Planning Unit

Notice of Submission on an Application for Resource Consent

Application Reference:

Resource Management Act 1991 - Form 13
Send or deliver your application to: Selwyn District Council, PO Box 90, Rolleston 7643 For enquiries phone: (03) 347-2868
For enquiries email: planninginfo@selwyn.govt.nz

1. Submitter Details

Name of Submitter(s) *(state full name(s))*:
Te Taumutu Rununga (Raymond John Henderson)

Descendant of Heni Te Marino (1820-1888) and William Gilbert (1800-1898) from Banks Peninsula. Heni Te Marino was a Maori princess related to Hone Tūhawaiki (the Maori chief for Ngai Tahu from 1805 to 1844).

Physical Address:
233 Branch Drain Road,
Brookside
Leeston 7682

Address for Service *(if different)*: N/A

Email: [redacted]

Telephone *(day)*: [redacted] Mobile: [redacted]

2. Application Details

Application Reference Number *(if not stated above)*: RC235464

Name of Applicant *(state full name)*: KEA X Ltd.

Application Site Address: Description of Proposed Activity: 187 and 115 Buckleys Road

3. Submission Details

I / We: ☑ Oppose all or part of the application

The specific parts of the application that **my / our** submission relates to are:

a) This is a new resource consent and as such there should have been **new consultation with Maori**. The conditions in the new consent have changed (e.g., native plantings to exotics, as has the size of the area in panels).
b) The Selwyn District Council (SDC) is in breach of its Treaty partnership with Ngai Tahu on **co-governance of Te Waihora** that has an objective to maintain or improve the quality of water and kai in Lake Te Waihora.
c) Commissioner Hughes-Johnson made clear reference for a need for **public notification**. Because the applicant knows the vast majority of Brookside (94%) were opposed in 2022, and the vast majority of residents are opposed again in 2023, this has not happened. SDC steadfastly refuses to operate democratically within the auspices of the Local Government Act 2002 and the directives given by the Commissioner.
d) The RMA 1991 requires specifications for a proposed activity that are not only **time-bound, but that specify materials** (viz. types of solar panel and other apparatus to be used on site). In "risk analysis" we have no idea what

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the materials and their composition will be.

e) There will be **considerable expansion of the Brookside substation** with increased electromagnetic fields and annoying "noise".

f) **Productive lands**. The applicant asserts he will maintain the productivity of the land through irrigation; yet there are no details on systems for irrigation, and furthermore there is no information on how he will limit heavy metals and leachates that make land less productive.

g) Division of the initial application. The applicant has prevaricated on size and believes a smaller area may be more acceptable. At a meeting on 20/11/2023 Donald Green stated "he had spoken to Keith Price who assured him once the Ward consent was approved then he would follow with installation of a solar farm on his property. Furthermore, two of his sons (Tim and Chris Green) are interested in the development of solar farms. Potentially the whole of Brookside may be transformed from a quiet rural community into a noisy, polluted industrial site within a decade.

h) The SDC is failing in its oversight of policy directives on the protection and use of **'productive lands'** and **freshwater management**.

i) The Resource Management Act (1991) and amendments specifically limit **contamination of air, soils, freshwater, and groundwater** but this is precisely what the proposed activity will do. There is a revised ecological report attached that fails to adequately address "risk" and issues of "humaneness" for species impacted by contaminants from the proposed solar farm.

j) Under existing legislation there are specified **mechanisms to dispose of waste**, but these are not included in this proposal.

k) Solar farms have a place in isolated locations on degraded and unproductive soils; they do not belong on good agricultural land in a populated rural community where irascible noise, electromagnetic fields, the ugly glare of solar panels, and contaminants affect people's wellbeing.

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The decision I would like the Council to make is: *(give details including, if relevant, the parts of the application you wish to have amended and the general nature of any conditions sought.).*

I request that the application and associated consents **be declined** by local authorities (Selwyn District Council, Environment Canterbury). The reasons for this will be detailed in a final submission before any hearing, but a summary of essential points is provided below:

This is the applicants second attempt at what has now become a "staged development" that will transform Brookside from a rural amenity with productive lands into a noisy contaminated industrial site. The applicant's wife has stated that she herself would not want to live alongside a solar farm. Despite this the applicant believes he can subjugate long-established residents to the vicissitudes of change; change from a charming rural amenity to a noisy, polluted industrial site; change from a productive farming community to lands that are unproductive with a token agricultural income; change from friable soils to soils compacted by increased leachates and heavy machinery during earthworks; change that is likely to raise ambient air temperatures above panels by 2 degrees C; change that will produce an annoying low-level hum that has caused others I know to incessantly wear ear plugs; and change to designated land use where contaminants are likely to have measurable impacts on air, soils, water, aquatic ecosystems, and terrestrial wildlife.

a) Maori consents and breaches of co-governance of Te Waihora. Both the national policy statements for highly productive land (NPS-HPL) and freshwater management (NPS-FM) refer to tangata whenua involvement in these resources. As a local of Maori descent living alongside this proposed development, I have inside knowledge of the ramifications of what is proposed but was never given the opportunity to communicate to tangata whenua and the applicant because they never sought a 2nd Maori consent. This is the applicants second attempt at a resource consent that has several changes to the original (e.g., use of exotic species with "gaps" between trees instead of the continuous native plantings as suggested by Maori to screen out visual impacts). Despite the fact this is a new consent, despite the fact there are substantive changes, and despite the risks to Te Waihora that were outlined to Environment Canterbury in March 2023, another Maori consultation has not been called for. Maori are drawn to the idea that solar farms reduce nitrate discharge from dairy farms into Te Waihora; however, the alternatives of increased heavy metals and PFAS compounds discharged into Lake Ellesmere have not been correctly explained to them during consultation. Furthermore, the nitrate-nitrogen coming off solar panels is significantly higher than the nitrate-nitrogen in agricultural soils.

b) Clauses 4.1, 4.2, and 4.3 of the co-governance agreement between SDC and Ngai Tahu for management of Te Waihora should preclude any further contaminants affecting water quality and kai in the lake. That is precisely what this proposal allows. Maori have reacted negatively to nitrates from dairy farms entering Te Waihora, and that was the primary motive for Mahaanui Kurataiao endorsing the proposed solar farm. Research shows most nitrates enter the lake as leachates from lighter stony soil. If nitrate-nitrogen from dairying is a concern, then council should have facilitated better riparian plantings along Buckleys Rd and Hanmer Roads decades ago. What Maori have not factored into their assessment is that "forever chemicals" leached by solar technologies bioaccumulate in aquatic ecosystems. Unlike nitrates that are either degraded to nitrous oxide and eventually evaporate from the lake, or that are taken up by plants to biosynthesize vegetative matter; the heavy metals and PFAS from solar technologies never degrade. After 25 years of solar farms in China these heavy metals and PFAS are now so ubiquitous they are regularly measured in both surface water and groundwater; and they are routinely documented as a contributor to poor health (Parvez *et al.* 2021), and because they bioaccumulate in placentas they are often measured at 5x the permissible maximum concentration levels in this tissue. In the New Zealand scenario these issues have already been researched and published by NIWA in their reports "Contaminants in kai—Te Arawa rohe" (parts 1 and 2). Did someone take the time to explain to the Runanga at Te Waihora that tamiriki not yet conceived may suffer ill-health during 2050 because of contaminated kai? Of course not. These things were made patently clear to regulators and planners at both the regional council and SDC during a previous hearing. There should be no stormwater discharge from the proposed USSP site at Buckleys Road into Te Waihora. This of course is not possible given the amounts of water that accumulate on heavy loams and are discharged from the site during heavy rain.

c) The National Policy Statement for Freshwater Management (NPS-FM) provides clear directions on how the RMA should be handled. The proposal by the applicant falls outside these NPS-FM guidelines, and as such the quality of water in drains and Lake Ellesmere will be impacted by this project. If there is proven risk to waters, then the project should not be approved.

d) The SDC has colluded with the applicant in progressing these applications. An e-mail sent by Hans van der Vaal to Commissioner Hughes-Johnson following the 2nd day of the previous hearing

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highlighted elements of that collusion. The applicant, his lawyer, and planners from SDC were "locked in the hearing room for over an hour" while they collectively formulated a summing up to be delivered by SDC planners. This is mentioned by Commissioner Hughes-Johnson in minute 3 of his notes. SDC are independent arbiters in matters of compliance and public interest that should adjudicate impartially, they are not there as facilitators of proposals to disregard shortcomings in resource consents, project design, impacts on "highly productive lands" and impacts on freshwater management. That is the type of systemic council failure that contributed to the CTV building collapse during the Canterbury Earthquake. We as ratepayers pay councils to independently do due diligence on compliance within legislation such as the RMA, the use of productive lands (NPS-HPL) and freshwater management (NPS-FM); to use integrity during vetting of construction materials and approvals, and to correctly carry out site inspections for compliance certification during construction. We do not expect councils to be using ratepayer money for acoustic reports to aid a developer. We do not expect non-complying applications to be sneaked in through the back door with "limited notifications to immediate neighbors". The reasons for the lack of impartiality by SDC on consents for solar farms, may lay in the fact that Orion NZ who manages Selwyn electricity is owned by Selwyn District Council and Christchurch City Council (10.7% and 89.3% respectively) who collectively received annual dividend payments of $30 million from their investment; so, of course the council will benefit financially from the approval of solar farms. This presents a huge 'conflict of interest' for both Environment Canterbury and SDC that has not been declared.
The absence of public notification in the face of the ruling by Commissioner Hughes-Johnson and his findings that environmental effects are "more than minor", and in the face of long-term desecration of productive lands falls outside the remits of an impartial council that should be implementing the NPS-HPL and NPS-FM with the intent that government policy statements fully intended. Of further interest are other solar developments that were all "limited notifications" to immediate neighbors. Furthermore, there has been no consultation with locals. It is also rather ironic that the agent for the applicant (Boffa Miskell) wrote a protocol for the Ministry of the Environment called "Managing Rural Amenity Conflicts as part of RMA applications", where Boffa Miskell outlined how written brochures, videos and extensive consultation with the rural community should be engaged in before a resource consent is applied for, yet not once in the 4 years that this application has been in process has anyone in Brookside seen or heard from either Boffa Miskell, or the SDC. Also of note is the fact that just like this RMA application, other resource consents have been issued just before Christmas when the public are busy preparing for the festive season and unlikely to have the time to make comprehensive submissions. I believe Robyn Casey is now seeking a ruling from the ombudsman on procedural matters by the Selwyn District Council.

e) Having read extensively on performance specifications of solar panels, the environmental risks from all solar technologies (panels, wiring, circuit boards, transformers, inverters, and batteries) and the "risks" these impose to soils, water, and air; I'd love to know what equipment is to be used *in situ* at Brookside. Alas, none of the materials to be used at Brookside are in either of the 2 resource consent applications filed to date for Brookside. It is the equivalent of SDC issuing a limited notified application to neighbors for a new building where those neighbors don't know whether that building will be made of adobe, brick, concrete, wood, steel, or straw. Furthermore, how can SDC assess risks when they themselves do not know the materials to be used on site, and how quickly the toxic components of these materials are released into the environment? This problem was identified in application RC225180 and still exists in application RC235464.

f) The applicant has been very specific in the layout of solar panels and the types of soil. The soils in the main are clay loam soils that are 1) productive only when they are irrigated or have spring rains and 2) are productive when not subjected to soil compaction.
   1) The applicant as an addendum has stated that "irrigation may be used" but has no specifics on how this will be done. Current irrigators at the site cannot be used within the proposed layout of solar panels. How then does the applicant intend to apply water and make soils "productive"? This had to be an integral part of his resource consent application, because without irrigation these soils are unproductive over the summer and autumn months. SDC should have insisted that designs for irrigation be included if they were to be party to government directives on 'productive land'. It would seem the applicant has indulged in tokenism to get the application over the line when he knows full well the land will never again be productively used by farmers once a solar farm is established. Furthermore, if the existing landowners have become too tired to farm cows, why on earth are they going to want to farm sheep?
   2) The Welsh government is conscious of use of "Best and Most Valuable" (BMV) lands for solar development and commissioned a report entitled "The impact of solar photovoltaic (PV) sites on agricultural soils and land" that states "The key impact of solar PV sites on land and soil is caused by compaction leading to soil structural damage. The effects of soil compaction on soil structure led to reduced permeability to water and air as well as increased surface runoff and erosion. Compaction near the surface and generally above a depth of 45cm can be alleviated.

However, the alleviation of deep compaction requires equipment such as a bulldozer and winged tine set to a depth to 60cm. The reversibility of soil compaction may take many years and in some cases compaction may be permanent. An assessment on the effect of compaction on the Best and Most Versatile agricultural land (land in MAFF Agricultural Land Classification grades 1, 2 and 3a) shows that the loss of high-quality agricultural land is likely to occur".
Soil compaction, increased run-off of contaminated floodwaters, and loss of productive soils are all inevitable outcomes at Brookside on heavy clay loam soils. The assertions by Mr. McMath that he will not degrade "productive lands" are specious and moot.

g) The resource consent should be time-bound with commencement and finishing dates. There is no such finishing date in the application. The applicant has divided his initial development area in two in the hope of getting what he envisages as a smaller project over the line, then growing it in a piecemeal fashion into a much bigger project. If as alluded to above all parties interested in solar technologies gain consents, then potentially we are looking at 500ha of good productive land that has become redundant; 500ha of solar panels leaching heavy metals and PFAS onto soils where increased soil compaction guarantees those heavy metal and PFAS leachates are washed into waterways and eventually into Lake Ellesmere; 500ha of good land that is progressively being compacted and contaminated with leachates that will add substantially to the costs to restore it as productive land after panels are decommissioned; and, 500 ha of land in the event of a catastrophic event that irreparably damages panels (e.g., fire, severe hailstorms, extreme winds) that potentially turn Brookside into a contaminated site. All materials in solar technologies are hazardous. The hazards are exacerbated in the event of a fire through oxidation of some components into "extremely hazardous" substances that are very toxic if inhaled. Despite this there is still no fire-plan for the site. Furthermore' there are still no HSNO classifications for the site. We now have notices on the fence with contact details for the site manager — what use is that in the case of an emergency? In the model 'Risk=Hazards x Exposure' where hazards are 'high' the applicant must demonstrate to locals and SDC that "exposure" to his chemical pollutants that affect air, water, or soils are "negligible" if the "risks" of the project are to be acceptably "low". He cannot of course do that. The SDC cannot do that. Collectively they have decided the Brookside rural amenity, the productivity of the land, the quality of freshwater around the site, the environment, and the "peace of mind" of current residents are all expendable "risks". These things all fall outside the guidelines within the RMA act, the NPS-FM and protection of surface waters, the NPS-HPL and "use of productive lands" for farming. Use of solar panels on depleted and unproductive soils in a remote location may not matter, but these are high yielding LUC1 and LUC2 soils in a populated landscape.

The photo on the left was one of 66 solar panel fires in the UK during the first 6 months of 2023. This fire burnt through hundreds of acres of panels. Some fires are started when the wing-span of birds causes a short circuit, others when floods short circuit panels, when batteries malfunction, or sometimes when old wiring malfunctions. Fires started by solar storage batteries are worse than solar panels because the heat makes them harder to extinguish, and the toxic compounds from ignition are more lethal.

h) The proposed USSP facility makes use of either sheep grazing under the panels or specialist floriculture and horticultural crops to make it a "solar farm". The latter ventures have a propensity to bioaccumulate heavy metals and PFAS compounds in harvested produce. That essentially leaves mutton, wool, and lamb as productive outputs from the farms. Farmers and residents at Brookside (with an intimate knowledge of the proclivity of sheep to eat out pasture, with knowledge of how soil compaction reduces pasture production, with an insight on how panels preclude pasture renewal, and how current market prices vastly imbalance the earning capacity of sheep as opposed to cows), will demonstrate that the earning capacity from grazing sheep under solar panels is only a small fraction of the earning capacity of traditional dairy farming. A new report supplied by the applicant indicates grass growth is not impacted by solar panels. Unfortunately, this report ignores "temporal

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change" and seasonal effects as solar panels and their associated technologies increasingly change soils as described in the literature. Contaminants in soil destroy plant mycorrhiza, soil micro-organisms, and impact macro-organisms (e.g., earthworms). The leachates from solar panels increase soil flocculation that result in clods, they exacerbate the compaction of soils outlined above, they result in poor water dispersion in soils, and eventually result in poor plant growth. In one trial after panels had been shedding contaminants for almost a decade then 'total organic carbon' and 'total nitrogen' were lowered by 61% and 50% respectively (Moscatelli *et al.* 2022). Other changes to soils under different types of panels have been noted by other authors during ongoing international research, that also demonstrate long-term impacts on soil productivity.

i) Leachates under panels. It is trite to use short-term examples of pasture growth under panels and then extrapolate from this to long-term assumptions about future pasture production as the applicant has. This is particularly evident at Brookside where changes to soil structure, soil compaction, and poor water dispersion happen within a heavy clay loam as iron is added and organic matter becomes depleted. In the words of Lambert et al. (2021), "long-term monitoring of soils is essential to evaluate the effects of solar panels on vegetation".

Although this is just an overview I will present two photographs of solar arrays at Brookside, one provided by the applicant in his resource consent application and the other photo taken at Michael Dalley's property. I should point out these are old-style Kyocera polycrystalline solar panels that are of moderate efficiency (only about 16-18% of solar energy was converted to electricity) that were considered "safe" forms of solar panel in their day. They are no longer competitive in a marketplace where efficiency is now at 25-30% of solar energy harnessed for electricity from different panel types.

Photo A. Photo supplied by applicant in RC

We can see in photo A (supplied by the applicant in his consent application) that spring growth superficially looks good, but there are early warning signs circled in red. Alongside supports there are bare patches where heavy metals have accumulated and depleted growth, and in the dripline at the edge of panels where heavy metals have accumulated and the vegetation is bronzed and stunted. A soil analysis from under similar older-style panels at Michael Dalley's property showed high levels of iron (2,040 mg/kg or 2x base levels in 'control' soils) and copper (22% above base levels). These are only short-term effects (i.e., 9 years within a 25–30-year lifespan of panels). The soil analysis produced these results because these photovoltaic panels contain pyrite (FeS_2), a conductor used in panels that leaches onto soils where it accumulates and reacts to make soils acidic (pH=5.9) in the reaction $FeS_2 + 3.75O_2 + 3.5O_2 \rightarrow Fe(OH)_3 + 4H^+ + 2SO_4^{2-}$. This reaction shows where the assayed iron ($Fe(OH)_3$) comes from in soil samples and the literature shows that this iron when above 'trace levels' in soils causes "bronzed and stunted growth of vegetation" (exactly as shown in the photo). Clovers die out quickly under panels where measured heavy metals (e.g., Fe, Cu, B, Mn, Mg, Pb, Al) kill soil micro-organisms and kill the mycorrhizae in plant roots. There are no clovers in this pasture, and of course lambs thrive on clovers for rapid growth of muscle and bodyweight. Between panels growth of grass is primarily enhanced by elevated nitrate/nitrogen (up 40% from leaching of Na_3N and Si_3N_4 off panels) and increased Sulphur (up 333% from leaching of metal sulphates and metal sulfides off panels).

Let us assume for a moment that the applicant had put 500ha of panels over Brookside, like he eventually aspires to, and let us assume he used the polycrystalline panels described above. After 30 years all those soils would have an iron pan; the iron (Fe) aids soil flocculation and the formation of hard clods, the iron assists soil compaction and turns friable soils into hard compact soils, and the

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iron impacts soil micro-organisms. After 30 years of leaching some of the electrical compounds that were elevated during soil tests will also be impacting soil micro-organisms. If, however, we have catastrophic events (wind damage, hail, and in a worst-case fire) it may not take 30 years to reach an endpoint where the cumulative effects of these leachates have completely changed productive lands into unproductive and contaminated soils. To state that solar technologies will not impact productive soils is simply not true.

In an overview of solar technologies, these polycrystalline panels are not the really "bad boys" of solar panels. Other panels have been demonstrated to leach high levels of cadmium, chromium, arsenic, mercury, silver, etc, etc. onto soils and into waterways. We of course have no idea what sort of solar panels the applicant is going to put on site, so we can only speculate on likely impacts rather than model them. What we can state unequivocally from a literature review, and soil tests done at Michael Dalley's property is that all solar panels leach contaminants onto soils. Because we do not know what materials will be used on site, this is a major shortcoming in application RC235464 that has highlighted previously in RC225180.

Photo B (below) was taken at Michael Dalley's solar arrays next door (i.e., 200m away from photo A) during summer. What a difference a little water in Brookside soil makes!! The bottom photograph represents what the proposed solar farm will become over summer and autumn without rain and without irrigation, and through changed soil composition. We can also see in this picture patches of bare dirt where heavy metals have pooled (at this stage mainly Fe^{2+} and Cu^{2+}) as leachates from the solar panels above.

Photo B. Photo taken at Michael Dalley's property over summer 2022/23.

j) Recently published science literature (viz. since the previous hearing on a Brookside USSP) further highlights the risks of contaminants. The ecologist report fails to understand the nature of Brookside soils where moisture absorption by clay-loams is slow, the propensity for flooding is high (especially after soil compaction following planned earthworks); and run-off of rain and floodwaters with contaminants is high. Therefore, it is likely the effects of excess water run-off will get considerably worse following the construction of a solar farm on site. I do not see a permit for long-term discharge of these floodwaters into drains. The likelihood of floodwaters containing contaminants is "high". The ecologists report contains no reference to any of this. The report also fails to detail the ecotoxicological impacts of contaminant uptake by earthworms, plants (especially briar and blackberry that bioaccumulate high levels of contaminants), and the likely impact to vertebrates feeding on worms and/or berries. The ecologist's report makes no reference to the impacts of those contaminants on the health and welfare of various species in the food-web at Brookside. Furthermore, the ramifications of contaminants on invertebrates are an oversight. The ecologists report also makes invalid assumptions about species, with royal spoonbill (photographed feeding in shallow waters at Brookside) and Australian bittern (almost photographed near Boggy Creek) both noted on occasions in surface waters where frogs and small fish are present, and one transient parakeet has been seen in the area following the establishment of a native forest by Te Ara Kakariki

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at 233 Branch Drain Rd. A colony of white-faced herons are regularly seen throughout the year on the properties of Robyn Casey and Ray Henderson and have nested in trees on these properties, while pied stilts and pied oyster catchers regularly nest in the area and have been photographed by a colleague at nest sites in Brookside paddocks (Keven Drew). The little German owl frequents the properties of Donald Green, Grant Lowe, and Ray Henderson (and presumably other landowners in the district), the common skink is abundant in the area, and there was and probably still is a colony of cave weta at 233 Branch Drain Road. To state birds "opportunistically use pasture sites for temporary feeding" is a mile away from reality. The estimate for bird strikes on reflective panels is at the lower end of published figures. The ecologist understates the impacts of the solar farm on species abundance and species diversity, and I can only conclude the report was written from the confines of a suburban office because in many respects it is inaccurate. When it comes to ecotoxicology it is well known that mice feed on the fruits of briar and blackberry (exotic vegetation in the area with a high propensity to bioaccumulate heavy metals), and the little German owl feeds on mice; so, inevitably owls will bioaccumulate heavy metals and PFAS compounds from the solar farm which will then either sub-lethally impact their welfare, prevent the species successfully breeding (thin egg shells, contaminants in albumen and yolk), or bioaccumulate to the stage where they are lethal. Heavy metals and PFAS washed into drains will eventually kill he endangered mudfish and contaminate foods eaten by Maori at Te Waihora. Heavy metals and PFAS that have bioaccumulated in earthworms or berries will be eaten by exotic birds, and either kill them inhumanely (these materials bioaccumulate in livers, kidneys, and the brain) or impede the breeding success of females. She may state ecological effects are "negligible", but I have been in ecology for 45 years and ecotoxicology for 20 years and know what is written understates the real impacts to aquatic and terrestrial ecosystems; the effects are greater than "minor".

k) All solar technologies must be recycled. The most recent cost for that recycling varies from $US15-45 per panel (US Energy Dept 2022). Although the number of panels is not included in resource application RC235464 (another oversight by the applicant), the area is around half the size of that proposed in RC225180 and if the number of panels is more than halved (c.150,000 panels) and assumed costs for recycling remain the same (approximately $NZ50 per panel); then to recycle the panels at the end of life (c. 25 years) would cost approximately $7.5 million. To this must be added the costs of recycling batteries and other materials listed in the application which are all expensive (c. $3 million). Who pays for this expense of around $10.5 million? My understanding from RC225180 is that the applicant was going to walk away and leave solar technologies to farmers. Furthermore, if as stated above the site is contaminated or soil is severely compacted who pays for site restoration of lands? These end-of-life details for the project should have been included in the resource consent application, along with details on who is liable for disposal of materials and site restoration.

l) The arguments put forward by Mr. McMath that this is the only site available because of the substation at Hights Corner were accepted by Commissioner Hughes-Johnson. A new development on Telegraph Road demonstrates these arguments by Mr. McMath were specious and moot. The site at Telegraph Road had no amenities to either receive or transmit electricity, yet a large solar farm is being established there following the construction of a new substation. Furthermore, if development did take place at Brookside, it would require substantial upgrades to the substation and the installation of new transmission wires. Does this make the upgrade almost as expensive as the new substation installation shown? If the development were to proceed, then after the development of the Ward solar farm, there will be solar development at the Price Farm, and possibly further development on properties owned by Tim Green and Chris Green. How large will the substation be at that stage? If the project proceeded as planned, would it be better just to build an entirely new substation at the outset along with new transmission lines at a different site on unproductive land? If and when all these upgrades happen, how much noise will be emitted from the substation? I have included a photo of the new substation on Telegraph Road that emitted a lot of irascible noise while I was there; something similar will eventually be required at Brookside. The evidence presented by Mr. McMath at the February 2023 hearing I believe was both misleading and inaccurate.

The existing substation at Hights Corner measures 61x19m or 0.12Ha and makes a quiet humming noise.

An upgraded substation like that on Telegraph Road measured 169 x 119m or around 2ha and emits an irascible noise.

m) Noise. The applicant and SDC have gone to great lengths to demonstrate the acoustics from on-site inverters, transformers, and batteries are compliant with noise volumes in the district plan. What they haven't done is examine the type of noise (a low frequency hum) and its impact on human health. Nowhere is the type of noise from an upgraded substation at Hights Corner discussed.

n) The applicant went to great lengths to demonstrate electromagnetic fields were low and inconsequential in his initial application. Take a look at the photo of the substation at Telegraph Road above and try and tell me the EMFs around it are "low" and having no impact on people's health and the surrounding ecosystem. That is what is likely at Brookside within 5-10 years, and once again it is a "nuisance" that impacts the health of affected people.

o) We will address these issues in detail prior to the hearing. The Public Health Act 1956 describes the "nuisance" effects of EMFs and noise, and penalties if they impact the mental and physical health of people. In the case of serious health outcomes (cancer, mental disability) then the applicant must be held liable.

p) The previous hearing on consent application RC225180 was imbalanced. The applicant and his witnesses were provided an entire day to present their evidence; those objecting to the development were given less than half a day and eventually oral evidence and visual presentations were omitted to conclude proceedings by 5pm. If it was a trial the prosecution and plaintiff presented the entirety of its evidence, and the defendant was allowed to present half their case. We believe for this reason the impact of solar technologies at Brookside is understated in the Hughes-Johnson report.

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4. Submission at the Hearing

☑ **I / We wish to** speak in support of **my / our** submission.

☐ **I / We do not wish to** speak in support of **my / our** submission.

☐ If others make a similar submission **I / We** will consider presenting a joint case with them at the hearing.

☐ Pursuant to section 100A of the Resource Management Act 1991 **I / We** request that the Council delegate its functions, powers, and duties required to hear and decide the application to one or more hearings commissioners who are not members of the Council. *(Please note that if you make such a request you may be liable to meet or contribute to the costs of the commissioner(s). Requests can also be made separately in writing no later than 5 working days after the close of submissions.)*

5. Signature

(Of submitter(s) or person authorised to sign on behalf of submitter(s))

Signature:.... [redacted] ..... Date: 11/12/2023

.....

Signature:..... Date:

.....

Note: A signature is not required if you make your submission by electronic means.

6. Privacy Information

The personal information requested in the form is being collected by Selwyn District Council so that we can process your application. This information is required by the Resource Management Act 1991. This information will be held by the Council. You may ask to check and correct any of this personal information if you wish. The personal information collected will not be shared with any departments of the Council not involved in processing your application. However under the Official Information and Meetings Act 1987 this information may be made available on request to parties within and outside the Council.

7. Important Information

1. The Council must receive this submission before the closing date and time for submissions on this application.
2. You must also send a copy of this submission to the applicant as soon as reasonably practicable, at the applicant's address for service.
3. All submitters will be advised of hearing details at least 10 working days before the hearing. If you change your mind about whether you wish to speak at the hearing, please contact the Council by telephone on 347-2868 or by email at
4. Only those submitters who indicate that they wish to speak at the hearing will be sent a copy of the planning report.

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