IN THE ENVIRONMENT COURT
AT WELLINGTON

I TE KŌTI TAIAO O AOTEAROA
KI TE WHANGANUI-A-TARA

Decision [2025] NZEnvC 342

IN THE MATTER OF	a direct referral under s 87G of the Resource Management Act 1991
BETWEEN	FAR NORTH SOLAR FARM LIMITED
	(ENV-2023-WLG-014)
	Applicant
AND	SOUTH WAIRARAPA DISTRICT COUNCIL
	Consent Authority

Court:	Environment Judge L J Semple Environment Commissioner A C E Leijnen Environment Commissioner K A Edmonds
Hearing:	1-4 July 2024, 13-15 & 22 November 2024 and 9 December 2024
Last case event:	Submissions received 17 March 2025
Appearances:	T Le Bas for Far North Solar Farm Ltd R Conner for the South Wairarapa District Council
Date of Decision:	28 October 2025
Date of Issue:	28 October 2025

INTERIM DECISION OF THE ENVIRONMENT COURT

A: We are satisfied that the proposal generally accords with the relevant objectives and policies of the national, regional and district planning documents. We are also

satisfied that the proposal will result in positive national benefits in the form of additional renewable energy generation. Based on our assessment of the effects of the proposal under s 104(1)(a) and (ab) of the RMA and the proposal's consistency with the relevant statutory planning documents under s 104(1)(b), we are therefore satisfied that the grant of consent is appropriate subject to conditions being satisfactorily finalised as set out in paragraphs [264] and [265].

B: Costs are reserved in accordance with paragraphs [266] and [267].

REASONS

Synopsis

[1] This case concerns the grant of consents for a 235ha solar farm comprising 39 inverters and some 321,160 solar panels on a rural site in Greytown, Wairarapa.

[2] The application by Far North Solar Ltd (Far North) to the South Wairarapa District Council (the Council) came to the Court by way of direct referral under s 87G of the Resource Management Act (the Act). Hearings took place in July, November and December 2024 with closing submissions received in March 2025.

[3] It is fair to say that the application for consents as presented to the Council for processing and subsequently to this Court to be heard and determined was less than comprehensive, with a number of issues regarding the development and operation of the solar farm raised by the Council, submitters and the Court, which the applicant had not previously considered.

[4] The extensive national and local policy support for the establishment of renewable energy options resulted in the Court giving the applicant greater opportunities to remedy areas of deficiency in its application during the hearing process than might normally be

the case. This included a significant gap between July and November for the applicant to provide further evidence.

[5] In terms of substantive matters, many submitters expressed dismay that what they consider amounts to an industrial activity should be allowed to establish in a rurally zoned environment. However, the planning framework within which such applications must be assessed, expects renewable energy generation in such areas whilst also recognising there will be environmental effects which need addressing.

[6] In that regard, concern was expressed regarding noise, traffic and dust effects during construction. With respect to the ongoing operation of the solar farm, s 274 parties were concerned about the potential impact on rural character and amenity, noise, glint and glare effects, effects on ecology and waterways, cultural effects, possible ground and waterway contamination effects, the effect of any increased fire risk and effects on aviation in the area.

[7] As a result of the additional evidence we sought and received and through careful evaluation of that evidence, we were able to satisfy ourselves that these identified effects could be appropriately managed with conditions. We consider that this decision meets the national and regional policy direction encouraging the establishment of renewable energy generation provided the adverse effects are appropriately managed by conditions. We are not satisfied that the set of conditions presented to us with closing submissions is optimal and we have directed Far North and the Council to undertake further work and provide a revised set of provisions to us.

[8] The Court was greatly assisted in its work by a group of submitters who worked together to produce a comprehensive case, questioning expert witnesses called by the Council and Far North and raising a number of issues that rightly required further explanation. The application and that the set of conditions which has been prepared to date and which will be further refined as a result of our direction, was significantly improved by the assiduous work of those submitters.

Background

[9] Far North lodged an application for resource consents from the Council in December 2022 for the construction, operation and maintenance of a solar farm at Greytown in the South Wairarapa District.

[10] It is fair to say that the initial application was not as detailed as is required for a development of this nature and scale and the Council's first request for further information under s 92 of the Act was made by letter dated 2 February 2023. It covered a wide range of matters including (in summary):

(a) requiring plans to be printable and legible at 1:10,000 and A3 to include:

(i) location and extent of the different arrays;

(ii) locations of inverters for each array;

(iii) location of buildings and structures including temporary structures required for construction and permanent structures other than inverters and arrays;

(iv) clear identification of culvert crossings;

(v) clear location of screen tree planting;

(vi) the landscape mitigation Plan;

(vii) detail of features worthy of conservation as mentioned in AEE;

(viii) detail of works proximate to high Voltage Transmission lines;

(ix) construction management details;

(x) vehicle access and any upgrading of access points;

(xi) nature of vehicles using access points particularly during construction;

(xii) distances between access points;

(xiii) traffic sightlines and any changes to the public road;

(b) consent duration sought;

(c) visual simulations from various nominated viewpoints;

(d) advice on what assessment has been undertaken against the rules of operative District Plan including areas of non-compliance;

(e) other consents and approvals required;

(f) an assessment of glint and glare effects;

(g) an assessment against the National Policy Statement for Highly Productive Land;

(h) an evaluation against the National Policy Statement on Electricity Transmission (NPSET).

[11] The Response to the first s 92 request was received on 1 March 2023 after which the Council made a decision to publicly notify the application. That occurred on 8 May 2023. At the close of the submission period some 46 submissions had been received. A summary of the issues raised by submitters was provided to the Court in the s 87F Report and all submissions were provided to and read by the Court as part of this hearing process.

[12] Counsel for the applicant made a request for a direct referral for the determination of the application by the Environment Court on 9 June 2023.

[13] A second request for further information was made on 27 June 2023 to address additional matters raised in submissions including:

- Transpower concerns regarding works and features near power lines;

- a second request for assessment against the NPSET;
- glint and glare effects on State Highway 2 users;
- an assessment of effect on aircraft operations;
- information regarding the end of life plan – decommissioning, protocols for management of potential discharges of contaminants;
- clarification again on the duration sought given inconsistencies in the Assessment of Effects on the Environment (AEE);
- soil and water contamination from panel run-off and breakdown;
- noise effects both during construction and operational phases;
- heating effects;
- further details regarding the National Policy Statement for Highly Productive Land.

[14] The applicant provided a response to the second request for further information on 11 August 2023 and the Council agreed to the matter being heard and determined by direct referral to the Environment Court on 11 September 2023. The Council's decision on that matters records that additional further information was also received by the Council on 7 September 2023.

The Location and Surroundings

[15] The solar farm is located across four separate addresses (the site)[1] as shown below and comprises:

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[1] Pt LOT 6 DP 8803 (WN391/56); Pt LOT 7 DP 8803 (WN391/56); Pt LOT 10 DP 3106 (WN583/131, WN583/132); SECTION 27 MOROA SETT (WNE1/330); LOT 1 DP 52574 BLKS IV WAIRARAPA SD BLK (WN22A/575); PT SEC 122 MOROA DISTRICT (WN36B/542); LOT 1 DP 76478 (WN43B/286).

(a) 415 Moroa Road, Greytown;

(b) 312 Bidwills Cutting Road, Greytown;

(c) 942 State Highway 2, Greytown; and

(d) 18 Pharazyns Road, Featherston.

Figure 1: Site location (approximate site boundary shown in red) (Source: Application dated 21 December 2022 Figure 1)

[16] As can be seen above, the site straddles Moroa Road with the part of the site to the north of the road comprising an area of approximately 170ha and extending for approximately 2km along Moroa Road. This part of the site is referred to as Area 1.

[17] Directly across Moroa Road to the south is the smallest land area of approximately 24ha referred to as Area 2 and to the west of that but some distance from it, is a larger

area (44ha) separated by Moroa Road and offset by paddock. This area is referred to as Area 3.

[18] The solar farm is approximately 5km from Greytown township with State Highway 2 located to the north and west of the site and approximately 550m from the site at its closest point. An existing local substation is located on the corner of Moroa Road and Bidwills Cutting Road 50m from the solar farm with Transpower's Masterton-Upper Hutt A (MST-UHT A) 110kV transmission line and associated structures traversing the southern boundary of the Site. At peak, the solar farm is expected to generate 175 megawatts of power and it is anticipated that it will connect to and supply Transpower's distribution network.

[19] The Papawai Fault line extends into the east of Area 1 approximately along the northern boundary of the second to last eastern most paddock north of the transmission line leading out to Bidwills Cutting Road.

[20] The site is relatively flat and is currently used for primary production purposes, principally pastoral grazing. Existing mature shelterbelts grow in an irregular pattern within the site and there are a few agricultural sheds on site but no existing dwellings. Water races are present through the site on the northern side of Moroa Road which currently provide drinking water for livestock. There are no other waterbodies or wetlands located on the site. The surrounding area is used primarily for rural primary production purposes with houses present throughout. There are also examples of rural lifestyle properties scattered throughout the surrounding zone.

[21] The site is zoned Rural (Primary Production) under the Wairarapa Combined District Plan (WCDP). There are no district plan notations, overlays or management areas relevant to the site.

The Project Description

[22] It was clear from the extensive further information requests and the information

provided to the Court in evidence that this proposal had evolved significantly throughout the application and hearing process. Specifically, a number of important details regarding the design and operation of the solar farm were refined and amended during the hearing. As such, obtaining a clear project description was something of a challenge to both the Court and to the community.

[23] Early in the hearing, Aquila Capital Plan Module General Arrangement Layout – No. ACRA-NZD-GS-GT-001 Revision K (Rev K) was confirmed as the correct plan to describe the proposal. Utilising this and a set of landscape plans[2] prepared towards the end of the hearing by Far North's consultant landscape architect, Mr Paul Smith of Rough Milne Mitchell Landscape Architects, together with the final set of proposed conditions proffered by Far North, we have developed a project description which we set out below.

[24] We say at this juncture that the continual evolution during the hearing (both of the proposal and particularly of the conditions) was less than satisfactory. The Court was diligent in checking with each expert witness to ensure that the matters they had evaluated and the plans they had reviewed in determining effects were consistent with the Court's understanding of the evolving proposal.

[25] As a result, and despite the less-than-ideal process, we are satisfied that the proposal as presented to the Court for consent was within the scope of the original application and that the Court had a comprehensive and accurate understanding of the effects of the proposal on the environment, including on the surrounding community. We are grateful for the diligent work of the s 274 parties in assisting with that process through their thoughtful and comprehensive questions of experts. We do note with concern that proposed conditions of consent were not circulated to the Court or s 274 parties prior to the commencement of the hearing despite several promises to do so by Far North and the Council. This continued throughout the hearing and placed s 274 parties at a significant disadvantage and caused the Court considerable frustration.

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2 19 November 2024.

[26] The solar farm is to comprise 39 inverters and 321,160 solar panels on a combined site area of approximately 235ha. Mr John Andrews, General Manager of Far North, advised in answer to questions that the site is to be subdivided first so that the pure farming operations and the solar and farming operations are on separate titles. Mr Andrews confirmed that:[3]

> …the landowner will continue to have entire titles which he can graze and farm and live on and do everything, and then he'll have titles post-subdivision which will be leased by us. We will be the lessee and then we will give him a grazing right to graze that land under our lease.

[27] Through questioning we understood that Far North will have in place a contract with a company that will undertake the engineering, procurement and construction of the project (the EPC) and then operate the solar farm for the first two years.[4] It was not entirely clear who will operate the solar farm after that time and we acknowledge this was a cause of some concern to submitters. We point to the conditions travelling with the land and the need for any operator to adhere to them in the ongoing running of the solar farm.

[28] The solar panels are to be mounted on tracking tables which tilt the panels towards the sun through an east-west axis throughout the day at a maximum 'tilt' height of 4.5m for a short time at either end of the day. At midday, when flat, the panels will be 2.2m above ground level.[5] The panels will be returned to this position at the end of the day.

[29] Various diagrams in the Landscape Mitigation Package depict the panels and illustrate how the tables tilt from a horizontal height of about 2m to a maximum height of 4.5m.

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3 Transcript Andrews at 60.
4 Transcript Andrews at 39.
5 Andrews EIC dated 15 February 2024 at [19].

[30] Each table will be approximately 30m long running north-east to south-west. The panels will sit in rows with spacing of 6m between them.[6] There is approximately 10.5m spacing between each row.[7] The mounting system is constructed on galvanised steel piles that are driven into the ground. As signalled in the lease agreement mentioned above, it is proposed that sheep will graze the areas between the table rows.

[31] The exact solar panels to be used were not known at time of hearing as they were yet to be purchased. We understood from questions posed by the Court that the panels are a "commodity" and as such the purchase will be made when the project goes ahead. It was explained that the proposal before us was based (at time of hearing) on panels chosen some two years ago which represented a worst-case scenario in terms of dimensions. We were told that the panels will be bought directly from the manufacturers with a warranty, and they have a 25-to-30-year lifetime once the EPC comes on site.

[32] Several conditions of consent have been proposed which will set parameters for the type of solar panels which can be utilised on the site. By way of example, all panels must be coated in anti-reflective coating, contain no per- and polyfluoroalkyl substances (PFAS) and have gridlines.

[33] The 39 Inverters (SMA MVPS 4200 model), are to be located centrally within the site, as shown on drawing Rev K and are based on a 20ft container skid.

[34] Access ways to the solar farm are located centrally along Moroa Road. We were advised that all access ways will meet the District Plan requirements in terms of depth, width and radius, distances from intersections and other aspects.[8]

[35] Buffer areas are proposed to be provided to the boundaries of the solar farm with the depth and planting of these informed to some extent by direct discussions with

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6 Andrews EIC dated 15 February 2024 at [20].
7 Greytown Solar Farm Glint and glare study Final Report, ITP Rev 3 August 2023.
8 Applicant's memorandum dated 27 June 2024 at [2].

neighbouring landowners (at the Court's direction). This has resulted in a variety of responses to edge treatment including bunding in places and a significant change from the type of planting originally proposed to layered varieties of native species. The 19 November 2024 Landscape Plan details these matters.

Preliminary matters

Additional Consents

[36] A matter which occupied considerable attention during the hearing related to whether rainwater run-off from the solar panels might result in the discharge of contaminants to ground requiring a regional council consent. Section 274 parties called evidence from Mr Raymond Henderson, a retired ecotoxicology expert who outlined a pilot study that evaluated the effects on soils of placing polycrystalline solar panels on a silty clay loam soil at Brookside (Canterbury, NZ) for 9.5 years, the effects of leachates from those panels on soil organisms, the effects on a ryegrass and clover pasture growing under and around solar panels, and the impacts of panels on the health of livestock grazing contaminated pasture that he and a local dairy farmer, Mr Michael Dalley had undertaken. We return to Mr Henderson's evidence later in this decision but note the following in summary now.

[37] The results of Mr Henderson's work were outlined in a report entitled "[t]he impacts of polycrystalline solar panels on highly productive lands and the environment" which Mr Henderson provided to the Court. Based on that work it was Mr Henderson's evidence that the solar panels were likely to leach a moderate amount of heavy metals after three years, in addition to per- and polyfluoroalkyl substances (PFAS) leached from tape, sealants, cables and circuit boards. It was Mr Henderson's evidence that these contaminants would then enter water races and ground water with resultant degradation of water quality in the vicinity of the site.

[38] At the Court's direction, Far North called additional evidence on the subject of contaminated run-off from Ms Wendi Williamson, a contaminated land specialist. Ms

Williamson's evidence was that contaminated discharges from solar panels were a possibility but that the "potential for soil and groundwater contamination from operation and later decommissioning of the solar farm is low" and any effects could be mitigated by proposed consent conditions.

[39] Ms Williamson outlined that "there is very, very little data on the effects of operational solar farms" and that although she had some reservations about Mr Henderson's scientific method, even taking his data on contaminant levels at face value, she was not concerned about an adverse contamination effect arising. She explained that she had evaluated the contaminant levels identified by Mr Henderson against the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health and determined that none of the contaminants tested by Mr Henderson exceeded background values, human health criteria or soil ecological values.

[40] The Court also heard evidence from Dr Dave Bull, on behalf of the Council. Dr Bull is also a contaminated land expert and his evidence principally addressed the issue of preliminary and detailed site investigations in relation to the requirements under the Hazardous Activities and Industries List (HAIL) which we return to later in this decision. Dr Bull did, however, note that Mr Henderson has raised "detailed concerns about the propensity for large solar panels and/or their support structures to contaminate land". Dr Bull was of the opinion that the only way in which such concerns could be appropriately addressed was if the applicant also applied to the Greater Wellington Regional Council for a discharge permit.

[41] As might be expected this prompted the Court to ask the Council's Planner, Mr Nicholas Pollard, whether consideration had been given to requiring any such consent to be progressed simultaneously in accordance with s 91 of the Act. Mr Pollard acknowledged that with the benefit of hindsight, the Council might have exercised this option but had not thought to do so until the matter was raised by the Court. Recognising that the hearing was already considerably advanced by this stage, Mr Pollard and Far North's planner, Ms Laila Alkamil, determined that the most efficient path forward was

to propose a condition that required the consent holder to obtain a certificate of compliance or a resource consent from the Regional Council prior to commencing any physical works on site. That condition[9] is contained in the final set of provisions proposed by Far North as set out below:

> A9. Prior to the commencement of any physical works on site the Consent Holder shall provide to Council:
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> (a) evidence in the form of a certificate of compliance issued under section 139 of the RMA from Greater Wellington Regional Council that the proposal is a permitted activity under the Greater Wellington Regional Natural Resources Plan; or
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> (b) a copy of a decision on a resource consent authorising the proposal under any relevant provision in the Greater Wellington Regional Natural Resources Plan.

[42] While we acknowledge that this approach should ensure that the question of whether a discharge permit is required will be resolved prior to any works occurring on site, we continue to hold reservations about the piecemeal approach adopted in this application. Although somewhat dated, the Court's position in *AFFCO New Zealand Ltd v Far North District Council (No 2)* remains apposite:[10]

> The value of integrated decision-making is apparent from the purpose of the Act and from the considerations stipulated by s 104. Unless all the effects, positive and negative, of a proposal are assessed together, the consideration of them required to make the ultimate judgment whether the consent should be granted or refused may be incomplete, and the balancing of them may be distorted. In that regard we adopt what was said in *Te Aroha Air Quality Protection Appeal Group v Waikato Regional Council (No 2)* (1993) 2 NZRMA 574 at 577.
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> Therefore good resource management practice requires that in general all the resource consents required for a project should be carefully identified from the outset, and applications for them all should be made so that they can be considered together or jointly.

[43] In this instance, the Court was initially advised by Far North's counsel and its planning witness that no regional consents were required. During the hearing, Far North

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9 Condition A9.

10 *AFFCO New Zealand Ltd v Far North District Council (No 2)* [1994] NZRMA 224 (PT) at 233.

accepted that a discharge permit may be required for run-off from the solar panels and agreed a proposed condition with the Council to address this issue. Subsequent to the hearing, the Court has been advised that an earthworks and discharge permit (for sediment) has been issued to Far North by the Wellington Regional Council for works associated with the development of the solar farm. The approach taken by the applicant to this issue and indeed to other aspects of the proposal is far from best practice and has caused the Court considerable concern. In this instance, the proposed condition relating to potential discharges is accepted. However, it is clear that this is an area requiring further investigation by all solar farm applicants. As Ms Williamson indicated there is "very, very little data on the effects of operational solar farms". The industry should look to remedying that.

[44] For completeness, given at least one consent has already been granted by the Regional Council, it would appear that condition A9(a) is redundant.

Other solar farms

[45] Following on from our comments above, we note that we were referred several times to other solar farms which had gained consent. We made the point during the hearing, and we reiterate it here, that several of those solar farms were consented under alternative legislation which has different processes, provisions, and purposes. As a result, there is little, if any, guidance that can be taken from those approvals for applications which are progressed under the Resource Management Act. By way of a straightforward example, consents issued under the COVID-19 Recovery (Fast Track Consenting) Act 2020 have a lapse period of no longer than two years by virtue of the operation of sch 6, cl 37(8) of that Act. The Resource Management Act does not have the same provision. More nuanced examples exist throughout the various legislative frameworks in place and as such, direct comparison between proposals consented under different legislative requirements is of limited or no value. It will be important for counsel and all parties to be cognisant of these distinctions when comparing cases in future.

Written approvals

[46] Section 104(3)(a)(ii) of the Act confirms that when considering an application for resource consent, a consent authority must not have regard to any effect on a person who has given written approval to the application.

[47] During the course of the hearing, the applicant submitted seven affected party approval forms signed by landowners located within the vicinity of the proposed site. The written approval forms were not submitted to the Council as part of the applicant's original resource consent application but were referred to in the Far North evidence and as such the Court sought to review them.

[48] At the Court's request, the Council also reviewed the written approval forms and the Council's consultant planner, Mr Pollard, prepared a series of maps showing the location of the landholdings to which the approvals related. Mr Pollard noted in his accompanying supplementary evidence that the various written approval forms included different versions of the solar farm plans and that the assessment of effects was not attached to any of the written approval forms provided. Ultimately, it was Mr Pollard's view that the written approval forms were incomplete and failed to meet the requirements of Form 8A of the Regulations[11] or the Council's affected party consent form. It was his position that the approval forms should not be relied on.

[49] By way of closing submission, the Council also noted the extensive amendments to the proposal which has occurred through the direct referral hearing process and in response to the Council's earlier s 92 requests. On that basis Council submitted that:

> … It is reasonable to assume that the solar farm proposal being considered by the Court is different to, or has at least been significantly more developed than, the proposal being considered by those who completed written approval forms.

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11 Resource Management (Forms, Fees, and Procedure) Regulations 2003, sch 1.

[50] In those circumstances the Council submitted that:

> … the Court simply cannot be satisfied that the parties who have provided written approvals fully understood the potential effect of a proposed solar farm on them at the time the written approvals were signed.

[51] Counsel for Far North generally accepted that position, submitting in closing that:

> … the written approvals obtained by the Applicant can be considered in so far as they approve the overall concept of a solar farm as a land use; however, it is acknowledged that that is the extent of their contribution to the Court's considerations.

[52] We are generally satisfied that there are no effects that fall on specific properties (for which there might be written approvals) which do not also affect other land holdings, landowners and occupiers. As a result, little turns on whether the written approvals meet the requirements of the Act or otherwise.

[53] For the sake of completeness, however, we find that the written approvals do not satisfactorily meet the requirements of the Act. Specifically, we find that the plans attached to the written approval forms were insufficient to fully inform those landowners or occupiers of the nature and extent of the solar farm, its component parts and the landscaping proposed (which in and of itself is a significant effect of the proposal given its scale).

[54] In these circumstances we consider, as the Court did in *Troughton v Western Bay of Plenty District Council* that the written approval forms are not sufficiently "yoked" to the application itself.[12] Whilst we appreciate that the applicant is not required to append the entire assessment of environmental effects to a written approval form, what is required is sufficient information regarding the defining features of the application such that the person signing the consent form has sufficient appreciation of those features to provide their approval. We do not find that to be the case in this instance and accordingly have dismissed the written approvals from our consideration.

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12 *Troughton v Western Bay of Plenty District Council* HC Tauranga CIV 2003-470-238, 18 February 2004.

Section 87F RMA

[55] Consent authorities in a direct referral process are required to review all aspects of the application, prepare a report as described in s 87F(4) of the Act and ensure that the Court is provided with all necessary assistance regarding the matters covered in that report.

[56] Mr Pollard, for the Council prepared a report to this effect, including contributions from relevant technical experts, covering planning matters and potential effects of the project. The report reviewed all the material in the AEE and responses to requests for further information made under s 92 RMA received between March 2023 and August 2023. Mr Pollard and Council expert witnesses attended during the hearing.

Consents Sought

[57] Solar farms are not specifically listed as controlled or restricted discretionary activities in the WCDP and accordingly Rule 21.6(a) applies:

> (a) Any activity that does not comply with the standards for permitted activities or is otherwise not specified as a controlled, or restricted discretionary activity.

[58] In addition, the proposed solar panels (which meet the definition of buildings in the WCDP), will be located approximately 12m from the road boundary, and therefore will be unable to comply with the 25m minimum setback from the unsealed Moroa Road.[13]

[59] Further, as a solar farm is not required for primary production or residential purposes and requires construction over 25m^2 in gross floor area and the external storage of goods, products and vehicles, Rule 4.5.5(c) applies which renders the activity a restricted discretionary activity. The s 87F report also notes a proposed data room which at 30m^2 exceeds the maximum 25m^2 rule.

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13 Standard 4.5.2(c)(ii).

[60] Overall, it was accepted by the planning experts that the project as a whole constitutes a Discretionary Activity under the WCDP.[14]

[61] We note here that during the hearing there was some confusion regarding permitted activities in the Rural Zone which was clarified by Mr Pollard in a further supplementary statement which explained the architecture of the WCDP. He outlined that there is no permitted activity "list" as such in the Rural zone but there are activities listed in Rule 21.1 (District Wide Rules) which are identified as being permitted provided they comply with certain standards. Any activity must comply with the District Wide Land Use Rules, before applying the Rural zone rules (section 4.5 Rural Zone – Rules and Standards - Note).

[62] Standards for permitted activities are set out in Rule 4.5.2 of the Rural zone. Those relevant to these proceedings include:

(a) Maximum height for buildings other than dwellings: 15m.

(b) Maximum height to boundary of 3m at the boundary and a recession plane of 45 degrees within the site.

(c) Building setbacks (other than for dwellings) of (relevantly):[15]

(i) 10 metres from the front road boundary of sealed roads.

(ii) 25 metres from the front road boundary of unsealed roads.

(iii) 5 metres from all other boundaries.

(iv) …

(v) 5 metres from any other waterbody

…

[14] Far North opening submissions dated 1 July 2024 at [5].

[15] WCDP, rule 4.5.2(c).

[63] There are no activity standards in the Rural zone pertaining to shelter belts nor are there any in the District Wide rules.

[64] Mr Pollard's explanation confirms that while not specifically listed in the Rural zone, the solar farm activity is captured by the district-wide rules and that the Rural zone rules manage the setbacks and height constraints usually attached to permitted activities in the Rural zone. There are no activity standards within rule 4.5.2 that are relevant to the specific activities of establishing screen mitigation planting or the removal of a shelterbelt.[16] This assessment means that the removal of existing shelter belt planting and trees is permitted as is the proposed mitigation planting.

[65] For completeness, it is noted that the project would also constitute a Discretionary Activity in the PWCDP fitting the description of "Large-scale renewable electricity generation activities" by virtue of the operation of Rule ENG-R6.1 and being in a Rural Zone, however the rule does not yet have legal effect.

Statutory Framework

[66] In assessing the activity, the expert planners (Mr Pollard and Ms Alkamil for Far North) agreed that the following statutory documents are relevant:

(a) National Environmental Standards – s 104(1)(b)(i):

(i) National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 (NES-Soil);

(ii) National Environmental Standards for Freshwater 2020 (NES-FW);

(iii) National Environmental Standards for Electricity Transmission Activities 2009 (NES-ET).

(b) National Policy Statements – s 104(1)(b)(iii):

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16 Pollard further supplementary evidence dated 19 February 2025 at [26].

(i) National Policy Statement for Renewable Electricity Generation 2011 (NPS-REG);

(ii) National Policy Statement for Highly Productive Land 2022 (NPSHPL);

(iii) National Policy Statement for Freshwater Management 2020 (NPSFM);

(iv) National Policy Statement on Electricity Transmission 2008 (NPSET).

(c) Regional Policy Statement– s 104(1)(b)(v):

(i) Greater Wellington Regional Policy Statement (GWRPS).

(d) Regional and District Plans – s 104(1)(b)(v):

(i) Greater Wellington Natural Resources Plan 2023 (GWNRP);

(ii) Wairarapa Combined District Plan (WCDP);

(iii) Proposed Wairarapa Combined District Plan (PWCDP).

[67] As we have set out previously, the consent application before us relates only to consents required under the District Plans.

[68] A full assessment of the relevant planning documents was undertaken by the two expert planning witnesses and they were generally in agreement as to their interpretation. We have reviewed that evidence and the related plans and policy statements and particularly note Mr Pollard's analysis in the s 87F report and his evidence in chief which agreed with Ms Alkamil's analysis.

[69] In summary, both planning witnesses were in agreement that the proposal, with conditions, was consistent with the relevant plans and policy statements including the

NPSHPL, noting the requirement for land remediation at end of life, the NPSFM (again noting the conditions around contamination), the GWNRP, noting the further engagement undertaken with Ngāti Kahungunu ki Wairarapa and Rangitāne o Wairarapa and the conditions on biodiversity, contamination and freshwater matters and the GWNRP noting again matters of engagement with mana whenua and the controls on contamination. This expert planning evidence was not challenged and we accept it here.

[70] The PWCDP is at a very early stage of its development and the WCDP (which became operative in 2011) predates some important and relevant guidance including the Regional Policy Statement and Regional Plan, the NPSFM and NPSHPL. Particularly relevant to the matter before us, the operative plan also predates the NPS-REG and NPS-ET and cannot therefore give effect to those documents although we were advised by counsel that there is no particular tension or inconsistency between the WCDP and the later NPS documents.

[71] We accept the submissions of counsel regarding the weighting of the operative and proposed district plans and the attention we should give to the other relevant plans and policy statements (which we address below) but acknowledge that the planning framework itself was of limited concern to s 274 parties who confirmed that they were not opposed to the activity itself (and in many instances supported the development of renewable energy) but rather were concerned at the proposed location relative to the character of the local environment.

Key Relevant District Plan Objectives and Policies

[72] The architecture of the WCDP divides issues into two parts. Part A deals with environmental issues and addresses various land use zones and Part B deals with district wide issues. The District wide issues include particular matters of importance to this determination being the identification of tangata whenua, Rangitāne o Wairarapa and Ngāti Kahungunu ki Wairarapa, and provisions addressing tangata whenua matters, and the provisions relating to network utilities which includes electricity generation, landscape

and rural character.

Tangata Whenua (Section 8)

[73] Objective TW1 provides the directive "to recognise and provide for the cultural values and relationship of Tangata Whenua in managing the natural and physical resources and the effects of activities, while taking into account the principles of the Treaty of Waitangi".

[74] The policy which follows, somewhat restates this in saying "[r]ecognise Tangata Whenua values and provide for Tangata Whenua to maintain and enhance their traditional relationship with the natural environment". Methods for achieving this are identified to be consultation and engagement with tangata whenua to identify sites of significance and the development of rules to recognise and provide for the values associated with such sites.

Network Utilities and Energy (Section 16)

[75] With respect to the development of renewable energy the following two objectives are of particular relevance:

> 16.3.1 Objective NUE1 – Management of Network Utilities.
>
> To enable the efficient development, maintenance and operation of network utilities, while avoiding, remedying or mitigating adverse effects on the environment.
>
> 16.3.4 Objective NUE2 – Energy Generation and Efficiency
>
> To move the Wairarapa towards a sustainable energy future by encouraging energy efficiency and the generation of energy from renewable sources.

[76] The policies which follow these objectives encourage renewable energy generation while also recognising there will be environmental effects which need addressing. They also include reference to recognising and promoting the use of environmental management codes of practice and best practice methods in energy

generation, distribution, and use.

Subdivision, Land Development & Urban Growth (Section 18)

[77] In addition to the above, Mr Pollard drew our attention to Section 18 of the Plan which provides overarching objectives for the subdivision and use of land. The key objective referenced by Mr Pollard was SLD1 which relevantly seeks to ensure that "land development maintains and enhances the character, amenity, natural and visual qualities of the Wairarapa, and protects the efficient and effective operation of land uses and physical resources".

[78] Relevantly, Policy 18.3.2(a) which follows, seeks to manage land development in a manner "that is appropriate for the character and qualities of the environmental zone in which it is located, while recognising that such change may alter the character and qualities".

Landscape

[79] Objective Lan1 and relevantly, Policy Lan1(g) were also quoted to us. While Objective Lan1 seeks "[t]o identify and protect the Wairarapa's outstanding landscapes and natural features from the adverse effects of inappropriate subdivision, use and development", Policy Lan1(g) has a wider ambit, more generally seeking to ensure development is managed by having regard "to the adverse effects on the landscape values of the site and locality". In other words, a focus on place.

Transportation

[80] Mr Pollard also addressed Objective TT1 with its relevant policies which seek to manage the road network. These policies generally direct how the Plan or council will carry out its function in this regard rather than providing specific guidance on specific activities.

Rural Zone (Section 4)

[81] As set out previously the site is zoned Rural (Primary Production) and the preamble to the Rural Zone provisions includes the following description:

> While rural properties vary in size, the rural environment is typically characterised by the following elements:
>
> - Open space, natural landscapes, and vegetation predominate over the built environment;
> - Working productive landscape, with a wide range of agricultural, horticultural and forestry purposes, with potential for associated effects, including noises and odours;
> - Large areas of exotic and indigenous vegetation, including pasture, crops, forest and scrublands;
> - Range of built forms, from reasonably large utilitarian buildings associated with primary production, through to small utility buildings;
> - Place where people live and work, with low population density;
> - A road network ranging from unsealed local roads with low traffic volumes to busy State Highways; and
> - Allotments self-serviced in terms of water supply and wastewater disposal.
>
> …
>
> and
>
> …
>
> Outside Forest Parks and other conservation management areas, primary production is the main land use in the rural environment, including associated processing, packaging and transportation. At times, primary production activities will generate effects such as noise, odour and dust – residents living in the rural environment should therefore reasonably expect amenity values to be modified by such effects. Primary production activities should be able to function effectively and not be unduly restricted by inappropriate development being located in too close proximity. Therefore, potential new activities in the Rural Zone must be compatible with rural character in the scale of development and prevent imposing limitations on the operation of rural activities and their ability to contribute towards the economic wellbeing of the Wairarapa …
>
> [emphasis added]

[82] Under the subheading Significant Resource Management issues, the Plan highlights, among other matters, safeguarding the life supporting capacity of soil resources and providing for a diversity of land uses and economic activities while addressing incompatible amenity expectations between different land uses. Important to the matter before us, the Plan specifically refers to:

> 11. Providing for the establishment and operation of renewable energy generation facilities, recognising that these facilities can be small-scale independent facilities through to large scale connected facilities. Renewable energy generation facilities can introduce large and highly visible built elements and other operational effects into the rural landscape, but generally need to locate in the rural environment because of their land area and siting requirements.
>
> [emphasis added]

[83] Objective Rur1 is:

> To maintain and enhance the amenity values of the Rural Zone, including natural character, as appropriate to the predominant land use and consequential environmental quality of different rural character areas within the Wairarapa.
>
> [emphasis added]

[84] Relevant policies (4.3.2 Rur1 Policies) following this objective were highlighted in evidence:

> (d) Maintain and enhance the amenity values, including natural character, of the differing Rural character areas through appropriate controls over subdivision and the bulk, location and nature of activities and buildings, to ensure activities and buildings are consistent with the rural character, including an appropriate scale, density and level of environmental effects.
>
> and
>
> (e) Manage subdivision, use and development in a manner which recognises the attributes that contribute to rural character, including:
>
> (i) Openness and predominance of vegetation
>
> (ii) Productive working landscape
>
> (iii) Varying forms, scale and separation of structures associated with primary production activities

(iv) Ancillary living environment, with an overall low population density

(v) Self-serviced allotments.

[85] Objective Rur2 Provision for Primary Production and Other Activities, is:

> To enable primary production and other land uses to function efficiently and effectively in the Rural Zone, while the adverse effects are avoided, remedied, or mitigated to the extent reasonably practicable.
>
> [emphasis added].

[86] The Policies which were highlighted as being particularly relevant to this objective are:

> (d) Ensure activities that are potentially sensitive to the adverse external effects of primary production and any other lawfully established activities, particularly those activities with significant external effects, are either appropriately sited, managed or restricted to avoid or mitigate these effects.
>
> and
>
> (f) Provide interface controls on primary production and other activities that may have adverse effects on adjoining activities.

Conclusion

[87] While many s 274 parties expressed concern that a solar farm of the scale and nature of that proposed should properly be categorised as an industrial activity and locate within an industrial zone, we find it clear that, taken as a whole, the relevant objectives and policies of the WCDP establish that the development of renewable energy facilities are generally considered to be activities which can be expected to locate within the District's rural zones. There are, however, clear policies around exactly where within those zones such activities might most appropriately locate and directions as to the management of adverse effects including the maintenance and enhancement of amenity, rural character and landscape values as far as reasonably practicable.

[88] It is through this lens that we have heard and determined this application.

Section 274 Party Evidence

[89] Seventeen submitters initially registered interest under s 274 RMA. Most of those parties took an active part in the hearing with many holding qualifications relevant to the issues addressed in evidence relating to potential adverse effects on the environment.[17] The s 274 parties generally worked together to minimise repetition where possible and to play to their professional strengths. The Court appreciated the time and effort these parties gave to preparing their evidence and developing questions for the expert witnesses. The Court was greatly assisted by their work.

[90] The key matters raised by the s 274 parties were:

(1) Unsuitability of the site due to:

(a) proximity to numerous residential properties;

(b) reverse sensitivity issues;

(c) proximity to an aquifer used for drinking water with the potential for contamination;

(d) proximity to Greytown which is a tourist town celebrated for its historic town centre, open countryside and trees;

(e) solar power production being an industrial activity which will negatively affect the landscape and amenity of the area;

(f) the location of the Papawai Fault Line which extends across the site;[18]

(g) the location of the site within the Rural Wildfire Risk Zone.

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17 E Creevey, D Hettige, R Hughes, J & R Jay, C Neerincx, G O'Connor, F and S van Steensel, A and J Woodcock.

18 We note that the fault line is not a mapped (overlay) feature of the District Plan for this site.

(2) Construction, location and layout issues including:

(a) the duration of construction (18-24 months) and impact on tourist routes (passing through a pastoral environment to a built one);

(b) noise and vibration related to driving in the piles for the solar panel table supports;

(c) potential wind damage given the character of the South Wairarapa Plains wind environment;

(d) potential flooding in heavy weather/storm events including height of the local water table.

(3) Contamination;

(a) potential discharge to ground water and waterways from galvanised piles;

(b) the toxic metals and components that make up the solar panels themselves and risk of ground/water contamination as they age;

(c) contamination of ground/water in the event of damage to the panels;

(d) contamination of ground/water in the event of fire emergency response;

(e) air contamination in the event of fire;

(f) electromagnetic effects on human health;

(g) low frequency ELF fields effect on human health.

(4) Fire risk:

(a) risk of the batteries and inverters used as part of the Solar farm infrastructure catching fire through natural aging or accidental damage

(by vehicle or stock);

(b) risk of neighbouring rural activity fire to the solar farm;

(c) practical issues of water supply, emergency services response, as well as chemical fires and evacuation risk to residents.

(5) Landscape and amenity issues:

(a) residential lifestyle amenity loss in terms of rural character;

(b) cumulative scale of structures;

(c) type of mitigation planting and endurance/ ability to maintain "camouflaging effect";

(d) potential for additional traffic and dust from roads;

(e) noise of operation and potential sustained noise out of character with rural activities.

(6) Glare:

(a) length of time until planted buffer becomes effective;

(b) effects on driver safety for surrounding roads.

(7) Ecology:

(a) effect on native birds, particularly roosting birds, and bats;

(b) natural processes concerning soil health.

(8) Community wellbeing:

(a) residents' emotional attachment to the area and community;

(b) uncertainty of outcome for residents;

(c) lack of adequate community engagement;

(d) potential respiratory and general health effects (see contamination risk above).

(9) Site remediation:

(a) risk of no site remediation in the event of the activity becoming uneconomic, mothballed, or if the operator/owner ceases to exist.

Section 104 - Potential Effects of the Project

[91] In accordance with s 104 RMA, when considering an application for resource consent including its conditions, the decision-maker must, subject to Part 2, have regard to any actual and potential effects on the environment of allowing the activity, any mitigation measures proposed, any relevant provisions of specified planning documents and any other matter the consent authority considers relevant and reasonably necessary to determine the application.

[92] Effects are defined by s 3 of the RMA as including:

(a) any positive or adverse effect; and

(b) any temporary or permanent effect; and

(c) any past, present, or future effect; and

(d) any cumulative effect which arises over time or in combination with other effects –

regardless of the scale, intensity, duration, or frequency of the effect, and also includes—

(e) any potential effect of high probability; and

(f) any potential effect of low probability which has a high potential impact.

[93] The term "environment" is defined in the Act as including:

> (a) ecosystems and their constituent parts, including people and communities; and
>
> (b) all natural and physical resources; and
>
> (c) amenity values; and
>
> (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) or which are affected by those matters.

Positive Effects

[94] By way of positive effects Mr Andrews, the General Manager of Far North Solar Farm Ltd, explained that the proposed Greytown Solar Farm design is:

> … optimised to produce 175MWp which is enough electricity to power approximately 40,000 average New Zealand homes. The power produced is equivalent to effectively displacing emissions from up to 13,975 cars from the national fleet, in terms of CO2 emissions savings.

[95] Mr Andrews explained in terms of economic benefit that:

> [24] Because electricity is sold at market rates, where generators offer it to the market at a competitive price, investors can see that hydro will not be used when solar is available and that water can instead be saved to be used later in the day, when competition from solar power is not present. In the absence of subsidies, solar power needs to be well priced, well placed close to a suitable grid connection point, have a long generation life expectancy, suitable terrain to build on and have a market to sell into, in order to be economically viable.
>
> [25] FNSF has selected the Greytown site for these very reasons. The power produced from the solar farm will first service local load in the area before being sent elsewhere. It is expected that the Greytown Solar Farm will cover most, if not all of the daytime power requirements for Greytown and the surrounding region for much of the year. Power not consumed at Greytown will flow north to Masterton and south to Wellington to be part of the national grid.

[96] We accept that the establishment of new renewable energy sources in New Zealand will produce positive effects. As set out in the NPS-REG these include:

> a) maintaining or increasing electricity generation capacity while avoiding, reducing or displacing greenhouse gas emissions;

b) maintaining or increasing security of electricity supply at local, regional and national levels by diversifying the type and/or location of electricity generation;

c) using renewable natural resources rather than finite resources;

d) the reversibility of the adverse effects on the environment of some renewable electricity generation technologies;

e) avoiding reliance on imported fuels for the purposes of generating electricity.

[97] It is not, however, the case that every application for a renewable energy project must therefore be granted consent. As set out in the NPS-REG "[d]evelopment that increases renewable electricity generation capacity can have environmental effects that span local, regional and national scales, often with adverse effects manifesting locally and positive effects manifesting nationally". Those effects must be identified, evaluated and avoided, remedied or mitigated. As NPS-REG Policy C2 provides:

> When considering any residual environmental effects of renewable electricity generation activities that cannot be avoided, remedied or mitigated, decision-makers shall have regard to offsetting measures or environmental compensation including measures or compensation which benefit the local environment and community affected.

Adverse Effects

[98] We set out earlier a summary of adverse effects which were raised by the Council and/or submitters. We now consider the evidence relating to these effects under a series of broad headings. We note here that while many residents gave technical advice for which they clearly held professional knowledge and/or experience, they did not appear as expert witnesses (nor did they seek to) given their lack of independence. Their statements were provided as submissions and the Court posed questions to these parties for clarification purposes. One independent expert witness (Mr Henderson – Ecotoxicology) was called by s 274 parties, Ms Elisabeth Creevey and Ms Gaylene O'Connor, and he assisted with understanding issues related to ground contamination particularly related to the aging of the solar panels. This issue related to several parties' concerns including advice of Mr Dayandra Hettige and Mr Frank van Steensel regarding

the toxic elements in the composition of solar panels. The Council called expert evidence from four independent experts.

Effects on rural character and visual amenity

[99] The Court heard from two experienced Landscape experts retained by Far North, Mr Simon Cocker, and Mr Smith who peer reviewed Mr Cocker's work and prepared the final Landscape Design Package for the project dated 19 November 2024. Mr Smith advised the Court that among other experience, he is the lead for five other solar farm projects within Aotearoa New Zealand, that vary in size between 80ha and 690ha. Ms Emma McRae, also an experienced landscape expert assisted the Council reviewing the proposal as submitted and the various plans developed through the hearing process.

[100] We also heard from parties living proximate and within the general area of the proposal. Key landscape issues for these parties included the 'industrial' nature of the solar panel tables/arrays and its ancillary features including inverters and access tracks. We understood these s 274 parties to also be concerned that calling the activity a "farm" was misleading because the term "farm" usually describes pastoral farming. It was their position that here the "farm" is almost entirely made up of structures and is not a pastoral activity and hence will change the rural character of the area.

[101] Alongside that, the s 274 parties were concerned that clearing the site of existing vegetation which includes the removal of all the existing shelterbelts would fundamentally alter the landscape.

[102] As discussed earlier, the site is made up of three areas. We note that Area 1 (the largest area to the north of Moroa Road) has a more open aspect with larger land holdings around it. Area 2 is smaller and proximate to several rural lifestyle blocks.

Diagram from J Woodcock further statement Appendix 1 (16 Oct 2024) illustrating rural lifestyle blocks around Area 2 (37 blocks)

[103] Area 3, while having an open aspect separated by paddocks, is directly across Pharazyns Road from the Wairarapa Eco Farm. This Eco Farm is surrounded by tall windbreak hedging and contains internal hedging. Mr van Steensel describes its establishment:[19]

> converting grassland (assumed low land use capability classification (LUC) based on mainly physical characteristics) into a functionally diverse, innovative, ecological (food) production unit that now supports 2,000 shelter trees, olive groves, wine grapes, tunnel houses, and a market garden (supplied over 100 families with fresh fruit and vegetables), chickens, horses, pigs and dairy sheep. It has been fully organically certified from 2001 to 2022.

[104] The setting for the site generally is the South Wairarapa central plains area about midway between Greytown and Featherston. In summary, we note from the Boffa Miskell Study provided to us in evidence that this area:[20]

> … consists of flat to gently undulating, free-draining, old and recent gravel fans, terraces and floodplains, but with lower rainfall it is drier than the western and

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19 F van Steensel EIC dated 5 April 2024 at [6].

20 Wairarapa Landscape Study 2010 Landscape Character Description report (Boffa Miskell Ltd, August 2010).

> southern plains. There is a greater sense of openness to the Central Plains landscape compared to the Western Plains because of its distance from the Tararua Ranges. To the east, the distinctive profile of the Nga Waka - a - Kupe and Maungaraki Ranges are prominent landmarks and backdrops.

[105] The Boffa Miskell Study further describes:

> The alignment of roads lines is based on a modified grid pattern which reflects the flat topography of the plains and historic settlement patterns.
>
> Land use is quite diversified and includes dairy, sheep and beef farming, scattered areas of market gardening, and orchards. … Some arable farming occurs in this area with irrigation systems on some of these properties. Land cover is dominated by grazed pasture and shelterbelts; whilst amenity plantings are less extensive than on the western plains. Indigenous vegetation is very limited and insignificant, limited to some distinct stands of kanuka, and small isolated lowland forest remnants …...
>
> Land parcels on the plains tend to follow a regular, linear pattern, with drainage ditches and shelter belts creating a distinctive patchwork. The area is characterised by well established rural and rural-residential enclaves with some evidence of recent rural residential development. Smaller landholdings around the fringe of the urban areas between 1 and 4 hectares characterise the area with a larger scale and less dense settlement pattern further from the towns. Transmission line pylons are also present and in some places are prominent elements in this flat landscape.

[106] The proposal will see all the (at the outer edge and internal) existing shelter belts removed from the site. New screen planting is proposed around the periphery of the site Areas. The landscape mitigation package evolved as the hearing progressed and concerns were raised by submitters as to the type, regime for planting (density/number of rows) height, fire resistance of plants and the character of the change of view from the current relatively open pasture to the solar panels and their related infrastructure (tracks, inverters).

[107] Mr Smith confirmed during questioning[21] that the landscape package provided has further detail to demonstrate that the planting will be undertaken in a way that will screen the solar farm from view, from beyond the site. This includes changes made to height and choice of planting (and in some cases depth of planting) to address concerns raised

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21 Transcript Smith at 636.

by specific neighbours. Changes also included earth mounding in places (for example around the western, northern and eastern boundaries of Area 1 and western edges of Areas 2 and 3).

[108] Plant choice was amended from an initial less refined approach with fast growing (and more potentially flammable) Japanese Cedars, to the use of natives and plants with better fire resistance. More detail was also provided regarding the nurturing of the plants until they reach appropriate heights through the use of shade cloth and multiple row planting and use of planted mounds.

[109] While the planting proposal specifies minimum planting size and minimum maintained hedge height (once plants reach that) trees are also proposed which will be left to mature above the shrub planting.[22] Mr Smith noted that there is flexibility between the design before the Court and the final design on the number of plant species, noting that:

> … there's about five and a half kilometres or so of three rows and then the remaining, quick maths, of 6.5 kilometres of two rows … they would be consisting of all the variety of plant species.

[110] When asked by Ms Jay if the planting would be amenity planting or a green belt, Mr Smith confirmed that:

> … it remains to be a hedge of sorts, of around five to six metres wide, so it does have a specific purpose like a shelter belt. But the variety of plant species and the inclusion of trees, is to provide amenity as well.

[111] The 19 November 2024 updated landscape Design Package also provided detail around the landscape design at access points into the site including off set planting to obscure views from the road. The theory of the mitigation was, as we understood it, to maintain a planted visual barrier around the perimeter of the site.

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22 Transcript Smith at 643.

[112] The Court conducted a site visit and visited several viewing points nominated by the parties. It is clear to us that the environment will change with the establishment of the solar farm but change in itself is not an adverse effect. The removal of the existing shelterbelts is significant given their current scale, but such shelterbelts can be removed and/or planted as permitted activities under the WCDP.

[113] We accept that the solar farm involves a relatively solid coverage of the site made up of the solar tables but with sheep able to be grazed between them. While serviced by access tracks which is common to pastoral farming, there would be more formality to the proposal's grid pattern, interposed with inverters the size of shipping containers, set within the "paddocks". We also note an analogy suggested in landscape evidence that the solar farm structures were not of a scale foreign to pastoral landscapes, and we understood this to reference shade structures commonly used over fruit crops which can cover large horticultural areas and were observed further afield on the Court's site visit.

[114] The final condition set provided to the Court, requires landscaping to be carried out in accordance with the 19 November 2024 Landscape Package. That package provided a significant improvement over the level of detail we had earlier been provided, and focused more closely on concerns raised by the s 274 parties and the Court. Further, the conditions require a Landscape Management Plan providing time frames for implementation consistent with staging of the construction of the solar farm, specific specifications of plants and methods of implementation and irrigation and a maintenance regime as well as pest control.

[115] It was Mr Smith's conclusion that:

> The feedback received from neighbours regarding the proposed boundary treatment was focused on the inclusion of a variety of native plant species that would contribute to the neighbours' short- and long-term amenity. As per the updated design this will result from a variety of native vegetation and the birdlife / habitat that it will provide that will be more aesthetically appealing and more valued by the community when compared an exotic shelterbelt.

> Inevitably, as illustrated in Tables 1 and 2, the preference to include native vegetation to enhance short- and long-term amenity values results in a compromise by slightly increasing the length of time the solar farm may be seen.
>
> When weighing up this compromise, I consider that the increase in amenity values experienced from the surrounding public roads and private properties offsets a potential increase in adverse visual effects resulting from the length of time that the solar farm may be seen for. Regarding this, I have reviewed the Visual Effects Comparison Table in Annexure 1 of my Rebuttal Evidence and do not resile from my conclusions.
>
> The long-term increase in amenity that will be experienced for 29 of the 35-year consent will positively contribute to the amenity values, when compared with an exotic shelterbelt. Also, the proposal provides certainty on the long-term boundary treatment of the site and the way in which it will maintain long range views over the site to the Tararua Ranges, which are valued by the community. Various agricultural activities and typical shelterbelt boundary treatments, in comparison, may reduce these views over the next 30+ years.
>
> Based on the above, I consider that the updated proposal consisting of 11.63km of native boundary vegetation will reduce the overall degree of adverse effects on the landscape character and values resulting from the proposed solar farm.
>
> In conclusion, the differences in the construction, short and mid-term adverse visual effects are immaterial, and overall, I consider that the proposed solar farm will have a **low degree** of adverse effects on the rural character and landscape values of the receiving environment.

[116] Taking the proposed conditions and landscape plans into account, as well as our own on the ground observations, we consider that the proposal, while changing the nature of the views of the site, provides mitigation that will ensure the activity is screened from view from nearby properties and public roads. When settled into the landscape mitigation, the solar farm will be a relatively benign change to the existing landscape. It will be different but not in our determination based on the evidence, significant. In time it will likely become insignificant due to the proposed mitigation which we find is an appropriate response given its setting and the character of the structures involved. We are satisfied that with Council oversight in its capacity to see the consent complied with, that this package sets out a practical and realistic landscape mitigation program.

[117] We understand that residents will know the solar farm is there but given the substantial mitigation planting it is unlikely to be visible from passing traffic and from

most homes unless they are well elevated. Even in that scenario, over time the mitigation planting will be of a sufficient scale to mitigate effects for those in closer proximity.

Outcome

[118] When considered against the provisions of the District Plan, we note that there is an expectation that renewable energy generation facilities generally need to locate in the rural environment because of their land area and siting requirements. The activity itself is supported although there is clear recognition that effects need to be mitigated particularly due to highly visible built elements and potentially other operational effects that will likely be introduced into the rural landscape.

[119] The landscape context is also relevant to assessment (Policy Rur1(d)) with a maintain and enhance outcome sought recognising the attributes that contribute to an area's rural character. Given the existing setting, the mitigation method is essentially to curtain off the development from public view and enhance the landscape with native planting which is not currently a strong feature of the area given it has been cleared and modified for rural production purposes.

[120] We find that the Landscape Package is capable of achieving the Plan policy outcome. However, while on paper the mitigation proposed will meet the objective to maintain and enhance the rural character it will depend on its implementation and that needs to be secured through conditions including implementation and management plans for care as well as monitoring. With these things in place, it is reasonable for us to conclude that landscape effects will be mitigated and the outcome consistent with the overall District Plan objectives.

[121] We consider that the Landscape Mitigation Plan conditions[23] (like almost all of the Management Plan conditions provided to the Court) would benefit from providing a clear statement as to the purpose(s) of the Mitigation Plan. This will (among other things)

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[23] Conditions B31 and following.

ensure that if a change to the Management Plan is sought, the Council will be better placed to evaluate whether such a change still meets the purpose(s) of the Mitigation Plan.

[122] It is noted that the applicant has offered an advice note to condition B35 to the effect that planting and maintenance contracts will be offered in the first instance to local businesses with the appropriate knowledge and expertise. Such a condition is not for a resource management purpose but is accepted by the Court as a condition under s 108AA(1)(a) of the Act (sometimes referred to as an *Augier* condition). If it is to be offered it should, however, be framed as a condition rather than as an advice note.

Glint and Glare

[123] The issue of glint and glare nuisance from the solar panel arrays was raised in relation to both traffic safety and in terms of potential nuisance to nearby dwellings. Technical evidence was received from Mr Nicholas Logan who prepared the glint and glare assessment which accompanied the application. He explained in evidence that he had modelled the glare received at 77 observation points and along 11 road routes[24] based on the general arrangement plans for the solar farm and mechanical details of the tracking structures. Observation points are single points placed 1.65m above the ground (approximately average eye level of a standing person). Typically, one observation point was placed at each residential property within the study area.

[124] Sensitive visual receptors typically include residential properties, roads, railways, runways and air traffic control towers. Receptors within the study area were only excluded from the study if there were significant obstructions between the receptor and the solar farm.

[125] Mitigation planting was assumed to be in place at a height of 4m with the vegetation modelled as an opaque obstruction preventing both received and reflected light. Mr Logan also noted that hills to the west of the site will shade the arrays during

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[24] Logan EIC dated 15 February 2024 at [5].

the late evening.

[126] The modelling considered potential visual receptors within 2 kilometres of the site. We were told that there is no formal standard on the maximum distance for glint and glare assessments, but Mr Logan's choice of a 2 kilometre distance was based on existing studies and assessment experience. Mr Logan also explained that the significance of a reflection decreases with distance for two main reasons:

(a) the solar farm appears smaller; and

(b) visual obstructions may block the view of the solar farm.

[127] The results of the initial assessment with the planting in place, indicate that three observation points received green glare and no observation points delivered yellow or red glare (explained further below). On that basis Mr Logan concluded that:

> 28 … The most impacted receptor received up to 6 minutes of green glare in a single day between 4:00 pm and 5:30 pm from early May to early August.
>
> 29. Car and truck drivers on State Highway 2 received up to 3 minutes of green glare between 5:00 am and 6:30 am from late January to early February, and between 4:30 am and 6:00 am from late October to mid-November.

[128] Given vegetation is seldom entirely opaque, during the hearing Mr Logan also modelled the glint and glare effects for all receptors <u>without</u> the proposed vegetation screening or horizon line to provide the most conservative results for the selected receptors. This was assessed as two different angles:

(a) Rest angle set to 0 degrees; and

(b) Rest angle set to 10 degrees.

[129] The results in this second assessment model were considered a worst-case scenario and found that:

(a) With the rest angle set to 0 degrees, 20 observation points and ten road routes received green glare, and four road routes received yellow glare. The

most sensitive receptor, State Highway 2, received up to 3 minutes of yellow glare in a single day for a car driver, and up to 6 minutes of yellow glare in a single day for a truck driver. …

(b) With the rest angle set to 10 degrees, no observation points or routes received any glare. This demonstrates that limiting the backtracking angle can provide effective mitigation of glare effects.

[our emphasis]

[130] Mr Logan explained further that:

11. Potential visual impacts from glint and glare include distraction and temporary after-image; at its worst, it can cause retinal burn. The ocular hazard caused by glint or glare is a function of the intensity of the glare (retinal irradiance), and the apparent size of the glare source seen by the receptor (subtended angle).

12. The severity of the ocular hazard can be divided into three levels:

(a) green glare, which has low potential to cause temporary after-image;

(b) yellow glare, which has potential to cause temporary after-image;

and

(c) red glare, which can cause retinal burn. Red glare is not usually possible for glare from solar photovoltaics (**PV**) as PV modules do not focus reflected sunlight.

[footnote omitted]

[131] In the case of glare from solar photovoltaic modules Mr Logan went on to explain:

13. PV cells are designed to absorb as much light as possible (generally around 98% of direct sunlight) in order to maximise efficiency. To enhance absorption and limit reflection, solar cells are constructed from dark, light-absorbing material and are treated with an anti-reflective coating. The small percentage of light reflected from PV modules varies depending on the angle of incidence. A high angle of incidence will typically incur higher levels of reflection

14. Single-axis tracking arrays rotate the receiving surface of the PV modules from east to west throughout the day as the sun moves across the sky. The angle of incidence for a single axis tracking system varies less than in fixed-tilt arrays as the reflective surface of the modules rotate on a horizontal axis to follow the sun. As such, the single axis tracking arrays proposed by FNSF operate with a low angle of incidence for much of the day.

> 15. The main exception to this tracking approach occurs during very early mornings and late evenings. During these times the low elevation of the sun causes trackers to cast shadows on each other (called self-shading), which leads to significant loss of generation. To avoid these losses during these periods, the arrays are programmed not to face the sun directly, adopting lower tracking angles to eliminate self-shading. This strategy is called backtracking. In most cases, the glare impact from tracking arrays occurs during backtracking as the combination of low sun elevation and near horizontal modules leads to a large angle of incidence and higher than normal reflection.
>
> [footnotes omitted]

[132] Mitigation measures for glare/glint adverse effects were described by Mr Logan:

> 31. … Vegetation can provide effective mitigation once the plantings are established, although receptors at higher elevation may be able to see over the screening. The results of our study indicate that the proposed vegetation screen will provide effective mitigation.
>
> 32. There are several alternative mitigation measures that we could have applied if the vegetation screening was insufficient:
>
> (a) Limiting the minimum backtracking angle (for example, minimum angle of 5°), which reduces glare during early mornings and late evenings when backtracking is active;
>
> (b) Installing signage or other warning systems to warn people of potential glare hazards; and
>
> (c) Removing trackers from areas that cannot be mitigated by other means. This eliminates glare reflected from the removed area.

[133] It is noted that a nearby private runway/farm airstrip was excluded from the study because it is not a registered aerodrome. In answers to questions however Mr Logan opined that this private airstrip was likely to:

> …receive both green and yellow glare from various parts of the proposed array in the mornings and/or evenings. The FAA, which provides guidance for glare studies at airports, no longer considers solar PV to pose an unusual glare hazard to pilots. The FAA's final policy states that:
>
> > "… in most cases, the glint and glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass-façade buildings, parking lots, and similar features."

[footnote omitted]

[134] Mr Logan also presented further evidence provided in response to matters raised by parties through the hearing including an assessment on the potential effects of the proposal on helicopter take-off and landing at Carrington Park, Masterton Hospital, Kuranui College, and Greytown Rugby Club.

Outcome

[135] Based on Mr Logan's assessment and technical evidence we are satisfied that it is unlikely that glare or glint from the solar arrays will have an adverse effect on the surrounding area. However, if there is an issue, conditions of consent can be framed to allow for mitigation by way of a further planted barrier or modification to the array itself.

[136] It is not anticipated that the site will need to be lit. In the event that outdoor lighting is required for maintenance it will be screened by planting and a condition of consent has been provided to manage the output and character of such light. We note the condition may require some provision to allow for fine tuning/review to ensure that this is the case. With Mr Logan's assurance we are satisfied that there is no safety issue from potential glare/glint effects on both road and air traffic, and that residential amenity will be retained through planting mitigation or module design if required.

Rural Productivity and contaminated land

[137] The applicant's position was that the presence of solar panels will benefit the soil and vegetation beneath by providing cooling effects and reducing evaporation. Further, the solar panel structures have the potential to improve organic matter content and natural soil processes due to lower stocking rates and lighter classes of stock. Overall, it was submitted that the construction, operation and decommissioning of the solar farm will not negatively impact the soils in the long term; rather it has the potential to improve the soils.

[138] Mr Ian Hanmore holds various qualifications in land management including membership of related professional organisations and the NZ Society of Soil Science provided evidence for Far North. Mr Hanmore confirmed that the site is mostly Takapau soil which is classified as Land Use Classification (LUC) unit 4s2. This soil type covers 97.8% (232.3ha) of the site and has a shallow and very stony profile making it vulnerable to soil moisture deficits and severely limiting its arable potential. He explained that this soil is suitable for grazing, root and green fodder cropping, production forestry and possibly limited orcharding.

[139] The remaining 2.2% (4.9ha) of the site is comprised of a number of small, fragmented areas with Heretaunga silt loam soil which has moderate limitations to arable use due to it shallow profile and limited stoniness. We understand that this land is LUC unit 3s2.

[140] Mr Hanmore advised that the current owner of the site has previously grown cereal crops, but yields were poor, and drought made the enterprise unviable. That activity was moved on to another site elsewhere in the district with more suitable soils. The current use of the site is grazing and root and green fodder cropping.[25]

[141] The National Policy Statement for Highly Productive Land 2022 (NPS-HPL) was amended in 2024. Its single objective is:

> Highly productive land is protected for use in land-based primary production, both now and for future generations.

[142] The NPS-HPL has defined all land in LUC classes 1-3 as highly productive land (HPL) until Regional Authorities have mapped the HPL in their regions.

[143] The mapping requirement for HPL is set out in cl 3.4 of the NPS-HPL:

> 3.4 Mapping highly productive land

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25 Hanmore EIC dated 14 February 2024 at [41].

(1) Every regional council must map as highly productive land any land in its region that:

(a) is in a general rural zone or rural production zone; and

(b) is predominantly LUC 1, 2, or 3 land; and

(c) forms a large and geographically cohesive area.

…

(5) For the purpose of identifying land referred to in subclause (1):

(a) mapping based on the New Zealand Land Resource Inventory is conclusive of LUC status, unless a regional council accepts any more detailed mapping that uses the Land Use Capability classification in the New Zealand Land Resource Inventory; and

(b) where possible, the boundaries of large and geographically cohesive areas must be identified by reference to natural boundaries (such as the margins of waterbodies), or legal or non-natural boundaries (such as roads, property boundaries, and fence-lines); and

(c) small, discrete areas of land that are not LUC 1, 2, or 3 land, but are within a large and geographically cohesive area of LUC 1, 2, or 3 land, may be included; and

(d) small, discrete areas of LUC 1, 2, or 3 land need not be included if they are separated from any large and geographically cohesive area of LUC 1, 2, or 3 land.

[144] Mr Hanmore appeared to us to have taken a well considered approach to understanding the soil characteristics on the site having thoroughly researched through several data bases as well as his own on site investigations.

[145] However, as the Regional Council has not yet carried out the requisite mapping, we are obliged to rely on the New Zealand Land Resource Inventory at the time that the NPS-HPL land came into effect rather than Mr Hanmore's on site survey. Mr Hanmore acknowledged this and confirmed that while he had undertaken specific site analysis, the NZLR has mapped less highly productive land than he did.

[146] Mr Hanmore advised:

> At the site there are five areas of LUC class 3 land that make up the total 4.9ha area of HPL. These range in size from 0.16ha to 2.09ha and are isolated from one another. In the farming context these areas have not and would not be delineated from the surrounding non-HPL in their land use due to their size and isolation. As such their identification is more academic than of any practical use. That is, it is not practically possible to separate and manage the small, scattered areas of Class 3 land within the wider matrix of Class 4s 2 land.

and

> Having a LUC 4s classification means that the arable potential of the land is severely limited by the characteristics of the soil, which in this case is the stoniness and shallow profile depth. These features reduce the overall water holding capacity of the soil and makes it vulnerable to moisture deficits, restricts plant root space, cultivation options and crop options.

[147] The NPS-HPL refers to a predominant characteristic of LUC 1-3 as being the basis for mapping HPL soils.[26] It is clear to us that the predominant soils here are not in the LUC 1-3 category. That being the case we can comfortably move from considerations under that Policy Statement to the more general matters of soil health and potential contamination from the proposed activity.

[148] Mr Hanmore set out an analysis of the quantum of soil area and volume which will be disturbed through the construction phase of the project. These soil disturbance activities are made up of the earthworks to provide access to, around and through the site as well as cable trenching and formation of hardstand areas. He also included a contingency allowance and noted that the supports for the solar panel do not require excavation as they will be driven into the ground some 1.2m.

[149] He confirmed that the primary construction activity concerning accessway and hardstand construction will remove the most productive layer of the soil (Some 9ha of it). This will require remediation at decommissioning of the site. He suggested in the case of trenching (to approximately 1m) for cabling, topsoil can be removed and stored to be

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[26] See NPSHPL, definitions of "LUC 1, 2, or 3 land" and "highly productive land" and cl 3.4.

placed back to the top of the trench once cabling is completed.

[150] We were also told the shading of the land from the panels can assist in retaining soil moisture but Mr Hanmore saw shading as likely to reduce pasture growth and suggested lower stocking rates (than current rates) of sheep. He noted:[27]

> Lighter and few stock will reduce potential trampling damage and soil compaction while natural soil processes such as expanding and contracting, and invertebrate action will help to reverse any soil compaction present.

[151] In relation to potential soil compaction through general construction activity Mr Hanmore noted that if such works were to be carried out in dryer months this would minimise adverse effects.

[152] Mr Hanmore made several recommendations concerning decommissioning of the Solar Farm which we understood to be captured in conditions ultimately agreed between the Council and the applicant. We address decommissioning later in the decision when we consider the proposed conditions of consent.

[153] The applicant also provided evidence on potential for ground water contamination with the assistance of Ms Williamson. Essentially Ms Williamson had undertaken a desktop exercise researching the NZ Geotech Database for the area within 1.5km of the site for bores drilled to less than 13m. She advised that Records indicate the depth to groundwater of the shallow aquifer is typically between 2.2 m to 4.4 m below ground level (mBGL), with one location encountering groundwater at 1.3 mBGL. She also advised that connectivity between the shallow aquifer and any deeper aquifer layers has not been established.

[154] We note that there was some difference of opinion as to whether domestic drinking water was extracted from the shallow aquifer with Ms Creevey and Ms O'Connor jointly submitting that most drinking water bores in the area tap into the top

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27 Hanmore EIC dated 14 February 2024 at [47].

layer aquifer which is essentially filled by surface water which drains into it. We accept that water is likely to be taken for domestic purposes and in any case that of itself is not a reason to place any more or less weight on the consideration of the potential to contaminate this resource.

[155] Potentially contaminating activities and land uses are defined on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL). Activity B4 on the HAIL covers land where power stations, substations and electrical switchyards are or have been in operation. However, Ms Williamson advised:[28]

> In accordance with the HAIL guidance document, the 33 inverter stations do not represent a HAIL activity because they do not require fuel and, taking into account maintenance inside the housing structure, will not generate hazardous waste. The inverter stations do not represent a potential source of soil or water contamination.

[156] We note that the number of inverters she considered was fewer than that proposed but scale does not alter her finding that an inverter station does not represent a risk to soil or water contamination.

[157] Ms Williamson also considered the substation and a switchyard to be constructed as part of the project at the eastern end of the site. We understood that the detailed design of the substation has not been finalised but is understood to be similar to, or smaller in size than, the existing Transpower substation located less than 200m to the east of the eastern site boundary. This activity also falls under HAIL Activity B4 and the potential for contamination arising from this activity could include:[29]

> 27. … storage and use of insulating oils in the transformers, temporary storage of waste oil before this is disposed offsite, storage and use of outdoor maintenance chemicals (e.g. paint, cleaning products), blast cleaning of infrastructure generating residues, and corrosion of galvanised metal infrastructure.
>
> 28. The type of contamination that could be expected from the substation is most likely metals (primarily copper and zinc), and hydrocarbons (petroleum and polycyclic aromatic hydrocarbons). These contaminants

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28 Williamson EIC dated 22 August 2024 at [25].
29 Williamson EIC dated 22 August 2024 at [27].

> could be deposited in underlying surface to near-surface (<0.5 mBGL) soils *if* there are no containment systems to prevent this.

[158] Ms Williamson advised that construction of this facility will be in accordance with guidelines implemented by Transpower and includes containment measures and protocols which mean over the 35 year life of the facility:

> … The groundwater table will not intercept the potentially contaminated surface soils and there is not expected to be any leaching of surface soil contamination to groundwater due to the low contaminant concentrations.

[159] However, since the substation represents a HAIL activity post decommissioning investigations will be required for removal or land use change and this is covered by conditions proposed by the applicant (Part F of the Condition set).

[160] In relation to the potential leaching from the solar panels themselves, Ms Williamson described her understanding of the makeup of the panels with the caveat that the panels are yet to be purchased/settled on. She indicated that:[30]

> 34. Concerns about the environmental effects from solar panels are related to the use of per- and polyfluoroalkyl substances (PFAS) in the composition of the backing sheet and sometimes used in glass surface coatings; and use of metals harmful to human health within the PV cells, particularly lead and cadmium. The glass, silicone, metal, and plastic componentry that makes up the remainder of the panel composition are considered standard construction materials that do not generate discharges of hazardous substances.
>
> 35. Solar panels have been widely documented to contain PFAS in backing sheets and are still actively marketed as so by chemical manufacturers. While a transparent fluoropolymer (polyvinyl fluoride (**PVF**) with brand name "Tedlar") is available for use as a backing sheet in bifacial panels, this is a proprietary product and transparent glass panels are more commonly used. FNSF have not confirmed what the backing material of their panels will be.
>
> 36. Fluoropolymers such as PVF have a high molecular weight and low solubility, and are understood to not readily break down to more harmful types of PFAS. The potential environmental risks from use of fluoropolymers thus primarily relate to discharges generated during the manufacture and disposal of PV cells. There are no PFAS risks posed by the use of glass backing sheets.

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30 Williamson EIC dated 22 August 2024 at [34]-[36].

[footnotes omitted]

[161] She considered a range of possibilities for discharge of PFAS and metals from the solar panels and considered discharges unlikely and in the event that this might occur through damage, the Operational Management Plan (required by the agreed conditions) would address this concern.

[162] Ms Williamson also addressed the leaching of the galvanised treatment of the support panel structures embedded approximately 1.6m into the ground. She opined:[31]

> … the Site is located on river gravels/alluvium, where the depth to the shallow aquifer can be as little as 1.3 mBGL. This means that there is potential for groundwater to come into contact with the base of the galvanised steel piles, although the contact time is expected to be relatively limited due to the free-draining nature of the alluvium and evidence of groundwater more often occurring in the 2.2- 4.2 mBGL range.
>
> and
>
> There is potential for zinc in galvanised coatings to leach to surrounding soils and infiltrate through to groundwater either during rain events, at the times when the water table is high and submerses the base of the galvanised piles, or due to atmospheric corrosion.

[163] Considering the specific characteristics of the site and aquifer, Ms Williamson concludes that:

> Conservatively assuming 6 μm per year of corrosion over a 35-year consent period results in up to 0.18 mm of corrosion on the piles, which is considered to result in only a negligible amount of zinc being released.

[164] For above ground galvanised structures, she concludes:

> The Site is also located in a low atmospheric corrosivity category, so the risk of zinc deposition to soil from aboveground corrosion of the piles is insignificant. Accordingly, the risk of zinc in stormwater discharges is also negligible.
>
> and

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31 Williamson EIC dated 22 August 2024 at [42]-[44].

> No requirement for groundwater monitoring for zinc has been recommended because the leaching potential of zinc in the piles is considered minimal and effects are considered less than minor in the context of the shallow aquifer and wider Moroa water race system.
>
> [footnote omitted]

[165] Overall, Ms Williamson concludes the proposed solar farm does not present an unacceptable risk to human health or the environment during its operation and following decommissioning so long as appropriate mitigation measures as set out in the proposed conditions of consent are implemented.

[166] We also had evidence from Dr Bull who, among other things, is a specialist in matters concerning site contamination. His evidence was prepared late in the piece for SWDC in response to questions about existing contamination on the site. Little clear evidence was available to confirm whether any HAIL land use has occurred on the site and Dr Bull suggested as a precaution a Preliminary Site Investigation (PSI) in accordance with the Ministry for the Environment's Contaminated land management guidelines No. 1: reporting on contaminated land in New Zealand should be prepared before works begin. That recommendation has been accepted by the applicant and is included in the Council/applicant agreed conditions provided in closing. We are satisfied that with that condition in place we need not take this matter further.

[167] Despite the technical evidence produced by Far North and the Council, several submitters spoke to their continued concerns about soil health and contamination concerns (primarily concerning the potential for contaminates to reach ground water). Among these, Mr van Steensel and his partner Ms Carolina Neerincx, who have both practical and expert knowledge in agricultural practice and propagation in this place, provided detailed information on agricultural/ cropping and soil health. This couple own and operate the Wairarapa Eco Farm and have lived on their block of land since 1996.

[168] Mr van Steensel set out his extensive expertise and a short background to his family's establishment and operation of the Wairarapa Eco Farm (supported with

evidence from Ms Neerincx and their daughter Ms S van Steensel). He described this as being a professional vocation as an ecology research station. Essentially, the Eco Farm is putting into practice the learning and teachings that he and his wife have been involved in through their careers. Mr van Steensel explained that:[32]

> … in addition to domestic requirements, I interrelate with the soils, the natural waters and the ecology that the site provides. We have provided proof of concept that genuine progress can go together with farming while maintaining and/or improving soil, water, air and landscape quality
>
> and
>
> We are successful in converting grassland (assumed low land use capability classification (LUC) based on mainly physical characteristics) into a functionally diverse, innovative, ecological (food) production unit that now supports 2,000 shelter trees, olive groves, wine grapes, tunnel houses, and a market garden (supplied over 100 families with fresh fruit and vegetables), chickens, horses, pigs and dairy sheep. It has been fully organically certified from 2001 to 2022.

[169] Mr van Steensel noted the success of the development on soils which are conservatively evaluated as not HPL:[33]

> Validating that with the introduction of mature characteristics into the ecosystem food production can go hand in hand with environmental care. It turns New Zealand official LUC system into a mockery with its strictly physical approach. The threat to our food security needs a better appreciation for soil microbial population and soil organic matter (living soil). These are the true drivers of food quantity and quality.

[170] With reference to the establishment of the solar farm he explained that he was concerned with:[34]

> … mainly invisible hazards [that] have adverse effects on the ecology (soil, water, air, and landscape quality) as I stated in my original submission. This is manifested in the circumstances in which we find ourselves with large areas of stony silt loam (with pasture), much of it only several feet above the water table (during winter), are to be covered by equipment (including rare earth's/trace elements) which are exposed to chemical, physical and biological weathering resulting in the breakdown (e.g. deterioration) and thus water entering the panels hence dissolving

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32 F van Steensel EIC dated 5 April 2024 at [3]-[6].
33 F van Steensel EIC dated 5 April 2024 at [8].
34 F van Steensel EIC dated 5 April 2024 at [13]-[15].

> in e.g. metals and rare earth's transporting them to the ground and other water bodies. The question is not 'Does this happen'? The question is 'How long does it take, what will be the volume of resulting contaminants and how long does it take to accumulate toxicity levels'? The introduction of large-scale equipment with rare-earth/trace elements can easily upset the local ppm (parts per million) balance of these elements (baseline or ratio) in the soil and the resulting accumulation causing toxicity aspect of rare earths/trace elements.
>
> …
>
> … a potential cocktail of contamination to groundwater which will become evident in the medium to long term, affecting generations dependent on that groundwater.

[171] In her concluding statement Ms Neerincx explained the family's concern in a rather fundamental way:[35]

> … Eco Farm pride itself on the absence of any chemical pesticides, fertilizer and veterinary products or newly tanalised post use over the past years. The possibility that the water we drink, wash and cook, the water we water the plants or give to our animals will be containment - contaminated with clusters of heavy metals since we are downstream from the solar farm is a step too far. It will demolish everything we have stood for, established, taught and lived for.

[172] As set out previously, we also head from Mr Henderson who is an expert in ecology and ecotoxicology having many years' experience with Landcare Research, and environmental assessment for animal health and risk assessment relating to different toxicants. Mr Henderson has researched a prototype solar facility at Brookside Mid-Canterbury that had been in place for 9.5 years. This study has informed his evidence in relation to the subject proposal.

[173] All these submissions confirmed to us a real concern regarding potential discharges and thus the potential adverse effect on natural resources if not appropriately addressed by the proposal.

[174] With the assistance of the various expert witnesses and Mr van Steensel, the Court explored whether there was potential to monitor the proposed activity for potential

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35 Transcript Neerincx at 1002.

contamination and whether from monitoring, mitigation might be possible. Mr van Steensel particularly agreed that this could be done. While his focus over his career has been on soil regulation, he felt a similar system of monitoring could be designed fit for purpose. In Mr van Steensel's opinion:[36]

> … monitoring programmes are absolutely critical. And in my world, these are being done on a fairly regular basis. You can - it depends a little bit on what you monitor, but you can safely assume that generally it is over a year, over yearly periods.
>
> …
>
> Is there anything you can do in hindsight with the trace elements? Not really. Because you're going to have to wait to, for them to be used up. If you have a high organic matter content, they can be stored in the organic matter and become inactive, so to speak, for a while, but if you decrease the organic matter content then they end up in the system again.
>
> …
>
> The organic matter … stores it, but with regards to trace elements, there's very little you can do once toxicity levels have been raised because your production system depends on microbes, and the microbes are being poisoned by it.
>
> …
>
> the best advice here is to monitor the soils and stop whatever is happening when you know there is a rise in, in those critical elements.

Outcome

[175] There are clearly important environmental issues at stake here, the extent of which are uncertain. Solar farm technology is relatively new to New Zealand and, as Ms Williamson noted, there is little research on contamination arising from their establishment and operation. While we accept that the panels themselves have changed since earlier installations such as that considered by Mr Henderson, we also acknowledge that it is not yet determined what panels will be used. Moreover, we acknowledge the submissions from some very relevantly experienced people, whose rural production could be potentially adversely impacted if things go wrong.

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36 Transcript F van Steensel at 989-992.

[176] We have therefore reviewed in detail the expert evidence before us and looked very closely at the proposed conditions of consent which now include a requirement for a State of the Environment Monitoring Report (SEMP). As the conditions are drafted, the SEMP is to provide information and data for the consideration of the Community Liaison Group (CLG). While the purpose as set out in C64 is somewhat limited (see conditions C63 and C64) a more appropriately crafted condition would secure a baseline and set thresholds for review and action. The condition as put to us, is leaving the CLG as the party which might raise a concern, when this should rest with the Council. A defined threshold which requires reporting to the Council and then triggers action by the District Council or applicant to involve the Regional Council would provide a check in circumstances where little is known about this activity's discharge characteristics.

[177] For completeness we note that the reference in proposed condition A13 should be to condition C63 rather than C62 and that there appears to be a discrepancy between the monitoring duration/frequency as between these two sets of conditions.

[178] While recognising the real concerns of s 274 parties, we are satisfied on the evidence before us that with conditions appropriately drafted and adhered to there is likely to be no adverse effects on the life supporting value and quality of the fresh water resources or soils.

Hazardous substances and Fire

[179] After hearing from s 274 parties, the Court requested the applicant to provide a Fire Risk Assessment which had not been included in evidence and was a matter of considerable concern for neighbouring property owners and occupiers. The Court specifically sought:[37]

(a) assessment of fire risk from the construction and operation of the solar farm itself and from adjoining rural/domestic activities in the context in which it

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37 Court Minute dated 9 July 2024.

is located;

(b) assessment of any additional risk associated with screen planting;

(c) mitigation proposals to reduce identified risks;

(d) protocols for fire containment depending on source and site factors;

(e) protocols for communication/warning in event of fire.

[180] Mr Hamish Denize, an engineering consultant with experience on small to large electrical infrastructure projects, transformers and substations subsequently provided evidence to the Court on these matters. While not having worked specifically on a Solar Farm project such as that proposed here (which spans many hectares of farmland), Mr Denize noted that he was unaware of any New Zealand fire engineer who had. We took this to mean that this is a relatively new technological industry to New Zealand and therefore local experience is scarce. Advantageously, Mr Denize came from a farming background and felt familiar with the setting of the proposed facility.

[181] Mr Denize attached a report to his statement of evidence titled Proposed Greytown Solar Farm – Fire Risk Assessment by Beca Limited (13 September 2024, Revision B) which he was heavily involved in preparing, along with others, and approved. He explained that this Fire Risk Assessment forms and underpins his evidence.

[182] We understand from the methodology in the Fire Risk Assessment that a risk characterisation approach, defined as "a process to characterize the risk associated with fire that addresses the fire scenario(s) … their probability and their potential consequences" was undertaken. A relative qualitative approach was used to characterise the probability and consequences and therefore risk to the exposed target identified as the local environment around the solar farm, with the primary fire stimuli being fire spread and smoke and combustion gases. The report does not determine the acceptability risk threshold for the characterised risks. Potential water contamination resulting from a fire was also considered.

[183] A review of available literature and information is identified to have been undertaken together with consultation with Fire and Emergency New Zealand (FENZ). A section on firefighting policies and procedures is included with the following statements:

> FENZ is aware of the increasing presence of solar farms in rural areas of New Zealand and is in the process of developing a national firefighting procedure for solar farms.
>
> FENZ noted that its current default position is to treat fires at solar farms in a similar way to how it treats fires at electrical substations. FENZ will mobilise to the site and wait at the site entry until met by a site representative, enter the site when advised it is safe to enter and undertake firefighting activities after electrical hazards have been mitigated. The site representative would also be required to advise FENZ which assets to protect, as well as handle any media queries and take control of the site once the fire is extinguished. FENZ noted that a site representative is expected to be available to attend the site within 1 hour.
>
> FENZ noted that an Emergency Response Plan (ERP) needs to be developed with site operator and is a proposed consent conditions (which is also consistent with the Transpower … standard …). This will inform fire fighters of site-specific risks and facilities, as well as enable FENZ to develop a pre-determined plan should a fire occur.
>
> With a pre-determined Emergency Response Plan, the Officer-in Charge (OIC) may choose to enter the site prior to the arrival of a site representative to undertake firefighting. Based on plans developed for other sites, the firefighting activities would most likely be limited to containing the fire within access tracks doubling as fire breaks. FENZ has advised FNSF to provide a minimum gravel access road width of 4m wide as a fire break. Fire fighters will not conduct firefighting on or beneath the solar arrays.

[184] Mr Denize accepted that the presence of screen planting increases fire risk near the proposed Solar Farm boundaries, simply by being present. In his opinion the screen planting fire risk has been reduced to a reasonably practicable level by proposed consent conditions which require selecting FENZ listed "low flammability" or "low to moderate flammability" tree species, tree size maintenance together with the gravel access tracks/fire breaks, firefighting vehicular access and fire water storage.

[185] We also note that the revised layout of the Solar Farm places the invertors centrally in the site and away from neighbouring properties, relocates water tanks to assist

with fire fighting and provides improved passing and access for fire appliances.

[186] Mr Denize noted that it was also proposed to have in place the following:

(a) An Emergency Response Plan (ERP) developed and agreed with the New Zealand Fire Service (FENZ).

(b) A Construction Fire Risk Management Plan (CFRMP) which would identify potential fire risks (e.g. identification of "hot works" and sequencing development steps to maintain access to firefighting resources) and have in place mitigation responses.

(c) An Operational Management Plan (OMP) which would address such matters as electrical equipment maintenance, firefighting water storage, access, and fire break maintenance.

[187] These plans, in Mr Denize's opinion, provided fire risk reduction mitigation such that the "fire risks emanating from a fire event in the proposed Solar Farm while operating, is no more than compared with the existing rural context". He opined that there is an elevated fire risk during the construction phase of the project which can be addressed by an effective ERP and CFRMP that would be comparable or better than the existing rural risk of fire spread from external activities (e.g. grass fires or wildfire arising from other properties).[38]

[188] Ms Williamson also addressed the issue of contamination in the event of a fire in answer to questions from s 274 parties. It was her view that based on "guidance values that are derived through extensive toxicological and scientific studies to determine potential contaminant risks on people and a short-term localised fire would be no different to a house fire next door to your property". This view was qualified by stating that it was dependent on an appropriate ERP.

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[38] Denize EIC dated 13 September 2024 at [19]-[22].

[189] As to the proposed Solar Farm substation, Mr Denize considered that this presents a higher fire risk, than would otherwise be the case if the substation were not present. He noted that Far North have confirmed that the substation design will meet Transpower's "Substation Fire Mitigation Design Standard" and said this standard has comprehensive fire risk mitigations, which includes equipment spatial setbacks to boundaries, FENZ response/tactics, firefighting provisions and a substation specific ERP with FENZ familiarisation. It was his evidence that there are hundreds of substations located in New Zealand, typically in similar outdoor rural contexts (such as the existing Greytown Substation adjacent to the proposed Solar Farm site) and that given the proposed substation design will meet Transpower's comprehensive standard, the fire risks will be mitigated to at least those good practice standards currently applied in New Zealand.

[190] Mr Denize also gave evidence that protocols for fire containment have been considered in the proposed fire risk reduction mitigations to reflect source and site factors. It was his expectation that the EMP, CFRMP and OMP would comprehensively contain emergency protocols, construction protocols and operating protocols to mitigate fire risk.

[191] Mr Denize also said that protocols for communication and warning in the event of fire have been considered in the proposed fire risk reduction mitigations. The proposed Solar Farm design features allow for detecting fires through electrical faults reported through the monitoring system and through the Closed Circuit Television (CCTV) surveillance system which will be supervised from a remote central control room. Like any fire in a rural context, an observer may also notice a fire. These all require a phone call to notify FENZ. The on-site Control Building housing the Supervisory Control and Data Acquisition (SCADA) will have a remote monitored automatic fire detection and alarm system. These fault and fire notification features are able to be used to notify FENZ of a fire in the proposed Solar Farm.

[192] Against all of that, we were particularly mindful of the evidence of Mr Hettige who is a submitter and local resident with engineering expertise in major grid substations and the transmission network in New Zealand including power supply to the Think Big projects in NZ. He outlined to the Court his understanding that:[39]

> Fire and Emergency NZ has no established protocols developed or resources available to deal with an industrial scale Solar Power Plant fire. The current FENZ protocol for domestic roof top solar fires is simply to Let It Burn. Considering the magnitude of this project, following this same approach could be catastrophic.

[193] We apprehend from Mr Hettige's evidence (which was not challenged) and from that of Mr Denize and Ms Williamson that a lot rests on ensuring that the detail of the conditions on fire risk along with the related management plans are robust. We note that no draft management plans were submitted to the Court nor did Mr Denize indicate that he had reviewed any draft plans. To the list of plans identified by Mr Denize, we would also add the Landscape Management Plan (LMP) which is also to include information on the type of plants used in landscaping and their location and maintenance to reduce fire risk.

Outcome

[194] Given the above, our focus is on ensuring that the conditions satisfactorily deal with both the construction and operational risks associated with the solar farm. In that regard, we find the current reliance principally on management plans to be misplaced. Management plans are subservient documents with their purpose being to inform what is needed to meet the substantive requirements in conditions. In this instance, those substantive conditions are to not only include monitoring but any action required as a result of that.

[195] We conclude that a thorough reconsideration of the conditions addressing fire risk is required. That is to start with the requirements in substantive conditions before moving to how the management plans will assist in ensuring those substantive conditions

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39 Hettige EIC dated 5 April 2024 at [12]-[13].

are achieved. Reordering the conditions so that the substantive conditions on fire risk mitigation requirements come before the specifics of what is to be contained in management plans designed to achieve these would assist with that.

[196] With respect to the Management Plans proposed, we note that condition A7 and condition B25 seem to indicate that input on such plans will be sought from a CLG which is to be established and facilitated by the consent holder. This potentially provides a feedback loop both during the preparation of the Plans and during their operation and potential review. We say "potentially" because the drafting of the conditions is not clear that prior to a Plan being submitted to the Council for compliance certification comments from the CLG are required and a record of how this review is met by amendments (or not as the case may be) to the Plan. This is considered to be fundamental to the success of such plans, as is ensuring that the purpose of each plan is made clear in the relevant condition.

Electromagnetic Fields

[197] Mr Martin Gledhill provided evidence on potential electromagnetic fields (ELF) and Mr Jeremy Verity provided evidence on potential radio frequency interference (EMC interference) associated with solar farm components such as inverters, the solar panel installations and switch gear. These matters were raised by submitters as a potential risk to health and to the operation of communication systems, for instance, internet and cell phone. Mr Verity gave us a description of the regulatory environment related to EMC (Electromagnetic Compatibility) standards which ensure that electronic and electrical devices can function as intended without causing or experiencing harmful interference from other devices. He opined that provided the applicant uses electrical equipment on the proposal which meets the detailed requirements of the EMC Standard, the equipment will be compliant with the radio communications regulatory framework. However, the applicant must ensure the electrical equipment is correctly installed to the manufacturer's instructions, all best practices are followed, and the equipment is then operated in the manner it is designed and certified to be operated in.

[198] His evidence essentially set out the requirements for compliance, but the EMC regulatory framework would require interference to already be occurring before action can be taken. We note that recommended condition D91 requires compliance with EMC standards and evidence of this condition being met to be supplied to the Council 15 working days before commissioning of the Solar Farm. We consider this to be a more proactive way of ensuing there is no interference.

[199] Mr Gledhill has not measured static electric and magnetic fields at a solar farm but considers that they would be very low. However, he provided advice on electromagnetic fields produced by alternating current (AC) carrying components that could result from a solar farm based on the results of measurements of low frequency electric and magnetic fields that he had undertaken around an existing solar farm. He advised that the principal components carrying AC will be the inverter, the transformer and the cables leading from the transformer to the electricity distribution network at the Greytown substation. He advised that:

> 7. … These create alternating electric and magnetic fields at the same frequency as the electric currents. These are often referred to as extremely low frequency (ELF) fields. As the frequency of the current fed to the electricity distribution network is 50Hz, this is the main frequency of any ELF fields produced. There may also be weaker fields at higher frequencies (up to a few kHz) near the inverter.
>
> and
>
> 9. ELF magnetic fields very close to the inverter and transformer are strong, but decrease rapidly with increasing distance. Typically they decrease to the types of level found in many houses (due to electrical wiring and appliances in the house) within 5-10 metres. At a distance of 100 m they would be indiscernible. The same is true of ELF magnetic fields found around transformers that are part of the electricity distribution network.
>
> 10. ELF magnetic fields immediately above the buried cables would be very low (similar to those found in houses), and decrease to indiscernible levels a few metres to the side of the cables.
>
> 11. The levels of the ELF fields would vary over the day, depending on how much electric power is being produced by the solar farm. At night time I would expect the fields to be much lower than during the day.

[200] Mr Gledhill opined that ELF fields from the solar farm would have no effect on the health of people around it. In response to questions from submitters he also indicated that it was highly unlikely that the ELF fields would affect bees or other wildlife in the neighbourhood.

Outcome

[201] Based on this expert advice we are satisfied that there is unlikely to be a risk to health and the potential risk to communications can be eliminated as required by conditions.

Construction traffic, earthworks, dust and noise

Traffic and construction noise

[202] The site has five accessways onto Moroa Road. Once operational, the solar farm is expected to create no more than two vehicles per day over three weeks annually for any scheduled maintenance.[40] Thus, we accept that once operational there will be very little traffic associated with the activity.

[203] This is a rural zone with the expectation of rural activities which inevitably involve vehicle/machinery and traffic associated with production as well as residential activity. Operation of the Solar Farm will generate insignificant traffic effects but it presents potential for traffic management and noise issues to arise through its construction period.

[204] There was no disagreement between the Planning experts on construction effects. We were told that construction traffic is expected to be no more than 3 trucks per day with the construction period being 18-24 months, with planted screening to be established prior to construction activities commencing.[41]

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40 Alkamil EIC dated 14 February 2024 at [71]-[72].
41 Alkamil EIC dated 14 February 2024 at [34].

[205] The total area of earthworks associated with the activity is relatively minimal as the site is flat. The s 87F report records at paragraphs [12.70] and [12.71] an earthworks area of 3,000m^2 and 500m^3 associated with a temporary construction yard, foundation blocks for substations, the piling for the support structures and the upgrading of the existing vehicle tracks.

[206] Mr Peter Ibbotson (Acoustics expert for the applicant) advised that:[42]

> The New Zealand Standard NZS 6803: 1999 *Acoustics - Construction Noise* guidelines will be complied with at all times. This is likely to require noise mitigation to Vermeer-type or any other drop hammer piling works, such as shrouds, dollies or use of alternative methods at piling locations that are within 100 metres of dwellings

[207] Conditions have been recommended by the Planning experts in consultation with Mr Ibbotson and Mr Jon Styles acoustics expert for the SWDC, to manage these effects. proposed conditions C62 and C67 require a Construction Management Plan including a Construction Noise Management Plan, as well as requirements to keep the roads clear of debris, all unloading and loading to take place within the site and ground surfaces to be adequately surfaced as soon as possible to limit dust, contaminant or sediment mobilisation. The access/entranceways are to be upgraded to comply with the WCDP Appendix 5 although we note an advice note suggesting this requirement is only for new accessways.

[208] We understand that the construction will be staged across the site, and this will be set out in the Construction Management Plan (proposed condition C62). Heavy vehicle movements are to be restricted to no more than 6 heavy vehicle trips (one way) per day (proposed condition C75). Liaison is also required with adjacent landowners / occupiers, but the purpose of that liaison is unclear (proposed condition C75(d)). We anticipate that this liaison is suggested to address potential noise and vibration associated with the piling of the solar panel foundations and there is a connection with proposed condition C67. We would expect to see clearer parameters set out in conditions around this work where

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42 Ibbotson EIC dated 14 February 2024 at [9].

this is proximate to rural residences.

Outcome

[209] We accept that construction type activities are not uncommon in the rural area for instance cropping, fencing, and cultivation activities and the like will have noise and dust effects. The proposal here will take place in stages across the site and will be required to be managed to specific standards and in accordance with methodologies set out in management plans.

[210] The detail of those management plans is not before this Court, but the scope and purpose are (or at least should be). We note proposed conditions C67 and D82 which appear to address likely construction noise issues. However, we would expect to see hours when noisy construction activities are allowed in a condition as well as any specific mitigation requirement, not in a management plan. Similarly, we would expect limits or performance standards to be clear to ensure dust is not carried across to adjacent residences where it may cause nuisance to clean water collection, outdoor residential activities and the like.

[211] For completeness we note that condition C68 appears to require the Council to certify the Construction Noise Management Plan within 15 days of receipt and review any further amendments within 5 working days of receipt. Unless the Council is clearly prepared to accept such a condition, these requirements which purport to bind the Council in this way are unlikely to be enforceable.

[212] It is not clear who is to complete preparation of the Construction Management Plan in condition C69 and when conditions C71 and C72 are triggered. Throughout the conditions reference is made to various thresholds including "prior to the commencement of construction on site", "prior to the construction of the Solar Farm", "prior to construction", before the commencement of any construction on the siteand "prior to commencement of the construction of the Solar Farm". The conditions need to be clear if these all mean the same point in time or some different points in time.

Importantly, the Council must be clear that it understands the various milestones.

[213] We anticipate that with clearly defined standards set out in conditions and then the methods to achieve these set out in the Management Plans, as well as a monitoring regime to test and ensure compliance, these environmental effects could be managed successfully.

Operational noise

[214] Operational noise is a somewhat different matter as this will be a long-term characteristic of the Solar Farm once it is operational. In addressing this point, Mr Ibbotson concluded that:

> The proposed solar farm would generate noise primarily from the operation of the solar inverters. The proposed solar farm would readily comply with the ODP daytime and night-time noise rules, and would also comply with the noise rules of the PDP. Noise from the site is expected to be generally below the existing ambient and background traffic noise levels near State Highway 2 (**SH2**), but may be above the background noise level at locations further from SH2 (where existing traffic noise levels are lower). On settled weather days, the solar farm would likely be audible at times at some locations as a low-level constant noise source.

[215] Both Mr Styles and Mr Ibbotson were in general agreement regarding the expected noise likely generated from the Solar farm. As Mr Ibbotson explained:[43]

> 10. The primary source of noise from power generation solar farms are the inverter units. An inverter turns Direct Current (DC) created by the photovoltaic cells to the alternating current (AC) that is used in the electricity grid. Some noise is also generated by the transformers and the solar array tracking motors.
>
> 11. Generation-only solar farms emit noise predominantly during sunshine hours. I expect little noise to be generated during the hours of darkness. In summer, operating daylight hours could begin earlier and extend later than the prescribed statutory daytime period of 7am to 7pm. In particular, energy generation is still likely to be appreciable after 7pm during the longer days of summer.

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43 Ibbotson EIC dated 14 February 2024 at [10]-[11].

[footnote omitted]

[216] Mr Ibbotson carried out various noise surveys to ascertain the character of the existing environment. His logger was placed at the northeastern side of the proposed solar farm. He found that the traffic on State Highway 2 (SH2) influenced ambient noise during the daytime with levels of between 43 and 53 dB L_{A10} recorded. Background noise levels of 37 and 45 dB L_{A90} were measured 760m from SH2. He noted:

> My attended measurement observations show that noise levels near SH2 are elevated (relative to the logged data) during the daytime and evening. Measurements were up to 59 dB L_{A10} at around 65 metres from SH2. As there are few gaps between vehicles on SH2 during the daytime and evening, background noise levels are also elevated (43 to 46 dB L_{A90}). Dwellings near SH2 are therefore already exposed to noise levels that are well above those that the proposed solar farm would generate.

[217] However further away from SH2 his measurements show that noise levels at dwellings to the north, west and south of the proposed solar farm (i.e. dwellings on Moroa, Settlement and Battersea Roads) vary with the time of the day and the distance of these dwellings from Bidwills Cutting Road. He advised that:

> Measurements I conducted around the site during daytime hours in settled conditions show that noise levels for dwellings well removed from Bidwills Cutting Road are around 35 to 40 dB L_{A10} and 30 to 35 dB L_{A90} – although noise levels can be up to 50 dB L_{A10} at times when birds are active and there is activity at nearby dwellings.

[218] The rules pertaining to permitted activities are found at section 4.5.2(f) of the WCDP, and are:

Daytime	7:00am to 7:00pm	55 dBA L_{10}
Night-time	7:00pm to 7:00am	45 dBA L_{10}
	9:00pm to 7:00am	75 dBA L_{max}

[219] While the PWCDP rules are somewhat less restrictive because they introduce an evening shoulder period, noise limit compliance with the WCDP rules would result in compliance with the PWCDP. Both Plans require measurements to be undertaken in

accordance with NZS 6801 and assessed in accordance with NZS 6802. It is noted that the Operative Plan uses a now superseded version of this methodology (1999/1991) rather than the 2008 version which is referenced in the PWCDP. We note that in the opinion of both Acoustic experts, the 2008 version should be relied upon. Mr Ibbotson, however, stuck to the WCDP for his assessment and indicated that there would little material difference.[44]

[220] Mr Ibbotson prepared a detailed noise model to calculate noise from the proposed solar farm. He concluded that the Solar Farm:

(a) Would readily comply with the WCDP daytime noise rule of 55 dB L_{A10}. Even in the worst-case "100% load" scenario, noise levels would be significantly (at least 16 decibels) below the daytime noise rule.

(b) Solar farm noise levels at dwellings near SH2 would be in the order of 24 to 34 dB L_{A10}, whereas State Highway traffic would generate background and ambient noise levels that are typically higher than this during daylight hours.

(c) Solar farm noise levels at dwellings on Moroa Road, Settlement Road and Battersea Road would be in the order of 27 to 39 dB L_{A10} at times of solar generation.

> The Moroa, Settlement and Battersea Road areas are further removed from SH2 and are subject to generally lower ambient and background noise levels (noting that ambient and background noise levels in this area vary depending on local activity). I expect noise from the solar farm generation to be above the existing background (L_{A90}) noise level at times, but generally similar to or quieter than the existing ambient (L_{A10}) noise level. In this area on settled weather days, the solar farm would likely be audible at times as a low-level constant noise source.

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44 Ibbotson EIC dated 14 February 2024 at [17]-[21].

[221] Mr Styles confirmed for us that:

> 14. The applicant has addressed the preliminary concerns raised in my Review by:
>
> (a) Agreeing to submit an acoustic report prior to construction. The purpose of the report is to demonstrate that the noise levels of the selected plant arrangements can comply with the operational noise limits. The Assessment is based on indicative plant specifications.
>
> (b) Agreeing to withdraw the proposed date-stamp from the operational noise limit condition and confirming that the solar farm's 45 dB L_{10} contour does not extend across any vacant land where a notional boundary could potentially be established in the future.
>
> 15. I agree that the proposal can be designed to comply with the operational noise limits prescribed by Rule 4.5.2(f) of the District Plan. This rule controls the maximum level of noise received at the notional boundary of any dwelling in a Rural Zone. I agree with Mr Ibbotson's finding that the noise levels received at notional boundaries will be well below the permitted standards.
>
> 16. I agree with Mr Ibbotson's finding that the solar farm would likely be audible to the closest receivers when meteorological conditions are calm. The noise will be experience[d] as a low-level, constant noise source. Mr Ibbotson's evidence confirms that the noise levels are likely to be at least 16 decibels below the permitted day time standards and 6 decibels below the permitted night-time standards.

[222] However, there is disagreement on the L_{A10} operational noise limit which should apply at any notional boundary within any other site (proposed condition E95). The Council experts recommend 40 dB L_{A10} at all times whereas the applicant experts prefer 45 dB L_{A10}.

[223] We understood this to come down to an understanding of existing amenity enjoyed at this place rather than a district plan rule. District plan rules are in place to regulate effects from permitted activities. Activities such as that proposed are to be assessed in real terms related to the expectations set out in the relative zone bearing in mind in this case the solar farm will have different characteristics to permitted activities primarily due to the continued duration of the noise.

[224] The assessment undertaken by Mr Ibbotson confirms existing levels of noise lower than that permitted at notional boundaries for existing residences. Given the character of the duration of the operational noise we prefer the recommendation of Mr Styles and Mr Pollard setting a maximum operational noise limit when measured and assessed at any notional boundary on any other site at 40 dB L_{A10} which is more in accord with the character of the area.

[225] We note that proposed condition E96 has been amended to refer to future dwellings when assessing noise however the reference to "possible non fanciful future dwellings" is uncertain and as such likely unenforceable. This will need to be reviewed at the drafting session in accordance with our directions.

Outcome

[226] Overall, with the recommended conditions of consent (as refined by the directions in this decision) and monitoring of the noise effects together with the potential to review acoustic treatment if necessary, we conclude that the operational noise of the proposed solar farm is able to be managed to ensure the ambient noise environment remains appropriate for those residing in the area and the existing amenity is retained.

Cultural effects.

[227] We received evidence from Mr Greg Hay, the Communications and Engagement Lead for Far North, a role he has held since February 2023. He confirmed engagement he has had with iwi group Ngāti Kahungunu ki Wairarapa (Ngāti Kahungunu) who hold mana whenua for the area in which the solar farm sits. No submission was received with regard to cultural effects, and we understood this was not an issue with respect to the proposed Solar Farm.

[228] The recommended condition set includes an accidental / archaeological or waahi tapu discovery condition which requires works in the area to cease immediately together with a protocol for recommencement. We accept these are necessary and appropriate

conditions.

Ecological effects (birds and bats)

[229] Ms Lily Tidwell, an ecologist retained by the applicant, undertook a site visit on 12 July 2023. She advised that all land parcels and shelterbelts were inspected and evaluated. Vegetation types were identified and described, and all incidental fauna observations were recorded.

[230] Ms Tidwell also reviewed and addressed concerns raised by submitters, summarising these under the following topics:

(a) general biodiversity concerns;

(b) heat generation/Heat Island Effects;

(c) shelterbelt removal;

(d) non-indigenous planting.

[231] Ms Tidwell peer-reviewed scientific literature in relation to each of these concerns (a total of 30 papers), which she then applied to the project, taking account of the type and scale of the proposed works within the context of the ecology of the Greytown area.

[232] Ms Tidwell noted that:

> One 'At Risk' bird species has been recorded in the Greytown area: pīhoihoi (New Zealand pipit, *Anthus novaeseelandiae*; At Risk – Declining). This species commonly occurs in grassland habitat, including exotic-dominated pasture, and was seen during a site visit to the proposed solar farm location. Kārearea (New Zealand falcon, *Falco novaeseelandiae ferox*; Threatened - Nationally Increasing) is also likely to be present in the area, as they are regularly observed in nearby Martinborough. Other indigenous birds seen on-site were pūkeko (*Porphyrio melanotus*), pūtangitangi (paradise shelduck, *Tadorna variegata*), kāhu (swamp harrier, *Circus approximans*), and spur-winged plover (*Vanellus miles*), all classified as 'Not Threatened."
>
> [footnote omitted]

[233] Ms Tidwell found that in a review of bird mortality at solar farms around the world:

> … concentrated solar plants were found to be far more dangerous for avifauna than PV cell systems as they create extremely bright reflections and have resulted in burns when birds land on the panels or fly through concentrated light beams (Taylor *et al*., 2019). PV cell systems do not concentrate light or produce extreme temperatures, but do still pose a potential collision risk for birds. Reducing reflectivity (Visser *et al*., 2019), especially the reflection of polarised light (Taylor *et al*., 2019), may reduce collision risk, but no studies have confidently determined what causes birds to collide with PV panels

[234] She felt little is known about these effects and suggested a monitoring programme be developed as part of this proposal. We note a recommended condition of consent includes both bird and bat fatality monitoring with triggers for response. An "Incidental Discovery Protocol" is to be developed to guide appropriate responses if dead birds or bats are discovered on the site.

[235] While lizard species have been known to be present in the Wairarapa Plains Ecological District, little to no lizard habitat was observed at the site, as the grass is grazed short by sheep and the shelterbelts have very limited understorey vegetation.

[236] Ms Tidwell also researched the presence of Long-tailed Bats (*Chalinolobus tuberculatus*, Threatened – Nationally Critical) which we were told are known to roost in exotic trees and forage over farmland. She noted that Department of Conservation records show only one bat recorded in farmland some 6.5km from the site in 1967. She opined that it was nevertheless possible that long-tailed bats utilise pastoral habitats in the Greytown area.[45]

[237] Ms Tidwell concluded from her site visit that:

> The land is currently grazed exotic pasture (WWLA 2022) wherein vertebrate fauna mostly comprises exotic species such as rabbits, rodents, mustelids, hedgehogs, cats, and introduced birds. Establishment of the solar farm is therefore unlikely to result in the loss of habitat for indigenous vertebrate fauna.

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45 Tidwell EIC dated 31 January 2024 at [16]-[22].

[238] Her research indicated that the most common adverse ecological effect of solar farms is the destruction and fragmentation of indigenous habitat during the construction phase. These impacts can be minimised by siting farms in locations with low indigenous biodiversity. Interestingly she found:

> A Dutch study found that all land use measures – for soil, water, vegetation, and biodiversity - scored better for solar farms than wheat fields (Vervloesem *et al.*, 2022). Similarly, studies in southern California found greater vegetation abundance and diversity on solar farms than on surrounding agricultural and ranch sites (Gasparatos *et al.*, 2017).

[239] She found that where consideration for biodiversity has been integrated into solar farming siting design and management, they can support a diverse assemblage of plants, pollinators and birds. In respect of insects, she found that:

> … flying insects which lay their eggs in water are polarotactic, meaning they use horizontally polarised light to locate bodies of water. This type of light is also produced by many human-made surfaces, including cars, windows, and PV cells (Fraleigh *et al.*, 2021). This creates an "ecological trap" whereby the insects mistakenly lay their eggs on the panels (Fraleigh *et al.*, 2021). However, anti-reflective coatings (Száz *et al.*, 2016), microtextured surfaces (Fritz *et al.*, 2020), and lines of non-polarising material on the surface of panels (Black and Robertson, 2020; Horváth *et al.*, 2010) are all methods proven to deter polarotactic insects. Avoiding placement of solar farms near aquatic invertebrate habitats further reduces the risk of creating an ecological trap (Horváth *et al.*, 2010).

[240] We were told the panels to be used for the proposed Greytown solar farm will have gridlines and anti-reflective coatings thereby reducing risks for polarotactic insects.

[241] Ms Tidwell also explained that extremely Low Frequency (ELF) electromagnetic fields (EMF), such as those emitted by power lines, have been shown to adversely affect the cognitive and motor function of honey bees, reducing their ability to gather food and pollinate. However, she opined that:

> It is unlikely that indigenous bees are present at the site given the lack of indigenous vegetation, but honey bees could be vulnerable to EMF pollution if they forage on the site. Any associated effects on apiculture or agriculture are beyond the scope of this statement of evidence.

[242] We note that the evidence from Mr Gledhill concurred with this.

[243] Finally, we note that the applicant has accepted conditions which will result in ecological monitoring of the site including the development of protocols to respond to issues should they arise. In addition, the landscape mitigation (which is to be implemented at the start of the project and staged with construction) will introduce a significant beneficial gain in potential ecological habitat. Ms Tidwell opined that ecologically, it would be more appropriate to utilise indigenous plants to create a visual screen around the solar farm which is now shown in the proposed detailed landscape mitigation plan. She opined:

> Studies in North America and Europe have shown that high quality wildlife habitat can be created by planting the margins of solar farms with locally-appropriate indigenous vegetation (Montag *et al*., 2016; Nordberg *et al*., 2021; Sinha *et al*., 2018; Taylor *et al*., 2019). There is a general paucity of indigenous vegetation in the Wairarapa Plains Ecological District and the addition of indigenous plantings around the 266 hectare solar farm would therefore represent an opportunity to enhance indigenous habitat values at the site.

[244] Ms Tidwell also addressed concerns raised by submitters who described a potential "heat island" effect above panels and conversely ground cooling effects beneath solar panels. She explained that such effects are not expected here given local climate conditions and the fact that the panels are elevated.

Outcome

[245] A fairly robust regime for monitoring and managing removal of existing shelter belts to avoid harm to potential bird and bat life is proposed in a situation where the extent of potential risk is considered low. In addition, pest management is proposed (refer to condition B52) and the staging of clearance and development and the landscape mitigation plan submitted at the completion of the hearing are significant improvements to the initial proposal.

[246] That said, once again the conditions require further review and refinement to ensure this outcome. Condition B49 would be improved by making it clear that tree clearing cannot proceed until the necessary checks for indigenous birds have been

undertaken and the report received and the purposes of the management plan should be made clear in condition B51.

[247] On the basis of the evidence before us, we find that the Landscape Mitigation Plan is likely to improve the ecological character of the site and potentially wider area simply through the provision of habitat. If clearance and construction is appropriately managed, we can see some potential benefit from the project to the ecological wellbeing of the local area.

Effects of water races

[248] The Moroa Water Races are manged through the Moroa Water Race Bylaw 2007. In addition, conditions are recommended at B26 to B30 with an advice note clarifying that the water race water is only available for farming purposes and is not an available resource for the solar farm. We note "farming purposes" is defined in the Bylaw as meaning "the provision of water for stock to drink".

[249] As set out previously, a monitoring regime is proposed to understand any potential contamination through run off and this provides for mitigation to be put in place should contamination be found. While we consider the advice notes are better cast as conditions, we consider that with the conditions in place any adverse effect on the water races is appropriately managed.

Economic Effects including tourism

[250] We have set out earlier Mr Andrews' advice regarding the positive economic effects from the provision of solar energy. However, for the owners and operators of the Eco Farm there is a perceived adverse effect of having a solar farm next door. We have no evidence to support the suggestion that a solar farm will be a deterrent to a business with a high focus on environmental sustainability. Rather, given solar energy is seen as a sustainable energy resource, we consider it is not fanciful to expect that the two activities may be perceived as positive outcomes for future food production and energy supply.

We are also comfortable that the potential for any adverse physical effects can be addressed by conditions attached to the consent accepting that in some cases further refinement of the conditions as presented to us is required.

[251] An additional concern was raised regarding a perceived negative effect on tourism character of this area – its heritage value and rural character and the "conversion of the tourist township approaches, passing through a pastoral environment to a built one, takes the form of electromechanical machinery and associated structures affecting the amenity value".[46]

[252] We have addressed the landscape mitigation, the design of which has been described by one submitter as a "curtain" of indigenous vegetation around the solar farm. This planting design can, if successfully implemented, provide appropriate landscape mitigation such that the solar farm's presence will be largely unnoticed when travelling through this neighbourhood and the Landscape Mitigation Plan will also provide ecological benefits. We find this perceived adverse effect to be unfounded. We conclude that the local character can be maintained and enhanced as a result of the mitigation provided in the recommended consent conditions, although some refinement is required in some conditions as set out in our decision.

Conditions

[253] As set out previously, we received a set of conditions subsequent to the hearing which were agreed in all but one matter between Far North and the Council. As a full set of conditions had not been circulated during the hearing, the Court extended an opportunity to the s 274 parties to review and comment on the draft revised conditions, which several parties did. Those comments were reviewed by Ms Alkamil and formed part of her revised set of conditions dated 12 March 2025 to which we now refer. The comments from s 274 parties have also been reviewed by the Court and have formed part of our determination.

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46 By way of example: Issac EIC dated 23 March 2024 2024 at [15]-[17].

[254] We are satisfied that the effects of the solar farm proposal on the surrounding environment and community can be appropriately managed by conditions as we have set out in this decision. However, we consider that the condition wording requires significant improvement, and we direct the Council and Far North to provide a further set of conditions to the Court taking into account the matters set out in this decision. The matters identified throughout the decision are not exhaustive and it is expected that all conditions will be revisited, particularly in light of the following paragraphs.

[255] Resource consent conditions must meet the requirements of ss 108 and 108AA, RMA. The latter includes a requirement that the condition must either be agreed by the applicant or be directly connected to an adverse effect of the activity on the environment or an applicable rule or be related to administrative matters that are essential for efficient implementation of the consent.

[256] A useful starting point for considering conditions is the Environment Court Practice Note. Clause 10.4 of the Practice Note outlines key principles for standards of good practice. Importantly, a resource consent, including its conditions, must stand on its own and be capable of being interpreted and applied independently. The conditions of consent must not undermine the consent itself or unreasonably restrict individual rights.

[257] Conditions presented to the court must be clear, coherent, certain, enforceable and properly justified. They should specifically reflect the activity for which consent is sought, including any modifications suggested or offered throughout the hearing, and must promote sustainable management.

[258] Conditions should apply specifically to the elements or aspects of the activity requiring resource consent and should not simply list all documents presented with the application. It is important that conditions explicitly state clear performance standards (as opposed to leaving these to be determined at a later date). Where expert certification or oversight is required, the condition must state clear parameters and specified standards

in relation to this.

[259] Although a number of questions were raised by the Court regarding conditions during the hearing, one specific matter that bears further discussion at this time related to whether a bond was required given the reasonably extensive decommissioning obligations set out in the consent. Both the Council and Far North took the opportunity to respond to that question in their closing submissions with neither party considering such a bond was required, although Mr Pollard provided possible wording for one should the Court take a different view.

[260] Both the Council and Far North noted that no other solar farm consented in New Zealand to date has such a condition imposed, with Far North citing a recent decision of the EPA under the COVID-19 Recovery (Fast Track Consenting) Act 2020 where the Panel held that it did:[47]

> … not consider it necessary, as suggested by Mr and Mrs Trotman, for a bond to be imposed. The Panel considers that the civil remedies available to the landowner alongside the civil and criminal enforcement mechanisms available under the RMA should be adequate to ensure that decommissioning to a standard which satisfies GWRC and CDC will be undertaken.

[261] In this instance, the consent conditions require decommissioning, and we were advised that the lease provisions for site require the lessee to remove all its improvements by the end of the lease period, repair any damage caused during this removal and to restore the site to a safe condition free from hazardous structures and material. We are satisfied that this provides the landowner with an enforcement mechanism to ensure the site will be appropriately decommissioned and alongside the consent conditions should provide an effective approach to end of life.

Overall Evaluation

[262] This application has been heard and determined within a policy context that

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47 Decision of Expert Consenting Panel on Harmony Energy NZ #2 Ltd's application for Carterton Solar Farm, 23 September 2024.

recognises and promotes the value of renewable energy. It is accepted as a matter of national policy that the establishment of renewable energy has the potential to provide national benefits while imposing local adverse effects. Through careful evaluation and consideration of those potential adverse effects and the imposition of a suite of conditions (which are to be further refined in accordance with our directions) we consider that the national benefits can be achieved without the impost of significant adverse local cost.

[263] Solar Farm development remains relatively new in New Zealand with few farms yet to be built at scale. We have worked assiduously to understand, evaluate and ensure appropriate mechanisms are in place to adequately manage identified adverse effects. There appears to be more that the industry could do to provide reassurance to communities impacted by such facilities that the national benefit will not be at their cost.

Direction

[264] Far North and the Council are directed to discuss and, where possible, agree a revised set of conditions responding to the matters set out in this decision. The Court will make available an experienced Environment Court commissioner to assist with this.

[265] The parties will provide a joint memorandum to the Court within 15 working days of the date of such conferencing setting out the agreed conditions and highlighting any areas that remain for the Court's determination.

Costs

[266] Costs are reserved in favour of the Court pursuant to the provisions of s 285(5) and (7) RMA. In the event that agreement as to costs has not been reached between the applicant and the Court's Registrar within 20 working days of the date of this decision, either may at any time thereafter seek directions from the Court for resolution.

[267] Any other application for costs should be made within 10 working days of the date of this decision. Any party may reply within a further 10 working days. Any response

to matters raised for the first time in the reply may be made within a further 5 working days.

For the Court

L J Semple
Environment Judge | Kaiwhakawā o te Kōti Taiao