

**IPENZ Auckland Engineering Heritage Committee Oral History Project**Interviewer John La RocheTrack 1

- 0.00 This interview with David Gladstone Downey at his home, 4/27 The Parade St Heliers on Monday 23 August 2010, interviewed by John La Roche as part of the IPENZ Oral History project using an H2 Zoom recorder. David was born in March 1922 at Gisborne. David has written a fascinating family history in his book "What's the Weather Like". This describes growing up on a remote farm near East Cape on the East Coast north of Gisborne.
- 1.24 David responded asking why the title "What's the Weather Like?" In the isolated part of the country where David's father had broken the farm in from the bush, there wasn't a tree felled when they occupied the place in 1924. The weather was a vital factor in their whole lives on the property, working around flooded rivers and in the rain. The standard question each morning was "What's the weather like?" David's dad drew the property in a ballot after returning from the First World War and working at Makarika Station out of Ruatoria. David describes how his father found the boundary of Waitangirua in the bush by following streams to No 1 peg. He and his brother did the same thing about 30 years later, still finding the same peg. There was nothing dramatic about breaking in the land, typical of many hill country farms of that type except that it took place relatively recently. The bush had to be felled and burnt. They had to survive major fires leaving the house twice by going to a neighbour's place taking their horses and dogs with them, the chickens being left to survive as best they could. He remembers walking to a ridge to see the whole of the countryside, over 1,000 acres, all red with fire except for one dark patch in the middle which was their house. It was saved by the work his mother had done to clear the land around the house forming a fire break. The house was saved by being clad in corrugated iron, including walls and roof. There was no electricity and David remembers reading nursery rhymes in bed by candlelight. Much later they got a diesel generator for lights and to boil a jug.
- 6-30 They killed their own meat and David milked the cows. After returning from a day's fencing, the three cows were always waiting to be milked.
- 7.21 David went to school at Napier and after he left all he wanted to do was to go farming. Around 1942 he was in the army at Waiohuru where he had a lot of company, very different from the isolated life at Waitangirua where there was little opportunity to meet other young people. He would only see neighbours every month or so and never in the winter because of the weather. He travelled by bus to boarding school in Napier. He hated the journey being car sick much of the way. He sat School Certificate and University Entrance in the same year. Then all he wanted to do was to go back to Waitangirua which he did for eight years, to shepherding and the life he liked and knew so well. But he still had a hankering to exercise his brain. He took a correspondence course in trigonometry because he was intrigued and knew nothing about the subject. Over the summer time, if the weather was right the station hands and residents of the Oweka and Waikura valleys would meet every two weeks or so to play tennis.

- 9.56 The Hindmarsh's had Pakira Station, a large station nearby. Doris and Ralph Worley, from Auckland came for the holidays in 1943 to stay with the Hindmarshes. One Sunday David and others from the valley went to play tennis with the visitors. David's mother sensing his restlessness had suggested David might like to become an architect, but that didn't appeal. When they went to meet the Worley's, David's mother, in a stroke of genius from David's point of view, asked Ralph if he would take David as an engineering cadet. David could not understand how she knew that such an opportunity existed, but Ralph agreed he could take David as a cadet in a few months' time.
- 12.00 In 1944 after the holidays, David joined Ralph in his Auckland office. This was during the war years, but because David was short sighted he was not able to go overseas. However he still had to go where he was told by the manpower Department. Although he had been in the army he wanted to get out. Ralph at the time was surveying the Karapiro hydro lake and so David was sent as chainman with Cec Thorpe to run levels for the future Lake Karapiro. At the time Cec Thorpe was a very experienced engineering assistant who with David was Ralph's total staff. Cec was on the instrument while David was the boy chopping lines through the manuka, gorse and scrub along the banks of the Waikato River. It was very steep country below the lip of the river bank, but David was used to this sort of country. He continued in this job for about 12 months.
- 14.54 After the lake level survey, Ralph became responsible for the legal survey of the land to be taken for the lake when it was formed. David was the logical person to go and be chainman for the surveyor. Bull the surveyor was a colourful character who had just come back from Borneo. He liked to order David around like a 'lackey', but he couldn't drive a car, leaving David to drive the old Essex tourer model. In the winter the Waikato area froze requiring the radiator to be drained each night. On one occasion the radiator boiled and Bull urgently required to be let out. David protested there was no need for worry. Bull was a very impractical fellow but a very good registered surveyor.
- 17.14 David continued with survey work for the next few years doing surveys around Auckland, North Auckland and the Waikato. Ralph's main work in those days was local body roading, water supply, sewage reticulation, and reservoirs. He was well known and respected, getting on very well with everybody. He was an excellent role model for David. The water supply at Kaiwaka was for a Council some members of which were unfamiliar with the procedure required for a loan application, one was a mechanical type, another a farmer. Ralph and David had prepared a loan proposal and written a report on the scheme. When it got to the point that Ralph recommended to the Council that they should apply for the loan, the Chairman stood up and said "And I second Mr Worley's resolution". Ralph had to explain that he couldn't move the resolution! They were very good people to deal with.
- 20.10 Before David's time Ralph had done all the civil engineering work for Whakatane Board mills including a railway line of about 20km from Te Teko to the Board mills. Ralph did all the associated water supply and a water treatment plant. Mr De Guere, with whom Ralph formed a partnership, did all the technical work for the plant to make paper board including all the electrical work. David's only involvement with the

Board Mills was later in the 40's when he and Cec Thorpe went down to survey the area of forest that that been cut.

- 22.05 David went to Canterbury University to study engineering at the age of 26 between 1948 and 1950. By this time there were no manpower restrictions and David had decided to concentrate on engineering rather than surveying, although he had done plenty of practical time for surveying. At this time the Auckland School of Engineering was moving from Princes Street to Ardmore. Since he had no fixed home in Auckland, David decided to go to Christchurch where he went to Rollerston House, a boarding establishment for the University. Rollerston House was started after the First World War to provide accommodation for returned servicemen undertaking university study. It was very successful and quite independent under the umbrella of the University, but it had nothing to do with the day to day running. When David joined there were five houses. Rollerston House was autonomous with its own Council to which David was elected. There was only one rule, if someone was making a noise when another wanted to swat, then the noise had to be shut down at any time of the day or night. Students have a habit of making noise, but David could only recall one occasion when they had to shut a party down.

26.46 Track 1 ends.

## Track 2

Tuesday 31 August 2010

- 0.0 Interviewer John La Roche. After he completed his University Studies David was the envy of many of his contemporary student because he was going back to work with Ralph Worley. Other students didn't know where to go or where they would get a job. David's first job with Ralph Worley was fixing the Karapiro lake edge in order to fix the boundary of the reserve along the edge of the Waikato River valley. David was chainman for Cec Thorpe cutting lines and taking levels for several miles down each side of the Waikato River towards Horahora power station. He then continued on the legal survey with a chap called Bull who had just come back from Borneo where he was used to having lots of lackeys carrying all his gear and David was expected to do this. This was in 1944 -45 interrupted by a period in Waiouru army camp where there were 10 in a tent with snow on the ground outside. He was tough in those days
- 5.33 The work David was involved in was almost entirely local body work with clients throughout the North Island. In the north there were Hikurangi, Kaiwaka, Bay of Plenty, Opunaki, and Taranaki amongst others. Ralph did a lot of travelling, taking David with him. David did the driving and they stayed at the old hotels such as Fathers in Paeroa. They did a lot of sewer reticulation work such as in Manurewa and at Whakatane taking levels throughout the Borough. They also put in permanent levels through out the streets. In Manurewa it was well before Mangere and septic tanks were used for treatment near Weymouth. Kaiwaka reminded David of Country clients where Ralph who was most approachable at any time, got on well with everyone. He knew all of them by Christian names. One day they had prepared a loan proposal for the Kaiwaka water supply, Ralph recommended to the meeting that that they should apply to the Loans Board, where upon the Chairman stood up and stated "I second Mr Worley's resolution". Ralph had to remind the Council that he was unable to move the motion but if they were to do so it would all be in order. David nearly got trapped at Hikurangi where he presented a report on sewage ponds. The only intelligent

question for the whole evening came from the only lady present – the lesson watch out for lady councillors!

- 9.13 The firm employed Brian Muir and Mike Andrews and later they merged with Mandeno Chitty and Bell. Ralph had a practise of employing people from other firms on a project by project basis when he didn't have the skills. Because of this they were working a lot with senior people in allied firms. They always managed to get on well with these people and this inevitably led to mergers with some of the firms. Brian Muir was an exception who became one of our directors as did Mike Andrews. Brian was a power engineer. He expanded the work rapidly, so rather than employ individuals, they employed a skilled team leading to the merger with Mandeno Chitty and Bell. Brian Muir had been at Meremere Power Station and when the station was commissioned his employment finished. Since he was living in Auckland he joined David and Ralph. His electrical experience was needed for the North Shore Sewage Treatment Plant and pumping stations. Brian led the electrical division very successfully. He brought in new staff from the Power Board and the firm expanded significantly.
- 13.05 Around this time, overseas work started and David joined a trade mission. Going back to the North Shore treatment plant, David described how Ralph Worley had been involved with many local bodies on the North Shore. The Auckland Metropolitan Drainage Board was making moves to take over the North Shore and this was violently opposed by the North Shore Local Bodies Association. An Act of Parliament established the North Shore Drainage Board, and one of their first actions was to appoint Ralph Worley as their Engineer. This led to over 30 years of consultancy for the firm. All of Ralph's commissions in the early days were done on a hand shake, but the Drainage Board Solicitor felt it would be good idea to have a signed contract. This was the first occasion Ralph had had a signed contract for professional services! The first part was a feasibility report on drainage from Devonport to Waiwera, the catch phrase at the time. They were commissioned to go ahead with the detailed design of the first stage. Stage 1 was commissioned in 1962 for a population of 40,000. They then went on with Stage 2 and further additions. John La Roche remembered designing a trickling filter and prestressed pipe bridges when he worked for the company in the 1960s.
- 17.53 Ralph Worley died in 1965. Until then David would often attend Drainage Board meetings with Ralph. After Ralph died David had to attend all Works Committee meetings as well as the monthly Drainage Board meetings over the next 20 years. He only missed one meeting. He forgot, and was asked next morning by the Secretary Manager where he was. There were no hard feelings. David said they managed to get on well with all their clients and if there were any difficulties Ralph was very good at talking his way out.
- 19.20 David also designed sewage plants for Tauranga and Wanganui. Tauranga was an activated sludge plant including power generation from the sludge gas to become self supporting from an energy point of view. The interesting thing about the site off Chapel Street was that it was in the harbour alongside the causeway to Otumoetai. Sand dredged from the harbour was used to reclaim the whole site. Because the sand was very loose and un-compacted, timber piles 3 to 4 metres long were driven over the whole site in a grid pattern of about 3 metre intervals. These piles were driven to

below the level of the plant foundations, but it was vibration from the driving of the piles that compacted the sand. The foundations for the plant were then excavated in the sand and to David's memory there were no problems with settlement. There wasn't anything unusual about the plant that was designed for 20,000 people but by the time it was commissioned it was overloaded by the rapidly growing population.

- 22.35 Waitara and Wanganui were both similar types of project with sea outfalls. At Waitara there was a main sewer but it was the outfall that was interesting where the pipes were strung together in strings and prestressed. Each string was pulled out into the sea to rest on pre prepared supports. A bracket was to be fixed later. McConnell Dowell had the contract and all went well until a storm during construction lifted the pipe off the supports leaving the line with a "wiggle" in it. After checking the stresses, it was decided that the pipeline could be left that way with the bend still in it. Wanganui was a similar type of construction for the outfall with a trunk sewer along the river bank. Wanganui sewage included waste from a meat works all of which was discharged straight into the river. It was no wonder the river was polluted! The task was to get the sewage and meat works waste from the river. The contractor laid the trunk sewer pipes below river level alongside the river and there were associated problems with water seepage. Then there was a river crossing that was difficult. The outfall was similar type of construction to Waitara but they managed to avoid a storm. David found the Wanganui scheme very interesting at the feasibility study stage determining what sort of waste disposal system should be installed. The existing waste was discharged straight into the river from 76 outfalls. They set up a laboratory in Wanganui for 18 months with Keith Davis as the Lab technician. He measured the waste water volume and strengths from all the outlets during dry and wet weather to get a picture of what the waste was like. The meat works waste was very strong. From these measurements they were able to design for the likely strength of sewage at four times dry weather flow, and how far off shore it would need to be discharged to meet the bathing water standards at Castlecliff Beach. David was able to show this could be achieved by taking the discharge out 6,000 feet from the shore. There also had to be overflows under storm conditions into the river. The dilution in the river and at the outfall was tracked by using radio isotopes discharged at various points by measuring the times and dilutions. Radioactive isotopes were ideal for this purpose because small concentrations could be measured very readily.
- 32.00 Expansion of the company in the early 60s. Mike Andrews who was a year or two ahead of David at University had just returned from Canada. David needed help with the expanding local body work and Mike was able to help. Mike knew Brian Muir, both having grown up in Gisborne. Humphrey Topham also joined as a mechanical engineer. The groundwork for building a larger firm was set and this continued. After Ralph died in 1965, David became the most senior of the directors. In parallel there were mergers with Mandeno Chitty and Bell and others bringing hospital work and the whole structure of the firm was changing from a partnership to a more corporate type of management. They recognised that sometimes engineers are not the best managers, so W D Scott were employed to look at the company and suggest improvements.
- 35.20 In 1968 the opportunity arose for someone to go on a Trade Mission. It was recommended that David should join a mission to the Far East to seek out opportunities for consulting engineers. The Mission leader turned to David and said he wasn't sure what they could do for him. They had never had a consulting engineer

on such a mission before. However David had done his own home work to find contacts. The Trade mission did arrange meetings with their opposition which were not always very helpful! David came back with lots of opportunities but recognised that the firm needed to be bigger. Opposition firms overseas had thousands of engineers, whereas most New Zealand firms were much smaller. Out of this the concept of ENEX was born. Those companies who wanted to be part of the action with existing firms put up people who were able to do the work. ENEX was set up with a corporate structure with a Board and an employed marketing executive John Alexander. John would seek out opportunities in the Far East doing a lot of travelling and visiting the World Bank and Asian Development Banks as this was where the money was. He would come back with a list of opportunities to enable ENEX to try to get short listed. It was quite a process to be short listed with then only a possibility of being selected. The lead time was quite long and to start without a track record was very difficult with just a few hundred engineers. Eventually they did get jobs which gave a track record and through this became known. They all travelled to the Far East many times following up personal contacts. Knocking on doors, getting to know these people and knowing how not to offend them was very important.

40.50 The company did a major project in Ipoh in Malaysia, 150 km north of Kuala Lumpur close to the Thailand border. In addition to World Bank and Asian Development Bank (ADB) projects they were working on the NZ Ministry of Foreign Affairs who had opportunities from time to time for consulting engineering firms. However this also was a mini version of the problem of being recognised by ADB. With perseverance and many visits to Wellington, they finally succeeded. The NZ Ministry came up with the opportunity for a sewerage feasibility study for Ipoh. The design population of Ipoh was 840,000 with a population at the time of 250,000. Wastewater was in the most cases discharged into the Kinta River with primitive or no treatment. Package plants were creeping into some places. The old town had foul smelling open monsoon drains that had to be stepped over to get to restaurants. Beer in a can was safest! The proposal had to be submitted for key personnel only with a training component for local people. David was the project Director, a Project Engineer, and Frank Lowe from Steven Fitzmaurice the Industrial Chemist. They had to employ two local engineers and other staff such as chainmen had to be local people who had to be trained also

45.33 After putting a team together and submitting it to the NZ Ministry, there was about a 12 month delay before the project was confirmed. By this time the originally selected project engineer was no longer available. David advertised in NZ and got no one who was satisfactory. He then advertised in Australia where he got 20 applications. After reducing the list to ten, he interviewed two in Sydney and eight in Brisbane. He tended to concentrate on personality and activities rather than academic qualifications. David chose Tony Manning from Townsville. He was good. On one occasion when David and his wife Barbara went to visit, Tony took them out dinner. After negotiating the monsoon drain a waitress came along with a very grey looking cloth to wipe the table. It wasn't long before Tony's wife had a headache and wanted to go home. She was not a great help to Tony who was trying to create a good impression. However the project went well. They had a Sri Lankan engineer and a Bangladeshi who were both very well qualified on paper.

- 48.36 Tony was a typical Australian who with David worked out two alternative major schemes for the whole of the area. There was a lot of limestone country that required test bores. The detailed design costings were left to each of the local engineers. Next time when David was there, the Sri Lankan engineer took David aside and said “Mr Manning, he very tough, he won’t help me”. Tony responded by saying he had been taken on to do the job, but in order to get on with it David had to convert it into a text book type of design for him. However the feasibility study was finally completed and was well received by the Malaysian Ministry. The next step was to quote for the detailed design. David was very disappointed to miss out on this contract when it went to a UK firm.
- 50.40 Worley Downey was also involved as a member of ENEX in a large highway job in Malaysia. Keith Lockie was the project engineer but David personally had little to do with it. Beca Carter were the main designers of the bridges which were of large precast concrete design.
- 52.20 Then there was a large irrigation project in Iraq. This was a major project involving a wide range of ENEX members including engineers, architects, contractors and economists. They were finally short listed as top proposal from 20 submissions. It was a major job involving the conversion of hundreds of acres of desert into productive agricultural land. Main features of the proposal were irrigation water, animal health, three towns of several thousand people and smaller villages for the people who had to run the scheme. Power had to be brought in with major transmission lines. There were opportunities for all disciplines. Mike Andrews went there a number of times. They got very close to getting the job, but it was the French who were finally awarded the contract.
- 55.24 ENEX had an office in Wellington. John Alexander was the representative in Wellington with one assistant. He got on the newsletter mailing list of various organisations that advertised opportunities. When he spotted an opportunity there were teams at Beca Carter and Worley Downey and other ENEX members whom he approached with the opportunities. If a company was interested, John would seek out further information such as terms of reference. Then it was necessary to put in a submission. These were to a ridiculously high standard. Not only did you have to say how the job would be done according to the terms of reference, but the number of personnel and pay levels had to be quoted. All usually being done under pressure to meet a closing date and all printed out in “glossy technicolour”. It was ridiculous when the success rate was about 1 in 10. It was easy to spend thousands of dollars to prepare the documentation, often to no avail.
- 58.42 David was involved in a voluntary role in many organisations including ENEX, ACENZ, NZ Water & Wastes and IPENZ. He was the Secretary of IPENZ Auckland Branch many years ago. Ralph Worley never went to any meetings of the Branch because his friends were other professionals mainly lawyers. Obviously he had a conscience about it and suggested to David that he should get involved on the Auckland Branch where he became Secretary. David said it was very routine and didn’t involve much work. Then Ralph suggested to David that he should write a paper on the North Shore Drainage Board scheme which he duly did and it was published. David was involved with a subcommittee of the Water & Wastes association on waste water. His longest involvement, nothing to do with engineers was

the building of the Holy Trinity Cathedral in Parnell from 1968 to 1980. This included monthly meetings discussing the first stage of the building and the nave, as a member of the Works Committee. They were dealing with Malcolm McKenzie, the architect who was a very difficult person to work with. He had very fixed ideas as to what the building should look like and the Works Committee also had fixed ideas as to the type of building they wanted. Since they were paying they were going to have it! This was why David was asked by his local vicar at Glendowie to provide some engineering and contracting experience to the committee when it was floundering. Worley Downey Muir was not involved except much later when Brian Muir did some of the electrical work. David was also a member of the Tongariro Park Board, again because the Board had a need to have an engineer as a member of the Board. Andrew Murray had been a member for many years and he approached David asking him to stand. David enjoyed this experience when he used to stay at the Chateau, meeting a number of active people.

1.04.32 David retired from the company in 1987. He had decided a couple of years earlier to purchase 10 hectares of land at Kerikeri for an orchard. So after having been born and bread on the land, now he was going back to the land. He and his wife Barbara enjoyed this very much. They didn't make any money and sold at a loss, but they enjoyed growing Kiwifruit, Oranges and Tamarillos. They built a house on the adjoining section so when they sold the orchard they were able to continue living in Kerikeri for 11 years. It was only on the insistence of their daughters that they came back to Auckland. David stood in over a weekend to help with a children's art exhibition in Kerikeri to represent the Art Craft society. Since returning to Auckland, David has done some art work, joined Probus and Seniornet. He was also involved in Seniornet in Kerikeri.

1.13.45 Interview ends