

## **Journal of a Leisurely Journey**

In October 2016 I decided to take my Nissan Leaf (2012 year of manufacture) from Bellerive in Hobart to Adelaide to attend the national conference and AGM of the Australian Electric Vehicle Association. The Tasmanian Branch is hosting the event next year, and we are trying to encourage member to bring their vehicles so we can gather about 50 EVs in one place for a display and rally to Cradle Mountain. It seemed this would be more credible if I did the journey myself as an example.

The Leaf is advertised as having a range of 160 km, but for practical purposes closer to 120-140 in the city and 80-100 at highway speeds. When I was test driving the car in 2014 the Nissan dealer noted the range of the vehicle and said, "Its not the sort of car you would ever use to go to Launceston" about 200 km north of Hobart. Not knowing how one would recharge on the road I had agreed at the time.

A year later I drove the car to Latrobe for the opening of the Anvers Chocolate car park with a new public EV charge station, about 300 km each way. I had discovered caravan parks have 15A outlets that I could plug into along the way. A bit slow, but possible.

This journal documents my much more ambitious trip to Adelaide and back, over 2,000 km return. I'll have to tell the Nissan dealer...

Clive Attwater, 2 November 2016

### **Preparation**

I started by checking for charging opportunities along the route and the distance between each of them. Each day was planned to cover about 200 km although the shortest was just over 90 and the longest just over 210. Most days have three legs of nominally 70-80 km each – the first leg uses the full overnight charge and two en route need charges of 2-3 hours each at 3.5 kW.

Route planning was assisted using the on-line EV range and power use calculator JurassicTest Green Race, a Swiss app that calculates the amount of power used by particular EVs. You enter your car model and characteristics in and it uses distance, speed and altitude changes to calculate energy used on any route pretty much all over the world. It does not easily take into account wind, cabin heating or cooling, vehicle load, but these can be allowed for 'manually'.

While on my chosen route there are few sites shown on Plugshare and even fewer formal EV chargers (mostly Tesla HPWC where there are), there are lots of caravan parks. My past success rate in convincing park operators to allow me to charge (off season when they are not busy) has been over 90%. I used the rule of thumb that if there is a single caravan park available I will call ahead to confirm that they will permit me to charge. If there are two or more, I don't bother, expecting that at least one will allow.

Purchases:

- 15 m 15A cord. Cost \$23
- 15A to J1772 charger from Gelco in SA to increase the charging rate by 50% compared to the 10A charger that Nissan supplies with the car. Cost \$580 plus freight
- I previously purchased a Jaycar 10A/15A converter – 15A plug to a 10A socket with a 10A breaker in line to protect the supply. This allows the 10A Nissan charger to use a 10A circuit safely, assuming there are no other loads on the 10A circuit.

I took both the Gelco and Nissan chargers with me. Normally I will use the Gelco being 50% faster. But the Nissan charger provides at least some possibility of using a 10A circuit if there is nothing else available.

Other EV related preps included

- Turning off all time of day and charge limiting (eg charge to 80% only) controls. For the duration of the journey most charges will be 'on demand' and to full capacity. While these controls can be overridden manually on any given charge event, I found on a previous trip how hard it is to remember to get all the settings right all the time. Off is easier.
- Loading AEVA promotional material and the teardrop banner to encourage folk to stop and talk about EVs
- Making sure I had my RACT card and my Chargepoint card (some mainland chargers need it)

### **Day One – Bellerive to Hadspen – 205 km**

#### **First leg and recharge**

I departed from Bellerive just after 7:00 AM and drove to Kempton via Old Beach and Brighton. There was little traffic early Saturday morning and I was able to drive most of the way under 80 km per hour. I took the old road through Brighton – slightly shorter and low speeds aren't holding anyone up. There was a brisk head wind, probably about 20km per hour.

Kempton was only 51 km but 200 m higher elevation and combined with the head wind, the first leg consumed just over 50% of the battery charge, even at modest speeds. I charged at the RV parking area, which has 6, 15A power outlets with no controls on use. Upon arrival there were three RVs parked so still a few spare plugs. I plugged in and went for a walk.

There is a toilet a few hundred meters from the RV parking area, and on weekdays, for limited hours, the local post office doubles as a café. But not on Saturday. Kempton village was pretty quiet, with virtually no one to be seen. I walked about 2 km to Mood Food which was buzzing with activity. Wouldn't it be nice if Bennetts Petroleum put in some provision for charging EVs, even just a 15A outlet?

I had a leisurely coffee and then walked back to the RV parking area in the village. I took time to read some of the historic plaques, not in any hurry, and got back to the car about two hours after departing. The blue charge lights were all out! I checked the state of charge and it had hardly charged at all. I concluded that the weight of the charging box which was blowing and swinging a bit in the increasing wind was enough to pull the plug from the downward facing socket. Grrr.



Lots of room here



This one is close to the ground

I unplugged and switched to another outlet – all the RVs had left so I had six to choose from – this one closer to the ground with a tighter plug. I plugged in and went for a short walk, returning to ensure that it was indeed charging ok. Only then did I go for a longer walk.

I did not think I needed a full charge to get to my next stop, Ross Caravan Park, so stopped when it hit 11 bars (out of 12) with the guessometer offering a predicted range of 113 km in ECO mode. Getting to full charge would have taken another 30 minutes or so.

No charge to charge at this site!

### **Second leg and recharge**

Kempton to Ross is 72 km, with almost no net change in altitude (-20 m) but a few big hills – up and down about 320 m altogether. But the killer was the wind. It had picked up as forecast and now blowing head on, variable but always strong, at about 20-40 km/hr.

I departed just before noon and drove mostly between 80 and 90 km/hr where the speed limit was 110, enough to avoid bothering the light traffic, pulling over once or twice where there were poor passing opportunities. But much of this leg had construction works with reduced speed limits, so as much as 30 km may have been at speeds between 40 and 80, a posted by the road works signs. Thus the average speed was close to 70 km per hour but so it was for most other road users.

In spite of the modest average speed and shortish distance, I reached Ross Caravan Park with the warning voice coming on as I drove into the entrance: “Low battery, recharge now”, one bar showing (had been for a while) and a guessometer range of 11 km. I probably would not have made Campbelltown had I been trying.



This outlet close to rubbish no longer serves a site.

Picnic shelter – essential in the wild wind

I have charged at the Ross Caravan Park before. After stopping at the office to report in, I selected a site and plugged in. I looped the charger cord over the top of the post so it was not pulling the plug out (like happened in Kempton), took out my picnic hamper and had lunch in the shelter during which I returned to check that the car was, indeed, charging. It was.

I walked around the village, then along the river, read a book, answered various emails, had a nap then a cup of tea in the village bakery. Sounds good, but the wind was howling so not as pleasant as it might be. Given the strong wind and the experience of arriving with little spare capacity to Ross, I decided to charge to pretty much full, just in case. This was being over cautious because, while the destination for the night was Hadspen, I knew I could charge at Longford Riverside Caravan Park if need be. There is another Plugshare point in Longford too, that I have not used.

I finally decided to push off at 5:40 PM when the SOC indicator had been showing “20 minutes to 100% charge”, 12 bars and a guessometer reading of 135 km. I paid \$6 for the privilege of charging.

### **Third leg and first overnight**

The third leg from Ross to Hadspen was 82 km (ok, I missed the park entrance and ended up driving 83 km). Hadspen is 55m lower elevation than Ross and while there are a few hills en route, much less than for earlier legs. The head wind was still strong, but a bit less fierce than the previous leg.

My original plan was to stop at Longford for the night but I checked ahead and lo and behold their cabins were fully booked out. The Longford Show is on this weekend. They offered to let me charge if I needed to and suggested Hadspen as an alternative.

I decided I wanted to avoid having to stop at Longford, so drove conservatively wherever possible – about 65-75 km/hr. Passing lanes meant that I was not a nuisance to many drivers. The actual average overall speed ended up as a little over 60 km/hr after including slower speeds through towns and a short stop to check directions.

In addition to the Longford Caravan Park, this leg also has a 10A power point at Zeps at Campbelltown listed on Plugshare.

I arrived at 7:00 PM, with 2 bars of charge and a guessometer reading of 21 km – comfortable enough.

I had booked an on-site van from the Hadspen Discovery Holiday Park. The Discovery chain in Tasmania now offer EV charging at four of their parks, 2 cents per minute if just stopping to recharge but free with overnight accommodation.

After unloading at my cabin, I plugged into one of the six designated power outlets near the office for EV recharging. They appear to be low desirability retired caravan sites now used for casual parking – and EV charging, just a short walk from the cabins. I plugged in and all the right lights came on so I left it to charge.

After making a cup of tea I thought I would check on the charging – just in case. All lights off – circuit dead! I called the afterhours help line (the office was closed) and the helpful park attendant expressed surprise but directed me to the circuit breaker box and suggested I try a different plug. I found the tripped circuit breaker on the well labelled panel and decided to swap the 15A Gelco charger for the 10A Nissan charger as I had all night to charge and the chances of it tripping out in the night were presumably much less.

Back to the cabin and dinner. Call me paranoid, but just before bedtime I did a final check on the SOC of the car. Nearly two thirds charged already and going strong. I can sleep well now.

About 5:00 AM I awoke to hear light rain falling. The Gelco controller says not to use in the rain uncovered, and while the Nissan does not carry the same warning, I thought that the car would be fully charged so what the heck. I unplugged and stowed the charger, checking that the car was indeed fully charged. Not a bad move as it happens as it rained much heavier later on and if nothing else would have been all wet to stow instead of lightly damp.



## Day Two – Hadspen to Spirit of Tasmania, Devonport terminal

### First leg and recharge

I left the Discovery Park just after 8:00 AM heading for Anvers Chocolate factory in Latrobe. This 80 km leg was downhill (125 m lower altitude at destination) with a few significant hills to climb, mostly around Deloraine (overall climbs adding to about 300m). Although it was raining steadily, there absolutely no wind. Bliss!

This is the shortest day of the entire trip, dictated in part by the timing of the ferry crossing and the desire to board the ferry with a full charge as you cannot charge on board.

There was little traffic in the early Sunday morning. I chose to take the old highway out of Hadspen past Westbury until just before Deloraine. Few cars passed me even while I was coasting along about 65 km/hr. After Deloraine there was more traffic and I had to pull over to allow people to pass or drive a bit quicker where this was not safe. A few drivers seemed impatient, tailgating and one honking when overtaking. But they were held up at best for 10 or 15 seconds!

My average speed ended up as just under 60 km/hr. I arrived at Anvers with four bars and 50 km on the guessimeter. The 'guess' was high because the last 20 km had been pretty much all downhill but realistically I had another 30+ km available of level driving.

I chose to stop at Anvers because they are the first commercial location to host a public EV charging station in Tasmania, well worth supporting. I went to the café front desk and requested the key to open the charge cable box. You leave your name and phone number (so they can find out if you are finished if someone else needs to charge) and they give you the key.

Anvers have two chargers a Tesla 22 kW charger and a 3 phase charger with a Mennekes female cable plug that can charge Teslas or J-1772 (single phase at 7 kW). The Leaf can only draw 3.5 kW.



Entrance to the site and café



Two chargers with cables in locked mesh box

I plugged in and checked that the charge lights all flashed as they ought and returned the key to the desk. Then went back and checked again. Once satisfied all was working I ordered coffee and cake. Charging is free, so the coffee and cake were good value as well as delicious!

I could not linger over the coffee and cake however, as I was booked in for an interview on the ABC radio show with Chris Wisby at 10:15. The café was far too busy and noisy for the interview so I went to the car. The interview call came through about 10:30 and went well (I thought) (Link?)

After that I took a few photos and sat in the car writing the first two days of this journal. I departed at just before 1:00 with slightly less than a full charge (the lights were still flashing), even though it showed 12 bars and a guessimeter range of 155 km (high because the previous kms had all been downhill).

## Second leg and recharge

It is a mere 10 km to the ferry terminal from Anvers and I have about four hours before boarding opens at the ferry terminal. It is a pity that it's raining or I would enjoy a good walk. So I just rolled down into Devonport, parked on the waterfront, had my picnic lunch and then went to McDonalds for a cup of tea, to do some more writing and use the wifi to update my emails.

At three o'clock I took the car to the Discovery Holiday Park in East Devonport, about 1 km from the ferry terminal for the final top up. Although the state coordinator had organised to include four Discovery Parks as sites for recharging, the manager at the park did not seem to know anything about it. He took my explanation in good grace and pointed me to the only unoccupied cabin to charge.

I had travelled only 14 km from Anvers with a guessometer reading upon arriving at the caravan park of 122 km and the SOC displaying 10 bars. Curiously though, when I plugged in the charger the SOC dropped to 9 bars. Must have been on the edge, but that's a big drop from Anvers for 14 km...?

Charging for 1¼ hours brought the car to full charge when I left, 12 bars and 147 on the guessometer.

## Boarding the Spirit

Not an EV event, but I did have a drama on boarding. I had managed to book myself southbound (Melbourne to Devonport) for today and northbound in two weeks. I had found the website a bit confusing, but gee whiz, I must be getting old...

The helpful staff 'corrected' my booking for a mere \$150. See you in Victoria...



Spirit in port of Devonport

In the queue to board the Spirit, another passenger approached me interested to find out about the Leaf. We talked in the queue and then again on board for over two hours. I think another EV owner can be expected soon...

## **Day Three – Spirit of Tasmania Melbourne to Newstead**

### **First Leg Port Melbourne to Ballan**

The Spirit arrived after an uneventful journey and we disembarked into the cool dawn of Melbourne just on 7:00 AM. I headed west onto the Westgate Bridge, the western bypass and then the western freeway in the direction of Ballarat, first stop Ballan.

Traffic was heavy enough for the first 20-30 km that you had to drive near the speed limit or create a nuisance so once on the freeway I did this stretch between 80 and 100 km/hr. Once a bit out of the city on the western freeway, the speed limit rose to 110 but I stayed between 85 and 75, going faster when the traffic was a bit heavier but slower when it was easy for other traffic to drive past.

There was no head wind and even at the highway speeds I made good range. However, I knew from Green Race that the last 20 km was all up hill – 500m elevation gain. So although the guessometer was giving me sweet reassurance that I had bucket loads of range to spare, I was having none of it. From Bacchus Marsh it was all climb and the range estimate plummeted.

I eventually rolled into Ballan at 8:15 with 11 km and two bars on the SOC meter. As I approached the caravan park entrance, the voice announced “Low battery” and dropped to one bar.

The leg was 80 km travelled in 75 minutes at an average speed of just over 60 km/hr, but much of the slowness was sitting in traffic at Port Melbourne and slow streets surrounding the Port and time spent locating the entrance to the caravan park. Highway travel averaged over 80 km/hr.

The caravan park had not been pre-warned but a brief request to charge my electric car was accepted with little discussion. The park is a not-for-profit park run by a local committee. They accepted the suggested price of \$1.20 per hour for charging and were keen to share the concept with the Kui chain of which they are part. Could be another Plugshare site!

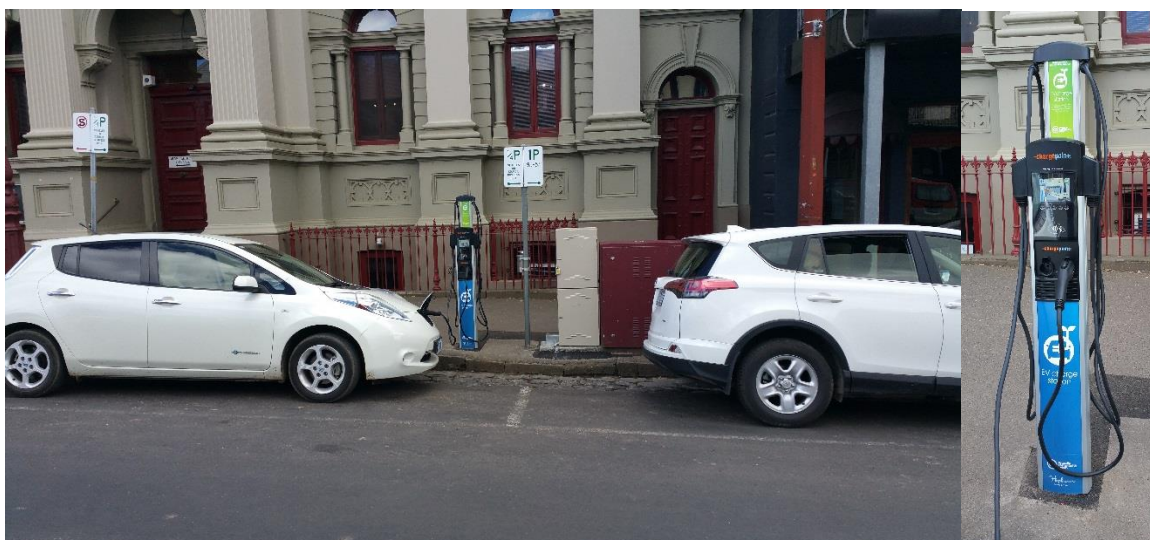
After plugging in I had breakfast on the park picnic table. While the intent was to sit by the car and chat to passers-by, it was chilly and a breeze was picking up so I grabbed the laptop and walked into town (about one km) and found a cosy coffee shop.

I left at about 11:20 AM after just under three hours charging, paying \$4 for the privilege. Departing state of charge just ticked up to 8 bars and an estimated guessometer range of 74 km.

### **Second leg – Ballan to Daylesford**

It is only 33 km to Daylesford, a bit of up and down and a modest net climb of a little over 100 m. The wind had picked up but mostly a cross wind so not expected to be as bad as in Tasmania.

I really didn't need to stop at Daylesford. Another hour of charging in Ballan, even less, would have seen me reach the destination for the day of Newstead. But the community at Daylesford has been so kind as to install a charger so the least I can do is stop and patronise the town for an hour. I decided to make this my lunch stop for the day.



Daylesford municipal sponsored Chargepoint charger in the centre of town      Close up view

The stop at Daylesford has its quirks. There are two 7 kW, J-1772 chargers on a single pillar. The adjacent spaces are marked “¼ P Vehicles on Council Business only” and “1 P 9-5:30”. Both were occupied upon my arrival so I ‘parked’ in the adjacent no stopping zone with my hazard lights on. The car in the ¼ P space left in about 5 minutes so I parked there and connected. Cars in the adjacent 1P space turned over every 5-10 minutes for the time I was there so it would not be a long wait to get connected. However, it shows they are high demand spaces so making them exclusive to EV charging would cause justified resentment.

I suggest the signs should be changed to read “¼ P except electric vehicle while charging” This leaves them free to meet the heavy local demand while allowing EV owners with a bit of patience to charge as the spaces become free.

The charger is a Chargepoint controlled charger, and users need to have a valid, activated Chargepoint RFID card to initiate and complete the charge event.

The charging went smoothly and I ended up staying for about two hours. This was not because I needed that much charge – I hardly needed any – but because there was a constant stream of people stopping to look and ask questions. Over the first hour and twenty minutes there I probably spoke to at least 20 people and found it very difficult to get through my picnic lunch as a result. To have a break, get a drink and patronise the town’s facilities I went to a nearby café to have a coffee, write up notes and flick a few emails. Upon returning to the car there were three or four more conversations before unplugging and hitting the road.

### **Third leg – Daylesford to Newstead**

By now I had way more charge than needed to get to Newstead so I drove at the speed limit all the way. The cross wind had shifted to almost a tail wind, it was downhill and at 33 km not very far. It so much more fun to drive when you are not being limited by managing your range and charging time.

I arrived having used 2 bars of charge (6 remaining) and showing 65 km of range.

Newstead was an overnight stop and I had planned to use a public charger provided by a local alternative energy retailer. It is a Jetcharge 7 KW box with a Mennekes female socket. If you don’t have a cable then you can use theirs – if they are open. I had spoken to them on a previous visit to



Newstead. The charger is available 24/7 if you have your own cable. As the sign notes, they are closed on Mondays...I don't have a cable...



Sigh, closed on Mondays

Neat conversion of a petrol bowser with choice of charging options

Note that they do provide a backup, two plugs a 10A single phase and a 10A three phase, so you aren't really stuck entirely if you have your charge controller box with you.

As it happens I know a number of folk in Newstead. I went to see Pat, a work colleague, who wanted to talk shop for a bit and tested a 10A circuit at his house just in case. The car charged for about 40 minutes while we had tea and a chat. As noted at some previous stops, as soon as the charger connected the SOC dropped by one bar, from 6 to 5.

Sue, my host for the night and travel companion for the rest of the journey arrived to take me home. I found a 10A circuit with nothing else on it and set up to charge at her place overnight using the Nissan controller. The car was fully charged before bedtime. All good.



Charging at Sue's ...

with Jaycar 10A plug converter/protector

## **Day four – Newstead to Horsham**

This day is about 207 km, with stops at Avoca, Stawell and overnight in Horsham. From today my friend Sue joins the journey, not in the Leaf but in her Ford Fiesta (diesel) towing a mini-caravan. Sue wanted to join the trip but use the caravan to reduce accommodation cost. The Leaf is not equipped to tow the caravan, and would severely cut range if it tried. Sue also had to return early, before the AEVA event on Sunday, and so needed independent transport for the return trip. Thus I have company and a 'support vehicle' for the last half of the outward journey.

### **First leg, Newstead to Avoca**

I departed from Newstead a little after 7:30 with a full charge and 151 km on the guessometer. It was dull and cool (9 degC) with a bit of spotty rain at first. There was only a faint stirring of a breeze from the west, but strong head winds were forecast for later in the day.

I drove at a leisurely speed between 60 and 65 km/hr. For the first half hour only one car passed me easily on the open road. In the second half hour there was more traffic with about eight cars passing. Mostly I slowed and pulled onto the shoulder so they had no difficulty with oncoming traffic.

I pulled into the Avoca caravan park at about 8:45. As this is the only caravan park in town, I had taken the precaution of telephoning before I left Bellerive to ensure that recharging would be acceptable. Lynn the manager remembered and welcomed me upon arrival. I plugged in just before 9:00, having travelled 62 km and still showing 6 bars SOC and 70 km range remaining. As had happened before, when I plugged in the SOC dropped to 5. The estimated charging time was 3 hours.

By now the sky had brightened, with occasional bursts of sunshine, but it was still only 9 Deg C. A 1 km walk into town went along the riverside and over the Avoca River, with a chorus of frogs singing 'bonk', frog spawn on the river and a rising gentle breeze. A walk up and down the main street showed a choice of three coffee shops/bakeries that were open, but sadly, many closed shops.

The Olive and Lavender store was the chosen haven to write up these notes.

Lynn from the Avoca Caravan Park was happy to be added to plug share, offering to allow recharging whenever a site is available. She declined payment and was not too worried about others paying – perhaps just cover the cost of electricity. Lynn also graciously offered free access to the toilets, showers, kitchen and lounge area, and there is an outdoor play area and picnic tables. Combined with the amenities of the village, it makes an attractive stop.



Charging next to the playground and kitchen amenities with toilets in the rear. Thanks Lynn



The charge took less time than expected, fully charged by 11:35. I hit the road with 12 bars and 164 km on the guessometer, heading for Stawell.

### **Leg two – Avoca to Stawell**

There are no direction signs to Stawell on the roads leading from Avoca. I pulled up Google maps which offered three routes, two of similar length, and two with the same starting direction. I chose the southerly one of the two shorter routes – 3 km shorter at 79 km and what appeared to be a quieter road so less traffic to annoy if I went slowly. That route started off on the road marked Ararat. I did not use the navigation function on my phone or car, expecting to see a turnoff along the way.

Well, I didn't notice and then forgot about the turnoff and found myself in Ararat. That route was 91 km, well enough within range, normally, but I had been pacing my energy use to go about 80 km not 91, and travelling at about 85-90 km/hr for the first 65 km. I would have to slow down for the last 25 or so km and even then, it was a good thing there was a fair bit of downhill and the threatened wind had not developed to any great extent.

I wasn't really in trouble. There are two or three caravan parks in Ararat, so I could have topped up there if I wanted to really play it safe. I had planned to use a caravan park just past Stawell, but there is also one about 6 km before Stawell that I could have used if need be.

In the end I travelled slowly when there was no traffic or on passing lanes, and pulled over or travelled a bit quicker (85 km/hr) where traffic and road conditions demanded it. I pulled into the Stawell Grampians Gate Caravan Park on the far side of Stawell with 1 bar and 15 km on the guessometer, with the voice telling me, yet again, "low battery" just as I rolled in.

This time Sue was behind me and the caravan park owner tried to wave her over to a site. The owner was a bit disappointed when I explained I only wanted to charge the car, not stay the night. After a brief explanation permission was granted and I was directed to a power outlet not on a site near the entrance. I was offered the use of the facilities while charging, and given a suggestion of places in town to spend the time.

The weather had now turned to intermittent heavy showers so we did not go far. However, there is a somewhat intriguing bric a brac shop on a grand scale about a block from the park (which offers free tea and coffee), and the caravan park has a lake and nearby walks through wooded countryside. They are all close enough to dash back for shelter if need be – which was definitely necessary at times. We ate lunch and later used the kitchen/dining area for another cup of tea while the rain poured down outside. At about 4:00, Sue departed with the caravan for a side trip through Hall's Gap, planning to meet up in Horsham a bit about 6:30.



Charging from a pole near the entrance (and the loos)



Nice kitchen/dining area by the lake



Play area near charge pole, kitchen/dining behind

Marianne the co-manager asked \$5 for the charging, being their normal charge for day users of their facilities. I said that I hated to argue about money, but that it should be \$6 to be equal to roughly double the price of electricity. She accepted.

### Leg three – Stawell to Horsham

I headed off at 5:30 with a guessometer of 150 km and 11 bars. This is far more than needed for the next 66 km leg driving conservatively, but there is a bit of a headwind and the highway is busy with big fast trucks, not the place to be driving 65 km/hr, so I will need to maintain at least 90 km/hr most of the time. There are not even many towns along the route that have 60 km/hr or even 80 km/hr zones to ease up for sections. Hence, a good margin of safety is in order.

Driving out of Stawell I was behind a large B Double. As it sped up from 60 to 80 and then up to 108, I stayed easily in its draft about 8 car lengths behind. The Leaf power usage display showed that 108 km/hr I was drawing about the same amount of power as driving without the draft at 80-90 km/hr, which is a huge range advantage.

To follow at eight car lengths is not too bad at 80 km/hr, but it's a bit risky at 108. I ended up drafting behind three trucks for short periods, about 5 minutes each, but that got me into Horsham with three bars and a range of 33 km on the guessometer, more than would normally be expected having driven the 66 km at an average speed close to 100 km/hr.

Overnight accommodation was at the Horsham Riverside Caravan Park. Sue had arrived ahead of me and set up for the night. The neighbours David and Di came over for a chat and a look. I let David drive the Leaf into town (with me) to the bottle shop to purchase supplies. David was very impressed: "I didn't know you could get a production electric car. Really nice to drive!"



Charging in the dusk



Ready to go, morning light



Sue's Fiesta and caravan



## Day Five – Horsham to Keith

### First leg – Horsham to Dimboola

Dimboola is only 37 km from Horsham, and the following stop, Nhill, is only another 40 km, the 77 km being an easy enough distance without recharging half way.

For this reason Dimboola was not originally a planned stop for this leg. However, I sent an email to about 13 regional newspapers along the route mentioning the trip and telling them what days and times I expected to be in each town. The Dimboola Press responded and asked for an interview, so I said I would stop in Dimboola. I arranged to meet Chris Johnson at the park about 9:00 AM.

When I left Horsham at 7:30 it was 2 deg C and the car was showing a low temperature warning (for road conditions). I noticed that the battery temperature was also showing a lower value than the usual mid-point, something I don't see at home with the car parked in the garage. As range was not an issue, I happily drove down the highway near the speed limit (mostly 100 km/hr), drafting once or twice for short spells at a safer distance, and with the heater and window defrosters blasting away.

I reached the Dimboola Riverside Caravan Park with a guessometer range of 71 km and 6 bars SOC showing. I set up the banner (ready for the press) and crawled back in the heated car to keep warm. Sue turned up a little before 9:00 and was despatched to collect coffees while waiting for Chris Johnson.



Open for business at the Dimboola Riverside Caravan Park

The park manager, Russel, came by and we had an extended chat about EVs and the role that caravan parks can play. By 9:45 Chris Johnson had still not appeared so Russel offered to drive into town and get him from his office. Chris arrived about 10:00 (he had forgotten...). A brief interview and some photos were taken. Chris supplied a copy of last week's edition of the Dimboola Banner with a page 4 article and photo based on the material I had sent before the journey began. He promised to post a follow up article next week with his own photo of me charging in Dimboola.

After Chris was finished, Sue and I set off to do a local walk in the nearby Little Desert National Park. To be fair, the walk was 4 km from the caravan park and having lost an hour waiting for Chris, we drove to and from the start of the walk. Maps and signposting by Parks Victoria proved to be abysmal and it was some time before we found our way. This normally arid area was unusually wet,



with lots of wildflowers in bloom. We climbed a local high point, barely a hill and had a nice outlook over the surrounding area.

By the time we got back to the Leaf, it was fully charged, and had probably been sitting in that state for 20 minutes or so. C'est la vie. Russel accepted \$5 for the (nearly) three hour charge.

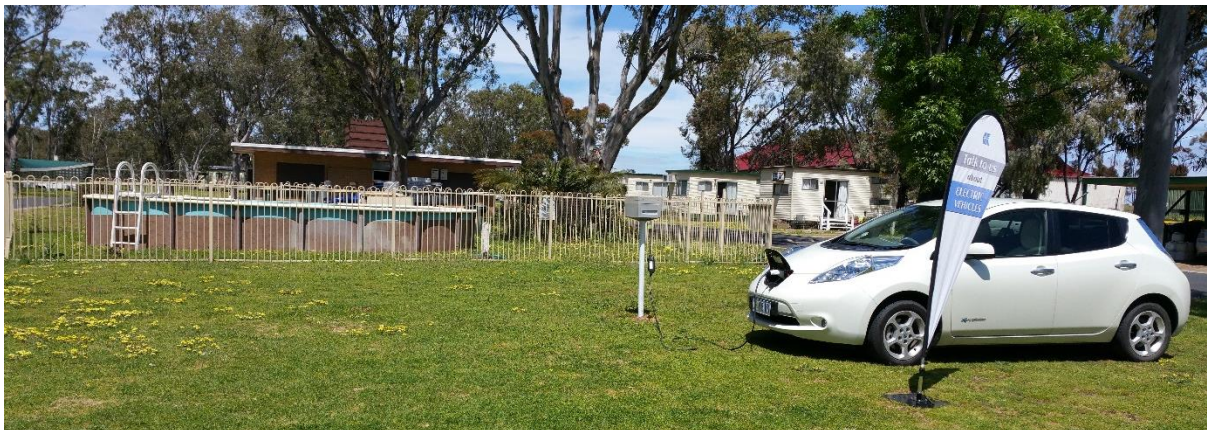
So with a full SOC and 137 km on the guessometer, off to Nhill.

### **Second leg – Dimboola to Nhill**

This short 40 km leg along the busy highway would have to move with the traffic. I tagged on to a group: a refrigerated transport truck, a livestock transport truck and a large SUV towing quite a large caravan. The SUV driver was clearly drafting the truck, probably closer than I would have been comfortable to. I could see the large truck above the caravan, and the shadows of all three vehicles on the side of the road so it was easy to gauge spacing and the changes to the lead vehicle. I stayed 8 – 10 lengths behind the caravan, but the combined slip of the group still gave a significant advantage.

The 40 km was covered, door to door, in 35 minutes, including a couple of slow stretches in the towns. I arrived with 7 bars and a guessometer reading of 95 km or about 8 km per bar.

I had not made any prior arrangements at the Nhill Caravan Park, but the manager, Ian, made me welcome without hesitation, directing me to the site 'front of house' by the gate. Good spot for the banner too.



Sue and I had agreed to have lunch in Nhill. I walked into town, about half a kilometre, to where she had parked in some RV parking. We bought supplies and went off to the nearby Nhill Lake to have a picnic. After lunch we walked around the lake, then on to and over the Nhill Swamp, on an elevated boardwalk that led directly back to the caravan park. This was the first day that was not either windy or rainy, just a bit nippy (10-12 Deg C) even by late morning.



Park and play area adjacent to Nhill Caravan Park    Lakeside lunch spot with picnic tables etc



Nhill Swamp boardwalk entrance

View of Nhill Swamp from the boardwalk

After the walk I sat and wrote up my notes by which time – fully charged! I paid \$3 for the privilege of charging for two hours and hit the road with 12 bars and a guessometer reading of 151 km. Ian said he would be pleased to add his park to Plugshare and would charge \$1.50 per hour if not an overnight guest.

### **Third leg – Nhill to Bordertown**

This 82 km stretch is the longest leg of the day, highway driving with lots of trucks doing 110+ (on the 100 km marked zone). It was generally fairly flat and slightly downhill, so range was no problem at moderate speeds. However, I while I started out driving at 75 once out of town, I took advantage of the first passing truck (after less than 5 minutes) to draft, but at a reasonable distance. This was enough to keep my power use down/range up even at between 100 and 110 that the truck maintained. I reached the Bordertown Caravan Park in 55 minutes. Sue was waiting with a cup of tea.

I had not contacted the park in advance but the receptionist had no hesitation in saying yes to my request when I indicated that I needed to charge for 1 to 1½ hours. She initially asked \$10 for the privilege. I suggested \$1.50 per hour was more realistic and she said as she had no clue, that would be fine.

The park is situated adjacent to the highway so is a bit noisy from passing traffic. The amenities include a BBQ and shelter, mini-kitchen and toilet blocks and are basic but free to access while charging.

We walked along a waterside park near the caravan park then around the town streets, more extensive than is obvious driving on the town's through road, bought a few supplies, passed APEX park and looked at the house where Bob Hawke spent the first six years of his life.





After just under 3 hours of charging I paid \$4 and departed at about 5:25 (SA time)

#### **Fourth leg - Bordertown to Keith**

The final leg of the day was 50 km. In theory this should need about 50% charge, but rather than cutting it fine I charged to over 8 bars SOC or about 66%. I expect to use the truck advantage again, but one can't necessarily rely on it, and it is not the sort of highway you can creep along if the range gets tight.

In the end the odometer read only 45 km to Keith, and I arrived with 4 bars and 48 km on the guessometer. That rate of energy use suggests over 10 km per bar which should give a range of over 100 km on a full charge, even travelling at 110 km, by far the best yet.

In the caravan park at Keith there were a few people interested in the car. Two went for test drives and were suitably impressed. A few others chatted extensively over dinner in the dining shelter.

## Day six – Keith to Adelaide

Originally I had planned to stop for the night at Mount Barker on day six, and to drive down to Adelaide on the Friday morning for the conference. However, the better range demonstrated by day five's drive made me decide to be more ambitious, extending the length of each leg to reach Adelaide this evening. The availability of more closely spaced caravan parks and charging options also made this practical.

### Leg one Keith to Coonalpyn

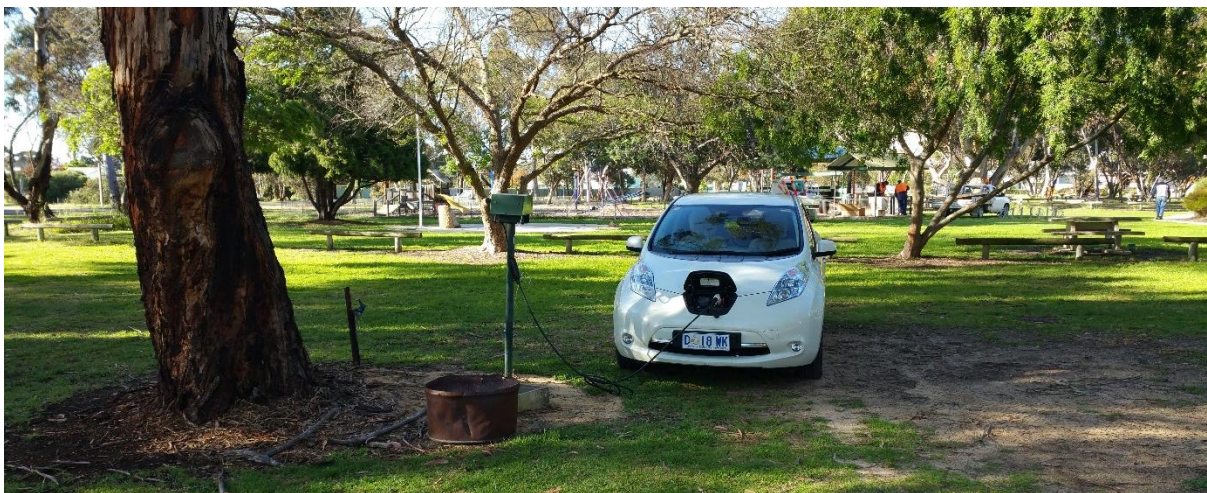
On the road at 7:30 with a cool 6 deg C and light wind from the north and of course, a full charge. The 67 km drive to Coonalpyn was truck assisted at 8-10 vehicle lengths behind, but the range per bar was well down from yesterday afternoon, only just over 7 km per bar instead of over 10! The truck was smaller, and there was only one rather than two or three, which may have reduced its effectiveness. Perhaps the cooler early morning may also be a factor...?

I arrived after 45 minutes and plugged in with just 3 bars and 44 km on the guessometer.

Coonalpyn caravan park was unmanned, with an honesty box for payments. I plugged in and wrote up my notes while waiting for Sue to join me for morning coffee. One caravanner stopped to chat about electric cars and seemed fairly interested.

The caravan park is fairly basic, but reasonably extensive with 20 powered sites. It shares the toilet and shower facilities with the local pool. The pool is open only Friday to Monday (except in hot weather if volunteers are available to staff it), but the toilet block facilities were open and easy to access. There was an honesty box for non-campers and non-pool users to use the showers.

There is also a playground and BBQ shelter where council workers were installing new BBQ facilities.



Leaf charging with playground and BBQ shelter behind

Coonalpyn is clearly a town struggling to survive. A little waffle kiosk on the highway is probably being kept going by the passing grey nomads as well as a couple of other coffee shops. The local hotels offers accommodation for \$55 including continental breakfast. But there is community care venture to help early onset Alzheimer's (pre age 50) people based around a free range snail farm and a community art project which was rather charming.





The charge was complete a little after 11:30. I put \$5 in the honour bin with a note – that will confuse them! And headed off with 12 bars and 143 km on the guessometer.

### **Second leg Coonalpyn to Murray Bridge**

I left Coonalpyn at 11:45 and headed onto the highway looking for a truck to latch onto. While the first leg had only a gentle breeze, the forecast was for increasingly strong northwesterly winds – ie a headwind developing during the afternoon. A truck would be most welcome.

In the absence of a truck, or much other traffic, I toodled along at 75 km/hr to make sure I made the 88 km to the caravan parks of Murray Bridge. There was no 'danger' if I fell short, with two widely separated parks at Taillem Bend before Murray Bridge and four at Murray Bridge itself. But I wanted to conserve range so I would not have to charge so long at Murray Bridge. I needed to leave fully charged to make it up over the hills before Adelaide and hopefully complete the last 90 km without stopping again.

As luck would have it, I drove the entire leg without a single truck passing me, not even a decent sized caravan. However, I averaged a touch under 9 km per bar and arrived with three bars showing, (dropping to two when I plugged in), and a guessometer range of 41 km. The display said 4:30 hours time to charge to 100%.

Some of the park staff were absolutely keen to talk about the car and 'hear' me start it up...duh. It was rather hard to get them to let me go to a site to plug in and get charging.

This was one of the few stops I didn't go anywhere. Not that being by the Murray River at Murray Bridge isn't worth exploring. It's just that some of us Taswegians wilt when the temperature hits 31 and the wind gets up. Sue and I sat and had lunch in the shade out of the wind, then a snooze and then some ice cream while I updated the journal.

After 3:55 minutes the indicators showed full battery, 12 bars and 156 on the guessometer. I paid \$8 for the privilege and headed off to Adelaide for the last leg of the outward journey.

### **Third leg – Murray Bridge to West Beach Adelaide**

Where will be stay tonight, Sue? In the city or near the beach. Dumb question when it's still near 30 Deg.

The google maps distance is quoted as 92 km, which would be easy on the flat. But there is a 300 m climb up and similar descent between here and there. It could be looking a bit lean by Stirling, but there is a charge point there if need be, it would just be a bit of a late arrival for the night.

If only I could find a truck... At least the highway from Murray Bridge is dual carriageway all the way. I can travel at 75-80 into the wind and keep up the range without holding up the light traffic.



After 25 km – a truck! A B double livestock carrier passes and I accelerate easily into its slipstream. Slightly higher power consumption but much higher speed gives me extra range. After 20 km the truck pulls into a truck rest area and I am back on my own again. He knew I was slipstreaming because I never passed him on the hills when his speed dropped to 85 km/hr, but stayed behind him when he went back up to 110. I wonder if he was tired of having me on his tail?

Another 25 km of 75-80 but the range is holding up in spite of the climb and wind. I think the hills and increasing tree cover is helping to shelter the road from the wind. The same truck came up behind me again and I let it pass, holding behind it for a couple of kilometres. It was clear I had the range to reach the beach so when it slowed going up a hill I passed it. Then kept going at the speed limit, which shortly after reduced to 90 km/hr in anticipation of the descent.

At the top of the hill I had three bars SOC (but I would say, probably just about to drop to two) and a guessometer reading of 30 km. Given the road distance was just over 20 km and it was all downhill, it was relaxing run into the city.

Going down hill in eco mode with the cruise control provided enough braking from regeneration that I never had to use the brake until briefly, as the speed limit reduced from 90 to 80, and again from 80 to 60.

Traffic was slow for the last few kilometres. I arrived in the Big 4 Caravan Park at West Beach at about 6:30. Just outside the gate the SOC went from 3 bars to 2 while the guessometer offered yet another 35 km of range. Sue was set up having enjoyed her afternoon walking on the beach and we settled down with a cup of tea as I texted and phoned 'home' to let them know I had arrived.

I reflected with sue how it was just two years since I first test drove the Leaf. The dealer had offered that 'it is not the sort of car you would ever drive to Launceston', 200 km from Hobart. At the time I agreed, and couldn't really imagine how you would. Now, two years later here I am in Adelaide, having driven in my Leaf. I wonder what he will think of that when I tell him.

## **In Adelaide for the conference and AGM**

With only expensive parking in the CBD, Sue dropped me off each morning and pickled me up in the afternoon, using the Leaf to look around town each day. The caravan park made topping up as necessary easy to do.

I will not report on the AEVA conference in any detail (that will be done by others) I will only say that it was a well organised and thoroughly interesting conference and a useful national council meeting, workshop and AGM. Well done SA branch!

Charging points in the central market were very handy (thanks for the tip Sally) for topping up the batteries during breakfast on Sunday after driving in from the beach. It means I can leave the EV display on Sunday afternoon with a practically full charge.

The Sunday display had 24 EVs on display, of which 11 were 'commercial' manufacture and the rest conversions or 'experimental' vehicles. Of the 24, two were from outside SA – both from Tasmania.



I was pleased to see the inspirational effect of my leisurely journey on AEVA members from various states, realising that just perhaps, it would be possible to take their EV/PHEV to Tasmania for next year's conference and AGM. After all, you really only have to drive to Melbourne...

## The trip home...

### First day, first leg, Adelaide to Stirling

I departed from the EV display at Elder Park just after half past three nearly fully charged. I probably didn't take the most direct route out of the city. I reached Stirling at just before 4:00, looking for the chargepoint shown on Plugshare.com at the Organic Market Café in Sterling. I demonstrated my lack of local knowledge – I didn't know the road in front of the café would be closed for a market on Sunday afternoon. It was closed and packed with visitors and stalls. I managed to go around the block and find a lane in behind the café. I walked round to the front, found the charger and asked about access. It happens that the lane I was parked in was about 30 m from the charger, and as long as I ignored the no entry sign, the no parking sign and kept close to the building, I could charge there today. I was on the charger just after 4:00 PM.



Charger at Stirling Organic Market & Café (just after the stall had been cleared away)

The 24 km from the Central Market parking charger to Stirling used 7 bars of charge due to the 300m hill climb. I had a nominal guessometer range of 47 km. But I had gone from Murray Bridge to West Beach on a full charge with two bars to spare, and much of that into a head wind. So I should expect to be able to reach Murray Bridge with a similar range to spare. Tonight I am trying to reach Coonalpyn, another 88 km beyond Murray Bridge. I am seeing if the full charge at Stirling will give me the range I need – 145 km, combining the long downhill, a hopefully modest tailwind and with any luck, a truck. If I don't make it there are several options for either topping up the charge or stopping earlier so I am not too anxious.

When plugged in, the car estimated 3:00 hours to full charge. In 2:50 minutes it was fully charged.

### Second leg, Stirling to ~~Coonalpyn~~ Taillem Bend

Which was sort of a mistake...

I knew the first part of the road from Stirling was downhill, but I expected to have enough uphill as well to take the battery down a bit. This was not so. The road went downhill almost immediately for some distance before much up. When the battery is fully charged the motor does not 'regenerate'



and therefore has no braking effect. I think I used my brake shoes more in the first couple of kilometres than in its entire life so far!

I could have left Stirling about half an hour earlier, and received the benefit for the first downhill sections to (nearly) reach a full charge from regen and not used the brake pads nearly as much. Good lesson.

I did pick up a truck nearly immediately, a big B double. It wasn't saving me as much as on the trip to Adelaide because there was no head wind, very little wind at all in fact. I did indeed sail down to Murray Bridge using just over five bars of charge. I kept going towards Tailem Bend but it was clear I would not have the range to reach Coonalpyn without topping up.

As the sun was getting low, I decided it was better to do the topping up in daylight, at least partly, and to finish the drive after dark. Many caravan parks are unattended after a certain time too, so negotiating a charge may be harder later in the evening. Finally, if I tried a caravan park early in the piece and got knocked back, I would have other options on my route without having to backtrack.

The first caravan park I came across, Westbrook Park, was about 4 km before Tailem Bend. This is 70 km from Coonalpyn, and the guessometer was showing 54 km and the SOC 5 bars. As so often happens, when I stopped and plug in, the SOC drops by one bar so charging started on four bars. Charging time to full was estimated to be 4:00 hours.

The caravan sat right on the shores of the Murray with campers having fishing rods planted in their campsites and lines in the river. The setting sun cast a warm glow over the scene and the breeze off the river created a cold chill. Sensual contrast one might say.



Looks lovely, feels cold (Leaf visible as most distant car)

The park was unattended but had a pick up phone that called the caretaker. I explained my needs and intention to charge, all ok'd without hesitation and agreed that I would deposit what I thought fair in the honestly box.

I had thought a little over one hour's charge would get me to Coonalpyn, but as the sun set and it got quite dark and cold I decided that being stranded on the road would not be a good move, and so stayed on charging for a full two hours. I then had the problem of being out of change so deposited the only \$2 coin I had in the box and departed. Well, at least it should more than cover the cost of power.

I left with 9 bars showing (having only just ticked up to that) and 100 km showing on the guessometer to do my next 70 km leg.

### **Third leg Tailem Bend to Coonalpyn**

It may have been late on a Sunday evening but road transport wasn't sleeping. There were one or two large trucks per minute on the road going east and nearly as many coming from the east. That pretty much dictated going with the flow and following a truck.

I tagged along on a big B-double at nearly 110 km/hr for about 40 km but the range was looking distinctly tight. I decided that I really had to back off and go slower to make sure I got there.

Much of the road had been two lanes each way, but a few km after Tailem Bend this became one with passing lanes about every 10 km. So I dropped back to 75 km/hour and let the trucks pass by pulling to the side and slowing when necessary to let them pass. The trucks did seem to thin out a bit as it got later but there was at least one every few minutes, and a few cars.

I pulled into the unattended Coonalpyn Caravan Park at about 10:00 PM with 1 bar SOC and 18 km showing on the guessometer and plugged in. I normally use the 2.5 kW controller for overnight charges but because I was plugging in late and expecting to leave early it seemed a good idea to use the 3.5 kW charger to make sure I was fully charged in time.

The park has no cabins and now I had no caravan so I put the front passenger seat into recline, pulled out a pillow and warm furry blanket, covered the blinking charge status lights with a towel and settled down to sleep. I am the sort of person that can sleep on airplanes so a Leaf seat was relative bliss.

When I awoke at about 3:00 AM for a loo break I noted that the batteries had just reached full charge, almost exactly 5 hours of charging since arriving.

Overnight camping fees are \$22 for a powered site. All I had done was use the toilet and recharged while parked, but I didn't have the correct change so put in \$25 in the honesty box for the privilege of sleeping in my car on their site.

The night was still and clear, and although I was parked under trees and had a warm blanket and down jacket on, the car was cooling to the point where heat was a good idea. One of the nice features of the Leaf is that you can set the cabin air-conditioning to come on while plugged in so the car is pre-heated (or cooled) when you get in to go somewhere. From 3:00 AM or so I kept the car at about 20 degrees for the rest of the night. Much better.



## **Second day heading home: First leg – Coonalpyn to Keith**

I woke again at 5:00 AM with the first faint hints of light showing. Feeling rested and being fully charged, I thought I would drive to Keith and have breakfast and a cup of tea in their excellent east facing kitchen shelter while charging for the next leg. By now the temperature was showing as 0 Deg C and outside it felt like it. However, because the car had been heated all night, I didn't really need the heater on for the first part of the trip, and just needed to put the demister on for a minute every 5 minutes or so at first.

At 5:00 AM the road was much quieter than the night before. Vehicles overtook me about once every ten to fifteen minutes, mostly cars, utes, etc. about 5 in total from Coonalpyn to Keith. As there were no trucks to follow and little traffic, I travelled at about 60 km/hr to preserve charge. As the sun rose the temperature reached two degrees and by the time I rolled into Keith it even reached four degrees. But the sun was shining and if you positioned yourself in a sheltered sunny spot, it was comfortable enough.

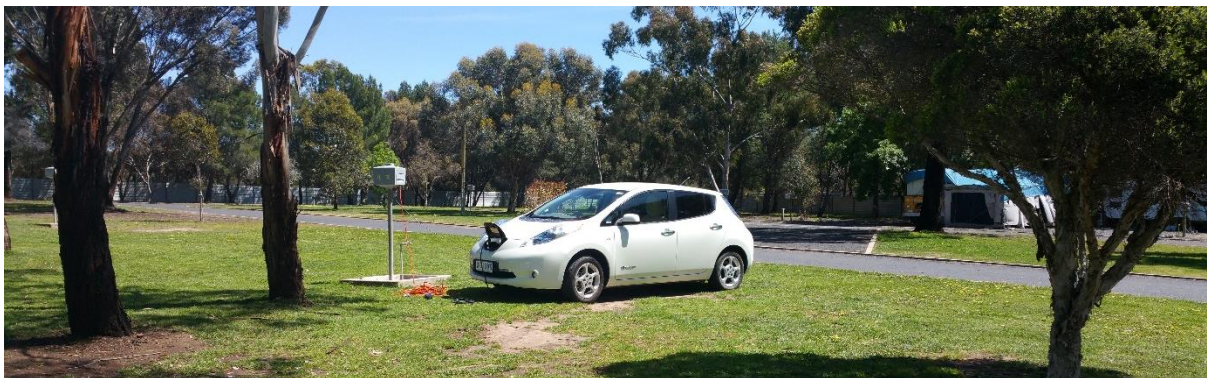
At Keith the campsite office was not yet open so I drove in, picked a sunny empty site and plugged in. I turned the heat on in the car while it was plugged in charging so it would be warm to leave. I used the loos and had breakfast and a cup of tea, read my emails and replied to a few. The ABC and 9 News websites showed good coverage of EVs from AEVA's display, the City of Adelaide announcement of 40 new EV chargers and lo and behold, snippets of my little journey.

After about an hour and a quarter I had enough charge to cover the 46 km to Bordertown comfortably. As there are more cafes and other facilities there, I decided to move on and park there for a longer charge. I would also be warmer there than in Keith as the day warms up.

I went to the office but it was still not open and no number to call. There was an honesty box but I had exhausted my change and I was not going to put a \$50 bill in for about \$1 worth of electricity. We did pay for a night's camping here a few days ago, so with that rationalisation, I drove off at about 7:30 AM with seven bars, a guessometer range of 108 km and without paying. I must remember to keep a better supply of change in the car.

## **Second Leg, Keith to Bordertown**

With the sun up, the car was comfortable without heating even though it still said only six deg outside. The trucks were back in large numbers so I tagged along and did the 46 km at about 105 km/hr, arriving at 8:00 AM with 2 bars and a guessometer reading of 26 km.



Lots of room to charge at Bordertown – vacant sites everywhere

The park office here was also unattended, but at least they post office hours: 8:30 AM – 6:00 PM. I parked and plugged and went off for a morning walk to select a preferred (sunny) café to write up notes, etc.

This is the first 'long stay' en route stop on the return journey that I also visited as a long stay on the way out. OK, exploring small towns is fascinating the first time. The second time a little less so, though I did make some new discoveries. But the weather was good and once the notes were done it was fine to just walk and hang out. There was at least some interesting art installations on site.



Rooster guarding file garden

The charge was complete at 12:15. They accepted \$8 payment for about four hours charging. I left with 12 bars and 143 km on the guessometer.

By now it was much warmer, quite pleasant with a light shirt on in the car. There was almost no wind, as had been the case for most of the previous 12 hours at least. Why can't I have a strong tail wind to make up for the outward journey?

### **Third leg – Bordertown to Nhill**

The traffic was relatively modest, mostly some caravans and a few trucks. I generally slipstreamed one or the other, until they turned off a side road or otherwise were unavailable. For a few short sections I toodled at about 85 km/hr.

The 82 km stretch was uneventful. One km before I arrived at Nhill the bars dropped from four to three and the guessometer was offering 43 km range remaining.

I went straight to the front of house site and plugged in. I was welcomed back by the attendant who remembered me from the previous visit and quizzed me extensively over the trip and car's performance while the flies raged around us. Of for some wind.

I went to town to buy lunch supplies and set up in their camp kitchen to dine in shady comfort. The breeze had picked up and the flies were much less of a challenge.

While in Nhill I wrestled with where to go next and how far to go for the day.

The shortest route to Newstead was via St Arnaud. It is along a minor road, straight and flat with little traffic but fewer settlements. I would be unlikely to get past Minyip, which has a caravan park with powered sites, but I expected no onsite cabins or vans. It is unmanned and I could just rock up and park and sleep in the car as I did in Coonalpyn. But I didn't really fancy another night in the car just yet.

The other route was the same as the outbound, via Horsham, Stawell and Avoca. Horsham was an easy hop from Nhill. There are several caravan parks and some offer onsite vans or cabins. A web

search revealed that there were a couple with several vacancies. I could probably make Stawell, but I would need to charge again in Horsham and would not arrive until about 10:00 or even 10:30. I was also hesitant to come and just charge after six o'clock. Many site offices are closed by 6:30 and may not want to be bothered collecting a few dollars late at night.

So I decided not to push it and be as heroic as I had imagined and settled on a park just past Horsham for the night. I think I must be getting old – in the past I would not have hesitated to go as far as possible.

#### **Fourth leg Nhill to Horsham**

Having settled on Horsham for the night and not needing to have too much to get the 80 km of flat driving to get there, I headed off with 10 bars SOC and 130 km on the guessometer at about 4:50 PM.

There was a hint of a tail wind. I decided to do this leg at 75 km/hr and not tag onto a truck. I was not in a hurry and only a modest amount of traffic, about one third being trucks, with a vehicle passing me every 2 or 3 minutes.

The drive was uneventful, and far more relaxing at 75 and not having your eyes glued to the back of a truck. I drove through and 3 km out of Horsham and arrived at the Wimmera Lakes Resort Park at 6:15 with 3 bars SOC and guessometer of 39 km.

On the outbound trip Sue and I had stayed in a different park on the opposite side of Horsham. I made my request for a cabin and a place to charge my electric car and the proprietor said that there had previously been Teslas in on two occasions and that they had had some difficulty charging. I noted that I could reliably charge from any powered site outlet. I described AEVA and offered our services to advise on recharging options for different EVs that may suit their site. I also suggested that they may wish to host EVs to charge even if they are not staying overnight. The proprietor was quite interested in the idea and said she would discuss it with her husband who was in Melbourne at the time.

I unloaded my stuff and parked the car on an empty site about 40 m from the cabin. I enjoyed the comfort of the cabin on what was another cold night, with TV, cooking and all conveniences as well as a comfortable bed. The car was fully charged before bedtime so I unplugged and moved it to the cabin before retiring for the night.

### **Third day heading home – Horsham to Stawell**

I got up and on the road without breakfast at 6:15 AM. Full battery and 165 km on the guessometer – if only.

Traffic was light and I drove a steady 75 km/hr down the largely straight and flat highway. About a dozen vehicles passed me in the 60 minute's drive, with me pulling over to let them pass on a few occasions.

I drove straight into the Stawell Gap Caravan Park, familiar territory, and plugged in to the power point near the entrance. The office doesn't open until 9:00 am so I will 'check in' then. I had breakfast in their lovely glassed in kitchen shelter by the lake made easy with an electric kettle and all. The early morning sun through the glass offset the cold of the 6 degree morning.

I remembered the access code so I could use the loos. Then settled back in the sunny shelter to write up my notes.

I decided to walk into town to get my morning coffee. It was further than I expected and up hill so I arrived after 25 minutes of walking briskly. I went into the first bakery/café I came to and asked if they had wifi. The shop attendant proudly stated that the whole town had wifi pointing out a sticker on the shop window with the password. So I ordered a coffee and logged on.

I had been pondering the need to write a section on the trade-off between speed of driving, charging time and total trip time. While I had some data on my own experience, I wanted to see what internet material was available to support and illustrate this. I also wanted to use my data and the internet material to estimate the optimum strategy under different conditions. I wanted to do it now because I had elected to do the next leg on mostly minor roads with little traffic and modest elevation change allowing me to experiment without causing a traffic hazard.

The analysis will be presented in a separate paper that I will finish in the next few days. But the conclusion was – with slow charging the slower the travel speed the shorter the total journey time. I decided to skip the planned stop at Avoca and drive direct to Maryborough, 110 km, at a speed of 50 km/hr.

I walked back to the car and found it fully charged, even though I had thought it would require another 5 or 10 minutes. I spoke to Marianne the proprietor. She said she recognised the car and knew what was up, and while perfectly happy to be put on Plugshare, it needed to make clear that charging was only during office hours, unless you phone ahead to make arrangements. She accepted \$5 for the 3½ hour charge and I got on the road with 12 bars and a guessometer range of 146 km.

### **Stawell to Maryborough**

This is where the driving became exceedingly leisurely but the total trip speed increased immensely. I cruised through Stawell at 50 km/hr, no issue there as that was the speed limit for much of the town. Toward the outskirts where the limit lifted, I let a couple of cars pass by pulling to the side. Just outside of town, in the first two kilometres, two more passed, this time by overtaking on the clear road. After that, 45 minutes with only one car passing easily on an open road and little oncoming traffic seen either.

You see a lot more driving at 50 km/hr. It's a bit more like bicycling or even walking. With the window down at times you could hear the birds and other noises. Without traffic you can pay a little less attention to the road and more to your surroundings.

I knew the road went along the Pyrenees and skirted the edge of the Grampians. As it did it rose. Because of my experiment I logged the number of kilometres I got for each bar on the SOC display. First 11, then 15 (good!), then 6, 4, 7 (ugh!) but I realised I was on a long, slow steady climb.

I reached the end of the real back roads and was on the Pyrenees Highway by now, still maintaining my 50 km/hr. For the first 20-30 minutes there was about a car a minute, but many in bunches so I had to make way about every four or five minutes for cars to pass. In many places they overtook easily without action on my part, but where they could not do that, I pulled off the road and slowed which was easy and safe enough while going at 50 km/hour so they could pass even on a bend. There were some but many fewer trucks on this road (as a share of road users) compared to the Western Highway that I had been on from SA to Stawell. After that first busy period the cars thinned out and it was closer to one car every three or four minutes, except around Avoca where it got busier.

Over the high point and the km per bar improved: 12, 19! 11 and 12.

Apart from the hills there was now also some wind. It was mostly a cross wind, ever so slightly behind me at times but for a 10 km stretch around Avoca, solidly a head wind. Life's not fair!

I rolled into the Maryborough Caravan Park with 3 bars SOC and 35 km on the guessometer after completing a leg of 110 km. The guessometer had dropped from 146 at the beginning to 35 at the end a difference of 111 km. I think that is the first time a journey in the Leaf has matched the reading on the guessometer so closely. Clearly it is perfectly calibrated for travel at 50 km/hour! (plus a bit of up and down, wind, etc.)

The park manager said he wasn't sure what to do as he had never been asked to allow an electric car to recharge before. How did \$10 sound? I said I didn't really need to charge but was just topping up as the wind was picking up and I had arranged to meet a journalist here. I said I would use less than 75 cents worth of electricity so how about \$1.50. He said don't bother to pay, I don't want the money, go ahead and charge. I left my \$1.50 on the counter anyway.

I had arranged to meet a journalist at the caravan park. He had called me on the outbound journey in response to my email sent before I started. Unfortunately he called a few hours after I had passed through the town so we had arranged that I would call him on the return journey.

Sam from the Maryborough District Advertiser arrived and we had a long discussion about the trip, how it went, electric vehicles in general. Sam admitted he knew next to nothing about EVs so I gave him a short history. He took pictures and notes, then he took the car for a test drive around Maryborough, burning up about 3 km of range. At the end he declared himself quite impressed.

I pulled away from Maryborough with 4 bars of charge and 64 km on the guessometer and headed for Newstead.

### **Maryborough to Newstead**

This was my last leg for a while as I was planning to stay in Newstead for a few days. I continued travelling at 50 km/hr. The road was modestly trafficked with cars passing me about every 3-5 minutes. The wind was picking up, mostly a cross wind, but shifting to nearly a tail wind for perhaps 10-15 km.

I rolled into Newstead with 2 bars and 30 km on the guessometer having travelled 34 km with a change in the guessometer reading of 34 km. How about that.



I had travelled the 594 km from Adelaide to Newstead in under 48 hours.

At Newstead I went to the Newstead Energy Centre, the one that was closed on Monday on the outbound journey. Today was Tuesday.

Frank enthusiastically welcomed me and brought out the Mennekes to J-1772 connector to plug into the charger. It's a straight plug in with no activation required and the car was charging. Pictures were taken – first Leaf and first Tassie car so this was significant.

I had realised upon examining the charger more carefully and reviewing the Plugshare website that in addition to the EV charger, there was a simple 15A outlet and a 3 phase 32 A outlet sitting right there at the base of the converted petrol bowser. I could have charged here last time after all. I should be more observant in future, but then I frequently tell myself that.



Recharging at the Newstead Energy Shop

I could recharge at Sue's place, just two blocks away, but Sue only has a 10A circuit available and the charger delivers 15A. Does that matter? I am at my destination after all.

It was about 2:45 in the afternoon and we had a dinner date in Castlemaine at 6:30. I really wanted to take the Leaf there, and to have enough charge to drive at 'normal' speeds and take the others for a test ride if they wanted without having range anxiety.

I charged until 5:15 when the shop closed and I had to give the cord back. Frank came out and we had a long chat about the trip and many 'things EV'. I then drove up to Sue's to get another hour's top up at 10A. I didn't record the final reading but it was well over 100 km and SOC about 8 I think and I felt quite comfortable driving the 15 km into Castlemaine at the speed limit.

Dinner at The Good Table with ten was a good way to finish this part of the journey. The trip was part of the conversation starters with lots of interest shown. One of the diners did a test drive after dinner, again suitably impressed.

And here I pause until I begin the journey to Melbourne and the ferry.

## **Resuming the journey – Newstead to Spirit of Tasmania**

Tonight I board the Spirit Of Tasmania to return to Tasmania. It's 160 km to the docks, via my daughter Eleanor's home in Brunswick East. To Eleanor's house is only 144 km. If I use the fast charger at Coburg, behind the Moreland Council offices it is only 140 km.

In principle I should be able to do that on a single charge from Newstead. It is downhill after all. In practice I choose to be cautious:

- Traffic will be heavier approaching Melbourne and I will have to move with the traffic so need to be sure I am not trying to stretch my charge at that point;
- There are two caravan parks en route. I would like to recruit them to Plugshare and the best way to do that is to stop in, demonstrate and pay;
- I am going to chargers I haven't been to before – I may have trouble finding them or they may not function on arrival – best to have some leeway.

I will of course still track my SOC and amount of charging en route to estimate whether I could have made it had I tried.

## **Newstead to Castlemaine**

I departed early, about 7:30 fully charged and with 151 km on the guessometer. There was little traffic so I could travel at 60 km/hr without causing a nuisance. The caravan park in Castlemaine is only 16 km from the place I was staying in Newstead so clearly I did not need to charge. I arrived with 11 bars SOC, guessometer 132km – arguably still enough to reach Coburg.

The owners were a bit bemused but willing enough to let me charge. All eight caravan sites were full (mostly they rent cabins) but they have a 15A outlet next to the office, accessible to the visitor parking spots, right near the entrance.

I wandered off to get my morning coffee, about a ten minute walk from the park. Almost exactly one hour of charging brought the SOC to 100%. I paid \$2 for the charge and departed via the old highway route to Macedon.

## **Castlemaine to Macedon**

The route to Melbourne off the motorway was mostly familiar as about two years ago Eleanor and I had ridden bicycles from Melbourne to Castlemaine on pretty much the same route. I travelled the 64 km at about 60 km/hour in mostly light traffic with a few cars passing and little oncoming traffic. In a few places, for safety, I pulled to the side to allow cars or vehicles with trailers to pass. The road went through many small towns so there were significant sections of 80 km/hr and 60m km/hr where my speed was not much of an issue even though traffic around the towns was heavier.

I reached Macedon by 10:30 with SOC 6 bars and 75 km on the guessometer. I had done almost exactly half the trip from Castlemaine to Coburg on half the nominal battery capacity. But while the trip from Newstead to Melbourne is mostly downhill, Macedon is higher than Newstead so the second part of the trip should be far more economical.

We had stayed here on the bicycle trip so the site was familiar. I called into the park office. The manager was somewhat uncertain and asked how much power I would need. I said just a top up for about an hour and offered \$2, twice the cost of the electricity, which was accepted.

I was offered any vacant site, paid in advance and followed her directions out the back exit to walk to town. I didn't need a coffee so I just walked to town and back about, 20 minutes each way. After one hour I unplugged with SOC of 8 and 100 km on the guessometer.

### **Macedon to Coburg**

About 20 km out of Macedon the road began to descend. Instead of getting about 10 km per bar of charge, it jumped to 19 then back to 14.

About 10 km from Sunbury it was clear that range was not an issue at any speed, and anticipating the ChaDeMo charger at Coburg, recharging time was very much less of an issue too. From there on I travelled at the speed limit (or with the traffic where heavier and slow).

I joined the Tullamarine Freeway at the airport down to Bell Street, then across to Moreland Councils offices to the fast charger. I didn't find the entrance particularly obvious and had to drive around a block or two before locating it (on foot). I got close but there are few obvious directional signs driving along Bell Street (well, I didn't see them) or on Sydney Road.



ChaDeMo 'ZapNGo' charger at Moreland Council offices.

As I pulled up to the charger I had 3 bars SOC (dropping from 4 as I stopped) and 56 km on the guessometer. After charging, the display showed 7 bars SOC and 110 km on the guessometer.

According to the charger display, I charged for 17 minutes, from 43% SOC to 72% SOC. The percentages were presumably of the total battery capacity, not the roughly 21 kWhrs of working capacity displayed by the bars on the dashboard. The display did not show total charge in kWhrs. During charging it did show the voltage and amperage, which varied over time. The initial charge was at 383V, 59A or about 23 kW. The final charging rate was at 393V and 38A or about 15kW.

I halted the charge at that point for two reasons:

- I could easily reach full charge on a J-1772 charger in just over two hours and have lots of time to get to the ferry; and



- If I charged at CERES park in Brunswick East, I could walk to Eleanor's place (about four blocks away) and visit while charging.

### **Coburg to CERES (Brunswick East)**

This 4 km stretch didn't make a noticeable dent in either SOC or the guessometer. It is somewhat downhill and the slow city traffic made for good range.

The two CERES Chargepoint J-1772 chargers have solar panels above and are reputed to be supplied entirely by green power. They are right by the entrance, quite obvious and were unoccupied. I plugged in, locked the car and walked off to Eleanor's.



Chargepoint J-1772 at CERES

We visited for a couple of hours and when I thought the car would be close to full charge, walked back to CERES. Eleanor and Zac bought some plants for the garden while I checked the car, which was fully charged (after 2:30), guessometer reading 165 km. Back to Eleanor's with the purchases, a light meal then to the ferry terminal.

### **Brunswick East to Melbourne ferry terminal**

My route to the ferry was 16 km. I arrived with 11 bars SOC and the guessometer was 143 km. As I got out of the car on the ferry, another driver asked how the trip from Adelaide was. He had seen me in Adelaide on TV news coverage of the AEVA event and Lord Mayor's announcement of new EV chargers. A lengthy discussion of EVs ensued...

## **East Devonport ferry terminal to Selbourne**

Christopher Walkden and I are part of the planning group for the 2017 AEVA national convention and AGM which will be hosted in Devonport with a 'rally' of EVs to Cradle Mountain – or at least that is the Tasmanian AEVA Branch concept at the moment. We wanted to drive up to Cradle Mountain, suss out the location, accommodation and recharging options both there and along the route. Christopher suggested we meet up after I got off the boat.

We originally planned to meet at Anvers Chocolate in Latrobe where I could leave my car to charge, not that it would need much, have breakfast and then drive on to Sheffield and Cradle. But there was a complication – hundreds of bicycles were riding from Devonport to Cradle just when we were and some of the roads were closed for some of the day.

We agreed instead to meet in Sheffield to try to get ahead of the pack and beat the road closures.

I watched the cyclists streaming out of Devonport at just after 6:30 in the morning. The ship had started to unload cars, but my deck had not been called. Just before 7:00 my deck was called – the last one. I was parked at the back – the fourth last car to disembark. So much for beating the pack.

I arrived in Sheffield with 5 bars SOC and 57 km on guessometer. I had travelled at a modest pace because there was zero traffic once out of Latrobe, and the cyclists were on another route.

I got to Sheffield about 7:45 as lots of cyclists were going through town. Gee these guys are fast, especially as they had been detouring to go up and down peaks on the route. I parked the Leaf in town and Christopher and I went off in his Mitsubishi Outlander PHEV to do our investigations.

We managed to pass the leading packs of cyclists well before we got to Cradle and time our passage to avoid the road closures. What we found was a lot of support for the EV rally concept from everyone we spoke to and huge potential for charging, meeting spaces and accommodation that could recharge our vehicles – far more than we had expected.

On returning to Sheffield we contacted an AEVA member and arranged to plug into a 15A outlet while we explored Sheffield's infrastructure and spoke to some of the local's about possibilities for meetings, charging and things to do should we stage a stop there.

After about two hours of charging I had heaps of capacity (11 bars SOC and 122 on the guessometer) and Christopher and I drove in our respective vehicles at the speed limit – where safe to do so on the windy roads – back to his house in Selbourne, near Westbury. I arrived with 3 bars and 23 km showing. I plugged in to one of his 15A outlets while he recharged his Outlander in the other, his Brumby electric conversion charging from 10A completing the stable of three EVs sharing the garage for the night.

I had stayed with Christopher and Zara a few times before as we had put on various events and promotions in the area, so I was starting to feel like I was 'home'.

## **Final day to home**

### **First leg – Selbourne to Longford**

We woke to a cold (6 deg C), mostly clear morning with a stirring breeze. The forecast was for winds from the WNW, about 25 km/hr. My first tail wind! What a lovely way that would be to end the trip.

I departed about 7:30 with the notion that I would go slowly and see if I could stretch the range to get to Ross or at least Campbelltown. The total distance to Ross from Selbourne, depending on route chosen, was about 100 km, with little overall elevation difference but a few ups and downs, but which should be comfortably within range. Rather than take the highway, I would use B and C roads with less traffic, so I could go slower and extend range without being a nuisance.

I monitor my range as I approached Longford, and if I could not make the full distance with some comfort, I would stop and top up at Longford Riverside Caravan Park where I had charged before and the owners were very supportive. The alternative of being on a C road in the Midlands with very little of any development around did not appeal.

There was little traffic on the road (two cars) for the first 15 km so I could travel at 50 km/hr without hassle. The bright sunny morning made the green fields a glorious site all around and it was a pleasure to drive slowly through the countryside. Once on the secondary road from Hagley to Carrick it got busier and I had to travel faster. I was even busier on the road to Longford so I had to either move with the traffic or pull over frequently to let them pass. I did a bit of both.

Although it was largely downhill (80m elevation drop) from Christopher and Zara's place to Longford, with a modest largely tail wind and I had not driven all that fast, the range was a bit disappointing. When I reached Longford I was down to 7 bars SOC and a guessometer range of 92.

I was not going to make Ross or even Campbelltown on one charge with any margin, if at all. From here to Ross was another 70 km or so to go, depending on the route and up and down but a net gain of 40-50m elevation so I was not likely to do that much better than I had so far. I suspected it was due to the batteries being cold in the open, unheated garage.

I pulled in to the Longford Riverside Caravan Park at 8:00 AM. Office hours are from 8:30 AM so I wandered off to fill in time until they opened. When I returned to the office, the staff different from previous charging events (two last year for the Anvers opening trip). They had never heard of the park allowing EVs to charge and had no idea what to do. I showed them the Plugshare entry for their park and explained I had done it before and which plug I had used. They agreed to let me charge and declined to be paid as 'the management' had not explained any of this to them.

I plugged in and sought their recommendation of a good coffee shop and walked about 300-400 m into town. JJ's Bakery provided good coffee, power points by the tables for my laptop and a tempting menu so I settled in to write up my notes and respond to my neglected emails. I then wandered down to the supermarket to buy some lunch supplies before returning to the car.

By the time I got back, just under two hours, the car was fully charged, 12 bars SOC and guessometer of 143 km. But as I started off I noticed something – the heater had been on, presumably the whole time from Selbourne. I had the fan on the lowest setting and it is nearly silent and I just hadn't thought about it. Turning the heater off immediately bumped the range to 160 km on the guessometer. Had I not used the heater, arguably I would have made the distance to Ross in a single leg. And although the day was cold, it was clear and bright and I had felt a little too warm on the first leg, so it was hardly necessary to have it on!



## Longford to Ross

I took C roads (C520, C522) and an unrated road Ashby Road, to Ross from Longford. Another alternative would have been B51, C522 and Ashby Road. The roads are mostly two lane and paved, with only about 5 km of Ashby Road being gravel but firm and smooth and in good condition. Both are about 4 km longer than the Midlands highway but with little traffic, you can travel slowly without being a hazard or nuisance.

For the entire length of these roads I travelled at about 45-55 km/hr, but was overtaken by only two vehicles. There were only six oncoming vehicles in the same distance, four of them agricultural trucks or equipment.

The wind had dropped before I left Longford and now was only a gentle stir. It was cool but otherwise a lovely sunny and now calm day. Driving in the country at a leisurely pace with no traffic is an unusual and I found pleasing experience. The road ran close to the looming tiers and the rolling fields were all bright green in the sunshine.

I arrived at Ross about noon with 5 bars SOC and 78 km on the guessometer and checked in to charge. The owners immediately recognised me and said 'You know what to do.' We noted the time and I plugged in to the unused site near the rubbish bins.

The SOC dropped one bar to 4 upon plugging in, and the estimated recharge time was 3:30 hours. I had found that generally the recharge time estimate wasn't bad, but if it was in error it overestimated the time to fully charge.



Flag in Ross town square showing forceful tailwind assisting my journey...sigh

I used the public toilets near the town square (the caravan park ones have a combination which I have never asked for, the public ones being close enough). Then had lunch in the caravan park camp kitchen shelter. When I checked the charge status after lunch it was proceeding a bit faster than stated (as expected). I went off to town for a cup of tea, returning via the office to pay for services rendered. \$5 was agreed for about 3 hours as fair.

Shortly after I returned to the car the status lights indicated 'fully charged' confirmed by the dashboard display – fully charged in 2:35, with an amazing 195 km displayed on the guessometer. If only!

## **Ross to Richmond**

Having travelled so well on back roads from Longford, I decided to see what I could find going south from Ross. There were one or two sections where the old highway appeared to parallel the new at Tunbridge and Antill Ponds. While short, they were a few km where slow driving would be acceptable and I hadn't actually ever driven through either since the new highway was built 25 years ago of so.

South of Oatlands I usually take Mudwalls Road. While quieter than the Midlands highway, it is still fairly heavily travelled, with about a car a minute for much of the day, so going really slow would not be very good.

I opted to explore the route through Parattah and Tunnack. At 103 km, this route is about 10 km longer than the Mudwalls Road route so you need to expect that the slower travel will pay off in longer range. In the end I am not sure it did.

The Midlands Highway from Ross up to about Antill Ponds had a lot of construction work and most of this distance had speed limits posted at 80 or 60 km/hr, so I could simply move with the traffic. I did take the parallel road at Tunbridge out of interest rather than necessity, but I found the road at Antill Ponds, while showing on Google Maps was in fact closed. I only had to cope with Midland highway traffic at full speed from Antill Ponds to Oatlands, a little over 10 km, and even here I got a break. Part of the road works was signalled. As a result, traffic came in pulses of 10-20 vehicles with a 5 minute break. I only had to pull over to let one pulse pass and apart from one or two other cars that presumably entered from side roads, the rest of the time the road was clear and I could travel unperturbed at about 55 km/hr.

Once past Oatlands and on the Parratah road there was very little traffic so I tootled along at a very leisurely 50 km/hr. I think only one car overtook me on the leg from Oatlands to Colebrook with two or three oncoming cars. It was also very pretty with lovely hilly countryside and nestled valleys, again, all very green. The route goes much higher (elevation 550m) than the Mudwalls Road (450 m), climbing all the way to nearly Tunnack before descending, but also quite a bit of up and down. The promised tailwind not only had not materialised, it was now picking up as a headwind! So all considered, it was probably not the most efficient route.

I had decided that if I still had three bars SOC when I got to Richmond I would chance making it all the way to Bellerive without topping up. As it happens I was about three kilometres outside of Richmond when the SOC bars dropped to two. Michael and Penny Wadsley are AEVA members on Plugshare as a home shared charging point in Richmond. Ah well, it would be a chance to bring the Wadsley's up to date on our exploration of Cradle yesterday and recount tales of the trip.

You are supposed to phone ahead to use the Wadsley's plug but I had been hoping not to charge so I had not. As I was getting my cord out to throw over the fence, Penny and Michael were walking back from tennis. Michael offered to move his Outlander so I could more easily plug into the 15A socket rather than the 10A one on the driveway. Before charging I was down to 2 bars SOC and 32 km on the guessometer. I really didn't need much to give me the reassurance to get home, maybe half an hour.

In the end we had tea and cakes and Penny's sister's house across the street and it was 40 minutes before I got back to the car. I was determined to get home before 6:30 if possible.

### **Richmond to Bellerive**

This is now very familiar territory. I left with 4 bars and guessometer of 66 km, heaps for the last 23 km leg. I simple drove home at the speed limit (or safe speed on the windy bits), reaching home with 2 bars and 21 km still on the guessometer. I know that coming home from the east, the reading at the top of the Meehan range for SOC and guessometer is almost always the same reading when I roll into my driveway, and it was this time.



## Summary Comments

### Charging rates determine trip time

With the 3.5 kW charger, en route charging required 70 hours compared to 41 hours of driving time, a little less than double.

	Hours	Share
Driving time	41	25%
Charging time		
En route	70	42%
Overnight	55	33%
<b>Total time</b>	<b>166</b>	<b>100%</b>

Note: Some overnight charging was at 2.5 kW; one en route charge was at 20 kW

If en route charging had been at 2.5 kW using the Nissan supplied charge controller, en route charging time would have been 98 hours, (28 hours more) and well over double the driving time. Not all en route charging time adds to normal journey time. Normal driving entails some time for toilet, drink and meal stops. If we take that to be one hour for every eight hours of driving then the additional journey time for slow charging would be 65 hours for 3.5 kW and 93 hours for 2.5 kW.

If fast chargers had been available on the route at the right places for the Leaf, assuming charging at an average 35kW, the return journey could have been completed in the Leaf in 28-30 hours driving time and 10 hours en route charging time, with one overnight stop between Melbourne and Adelaide instead of three and no overnight stop between Hobart and Devonport. The total trip time would be 3-4 hours longer than in a conventional ICE car.

A longer range EV such as a Tesla, Bolt or other newer model would further reduce the total trip time because the full charge at the beginning of the day would take the car further, and a smaller proportion of charging would be en route. For EVs with range in excess of about 300 km, and fast chargers of 50kW or higher in the right locations, trip times would be essentially the same as for ICE vehicles.

### Driving speed, range and total trip time

Lower driving speed increases range, reduces electricity use and cuts charging time required. Increasing range is critical if charging opportunities are widely spaced relative to vehicle range.

Journey section	Distance	Energy	Energy rate	Driving time	Charging en route
	<i>km</i>	<i>kWhr</i>	<i>Whr/km</i>	<i>hrs</i>	<i>hrs</i>
Hobart to ferry	300	56	188	5	10½
Melbourne to Adelaide	813	158	194	13½	26½
Adelaide to Melbourne	813	136	167	15	24¾
Melbourne to Hobart	358	61	171	7¾	8
<b>Total</b>	<b>2284</b>	<b>411</b>	<b>180</b>	<b>41¼</b>	<b>69¾</b>

Notes:

Distances are odometer readings and include some local test drives at some caravan parks

Adelaide to Melbourne km is to Brunswick East, the recharging site in Melbourne, about 12 km from the ferry

Melbourne to Hobart includes 12 km in Melbourne and was via Sheffield

The route to Adelaide from Melbourne via Ballarat is more direct (735 km) with ample charging opportunities and could save one night's accommodation en route

Increasing range by driving slowly means less charging time, but adds to driving time.

- For 2.5 kW charging, driving slower will save significantly more charging time than slow driving adds to driving time reducing overall trip time.
- For 3.5kW charging, driving slower adds nearly as much to driving time as it saves in charging time. While slow driving will reduce total trip time a little, the nuisance factor to other vehicles and safety suggests this should only occur where necessary to extend range to reach the next charging point or on roads with very little traffic
- For charging over about 7-10 kW, driving at permissible speeds reduces trip time

I chose to drive and select recharging points that meant I should arrive with about 2 bars state of charge. This cautious approach meant that I stopped a little more often than I had to but it more or less eliminated any range anxiety. Consequences of this approach include:

- You have a margin of safety to cover unexpected detours, getting lost, stronger than expected headwinds, unplanned hill climbs, etc.
- It takes little additional time with more stops – total recharging time is about the same you just have more shorter stops instead of fewer longer ones

### **Energy use and cost**

Energy use was affected by wind, vehicle speed and by climbing and descending.

- Highest energy use: 292 wHrs/km Adelaide to Stirling (climbing the Adelaide Hills)
- Lowest energy use: 126 wHrs/km Ross to Richmond (descending from Midlands)

The outward journey was into a headwind for most of the journey, of varying strength. I also generally drove faster on the outward journey. Overall the energy consumption was about 190 Whrs per km, consuming about 214 kWhrs. At a nominal 25 cents per kWhr, that translates to \$53 in electricity use. A petrol vehicle using 8 litres/100 km would have consumed about 88 litres of fuel or about \$110 at prevailing prices.

The return journey had less wind, with more cross wind and at times a modest tail wind. I also drove a bit slower on average. My route was different, 58 km longer than the outward journey. The overall energy consumption was 170 Whrs/km or 197 kWhrs, with a nominal cost of \$49.

The previous section referred to the 'nominal' cost of electricity used. In fact I paid roughly double the price of electricity to caravan parks where I recharged en route. However, all the places I stayed overnight included recharging as part of the normal overnight fee (for a powered caravan site or onsite cabin), and none of the public charging stations used required any payment. My actual payments for electricity totalled \$72.00.

### **Tips and ideas**

- Check your route on Jurassic Test GreenRace before you go, and note the elevation changes
- Get a charge controller (EVSE) that gives you a full 3.5 kW from a 15A powerpoint but bring your 2.5 kW one too in case there is no 15A supply.
- Plan to recharge en route during park office hours if using caravan parks.
- Try caravan parks not listed on Plugshare.com. Very few will knock you back if you pay.
- Carry enough change for the honesty boxes at some sites
- If not using caravan parks for overnight, check that the accommodation can recharge you.
- Budget enough time and be prepared to relax and enjoy the towns you visit.

Drive time to site	Charging site	Charging Hours	enroute/ o'nite	Paid	Km to site	kWhrs	kWhr/km
1:00	Kempton	1:50	en route	free	51	6.42	
1:00	Ross	4:40	en route	\$5	72	16.33	0.185
1:20	Hadspen	5:30	o'nite	free	83	19.25	0.232
1:25	Latrobe	3:20	en route	free	80	11.67	0.146
0:20	East Devonport	0:45	en route	\$1	14	2.63	0.188
1:15	Ballan	3:00	en route	\$4	80	10.50	
0:45	Daylesford	2:05	en route	free	34	7.29	
0:55	Newstead	5:00	o'nite	free	33	12.50	0.206
1:15	Avoca	2:35	en route	free	61	9.04	
1:45	Stawell	4:20	en route	\$6	91	15.17	
0:45	Horsham	5:00	o'nite	free	66	17.50	0.191
0:30	Dimboola	2:40	en route	\$5	37	9.33	0.252
0:35	Nhill	2:10	en route	\$3	40	7.58	0.190
1:27	Bordertown	2:40	en route	\$4	82	9.33	
0:45	Keith	6:00	o'nite	free	45	15.00	0.192
0:45	Coonalpyn	3:15	en route	\$5	67	11.38	0.170
1:15	Murray Bridge	3:55	en route	\$8	88	13.71	0.156
1:30	West Beach	5:30	o'nite	free	89	19.25	0.216
0:20	Market Square	0:45	en route	free	17	2.63	0.154
0:38	Stirling	2:00	en route	free	24	7.00	0.292
0:55	Tailem Bend	2:00	en route	\$2	76	7.00	
1:05	Coonalpyn	5:00	o'nite	free	71	17.50	0.167
1:15	Keith	1:10	en route	free	66	4.08	
0:34	Bordertown	4:30	en route	\$9	46	15.75	0.177
1:00	Nhill	3:05	en route	\$4.50	82	10.79	
1:25	Horsham	4:15	o'nite	free	79	14.88	0.159
1:00	Stawell	3:30	en route	\$5	62	12.25	0.198
2:25	Maryborough	0:45	en route	\$1.50	110	2.63	
0:47	Newstead	2:20	en route	free	39	8.17	
0:02	Newstead	3:30	o'nite	free	0	12.25	0.155
0:25	Castlemaine	1:00	en route	\$2	15	3.50	0.233
1:50	Macedon	1:00	en route	\$2	62	3.50	
1:17	Coburg	0:17	en route	free	60	5.67	
0:12	Brunswick East	2:20	en route	free	4	8.17	0.138
1:15	Sheffield	2:35	en route	free	52	9.04	
1:00	Selbourne	4:40	o'nite	free	72	16.33	0.205
1:00	Longford	2:00	en route	free	36	7.00	0.194
1:35	Ross	2:35	en route	\$5	72	9.04	0.126
2:30	Richmond	0:50	en route	free	103	2.92	
0:25	Home	4:50	o'nite	free	23	16.92	0.157
41		125		\$ 72.00	2284	411	0.167



Notes to table:

1. Driving times were not accurately recorded and may include some time pulled over checking for directions, finding park entrances, and negotiating with park attendants. Actual driving times are likely to be somewhat less than shown.
2. Local travel in Adelaide and Newstead/Castlemaine/Bendigo while staying for several days is not shown in table.
3. Charging times were recorded with some care for en route charging, but several instances occurred where charging was complete before I returned to the car. In these cases the time to reach full charge was estimated.
4. Charging times overnight were generally estimated based on the car's time to charge indicator that tended to overestimate actual time required. Where charging was complete before bedtime, and noted, actual times were recorded.
5. Most charging was at a nominal 3.5 kW and total kWhrs was estimated on this basis. Yellow cells were based on 2.5 kW (only 10A outlets available) and the green cell was based on an estimated average rate of 20 kW from the Coburg DC fast charger. In practice charge rates vary with SOC so these are indicative estimates, not metered power consumed.
6. kWhr/km were calculated only for charges taken to 100% SOC. Where partial charges occurred, distance and charge were summed with the final charge in the sequence at 100% to estimate kWhr/km for the 'group'. Groupings are indicated by the box around the travel distances for the group.
7. Distances are based on odometer readings and include any local travel such as test rides to interested campers at the end of the day, deviations when looking for the camp ground entrance, etc.