**From:** Roger Underwood **Subject:** Checking a tower site

Below is an Interesting story and  attached photo from retired Qld forester Ray Robinson about testing potential tower sites. I always had a good head for heights, and climbed a lot of trees, but this wireless tower looks pretty hairy to me.

My only experience of testing a site for a potential lookout was when I was DFO  at Pemberton in about 1970. Not long after Gardner Tree was condemned I was asked by my boss Steve Quain to try to find a new tower site to the west of Pemberton. This was at the height of the Vietnam War, and the SAS used to come down to the karri country every year for training operations.  I had a good relationship with the Colonel and used to provide them with a camp site in State forest and various other assistance. They had an RAAF helicopter with them and I decided to see if I could use this to examine a potential tower site Len Nicol and I had identified on the Channybearup Road.

All was arranged, the helicopter arrived at the appointed time, landing in the paddock next to DHQ. I had to sign a form that absolved the RAAF of any responsibility if I was killed on the flight, and then off we went, choppering out over the town, the farms at West Pemberton and Big Brook forest. Although I had done plenty of flying on aerial burns, the chopper was a different experience – not far above the tree tops, excellent visibility and slow and steady. I found it enthralling.

We found the spot easily-enough, it was a prominent hill, although clothed completely in karri forest. I was in contact with the pilot over the intercom, and I sat on the floor at an open door, attached by safety harness to something inside. I had the Pemberton 80 map on my knees and a compass to sight through.  The pilot took it down to just above the tree tops and then did a slow 360 on the one spot, while I took bearings to the nearest horizons and tried to estimate distances.  This took several minutes. It was a remarkable demonstration of the capacity of the machine and skill of the operator.

Eventually I had what I wanted, and gave the pilot the OK to head for home.  Before doing so, however, we had another little job. The Colonel had come along for the ride, and he directed the chopper down to the Yeagarup Dunes where he wanted to test the ground for a potential parachute drop of his troops.  We arrived over the dunes and he asked the pilot to hover about 15-20 feet from the ground .... and then he leapt out! He landed neatly on the sand, stomped about a bit to test it, then called the chopper down, boarded it and we headed for home.

After we landed I had a chat with the pilot, thanking him for his help. “That was about the most dangerous thing I have ever done in a chopper” he remarked, “normally I would never do that, because of the risk of sudden downdraft or loss of power – we would have been goners”. This guy had flown several missions in Vietnam, and was very serious about staying alive. I would have been worried, had I not been young and believed myself indestructible in those days.

The tower site did not prove to be ideal, with quite restricted horizons in two important directions, and the knowledge that we would have to clear a large area of forest and build a very tall tower (we had already done that with the replacement of Beard Tree, but didn’t want to do it again). And within a year or so we had started using spotter aircraft, meaning no new lookout was needed.

So it was a wasted exercise, ....but a memorable experience.

R

**From:** John Evans **Subject:** RE: Checking a tower site

Jock Smart asked me to select a suitable tree for the Bicentennial Celebrations in 88.

After a close look at virgin karri high in the land profile, Warren Nat Park was the initial target, so after a drive around and some walking (thru 25+ YO fuels/scrub) only one was found to be (probably) really suitable.

Jock, Gordon and I checked it but it needed to be checked from the air to identify any serious damage in the crown/upper bole (most of the trees had past fire damaged crowns), so a chopper was organised.

The doors were taken off so I could lean out and do a close inspection of the tree (and other possible) and take pics.

Pilot was ex RAN, and he DIDN’T like hovering over the forest whilst I took the pics (he was white when we landed).

Tree turned out to be OK, but still had to be climbed (ladders up the bole to the crown) and inspected (some hairy moments whilst branches were measured, drawings made, pics taken etc). I had to determine if a steel framework thru and above the crown could be prefabricated. A lot of wriggling along branches, throwing ropes around forks etc.

As Barney said, a prehensile member was very handy 50+m above the ground.

None of the riggers would use a chainsaw so muggins had to do cuts whilst laying on ladders etc.

Lucky Worksafe weren’t around.

Upper floor ended up 68.8m.

John

**From:** Roger Underwood

All of the WA tree lookouts were constructed with a double ring of pegs – you climbed on one set, the others were behind you. There was a lacing of  cross-braced wire between the two – see pic of Pembi Office Tree attached. The climbing pegs alternated between a wooden and a steel peg, but all of the back pegs were metal (they were hammered in, rather than inserted into holes bored with a hand-auger.

When an up-climber met a down-climber in my day, the normal thing was for one of them to move onto the back pegs while the other passed. The correct protocol was to offer to do so.

On one famous occasion I took a young man out to Gloucester Tree. He had been recruited as our lookoutman for the summer over the counter in Head office, and come down on the bus. I would always take the new towermen up the tree on their first climb to get their training started. I headed up and he followed. We got about 50 feet from the ground, which is the point at which you start to feel the tree moving, the swaying in the breeze. The poor guy froze solid and would not go up or down. I had to come back, climb out around him on the back pegs, and then get him down. This was extremely difficult because he had a death grip with his hands, his knees were wobbling and his legs jelly-like.

Eventually I got him down, one laborious step at a time, took nearly half an hour. We drove straight back to the bus depot and he caught the afternoon bus back to Perth.

I had a similar experience with a towerman recruit at Gardner Tree. He also panicked at about the 50 foot mark, but at least he could get himself back to earth, where he promptly gave me his resignation.

R

**From:** Max Le Clercq **Subject:** Re: Checking a tower site

Hi Roger,

A couple of lovely stories! My wife will be delighted to learn she's made of sterner stuff than some of the alleged "tough guys" of the past.

It also clears up a question I had about whether that "back" row of pegs (see attached photo) was a regular thing, or just something they added in later years for the tourist trees to form the "cage" and try to make it all look a bit safer for we untrained tourist "novices". Good to know.

Being able to get off the main pegs completely and only have the weight of one person on them makes an awful lot of sense - even though I imagine they're easily rated for more than just the one person anyway.

Another question to satisfy my curiosity: The tourist trees (Diamond, Evans & Gloucester) that we've climbed all had what I'd call a "right-hand thread" to the pegs (i.e. the trunk is on your left-hand side as you ascend and descend) - were any trees "threaded" the other way, or was this just the standard?

I'm guessing with a majority of people being right-handed there may be ergonomic advantages for those who did all the drilling and hammering to be doing it where your dominant hand was able to do the serious part of the work, but I was wondering if there was anything more to it than that?

Max

**From:** John Evans **Subject:** RE: Checking a tower site

The direction of spiral of the pegs doesn’t matter so much, but where they enter the crown is critical.

The Diamond and Gloucester were already pegged so the alignment was fixed.

The Bi-tree was more difficult as it not only had to enter the crown at the correct place (and only one place was suitable) but had to leave the bottom deck (which hadn’t been built then) at the correct place also. Just to make it tricky, the central resting platform had to be allowed for also.

I ended up getting a long length of rope, tying it off at the top, then spiralling it down at the correct angle, allowing for central resting platform, to the ground. The angle (offsets) were determined using a piece of tin cut to the right shape with a spirit level fixed to the vertical side. The angle was taken from the Gloucester pegs.

The pegs were ¾” concrete galv reo bar. Had a big blue with Jock as he wanted to use karri, which I refused to do. They rot too easy and break with no notice (and are a bastard to replace –try boring into end grain with a 2” hand auger and little to hang on to). The steel ones will outlast the tree. Peter Gow, now head of PWD OK’d them (checked the Diamond Tree also). I don’t think you could build another tree now, because of insurance issues.

John

**From:** Roger Underwood **Subject:** Re: Checking a tower site

No, the story came about on Beard Tree. George Reynolds had just finished pegging the tree, wooden pegs only, and Barney was given the job of climbing the tree and measuring the size and layout of the limbs in the crown so that they could design the cabin and its supporting bearers. Barney said he was up in the tree, with a 66’ tape in a leather case, scrambling from one limb to another and measuring and making an architectural drawing of the crown in a notebook. Half way through the operation it started to rain “and you know how greasy karri bark gets when it is wet” Barney told me, “I found myself wishing I had a pre-hensile penis so that I could find one more point of attachment”.

Later Barney was up the tree again, this time with George Reynolds who was about to start axing off the limbs. “George was walking up and down on a swaying branch, rolling a smoke and complaining about it being a Saturday, as he wanted to get in to Manjimup to put a bet on a horse he fancied”.

I met George only once, after he became a mature aged Forest Ranger and was stationed at Gnangara. He was close to retirement then (in 1963). He was proud of his status as “the man who pegged Gloucester Tree” and I was proud to have shaken his hand. Both his sons became forestry mechanics.

R

**From:** Max Le Clercq **Subject:** Re: Good news

John,

Having climbed that tree myself (see attached) I recall there are (I think) four levels to that structure, each with a standard metal ladder up to the next level.

What was the reason for constructing it that way?

I can understand the entry-level platform and the final one, but why put in the intermediate levels rather than just a ladder straight up to the top without the intermediate floors? Did it give the whole structure greater strength, or was it something to do with the angle the ladder(s) had to be aligned at for the public to use them?

Max

You will have to ask the engineer who designed it Max.

From John Evans

**From:** Ray Robinson **Subject:** Scan.jpeg

Hi John, This was how we examined sites for fire towers in 1970’s in Dalby district QLD. The method was to erect this temporary radio mast, then climb it to various heights, and take a surround of photos at each height. The best coverage determined the height of the cabin of the future tower, or if the site was any good. The platform was at 110 feet.

This was my only go at the photos, and the problems were that my boots wouldn’t fit in the slots of the last section so I had to shimmy up the last section to the platform. The tower dropped two inches as I swung onto the platform. Worked ok, but the film jammed in the camera so I had to do it all again. Then when we went to wind the top section down, we took a half turn on the winch, and the wire broke so the top section crashed to the bolts on the second section.

Might explain why I wasn’t keen on another go. Regards Ray R

Dear Roger,

In this case it's the Pemberton Tree photo which caught my attention. I went and checked back in Dave Evans' book, and the alternating karri and steel pegs arrangement corresponds to his description of the construction phase. That made me zoom in on the Gardner photo, and while it's a bit hard to make out, I think I'm right in saying it has the same alternate arrangement - or were they karri all the way to the top?

Now, that got me thinking back to the only three tourist trees that Christine & I have climbed over the years (in chronological order, Diamond, Gloucester, Evans), and I couldn't remember any karri pegs. I checked this by finding old photos of my intrepid Christine on all three over the years (attached), and yes, they are all steel - no karri.

Now, this is where it gets interesting. Our "tourist" experiences, strictly speaking, aren't what was your norm as a forester - because we stepped on steel right the way to the top. I can except that the Evans Tree is a special case because it was purpose-built that way much later, but back when Diamond and Gloucester were used only as forestry fire lookouts they must have had every second peg as karri as well. I can't see any indication in those Diamond and Gloucester photos of where the karri pegs have been removed and replaced with steel - it looks like steel was used right from the start - which must be wrong according to Dave Evans. A closer look higher up the Diamond photo shows what could be an old pegging alignment (it's a photo from so long ago - I can't say it caught my attention at the time), but I can't see any evidence of other pegging alignments in the Gloucester photo).

It got me thinking; are there variations in pegging arrangements that should be recorded for posterity? I know about Big Tree's pegging being vertical (Evans, page 18), but was wondering if there are any other variations from the standard karri-steel-karri-steel etc design that you're aware of? It's probably only a small thing, but that's just the sort of nit-picking question I'm prone to think of and then go hunting for answers to.

Just as a personal preference - which type of peg did you prefer putting your feet on, or didn't it matter? I think I can remember reading somewhere that the karri pegs could be a bit slippery at times. Never having tried both it's not an opinion I can form myself.

Max

Hi Roger, Max and Andre.

Diamond, Gloucester and other early tree lookouts all had wooden pegs, but when I refurbed the Diamond and Gloucester I replaced them with steel eventually. Initially we did put some jarrah pegs into the Gloucester where replacements were required, but when later some of the karri pegs began to deteriorate (rot), and a couple broke (not a good feeling at 40+m to have that happen), I got 19mm knurled concrete steel reo bar, welded some washers to the outer ends (to attach the outer cage to) and had them galvanised and used them to replace all pegs. They will last for another 100 years or more (but the trees probably wont) but give a very good grip, but can be a little slippery if wet, and are very cold in winter!

With the Bi Tree I used steel from the word go, although I had a big argument with Jock who wanted wood for “authenticity” but safety concerns (and ease of installation overrode that.

The wooden pegs were bastards to put in with a 2” hand auger, but big drills ‘bit’ too much or were hard to push into the end grain of old wooden pegs.

John

Dear Roger & John,

That clears up a lot, so thank you both very much for the explanations.

Just to illustrate how hard it can be to shut me up once I get on a roll, your answers have thrown up another question.

You might remember I sent you all a photo of the old Ludlow Tree after I'd found it and recorded the location, as well as an old article I found about it (both attached again). Now, if you look at the photo I took in 2018 you'll see steel pegs which I'd assumed someone, sometime, had bent back to stop people from climbing it. The old article mentions he (John Watson) "...has spoked a pole 70 feet long to the tree, thus forming a ladder, and has another ladder of 15 feet above that again".

Now, I assumed those bent-back steel pegs were the rungs of that Heath-Robinson "ladder" that Watson constructed (you'll see they go vertically upwards to the cut-off side branch where the "second ladder" starts), the pole that they were attached to on the outside is no more, and that they were hammered into the tree progressively as the ladder was built - a bit like the closing of a zip (I hope that's understandable as an explanation).

If so, then steel actually pre-dates any steel-karri combination in Forestry Department history. If not, then nothing in that photo is Watson's original work, and somebody, sometime has actually re-pegged that tree using steel at a later date.

Either way, it's an interesting problem, and I know you mentioned somebody you knew down Ludlow way Roger who is interested in matters historical - could you pass this conundrum on to him and see what he knows about whose steel pegs they are?

I can't sign-off without echoing that Diamond Tree vandalism comment Roger. Absolute arseholery at its worst.

If you'd like to "count", and depending on how many new enemies you'd like to make, I'd officially complain that it's damage to a heritage-listed structure if I were you, and it needs to be made-good again. Don't just leave it to people in caftans to annoy bureaucracy; if the authorities didn't want it climbed, then what should have happened is that it should have had a fence put around it, and it remained intact - that's history they've brazenly rooted with. With old historic bridges that are no longer trafficable they just put up a barrier and keep it in-situ for people to look at - they don't bloody-well blow the bastard thing up just to stop anyone driving on it. Same principle.

Max

I think the simple explanation is a saving in cost and time to use steel pegs (at Ludlow) an also the white ants which love tuart (particularly the heartwood). Fairly quick to peg a tree by drilling smaller holes for steel than timber pegs.

John

Dear John & Roger,

The more I sit looking at something the more I realise I know bugger-all about it, and the greater becomes my curiosity.

Here are a selection of "idiot questions" that have occurred to me - I've checked what sources I have here and can't find any answers, so I'm now annoying you with them. They are probably dead-simple to answer if you've been "in the game", but as a former extractive metallurgist those answers don't seem to come readily to me - apologies for this.

(1) I've read elsewhere how pine growth issues on the Gnangara sandplains were helped by something as basic as hammering a zinc-coated nail into the trunk, and it occurred to me that a steel-pegged tree has one hell of a lot of "zinc-coated nails" hammered into it. What, if anything, did this do to the tree's growth rate or characteristics over time (assuming anybody ever bothered to note/measure/record this)? Once a tree had been steel-pegged, was there anything about the tree which noticeably altered? A more general forestry question which flows from this; did any "mad (amateur) scientist" in the Department ever bother to hammer different coated nails into native trees as an experiment to see whether you got the same stunning results as they'd gotten with pine?

(2) When you peg a tree you take inanimate objects and bolt them onto a living organism which continues to live and alter shape (albeit slowly). When the tree was initially pegged everything would be "tightened up" to give the structure rigidity - what happened then over time? I've tried to do a mind experiment thinking about whether it would get even tauter with time or start sagging and I can't work it out based on my wildly different work/life experiences doing something other than forestry, so I thought I'd ask the experts. With time, did you need to do periodic tightening of the wires and paraphernalia, or the reverse - having to slacken things off instead? Or neither - because that's just me over-thinking things and asking an "idiot question"?

(3) Considering I've blithely shimmied-up three trees as a tourist over the years I'm embarrassed to say this isn't a question I've ever thought of before - just how far into the tree do pegs go? I'm guessing that may be a function of the differing types of wood structure the behind the bark (forestry stuff and terminology - as explained, not my strong suit) as well as the basic mechanical engineering calculations about supporting a weight using only a single anchor point (although thinking about it, once the exposed end is wired-up to all the others in a spiral it strictly speaking isn't just a single anchor point any more).

(4) Finally, probably the weirdest direction my mind wandered off in; a whole lot of horizontal pegs would, if I were a bird, look like a whole lot of perching places. In your experience, did pegged trees exhibit any signs that they served a purpose to wildlife which differed from other unpegged trees (I suppose the cabin area could be another area where fluffy/furry/feathery/scaly things might have holidayed in as well)?

Please feel free to ignore this if "idiot questions" don't float your boat - as I said, with me, questions beget questions. It can be annoying to others I know.

Max

Hi Andre,

Your photo of the Gloucester Tree actually raises even more questions in my mind

Your photos from 2012, and shows all-steel. The tree was originally karri-steel-karri-steel etc, and only re-pegged to all steel at a later date (which was....?).

If that climbing alignment hasn't changed, then those "burrs" all mark the spot of where the very first pegs were hammered in, and if the alignment has been changed, then they all arise from that latter time when the all-steel arrangement was added to the tree.

I've attached another photo of Christine coming down the Evans Tree in 2014, and I'd draw your attention to the conspicuous lack of "burrs" on a tree that we know was pegged in 1988 (i.e. 26 years of potential "burr growing" has elapsed). It looks nothing like Gloucester.

That Gloucester photo obviously has at least some pegs in shot which are not originals (maybe all, if what's there now isn't the original alignment) and were inserted sometime post-1946 (when it was karri-steel-karri-steel), and yet all I see is "burrs" at every single point of contact (and all of a remarkably uniform nature, and quite pronounced) - which begs the question as to the history and genesis of "burrs" in general.

An interesting problem.

All pegs (steel or timber) went in 6” (150mm). No point going deeper. John

**From:** Des Donnelly **Subject:** RE: Ludlow Fire Lookout Tree

Hi John,

It is very likely that the Ludlow lookout tree was pegged by Watson. He was amongst the first forestry cadets to be trained at Ludlow and my theory is that the students probably collectively pegged the tree in their time off. There was little  else to do and they probably wanted to see where smoke was coming from as they had no view of any horizon as they were buried amongst the tuarts. The tree was out in the open only 50 meters from where the school stood. That part of the Moriarty farm had been cleared and was a cow paddock the pegged tree was out in the open left standing as it was unmerchantable. The area behind the tree to the south was planted with Tuart seedlings and pine trees in rows I would say during the life of the forestry school. Some mighty fine tall tuarts have grown on.

Watson did go on to manage Ludlow after completing his forestry training and it is possible he pegged or had the tree pegged to allow fires to be located. There is nothing in his journal that mentions the fire tree. However the time lines seem to fit.

The current pegs are steel but I cant tell you if they are simply round bar or reo bar. I will have a look next time i am down at Ludlow. I remember asking Harry Kravanis to cut off the first few pegs to stop the settlement kids from climbing it about 1973.

Des.

Dear Des,

Apologies for barging uninvited into your conversation, but I don't know if the following helps your enquiries.

I've attached another of my 2018 photos of the tree, and you can see right at the very bottom the highest of those pegs which was cut off circa 1973. Didn't pay a lot of attention at the time, but I think the cutting stopped about 8-10 feet up with the remaining pegs all bent sideways rather than remaining perpendicular to the trunk (that must have been a hell of an effort to achieve). What was interesting was that not all pegs seemed to stick out by the same amount. Didn't notice at the time (and the photo isn't helpful to check back on) what the surface of the steel was like. Was reo bar even invented in those times?

Also attached is the only newspaper reference I've found about the tree (1936). For what it's worth, the language used indicates that Watson built it when he was in charge, and I'm guessing probably not that long before the article was printed. The mid-30s would be the part of any extant diaries and papers of his where I'd guess the best chance for a written reference would be found.

It also talks of it being in the form of a ladder - with a pole away from the tree running parallel to it with these pegs "strung between" as rungs. That explains the pegs rising vertically up the trunk rather than curving around. If you only needed to drive the pegs in far enough to get a grip - because the other end of the peg would be supported by the external pole, then I think it may have potentially been a dodgy business using it once that supplementary pole had either rotted away or was removed some time later - a good reason to keep kids off it I'm guessing.

As I said, apologies for the interruption. Hope what's here may help in some way.

Max Le Clercq

The Beard Tree photo is interesting to me because the spiral is way "tighter" than I'm used to with Diamond/Gloucester/Evans (i.e. it goes more 'straight up' than 'curves around'). Probably an "opening" for you for a conversation with the brains trust about the problems/issues with pegging trees which exhibit individual characteristics. Considering that with some you've got a reasonably clean path to the top and with others you've got obstacles you need to get around on the way there, I'm guessing each tree had a very specific "plan of attack" to get you from the ground to the cabin - the tourist trees (as best as I can remember) only got tricky closer to the top. Beard obviously demanded that you had to go more "straight up" to get the result you wanted. Got me thinking about whether you could devise a "gradient index" (height of tree divided by the number of degrees the pegs rotate through between first and last - something like that). Probably too much time elapsed now to work that out when you've only got a handful of old photos extant.

The other thing that's been occupying my little grey cells recently is Watson's Ludlow Tree and the "pole ladder" it had. Thought about it, and decided to check out the next he was associated with (our old friend the Mullalyup Tree) and lo and behold on page 54 of Dave Evans' book there's the picture of it with - as I can now recognise - the exact same type of "pole ladder" for the first stage and then the more conventional "second stage ladder" up to the crow's nest. It seems he took the same Ludlow concept into his next project, and only started broadening his thinking from then on. I remember someone commenting about how thin the jarrah was compared to later trees - if you build it with the "pole ladder" concept you can obviously get away with that. So, a bit more of the picture perhaps explained by that stunning piece of lateral thinking and observational nous of mine.

Max

A few quick questions/comments:

That arrangement of pegs and wires looks quite "jumbled" (I've only ever climbed the "tourist" trees, and they all seemed quite uncomplicated at the top to me - maybe Gloucester was a bit fiddly, but not much) - was it a tricky business navigating through that and getting into the cabin? I may not be lining-up the right pegs though, and maybe it's simpler than it looks to me.  I'm guessing some trees were "favourites" more than others when it came to the final few pegs - did Boorara have any sort of "reputation"?

When I look at where those pegs are in contact with the tree I don't see anything like the amount of "scar tissue" you have growing on Gloucester Tree, despite Boorara having been pegged only six years later. Any theories?

It's a great tribute to the workmanship that after all those years you can still lift it up (with the attached tree trunk's weight as well) and it still all hangs together. Bravo to whoever built it.

Max