Yesterday we heard many things from Helios, many of those things lacked context, were misquoted or just plain wrong.

Helios led yesterday with the suggestion that this project would inject $450m into the Maniototo economy. This seems – unlikely. The only references I have seen to the nominated sum relate to the total project cost , the bulk of which will flow to the economies of Guangdon or Jiangsu – not to Ranfurly. The bulk of the materials for the build will not come from this region or this country. The economic benefit to this area would appear to be wildly overstated. Indeed, if this build follows the path of many others in Australasia, even the labour content will be largely sourced from offshore.

Mr Schlichting informed us that Transpower has predicted that we will need to generate 83% more electricity by 2050. I think he is probably referring to the MBIE Electricity and Generation Scenarios document, which does indeed predict that we will need such an increase, but only as the highest of five possible scenarios – the lowest of which predicts a 34% increase. The reference prediction is for a little over 50% more generation than we have now.

For context, solar (MBIE Q1 2025) represents 1.3% of New Zealand generation. Since 1998, while connection counts have increased, the average electricity use per connection has dropped 24%. New Zealand has around 10.349GW of generation capacity. A 50% increase in output would therefor require an increase of generation capacity (given the same mix of generation) of around 5GW.

Transpower maintains a database of all connection requests. That database shows that Transpower has already approved 2.2GW of new generation. It also lists 7.93GW of new generation where applications have been received and investigation has started. Naseby falls into this category although investigation has been stopped at the applicant's request – which seems incongruous when you consider that yesterday we were told that Transpower approval "takes a very long time". Still in the que sits a further 6.17GW of applications – a total of 16GW of planned new generation, more than three times the amount needed by 2050 according to the reference scenario when supplied by the current generation mix.

Helios was described yesterday as a leading solar developer. Helios lists five New Zealand projects on its website, none of which have yet resulted in a single panel being installed. One of those projects, Edgecumb, was sold to Genesis Energy in August last year before any work had started on site. No investment decision has yet been made by Genesis.

Helios was described yesterday as a 100% New Zealand company, but at launch in 2022, it was described as joint US- NZ power company with much emphasis on the involvement of a Google executive Urs Hölzle. Ownership of the company is far from transparent.

Helios claimed yesterday that the Naseby location was capable of a higher solar output than "most of New Zealand". I covered this assertion in my submission extensively. According to LENZ data, Naseby has a mean annual solar radiation that is equalled or surpassed by almost all the land from Kaikoura to the tip of the North Island.

Mr Schlichting compared the output from the proposed Naseby install with the Clyde dam, claiming that it would produce about 1/3 as much electricity as that asset. This seems very likely wrong. Clyde has a capacity of 464MW, to the casual observer that would make the Naseby "peak" output of 300MW well over half of Clyde's capacity.

Unhelpfully, the applicant does not list the modelled output from their proposal. They do however tell us that it is expected to supply "70,000homes". The standard calculation for this unregulated metric uses a load of 0.8kW for a "home". From this it is possible to calculate that Helios expect the mean output from Naseby to be close to 56MW, 13% of the output of Clyde at full load. Clyde generates 2,100GWh of energy annually. Naseby will generate under 0.5GWh – perhaps 23% of the output of Clyde.

We have moved a long way from Helios contending that "There is no increased risk of fire with a solar farm. Solar panels are not flammable. The components are encapsulated in glass and cannot support a fire. All major electrical components such as inverters and transformers will be containerised. Electrical wiring from panels to inverters is undergrounded."

None of those statements is true. There is a demonstrable and quantifiable risk of fires associated with solar farms. Solar panels are flammable and there is an internationally recognised standard that classes them according to flammability. The panels are encapsulated in many things but I'm unaware of any with a glass encapsulation layer. Inverters may be containerised, but not in a way that prevents the spread of fire, I have yet to see several hundred

tonnes of transformer in a container. Approximately 700 kilometres of wiring will run above ground – a tiny fraction of the install, from the ends of strings to inverters will be buried.

Mr Deneze seemed to imply that solar panel failures could be avoided by good component choice and careful installation. Those things will reduce failure rates but I point out that the studies I listed in my submission came from jurisdictions that have strict controls over both things – but the failure rates are what the failure rates are.

Yesterday Mr Schlichting told us that he expected that between one and five percent of all panels would be replaced over the life of the install. Setting aside the accuracy of that claim, I would point out that this rate of failure would see failures in between 5000 and 25000 panels. To express that differently, Mr Schlichting expects a panel failure rate of between one panel every two days and two panels a day.

Not every panel failure will result in a fire – but some will.

I refer in my submission to the lotto effect – the principle that, even facing very low odds, buying enough tickets will certainly make you a winner. Helios propose to buy 550,000 tickets.

I have referenced several reputable studies which seek to quantify failure rates by failure mode in solar panels. Sticking only to the panels themselves, PV module failure rates are listed as between 0.0152 x 10^-6 and 0.065x10^-6 module hours between failures. That may seem like a very low failure rate, if you have 10 panels on your roof you could expect one failure every several thousand years – but we are not discussing ten panels on your roof, we are discussing 550,000 panels in a field. It takes 75 days for this proposal to clock up one billion panel hours – but each panel contains within it somewhere over 100 solar modules – so the install will clock up more than a billion module hours each day. That means a predicted failure rate of one module every 15 to 65 days (conservatively).

Module failure is only one of the many possible failure modes for this installation.

Fire suppression in solar farms presents a myriad of problems – none of which FENZ have any experience mitigating. During a fire, FENZ must, by definition, deal with a failed electrical installation that cannot be turned off. In most jurisdictions that means that no water can be applied to the panels themselves, firefighting is therefore limited to the area outside of the panels and other equipment. By the time firefighters begin to fight a fire which has started within the panel array the fire-front may already be measured in kilometres rather than hundreds of metres.

North Hyde Substation.

Council must seek the advice of a competent fire engineer. Chit chat between FENZ and the applicant do not constitute a robust risk assessment on a matter that involves fatal risk. A four metre farm track is unlikely to form an effective fire break for a firefront measured in kilometres

When questioned, Mr Schlichting suggested that economics meant that an install in Naseby needed to be 300MWp. What the commissioners might have asked is what was the proposed connection size for Helios' other solar proposals. Karioi is 100MWp, as is OngaOnga. Edgecumb, which Helios have now sold to Genesis Energy, is 114MWp. Even better, they could have asked what the norm for solar farm connection capacity is in New Zealand.

We did make progress on glint and glare with the applicant's expert at pains to point out that the real world may well not match the modelling and that his predictions relied on 100% 0pacity of the screen planting. He also confirmed my fear that his modelling used height data obtained from google maps (mentioned in my submission). No serious engineering investigation would have proceeded without, much more accurate, lidar data. No on has yet addressed my concerns about the number of points modelled (not listed) during this assessment.

The metrics contained in the vegetation management plan for the success of the proposed planting are completely inadequate. I would suggest that 80% of plants surviving means nothing if those plants fail to achieve the growth rates we are told are expected. The landscape expert told us that the most significant visual effects will occur at the build stage – while the applicants tell us that that they don't wany to start planting until that stage has begun! Just let that sink in.

This is an industrial scale project with a gross income of at least $150,000 per day. That income is guaranteed by forward facing purchase agreements. Not far from here, at the Hawkeswood gold mine at Millers flat, the applicants were made to install several kilometres of four metre high earth bunds to mitigate visual effects and noise. At Millers flat there is no danger of sun-blinded teenagers leaving the road in fast moving vehicles, nor is there any guaranteed forward purchase agreement.

It is entirely reasonable and consistent with this example to make earth bunding a consent condition for Helios in place of the proposed planting. Such a condition guarantees opacity and also helps to mitigate noise. It is, in fact, the only way to meet the conditions outlined by the Helios glint and glare expert.

While the Glint and Glare expert was refreshingly honest about the likely accuracy of his predictions, the presenter on noise effects was not. I have listed many reasons why I think his approach is potentially flawed in my submission. Random, unannounced auditing of noise levels during both construction and operational phases must be a condition of any consent.

Bond

The relationship for a decommissioning bond must be between the council and Helios. Imagine a situation where Helios, or its successors, fails in its commitment to pay the required annual bond maintenance fee. Who can seek enforcement? Only the landowner – because that is where the relationship lies. Even if the relationship lies between council and Helios, council faces potentially grave difficulties enforcing any bond. Mr Schlicting is listed, by my count, as a director of over thirty registered companies in New Zealand that contain Helios in their name. Helios have a history of on selling projects once consent has been gained, folding an unsuccessful entity has, sadly, been a popular way of avoiding responsibilities, financial and

otherwise in New Zealand. A business failure here would, inevitably leave the council and ratepayers in a very difficult position.

In my submission I list studies that look at the residue of solar panel fires. The conclusion of two of those studies is that the only feasible means of remediating a site after a panel fire is likely to be complete removal and dumping of the topsoil layer. The cost of such remediation is likely to be extremely high. Helios have incorrectly asserted that the main element of concern in residue is Cadmium. The fact is, that in the absence of a scientific analysis of the residue from the actual panels which Helios intend to employ – and Helios have not specified that panel type – we have no idea what the level of contamination will be or what the most dangerous element will be. What we do know is that existing studies raise major concerns.

Yesterday it was suggested that a decommissioning bond of $20m is appropriate. In my submission I point to the NREL data which predicts decommissioning costs of circa $150m. They arrive at that number through vast experience auditing actual decommissioning costs in the US. Their method of calculation is however not particularly granular. NSW also provides a decommissioning cost calculator which does allow site specific data to be entered. That calculation (as best as I can calculate given the paucity of real data from Helios) comes in somewhere north of $100M.