Oral History Program

Living on the Edge

Lawrence Hargrave Drive (Part 1)

SUMMARY REPORT

Researched and written by Cinetel Productions

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About this Oral History...

Oral history has been described as 'a picture of the past in people's own words'. It is based on stories by people who were involved in life's events, told in their own, passionate words. It adds to the official written history and gives us a more intimate and personal perspective on how, when and why things happened. Oral history is a means of communicating how individuals perceived and dealt with challenge, achievement and failure. It often reveals the unsung heroes, those actually responsible for innovations and important changes, and provides them with an opportunity to evaluate their actions in a wider occupational, social and political context.

The RTA established its Oral History Program in 1997, to investigate various topics of historical interest. *Living on the Edge - Lawrence Hargrave Drive (Part 1)* is the 10th thematic oral history to be undertaken as part of the program. As with previous projects, this oral history did not seek to present a definitive history of Lawrence Hargrave Drive - rather it involved a recounting of interesting recollections, stories and insights, told by those involved.

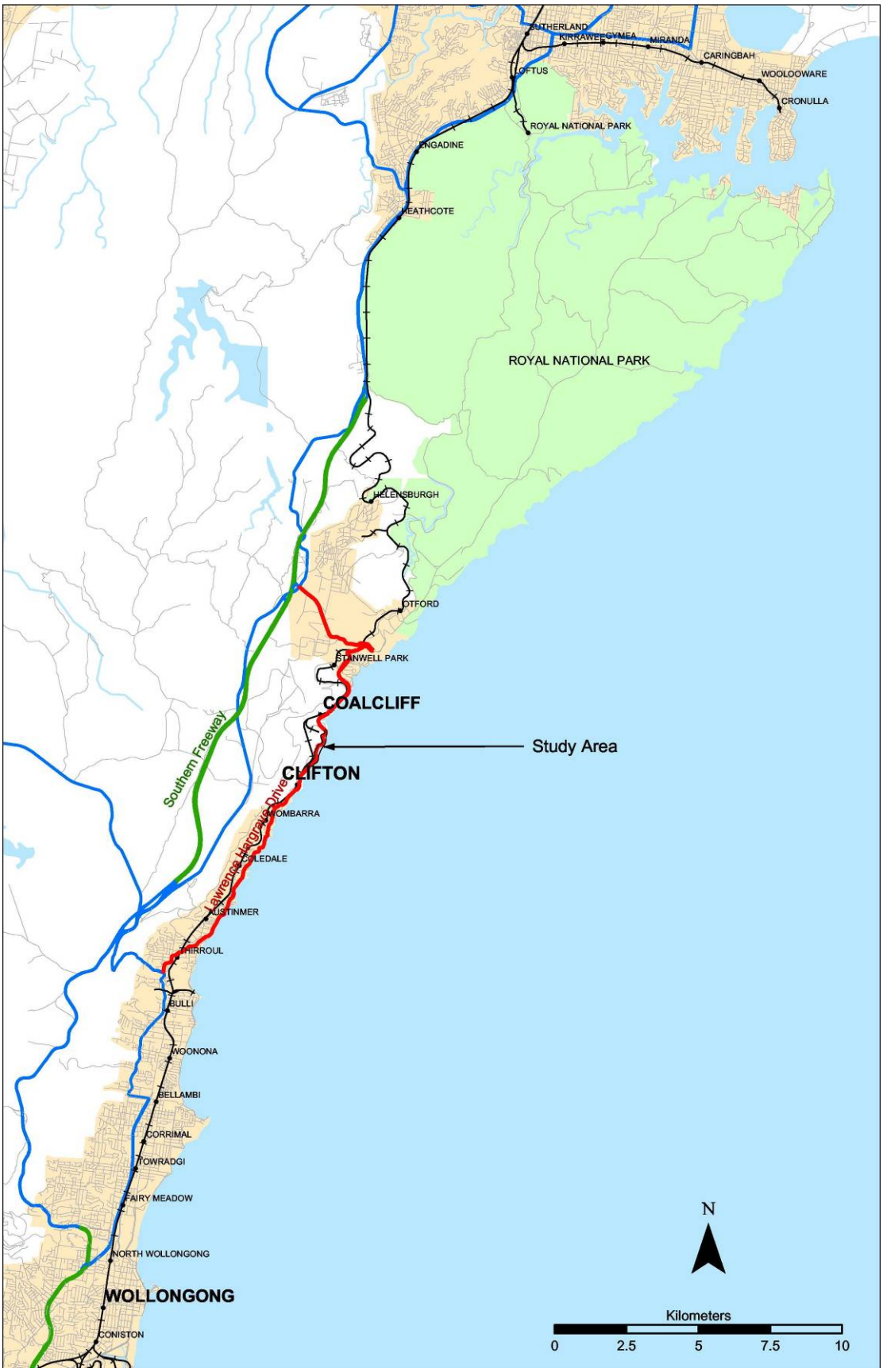
The project was based on 23 hours of digitally recorded interviews with 22 participants - local residents, former Department of Main Roads staff, former and current RTA staff, geologists and the Alliance champion. This report is a summary of the key themes revealed in the course of research, investigation and interviewing. It discusses the background and significance of Lawrence Hargrave Drive to the local community and records the history, lives, aspirations and occasional frustrations of some of the local people who rely so heavily on this road for access. Part 2 of this oral history will track the construction phase, through to the opening of the new bridges.

Outputs from this project include the original interview tapes, logs, photographs, research materials and an edited double-CD compilation. Compiled excerpts from the original interviews may be accessed on the RTA website at www.rta.nsw.gov.au. Click on 'Environment', then 'Heritage', then 'RTA Oral History Program', or simply type "oral history" in the Search window.

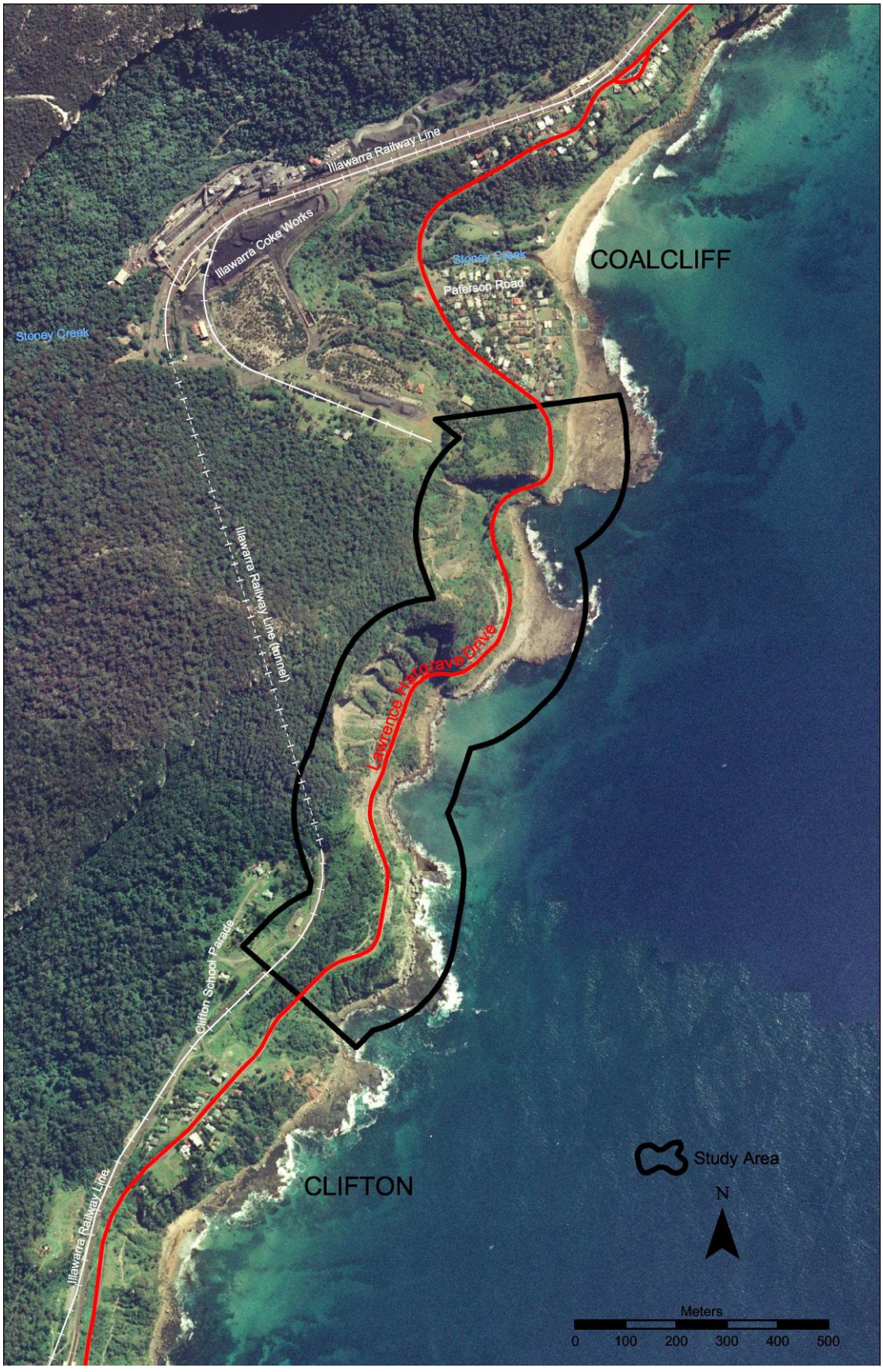
The author would like to acknowledge all who contributed to this oral history - the 22 interviewees named at the end of this document and the staff of the RTA Environment Branch and Wollongong Regional Office who assisted with the project.

The opinions expressed in the oral history interviews and summarised in this report are those of the individuals concerned and do not necessarily represent in whole or in part the position of the NSW Roads and Traffic Authority.

Section of Lawrence Hargrave Drive from Coalcliff to Clifton, 2003



"Locality Map (source: Lawrence Hargrave Drive: Preferred option for repairing the road - Review of Environmental Factors, March 2004)"



"Aerial photo of rock fall area (source: Lawrence Hargrave Drive: Preferred option for repairing the road - Review of Environmental Factors March 2004)"

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The Coast Road

It is one of the most scenic roads in Australia and one of the most dangerous. Lawrence Hargrave Drive, also known as Main Road No. 185, the Coast Road and the Cliff Road winds its way along rugged coastal scenery from Stanwell Park to Thirroul, past the villages of Coalcliff, Clifton, Scarborough, Wombarra, Coledale and Austinmer. Graham Aubourg, a Coalcliff resident, remarks:

> 'It's just incredibly beautiful. It's one of those rare places where the mountains and the cliffs come directly to the edge of the sea. It's just one of those things where you have your rainforest, your cliffs, your ocean all in the one spot'. (Aubourg, Tape RTA-LHD:FH1, Side A, 10:51 & Side B, 37:28)

Lyn Busch, custodian of the Clifton School of Arts, came to the area from Grafton in 1963:

> 'I loved it – a view coming around the cliffs was something that I had never seen before, coming from the country, and still today I never get sick of it. The sea – it's never the same, it changes from one day to another, it's the most beautiful I've seen and it's the gateway to Wollongong'. (Busch, Tape RTA-LHD:FH13, Side A, 04:19)

Charles and Pat Simpson are both teachers living at Stanwell Park:

> 'I can remember that it was very narrow and very winding – it always seemed to be very foreboding, and yet it was exciting too, because the cliff was just there, down to the water. (Pat Simpson, Tape RTA-LHD:FH3, Side A, 11:12)

> 'Some mornings I've seen whales, dolphins. As you drove around the cliffs, you could see whale spouts blowing – at other times, with very heavy seas, giant waves crashing, so that the sea spray actually came over the road – on others, it's calm, clear blue sky. You can watch lobster fishermen diving off their boats to grab a snagged rope and pull up a lobster pot, which they used to sell in the pubs… lobsters over the bar… all of those visual images come back and it was fun going to work'. (Charles Simpson, Tape RTA-LHD:FH4, Side B, 29:57)

The history of the area goes back to the European discovery of the Eastern seaboard by Captain James Cook in 1770. Artist Ellis Eyre lives in the old doctor's cottage at Scarborough:

> 'Cook tried to get ashore at Waniora Beach down here near Bulli High School, saw some natives and tried to get ashore with the longboat – they were driven back by the surf and the natives got on the beach and waved their spears, so they decided to give it away. So they travelled north up the coast – next morning, they woke up; they were back down at Bulli again, so they must have travelled past here twice.' (Eyre, Tape RTA-LHD:FH14, Side A, 05:40)

On 10th November 1796, the sailing ship *Sydney Cove* left Calcutta bound for Port Jackson but ran into heavy seas and ran aground in the shallow waters of Perseverance Island, north of Van Diemen's Land. All aboard survived and a longboat of sailors was despatched, which also came to grief and was wrecked on the NSW south coast in March 1797:

> 'A boatload of sailors got ashore – about 17, I think, and they must have walked completely all the way around the coast, including around Jervis Bay and

> everything else like that. By the time they got up here, apparently there were only five sailors left and they met some Aboriginals, and among the Aboriginals were two from Sydney that told them white men were bad, so they actually speared two of them and three of the others ran away and walked along the bottom here – I don't know where they could go and there's a plaque up in the park there noting this is where the first coal in Australia was discovered. Just underneath there, they lit a fire for the night on the old coal seam where you can find it…… lit a fire on the beach, discovering the coal'. (Ellis Eyre, Tape RTA-LHD:FH14, Side A, 05:44)

The three survivors were helped by friendly Aborigines who took them across several rivers with their canoe and gave them some food:

> 'Then they walked up through the National Park, as far as the furthest point which you can see from here, which is called Cape Providence … of course from there, they could see a fishing boat out to sea near Wattamolla, which rescued them and took them to Sydney and they reported to Grose, who was then Acting Governor that there was good coal found here and he sent Bass down with a longboat full of marines. They came down here, apparently got half a dozen bags of coal. He then took the longboat down to Fairy Meadow, saw some Aboriginals, charged up the hill and shot six of them, which is very nasty summary justice for the natives'. (Ellis Eyre, Tape RTA-LHD:FH14, Side A, 07:38)

George Bass reported that he had found a coal seam of significant size, which at its northern end rose to about 6 metres above sea level. It descended gradually until it entered the ocean about 13 kilometres further on. It was the first European discovery of coal in Australia:

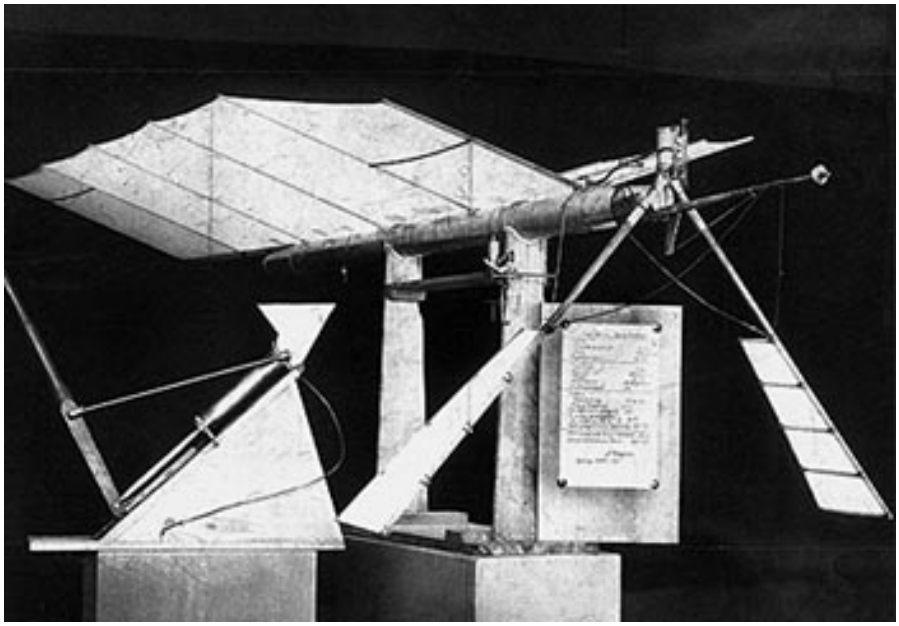
> 'With the discovery of coal, Mitchell, the Surveyor took it over and was granted it, so it's called Mitchell's Mountain after him and then he trundled off and discovered his Western areas and Mitchell's cockatoo is named after him, etcetera, etcetera, and he never lived here - he then sold it to Judge Hargraves, who was Lawrence Hargrave's father – he had three sons, Lawrence was the younger. Lawrence Hargrave was apparently a bit of a tear-away and he is apparently recorded to be the first white man ever to canoe up the Sepik River in New Guinea and Dad disinherited him and said 'Go away' '. (Ellis Eyre, Tape RTA-LHD:FH14, Side A, 09:06)

Lawrence Hargrave inherited the property after the death of his father and both of his brothers in the Crimean War and from typhus. Bruce Fishburn was an Engineer at the former Department of Main Roads' Bellambi Works Office in the 1960s:

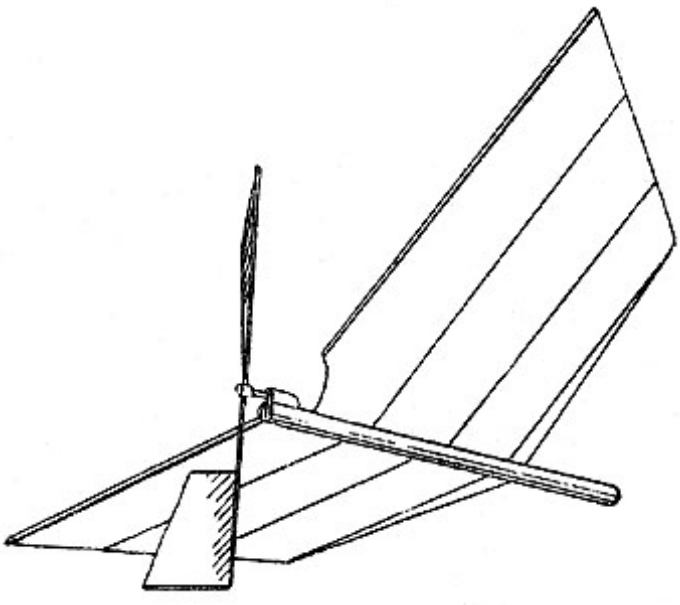
> 'When I was there, Mrs Hargrave was the publican at the Clifton Hotel and there were all types of mementos from the era… I think it was her grandfather, was Lawrence Hargrave. Now for some reason he doesn't really get the true fame that I think is due to him. Lawrence Hargrave was a contemporary of a fellow called Otto Lilienthal and between he and Lawrence, they had been working on being able to control the flight of these box kites and gliders. Now if you scratch anyone these days and ask them 'Who was the first person who pioneered flight?' they always talk about the Wright Brothers, which is rubbish – it was Otto Lilienthal and Lawrence Hargrave – they were the true pioneers. What the Wright Brothers did was to put an engine on a device which these other guys had worked out. The true pioneers of flight really rest in guys like Lawrence and much of the work that he did was done down in this cliff area, and especially up at Bald Point where he took advantage of the winds, just to study what happens and of course that's a favourite haunt now of hang glider enthusiasts all over the place,

> and I suppose the hang gliders are just really a further development of what these two guys had done'. (Fishburn, Tape RTA-LHD:FH 24, Side A, 09:28)

After his quite significant contribution to aviation the rather eccentric Lawrence Hargrave sold the interest in his properties on the coast to the Hon. Alexander Stuart, MLA, the principal proprietor of the Coal Cliff Land and Coal Mining Company, who subsequently became Premier of NSW, while Lawrence Hargrave settled down at Double Bay to live out his days. He left his imprint on the first twenty-dollar note and the troublesome road that bears his name.



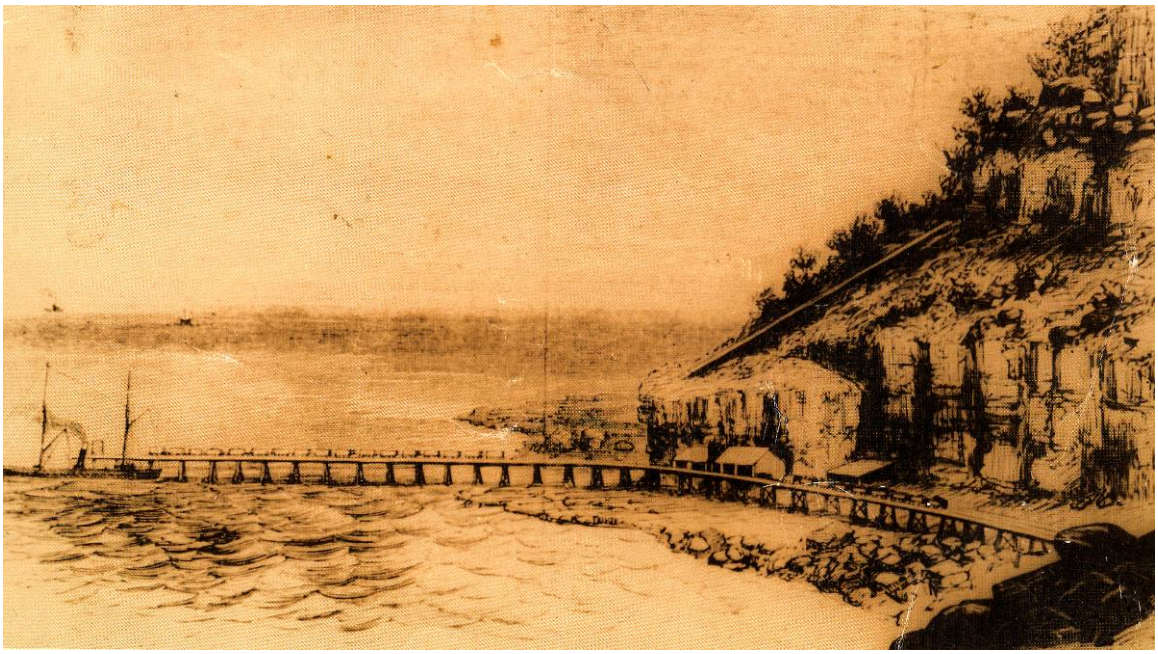
Hargrave's Ornithopter used a radial rotary engine that ran on compressed air (1888)



Flying machine No. 6, 1888

Horse and buggy at coal loader, 1888.

Clifton, 1889



The Jetty at Clifton (artist's impression), date unknown, but probably 1880s

The jetty in 1906 (Government photo)

Clifton Public School and township, 1900

(photograph supplied by Ellis Eyre)

The jetty, geology and the road

The coal leases discovered in 1797 were not mined until January 1878 because of difficulties in securing a safe landing to transport the coal. Alexander Stuart began the construction of a jetty in the ocean, starting at the cliff face about 6 metres above sea level. The jetty was constructed from turpentine piles and extended for a distance of about 150 metres from the shore straight out into the Pacific Ocean. The piles were between 12-15 metres long and a crane was erected at the outer end of the jetty. A single line of iron rails from the mine to the jetty was laid down progressively and carried the rail trucks, which could be unloaded at the rate of one per minute onto ships that could moor at the jetty as long as the weather was fine and a west wind blew. The jetty was the colliery's lifeline, but also its greatest problem - it operated for only five months until in June 1878 a furious storm washed away a significant part of it. Waves surging up from below had lifted the deck and demolished the piers. The following year a second jetty with a double line of rails and turntables at both ends was constructed with all possible speed. It operated until 1881 when it too, was wrecked by the sea. The final structure, almost 3 metres higher than the original jetty survived frequent damage until 1904, when 45 metres of it was lost. (References: *The Coal Cliff Colliery Adit and Jetty Tramway, 1797-1910* by Jim Longworth and *Coalcliff Mine - 100 years of Mining,* published by Coalcliff Mine, 1978)

By the late 1870s, a rough track had been carved along the cliff face, which later was to become known as Lawrence Hargrave Drive. Its origins are obscure. Leo D'Adam took charge of the DMR's Bellambi Works Office in 1963:

> 'I spoke to some historians around here years ago and they led me to believe that originally it was an Aboriginal track and then cattle were brought into the area and the cattle found their way around. Back in the 1860s there was a petition made to Parliament for funds to be provided for construction of the road, but no sooner had they commenced on the road than two hundred tons of rock came down and wiped it out'. (D'Adam, Tape RTA-LHD:FH16, Side A, 03:00)

The rock falls that have become associated with Lawrence Hargrave Drive originate high above the road. Geologist Marc Hendrickx clarifies:

> 'The rocks around Lawrence Hargrave Drive are Permian to Triassic in age. The lowermost parts of the formation, as they're exposed at the sea line are parts of the Illawarra coal measures and the topmost unit in the Illawarra coal measures is a unit called the Bulli Seam – it's a coal seam, and the thing about coal is that it's a very weak rock, and when it's exposed to the extremes of ocean weathering it weathers very rapidly. The particular situation between Clifton and Coalcliff is that the Bulli Seam comes down to sea level and is exposed to direct wave erosion and this doesn't happen anywhere else along the Illawarra – you get smaller seams exposed, but nothing the scale of the Bulli, which is about two metres thick, and the units overlying the Bulli Seam are the Narrabeen Group, a Triassic group of rocks and include such units as the Coalcliff Sandstone, Scarborough Sandstone and the Bulgo Sandstone. These major, quite thick sandstone intervals are then separated by claystones, which again are a fairly weak rock, which break down rapidly. At Coalcliff, due to the erosion of the Bulli Seam, the overlying Coalcliff sandstone is then subject to forming overhangs and you get large collapses of the Coalcliff Sandstone into the ocean and above the Coalcliff Sandstone, as it is eroded, you have what's called the Wombarra Claystone, again

> a very weak rock which erodes very rapidly, and you have these intervening series of claystones and sandstones. At Coalcliff, the net result is to form these spectacular cliffs, the highest of which are in the unit called the Bulgo Sandstone and jointing behind, the cliffs, coupled with bedding produce these very large boulders which can come down from tens to hundreds of metres. (Hendrickx, Tape RTA-LHD:FH28, Side A, 16:49)

Greg Kotze, Chief Engineering Geologist at GHD-LongMac adds:

> 'The site mechanisms are a range of rock fall failure mechanisms: sudden brittle failures, toppling, sliding, right through to debris flows, debris slides, mudslides during wet weather and embankment failure and subsidence also during wet weather, so it virtually covered the full gamut of geotechnical failure types all in one site area.' (Kotze, Tape RTA-LHD:FH18, Side A, 12:17)

By 1875, a bridle track was constructed from Clifton to Coalcliff over Mitchell's Mountain and in 1876 work on the road was begun from Clifton to above the mine. In 1880, the road was extended right around the cliffs from the mine to Coalcliff in a joint effort between the mining company and Bulli Council. It subsided after a heavy rockslide and was rebuilt by laying poles under the road from the cliff to the outer face:

> 'It was almost a corduroy road, and they put telegraph poles from the cliff out to the edge and then they put a vertical fence up with a triangular post, so the whole road was tiered back to the cliffs so that it would not tilt.' (Eyre, Tape RTA-LHD:FH14, Side B, 40:12)

In 1887, a large crack formed in the road at Clifton. The *Illawarra Mercury* of 26th April, in an articled headed 'THE CLIFTON LAND-SLIP SCARE' reported:

> *The land crack at Clifton, concerning which such sensational telegrams have appeared in the Sydney newspapers, is as slow in its movements as if it were a Government railway contract. In fact, the reports about the matter have been exaggerations to a very great extent. Several cracks have occurred in the locality, but that there is any probability or danger of acres of the township taking a plunge over the cliffs into the sea, as has been inferred, is about as likely to take place as that a tidal wave shall deluge the town. To all appearances, the whole thing has already reached a climax.*

The tone of the article seems to suggest that the citizens of the Illawarra were used to such events. However, six weeks later, the *Mercury's* tone was more alarming:

> *The crack is now much more defined than when it caused such a scare a few weeks ago. Close to the coal company's offices, a narrow strip of land appears as if it were gradually being forced towards the sea. Mr. Williams, Manager of the Coalcliff Colliery assured our reporter that from Friday afternoon till Saturday afternoon this strip of land had shifted six inches seawards. Following the crack, we find that several panels of fence have been carried away with the slip, and proceeding across the road there are very apparent evidences of something being wrong with the Clifton Public hall. The blocks upon which the building stands are out of plumb 9 or 10 inches, and the building itself has shifted some little distance. Entering the building, the stage is found to be leaning forward, as if about to topple over, and many other evidences indicate the great strain being put upon the timbers. In fact, the hall is permanently injured, and may be said to be*

practically ruined. Following the crack to the railway embankment, we find that the 4-feet brick culvert is falling in. Climbing the embankment we are brought face to face with perhaps the greatest destruction to be met with. The embankment has not only gone down four or five feet, but it has shifted eastward at least a couple of feet and the railway bridge has been twisted to a curve. At the rear of the school is a large slip, which brought down with it an immense tree. This tree, which crashed through Mr. McLaren's fowl-house, killed several valuable birds belonging to that gentleman.

Mining families

The Coalcliff mine, which had opened in 1878 attracted employment from the surrounding areas and villages grew along the coast. Their names – Coalcliff, Clifton, Coledale – reflected their coal mining origins and the topography. Lynn Busch lives at Clifton and has researched the history of the town:

> 'When they first started the mine up they had tent camps along the creek and there was an epidemic…. I think it was typhoid went through the tent village and they had to all be disrobed, their tents were burnt and so was their clothing and all that. You've got to remember that this village, even though it looks small now, in its heyday there were about 600 to 800 residents here and there was a Catholic church, Anglican church in the Catholic church, there were two hotels and a stagecoach terminal area where they used to refresh their horses and then they'd be off to Waterfall the next day – it was the link with Sydney and here. And they had a baker, they had a butcher, they had a general store, billiard rooms and a boarding house, also a convent, and there was a doctor's surgery, a Court of Petty Sessions and quite a large railway station. So you've got to remember that the village itself was self-contained and they didn't have to go out much in early days, but it was the link to where they worked and it was the link to the jetty where the colliers used to call in and they'd load them.' (Busch, Tape RTA-LHD:FH13, Side A, 11:45 & 17:02)

Gus Forbes is a former miner, born in 1923:

> 'I was born in our house in the bush at Scarborough. My mother was attended by Mrs Emmett, a midwife, who fulfilled most of those duties at that particular time. We had lived in the bush with no electricity, no running water. My father worked in the coal mine, he came back home black and mum would put the copper, the 18-gallon copper on, boil the water and he would have his bath in a round galvanised tub. Things were pretty primitive – no refrigeration to keep the butter cold. We dug a little hole in the bank of the creek and put it in there. Mum wanted to set a jelly – the same thing happened – sometimes the jelly set, sometimes it didn't. Some people had ice chests and the people who had ice chests were considered pretty well off'.
>
> *Did you have a meat safe where you kept the meat?*
>
> 'We had a meat safe, which we hung under the plum tree and that was our only means of refrigeration. We had a dairy and we supplied milk to people: sometimes we got money for it, sometimes we got eggs, or we got fruit'.
>
> *So it was a bartering system, was it?*
>
> 'A bartering system, and I can remember, my Dad killed a pig and the neighbours helped, the pig was cut up and divided amongst the neighbours and then a week or two on, somebody would kill a calf and the same thing would happen, but neighbours cared for one another – if my mother was sick, there were two or three women that would be there to help out, get the kids to school and do what they could to make themselves ….. and in those days, you knew everybody in the street, now you're lucky to know who lives next door. We didn't have locks on the doors – we didn't need to lock our houses – come to think of it, it was

> probably because there was nothing worth stealing.' (Forbes, Tape RTA-LHD:FH8, Side A, 00:36)

The house that Forbes grew up in was rudimentary, but fairly typical of those times for the miners:

> 'To think of it, it was really a firetrap because in those days, a lot of the houses were lined with Rubberoid and would burn so fiercely. Mum used to do a spring-cleaning and she would Kalsomine that Rubberoid – make the place look as good as it could be under the circumstances. A lot of the inside lining of the houses in those days was done with sugar bags, cemented over.'
>
> *What was the floor made of?*
>
> 'Sometimes for a long while there were a lot of bare floors.'
>
> *When you say bare floor, do you mean dirt floor?*
>
> 'Dirt floor, yes.' (Forbes, Tape RTA-LHD:FH8, Side A, 04:19)

As the Depression deepened, life became even harder:

> 'It affected us pretty badly- same as everybody else. The miners, the unemployed cleared a great patch – probably the equivalent of about three football grounds up the heights, behind where Billy Gray used to live and they dug it up, put potatoes in, cabbage, any vegetable you name, they grew, and when that came to harvest time, that was divided among the population.' (Forbes, Tape RTA-LHD:FH8, Side A, 13:26
>
> '[The people] were lucky because they had the sea – you find most people fish here – even today we still fish, we get our fish from the sea, we don't go and buy it.' (Busch, Tape RTA-LHD:FH13, Side A, 14:33)
>
> 'There were some boats, fishing boats propelled by oars, they would catch fish and that was divided, and then there was a lot of divers would go down the coast getting lobsters, because in those days I can remember going in the water and lobsters were like lice: they were everywhere.'
>
> *So you used to have often lobster for dinner?*
>
> 'Often lobster for dinner – never ever appreciated lobsters and could not understand why somebody would pay $ 42 a kilo for them today, but we couldn't give them away.'
>
> *Did you eat rabbits as well during the Depression?*
>
> 'Ate rabbits. I can remember a horse and cart used to come round selling rabbits, sixpence a pair, and then it went up to nine pence a pair and everyone swore off eating rabbits – it was too dear. Did a lot of time trapping rabbits and sleeping out wherever we went. We just took a blanket and tin of sardines, a tin of baked beans, half a loaf of bread and a knife and camped out – always found a creek to camp by and boil the billy and it was a great life.' (Forbes, Tape RTA-LHD-FH8, Side A, 13:26)

> 'They used to make pants out of the flour bags and they used to cut them up and make the kids' pants out of them – they used to laugh because they had 'flour' or the name of something written across their bottom, or the front of them.'
>
> *Did they wear shoes?*
>
> 'No, that was one thing. They didn't have shoes, no.' (Busch, Tape 13, Side A, 15:03)

Elaine Pugh is a Stanwell Park resident. Her husband's father, Ray Pugh, was the Policeman at Scarborough:

> 'One lady decided to end it all, and to do that, she had to strip off all her clothes. She went and lay down on the railway lines naked and they came running down to the police station: 'Mr Pugh, Mr Pugh, you'll have to get her off the railway line, the paper train will be coming through', and she was on a section of the line where the banks were steep at the side, and she wouldn't get up and he had to put her over his shoulders in a fireman's lift and haul her up the bank. And then, there were huts up in the bush – Depression huts – where people had gone and just squatted and lived up there in the bush and there were old men that lived up there that used to come down to the Clifton Post Office to get their pension every fortnight, and if they didn't arrive, the Post Office would contact the policeman, who'd get the Austinmer man up and they'd go up to find the body.' (Pugh, Tape RTA-LHD:FH21, Side B, 38:27)

Brian Harvey lives at Clifton. His father had some cows and a milk run along Lawrence Hargrave Drive during the Depression:

> 'Then, when the mines reopened, he went back into the mines and he used to work at the stables in the pit. They used to start work at two o'clock in the morning and he drove a pony and sulky to work 'round the cliffs. Most of the miners travelled on the workers' train, but there were no trains going through at two o'clock in the morning, so he used to walk through the railway tunnel, while the horse walked the road by himself and they would meet up at the other end.' (Harvey, Tape RTA-LHD:FH12, Side A, 00:51)

The children of the miners who lived along Lawrence Hargrave Drive had an easier time of it and the kind of freedom that children today don't experience any longer:

> 'Kids were safe- we had the bush to roam, which we did, we used to go over the mountain and pick Christmas Bells, sell them on the side of the road, which was not the thing to do, as the Police tried to explain to us when they caught us, after chasing us for about half a dozen times. We used to swim in the dams, made canoes out of cedar, rode the pit horses – we had a wonderful upbringing.' (Forbes, Tape RTA-LHD:FH8, Side A, 11:44)
>
> 'There was a lot of kids in the town from various ages and stages and we had a hell of a good time in Clifton. In the summertime we lived at the beach and in the winter time we went up the mountain – we used to get frankfurts at Les Nicholls' store which was at the School of Arts and we'd take them up the top of the mountain and get a fire going and roast these frankfurts and put them on bread and then walk down back home after we'd had dinner – that was another one of the favourite exploits, and over on the park, over here now, of an afternoon or evening, we'd be playing cricket or football, or hide or seek, or whatever – there

> was always something going on, but looking back on it, we had a great time.' (Harvey, Tape RTA-LHD:FH12, Side A, 04:09)
>
> 'We used to play cricket on the main road, so we'd put up a fruit box and the thing and quite honestly, we could play there for four hours and never happen to move that box once or twice.' (Forbes, Tape RTA-LHD:FH8, Side B, 52:44)

Warren de Clouett who grew up at Scarborough recalls Lawrence Hargrave Drive during the 1940s:

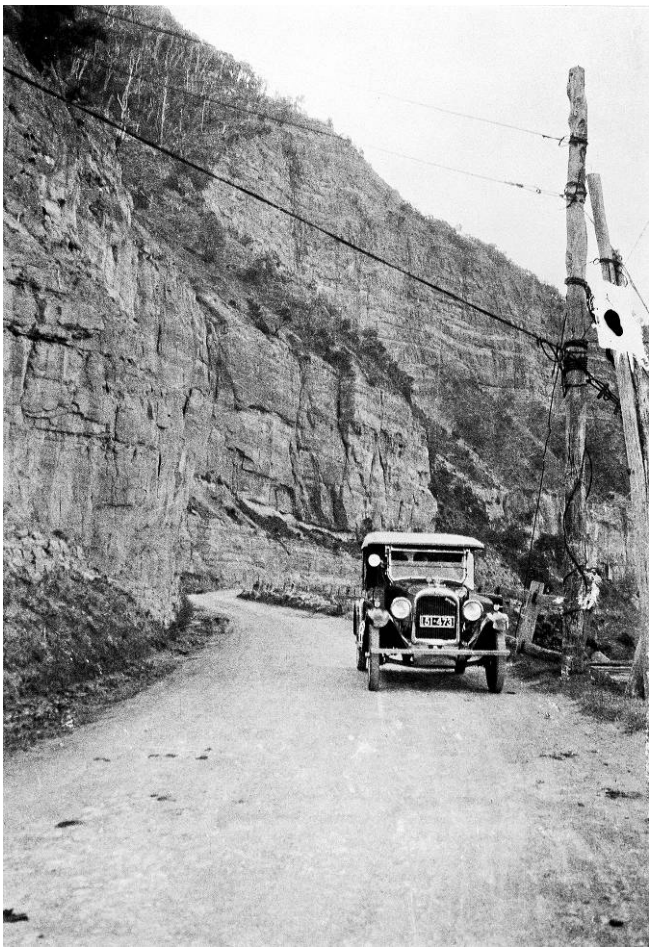
> 'It sort of wasn't a road, it was a track, virtually, you know, I mean you could walk in the middle, you were never going to have to get off for cars or bikes or anything, so you virtually had the road to yourself - the old school bell would go and you'd see kids running and all that. It was quite a big school years ago, Scarborough, because they were building the railway line and they had a terrible lot of fettlers, like railway workers and up near the school, the families used to live in tents, big, big tents, while the fathers were working on the railway line and I can remember all those children used to go school. When we came home from school, we always had a hot dinner, 'cause that's when my father came home – three o'clock – that was tea time all them years ago and believe it: that was all families. And then my father would have his hot tea and whatever – then, up the pub'. (De Clouett, Tape RTA-LHD:FH17, Side A, 09:21 & 27:22)

Gus Forbes recalls the first time he saw a car on Lawrence Hargrave Drive:

> 'The first car that went over Wombarra Heights was a little red Austin owned by Mr Croft and I don't know whether Johnny Baines told you about his father and the first car he had – he bought a Prefect and the story goes that Lawrence Baines went to Sydney and bought this Ford Prefect and he drove it home in low gear, or second gear because he didn't know how to change gears, and anybody that knew anything about a motor vehicle, he was a saint, because we knew all about horses and sulkies – we knew how to change the wheels on sulkies and things like that, but a motor car, that was something different. (Forbes, Tape RTA-LHD:FH8, Side B, 52:44)

Stan Rees, a miner from Coalcliff has different memories:

> 'I think the first chap that bought a car here was a chap by the name of Harry Ray – in 1938 he bought a brand new Ford V-8 and I think he paid £300 for it at that time and I think he had the only car along here. You never saw a car, you walked – that's why I think everybody was so healthy – you used to walk, there was no buses until about the war years, when the buses started to run.' (Rees, Tape RTA-LHD:FH5, Side A, 08:28)



T-Model Ford along Lawrence Hargrave Drive, 1920s

Embankment failure, 1940

The war

In 1939, John Baines, now a local concrete contractor, was only nine when the war came to Lawrence Hargrave Drive:

> 'My father had the newsagency at Scarborough and we travelled the road every day, delivering the afternoon papers on foot, from Scarborough to Clifton. My brother and sisters all had their turn. There were six of us and I was the youngest and did it for the longest, until I was 18. I started doing that at the beginning of the war in 1939. There wasn't a great lot of traffic around then – we'd see only two or three motorcars. There used to be blackouts and things all the way along the coast, and they had wardens in each town that used to get alarmed and they used to come around and do patrols and make sure you had blackout paper up to your windows, so there was quite a bit of fear, and I can remember big convoys of boats coming through – it was too risky travelling on their own.' (Baines, Tape RTA-LHD:FH10, Side A, 02:05 & 25:05)

> 'I can remember Army trucks going through at different times, you know, with soldiers on them. They had a camp down at the bottom of Clifton hill – I think there were four soldiers and a sergeant, or whatever rank, I don't know, I don't remember now, but they had the road dynamited between the bottom of Clifton hill and what they call the amphitheatre there now, and it was loaded up to be blown up if the Japs invaded us.' (Harvey, Tape RTA-LHD:FH12, Side A, 02:24)

> 'They also loaded the Otford Tunnel at the Stanwell Park end and they had tank traps down at Lake Illawarra. There was real fear of a Japanese invasion.' (Baines, Tape RTA-LHD:FH10, Side A, 23:25)

> I remember Bob Brown and I – he lived next door to the hotel – we were coming up Clifton hill one day, we were only little blokes, you know and these Army guys went past and they threw us out two tins of Bully Beef and we'd thought we'd won the lottery.' (Harvey, Tape RTA-LHD:FH12, Side A, 03:39)

Charles Simpson offers an interesting insight into how things might have been if an offer that the Americans are supposed to have made might have been accepted:

> 'During World War II, we've been reliably informed by a number of locals that the American Corps of Engineers, who were in Australia at that stage offered to rebuild the road by their simple method of blasting three-quarters of the cliffs out and building a viaduct from Coalcliff to Clifton. Most of the locals were of the opinion the New South Wales Government should have taken that offer - it was a free offer and they never took them up on it.' (Charles Simpson, Tape RTA-LHD:FH3, Side B, 34:38)

Gloria's story

Gloria Bouren is now 79 years of age. The only girl out of seven brothers, she was born at Glen Innes:

> 'It's a lovely town and Sunday outing would be up to the cemetery here all my mother's relatives were buried and a couple of baby brothers that had died. It's a lovely place – gets a bit chilly in winter.' (Bouren, Tape RTA-LHD:FH11, Side A, 01:42)

Gloria spent the war years in Brisbane working as head waitress at the Queensland Club, an exclusive club for gentlemen:

> 'I had a wonderful time. It was the jumping off spot for the campaign in the South Pacific, like, and there was about a hundred men to every woman – we used to go out dancing nearly every night of the week – you had to go and look after the troops, like. A lot of the Americans were homesick. The Americans used to take us for a ride in their jeeps. We had to be in at midnight, otherwise the doorman would lock us out.' (Bouren, Tape RTA-LHD:FH11, Side A, 04:29)

Gloria's days as a party girl ended when she met her husband Jack, who was returning from a tour of duty in Papua-New Guinea at the end of the war. Jack was a miner from Thirroul and they settled at Clifton in 1946 in one of the miners' cottages:

> 'It was a weatherboard house, badly in need of paint, with a leaking corrugated iron roof, and I'd get up in the morning and stoke up the stove – because we had a coal-burning stove and you didn't have a sink, so you washed up in a dish. We didn't have lounge rooms in those days and there was no bathroom – we had this shed out the back where the copper was and the washtubs, and there was a bath in there – you'd heat up the water in the copper for a bath and that's where you bathed – we didn't have a shower. Of course, the house had been there that long that on a real windy night all the coal dust that was stored in the roof used to come down, 'cause it had one of those ceilings, sort of board ceiling and you'd go out in the morning and everything in the kitchen would be covered in coal dust, so I had plenty to do, but like, everyone was in the same boat. We were all quite happy, and along the road a bit they used to have these cows up there, wandering around, and these horses, and when my son got older he bought a pony …. we bought it for him for his birthday and he used to just roam up there and our front veranda was on the street and the horse would stand there if he wanted anything and hang his head over the front veranda. Goodness me, things were different in those days, and often a rock would come roaring down the mountain. There was a house up the top of the street on the left and one night, after heavy rain these rocks used to come pounding down and this great rock came down and wiped out their laundry and shed and practically the back of the house, but no-one was hurt, but rocks would often come down – you'd hear them roaring down the mountain.'
>
> *How did the locals react to all those rock falls – were they sort of taking it all in their stride?*
>
> 'Oh yes, yes. There was an old lady lived across the line here – she was terribly lucky, she had this big long house she'd lived in all her life – she died when she was 90, I think and just after she died this great rock came down and wiped the

> house out – it was real strange. I'll never forget it – we went up to have a look, like – it was a long house with rooms beside one another and the whole place…. they had this great big rock in the middle of it.' (Bouren, Tape RTA-LHD:FH11, Side A, 13:53)

Despite the dangers of living along the coast, there was a great sense of community and social spirit in Clifton of the 1950s:

> 'Saturday nights we'd all go to the hotel and sit around and have a drink and there'd be a singer there, or a band, or something. One of the miners was a great singer – Darby Ranger was his name – big handsome bloke, and he'd be up the pub, singing – he had a beautiful voice and he knew all the words of the songs. Everyone knew everyone – we all got on very well together – we'd have a dance in the hall every second Friday night, play tennis every Saturday afternoon and go to the hotel Saturday nights – of course, the hotel closed at eleven o'clock, or was it ten? It used to close at six o'clock once and it was great celebrations the first night when they were allowed to stay open later – the place was packed.' (Bouren, Tape RTA-LHD:FH11, Side A, 24:50)
>
> *Were the people poor by today's standards?*
>
> 'Oh, they had all they wanted and plenty of food to eat and eventually, like us, we got a car, the people over the road got a car – we had a 1934 Dodge, but we drove up to see Mum in Brisbane, we used to. You'd only go so far and the radiator would heat up and you'd have stop and get out and put more water in the radiator. It took us about three days to get to Brisbane and you'd camp on the side of the road, like. We had a tarp that you'd pull out from over the side of the car, like. It was an adventure driving to Brisbane.' (Bouren, Tape RTA-LHD:FH11, Side A,18:39)

Life underground

For the people of Lawrence Hargrave Drive, employment opportunities were limited. Ron Draper recalls:

> 'You just practically left school and walked straight into a job, which was mainly the pit, or the steelworks.'
>
> *Were they the only two options available to you, were they?*
>
> 'Roundabout that time, yes, or the railway.' (Draper, Tape RTA-LHD:FH7, Side A, 09:35)

Stan Rees started in the mine at 14, as had his father:

> 'He was a miner, he was a Welshman, came out here and started up at Coalcliff – his father was a miner – once you got coalmining in your blood, it seems to stick in there. It was the old pick and shovel days – they'd draw for different sections of the mine – they used to draw for positions: if you got a good draw, well you made money, if you didn't you was battlin' and they worked hard – I seen chaps there…. of course there was no such a thing as compensation them days….. and they'd come and they'd be working in their misses' corsets because they'd have a broken rib, because if you didn't work, you didn't get any money. You know, you'd see blokes coming with broken fingers ….. oh, terrible it was.' (Rees, Tape RTA-LHD:FH5, Side A, 01:24 & 11:15)

In 1939, Gus Forbes left school and was looking for a job:

> 'The day after I turned 16 – I must have been a bit of a torment to my mother, because she was working in the shop and I was tormenting her – and she said: 'For goodness sake, go and get yourself a job', so off I went – I went along to the pit and I saw Bill Sweeney, who was the pay clerk – I said: 'I want a job, Mr Sweeney' and he said: 'You can start tomorrow', so I started tomorrow. I went home and told Mum – she nearly had a fit – didn't want a son in the coalmine – anyway, I stopped in there just on twelve months, I was a clipper, that is clipping the full coal onto the endless rope to take it to the surface and clip off the empties that came on the reverse rope.' (Forbes, Tape RTA-LHD:FH6, Side A, 26:49)

After his first year in the mine as a 'clipper', Gus Forbes became a 'wheeler'. In 1940, mechanisation had not yet been introduced and pit horses did the heavy work of pulling the skips:

> 'In those days, you walked three mile in with your horses – you walked three mile out – there was no transport, you had to take the powder in on one of the horses and there was no water in the mine in those days – we didn't get the water in until we got the machinery in, and I was 23 years of age, I was as fit as a fiddle, I didn't drink, I didn't smoke, and I would go to sleep at the tea table. It was slavery – nobody should work that hard, nobody does work that hard anymore. You chased horses – they were tandem horses, you had a lead horse and a body horse and you really, really worked hard – you earned every penny you got and I was on … the machine wheelers were the highest paid wheelers and it was twenty-three and a penny a day'. (Forbes, Tape RTA-LHD:FH8, Side B, 35:26)

Stan Rees explains the kind of horses that were used:

> 'Well, they were big horses, some big horses, yeah, they were an average size horse, very nuggetty, very good, and of course the horses got to know what they had to do. Each wheeler treated his horse as his own, more or less, and then of a weekend they'd bring the horses up out of the mine and the horses would come up for the weekend. It was a sight to see them come out, when you see fifty horses coming out and they'd go berserk just seeing the sunlight, because they was down there – sometimes they wouldn't bring them out of a weekend and they'd be down there for a fortnight, three weeks – never even see the sun or anything. It was really a cruel thing for the animals. The horses worked right in the mine, right at the coalface, two or three miles, and they knew their way in, where they were going – it was dark, no light or anything. At that time you only had lights that you used to hang on your belt, not the headlights.' (Rees, Tape RTA-LHD:FH5, Side A, 14:19)

> 'A lot of the places out there had a crook roof, or you had the floor bumping up all the time – the floor would come up and they had to sometimes dig holes out in between the tracks so the horses could get through – the horses were too tall – they couldn't pull the skips.' (Draper, Tape RTA-LHD:FH7, Side A, 28:51)

> 'The skips would come up in the cage and the onsetter had to pull a lever to let them out – they went down onto the weighbridge, where they had a leather token on it – leather with a number stamped on it, and this bloke used to yell it out inside to the two weighmen – there was a company weighman and a Federation weighman, that's the Union weighman – and they'd take the number and the weight and that's what the miner got paid on. And then it'd go from there and up a creeper, and the skip used to bump back on it and it'd come up and go off at the top and we had to sprag them from there to the next bloke – he'd change the points from one tumbler to the next and they'd bump the empty out – he'd pull the lever as they went in, which would lock the things on the bottom of them and pull the other lever up with his other hand and the skip would turn over and empty down into the shakers, the screens, and what you did down there was you picked the stone out before it went down into the railway wagons, or the best amount that you could.' (Draper, Tape RTA-LHD:FH7, Side A, 25:56)

Brian Harvey worked for ten years on night shift, known as the 'Dog Watch':

> 'You got paid on a bonus system – the more coal you got, the more money you got. We had our ups and downs, but I enjoyed working there.' (Harvey Tape RTA-LHD:FH12, Side A, 10:34)

Warren De Clouett started as a butcher's apprentice and then joined the mine in 1966. By this time, mechanisation had come to the mines and horses were no longer in use:

> 'My first job was at South Clifton where my Dad and my uncles worked and it's the best job that I ever had in my life. I couldn't wait to get to work – honestly, I used to run to work, just to be able to go down the coal mine and sit with them men and listen to some of their stories. They were just so unbelievable, the stories, just to sit there and listen to them and work with them and learn off them, which I did.' (De Clouett, Tape RTA-LHD:FH17, Side A, 14:00)

De Clouett recalls a typical day in the mine at Scarborough:

> 'They'd blow the seven o'clock whistle and you'd walk over, get on the transport. You left the pit top with a locomotive towing about eight of those what they

> called 'men cars' and it would take you from twenty minutes to half an hour to get to the bottom of the drift, and then you'd get in your own individual battery cars and you'd go to your different sections of the mine. You'd get there and you'd have a quick bite to eat – it might be a sandwich or a bit of fruit and I'd start the machines up, and the men would go to their different positions and you'd start cutting coal. The men would bring in the timber and the bolts and all that, and you'd cut your coal and you'd start to put your bars up, you'd have blokes putting the props up, and you'd start cutting again and you'd continue that all day. You'd stop for crib about quarter to eleven, which was pretty early for dinner, you'd lie in the rib somewhere because at Scarborough we didn't have crib rooms, and then the Deputy would say: 'Right-oh boys, let's cut a few more', so we'd go back, cut some more coal, put it on the belts and it would make its way out to the pit top and then at half past two, you'd finish, make sure that everything was secure, because you had a shift coming in behind you – the afternoon shift – make sure that there was plenty of timber for those blokes, and then we'd make our way back to the bottom, get onto our transport which had already brought the afternoon shift in – they'd get off, we'd get on and we'd come out at the pit at about quarter to three, run to the bathroom, run home, and then run to the beach and surf. That was your normal day.' (De Clouett, Tape RTA-LHD:FH17, Side A, 19:15)

But working underground for years in coal dust took its toll on the miners:

> 'You couldn't see for dust there at times, and that's how a lot of the dusted miners came about – coal dust.'
>
> *How did it affect their health?*
>
> 'Oh, very bad – once they got over fifty, they was finished, really – you could hear them breathing and coughing and spitting, you know, but they had to work, because otherwise they'd starve, 'cause they couldn't retire or anything – there was no retirement age them days. They'd work till probably they'd drop dead, or they couldn't work any longer.' (Rees, Tape RTA-LHD:FH5, Side A, 22:25)

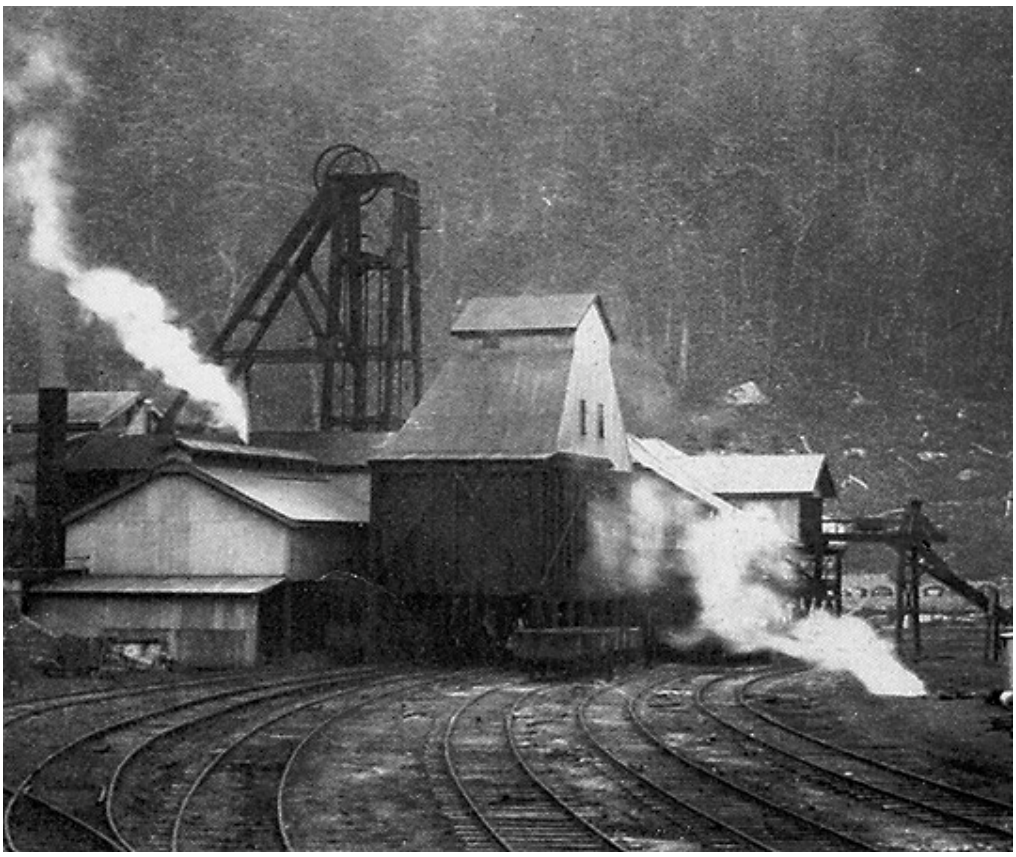
How dangerous was it, to be working everyday in the mines?:

> 'Every time that anyone drops their head to walk into a coalmine is dangerous, very dangerous. I saw a lot of bad accidents in the mine and one that will stay with me for ever and ever is the night that Billy Band, a fitter in the mine…. only been married twelve months, and he got killed. I was working on the stone at Number 12, we'd just gone back after the Christmas break, we got a phone call to say there was a bad accident down in sixteen. I was pretty fit in those days and about twenty of us took off and I must have beaten them by about two hundred yards, and the labourer to Billy was 'Skin' Ainslie – he was at the power box, disconnecting the power, he couldn't talk, he was crying, he just pointed and away I went, saw the light under the brattice and I ducked under it, and there was the loader and I see Billy underneath it and crawled under it, felt his pulse and he was dead – there was no pulse – I knew he was dead before I got under. We got to the transport, put the stretcher on one of the cars, we all got on, nobody spoke, not one word all the way out - there wasn't a dry eye on that transport – we got outside, half the town was there because when there was a bad accident they blew the whistle and everyone knew there was an accident – they didn't know who or what, so they all turned up. There was a lot of relieved faces when they found out that it wasn't one of theirs and it was Gracie…. Gracie Band was ……. she was the one who didn't have the relief on her face and that is something that

> will stay for me, but other accidents… I've seen horses killed, which is a sad thing in itself because when you're a wheeler nobody could say anything they liked about your horses – you could say what you liked, but if somebody else hit your horses it was knuckles are trumps, you just had something with those horses, you loved your horses and to see a horse get killed is a terrible thing.' (Forbes, Tape RTA-LHD:FH8, Side A, 27:47)
>
> 'There was always accidents. Main accidents were once the machinery started you had to be very careful because these machines took up the full width of the driveway – it was just like trucks going along the main road. You had to be careful and that, because it was big machines, and it was coal coming out of the mine. When you were extracting coal was the worst part – extracting the pillars, because then you'd get the fall – sometimes bury the miner and stone might weigh a ton or something and would come out – just drop out of the roof…. boom! While I worked up here there must have been about four deaths. Bobby Shepherd got killed in a loco accident. He was riding on the front of a loco and it was going down a steep incline and it got away on the driver, and when he went to jump off he got hit and it killed him.' (Rees, Tape RTA-LHD:FH5, Side B, 28:52 & 32:53)

Ron Draper had his arm broken when a skip hit it, but worse was to happen to his brother George:

> 'They tell me that he went in… they were short of a bit of brattice, the stuff they put up to take the air down into the pit and take the gas back out, and he went into this place to get this bit of brattice, and when he went to pull it, the whole lot collapsed on top of him and the only way to get him out was to cut his boots off him, but by that time it was really too late. The roof came in on him. He was Mum's white-headed boy – Mum thought the sun shone out of him. I went white overnight. It was the 13th April 1967. (Draper, Tape RTA-LHD:FH7, Side A, 12:28)
>
> 'The men and their wives started a Women's Auxiliary, and the men used to put a little bit of money in each week out of their pay, which they called a 'stump' and they built Coledale Hospital. It was a combined effort by all the mine and coke workers.' (De Clouett, Tape RTA-LHD:FH17, Side A, 02:58)



The Coalcliff shaft mine, 1920s

(From: *Coalcliff Mine - 100 years of Mining,* 1978)

Rock bolting in the mine at Coalcliff, 1970s.

(Source: Booklet: *Coalcliff Mine: 100 years of Mining. 1978*

Extreme weather events

The combined effect of rain, wind and the sea has made the coast at Lawrence Hargrave Drive an area of interest to climatologists. Storms of unusual intensity can strike without warning. An article in *The Daily Telegraph* of the 10th March 1913 (edited) gives us an insight into one such storm:

TERRIFIED CLIFTON.

———

HOTEL UNROOFED.

———

SOME NARROW ESCAPES.

———

"TREES BLOWN ABOUT LIKE STRAW."

———

CLIFTON, Sunday. – One of the most terrific and disastrous storms which has ever taken place on this portion of the South Coast occurred last night, when much damage to property was done and many narrow escapes from death were experienced.

The large two-storey brick building, the "Imperial Hotel," Clifton, was wrecked, roofs were blown off, large trees uprooted and blown about like straw. Sheet iron, twisted into all possible shapes, was blown about like so much paper. Long pieces of timber, evidently torn off some of the roofs, were scattered around and splintered as though exploded by a charge of dynamite.

A strong south-easterly gale, with terrific rain squalls was experienced during the whole of Saturday, and as the day advanced the gale increased in fury, and a mountainous sea was dashing against the rocks with a roar like the discharge of artillery. By about 10 p.m. the gale had reached hurricane force and buildings were shaken to their foundations. Between half past ten and 12 p.m. the climax was reached and for some minutes the 60 boarders and other occupants at the Imperial Hotel, Clifton, were thrown into a state of the greatest excitement.

TERRIFFIC TEARING NOISE

A terrific tearing noise of tons of iron roof, smashing of timbers, crashing of bricks and mortar and breaking glass rooted everyone to the spot. Men sitting in the hotel parlors were smothered with falling plaster and broken glass from the gas fittings overhead, and many thought their last moment had come. Large chimney stacks of the hotel building were torn off with the roof and were hurled through the ceilings and floors of the building, tearing great holes, about ten feet square in their descent.

RUDELY AWAKENED

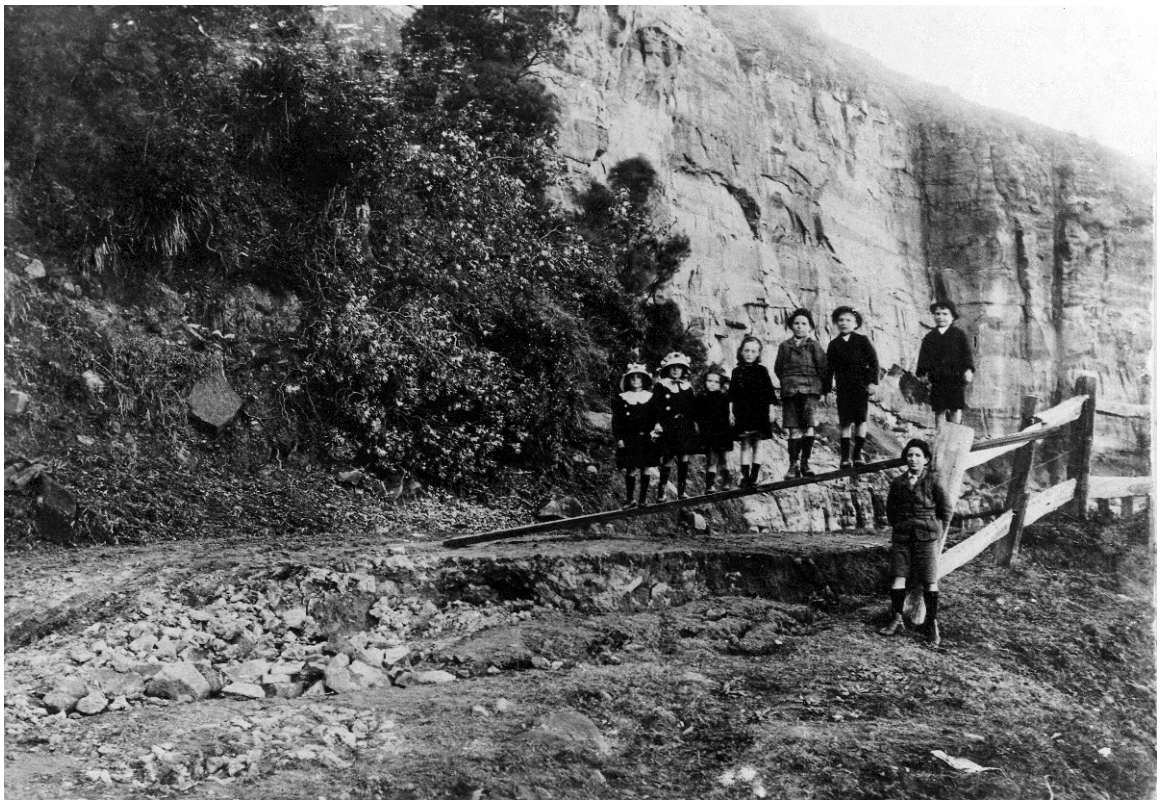
> Mrs. W. Loneragan, wife of William Loneragan, billiard room proprietor, had the most sensational experience. She with her infant child was asleep in one of the double bed-rooms upstairs when she was rudely awakened by the crash of the falling roof, and the next instant was covered with falling plaster. Crash followed crash in the room and bricks and timber were driven through the ceiling, breaking almost every article of furniture in the room as well as falling on the bed all round her. Whether fear or presence of mind prompted her to remain perfectly still she does not know, but strange to say, the only portion of the room or bed not damaged was just the small space she and her child occupied. It was most fortunate that she did not attempt to move from her position, for had she done so, she would certainly have been killed by the falling debris.

The year 1950 started wet, with 32 inches of rain recorded in the first three months. There were serious landslides on the railway line between Coalcliff and Scarborough, subsidence of the line between Scarborough and Coledale, at Wombarra the platform had fallen away with one line suspended in the air, while at Clifton a 10-ton boulder crashed into Mr. L. Williams' home. Then on Thursday 6th April torrential rain caused floods and massive landslides all over the Illawarra. Tons of falling rock, trees, earth and water rendered Lawrence Hargrave Drive totally impassable and at Clifton, the whole road had subsided:

> 'There's a couple of newspaper articles that mention this major collapse in 1950. One of the quotes – this is from the *South Coast Times* on the 5th June 1950, when they're considering what they're going to do with it all – this is after gangs had been working for two months on the road and the comment is that it'll be another two months before the road is trafficable and there's a quote here……. *'Engineers, after viewing the wide fissures in the cliff face below the road shake their heads and express the opinion that the task is most difficult, if not hopeless….'* (Hendrickx, Tape RTA-LHD:FH28, Side B, 40:03)

Brian Harvey adds:

> 'In 1950, we had that wet winter and the road here was closed here for about five months and Clifton hill was just one great big bog heap and they'd never done anything to it, or tried to clear it and a bloke got injured at Coalcliff Colliery and the ambulance had to go right around and he nearly died. And the miners had a meeting the next morning and they said 'Well, we're not going to work again until they put a road through round the cliffs and clear the cliffs.' So they put a bulldozer in one morning and at dinnertime the next day they had a one-way track through, so it's marvellous the power of people.' (Harvey, Tape RTA-LHD:FH12, Side A, 26:30)



Clifton schoolchildren after road collapse of 1913 (Photograph supplied by Lyn Busch)

The postman on Lawrence Hargrave Drive, 1920s. (Photograph supplied by Lyn Busch)

1942 photograph of cliffs (Source: DMR files)

Lawrence Hargrave Drive, 1947 (Source: DMR files)

Very large rock fall, Lawrence Hargrave Drive 1949

Mudslide as result of storm damage, April 1950

The Waterhouse Report

In 1949, the Department of Main Roads, concerned that Lawrence Hargrave Drive was posing a risk to public safety, had engaged L. Lawry Waterhouse, a leading geologist, to conduct a survey and prepare a report on the most troublesome section of the road between Coalcliff and Clifton. The storm of 1950 increased the need to find a solution:

> 'The Waterhouse Report was incredibly important in terms of the history of the road and in terms of our current remediation studies. There was actually a reference in the RTA Library to a report by Lawry Waterhouse and I had asked them for a copy of this report and they had come back and said 'It's been lost' and I thought damn, this was going to be a very useful report, and just on the odd chance, I sent an e-mail down to Val Brizga, who's the Scientific Officer in Wollongong and he managed to come up with a photocopy of it. And it was this report, detailing the engineering geology between Coalcliff and Clifton – it was just one of the most detailed engineering geology reports I've ever seen – it was absolutely brilliant – detailed site observations and detailed mapping. The maps were beautifully hand-coloured by watercolours. This report by Lawry Waterhouse was incredibly important and it is amazing to me that it had not been looked at in relation to Lawrence Hargrave Drive in modern times, so this report was an absolute godsend and without it, we would have to again spend a lot of time doing detailed mapping to get to the same point, so Waterhouse has saved us a lot of time and money. It's interesting to think what happened between him handing in the report to the then DMR in I think 1952 and the subsequent work that's been done on the road up to the present, because it almost seems like the report was buried somewhere. Waterhouse provided a host of remediation options for fixing the problem and these included things like redirecting the road to different parts of the slope, to tunnelling, to bridging options and included also roof protection, so having rock fall protection devices above the road.' (Hendrickx, Tape RTA-LHD:FH28, Side B, 28:28)

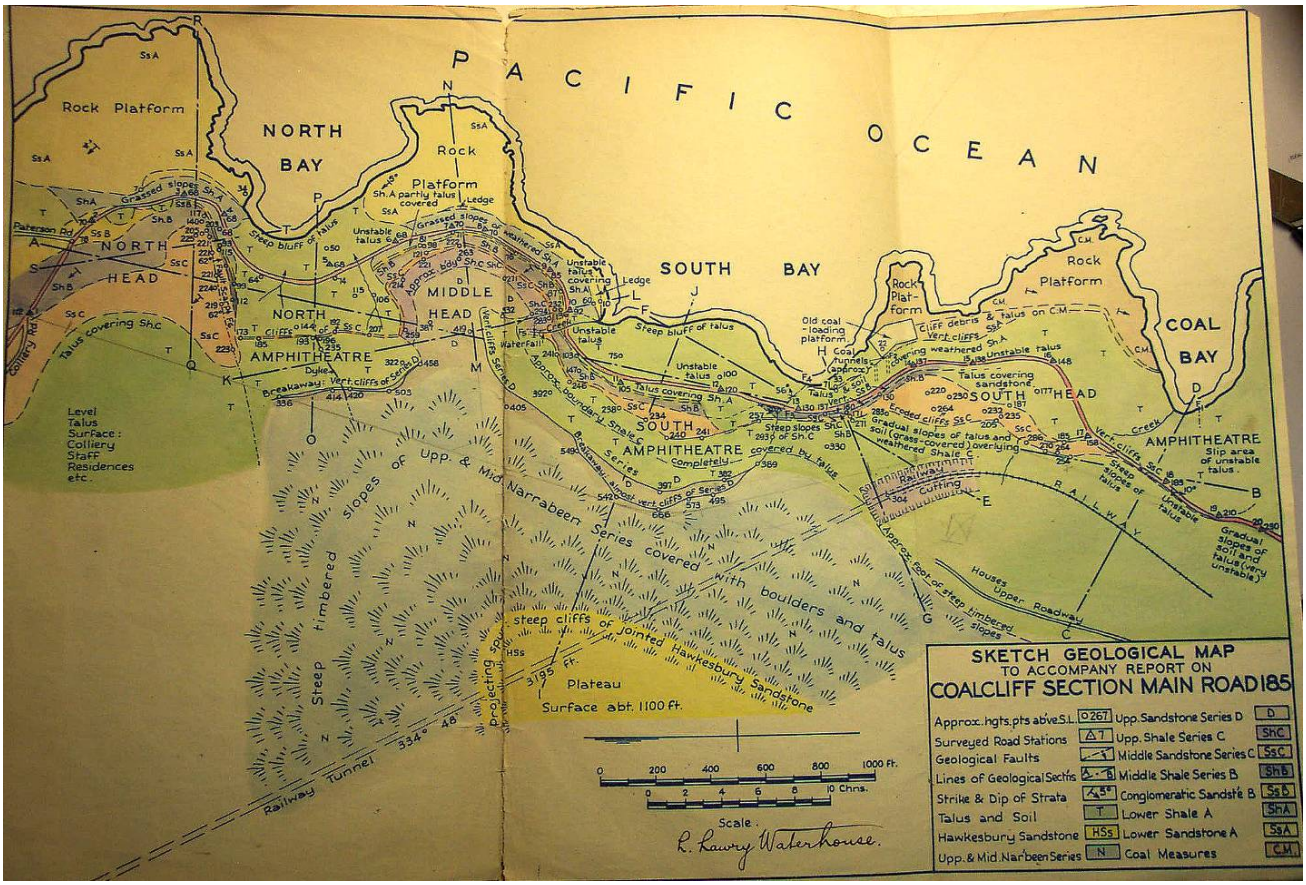
But the Department did not have the means to carry out these expensive remediation works. Waterhouse's report concluded:

> 'The only practicable way of providing safety and security (permanently) is to close the road unless a very large expense be incurred.' (Letter by Chief Engineer, DMR, 2nd March 1953, RTA File No: 58-1202, RTA records, Auburn repository)

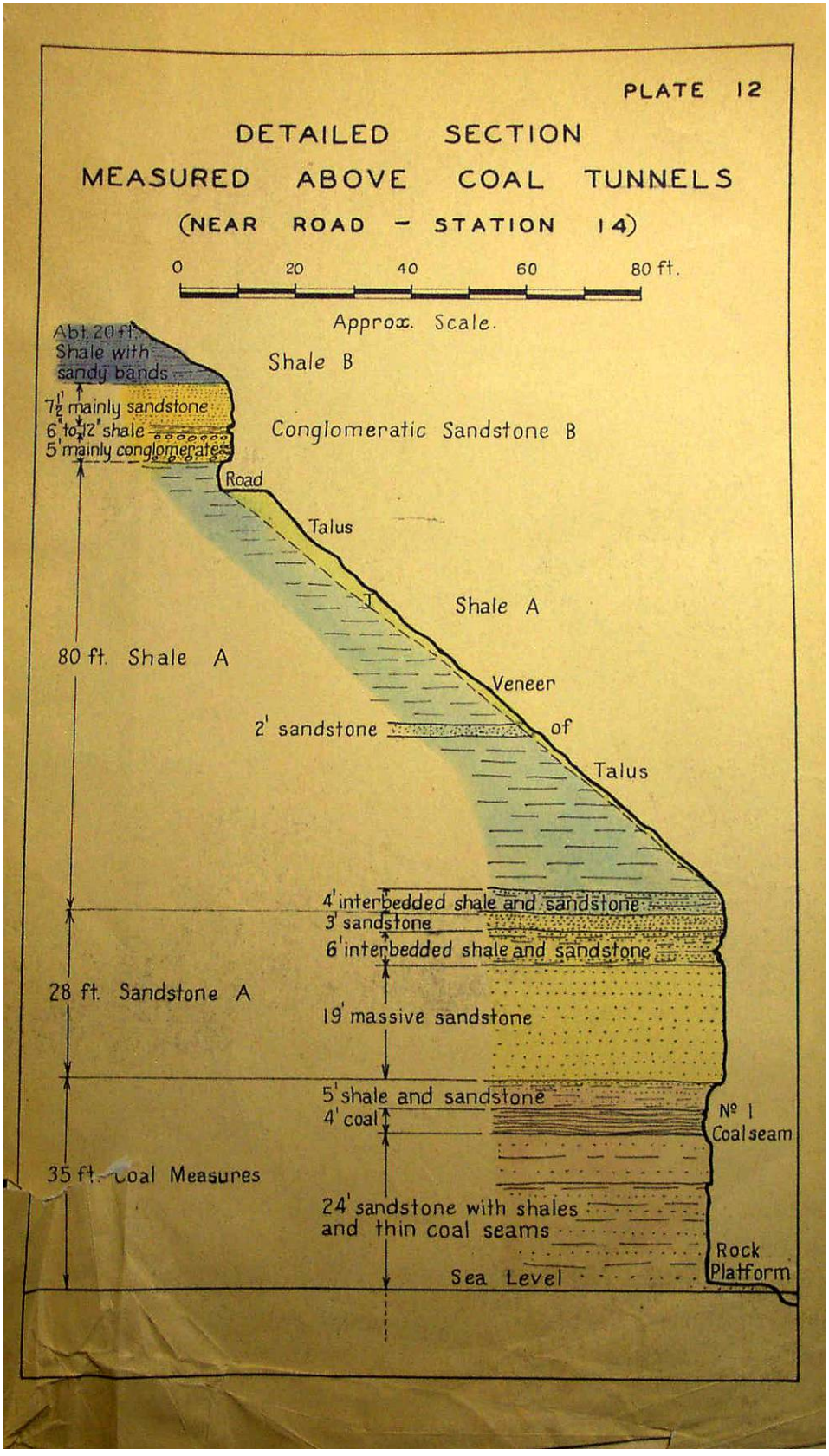
This advice was not taken up by the Department, which argued: 'As warning fences are displayed, the rock face is examined at frequent intervals and from time to time the Department removes loose rock from the cliff face above the road, it is not felt that the hazard warrants the severe inconvenience which would be caused by closing the road' (Source: DMR files).

Leo D'Adam comments:

> 'Professor Waterhouse made the comment in his report that it should be closed – he reckoned it was a dangerous road and we've said that all along, but the one factor that kept it going was the coalmine up there. Over those years, coal was very scarce – power supplies etc. etc., so it was a dominant factor in keeping the road going.' (D'Adam, Tape RTA-LHD:FH16, Side A, 14:19)



Original watercolour drawing by Lawry Waterhouse, 1952 (from DMR files)



Section drawing by Lawry Waterhouse, 1952 (from DMR files)

A road you could never trust

During his investigations, Waterhouse witnessed an actual rock fall on a furniture truck in 1949. John Baines was the driver of that truck:

> 'I was asked to cart some furniture for Mr Hawkins who had the general store in Scarborough. A friend and I went and loaded it on. We got going, we were going round the cliffs and there was a loud bang on the side of the truck and I came to a stop. Cy and I jumped out and here was a hole, about two foot across in a wardrobe on the side of the truck and a hole in the tarpaulin, so I climbed up, had a look in and here's a big rock sitting in the middle of the truck, right on top of a typewriter.' (Baines, Tape RTA-LHD:FH10, Side B, 31:47)

Ron Draper add this little insight into the times:

> 'The SP Bookie, he was going home one night and it was raining like anything and that, and these rocks were on the road near the amphitheatre, so he decided he'd get out and get them out the road so he'd get through a bit better, and he heard some more coming, so he jumped in the car and drove the car straight over the top of it. He'd cleared a bit of a channel, but he drove the car over the rest.' (Draper, Tape RTA-LHD:FH7, Side B, 37:22)

Leo D'Adam comments:

> 'It was a type of road that you could never trust, in that it would remain stable, because of the nature of the geological formations of the area that's quite unstable. I was always worried that a major catastrophe could happen, given the right circumstances.'
>
> *What was the locals' attitude towards all these rock falls – were they afraid to drive on that road?*
>
> 'Surprisingly, no – they'd grown up with it and in those days – I don't know what they do now – we used to just pick the rocks up and dump them over the other side.' (D'Adam, Tape RTA-LHD:FH16, Side A, 24:25)

In 1954, the young Queen Elizabeth and Prince Phillip made their first Royal Tour of Australia. They were to visit Wollongong and take the scenic route along Lawrence Hargrave Drive, but the Department of Main Roads, in an internal memo recommended that the road not be included in the tour on safety grounds. This prompted a letter from P. Brooks, Honorary Secretary of the Coalcliff Progress Association to the Commissioner of Main Roads:

> Dear Sir,
>
> The members of my Association view with concern the statement that the Main Road between Clifton and Coal Cliff is unsafe for the Royal Tour.
>
> Considering the fact that a bus load of school children are conveyed to Scarborough Public School in the morning, returning each afternoon, and also the motor traffic that is travelling on this Road daily and at week-ends, my Association would appreciate more details as to its safety.

The touring Royals took the train to Wollongong instead.

Some time during the 1950s, the Department of Main Roads hired a man whose name was Bert Cheetham to look after the road. Bert was a friendly bloke with a limp – he waved to all passers by and patrolled the road for eight hours a day, virtually every day:

> 'He had a spade and a shovel and his job was to walk around the cliffs and shovel any small rocks off the road, use the broom and then the shovel and he'd throw them into the sea, and if there was a serious rock fall that he couldn't lift off with the shovel, he would then go the to hotel, because that was the nearest phone, ring up the old Department of Main Roads headquarters in Wollongong and they would send a team of workers out with the appropriate equipment.' (Charles Simpson, Tape RTA-LHD:FH 3, Side A, 27:08)

> 'He worked on that road, between Coalcliff and Clifton and that road used to be kept spotless by that man, I mean spotless.' (De Clouett, Tape RTA-LHD:FH17, Side B, 39:37)

> 'He used to come up from Coledale on a pushbike and he'd start there at one end and he'd go right through and he worked….. he wouldn't sit, he worked for his eight hours. Anyhow, when old Bert went, they didn't replace him……I think they replaced him with a chap for about three months and he retired and that was it.' (Rees, Tape RTA-LHD:FH5, Side B, 44:24)

> 'When he was employed it was very, very rarely that the road was cut. All of the locals were of the opinion that when he retired, that was when most of the trouble with rock falls began.' (Charles Simpson, Tape RTA-LHD:FH3, Side A, 28:26)

But the rock falls continued, with our without Bert Cheetham, as nature took its course. There were particularly bad years in March 1958 and April 1963, when after a nine-inch deluge, floodwater undermined the road for a distance of about 20 metres and the road slipped into the sea below. Hundreds of tons of rock and soil, loosened by what had then already been weeks of rain also crashed into the sea north of Clifton.

Leo D'Adam recalls one eventful evening in 1965:

> 'There was a group of men repairing the road in the evening – it had slipped during the day and they kept working, and I went out there and it was raining – very violent weather with very strong winds, but the men kept working and it was just coming on towards the change of shifts at the coalmine – it would have been about ten-ish in the evening, and we held the men……. about 10 or 15 cars up, miners going to the night shift, and we'd just finished gravelling and I let the miners go through, when no sooner than we were just tidying up there – we were dumping another load of gravel and the truck was tipped up, we could hear a rumble up top and down come this massive rock - it must have been at least 30, 40 tons or more and the tip truck was tipping the material and its tailgate was swinging and the rock completely took the tailgate. It was by good fortune that we did not have any fatalities that night – we could have lost a fair few people, coalminers and their cars – they would have been sitting ducks, and the truck – would it have been another metre back, it would have taken it with it, and I was only about five or six metres from where the rock went through. So it put the fear of life into me and I never, from there on sanctioned that repairs would be undertaken in the evening, doesn't matter what emergency, and we immediately

> closed the road off. That was in my day, I don't know what happened afterwards.' (D'Adam, Tape RTA-LHD:FH16, Side A, 09:28)

In 1963, the first recorded fatal accident due to the condition of the road was reported when a Coalcliff motorist plunged to his death, crashing through the guardrail into the ocean below:

> 'The Coroner's and the Police reports at the time suggest that an embankment failure was partly to blame.' (Hendrickx, Tape RTA-LHD-FH29, Side A, 04:35)

Stan Rees, himself a Coalcliff man, knew the victim:

> 'I can remember Bobby Poole, when he went over in the car, like, but I didn't see that, I didn't know until the next day – he lived at Coalcliff here and his son used to kick around with my son and that's how we knew it was Bobby. He said his father hadn't come home that night from Clifton and we went around there and you could see where the car had gone through the fence and that was more or less caused by a slip in the road too, and it hadn't been fixed up for quite some time and it wasn't fixed up till after the accident. You could see the crack, it had a…. in the old time it'd be a three inch drop – was on that hairpin bend, yeah, and there was no car – never ever found the car – it went into the sea – never ever found it.'
>
> *Did they find his body?*
>
> 'Yeah, yeah, his body was there, because I had to identify him, down at the morgue. (Rees, Tape RTA-LHD:FH5, Side B, 54:05)

Marc Hendrickx continues:

> 'The same year, I think in December, another accident occurred at the same spot, in which a loaded coal truck drove over the edge and the driver died in hospital the next day after being recovered – again, there was a Coroner's investigation into this death and it turns out that the coal truck was being….. it had broken down, was fully loaded with coal, heading to the Coalcliff Coke Works and the driver reportedly called for assistance and he was towed by another truck and the connection between the two failed just at this particular corner and the truck went through the guard fence again and ended up down the slope.' (Hendrickx, Tape RTA-LHD:FH29, Side A, 04:47)

By 1967, a *South Coast Times* headline screamed: 'ROAD IS DEATH TRAP – SOMEONE WILL BE KILLED' and the article read: *'For the third time this week tons of rock and debris hurtled down a cliff face at Clifton yesterday, blocking the coast road. Only the day before, the Minister for Highways, Mr Morton had told residents that the amount of traffic along the route did not warrant the cost of reconstruction.'*

On 2nd November 1967, another huge boulder slipped off the cliff face above Lawrence Hargrave Drive and narrowly missed Alderman Norm Bartlem, on his way home from a Council meeting. The following day, the *South Coast Times*, in an article headed 'STATE TO ACT ON CLIFF DEATH TRAP' reported that the House was told that residents were living in fear and that the State Government would take urgent action to prevent motorists being crushed to death by falling boulders on Lawrence Hargrave Drive. 'We'll prevent a rock fall on this road' declared the Minister for Agriculture, Mr Chaffey, speaking on behalf of the Minister for Local Government and Highways, Mr Morton. His announcement followed an

urgent call for action from the Member for Bulli, Mr Rex Jackson, who called on the Minister to make an immediate re-investigation of the spot and 'secure substantial funds from the Treasury to remove boulders threatening the road.' On November 4th, the Police and DMR engineers ordered the road closed to all traffic. Jeff Thompson, the DMR local Divisional Engineer said: 'We just couldn't take the risk of keeping it open any longer – boulders are liable to come crashing down at any moment of the day and night.' (Source: *Illawarra Mercury* article, 4/11/1967).

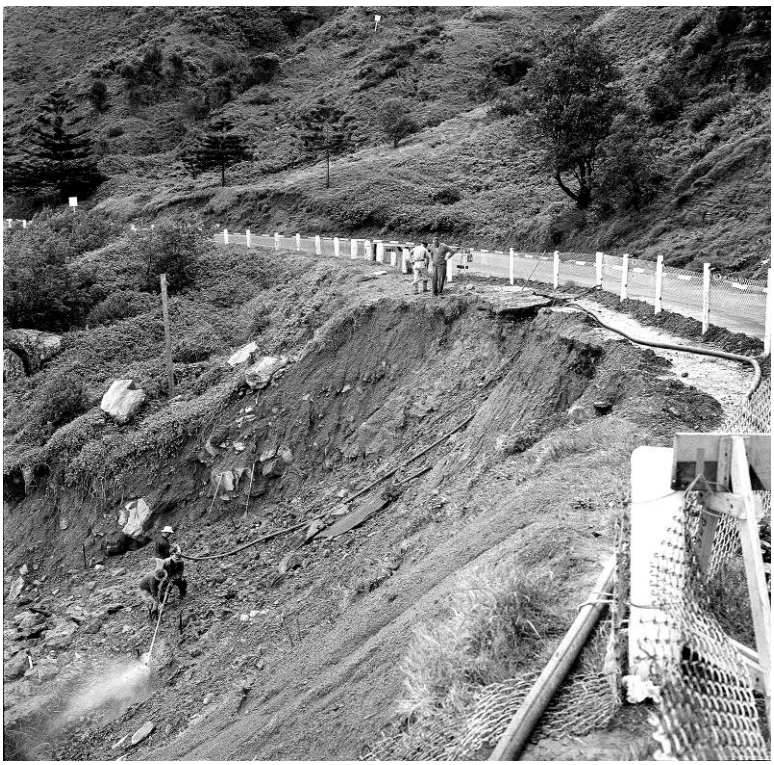
Ald. Hargrave asked for more warning signs to be placed on approaches to the closed roadway. 'Hundreds of cars came right up to the barriers yesterday and had to be turned back, causing several major traffic jams,' she said. Another article in the same paper stated: *'The reopening date of the busy road has been thrown in the lap of the gods.'* (*Illawarra Mercury* article, 7 November, 1967).

On Remembrance Day 1967, the *Illawarra Mercury* reported that 30 men, incensed over the Department of Main Roads' decision to close the road, stormed the Clifton Hotel to protest against the road closure. The men gathered at the bar and exchanged heated words to describe the Department's action. The words included 'stupid', 'ridiculous' and 'pointless'. Further action in the form of public meetings were foreshadowed.

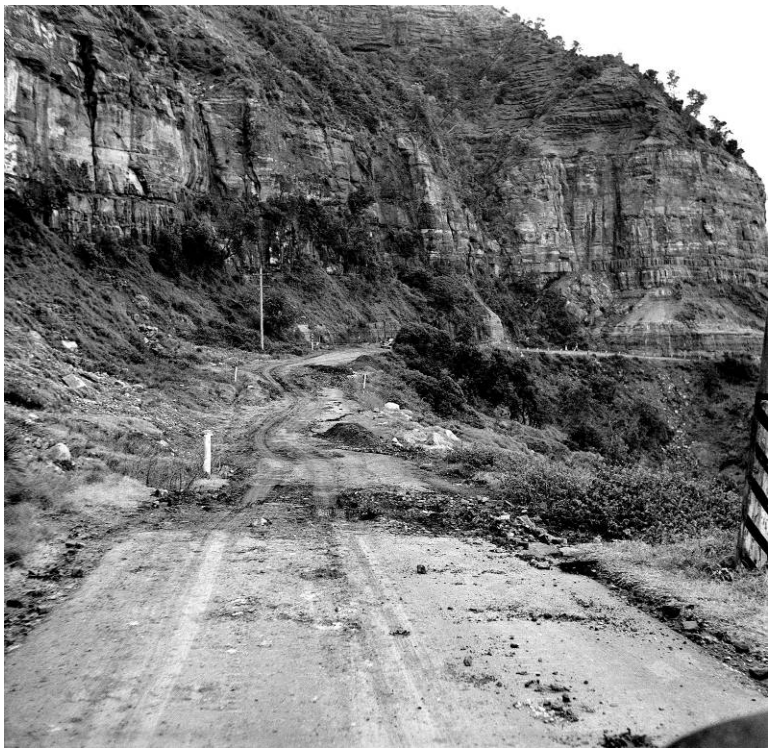
The DMR, now feeling the pressure to act quickly considered dynamiting 5,000 cubic yards of the cliff face to loosen rocks, but then changed its mind because of concerns over the stability of the railway tunnel, less than 60 metres away. 'There will be no use of dynamite, we'll just have to think of something else' Jeff Thompson was quoted as saying in the *Illawarra Mercury.* 'Bruce Fishburn recalls how then possibly the most improbable and bizarre plan ever hatched within the DMR became a reality:

> 'Jeff Thompson sort of reckoned that really, the level of risk was getting to a stage there that we better get some help. So he went up to Sydney and had a talk to various people there and can I sort of comment that I have never seen or heard of so many whacko ideas out of this advice that Jeff got, and included in that was the idea that all these pieces of rock that were sort of hanging there could actually be loosened by hitting them with a wrecking ball-type of arrangement. So much to my disgust, I finally agreed that what we would do was to give this a trial, and so what we did was to organise to get a pile driving winch, and we put that on site down the bottom, and then we had we had to put an anchor up the other end to hang onto the other end of a rope and the idea was that we were going to have a rope that was anchored both ends and from this rope we were going to hang a pulley, and on the pulley we were going to use the twin-drum pile driving winch, both to pull it up and down the rope, and also to lift the weight up and down. Any rate, coming back to the wrecking ball, we then had our first trial with that with a great deal of ceremony and it was hopeless, it really was hopeless. I think we spent all day and got about …….though we did get some rocks down, but it really wasn't worth the effort, because, you know, it's quite massive sandstone and you'd just go 'dong' and it would come back, 'dong' and do it again, and little chips would fall off, and what we found was the most successful was actually to pull this pile driving hammer, lower it right down to the bottom of the slope and drag it back up the face, and it would then hook under the rocks and it would then pull them out, and that was quite effective, but when you pulled them out, there was just another layer behind them and….. we didn't fix the problem and I was of the view that there really was nothing that would fix the problem.' (Fishburn, Tape RTA-LHD:FH23, Side A, 23:49 & 36:19)

Cleaning up damage after the 1950 storm



1963 Embankment collapse



Ruined section of road, 1965

On the 21st November, Ald. Hargrave, the Licensee of the Clifton Hotel moved a motion in Council to have the road reopened to traffic, but her motion was condemned by the rest of the Council, who asked her if she was prepared to accept the responsibility for someone's death if the road was reopened on her representations. Earlier, Ald. Hargrave had accused the Deputy Mayor, Ald. Birch in having been stampeded into agreeing to the road closure by the DMR, denied by the Deputy Mayor. (*Illawarra Mercury* article, 21 November 1967).

The road was opened again late in December 1967, but rock falls continued intermittently. On 22nd May 1968, Alex Penman, a 26-year old miner at Coalcliff Colliery narrowly missed being crushed to death by six half-ton boulders that rolled off the cliffs. Penman told *Illawarra Mercury* photographer Graham Coleman that he had jammed on the brakes as a huge boulder crashed onto the road directly in front of him, crumpling the front of his car and that then at least half a dozen more slabs of rock fell onto the road, the *Illawarra Mercury* reported.

In 1968, the DMR commissioned an Options Study and a number of possible remediation options were costed, including a causeway, an offshore bridge, combination options involving tunnels and rock shelters and a number of inland tunnel options. The study concluded that the expense involved in major remediation works was not justified on economic grounds. (Source: LHD Link Alliance document).

Then, remarkably, the frequency of rock falls and landslide events decreased and did not pose a major threat for the next twenty years as the world almost forgot about the perils of Lawrence Hargrave Drive.

STATE TO ACT ON CLIFF DEATH TRAP

Residents living in fear, House is told

The State Government will take urgent action to prevent motorists being crushed to death by falling boulders on Lawrence Hargrave Drive, Coalcliff, described in Parliament yesterday as a "death trap."

Steps to prevent disaster on the winding cliff road were announced last night by the Minister for Agriculture, Mr Chaffey.

"We'll prevent a rockfall on this road," declared Mr Chaffey, speaking on behalf of the Minister for Local Government and Highways, Mr Morton.

Rockfalls closed Lawrence Hargrave Drive three times last week.

One rockfall narrowly missed a car travelling along the Drive.

An urgent call for action on the road came in State Parliament yesterday from the Member for Bulli, Mr R. Jackson.

Mr Jackson said constituents living in the area were "gravely concerned" following an accident at Brooklyn on Sunday.

Two men were killed there when a boulder crashed down on their car as they travelled along the Newcastle Expressway.

"A safety fence at the bottom of Lawrence Hargrave Drive cliff would be useless if a big boulder fell," Mr Jackson said.

He called on the Minister to make an immediate "re-investigation" of the spot and secure "substantial funds" from the Treasury to remove boulders threatening the road.

Earlier, Mr Morton promised an inspection of the Departments of Police and along the Newcastle Expressroad.

He said the inspection would be made by senior officers of the Departments of Police and Main Roads.

Coalcliff residents last night however, held little faith in schemes to eliminate the "death trap."

One resident said he was sure more people were catching trains since the falls began on Friday.

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P.W.P

COAST ROAD INSPECTION

TRUCK convoys hauling coal to Port Kembla from Coalcliff Colliery will begin using Bulli Pass and Mount Ousley Road today.

This follows the weekend closure of a section of the Lawrence Hargrave Drive, where three cliff-falls made driving a gamble with death between Clifton and Coalcliff last week.

The closure of the winding tourist route means taking the long-way-round to Wollongong today for scores of workers from Coalcliff, Stanwell Park, Bald Hill and Helensburgh.

DRIVERS "DICING WITH DEATH"

The road will be closed for at least two weeks, according to Department of Main Roads engineers who inspected the cliff-face last Thursday and Friday.

They decided on immediate action to neutralise the danger from the towering 300ft. cliffs following a Times' story which warned: "Someone will be killed."

The detour will add hundreds of dollars to the transport costs of hauliers pulling coal from Coalcliff Colliery.

Instead of a seven mile mile drive along the coast to the foot of Bulli Pass they now face a 16-mile run, with a stiff haul up Bald Hill at Stanwell Park, and a hazardous descent of Bulli Pass with full loads.

PICTURE: Divisional Engineer with the Department of Main Roads, Mr G. Thompson, and fellow DMR engineers Messrs. T. Coulter and B. Fishbourn inspect the crumbling cliff-face near Coalcliff at the weekend.

South Coast Times, 6 November 1967

South Coast Times 27/11/67

Giant hammer to smash rocks

A GIANT hammer will smash away loose rocks from the cliff face at Coalcliff where landslides blocked the lower coast road.

The hammer will swing on wire ropes more than one inch thick hanging from the top of the cliff.

COAST ROAD REPAIRS

It is being installed this week by the Main Roads Department and Wollongong City Council.

Bulldozers have sliced access paths through rough undergrowth at the top of the cliffs to the area where the cliff-face is crumbling.

The tracks also will provide a cleared area for an anchor for each of the ropes.

The hammer will be swung into the side of the cliff by manual manipulation of the ropes.

Loose rock will be knocked down the cliff face into the sea.

Lawrence Hargrave Drive has been closed to traffic since a series of rock falls created a public safety hazard almost a month ago.

City Council aldermen last week had a heated debate about the closure of the road and then inspected the area on Friday.

Local residents have signed a petition calling for the re-opening of the closed section of cliff road between Clifton and Coalcliff.

The closure has meant a drastic re-routing of Coalcliff coal trucks around Stanwell Park and Princes Highway to Bulli Pass.

It also has meant diverting all Sydney-Wollongong traffic along Princes Highway.

Work on restoration of the weakened sections of the cliff face is under the direction of the DMR Divisional Engineer, Mr G. Thompson.

He said the work should be finished before Christmas.

Aldermen who inspected the area were not prepared to talk about the road blockage.

The inspection party consisted of The Mayor of Wollongong, Ald. A. F. Bevan, the Deputy Mayor, Ald. R. Birch, Ald. Mrs Rube Hargrave, Ald. Norm Bartlem.

Divisional Engineer of the Main Roads Department, Mr G. Thompson, and the Town Clerk, Mr H. Tolhurst, were present also.

THE N

EIGHTEEN-year-old young adults emerged as the new breed of Wollongong school - leaver this week.

They are the young men and women who completed the first Higher School certificate examination.

About 650 students from State Schools and another

Indigenous perspectives

Although the Aboriginal history of the area surrounding Lawrence Hargrave Drive cannot be substantiated by written records, there are oral history accounts passed down through the generations. Allan Carriage is a tribal elder of the Wadi Wadi Nation:

> 'My Aboriginal name is Gerringonga, which are porpoises – this is where Gerringong got its name from too – from the porpoise. The Wadi Wadi Nation are one of the main tribes in this area, from Botany Bay they lived along the coast as far as the Shoalhaven River. My tribe were the first people to help colonisation, because when they landed near Kiama, they had scabies and sores all over them, but my people healed them, fixed them up and saved some of their lives and their legs with the bush medicine, which I know some of, my mum taught me – and there's some good bush medicine, actually, and good marine bush medicine too – iodine for pregnant women and stuff like this – I know all that stuff that Mum taught me.' (Carriage, Tape RTA-LHD:FH30, Side A, 01:29 & Side B, 32:00)
>
> 'We grew up around Hill 60, that's near Port Kembla, lived on official camps and Mum was born on Hill 60 in a tin shack and my brother was born at the old hospital at Port Kembla next to the Coomaditchy Swamp. Before Mum came back to have Peter, I was sort of on the run, a fugitive with my mother, because the Welfare was chasing me – I was still in my Mum's belly – unreal, isn't it.' (Carriage, Tape RTA-LHD:FH30, Side A, 14:57)
>
> *Could the Welfare have taken you away?*
>
> 'We never had a hope - they could have done anything with us. My Mum used to hide us in the sand hills – we knew the sand hills backwards there at Port Kembla, and my Mum used to say to me and Peter – 'You boys, go and get something for tea' so away we'd go, me and my brother – he was younger than I – we'd go down, we used to dive for lobsters, abalone – that was our food: oysters, sea urchins, cunjevoi, all the top food in the world was just there for us to live on as bush tucker and marine tucker, whatever you want it call it. Sometimes we used to try to get some kangaroo meat Mum used to cook up, the Wonga pigeon, birds, I know all the berries, I can go into the bush and get a feed of berries, like, it's a very finely tuned diet we had. So anyway, we'd get home and Mum used to say – she'd cook it all up and we used to live in a bark hut, but she'd cook it all up and used to put it on this big old wooden table we used to have and she'd say: 'Uhm, I wonder what the rich people are eating tonight?' and I used to be so damn naïve when I was a little fella and I said: 'Oh yeah, Mum, they have more money than us, they'd be eating better than us' and she just used to laugh at me, you know.' (Carriage, Tape RTA-LHD:FH30, Side A, 18:58)
>
> *What sort of education did you have?*
>
> 'Oh, I don't know – I think I started in first class and I finished in first class – I can't read and write. When I did go to school, what school I went to, the teachers tried to teach me that I was 'Marree' – that my people were bad people who used to kill all white man who'd come onto our land – that's what they taught me at school, you know. I could not learn reading and writing because I had that attitude put on me about being a bad Aboriginal person, because they tried to change me,

> but I did not want to change, because I knew I was Aboriginal.' (Carriage, Tape RTA-LHD:FH30, Side A, 20:51)
>
> *Do any features along this coastline have a particular meaning or a place in Aboriginal thinking or folklore?*
>
> 'The escarpment has – the escarpment itself. It's the backbone of my people's spirituality. The escarpment at the back has got thousands of caves in it and we've got drawings, big drawings in the caves of whales and all sorts of different fish. My Mum only told me a little bit about legends – it's about five sisters, or six sisters – this is why the mountains are all joined because evil things come from the sea and the sisters wanted to protect the evil stuff from coming on to the land, and so they gave their life and they went up and they held each other's hands – that's the escarpment running along the back of Wollongong, and in my culture, the evil things were the sailing ships – that's what we tried to stop from coming onto the land, those five or six sisters, and that's the story of colonisation. I don't really want to go into the bad stuff because my Mum said not to go into bad stuff, just try and fix up what you have, you know.' (Carriage, Tape 30, Side A, 06:01 & Side B, 29:27)

Allan started work at a very early age, picking beans. He then joined the Mt Kembla Coal mine at 17 and was the youngest worker in the pit, shovelling coal into the skips. Allan now fights for the rights of his people and the land:

> 'I go to court and fight – that's why I try to plead to people who think with their brains, trying to look after country, which is our legal system. Things have to start somewhere and it starts at the grass roots. My mother told me that two wrongs never make a right. She wanted me to work with non-Aboriginal people, just to look after country and other people too – that's what it's about, to put something into what's better for long-term issues. As a leader of my people I just have to sit there and take it and still love…well, I've always talked love, I've never hated and that's what Mum was about, really, what they taught me, my people, so I adopted my mother's ways in a lot of ways and the same as she adopted Nan Rose's mother's ways, and Granny's way and Aunt Biddy's way, and it goes back a long time and I'm still practising today, trying to bring things together for all who are concerned for this country.' (Carriage, Tape RTA-LHD:FH31, Side A, 22:39)

Asked whether his people ever walked along the cliffs where Lawrence Hargrave Drive now is, Allan replied:

> 'My old people wouldn't walk through there because the rocks used to fall all the time. A little pebble would fall off the top of that, and would go right through the top of your head – you've got to be careful at all times, that's why my people never walked down through there much, they tried to avoid it. They were very smart, they wouldn't go…... we know this part here, we wouldn't endanger our lives to do it, you know.'
>
> *It's only the white man that builds a road through these parts, is it?*
>
> 'I suppose you could say that, yeah…we just used it as a track, and I tell you what, it was a fast track too, but that's why my people came up over the top.' (Carriage, Tape RTA-LHD:FH30, Side B, 52:30)

The cliffs awaken

Through the nineteen seventies and most of the 'eighties, apart from some isolated instances, the mountain and the road largely behaved themselves, with less reported rock falls and incidents. That changed abruptly in 1987 when the mother of all rock falls came roaring down the mountain. Bob Webb, now Road Services Manager at the RTA's Southern Regional Office was there at the time:

> 'There was a big slab came down during the night, and we went over the next morning and we found not only was the road completely blocked by a 200-ton lot of rock, but there was another large slab hanging next to it, that we were concerned was fragile and would also fall. So we arranged to get a contractor in to drill and blast that slab – it had been in the media, the road was closed, so the media came up to see the blast. We loaded it up and he let it off and smoke cleared and the rock was still there, stuck grimly to the face, so we had to come back and drill and load it again and bring it down.' (Webb, Tape RTA-LHD:FH25, Side A, 10:41)

The year 1988 on the Coast started very wet and then a one-in-30- year storm event hit with a fury:

> 'On the night of the 30th April and the morning of 1st May in '88, we had a monumental rainstorm hit the area – it was particularly intense around the Coalcliff / Stanwell Park area, but it also struck much of the Illawarra and caused immense damage in the road system all around the Illawarra. At the cliffs section on Lawrence Hargrave Drive we had a massive slip in the amphitheatre develop, where the road dropped about one to one and a half metres, another section of road towards the southern end of that section was completely washed away, we had a large number of small slips develop under the road, we had 1300 cubic metres of debris washed down onto the road from higher up – it consisted of mud and boulders – there was a car trapped in the amphitheatre; we never found the driver, no-one ever came to claim the car, we never found a body, nobody was reported missing – it created monumental damage through that one and a half kilometre length.' (Webb, Tape RTA-LHD:FH 25, Side A, 15:36)

Charles Simpson was in his car that day:

> 'I drove around the cliffs and up the Coalcliff hill on Lawrence Hargrave Drive fifteen minutes before the flash flood came, which washed six cars into the creek and people barely escaped with their lives. I was driving around rocks on the road and water pouring over the top of the escarpment – not down the normal watercourses but arching out – and I was driving, weaving in and out on the road, so that was the scariest time, and of course the road was shut, as were half the roads in Wollongong for weeks afterwards.' (Charles Simpson, Tape RTA-LHD:FH4, Side B, 32:47)

Marc Hendrickx comments:

> 'The road basically fell into the ocean in places and there's one particularly spectacular failure that occurred, which shows perhaps several metres of the road that's just simply dropped away into the ocean, with a guardrail hanging free in space.' (Hendrickx, Tape RTA-LHD:FH29, Side A, 10:14)

Greg Kotze adds:

> 'That particular embankment failure was caused by the effects of coastal erosion – wave attack on the earth embankment on the low side of the road – the waves were simply eating away at the toe, removing the buttressing support of the embankment and it got to a critical point where it could no longer hold itself up, so it simply started to slip towards the ocean.' (Kotze, Tape RTA-LHD:FH18, Side A, 20:49)

In addition to the damage done to the road, the Railways had also suffered major damage to its infrastructure:

> 'Back in '88, when we had the big event, the Railways had major problems on their line. They had a catastrophe at Coledale where the earth fill collapsed because it was saturated and it fell into a house below and a young mother and her child were killed. They had major instabilities in the viaduct at Stanwell Park, they had slip stability problems at Clifton above our road, where the whole formation, the whole mountain, in fact was moving, and they had problems with the tunnelling behind there, the amphitheatre, where the tunnel was shedding rocks onto the railway line.' (Webb, Tape RTA-LHD:FH25, Side B, 33:37)

Major rock fall in 1987

Damage to Lawrence Hargrave Drive after 1988 storm (Photo by Ron Draper)

Close up photo of road slippage

Making the road safer

The 1988 storm was a true disaster. The *Daily Mirror,* in an article headed 'SHATTERED SCENIC ROAD GONE TO POT- REPAIRS TO COST MILLIONS' reported that the road would be closed for four months (which in reality became more than six months). Leo D'Adam was quoted in the *Illawarra Mercury* as saying 'It's the worst damage to the road in the past 25 years'. The remediation measures took many months and $ 9.5 million of expenditure:

> 'We had to develop techniques to repair a lot of these areas. Below the road we had the really big slip in the amphitheatre to repair. We repaired that using a technique that had been trialled just the year before on Lawrence Hargrave Drive of putting in transverse rubble drains, which take the moisture out, and we used slag as rubble, which is quite strong. Where the road had virtually disappeared we used a terramesh wall, using rock-filled gabion boxes, reinforced back into the fill using layers of mesh. A lot of the things we used for the first time – we put in quite a number of PVC drainage lines. We were able to shift the road in the amphitheatre towards the sea and leave a large rock fall pit, which catches a lot of the rock fall in the amphitheatre area, and that was very successful in reducing the rock fall on the road in that area.' (Webb, Tape RTA-LHD:FH25, Side A, 19:59)

Mal Bilaniwskyj is Asset Manager at the RTA's Southern Regional office in Wollongong. He reveals the challenge facing the remediation work of 1988:

> 'The challenge is trying to find a permanent solution. The reality is: there was no permanent solution, so it's really trying to restore the road to give us as long a service life as possible, always recognising that we could never fully repair the road along the existing line, with the talus below us and the rock falls, weather and cliff line above us, but the challenge there was to try and design a road in an area which we knew had finite life.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side A, 28:15 & Side B, 39:06)

In 1997 a motorcyclist hit a rock lying on the road, and then crashed into an oncoming car. He was injured and sued the RTA for damages. The RTA successfully defended the case and was found to be not liable on the grounds that the road was signposted that rock falls do occur, but it was a warning that society was becoming more litigious.

Then the Thredbo landslide of 1997 occurred in which 18 persons lost their lives and which could have serious liability implications for government authorities:

> 'After the Thredbo landslide there was recognition that the scheme we had was just not technically good enough – it did not appear to be capable of discriminating to the extent we needed it to. While the Inquiry was still in progress in about mid-1999 we started developing a new procedure with the intention of making it capable of assessing a wide range of slopes and getting valid comparisons between them, so we started in mid-1999 essentially commissioning some external consultants.' (Ian Stewart, Tape RTA-LHD:FH27, Side A, 24:05)








Remediation work, 1988

Cliff face near amphitheatre

Fallen rock, 1989

In 1999 the RTA asked their geotechnical staff to come up with some answers. They approached Greg Won, a geotechnical scientist at the RTA's Blacktown office:

> 'Well the first thing that I did was to look at the nature and the extent of the rock fall problem and I found that the rock fall zone came from a certain area of the cliff line. At the same time we purchased a rock fall program from the United States called the *Colorado Rock Fall Program* and that assisted us in trying to model the trajectories of the rocks as they came off the cliffs onto the road. This particular program models the bounce effects of rocks falling from a height down a slope or a vertical incline and, using basically Newtonian physical laws, models the trajectory and the path, and where the rocks will land. The program assisted us in developing a whole range of options on how to contain the rock fall problem by building a five-metre berm on the road shoulder, and having a steel column barrier fence six metres high was the second option. Also there were options involving doing some cliff line or slope re-profiling, so that you could create rock fall drop zones on the cliffs themselves. Another option involved heavy-duty rock fall netting of the cliff lines – we had received from the Swiss Geobrugg company a lot of products that they use to try and contain the rock fall problem in the Swiss Alps. Another option was using a bridging structure of some sort – more of a rock fall portal, either made of steel multi-plate arch or a reinforced concrete portal tunnel.' (Won, Tape RTA-LHD:FH22, Side A, 06:48 & 10:48) & 22:28)

But Greg Won's options were not so easy to put into practice:

> 'Greg did a tremendous report, but when we actually started to try to implement what he suggested, what we found out was that there were some major OH&S issues for workers because a lot of the rock falls were coming from one or two levels above the road – up to, sort of about 120 metres above the road – and not even the extended platforms could reach a lot of these areas, so we actually looked to abseil from above to remove rocks – that was one of the techniques suggested. To do that, you actually had to secure the area above you, so it wouldn't actually bring rocks down on top of you, so actually, when we started looking at the whole process, we actually found that (A) the cost escalated from the three to three and a half million dollars initially to a sum of next to nine or twelve million dollars at that time, and also we said we actually couldn't secure the site from above us, so we basically said: 'Ooh, we don't think we can do this', so we had to then go back and look at something else.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side B, 45:35)

The RTA then started developing a new procedure to assess a wide range of slopes across NSW. The State was divided into seven regions and different regions were given to a range of external consultants for the Slope Assessment Risk Study. GHD-LongMac was allocated the Southern Region, which extended from Sutherland to the Victorian border:

> 'We ranked all the unstable sites, the cuttings and embankments over that vast area and the idea was to rank them in terms of priority for treatment. The survey involved walking each of the known sites, recording geological and geotechnical conditions and assessing the previous and likely future performance of each site and to give each site a ranking in terms of instability and risk level. In the process, it became apparent to us through our assessments that the section of Lawrence Hargrave Drive came up number one in terms of priority requiring treatment.' (Kotze, Tape RTA-LHD:FH18, Side A, 13:23)

As if to confirm those findings, rock falls persisted along Lawrence Hargrave Drive:

> 'About four or five years ago a claim came through with photographs where a Holden Commodore was travelling northbound with four people aboard and a rock round about 300mm plus came off around near the amphitheatre and landed in the rear quarter of the vehicle – on the panel out there, and did major damage. That was very close – that was probably……. had it have been another metre forward and half a metre inwards, it would have landed right in the middle of the passenger compartment with the four people aboard, so that was a very close call, that one.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side A, 22:46)

Bob Webb adds:

> 'Well I was concerned that the rock fall had actually increased, judging by the amount of rock we were now actually getting in the rock fall pit. We were becoming increasingly concerned about risks to people.' (Webb, Tape RTA-LHD:FH25, Side A, 24:10)

In view of the dangers, GHD-Longmac were again consulted to address the rock fall issue from a risk management perspective, and their report discussed a comprehensive range of solutions. They ranged from permanent solutions involving the construction of a major bridge or tunnel, to a risk management solution involving some engineering work plus road closures after rainfall when risks increased. Permanent road closure was also considered.

But there were more rock falls in 2002:

> 'In about a month or six weeks we had three serious incidents – we had one block of six or eight tons fall off the Middle Headland and land in the northbound lane – there was a car coming south as it fell and the driver saw it coming and put her foot down, trying to get past it, because it was too close to stop and the rock hit the road as she was going past, split in half and about three tons of it bounced sideways into the side of the car and knocked the car into the guardrail. It was still drivable and she kept going, but clearly, if she'd been going north that would have been curtains, because it would have landed straight on top of her. About a month later, I believe there was another incident, where a smaller rock went into the back seat of a car – there was only the driver in it, so again, no-one was hurt, but again a pretty near miss, and I believe there was another incident where a truck ran into a fallen rock.' (Ian Stewart, Tape RTA-LHD:FH27, Side B, 37:38)

In 2002, several of Greg Won's Rock Fall Mitigation Strategy Options and measures suggested by GHD-Longmac in their report – rock scaling and bolting, the erection of sophisticated warning signs, boom gates, a rainfall detection system, the construction of a rock ditch, berm, and Geobrugg RX150 steel catch fence – were constructed at a cost of about $4.3 million:

> 'We shut the road for a period of six to eight weeks and we constructed a new high-tech geo fence around Headland One to control the rock fall on that. We scaled the face around there too – they got up there in cherry pickers and in manned boxes hanging from cranes, and using manual tools, largely, brought down any loose material at all on the face. After we have done that, we did a lot of rock bolting and meshing around Headland One and then we got the people in and built the fence.' (Webb, Tape RTA-LHD:FH25, Side A, 25:33)

40-tonne rock which fell into the ditch, 2002

Damage to car hit by rocks, 2000

Cliff face after rock fall, 2002

Possible LHD option – reinforced concrete portal tunnel, Arthurs Pass NZ

Geobrugg fence around headland, August 2002

Construction of berm, 2002

The rainfall protocol

In early 2003, the rains returned to the Coast and the rainfall protocol began to take effect. The RTA imposed a rainfall protocol that automatically closed the road if more than 35mm of rain fell within a specified period, to further reduce the rock fall risk:

> 'That's when all the problems started at that point of time, because the road was being closed about every fortnight for a period of one or two days and the community got very agitated, because they were under the impression that the work we had done had been sufficient enough to keep the road full time and they weren't very happy with the road being closed all the time.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side B, 50:04)

Ian Stewart ponders the dilemma that the RTA now faced:

> 'We found ourselves caught between some very soundly based recommendations about risk levels and the fact that this was creating a really intolerable problem for the local community, in that they would never know whether the road was going to be open and may well find themselves, or part of their family, their kids on the wrong side of it when it did close.' (Ian Stewart, Tape RTA-LHD:FH27, Side B, 46:29)

Graham Aubourg was one of the residents affected by the frequent road closures:

> 'They put some signs up at either end of the barriers and they didn't have a really good grasp on communicating with the locals to begin with and people got very angry that after 35mm of rain, the road would close, so you wouldn't know when you got up of a morning whether you had to drive another 30 km to get to work, or whether you could drive around the cliff road – or you'd drive around the cliff road to go to work, and you'd go to come home and have to turn around, so it was frustrating, because this time around it was the way in which it all happened.' (Aubourg, Tape RTA-LHD:FH1, Side B, 35:01)

Brian Harvey was also upset by the closures:

> 'It's had a big effect on me because my daughter lives at Stanwell Park and she's got two kids that are going to school – she works in the school system and she works at five different schools – and I have to get the kids ready for school of a morning and pick them up in the afternoon. Where it used to take me ten minutes to get out there of a morning and evening to get them to school and get them home, it's now thirty-three kilometres round and thirty-three home, and I've got to stay there all day now, because there's not much point in coming home to have to come back and do the same amount of travel in the afternoon, so that really affects me.' (Harvey, Tape RTA-LHD-FH12, Side B, 30:18)

In March of 2003, the NSW Minister for Roads visited Wollongong and was met by a delegation of local residents demanding that a permanent solution be found. Mal Bilaniwskyj recalls:

> 'That started the whole train of events off where we had to review – we were given instructions by the Minister to review the rainfall protocol – we engaged another consultant to review that – and in the end, the long and short of it was that the next consultant said that even though we had reduced the risk to life from one in ten years to about one in forty years, including the rainfall protocol,

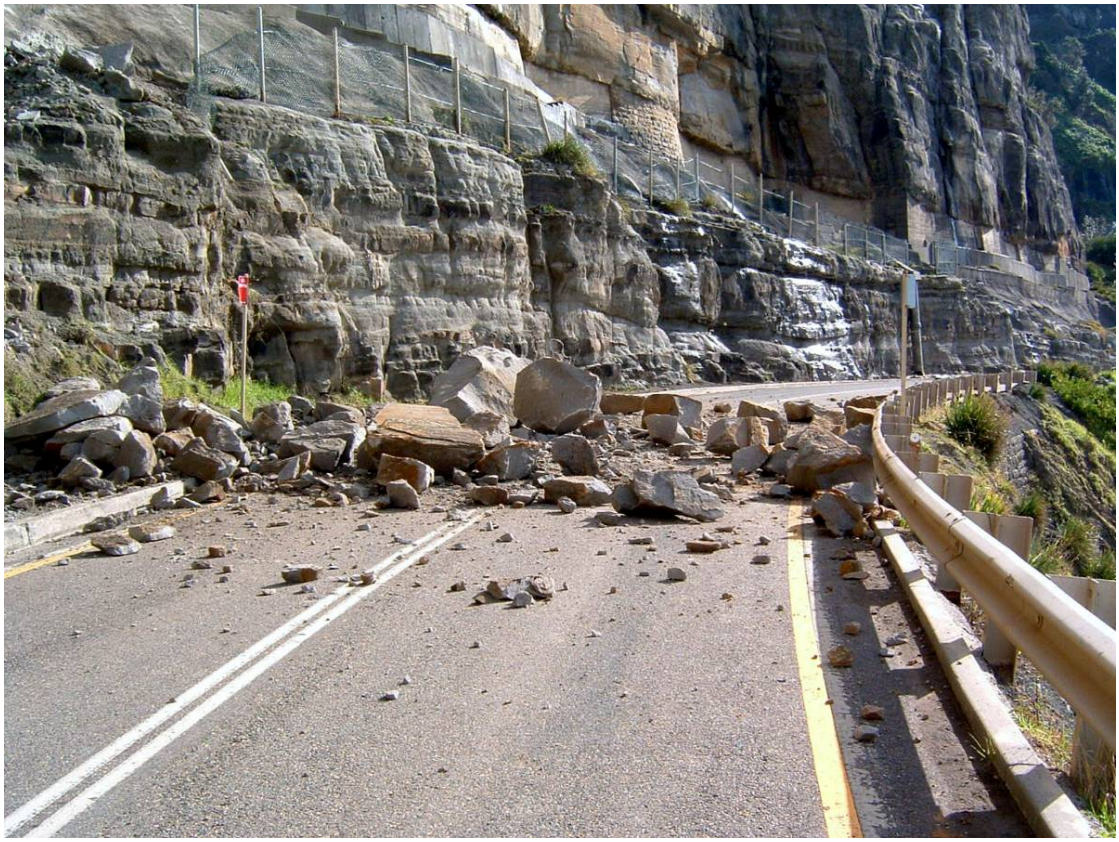
> the reality is we should be targeting one in a thousand years to reach the so-called Australian Geomechanics Guidelines. Now there's a lot of debate about that, but the long and the short of it was that we couldn't guarantee the risk to life to come anywhere near that.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side B, 50:48)

In July 2003 after further rock falls, it was decided to close Lawrence Hargrave Drive for an initial one-month period. At that point, the community became politically active:

> 'We marched from Scarborough School to the picket line at this end and at that particular time it was really heated, and they had the Police there and Security and that…..people were quite wild because they knew that it's gonna be a long time. You had your Greens, you had your Liberals, you had your Labor people, you had your Independent people talking and that, and the RTA was just….. they were saying one thing and people wanted something else, or one part of the people wanted something else and they'd want to smash the picket line down, I mean I know about picket lines and I know about Unions and I know about, you know, the feelings of people.' (De Clouett, Tape RTA-LHD-FH17, Side B, 44:50)

Cartoon published in Illawarra Mercury 2003

Embankment collapse, June 2003



Rockfall of 11 July 2003

Old and new intelligent signs at entrance to Lawrence Hargrave Drive

Crack in embankment, November 2003

Rock fall, March 2004

Measuring rock, May 2004

The Alliance

On the 29th August 2003 the RTA finally decided to close the road indefinitely so that a permanent solution could be found. Gus Forbes sums up how the community felt:

> 'All the other closures, we were told: 'Right-oh, the road is closed for a period of x amount of weeks, or months.' We could wear that because there was light at the end of the tunnel, but when they closed it this time, they said: 'It is closed indefinitely and may not open again.' That made it pretty hard, because it affected our business – the Scarborough Hotel went down to 50% of its turnover, and my son said to Carl Scully: 'How would you feel if Mr Carr said to you: I'm going to cut your wages in half this week?' He said: 'I wouldn't like it.' He said: 'Well, that's what you're doing to us.' The Clifton Hotel has gone broke, the service station at Stanwell Park has gone broke and we lost some good staff over it – we employed three apprentices – you've got the school that's probably going to lose a teacher because kids from Coalcliff, which is a ten minute drive to school have got to go round the top, so it's affected business, it's affected the schools, it's affected the community to a great extent, but I still think it's drawn the community closer together.' (Forbes, Tape RTA-LHD:FH9, Side A, 10:46)

But not all the residents were unhappy about the road closures:

> 'Some residents want it shut and consider it to be a little isolated Greenie village, but this road is most important to Wollongong, because how else would you go out of Wollongong? We've had major bushfires and we've been locked in here for a week because the two top roads have gone out, this has gone out, had to go down all the way through Nowra to get in there, and so it's most important – when Wollongong is about to become a suburb of Sydney – it's most important that it has alternate reasons, and of course the fog is one, bushfire is another one and the storms. (Eyre, Tape RTA-LHD:FH14, Side B, 47:23)

In September 2003, the RTA invited proposals from the private sector to form an Alliance project- a first for the RTA. Barclay Mowlem was selected as the construction firm, Maunsell Australia as the design entity and Coffey Geosciences as geotechnical engineers. Peter Stewart is an expert in the construction of incrementally-launched bridges and is the Alliance Champion:

> 'Alliance projects are trying to overcome some of the bad habits, if you like, that have developed in the industry over the years. Trying to get every bit of behaviour in the same way is fine, but you can't really drive that unless the commercial model supports it, and an Alliance does that, it actually overcomes the traditional mistrust that seems to have pervaded the industry: the client/owner doesn't trust the contractor and he doesn't trust the consultant, and so the ring of mistrust carries on. The only person who can break that is actually the owner, by saying: 'Hey, I'm going to do something different here – I want to actually do business on a better basis, a better foundation' and so he sets in place a process whereby you don't tender for it in the traditional manner – you don't price it and it gets accepted on the lowest dollar, you actually put forward a team that actually can demonstrate that they can perform together, they can integrate and you put underneath that a model that will help them continue that process all the way through to the end. An Alliance Project could be described as starting with a blank page and saying: 'OK, what do we want to build here?' and you

> actually have to develop the option that you want to build from scratch and then put in place the approvals, and then the process goes on from there.' (Peter Stewart, Tape RTA-LHD-FH19, Side A, 15:02)

An Alliance project is fast-tracked in many ways through the approval process as well as the design and construction process and can still be designed as it is being constructed. The client becomes part of the Alliance and the risk profile is different:

> 'To an extent, the client parties take on risks they're unfamiliar with: a constructor will take on a client risk, a client will take on a construction risk and the designers take on a construction risk and owner's risk and so it's very much part and parcel of the Alliance. The rewards, of course, are shared equally as well, so that it is equitable. It's quite unusual for the RTA to embark on this and it's a bit threatening for them – there is mixed feelings within the RTA – some are for it, some are against it, and that's understandable.' (Peter Stewart, Tape RTA-LHD-FH19, Side A, 22:02 & 24:26)

There are, however, checks and balances to ensure that the process is controlled:

> 'You actually have a fairly robust team of experts, which includes the owner and you also have an independent assessment as well, in which the owner employs independent people to audit and review the process to make sure it's robust. Sure, the risks are still there and we actually cost those risks.' (Peter Stewart, Tape RTA-LHD-FH19, Side A, 15:02)

In order to involve the community in the process, the RTA had already formed a Community Consultative Committee. Ellis Eyre is a member:

> 'This committee started off a little bit split between the people who wanted it opened instantly and the people that wanted it shut and the other people that knew that it was essential – we had to have the road, not only for ourselves, but for Wollongong as well, and that it had to be built properly, not a temporary thing. This is the first Committee that's ever done this – we're going by the seat of our pants. Now, I've been pushing and pushing – in fact, I stood up at the meeting with Carl Scully and the locals when they announced the bridge and said to him publicly: 'Well, if we can't fix up the road and we have to build a bridge and it costs more than forty million dollars will you build it?' and he said: 'Yes, I swear on the telly' and I said: 'I'm on the Committee' and he said: 'Right oh!' and it is now going to cost forty-seven million, three million for a cycleway we've got and so we'll probably bite him for some more because we want a good job, and I think he's very pleased with it and since then, the Committee have worked together and we've unified. The RTA, I must say do not put anybody on the Committee down, they take everybody's idea on side, they explain it – if it's a radical idea, like we had one dear Greenie lady say: 'Can we have the bridge painted green so it will disappear?' and Peter said: 'It will go grey like the rocks anyway', so she was brought on side and since then, we have become almost like a friendly family now and things are getting solved very quickly and very smoothly'. (Eyre, Tape RTA-LHD:FH 15, Side A, 02:25)

Stewart describes the process in arriving at a final design:

> 'We had a workshop whereby we asked about thirty participants for ideas. We all huddled down into groups and individuals and sketched out ideas. We initially developed 70 ideas – when we collated them, there were actually 26 distinct ideas in there.'

What were some of the more outlandish ones, do you remember?

'The more outlandish ones certainly worthy of mention was a floating bridge, breakwaters, we had dual-use tunnels – we were going to put the road and rail in the same tunnel and we had a separate tunnel for the road – just leave the rail alone, we had a bridge over the headland – over the top of them, and then we had what we call the 'Italian Solution', which was tunnel, bridge, tunnel, bridge – quite dramatic.' (Peter Stewart, Tape RTA-LHD-FH19, Side A, 19:27)

The 26 designs were shortened to just four options to be presented to the community. Aesthetics was to be an important consideration in the selection of the final design:

'It was very important to us, to the extent that we built in features that we believe are quite expensive features to actually make it more attractive. The final solution is two different bridges meeting at a point, and we've made the northern bridge deeper than it need be, but so that when the two bridges meet, they are seamless – it looks like it's one bridge. That's cost money, but I think it's worthwhile. We don't produce such a product that looks as if it's cheap and nasty – we want to make it look good for many years to come.' (Peter Stewart, Tape RTA-LHD:FH19, Side B, 41:27)

An important consideration is the environmental impact that the new structure will have:

'From all the studies that have been done, it will have little impact on the environment – in fact it's probably quite an environmentally responsible solution in that it has very few points of contact with the natural environment and it will allow the existing road to just go back to its natural state over time. It will be environmentally very attractive – I think from a driver's experience it will be quite spectacular, driving from south to north down the sweeping curve through the Southern Amphitheatre and then seeing the bridge disappear around that headland, following the sweep around – it will be a very dramatic drive, I would have thought.' (Peter Stewart, Tape RTA-LHD:FH20, Side A, 06:49 & Tape RTA-LHD:FH19, Side B, 48:42 & 47:36)

Community response to the final design option was varied:

'I just want an option that is cost-effective and that will give me the access that I used to have. I want access to the northern suburbs of Wollongong because that's where my friends are, that's where my social life happens, and I'm not talking trivially about that - I'm talking about services that are delivered to me that I have accessed over the years.' (Pat Simpson, Tape RTA-LHD:FH4, Side A, 16:52)

'I don't care what they do, as long as they do it quick.' (Harvey, Tape RTA-LHD:FH12, Side B, 31:42)

'I think it's great to people's feelings to drive through there and look at those big cliffs and know they're safe.' (Carriage, Tape RTA-LHD:FH 31, Side A, 01:46)

Do you love your road?

'I don't know about love it, but I'd like to be able to drive on it – it was bloody handy'. (Harvey, Tape RTA-LHD:FH12, Side B, 36:05)

'I just want to see the road fixed before I die'. (Rees, Tape RTA-LHD:FH6, Side A, 12:06)

Will the new bridges, when they are constructed mean the end of problems for Lawrence Hargrave Drive?:

> 'I think the bridges will deal with the issues in our worst area of Lawrence Hargrave where we have the rock falls and the embankment failures but we really haven't addressed all the other issues of Lawrence Hargrave Drive – of all the other slips that exist along it – and a lot of these slips aren't associated just with the road, they're global slips which the road sits on. In many cases, the road and the railway line sit on them – they extend beyond the railway line and they extend below the road as well. So that's not something that we can deal with ourselves, so, yeah, basically the road on either end is still a problem which we'll have to deal with in the future.' (Bilaniwskyj, Tape RTA-LHD:FH26, Side B, 58:14)

What is the future for the Illawarra region when the new bridges are completed likely to be?:

> 'That road will be the greatest tourist attraction in the South Coast. We'll have tourists galore coming down through the Illawarra – I see the future for the businesses that are doing it tough now – when the road is opened, it's going to mean more jobs for the businesses that are there and I doubt whether the businesses will be able to handle it.' (Forbes, Tape RTA-LHD:FH9, Side A, 16:00)

Greg Kotze has the final word:

> 'I'd just stress again the enormity of the site. To have a site of this magnitude in terms of the geometry, the physiology, the geography, the geology, the rainfall, the climate, the ocean all rolled into one. It's arguably one of the most challenging sites to put any road through and I think that's what makes it so unique and I don't think we'll find anything quite this challenging again on the Australian mainland.' (Kotze, Tape RTA-LHD:FH18, Side B, 39:52)

This oral history project has documented the background and significance of the coast road - Lawrence Hargrave Drive - to the local community. It has also recorded the history, lives, aspirations and occasional frustrations of some of the local people who rely so heavily on this road for access.

Within the foreseeable future a new bridge is to be constructed on Lawrence Hargrave Drive, which will address the current safety concerns and yield tangible benefits for the travelling public. Part 2 of this oral history project will document the challenges involved in the construction process.

The opinions expressed in the oral history interviews are those of the individuals concerned and do not necessarily represent in whole or in part the position of the New South Wales Roads and Traffic Authority.

Computer image of proposed new bridges at Lawrence Hargrave Drive

Ground level view of proposed new bridges

List of Interviewees

Name	*Tape No.*	*Date*	*Place*	*Duration*
Graham Aubourg	RTA-LHD:FH1-2	16/03/2004	Coalcliff NSW	72 mins
Charles & Pat Simpson	RTA-LHD:FH3-4	16/03/2004	Stanwell Park NSW	101 mins
Stan Rees	RTA-LHD:FH5-6	23/03/2004	Coalcliff NSW	76 mins
Ron Draper	RTA-LHD:FH7	23/03/2004	Bulli NSW	54 mins
Gus Forbes	RTA-LHD:FH8-9	24/03/2004	Thirroul NSW	77 mins
John Baines	RTA-LHD:FH10	24/03/2004	Thirroul NSW	56 mins
Gloria Bouren	RTA-LHD:FH11	26/03/2004	Clifton NSW	50 mins
Brian Harvey	RTA-LHD:FH12	26/03/2004	Clifton NSW	39 mins
Lyn Busch	RTA-LHD:FH13	26/03/2004	Clifton NSW	49 mins
Ellis Eyre	RTA-LHD:FH14-15	01/04/2004	Scarborough NSW	81 mins
Leo D'Adam	RTA-LHD:FH16	01/04/2004	Wollongong NSW	53 mins
Warren De Clouett	RTA-LHD:FH17	01/04/2004	Wombarra NSW	56 mins
Greg Kotze	RTA-LHD:FH18	14/04/2004	Cremorne NSW	41 mins
Peter Stewart	RTA-LHD:FH19-20	04/05/2004	Cremorne NSW	75 mins
Elaine Pugh	RTA-LHD:FH21	07/05/2004	Stanwell Park NSW	58 mins
Greg Won	RTA-LHD:FH22	10/05/2004	Cremorne NSW	58 mins
Bruce Fishburn	RTA-LHD:FH23-24	12/05/2004	Rhodes NSW	74 mins
Bob Webb	RTA-LHD:FH25	18/05/2004	Coachwood Park NSW	45 mins
Mal Bilaniwskyj	RTA-LHD:FH26	18/05/2004	Coachwood Park NSW	60 mins
Ian Stewart	RTA-LHD:FH27	21/05/2004	Cremorne NSW	59 mins
Marc Hendrickx	RTA-LHD:FH28-29	24/05/2004	Cremorne NSW	77 mins
Allan Carriage	RTA-LHD:FH30-31	27/05/2004	Clifton NSW	87 mins

Summary of events 1879-2004

MR 185 - Lawrence Hargrave Drive

Summary of events 1879-2004

(Compiled by Marc Hendrickx and Frank Heimans)

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
7/1/1879	Slope Failure	Coalcliff landslip of "considerable dimensions" within the past few days immediately to the north of the tunnel mouth and jetty of the Coal Cliff Colliery, about 200 tons of earth, stone and other material said to have slipped down with a crash in the presence of a number of men at work on the jetty.	IM (Illawarra Mercury) on file.
28/10/1881	Slope Failure	Heavy slips between Clifton and Judge Hargrave's residence	IM (PF) (personal communication from Phil Flentje, Research Fellow – Engineering Geologist and landslide hazard assessment expert, Uni. of Wollongong)
26/4/1887	Slope Failure	'The Clifton Landslip Scare'. Rebuke of sensational telegrams in Sydney papers concerning land cracks at Clifton. The land crack… " is as slow in its movements as if it were a Government Railway Contract".	IM (on file)
7/6/1887	Slope Failure	The Clifton Land Crack. Further slow movement of the landslip is causing extensive damage to the land surface and numerous buildings	IM (on file)
22/3/1894	Slope Failure	Clifton, road around cliffs completely blocked by hundreds of tons of rock.	IM (PF)
9/2/1895	Slope Failure	South Coast Road Blocked in many places by landslips	IM (PF)
21/11/1906	Picture	Picture of central headland and southern amphitheatre appears in Sydney Daily Mail	SDM (Sydney Daily Mail) (on file)
10/3/1913	Slope Failure Accident	"Terrified Clifton" Report on storm at Clifton. Imperial Hotel was wrecked. Includes a report on the road. "fair amount of earth and stone rolling down from cliffs some 700 ft above the roadway" "It is not so very long ago that the man in charge of this particular piece of road was knocked insensible through being struck by a piece of stone which had fallen from the cliffs"	DT (Daily Telegraph) (on file)

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
17/12/1920	Slope Failure	Scarborough-Clifton. "The heavy rainfall was responsible for large landslips on the cliff road. All traffic along the road was suspended for three days. Just over the old jetty a very large slip occurred and fell onto the boiler house smashing the wooden covering over the boiler to matchwood. A stone weighing upwards of two tons landed from the cliffs onto the approach to the jetty.	SCT (South Coast Times) (on file)
6/5/1921	Slope Failure	Landslip, 1 mile above Clifton, approx 100 tons of rock	IM (PF)
1931	Slope Failure	Rock falls in Southern Amphitheatre.	RTA photo collection 28115, 28116
21/1/41	Recommendation	Report by chief engineer recommending removal of insecure rock. Accompanied by 6 photos showing details of cliff face in GD1. Large sheet of sandstone (30 tons) loose with joint widening between sheet and cliff face. £1000 made available to remove rocks.	35/M.1476 summary of action taken and reports since 1941 DMR File No: 58.1201
28/1/41	Recommendation	Minute by Assistant Commissioner outlining action to be taken with regard to the improvement of this section of road including: 1. Closure of road until insecure rock removed 2. Comprehensive survey 3. Possible relocation 4. Possible tunnel 5. Provision of overhead protection	35/M.1476 summary of action taken and reports since 1941 58.1201
29/1/41	Remediation	Divisional Engineer removed overhanging rock, and decomposed shale, construction of stone pitching between Coalcliff and Clifton. Road to be closed to traffic for several weeks. Gang included riggers from Sydney Harbour Bridge.	35/M.1476 summary of action taken and reports since 1941
7/2/1941	Air photo survey	Aerial photo survey ordered - Adastra Airways	58.1201
3/4/1941	Advice	Local bodies advised that road would be open to traffic from Wednesday 16/4 (Easter Holidays)- Probably not opened.	35/M.1476 summary of action taken and reports since 1941
22/4/1941	Examination	Examination of air photos leads to the conclusion that there is no satisfactory deviation above ground.	58.1201

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
9/5/1941	Funds Allocation	Allocation of funds increased from £1000 to £4000; "defer consideration of tunnel"	35/M.1476 summary of action taken and reports since 1941
23/5/1941	Approval	Approval given to Divisional Engineer to advertise road was re-opened to traffic.	35/M.1476 summary of action taken and reports since 1941
30/9/1941	Report	Divisional Engineer reported that 5,830 cubic yards of rock and spoil removed from the face, mostly at the southern end near Clifton. The total cost of excavation and stone pitching was £4888.18.9. The Divisional Engineer stated that a bituminous emulsion skin and a layer of concrete mortar applied by the gunite process had both been unsuccessful as a means of protecting the shale.	35/M.1476 summary of action taken and reports since 1941
17/3/1942?	Inspection	Divisional Engineer reported sandstone cliffs in good condition but shale weathering behind emulsion and gunited concrete protection	35/M.1476 summary of action taken and reports since 1941
4/6/1943	Slope Failure	Divisional Engineer reported on numerous subsidences after heavy rain in the latter part of May of sections of the road built on talus. He also referred to the need for positive protection of the shale by brick or concrete walling to avoid undermining of the sandstone. He further stated there was a need for a new route for Main Road No. 185 because there was no certainty that the existing route could be maintained even with the expenditure of very large sums.	35/M.1476 summary of action taken and reports since 1941 Photo RTA southern region-GD2 developing embankment failure
1946	Slope failure	Rock fall GD3	Photo RTA southern region
21/11/1946	Slope Failure	Divisional Engineer reported falls of earth and rock in sizes up to 10 cubic yd pieces after 680 points of rain on 18-19 November 1946.	35/M.1476 summary of action taken and reports since 1941
25/11/1946	Statement	The A/Assistant Chief Engineer stated: "The advisability of permitting this road to remain open to traffic has received consideration in the past, and now again arisen. The danger along this cliff section is greater than normally exists on mountain lengths from movement of rocks, trees, etc."	35/M.1476 summary of action taken and reports since 1941
26/11/1946	Slope Failure	Divisional Engineer reported further road closures and noted "numerous quantities of unstable material" on faces above the road.	35/M.1476 summary of action taken and reports since 1941

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
9/12/1946	Legal	Legal officer stated it would be wise to erect warning notices. Advice to motoring organizations would not affect the Department's legal position in any way in event of an accident. The Department's main responsibility was to ensure that the work to minimise danger was not done negligently.	35/M.1476 summary of action taken and reports since 1941
19/12/1946	Report	Preliminary report by F. Gosden of a deviation to by-pass the cliff section involving steep grades on a sidelong talus slopes and a short tunnel under the spur was submitted. Two air photos showing proposed deviation-climbs up Stony Creek-then tunnel through Hawkesbury Scarp before descending down to Scarborough with several switchbacks.	35/M.1476 summary of action taken and reports since 1941 58.1201
23/12/1946	Proposed treatments	Treatments proposed: 1. Bringing down a portion of the rock face 2. Tunnelling under the spur 3. Deviation up Stony Creek 4. Deviation from Prices Hwy near Helensburgh 5. In addition to 4 spur road down Stony Creek Gully Recommendation for a traffic survey and geological survey	58.1201
14/2/1947	Traffic count	Traffic count ordered for section between Coalcliff and Clifton. Warning signs discussed.	58.1201
21/4/1947	Report	Geological Report by FW Lancaster (with plan, sketches-sections and 8 photos). Photos show existing protection to shale layers. Concrete wall with drainage. Suggests one solution - to construct concrete protective tunnels at danger points.	58.1201
5/5/1947	Report	Construction engineer submitted a minute at the foot of a report dated 21/4/47 by FW Lancaster stating that a 1200 to 1500 ft tunnel should be considered for comparison with a surface deviation. Overhead protection was not favoured because of the high probable cost.	35/M.1476 summary of action taken and reports since 1941
30/6/1947	Name	Road name of MR185 changed to "Lawrence Hargrave Drive" from Lower South Coast Road	DMR 22nd annual Report, 1947-date of change not specified

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
8/7/1947	Signs	"Beware falling stones" signs erected	35/M.1476 summary of action taken and reports since 1941 58.1201
5/9/1947	Report	Chief Engineer quoted LL Waterhouse as saying that blasting large masses of rock from the cliff face and using these to protect the road from the sea was a matter that justified consideration	35/M.1476 summary of action taken and reports since 1941
4/12/1947	Slope Failure	Divisional Engineer reported a fall of rock that blocked the road for some hours on 1/12/1947. The sandstone rocks on the road varied from 4-5 cubic yards downwards. A photograph of rocks, apparently at the southern amphitheatre, is shown with the Divisional Engineers memorandum dated 19/12/1947.	35/M.1476 summary of action taken and reports since 1941
7/3/1949	Slope Failure Accident	C.A. Gittoes reported details of an accident to a lorry load of furniture which was struck by falling rock at 2.30 pm 3/3/1949 (John Baines incident)	35/M.1476 summary of action taken and reports since 1941 (See also Appendix 1 Waterhouse for detailed description)
7/4/1949	Slope Failure	Divisional Engineer referred to a 65-ton rock that slipped into the sea from a point below the road and a 50-ton rock that fell onto the road just south of the "main amphitheatre". The fall appeared to be caused by heavy rain. (Photo in LHD brochure of preferred options)	35/M.1476 summary of action taken and reports since 1941
May-June 1949	Slope Failure	Lower south coast road blocked by landslides near Clifton Hill.	IM (PF) RTA photo 379,379B,380,382,534, 535,
5/12/1949	Recommendation	Divisional Engineer recommended against erection of timber barricades to protect traffic from falling rocks because the barricades could be demolished by the larger rocks or the rocks might overtop the barricades and land on the road.	35/M.1476 summary of action taken and reports since 1941
3/4/1950	Storms	32 inches in 3 weeks - heavy rains Wollongong area - Railways affected	SCT (on file)
6/4/1950	Storms	Storms cause extensive damage to properties in Wollongong area.	SCT (on file)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
6/4/1950	Slope Failure Storms	Rain aggravates damage in Wombarra area. Report includes mention of extensive damage to Lawrence Hargrave Drive. 'Workmen have been employed daily for the past two weeks in an effort to keep up with the constant cracking up of the surface'	IL (on file)
8/4/1950	Slope Failure Storms	Slowed trains, smashed roads after record rain. "South Coast Road totally impassable". "Tons of falling earth. Trees and water have rendered the South Coast Road impassable." "Beyond Clifton falling earth and boulders continue to cascade upon the already blocked highway as streams of water pour down the western cliff face."	IL (on file)
10/4/1950	Slope Failure	Lower Coast Road Closed by Slides.	SCT (on file)
10/4/1950	Newspaper report	Rail beds refuse to behave as mountain moves to sea. Report on rail line between Austinmer and Coledale.	SCT (on file)
12/4/1950	Editorial	The roads problem is urgent. Comments on recent damage due to floods.	IL (on file)
20/4/1950	Storms	Report on storms Wollongong area	IL (on file)
20/4/1950	Slope Failure	Photograph of slip over road north of Clifton. "five feet deep in places" "carried safety posts and netting over the embankment"	SCT (on file)
5/6/1950	Remediation	Difficulties in clearing Lower South Coast Road. Repairs carried out continuously since the damage to the roads caused by severe landslides on Good Friday morning. Gangs working for almost two months - it will be another two months before the road is trafficable. "Engineers after viewing the wide fissures in the cliff face below the road shake their heads and express the opinion that the task is most difficult, if not hopeless." "An old identity of the district pointed out to the representative a spot on the opposite side of the road which he said was 25 years ago the site of an old well which serviced the water for the ventilating fans of the Coalcliff colliery."	SCT (on file)
17/7/1950	Report	Alternate rail route may have to be found. Report on comments made by Transport Minister on state of transport in the Illawarra region.	SCT (on file)

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
24/7/1950	Proposal	Press report concerning proposal for a new tunnel to accommodate both rail and road between Coalcliff and Scarborough	35/M.1476 summary of action taken and reports since 1941-unknown press report.
14/9/1950	Political	In Question Time, Minister for Transport stated that because of abnormal weather of the last six months Main Road 185 "has become too dangerous for traffic"	35/M.1476 summary of action taken and reports since 1941
28/9/1950	Political	Minister of Transport was advised that the road would be re-opened to traffic as soon as safe conditions could be provided. A temporary track was being provided for emergency passage of doctors, ambulance drivers etc.	35/M.1476 summary of action taken and reports since 1941
5/4/1952	Letter	LL Waterhouse letter to Department of Main Roads apologising for delay in producing geological report due to illness.	File 58.1202
16/6/1952	Slope Failure	Lawrence Hargrave Drive closed on two previous days due to fall of silt and boulders at Coalcliff and Clifton.	IM (PF)
1/12/1952	Report	Report by LL Waterhouse received	35/M.1476 summary of action taken and reports since 1941 (See Waterhouse report) 58.1202
2/3/1953	Report	Report on Waterhouse report by Chief Engineer-discusses some remediation options.	58.1202
6/10/1953	Political	Internal memo discussing planned route of Queen Elizabeth-recommendation that LHD not be included in the route on safety grounds.	58.1202
11/12/1953	Letter	Letter to Editor SMH regarding proposed route of Queen through Illawarra.	58.1202 SMH 11/12/1953
18/1/1954	Political	Coalcliff Progress Association objected by letter to prevent the Queen traversing the road because it was unsafe, while school children were conveyed along it daily.	35/M.1476 summary of action taken and reports since 1941 58.1202

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
23/3/1954	Letter	Letter to Coalcliff Progress Association regarding state of road. Advises that there is a possibility (which cannot be removed) of rocks falling onto the roadway. Regular inspections made for loose rocks. Question of closing the road made depending on weather conditions.	58.1202
8/6/1954	Report	Comments on condition of Waterfall Creek. "Road cannot be made so that it can be travelled by the public without some measure of risk"	58.1202
8/6/1954	Report	Divisional Engineer in commenting on Waterhouse report stated " I do not think it is possible to make the road safe"	35/M.1476 summary of action taken and reports since 1941
21/12/1954	Signs-Recommendation	Maintenance Engineer recommended: 1. Erect signs warning road users that they use the road at their own risk 2. Not proposed to remove debris from above the road unless it is obvious that rocks are about to fall and that any work undertaken is carefully programmed to ensure it will not cause further slips or falls later 3. The existing " Beware Falling Stones" signs are to be amended to read "Beware falling rocks - vehicles should not stand"	35/M.1476 summary of action taken and reports since 1941
13/10/1955	Remediation	Estimates requested to: Remove unstable rocks, gunite protection of shales, reconstruct seal and shoulder to exclude water entry below road, examine culverts and replace damaged culverts, examine outlets and provide for erosion protection downstream. Memo at bottom states that the proposed work may impact on the Department's legal liability in regard to rock falls from above the road. Uncertain if work proceeded.	58.1202
25/8/1956	Accident	Car damaged by falling rock	58.1202
2/9/1956	Newspaper report	"Death poised on a hill: South Coast road peril". Report of danger posed by coast road following incident in which rocks collided with a passing car (25/8/1956).	Sun Herald-in 58.1202
17/9/1956	Report	Coast road inspected. Report on visit by politician to LHD	IM 17/9/1956

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
9/2/1957	Slope Failure	Fall of earth between Coalcliff and Clifton blocked road	IM (PF) Photo RTA Southern region GD2
23/1/1958	Approval	Approval given to provide for fences on benches along road. Trial estimate to cost £1000	58.1202
10/2/1958	Storm Slope Failure	Report on storm in Wollongong region. "The rain brought down two huge boulders on to the road around the cliffs just north of Clifton. The first was on Friday night and the second came down on Saturday morning."	SCT (on file)
12/2/1958	Storm	"Hail Havoc in North". Report on Hailstorm Helensburgh	IM (on file)
13/2/1958	Storm	Report on storms Wollongong area	SCT (on file)
13/2/1958	Storm Slope Failure	"District drenched by heavy soaking rain." "The lower south coast road between Sydney and Wollongong was closed for 5 hours on Monday when a landslide of rock fell 300 feet to the roadway on Lawrence Hargrave Drive between Coalcliff and Clifton. The landslide, which contained about 7 tons of rock and earth occurred at about 9 am when heavy rain washed away part of the cliff top." Photograph of grader clearing landslide debris	SCT (on file)
11/3/1958	Slope Failure	150 ton rock fall at the road near Coalcliff with blockage 22 ft long, 5 ft high	IM (PF)
12/3/1958	Storm Slope Failure	Graders clear coast road. Photo of grader.	IM (on file)
12/3/1958	Storm Slope Failure	Landslide blocks road. Photo of landslide on LHD.	IM (on file)
13/3/1958	Storm Slope failure	Heavy rain smashes up local roads. " Some of the worst damage occurred at Coalcliff where hundreds of tons of rock fell to the road from the cliff face above."	IM (on file)
25/3/1958	Remediation	Memo approving £1000 for cost of one quarter of a mile of fencing	58.1202
8/1958	Remediation	Fence completed August 1958 - memo dated 14/4/1959	58.1202

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
20/2/1959	Slope Failure	Coast Road closed by falls	IM (PF)
5/3/1959	Slope Failure	"Crack in Coast Road at drop"-embankment failure at Scarborough	IM 58.1202
19/3/1959	Slope Failure	Rock fall in the amphitheatre	IM (PF) 58.1202
29/8/1961	Slope Failure	Wide cracks and sliding towards the sea near Clifton on weekend	IM (PF)
30/4/1963	Slope Failure	Slip on Lower Coast Road near Stanwell Park	IM (PF)
3/5/1963	Remediation	Report on flood damage March-April 1963. Slips at north head (GD5) 5.65 M 10 ft retaining wall collapsed. North Bay slip 5.77 M. RTA photo 15657, 15659 Pipe culvert 6.5 M Retaining Walls 5.9-6.0 M Slip 6.05 south side Middle Head Steep grade 6.02-6.25 M Additional slips reports to north.	58.1202
6/5/1963	Slope Failure	Divisional Engineer reports slips and subsidences at various locations following flood rains in March and April 1963	35/M.1476 summary of action taken and reports since 1941
9/5/1963	Slope Failure	Roads slips into sea north of Austinmer.	SCT (on file)
10/5/1963	Remediation	Coast Road repair hard, dangerous. "During the nine inch deluge which lashed the South Coast about 12 days ago, floodwater undermined half the roadway for a distance of about 60 feet and it slipped into the sea below….Part of an old stone retaining wall built into the cliff face crumbled and crashed below….old stone wall-replaced with concrete crib."	IL (on file) See also plan 185 497RC2746 sheet 1 and 2
10/5/1963	Slope Failure	Memo showing photographs of slips to coast road	58.1202
20/5/1963	Slope Failure	"Cliff slips at Clifton. Hundreds of tons on rock and soil, loosened by weeks of rain, crashed into the sea north of Clifton yesterday cutting the Lower South Coast Road for 20 hours." Photograph of clearing work.	SCT (on file)
20/5/1963	Slope Failure	Fall onto Coast Road between Clifton and Coalcliff	IM (PF)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
23/5/1963	Railways	'Railway damage –Just how bad the slip?' Report on storm damage to railway line near Stanwell Park	SCT (on file)
24/6/1963	Accident	'Skindivers recover man's body'. Report on recovery of accident victim's body. Accident occurred on 19/6/63 between Coalcliff and Clifton. "The offside wheels dropped onto the gravel shoulders which had slipped in heavy rain and the car sliced through the safety fence and rolled over several times, eventually plunging in the sea".	SCT (on file)
24/6/1963	Accident	Death dive into sea at Clifton. Report on death of Robert Michael Poole at Clifton: "the off side wheels went down into a gravel shoulder which had slipped seaward during recent rains.."	IL (on file)
4/12/1963	Slope Failure	Lawrence Hargrave Drive closed by landslide on 12th and at 6 pm on 13th	IM (PF)
13/12/1963	Slope Failure	Rock Falls mentioned in report dated 21/1/1964	58.1202
2/1/1964	Accident	Road closed as death truck is hauled up. Report on truck accident at Coalcliff. Picture. Cause of accident not mentioned.	SCT (on file)
18/7/1965	Slope Failure	30 ton rock fall.	35/M.1476 summary of action taken and reports since 1941
1965	Remediation	Concrete wall proposed to repair area affected by 18/7/1965 falls	58.1202
4/2/1966	Report	Divisional Engineer forwarded details of proposals to underpin the cliff face	35/M.1476 summary of action taken and reports since 1941
30/10/1967	Political	Minister for Highways advised Mrs Byers of Stanwell Park by letter that the Department is not in a financial position to carry out major improvements to MR185. The Department considered existing conditions not unreasonable. It would not be practical to hose stone from the cliff face with sea water	35/M.1476 summary of action taken and reports since 1941
2/11/1967	Political	Mention of state of road in Parliament	NSW Parliament Hansard 2/11/1967

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
2/11/1967	Slope Failure Near Accident	"Road is Death Trap". "Someone will be killed". "For the third time this week tons of rock and debris hurtled down a cliff face at Clifton yesterday blocking the coast road. One fall blocked the road completely on Sunday night. Another partially blocked the road on Monday". Alderman nearly drove into the fall in the dark. Locals told by Minister previous day that traffic along the route did not warrant the cost of major reconstruction.	SCT (on file)
2/11/1967	Slope Failure Near Accident	'Coast Road Death Trap'. Alderman fears south coast will have a repeat of the weekend accident at Brooklyn in which a three ton boulder dislodged from a cliff face and smashed down on to a sports car killing the two occupants.	SCT (on file)
3/11/1967	Slope Failure	Engineer in chief noted that the Divisional Engineer was arranging for the road to be closed at about 7 pm that day because rocks had been falling on to the pavement during the preceding few days.	35/M.1476 summary of action taken and reports since 1941
3/11/1967	Slope Failure Remediation planned	"State to act on cliff death trap." State Government will take urgent action to prevent motorists being crushed to death by falling boulders on LHD. Rock falls closed LHD 3 times last week. One rock fall narrowly missed a car travelling along the drive.	IL (on file)
4/11/1967	Remediation	'Death trap strip' closed to traffic. Photo of DMR workman bituminising the cliff face. " We expect about 100 tons of rock will have to be blasted into the sea". "Rock falls a mystery"	IL (on file)
6/11/1967	Remediation	Officials avert traffic chaos. 'Death road' is closed. Signs installed to divert traffic.	IL (on file)
6/11/1967	Inspection	Coast Road Inspection. "…decided on immediate action to neutralise the danger from the towering 300 ft cliffs…road will be closed for at least two weeks.	SCT (on file)
7/11/1967	Remediation	No dynamite for death trap strip. Cliff face will not be dynamited due to concerns over stability of nearby rail tunnels. Since the road has been closed there have been more falls of boulders.	IL (on file)
7/11/1967	Remediation	Diesels get the blame. Alderman Bartlem said he believed that diesel trains travelling through tunnels were loosening rocks with vibrations. Diesel trains are much heavier than the steam trains were…	IL (on file)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
7/11/1967		Death strip link to past. Report on history of road. Link to discovery of coal in 1796. Mr Bayley remembers that in 1950, the road was entirely covered and nobody used it for months.	IL (on file)
9/11/1967	Aerial survey	Aerial survey of cliffs taken, Road closed as a public safety measure. Oblique air photo published	SCT (on file)
9/11/1967		Theory on trains doubted. Spokesmen from Department of Railways said doubtful that rock falls due to diesel trains. Dynamiting discounted due to concerns over railway tunnel. Picture of road block	IL (on file)
11/11/1967	Political	Closing of road called 'ridiculous'. Men stormed the Clifton Hotel last night to protest over continuing closure to motorists. "It's been like that for years"	IL (on file)
13/11/1967	Protest	Bid to re-open coast road. Fretting shale blamed for causing rock falls. Road remained sealed off despite pleas from miners and residents to have it reopened.	SCT (on file)
16/11/1967	Remediation	Start on rock hazard. DMR will work through the weekend to clear rocks from cliffs. Equipment hauled up to head of cliffs included compressors, air tubes, and wrecking ball. Road has been closed for almost a fortnight. Local residents pressing for a single lane to be opened.	SCT (on file)
21/11/1967	Protests	Angry clash between aldermen on bid to re-open drive. Move to re-open drive before rocks removed condemned.	IL (on file)
22/11/1967	Photographs	Approval given to obtain aerial photographs from Australian Aerial Mapping P/L -cost estimated $2647.00.	58.1201
23/11/1967	Remediation	Coast road ready for holiday rush. Lawrence Hargrave coast road will be re-opened in time or the Christmas -New Year holiday rush. DMR teams now rigging equipment and would soon begin knocking down weakened sections. Delayed due to rain.	SCT (on file)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
23/11/1967	Remediation	Risky job to make road usable. DMR contractors working on one of the most difficult and risky jobs they have ever encountered. Access road constructed to top of cliffs from Coalcliff colliery parking area. Platforms to be installed at top and foot of cliff to swing wrecking ball to knock loose boulders into the sea. Delays in work due to rain.	IL (on file)
27/11/1967	Remediation	Giant hammer smashes rocks. A giant hammer will smash away loose rocks from the cliff face at Coalcliff where the landslides blocked the coast road. Bulldozers have sliced access paths through rough undergrowth at the top of the cliffs to the area where the cliff face is crumbling. The tracks also provide a cleared area or the anchor. Local residents signed a petition to re-open the road. Picture of Aldermen inspecting rock face.	SCT (on file)
7/12/1967	Remediation	Coast road re-opening is delayed. Workmen unable to work due to rain.	SCT (on file)
14/12/1967	Remediation	Coalcliff's man-made rock falls. Photo showing apparatus at top of headland. Main roads workmen began driving huge wedges into the cliff top to force away the overhanging rock. The wedges are steel girders the size of railway tracks. (second article page 3): "Higher up the cliff other workmen are preparing to swing a giant ball into another section of the cliff top to shake away loose rock.	SCT (on file)
21/12/1967	Remediation	Road open for holidays. LHD should be open to traffic tomorrow afternoon a DMR spokesman said.	SCT (on file)
21/12/1967	Photogrammetric survey	Approval given to pay Australian Aerial Mapping P/L $4183.50 for cost of photogrammetric survey.	
22/12/1967	Remediation	Road not likely to be opened. DMR spokesmen sceptical about SCT report. "We hope to have the road open for Christmas."	IL (on file)
29/12/1967	Reopening	Road re-opened to traffic	58.1202
11/1/1968	Engineers' Report	Engineers investigate new "safe" road. "They believe the present section of the road will never be safe to motorists."	Wollongong Times in 58.1202

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
18/1/1968	Rock removal	Summary of work done November-December 1967 by Divisional engineer J.A Thompson. Permission gained to use explosives on North Head after jacking failed to separate overhanging cliff sections. Over 1000 tons removed from North Head.	58.1202
22/1/1968	Slope Failure	Rock fall closed LHD for two hours -cleared by bulldozers.	SCT (on file)
31/1/1968	Traffic volume	From memo 31/1/1968 Current traffic volume (2000 data): Clifton is 3113 AADT from station 07754 North end: traffic station at junction with SH1 at Helensburgh: 12 hour count: 773 vehicles (includes 84 heavy) South end: Traffic station at junction with SH1 foot of Bulli Pass 12 hour count: 8282 vehicles (includes 918 heavy) Northern end (at junction with SH1 at Helensburgh) is 3559 AADT station 07758 Southern end (at junction with SH1 foot of Bulli Pass) is 19469 AADT station 07751	58.1202
20/3/1968	Bus drivers objections	Meeting with local bus drivers over risk of driving along MR185 north of Clifton. Divisional engineer to investigate possibility of widening road to 20 ft. Bus drivers withdraw objections on 22/3/1968	58.1202
10/4/1968	Slope Failure	A view of a trouble spot. Photo of cliff section taken from air. "Rock falls are still menacing motorists on the old south coast road".	Express (on file)
15/5/1968	Slope failure	Coast road open again. LHD open to traffic after being closed due to rock fall on Wednesday morning (15/3). Heavy rain and high winds dislodged 3-4 tons of rubble about 15 feet above the roadway. Rock fall north of usual trouble spots.	IL (on file)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
23/5/1968	Slope Failure Accident	Miracle escape on drive. Miner Alex Penman and his car narrowly missed being crushed by a 6-ton boulder. Penman's damaged car blocked the roadway at 11 pm. "Penman told Coleman he jammed on his brakes as a huge boulder crashed onto the road directly in front of him. The car failed to stop in time and the front crumpled against the big boulder. About half a dozen half-ton slabs of rock fell onto the road after the rock which damaged Penman's car. A fortnight ago the Department closed the road for safety's sake."	IM (on file)
23/5/1968	Report	Investigation of deviation options to avoid the rock fall area at Coal Cliff. Report dealing with a number of deviation options including tunnels, bridges and a causeway. 11 options are discussed. Includes an air photo showing location of various options. Report concludes that none of the options could be justified on economic grounds.	58.1201
24/5/1968	Report	Drivers unlikely to be scared off. Report on comments by locals following near miss of 23/5/1968.	IM (on file)
21/6/1968	Recommendation	Report on investigations by LL Waterhouse. Conclusion: 1. No simple practical solution 2. Not possible to predict when dangerous rock falls are likely to occur 3. Only practicable way of providing safety and security is to close the road, unless a very large expense be incurred.	
5/7/1968	Remediation	Plans with design for treatment of shale bands with brick facing	Plan No. 185497RC2753 sheet 1-4
12/3/1969	Accident	DMR report of accident involving collision of a Volkswagen with a 1.5-ton boulder - no injuries, but car written off.	58.1202
24/7/1969	Remediation	Plans dated with date of inspection of completed works	Plan No. 185497RC2754

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
11/1/1974	Slope Failure	Rock fall in amphitheatre near Coalcliff. Landslide near manager's building at Coalcliff Colliery. Greg Kotze writes a report on incident for remediation measures	IM (PF)
11/1/1974	Slope Failure	Near miss	SMH 11.1.74
28/8/1974	Storm Slope Failure	Heavy rain around Wollongong. "Last night rain weakened sections of the Coast Road at Coalcliff collapsed, blocking the road	IM (on file)
11/3/1975	Storm	Water washed away sections of Lawrence Hargrave Drive on sweeping bends at Coalcliff and Coledale.	IM (on file)
22/7/1976	Remediation	Cost for construction of retaining wall (gabion baskets) after failure caused by heavy rain during March 1976.	ERM/185 part 2
27/6/1984	Remediation	Telex (date stamped 27/6/1984) concerning corrective measures in Coalcliff amphitheatre. Construction of protection for shale bands.	ERM/185 part 3
22/11/1984	Report	Letter to Divisional Engineer from Works Engineer regarding condition of cliff face with recommendation for work to be done to remove one section of the rock face. Photos attached.	ERM/185 part 3 PJ Collins Works Engineer
11/12/1984	Remediation	Telex (date?) regarding proposed road closure 3/12/84 - 7/12/84. "Due to recent heavy rain a large rock overhanging the carriageway of LHD has been undermined and is considered to warrant removal from the embankment."	ERM/185 part 3
29/11/1984	Press release	Press release advising of road closure between 4/12/84 for up to 3 days, depending on the amount of debris to be removed.	ERM/185 part 3
11-12/1984	Remediation	Telex (date after 29/11/1984) regarding removal of loose undermined rock. "The preferred method for removing the loose rock would have involved dowelling and grouting adjacent rock masses….."	ERM/185 part 3
5/12/1984	Remediation	Sketch in file showing details of explosive layout for rock to be removed from cliffs north of Clifton. Rock dimensions 2.8m x 6m x 1.4m. No additional details supplied. (This appears to be the rock section referred to in 22/11/1984 above)	ERM/185 part 3

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
4/6/1985	Remediation	Memo regarding status of treatment of overhanging rock faces at Coalcliff. Current status: 1. Details of rock dowelling treatment discussed 2. Rock dowelling procedures employed at Stephens Flat, Hunter Division discussed 3. Product and technical info obtained 4. Steel reinforcing bar rock dowels have been requisitioned. Work is programmed to commence early in 1985/86	ERM/185 part 3 PJ Collins Works Engineer
3/7/1985	Minutes of meeting	Minutes of Safety Committee meeting held on 3/7/85. "Mr Millar claims that the cliff face between Clifton and Coalcliff is deteriorating much quicker than it has in the past."	ERM/185 part 3 PJ Collins Works Engineer
16/8/1985	Memo	Hand written memo discussing provision of street lighting between Coalcliff and Clifton to assist in cleaning operations	ERM/185 part 3
11/10/1985	Letters	Letters sent by ALP branch to local member and Minister for public works NSW for radical action to be taken to address hazardous sections of LHD.	ERM/185 part 3
23/10/1985	Letter	Letter from LJ Brereton, Minister for Roads to Rex Jackson regarding expenditure LHD. " Concerning the danger of rock falls on to the road between Coalcliff and Clifton the wire mesh barriers erected by the DMR are only intended to catch the smaller rocks and debris which create a nuisance to motorists if allowed to spill on to the road pavement".	
30/10/1985	Allocation of funds	In the 1895/1986 Construction programme an allocation of $50,000 has been approved for the protection of the cliff face against weathering and collapse. It is proposed to concrete face an exposed shale band underlying some massive sandstone and to rock bolt certain fractured sections of sandstone.	ERM/185 part 3 PJ Collins Works Engineer
25/9/1987	Remediation	Note to Divisional Engineer from Works Engineer outlining drilling and blasting of cliff face adjacent to MR185 at Coalcliff. Class of work: drill and blast rock face to allow re-opening of road in a safe condition to traffic.	ERM/185 part 4

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
13/11/1987	Accident	Letter to Divisional Engineer form Works Engineer detailing risks to road users due to rock falls along LHD. Eight rock falls in past twelve months that have blocked the road to traffic. In addition there have been numerous minor falls, one of which damaged a passing vehicle. All eight major falls had potential to crush a vehicle, killing all occupants.	ERM/185 part 4
16/2/1988	Letter	Reply to letters concerning delays clearing rock fall material. R.M. Webb (Works Engineer) comments that delays unavoidable due to the OHS risk to workers and public. Essential to ensure flow of material ceased before the material is removed.	
30/4/1988	Railway disaster	One-in-30 year storm event on the coast. After prolonged rain, Coledale railway embankment collapses, killing two people in house nearby.	ERM/185 part 4
3/5/1988	Storm Slope Failure	"Coastal route closed indefinitely. Worst damage on the road in 25 years. Whole sections have just collapsed into the sea". Photos.	IM (on file)
5/5/1988	Slope Failure	"Our roads shame". Picture of damage. "They have neglected the road for far too long"." Shattered scenic road gone to pot". "Closed for 4 months".	Daily Mirror (on file)
7/7/1988	Slope Failure	Two rock falls near workmen	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
8/7/1988	Slope Failure	About 12 rocks fell on road (1 tonne of rock *in total)*	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
18/7/1988	Slope Failure	Large rock fall on road in amphitheatre (about 20 tonne)	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
3/8/1988	Remediation	The drive to fix coast link. Report on progress of repair work.	Advertiser (on file)

Date:	**Event/topic:**	**Particulars:**	**Reference/source/ Comments:**
24/8/1988	Slope Failure	Minor rock fall	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
August 1988	Rock fall	Greg Kotze's car travelling along LHD hit by rocks	
20/9/1988	Slope Failure	1 large rock fall	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
25/9/1988	Slope Failure	Another large rock fall	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
5/10/1988	Slope Failure	Rocks fall on road close to workmen	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
2/11/88	Remediation	LHD will open again after 6.5 months closure. To be opened 15/11/88.	Advertiser (on file)
4/11/1988	Slope Failure	Several rocks fall	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
9/11/1988	Slope Failure	Photos recording rock falls between 1/7/1988 to 9/11/1988 during reconstruction period.	ERM/185 part 4 9/11/1988 RM Webb Works engineer
6/11/1988	Slope Failure	Several large rocks (about 2 tonne)	ERM/185 part 4 From list in 9/11/1988 RM Webb Works engineer
17/11/88	Remediation	A six-month and $6 million rescue job.	IM (on file)

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
1988	Road slip	Major road slip near Clifton. Road drops between one half to one metre. Road closed for 2-3 months while remedial work carried out.	OH interview with Mal Bilaniwskyj
16/6/1989	Slope Failure	Report from Works Engineer on recent rock falls in GD2. Rocks accumulated between November 1988 and June 1989. Photos showing block sizes up to 2-4 tonnes.	Ian Stewart O.H and others
1996	Study	CSIRO is commissioned to undertake study to calculate risk of rock falls. They find that there is a 10% chance of a car being hit by a rock.	OH interview with Mal Bilaniwskyj
3/8/1997	Accident	Motorbike hits rock, then oncoming car. Motorcyclist injured - RTA found not liable	Information supplied by Marc Hendrickx
17/8/1997	Debris flow, Clifton-Coalcliff	Vehicle trapped by debris flow and hit by rock-panel damage only	Information supplied by Marc Hendrickx
1998	Survey	RTA staff in Wollongong Office produce an initial Slope Risk Assessment Survey on section of LHD	
1998	Southern Amphitheatre Mitigation Rock fall Study	RTA commissions Greg Won to produce an Options Study for Southern Amphitheatre section only of LHD. Greg Won looks at Southern Amphitheatre. Modelled rock fall trajectories using Colorado Rock Fall Simulating Program, which could predict rock fall trajectories and landing sites. First time this program is used by RTA. Program is very accurate and models show that rock fall ditch and berm of a certain height would capture 90% of all rock falls. Options are costed. Won presents a 2-volume Report to Asset Branch in Wollongong by late 1998 entitled 'Southern Amphitheatre Mitigation Rock Fall Study'. This report presents RTA with seven options and funding is made available for Option 4: a rock fall ditch and berm, which is finally constructed in mid-2002.	OH interview with Greg Won
1999	Headland Study	Greg Won is asked to produce a Headland Study for the two headlands north of amphitheatre. Identifies where rock bolting, stabilisation, rock trimming and rock removal is needed. He identifies modes of rock fall and treatments, using shotcrete, rock bars, and pinpoints places on the cliff face where rocks need treatment or removal. Prioritises them in order of urgency.	OH interview with Greg Won

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
2000	State-wide Risk Assessment Survey	RTA divides State into 7 regions and engages GHD-LongMac to undertake study of Southern Region's unstable sites. Section of LHD between Coalcliff and Clifton is ranked first. Greg Kotze hands in this study - his first Report.	OH interview with Greg Kotze
Late 2000	Review of GHD-LongMac Report	First GHD-LongMac Report reviewed by Ian Stewart.	OH interviews with Ian Stewart and Greg Kotze
27/12/2000	Rock fall incident, GD3	Rock fall lodges a rock between the legs of a woman passenger.	OH interview with Ian Stewart
January 2002	Rock fall incident	8 tonne rock hits passing car, and knocks car into guard rail	OH interview with Ian Stewart
April 2002	Risk Assessment Report and options received from GHD-Longmac	RTA seeks advice on a more detailed Risk Assessment and options available to reduce risk levels. Engages GHD-LongMac to produce this. Greg Kotze works on this Risk Assessment and makes about 20 visits to LHD and does extensive mapping and fieldwork to produce a second report suggesting various options: slope stabilisation works, construction of bridge, viaduct or tunnel and road closures during peak wet weather periods. These measures are proposed to reduce overall risk profile.	OH interviews with Ian Stewart and Greg Kotze
2002 (July-September)	Remediation work	LHD is closed while Rock Fall Mitigation Strategy by Greg Won is put into action. Rock fall ditch is constructed, scaling and cleaning of rock face is undertaken, Swiss-designed Geogbrugg RX150 catch fence is installed at base of Headland 1 and rock bolting is carried out. Total of $4.3 million spent on this work	OH interview with Greg Won
March 2003	Community anger	Community anger against RTA runs high as road is closed intermittently again after 35mm or more rain has fallen over a five-day period.	Ros Muston

Date:	Event/topic:	Particulars:	Reference/source/ Comments:
July-August 2003	More rock falls and embankment failure	Issue is forced in July 2003 as road is closed again for one month initially. Another significant rock fall happens on 11 July 2003. The road also develops major embankment failure in Southern Amphitheatre that would have to be fixed before road can be reopened.	OH interview with Ian Stewart
August 2003	Review of GHD-LongMac Report by URS	The second GHD-LongMac Report is reviewed by URS Technical Consultants who basically agree with it. The URS Review looks at ways of improving efficiency protocol and length of closures. Ian Stewart is involved in review of URS' Review of the GHD-LongMac Report. The URS Review concludes: the 'Risk Level is Intolerable'.	OH interview with Ian Stewart
August 2003	Road closed indefinitely	In August 2003 RTA decides to close road indefinitely and embarks on a permanent solution to fixing LHD. Seeks expressions of interest to form an Alliance.	OH interview with Peter Stewart
September -November 2003	Alliance formed	Alliance considers 8 contractors and decides on Barclay Mowlem as preferred contractor. Ian Stewart is one of 5 on the Assessment Panel. Community Consultative Committee is set up and includes Ellis Eyre and Graham Aubourg.	OH interview with Ian Stewart
26-27 November 2003	Workshops	Workshops canvass options and 70 options are put on table. Reduced to 26 options and then just four. Alliance starts designing their preferred option	OH interview with Peter Stewart
April 2004	Alliance presents Preferred Option	Preferred Option presented to all parties and community.	RTA Website
May 2004	Go-ahead for linked bridges design	RTA formally accepts Alliance's proposal. Construction of access road begins.	OH interview with Peter Stewart

Note:

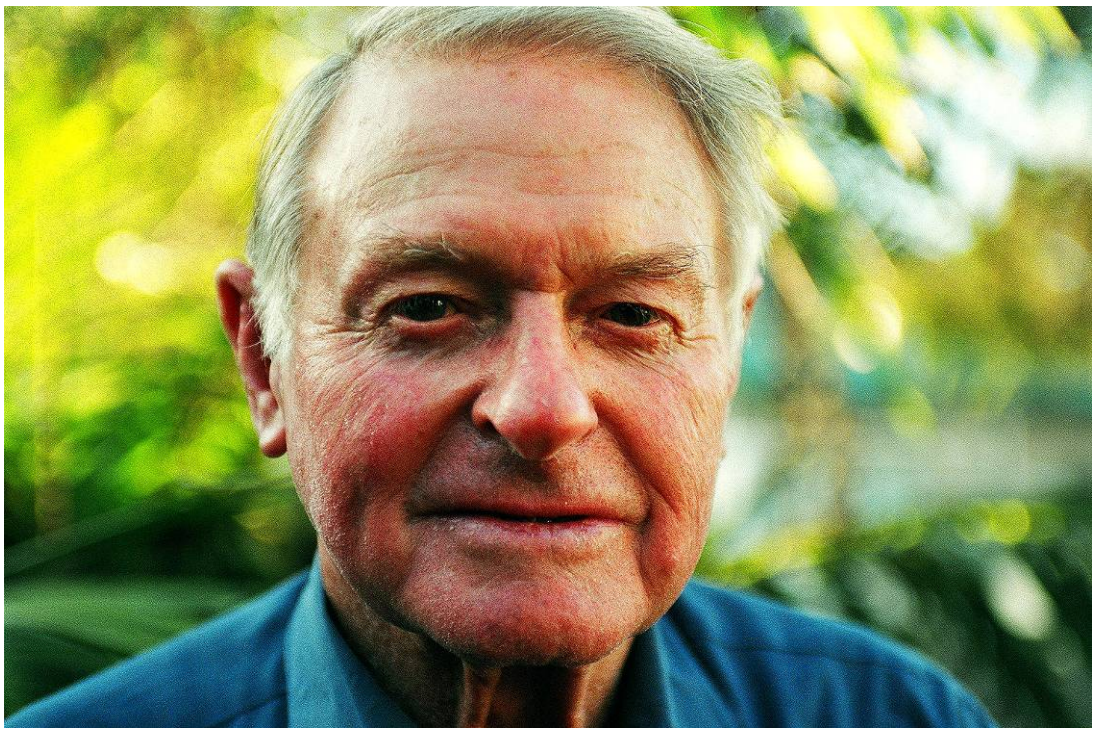
This Summary of Events was completed from information supplied by interviewees and a range of documentary sources, including DMR files and newspaper articles and is, to the best of the authors' knowledge, correct. Any omissions or inaccuracies are unintended.

Interviewees' biographies

Graham Aubourg

A teacher whose first posting was at Goodooga, Graham Aubourg has been a Coalcliff resident since 1980. He came to the area because he was attracted to scuba diving, spear fishing and the natural beauty of the Coast. Graham took up voluntary bush care work, spraying weeds, planting trees and reducing the number of feral goats that live up in the escarpment. He has seen wallabies, deer and sea eagles up in the mountains above Lawrence Hargrave Drive. Graham is a member of the Consultative Committee set up to advise the Alliance team. He has built his own large-scale papier-maché model of the section of Lawrence Hargrave Drive from Coalcliff to Clifton.

John Baines



John Baines is a successful cement contractor who was born in Scarborough in 1930. His father owned a newsagency and John, like his five brothers and sisters started delivering papers on foot to residents along Lawrence Hargrave Drive since the age of nine. He remembers the presence of the Army during the war years and vividly recalls an event in 1949, when, while driving a load of furniture around the headland on Lawrence Hargrave Drive, his truck was struck by a rock fall. He now lives at Thirroul.

Mal Bilaniwskyj

Now Asset Manager at the RTA's Southern Regional Office at Wollongong, Mal Bilaniwskyj started his career with the DMR in 1972 as Assistant Maintenance Engineer at the Bellambi Works Office. He worked on the construction of the F6 Freeway, looked after maintenance on Lawrence Hargrave Drive and was a witness to most of the major events that have occurred in the Illawarra since the 1970s. From the mid-1980s, as Engineer at Bellambi, he became directly responsible for Lawrence Hargrave Drive. His overwhelming drive has been to make the road safe and reduce risks to motorists and residents.

Gloria Bouren

Born in Glen Innes in 1925, Gloria Bouren arrived at the South Coast in 1946 after marrying her husband Jack, a miner from Thirroul. Gloria loved living on the coast and soon involved herself with the local community. She became President of the P&C Association, joined the Hospital Auxiliary and was awarded the AO medal for her charitable work. Gloria lives at Clifton in the house she and her husband built in 1953.

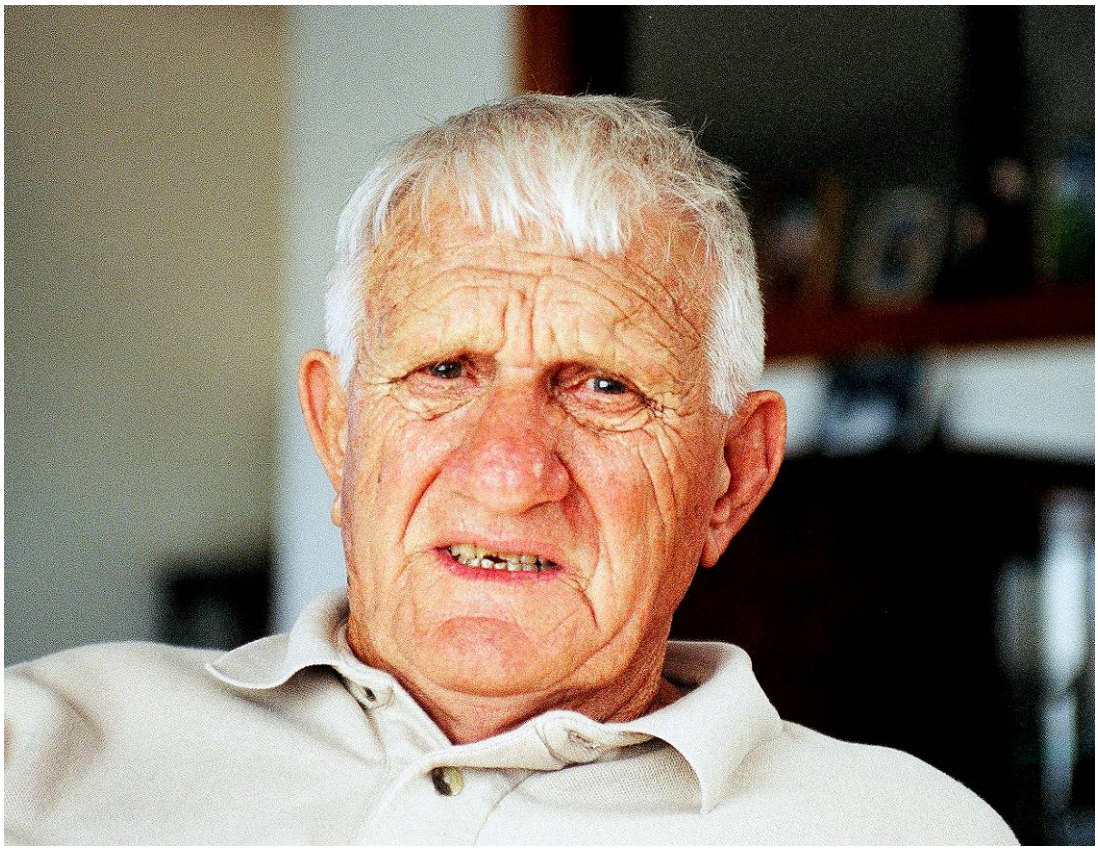
Lyn Busch

Lyn Busch has lived in Clifton since 1962 and has witnessed the steady decline of the town. She has researched the local history of the town, the mine and the impact of the Depression on the community. She also has amassed an important collection of historical photographs. She is a committee member of the Clifton School of Arts and is currently at the forefront of a campaign to raise funds for its restoration.

Allan Carriage

Allan Carriage, whose Aboriginal name is Gerringonga (porpoise) is a descendant of the Wadi Wadi Nation, one of the main tribes that inhabited the South Coast. Allan had a basic education and started work during his teenage years at Port Kembla Coal Mine. He knows of caves decorated with ancient wall drawings deep in the escarpment and some of the Aboriginal legends concerning the escarpment. Brought up in traditional ways by his mother, Allan has advised the RTA on items of Aboriginal heritage and believes in the power of cooperation to solve all issues of equality, race and the environment for the common good of all.

Leo D'Adam



Fernandino Eli D'Adam was born of Italian migrants who arrived in Australia in 1924. In 1963, he was put in charge of the Bellambi Works Office and was there for only a few months when the northern section of Lawrence Hargrave Drive near the amphitheatre all but slipped into the sea. He narrowly missed being hit by a rockfall in 1965. Leo left the coast to become Divisional Engineer at the DMR's Port Macquarie Works Office and then returned to Bellambi as Divisional Engineer in 1986 where he oversaw the massive reconstruction program of the road after the 1988 storms.

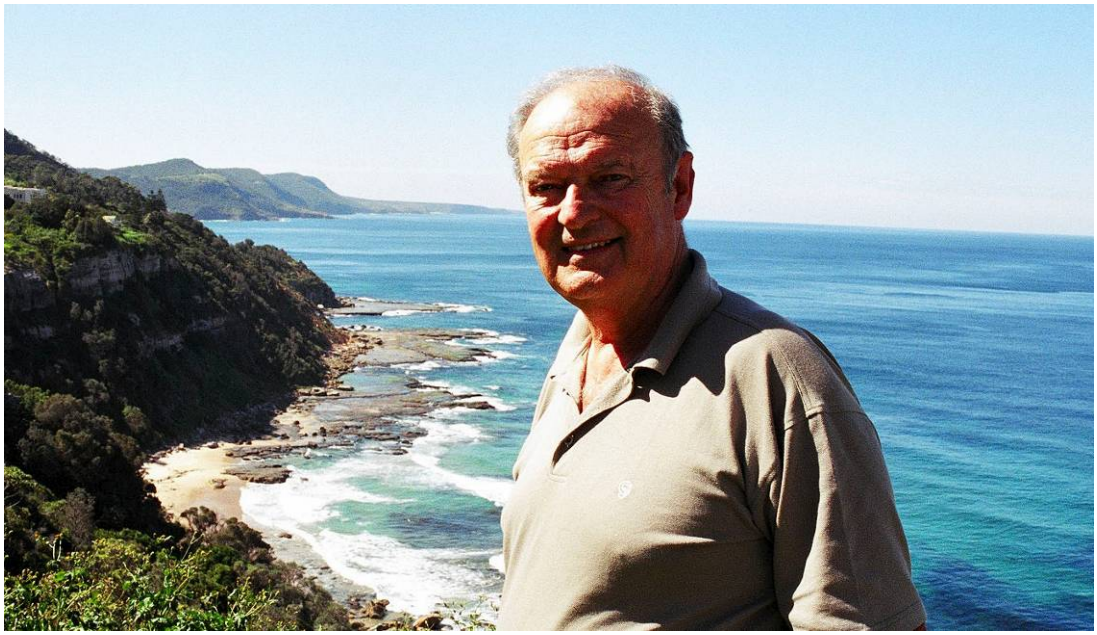
Warren De Clouett

One of a family of nine children born in Scarborough, Warren De Clouett walked along Lawrence Hargrave Drive as a child in sandals that sometimes had no soles. He also sold pies outside the Clifton Hotel from an old horse and cart with a wood-burning stove until six o'clock closing forced the patrons out. Warren started as a butcher's apprentice and became a butcher. At the age of 21, he joined the South Clifton Mine and enjoyed the work. When the mine closed, he found work at other mines and spent altogether 18 years working underground. He was President of the Junior Rugby League Club and has been a member of the local fire brigade for 23 years.

Ron Draper

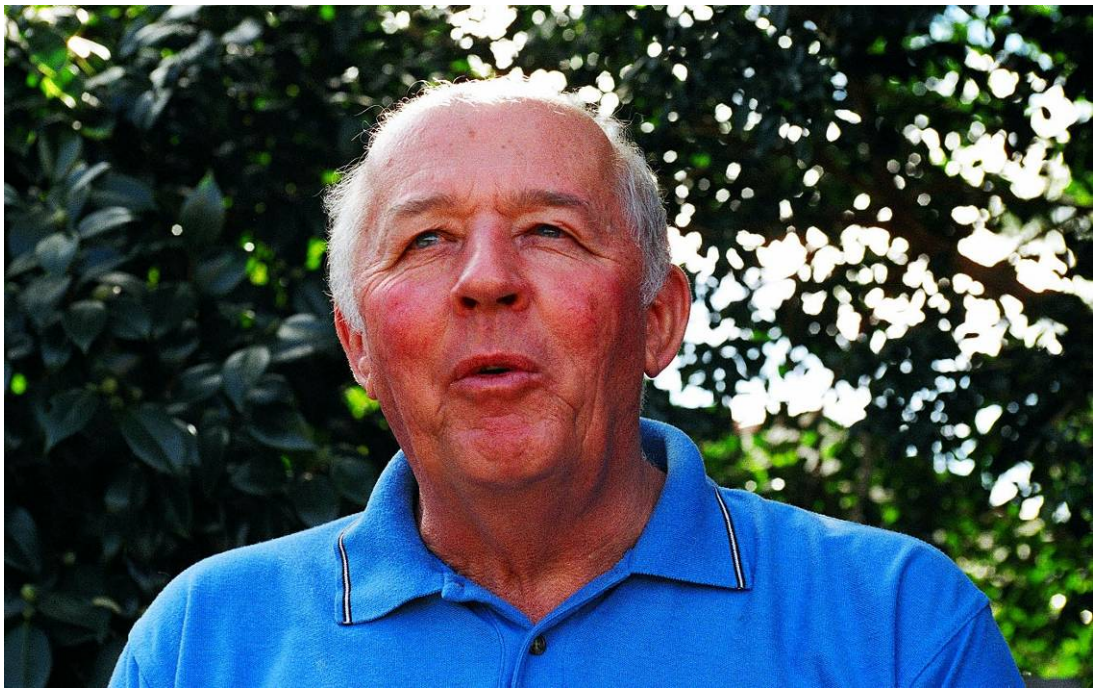
Born in Clifton in 1930, Ron Draper lived through the Depression, the Second World War and the death of his brother George through a mining accident in 1967. He also joined the mine at an early age and worked there until it closed. He remembers quite a few rock falls and mudslides along Lawrence Hargrave Drive. Ron lives at Bulli and has been a resident of the South Coast for all of his 74 years.

Ellis Eyre



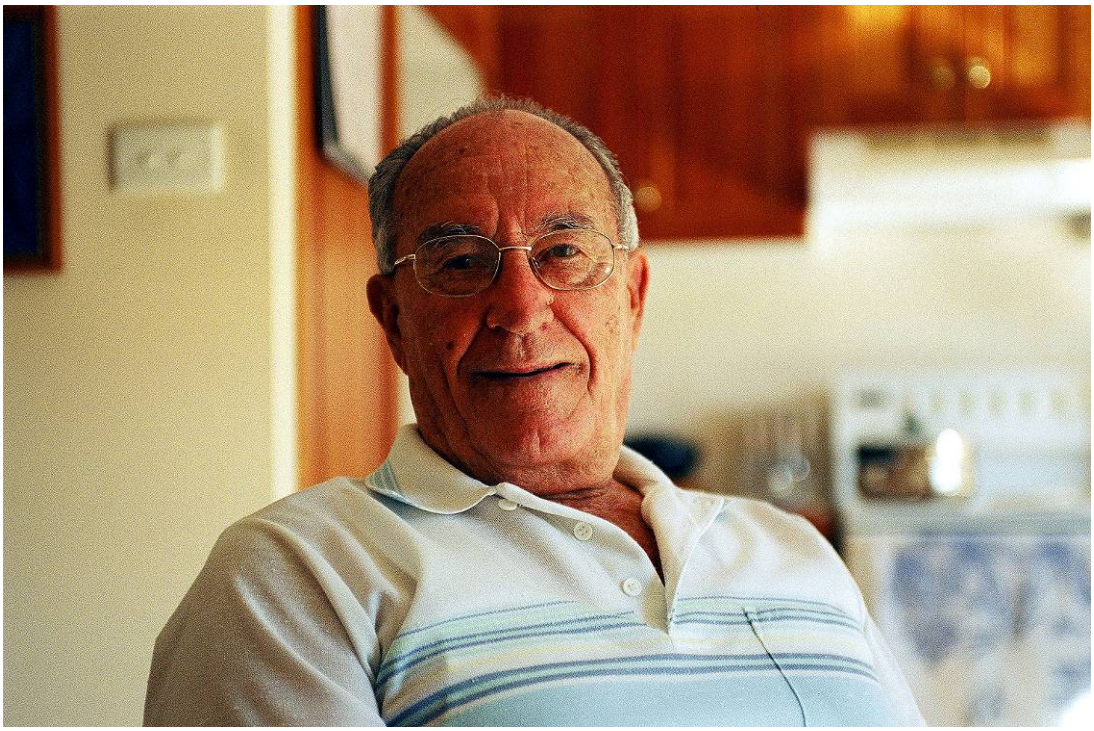
A distant relative of the explorer Edward John Eyre, Ellis Eyre has lived in Scarborough since 1973 in the old doctor's cottage on Lawrence Hargrave Drive. First called the 'Mad Squire' by the locals, Ellis' knowledge of local and Australian history is extensive and he has worked as an art teacher and practising artist. He joined the Community Consultative Committee set up by the RTA to bring community views to the reconstruction process.

Bruce Fishburn



After finishing his engineering degree, Bruce Fishburn started at the DMR's Bellambi Works Office in 1966. Together with Leo D'Adam, Fishburn built a retaining wall and a trap to catch rockfalls. He was also put in charge of the brave but ill-conceived experiments using a wrecking ball and chain in 1967. His contribution to Lawrence Hargrave Drive has been in maintenance, reconstruction and line marking to ensure that visibility along the road was as high as he could make it.

Gus Forbes



When Gus Forbes was born in Scarborough in 1923 in a house with no running water, sewerage or electricity, life was a simple matter of survival against the odds. Forbes worked as a miner since the age of 16 and became a 'wheeler'. He saw many dramatic events at the mine, including the death of his best friend, Billy Band. After Gus married, he left the mines and delivered groceries from the cake cart along all of Lawrence Hargrave Drive. He then spent 25 years as Manager at Flemings grocery stores. Gus is looking forward to the reopening of the road in 2006 and sees a bright future for business in the area after that time.

Brian Harvey

Brian Harvey was born in a family that survived the Depression by having a milk run with a pony and sulky along Lawrence Hargrave Drive. After leaving school, Brian worked for an Illawarra meat company for 15 years, then joined Coalcliff Colliery as a miner, where he worked on the 'Dog Watch' from 1965 until the mine closed in 1991. He can't wait for Lawrence Hargrave Drive to reopen as he presently has to drive an extra 60km round trip to bring his grandchildren to school.

Marc Hendrickx

Born in Canada in 1968, Marc Hendrickx has lived in Australia since 1970. After completing a B.Sc. Honours degree with a major in Geology, and after winning several academic prizes, he found a job with the State Geological Survey of Victoria, mapping major parts of the east of the State. He describes geology as 'putting a whole story together - a puzzle where one is intellectually challenged'. Marc worked in the Tanami Desert in Central Australia for two years from 1998 and then obtained a position with the RTA as Scientific Officer working on Slope Risks and other geological work. Marc has examined all the DMR files relating to Lawrence Hargrave Drive and has put together a detailed site history of the road. He has also researched the newspaper files and is familiar with all of the major events that have occurred on Lawrence Hargrave Drive.

Greg Kotze

Greg Kotze studied Geology and Geophysics at Macquarie University. He joined Longworth & McKenzie as Engineering Geologist in 1974 and during his first few weeks with the firm was sent out to investigate a landslide at Coalcliff above Lawrence Hargrave Drive. Now with GHD-LongMac, he was involved the RTA survey to rank all unstable sites in NSW wherein Lawrence Hargrave Drive was ranked first in the State as requiring treatment. He also produced a Risk Management Strategy Report, which documented risks associated with various instability mechanisms and suggested a range of options to reduce those risk levels. He has a very deep knowledge and understanding of the site and the factors that influence its behaviour.

Elaine Pugh

Born in 1928 at Campsie, Elaine Pugh lived in Canterbury where her father was a publican. She moved to the Coast in 1951 and settled at Stanwell Park. She gives interesting accounts of life there during the 1950s and 1960s. Her husband Ray worked at Coalcliff Colliery and his father was the local policeman at Scarborough, who told her many tales about his time there, and in particular about the great storm of April 1950. Elaine is President of the CWA, which has been financially affected by the road closures.

Stan Rees

Born in Redfern in 1924, Stan Rees comes from a long line of miners, starting in Wales. He has been a Coalcliff resident for seventy years and has worked at the colliery since the age of 14, when his father broke his leg in a motorcycle accident. He worked two or three miles deep inside the coalface with pit horses in what he describes as 'the pick and shovel days'. When mechanisation came in 1958, the job was made somewhat easier, but the dangers to miners increased. Rees was involved in the 1949 coal strike, during which time two union organizers were jailed. He gives very accurate descriptions of life in the mines and says that he just wants to see the road fixed up 'before he dies'.

Charles and Pat Simpson

Pat and Charles Simpson are both teachers and committed residents of Stanwell Park. They have lived through most of the momentous events on the Coast in their lifetimes and their children also roamed far and wide along the area, developing an appreciation for nature and the topography. They were instrumental in getting footpaths constructed along the edge of Lawrence Hargrave Drive so that children could, until the road closures, walk to school from the northern and southern sides. The road closures have meant increased travel times and costs for the Simpsons, who want to see the road reopened and made safe.

Ian Stewart

After studying Geology and Engineering, Ian Stewart started with the DMR at Tamworth where he took over management of the testing laboratory. In 1978 he was moved to Wollongong as Second Scientific Officer where he investigated embankment failures and rock falls along Lawrence Hargrave Drive. He then took a position at the DMR's laboratory at Milsons Point where he developed Australian standards tests for aggregates. More recently, he has been involved in Risk Assessment associated with geotechnical problems and developed new risk assessment procedures. He also has a background in contract disputes and has briefed legal counsel on geotechnical matters. He was part of a five-member evaluation team that selected the Alliance partners.

Peter Stewart

Peter Stewart is the Alliance Champion. Born in Belfast in 1944, he attended Strathclyde University in Glasgow and graduated in Civil Engineering in 1971. He was offered a position in South Africa and moved into bridge construction. He was at the forefront of innovation in South Africa when he built the first incrementally-launched bridge there in 1977. Stewart has lived in Australia since 1985 and has many spectacular bridges to his credit. As part of Barclay Mowlem, he put together a team and was successful in obtaining the contract to construct the proposed bridges for Lawrence Hargrave Drive. This will be the RTA's historic first Alliance project.

Bob Webb

Arriving at Bellambi Works Office in 1986 as Works Engineer, Bob Webb was immediately introduced to problems with Lawrence Hargrave Drive when his vehicle was struck by a rock from above. He was there when in 1987, a huge 200-tonne slab came down in the night. Then, in 1988, after the massive storm of 30th April, he was involved in repairing the big slips in the road and putting in place remediation measures. In 2002 he oversaw another massive reconstruction program, which included building a terramesh wall of rock-filled gabion boxes, a ditch, berm and hi-tech Geobrugg fence. Bob is presently Road Services Manager of RTA's Southern Region.

Greg Won

With a Master's degree in Civil Engineering, Greg Won joined the Department of Main Roads as Materials Scientist. In 1998, he was approached to find a solution to the problems of rock falls in the Southern Amphitheatre section of Lawrence Hargrave Drive. Using the *Colorado Rock Fall Program*, he modelled the trajectories of falling rocks and came up with a range of options to make the road safer. Several of these options, including treatment of the headlands, were proceeded with in 2002. He is currently involved in work on the Sydney Western Orbital Freeway.