside form entitled City of Burnside Customer Request Action Form. It has a request number - 1092515. This corresponds with the reference in the letter from John Draper to Brevet Sergeant Lovell above. The form is dated and timed at 6/08/2009 3:16 PM. It gives the location as Strathspey Avenue, Hazelwood Park. I set out the pertinent parts of the form:

'Action: Trees – Fallen / Hanging Limbs / Branches - Large

Request Details:

Large branch hanging out of tree (still attached) opposite Hazelwood Park near Strathspey. Reported by Davi at CFS and also Ben.

Rang through to Craig. The Arb team are already aware of it.

Completed By Craig Wadham 20.08.09

Removed damaged trees and pruned Grey box over road. No further action at this stage.

Date of call/incident: 6/08/2009 3:15:08 PM'

- 5.3. The second internal document is an email from John Draper to Craig Wadham dated 19 August 2009. I set it out in full:

From: John Draper
Sent: Wednesday, 19 August 2009 11:30 AM
To: Craig Wadham
Subject: Greenhill Rd - Grey Box Gum

Craig

I don't think you need to do any work on the Grey Box gum that let go of a large lateral last week. I would prefer to wait and let the tree develop some good regrowth shoots around the split out and when the shoots have developed we can then clean up the split if necessary.

When you prune the Moreton Bay Fig take with you a bottle of 'metho' when you guys prune the tree you swab the cut with the metho it dries out the sap and spreads it across the cut face and slows it down from dripping constantly.

Thanks'⁹

6. The failure of the northern leader on 9 January 2010

- 6.1. The extensive photographic evidence received at the Inquest shows that the part of the northern leader which failed and landed on Ms Jolly's car was a very large piece of wood. It appears in the photographs comprising Exhibit C17a. In particular,

⁹ Exhibit C17, page 25

photograph 7 in that bundle gives a very good indication that the timber which fell was extremely heavy.



- 6.2. The evidence was that the leader, when it finally made contact with the road after hitting Ms Jolly's car, produced a significant gouge mark in the bitumen of the road surface. This is indicative of the weight involved. Furthermore, the photographs reveal that Ms Jolly's Ford Laser sedan sustained very severe damage where the timber landed on the roof of the vehicle. On any view the timber dropped after the branch failure was extremely heavy and large. It was to be expected that if it landed on a person or a vehicle, severe damage would result. Although Ms Jolly's car continued to travel after the timber had bounced off its roof and subsequently collided with a fence and some cars on the opposite side of the road, there can be little doubt that the fatal head injuries sustained by Ms Jolly resulted from the impact of the falling branch. This is evident from the vertical damage to the roof of the car, evident in the photographs referred to above and the relative lack of damage to the front of the vehicle where it impacted on the fence and other vehicles when it came to rest. There was never any suggestion during the course of the evidence that the fatal injuries were not inflicted by the fallen branch. Any suggestion that the fatal injuries occurred not

as a result of the contact with the fallen branch, but as a result of the subsequent collision with the objects on the other side of Greenhill Road can be rejected.

7. City of Burnside's tree management policies

- 7.1. Mr John Draper developed, over a 3 year period, the council's tree management strategy which was current as at January 2010. The strategy was endorsed by council during the financial year 2006/2007 and followed a community consultation process that included comment by numerous persons internal and external to the City of Burnside, professional associations, the Local Government Association Mutual Liability Scheme and public workshops and presentations¹⁰.
- 7.2. Mr Draper is the Acting Manager, Open Space and Environment with the City of Burnside. He stated that the City of Burnside is responsible for the management of approximately 27,000 street trees and more than 20,000 trees in parks, reserves and public road reserves. The council allocated approximately \$1 million annually towards public tree management in 2011. The budget covered staff resources, machinery, contract tree pruning, tree planting and watering and stump removal. Trees account for approximately 20% of the Operation Services Department budget. That department is resourced by ten staff members. The arboriculture department is one of only a few South Australian local government authorities with staff trained to a minimum Australian Qualification Framework Level 3 standard with senior staff and team leaders trained to achieve the AQF 4/5 level. According to Mr Draper, this is well above the State Local Government Association average for field staff experience and training levels. Since 2008 the council has allocated funds for the training of all field staff to level 4/5.
- 7.3. In his witness statement¹¹, Mr Draper acknowledged that tree management in the City of Burnside is reactive in the sense that council responds to reported incidents. However, there are scheduled pruning regimes for planted street trees but for large remnant trees growing in parks and reserves, the council does not conduct preventative maintenance¹². It reacts to resident enquiries or large tree limb failures

¹⁰ Exhibit C28, paragraph 2.3

¹¹ Exhibit C28

¹² The subject tree is of course a 'remnant' tree

that may precipitate further inspection and maintenance. Importantly, in paragraph 3.4 of his statement, Mr Draper says:

'The proactive management of large trees after such an incident involves Council undertaking an assessment of the individual tree and adjacent trees that may exhibit similar structural issues that precipitated the incident that was reported.'¹³

This policy evolved following the adoption of the tree management strategy¹⁴ and is now part of the council's general approach. It was the policy that was in existence as at January 2010 and, I infer, in August 2009. The tree management strategy document is annexed to Mr Draper's statement¹⁵. It is a comprehensive document. The following statement appears under the heading 'Key recommendations' at page v:

'10. REMNANT TREE PRUNING

Current resources are inadequate for the appropriate management of Council-owned remnant tree stocks. Additional resources may need to be committed to this area of tree management to adequately care for the ageing remnant tree population. It is intended to create a database of remnant trees growing within the road reserve, detailing structural deficiencies, maintenance requirements, and a management plan that indicates what resources are required to minimise risk and promote good health.'

- 7.4. Mr Draper in his oral evidence referred to a further document entitled 'Tree Risk Management Protocols' which was admitted as Exhibit C28a. The following appears in that document under the heading 'Limitations of Protocols':

'In the case of Council's management of risk the question is what is reasonable. It is considered unreasonable to expect Council to undertake tree management on every tree growing within a Council reserve when there are finite and competing resources dedicated to all functions of Council.

If absolute safety from tree failure were achievable, society would almost certainly find the cost in terms of tree losses unacceptable. To manage old trees and their younger successors responsibly with regard both to safety and their value, there is a need to quantify tree failure hazards and any associated risk so that the risk can be kept within acceptable or reasonable limits.

It is therefore reasonable to expect that Council will create a system or management plan/protocol that minimises risks associated with trees where possible.'

- 7.5. Mr Draper stated that the vast majority of Local Government authorities work on a similar basis to that adopted by the City of Burnside. Support for this contention is to

¹³ Exhibit C28, paragraph 3.4

¹⁴ 2006/2007

¹⁵ Exhibit C28

be found in the Independent Inquiry into Management of Trees on Public Land¹⁶, an enquiry undertaken at the instigation of the Local Government Association and the Local Government Association Mutual Liability Scheme. I will return to that document later.

7.6. Mr Draper summarises council's position as follows at 3.7 of Exhibit C28:

'Council is responsible for over 50,000 'trees', the ability to appropriately inspect and assess every tree under Council care and control is extremely difficult. Trees are living dynamic structures that evolve and develop in response to a vast array of factors. The ability to undertake a risk assessment of large scale populations remains a challenge. It is simply not practically or financially possible to carry out aerial visual inspections of all the large remnant trees on Council road reserves. Even if that were to occur a tree which had passed such an inspection might unexpectedly drop a limb not long afterwards. **The balance which is attempted to minimise the risk of harm from branch failures is to take advantage of callouts which require elevated work platforms or climbing with rope and harness to inspect adjacent trees as well as the one which might have been the subject of specific work.**'¹⁷

8. Independent Inquiry into Management of Trees on Public Land

8.1. This report was prepared at the instigation of the Local Government Association and the Local Government Association Mutual Liability Scheme. The report was delivered in March 2010 and a copy of it was admitted into evidence¹⁸. The report states at paragraph 7.3:

'Currently, the majority of councils apply a mostly reactive approach to risk management in existing trees. This involves responding to reports of unsafe trees from the public, incidental observations made by council staff carrying out other duties, and through clean-up operations following major storm events.'

8.2. This statement corresponds with the evidence of Mr Draper as to the approach adopted by the majority of Local Government Authorities in South Australia. I also note that the report recommends that each council develops a formal tree management policy. The report notes that tree management policies have been developed by a number of councils in South Australia and interstate, and cites as the only example of a South Australian council to have done so, the City of Burnside. This in itself is a

¹⁶ Exhibit C37

¹⁷ When Mr Draper refers in that passage to 'aerial visual inspections', I understand him to be referring to visual inspections of tree canopies conducted using elevated work platforms or climbing the tree with rope and harness. It is not intended to be a reference to inspections carried out from aircraft. Emboldened passage is my emphasis.

¹⁸ Exhibit C37

reflection of the appropriateness of the tree management policy that existed within the City of Burnside at the relevant time.

- 8.3. It is notable that the report recommends that councils adopt a proactive approach to managing the risk in existing trees. The report defines proactive tree risk management as comprising five elements, namely the establishment of a register of priority trees, assessing tree failure risk, identifying actions to manage risk, establishing and following a program to implement the actions and ongoing tree surveillance and maintenance of the tree register.
- 8.4. I understand that as of the date of the Inquest, the Local Government Association had not decided what to do in response to the report. As at March 2011, the Association was continuing with public consultation¹⁹.
- 8.5. The City of Burnside made submissions to the Inquiry in relation to what were then draft recommendations. The council's submission dealt specifically with the recommendation for a proactive approach to tree management. The submission²⁰ stated that the council regards proactive tree management as a goal to be strived for. However, it notes that the matter needs to be looked at in the context of the resources available to council and the lack of suitably qualified arboricultural experts. The response may be summarised as supportive, but noting that a proactive approach to tree management will require additional resources.

9. The incident on 6 August 2009

- 9.1. I have already set out the council's internal documentation about this incident. I have also set out the relevant parts of the letter from John Draper to Brevet Sergeant Lovell in which Mr Draper refers to his understanding of what occurred on that occasion. It is now necessary to consider the oral evidence.
- 9.2. The key witness in this regard was Mr Draper. I think it is fair to say that on reading the letter from Mr Draper to Brevet Sergeant Lovell, one would conclude that the focus of the council's attendance at the site on 6 August 2009 was the subject tree, albeit that there was some involvement with the smaller adjacent tree. However, in Mr Draper's witness statement²¹, he states that he attended at the location of the tree

¹⁹ Exhibit C37a

²⁰ Exhibit C37b

²¹ Exhibit C28

on that day, prior to any work being done by the council tree crew. In paragraph 7.3 of his statement he says that when he attended he observed that there had been a major failure in the smaller grey box – in other words, the adjacent grey box tree. He said that the failure was not in the subject tree. He did say that the subject tree had lost a limb which he estimated to have been approximately 150mm in diameter and approximately 5 metres in length. That branch was hanging in the canopy of the subject tree when Mr Draper arrived. He also said that the whole of the upper section of the adjacent grey box tree had failed at a height of approximately 8 to 10 metres above the ground. The upper part of the tree had broken off and fallen to the ground, but it was still attached by bark or other material at the failure point and had wedged itself between that point and the ground, just below the point at which the tree had broken. He estimated that the diameter of the trunk at the failure point was 300 to 400mm.

- 9.3. The significance of this evidence is that a major issue in this Inquest has been to determine the date on which the southern leader of the subject tree failed. An obvious theory, and one pressed hard by counsel for Ms Jolly's family, was that the failure occurred on 6 August 2009. Certainly the only records held by the council that refer to any work at all done on the subject tree or trees in the vicinity, is the correspondence cited above relating to the attendance on 6 August 2009. The significance is that if the southern leader of the subject tree had failed on 6 August 2009, then, so the theory would go, any reasonable arborist inspecting the tree at that time would have been duty bound to consider not just the failure of the southern leader, but to consider the tree as a whole, and particularly to consider the risks posed by the northern leader. The failure of the southern leader in itself would be an indication that the corresponding leader on the other side of the tree, namely the northern leader, required close scrutiny to ascertain whether it was at similar risk of failure. Indeed, the need for scrutiny would be heightened by the fact that the northern leader extended well over Greenhill Road, down which thousands of motor vehicles travelled each day. I think that it is beyond contention – and no one suggested to the contrary – that had the southern leader failed on 6 August 2009, it would have been incumbent upon the council's arborists and other employees to make a close inspection of the northern leader. Had they done so, it is almost inevitable that they would have formed the opinion that the northern leader was itself at risk of failure, and taken steps either on that day or very soon thereafter to have removed

most if not all of the northern leader, thus rendering it safe. Obviously if that had occurred, the northern leader would not have been present on 9 January 2010 and would not have fallen upon Ms Jolly. For this reason, the need to closely examine the events of 6 August 2009 is clearly apparent.

- 9.4. Mr Draper made it quite clear in his statement²² that both the northern leader and southern leader of the subject tree were present when he attended the site on 6 August 2009. The 150mm diameter branch, which he referred to as having come from the subject tree, was in fact a branch that had come off the southern leader itself.
- 9.5. Mr Draper said in his statement that the email he forwarded to Craig Wadham - Mr Wadham is the Team Leader, Arboricultural Unit employed by the City of Burnside - on 19 August 2009 was in fact referring to the adjacent tree and not the subject tree when it stated his view that there was no need for any further work in relation to 'the grey box gum that let go of a large lateral last week'. That email was written because a tree crew was to be working in that general area with an elevated work platform. The work that was to be done at that time was work on the Moreton Bay Fig trees further east on Greenhill Road. Mr Wadham had apparently enquired of Mr Draper whether the opportunity should be taken, in light of the availability of an elevated platform, to do any further work on the trees at the corner of Strathspey Avenue and Greenhill Road.
- 9.6. One could be forgiven for thinking that the words 'the grey box gum that let go of a large lateral last week' are not apt to refer to a grey box gum whose main trunk fractured such that the tree was effectively broken in half, approximately mid height. That is because the main trunk of a tree hardly seems to fit the description of a 'large lateral' of that tree. Against this, it needs to be noted that the adjacent grey box was very poorly shaped in its habit of growth. The adjacent grey box had a marked deviation in the trunk some 1 or 2 metres below the point at which it fractured. That deviation was some 30° or more from the general direction of the trunk below the point of deviation. After the point of deviation the tree continued some further distance of approximately 7 to 8 metres with a considerable canopy. In the sense that the tree was not vertical at the point of fracture, but was angled from the main trunk below the point of deviation I have referred to in a significant way, one might be excused to some extent for considering it to be a defacto 'lateral' even though it is a

continuation of the main trunk. That, it seems to me, is the only explanation I can think of for the employment of the language 'large lateral' in referring to what was a continuation of the trunk of the adjacent tree.

- 9.7. I note that, importantly, the adjacent grey box did exhibit, in January 2010, clear evidence that it had fractured at some earlier time in the manner described by Mr Draper. In that sense, there was corroboration for his contention.
- 9.8. The matter is further complicated by the terms in which Mr Draper expressed himself when he wrote to Brevet Sergeant Lovell in January 2010. It will be recalled that the letter stated in paragraph 4 that a section of 'the tree' failed and brought down small branches and some trunk sections of the 'smaller adjacent tree'. The letter goes on to say that there was a branch that still remained attached in the crown and posed a potential risk of failing. The reference in this paragraph to the tree appears to be a reference to the subject tree. It appears to be a reference to a failure in the subject tree which brought down 'some trunk sections' of the smaller adjacent tree. Thus, so it would appear on this reading of the letter, there was a failure in the subject tree of sufficient proportions to cause a major failure in the smaller adjacent tree.
- 9.9. It was never seriously suggested that the 150mm branch that fell from the southern leader of the subject tree might have been causative of the damage to the adjacent smaller tree which I have described. As a matter of commonsense, that proposition can be ruled out. The mechanics of a failure of a limb of some 150mm from the southern leader of the subject tree would not be such as to be capable of causing a catastrophic failure of the trunk of the smaller adjacent tree. Furthermore, the evidence was that the branch from the southern leader was some 2 metres lower than the failure point of the adjacent grey box. Mr Draper, when making his statement, said that he could not give an opinion as to which had failed first, namely whether the smaller limb from the subject tree had failed before the failure of the adjacent tree or vice versa²³. Nevertheless, on giving his oral evidence he made it plain that it was his view that the failure of the smaller adjacent tree was more likely to have occurred first, and been causative of, the failure of the branch of the southern leader of the subject tree. On any view it seems to me to be inherently unlikely that the 150mm branch of the southern leader of the subject tree could possibly have been causative of

²² Exhibit C28

²³ Transcript, pages 397 and 481

the catastrophic failure in the adjacent smaller grey box. It should be remembered of course that the 150mm branch referred to by Mr Draper was destroyed and disposed of on or about 6 August 2009. It is not possible now to reconstruct events.

- 9.10. Mr Draper did not, in my opinion, do himself justice in some aspects of his oral evidence. For example, he demonstrated a reluctance to concede that there were obvious problems in the way he had expressed himself in the letter to Brevet Sergeant Lovell²⁴. Indeed, he demonstrated some reluctance to concede that the failure of the southern leader, when it occurred, would have been a significant event involving a lot of noise, a lot of foliage and a significant clean up job²⁵. In my view those things were obvious and should have been forthrightly conceded. After much cross-examination, Mr Draper finally conceded that in his letter to Brevet Sergeant Lovell he was not as clear as he should have been about ‘exactly individual specimens’ and that in the letter to Brevet Sergeant Lovell he had rolled both inspections, assessments and actions all into one statement and ‘therefore there is a confusion in the letter’²⁶. He ultimately acknowledged that he could not explain the terminology he had employed²⁷.
- 9.11. It was put to Mr Draper by counsel for Ms Jolly’s family that the reference in the email to Mr Wadham was a reference to the subject tree and Mr Draper rejected that contention²⁸. It was put to Mr Draper that he had innocently persuaded himself that the events of August 2009 were as described in his statement when in fact the true position was that the southern leader had been involved on that occasion. Mr Draper steadfastly refused to agree that that was the true position.
- 9.12. Another rather unsatisfactory aspect of Mr Draper’s evidence was that, while being pressed to explain how he expected Brevet Sergeant Lovell, to whom he supplied the email he had forwarded to Mr Wadham, to read that email as referring to the smaller adjacent grey box rather than the subject tree, he offered for the first time the information that he had made a follow-up phone call to Brevet Sergeant Lovell after despatching the letter to the latter on 25 January 2010²⁹. After some considerable cross-examination about what might have transpired in that telephone conversation

²⁴ Transcript, pages 426-427

²⁵ Transcript, page 432

²⁶ Transcript, pages 482, 484

²⁷ Transcript, page 485

²⁸ Transcript, page 646

²⁹ Transcript, page 662

with Brevet Sergeant Lovell, which occupies pages of transcript from 662 to 668, Mr Draper backed away from any positive suggestion that in his conversation with Brevet Sergeant Lovell he verbally explained what the true import of the email was.

- 9.13. Not without some misgiving, I have reached the conclusion that I should accept Mr Draper's evidence on this point. His evidence is supported by the statements of the other workers that attended on 6 August 2009 - Matthew Grant³⁰ and Paul Ryan³¹. Furthermore, the evidence is clear that there was only one record of attendance at the site of the subject tree in relation to a major limb failure, and that is the attendance that was closely analysed in the evidence of this Inquest. It was accepted by all parties that the Metropolitan Fire Service, the Country Fire Service, the State Emergency Service and the South Australia Police have all checked their records and found no record within any of those organisations of an attendance between August 2009 and January 2010, apart from the attendance on the night of the fatal accident. This means that if the southern leader was indeed present as asserted by Mr Draper on 6 August 2009, that 1) it must have failed sometime between that date and 9 January 2010 and 2) that there was no record within City of Burnside, nor any of the services referred to above, of any attendance to deal with what would have been a very significant piece of timber on the ground blocking the footpath and creating a significant amount of mayhem.
- 9.14. By the same token, if the contrary position is correct, and it was the southern leader that failed on 6 August 2009, the same difficulty remains, namely that there is no record of a failure of the main branch of the adjacent smaller grey box. It should be remembered that the diameter of the failure point of the smaller adjacent grey box was 300 to 400mm. The length of the trunk above the failure point was some 7 to 8 metres. There was a significant amount of foliage. On any view it was a significant event. Indeed, I think it is reasonable to suggest that the failure that occurred in the adjacent grey box was of a similar magnitude to the failure of the southern leader of the subject tree. The fact is, that only one of these failures is recorded in any official record of the council or any other authority. There is therefore no reason, based merely on an absence of a record of the failure of the southern leader, to assume that it was that branch which failed on 6 August 2009 and not the smaller adjacent grey box.

³⁰ Exhibit C32

³¹ Exhibit C34

10. What other inspections and assessments did Mr Draper undertake on 6 August 2009?

10.1. According to Mr Draper's version of events, which I have accepted, the question still remains whether, in light of the failure of the 150mm branch from the southern leader of the subject tree, it was necessary to carry out an inspection that would have revealed the weaknesses inherent in the northern leader of that tree. Mr Draper was asked what he did in relation to the subject tree. He said that he considered the failure of the 150mm branch and then looked in the general area of that failure for any other failures 'that may not actually be dislodged or may be cracked even'³². He said that that was the inspection that he did on that section of the tree and that 'so in a sense I did carry out that assessment and looked at the larger tree'³³. He said that when he looked again at the site on 19 August 2009 he was primarily looking at the adjacent grey box. The work on the subject tree, namely the removal of the 150mm limb and a pruning back to the point of origin of that limb, had already been undertaken. He was asked whether on that occasion he should have considered the angle of the lean and the position of the northern leader over Greenhill Road. He responded:

'I think in hindsight you would probably suggest that but that wasn't my primary focus at the time.'³⁴

10.2. Mr Draper gave evidence that on 6 August 2009 there was a machine called a hydra-ladder present to enable some work to be done above ground. He was asked why no one took the opportunity to inspect the larger grey box using the hydra-ladder. He responded:

'A. I can't explain why the opportunity wasn't taken but as I've said, the inspection that I undertook from the ground to identify any other failure points, was centred on the southern side of the tree and that really sort of directed the focus of attention at that time given the late hour and whatever, so –

Q. Didn't you look around on the northern side of the tree.

A. It would have been a cursory examination.'³⁵

³² Transcript, page 453

³³ Transcript, page 453

³⁴ Transcript, page 468

³⁵ Transcript, page 495

- 10.3. Finally, Mr Draper repeated that his primary focus was on the southern side of the tree³⁶ and when asked if he accepted that his assessment was not a proper assessment, he responded:

'It probably could have been more detailed.'³⁷

However, in re-examination Mr Draper was asked the following questions and gave the following answers:

'Q. ... When you answered that question were you answering that question in the knowledge of the fact that the southern leader had failed after your August assessment or imagining yourself in the position that you were in, on 6 August when the southern leader was intact.

A. I think my answer was that knowing the outcome and the failure of the tree in 2010 that my examination of the tree in 2009 should have been more extensive. So I ultimately know the end result and the issues that have arisen with the tree, and in recognising that and knowing the outcome my inspection of the tree in 2010 should have been more extensive.

Q. What about if you take out of your mind your knowledge of the fact that the tree did fail producing this incident. What's your view about the adequacy of your assessment as at August 2009.

A. My inspection in 2009 was adequate because I knew where the failure had occurred, what we needed to do with the failure on the southern side of the tree and at that time I considered the inspection that I had undertaken appropriate.'³⁸

- 10.4. It is most unfortunate that neither Mr Draper nor any other council officer took the opportunity in August 2009 to consider the northern leader and the risk that it presented in overhanging Greenhill Road.

- 10.5. In conclusion, so far as Mr Draper's evidence is concerned, I accept his version as to what actually occurred on 6 August 2009, namely that the major failure that occurred on that occasion was a failure of the adjacent smaller grey box and not a major failure in the subject tree. The failure in the subject tree of a 150mm diameter branch could, in the context of the overall size of the tree, be described as minor. In that sense the integrity of the structure of the tree had clearly not been affected by the failure of the adjacent grey box. The damage was relatively minor and of itself probably did not mandate that Mr Draper inspect the whole of the subject tree on that occasion. However, it is another question whether, having regard to the council's own protocols

³⁶ Transcript, page 496

³⁷ Transcript, page 497

³⁸ Transcript, pages 778-779

for managing remnant trees, the opportunity to inspect the whole of the tree should nevertheless have been taken.

11. The expert evidence

- 11.1. Three experts gave evidence at the Inquest. They were Mr Kym Knight, consulting arborist, Mr Marcus Lodge, consulting arborist and Mr Colin Thornton, arboricultural consultant. The last of these carried out a more limited assessment of the subject tree than the other two, having been asked by the City of Burnside to assess the tree for the purposes of a proposal for the removal of the tree after the failure resulting in Ms Jolly's death. As a consequence, Mr Thornton did not carry out the exercise purportedly carried out by the other two experts, namely to put himself in the position of an arborist inspecting the tree at sometime prior to 9 January 2010, with a view to assessing the likelihood of the tree failing. However, Mr Thornton commented on the issues raised by such an exercise. Each of the other two experts carried out a QTRA in relation to the tree. A QTRA is a Quantified Tree Risk Assessment which purports to apply a formula to arrive at what is described as a risk of harm and is expressed as a mathematical probability. Using this formula, Mr Lodge arrived at a risk of harm figure of 1 in 935. Under the QTRA process a risk of harm of 1 in 10,000 is considered to be acceptable. Anything less is in the range of unacceptability and a probability of 1 in 935 is well within the range of unacceptable risk. Mr Knight applied the same formula and reached a risk of harm calculated as a probability of 1 in 187. For his part, Mr Thornton did not carry out a QTRA at all. Mr Thornton was firmly of the view that the carrying out of a QTRA after the tree had failed in some way, with a view to determining what the probability of that failure occurring would have been had an assessment been carried out at some earlier time, was a very difficult process. He was asked if he would ever do a QTRA retrospectively, and answered in the negative. His explanation was as follows:

'Because the idea of a QTRA is to assess the tree. If the tree has gone, I don't see how you can assess that section of the tree that has gone and that's my main issue with doing a risk assessment on something that's not there anymore.'³⁹

The other experts accepted that it was possible to do a retrospective QTRA but acknowledged that in doing so, it was imperative to put out of one's mind the knowledge that a failure had in fact occurred, and to place oneself in the position of

³⁹ Transcript, page 320

observing the tree as it existed before the occurrence of the failure and with no knowledge of what was about to transpire.

- 11.2. A considerable amount of evidence was devoted to the nature of the QTRA process and its reliability. For his part, Mr Thornton gave evidence that he no longer uses it, although he was trained in it and licensed to use it for some time. The other two experts remain devoted to the QTRA process and continue to be licensed to use it.
- 11.3. My attention was drawn to two decisions of the Environment, Resources and Development Court⁴⁰ in which the application of the QTRA system has been rejected as a result of concerns about the sensitivity of the methodology to underlying assumptions about the probability of limb failure and the diameter of limbs likely to fail.
- 11.4. Clearly, there is significant difficulty in applying a mathematical system to a dynamic living structure such as a tree. The difficulty is apparent even in the divergence of opinion between Mr Knight and Mr Lodge as to the risk of failure to be assigned to the subject tree in their respective assessments. On the other hand, I can understand the potential utility of a process which applies a standardised approach to the assessment of risk of failure. In the process upon which I am engaged, namely ascertaining as far as practicable the cause and circumstances of Ms Jolly's death, I need not determine one way or the other whether the QTRA system should be accepted or rejected. No doubt it has its limitations; on the other hand it may serve as a useful guide in conjunction with other methods of assessing risk. In that respect, I note that in his report⁴¹ Mr Knight stated that he used two methods of assessing risk, the primary method being a visual tree assessment that examines tree structure and health to determine if abnormalities are present and the likelihood of failure and, secondly, the QTRA system.
- 11.5. On any view, it is absolutely clear that there is an inherent difficulty in making an assessment of the risk of failure of a tree after the tree has already failed and the dropped branches have been disposed of in one way or another. In the present case, we know that the southern leader of the subject tree came down sometime between August 2009 and 9 January 2010. I have accepted that it was present at those times in

⁴⁰ Lacey v City of Burnside [2008] SAERDC 75 (upheld on appeal in Lacey v City of Burnside [2009] SASC 136), and Goode v City of Burnside [2007] SAERDC 5

⁴¹ Exhibit C26, page 13

August 2009 when Mr Draper had occasion to visit the site⁴². I accept therefore that any assessment carried out by Mr Draper in August 2009 would have involved an assessment of the tree with the southern leader present. Once the southern leader was gone it would necessarily become much more problematic to purportedly assess the tree on the basis that it was present. Mr Lodge and Mr Knight both had to carry out that exercise for the purposes of their evidence. The matter was further complicated by the fact that it would appear that at least Mr Knight's report⁴³ was carried out at a notional time prior to 9 January 2010 when the southern leader was not present. This did not prevent Mr Knight, when giving his oral evidence, from expressing an opinion as to the nature of such an assessment if made at an earlier time when the southern leader was present.

11.6. Mr Knight expressed the opinion that the exercise of assessing the tree in the presence of the southern leader would not be significantly different from such an exercise in the absence of the southern leader⁴⁴. In expressing that opinion, Mr Knight stated that there were already other failures in the tree, including the 150mm diameter branch that had come off the southern leader⁴⁵. He said that the tree had therefore suffered 'failures', whether the southern leader was present or not. In this respect Mr Knight categorised the damage to the 150mm branch as a 'failure'. On the conclusions I have drawn about the events of August 2009, it seems to me inappropriate to regard the damage to that particular branch as a 'failure', given that it was most probably occasioned by an impact from the falling upper half of the adjacent grey box.

11.7. In many ways Mr Knight was inclined to be unwilling to make concessions. He was something of an advocate for the position that the subject tree was obviously unsafe on any footing. For example, he agreed with the proposition that a reasonable QTRA may not involve a detailed inspection of every part of a tree⁴⁶. Yet he said this:

'Now in this tree the part most likely to fail and certainly the part that posed the most greatest (sic) risk to the public was the branch that was over the road. It was always the obvious target for a QTRA assessment.'⁴⁷

In that passage Mr Knight shows a lack of objectivity.

⁴² On 6 August 2009 and on or about 19 August 2009 respectively

⁴³ Exhibit C26

⁴⁴ Transcript, page 562

⁴⁵ Transcript, page 562

⁴⁶ Transcript, page 557

⁴⁷ Transcript, page 558

- 11.8. Furthermore, Mr Knight showed himself to be at odds with the generally accepted approach to tree management within the local government sphere when he stated that ‘managing trees on a reactive basis is not an appropriate way to manage a tree population’⁴⁸. It will be recalled that the Independent Inquiry into Management of Trees on Public Land⁴⁹ found that councils in general take a reactive approach to tree risk management. True it is that the inquiry recommended a change in this approach. That recommendation continued to be the subject of consultation at the time of the Inquest. However, the apparently overwhelming opinion within the local government community about the appropriate approach to tree management cannot be lightly dismissed in the manner adopted by Mr Knight. The matter is far more complex.
- 11.9. In summary, I did not find the expert evidence particularly helpful. It certainly was useful to know about the QTRA system and its limitations. The many photographs introduced through the experts were interesting. But I have concluded that the case revolves around the events of August 2009 and whether the City of Burnside applied its own stated policies to those events.

12. What should have occurred as a result of the various attendances at the site in August 2009

- 12.1. Mr Draper gave evidence that his primary focus when he attended the site in August 2009 was the adjacent grey box and the southern side of the subject grey box. I have set out the relevant passages of his evidence earlier.
- 12.2. Not without some hesitation, I have concluded that even when one dismisses from one’s mind the benefit of hindsight, it would have been appropriate for Mr Draper to have carried out a more extensive assessment of the subject tree in August 2009. At one stage in his evidence he noted the lateness of the hour on the occasion of 6 August 2009. However, he had a further opportunity to review the position on or about 19 August 2009 and it would be unlikely that a similar sense of pressure would have been experienced on that occasion.

⁴⁸ Transcript, page 603

⁴⁹ Exhibit C37

- 12.3. In Mr Draper's statement he noted the immensity of the task of proactively managing all of the trees in the City of Burnside area. For example, he stated:

'Council is responsible for over 50,000 trees, the ability to appropriately inspect and assess every tree under council care and control is extremely difficult.'⁵⁰

He stated that the City of Burnside deals with tree maintenance for remnant trees on a reactive basis and added:

'The potential management of individual or stands of trees has been in response to resident enquiries or large tree limb failures that may precipitate further inspection and maintenance. The proactive management of large trees after such an incident involves council undertaking an assessment of the individual tree and adjacent trees that may exhibit similar structural issues that precipitated the incident that was reported. This management regime has slowly evolved since the development of the strategy (2006/07)⁵¹ and now forms a standard work method in undertaking tree inspections and assessments within the majority of the council's open space network. It was the management regime that was in existence at the time of the incident which is the subject of this Inquest.'⁵²

And later:

'The balance which is attempted to minimise the risk of harm from branch failures is to take advantage of callouts which require elevated work platforms or climbing with rope and harness to inspect adjacent trees as well as the one which might have been the subject of specific work.'⁵³

- 12.4. The fact is that in August 2009 there was to be work done by a tree crew in the general area of the subject tree using elevated work platforms and there was a specific consideration of whether further work should be done using an elevated work platform in relation to the adjacent grey box. In my opinion, consistent with Mr Draper's description of the management regime which was in existence at the time, it would have been reasonable to expect that either, on 6 August 2009 or later on or about 19 August 2009, the opportunity would have been taken to closely consider the whole of the subject tree and not just the southern part which was the subject of focus on 6 August 2009. Had a thorough consideration been given at that time to the whole of the subject tree, and in particular to the northern leader and the extent to which it overreached Greenhill Road, I consider it likely that the opportunity would have been taken for the elevated work platform, which was in the immediate vicinity for the

⁵⁰ Exhibit C28, paragraph 3.7

⁵¹ This is a reference to the Tree Management Strategy

⁵² Exhibit C28, paragraph 3.4

⁵³ Exhibit C28, paragraph 3.7

purposes of working on the Moreton Bay Figs⁵⁴, to have been deployed to inspect more closely the fork between the northern and southern leaders. Had that occurred, I think it very likely that the northern leader would have been regarded as being at risk of failure. That in turn would have precipitated steps which, had they been taken in August 2009, would have meant that the northern leader was not present in January 2010.

- 12.5. This conclusion is consistent with paragraph 3.4 of Mr Draper's witness statement⁵⁵ which I have already quoted. This conclusion fits with the stated policy that after a large limb failure, council's policy was to undertake 'an assessment of the individual tree and adjacent trees that may exhibit similar structural issues'⁵⁶. It also fits with Mr Draper's evidence that council's approach

'... is to take advantage of callouts which require elevated work platforms or climbing rope and harness to inspect adjacent trees as well as the one which might have been the subject of specific work.'⁵⁷

- 12.6. There was a hydalift present on 6 August 2009. It was high enough to enable the pruning back of the failed 150mm branch of the southern leader. It would therefore have permitted a proper and thorough 'aerial' inspection of the junction of the northern and southern leaders. Mr Draper's evidence was that, if an aerial inspection had been conducted at that time of the junction, decay would have been evident⁵⁸ and he said:

'You'd have to have very good reason not to do work.'⁵⁹

Mr Draper acknowledged that the callout on 6 August 2009 was an occasion that provided an example of what he was describing in paragraph 3.4 of his statement⁶⁰.

- 12.7. This conclusion is also supported by the evidence of Mr Wadham:

'Q. I think you said but just so to be clear that we get into context, this proactive assessment is if you were called out to a failure, say a limb failure, say a major limb failure or large limb failure and that required you for example to get up and do some pruning work or work on the tree where there had been a limb failure.

⁵⁴ Within 200 or 300 metres of the intersection of Strathspey Avenue and Greenhill Road

⁵⁵ Exhibit C28

⁵⁶ Exhibit C28, paragraph 3.4

⁵⁷ Exhibit C28, paragraph 3.7

⁵⁸ Transcript, page 463

⁵⁹ Transcript, page 463

⁶⁰ Transcript, pages 378-379

A. Yes.

Q. Is that also an occasion when you take the opportunity of doing an assessment of the tree and its neighbours.

A. Absolutely.'

12.8. In those circumstances it is my opinion that Ms Jolly's tragic death was preventable. In reaching that conclusion, I do acknowledge the immense difficulties posed in the management of remnant trees in the Adelaide metropolitan area. I would not wish it to be thought that I would expect councils to carry out individual inspections of every tree within their area, and not even every tree that overhangs a road. However, the difference in this case is that a major event occurred which provided the opportunity for attention to be given to the subject tree. That opportunity was the failure of the adjacent grey box and the relatively minor damage to the southern part of the subject tree. If, in accordance with the management regime described by Mr Draper⁶¹, the opportunity had indeed been taken to undertake an assessment not only of the adjacent grey box but trees adjacent to that tree, including the subject tree, the subject tree would have come under a proper process of assessment. Thus, there was an occasion for the council, through its staff, to have its attention drawn to the subject tree. The subject tree is in a different category from a notional tree which fails in the metropolitan area unexpectedly, and in circumstances where the local council has not had occasion in the relatively recent past to inspect that tree, or trees in its vicinity.

13. **Recommendations**

13.1. In view of the process of review that has commenced following the Inquiry into Management of Trees on Public Land⁶², I do not propose to make any recommendations.

13.2. The Adelaide metropolitan area, and not merely the council area of the City of Burnside, has many examples of very large gum trees overhanging roads. Some roads are busier than others but it is not difficult to find plenty of examples within metropolitan Adelaide of gum trees overhanging roads and houses to an extent that causes disquiet, if not alarm. It is difficult to see how the risk can be eliminated entirely without the wholesale destruction of Adelaide's treescape. In any event, a considerable body of work has been undertaken by the Independent Inquiry into

⁶¹ Exhibit C28, paragraph 3.4

⁶² Exhibit C37

Management of Trees on Public Land⁶³. Considerable work has been done within the City of Burnside with its tree management strategy and associated protocols. I assume that similar strategies may be found in the records of other Local Government Authorities. It is clear that efforts are being made and that, within the limits of the resources available, the people responsible for this area of public administration are genuinely attempting to manage a very difficult situation.

- 13.3. It is impractical to expect that every single tree in metropolitan Adelaide will be individually inspected and assessed. It is probably impractical to expect even that, within existing resources, every tree that might pose a risk if it failed will be so inspected. Of course, when a risk has been drawn to a local authorities' attention, then it is incumbent upon that authority to carry out a complete inspection of that risk in accordance with generally accepted standards.

Key Words: Council Maintenance; Falling/Overhanging Trees/Branches

In witness whereof the said Coroner has hereunto set and subscribed his hand and

Seal the 10th day of May, 2012.

State Coroner

Inquest Number 33/2011 (0052/2010)

⁶³ Exhibit C37