Selwyn District Council
CONSENT APPLICATION 2225180
KEA-X SOLAR FARM, BROOKSIDE
LANDSCAPE REVIEW
18Sept2022

A. INTRODUCTION

1. This Landscape Review has been prepared by Graham Densem Landscape Architect, at the request of Selwyn District Council.

2. It concerns an application to convert rural farmland to a solar electric farm on a site of ultimately 258ha, in three stages, between Buckleys, Hanmer and Branch Drain Roads. The site is in the Lower Plains character area, south of the Selwyn and Irwell Rivers.

3. This is a new issue for Selwyn District's rural and farming areas, arising from the global imperatives of climate change. Further such applications are likely in the future, and for environmental reasons, should be supported in general. However from a landscape perspective, the impacts of this application on its rural landscapes are potentially significant. The issue is not whether such change should occur but how the effects should be managed and mitigated within the rural landscape.

4. The following documents have been considered in preparing this Review:
    - *The Application and AEE document prepared by Boffa Miskell Ltd, dated 9 March 2022 (AEE);*
    - *The Landscape and Visual Assessment document and its Graphic Supplement, prepared by Boffa Miskell Ltd, dated 9 March 2022 (the Landscape Assessment) and February 2022 (the Graphic Supplement);*
    - *Amended 'Existing and Proposed Site Vegetation' plan, Figure 3 of Graphic Attachment, dated June 2022;*
    - *Additional Visual Simulations by Boffa Miskell, dated 01 September 2022;*
    - *The Operative Selwyn District Plan;*
    - *SDC Baseline Assessments for the District Plan Review, notably DW015, 'Versatile Soils'.*

5. The site and environs were inspected by the writer from public roads in early May 2022.

B. THE APPLICATION

6. The proposal is to establish a solar farm comprising 5,844 solar frames, in three stages over three years, on a site of 258ha. With 26 panels per frame, this amounts to 151,944 solar panels in total. The site currently is farmed pastoral land. It has frontages on Buckleys, Hanmer Road and Branch Drain Roads but parts also are internal to the site, set back from public roads behind neighbour's land. It is 4kms north of Leeston, 8kms south-east of Dunsandel, 4 kms south-west of the lower Selwyn River and less than 1km south-west of the course of Irwell River.

7. The steel frames will bear solar panels standing 0.7 – 3.02m above the ground, angled to the sun, in rows aligned east-west. The rows will be set possibly 10m. apart, with '*sufficient space between the tables to accommodate internal roading … to allow for construction and maintenance,*'[1] and with sheep grazing to manage grass growth below. The amount or widths of roading are not shown. It must comprise, at a minimum, the orange lines on the Site Appraisal Plan, Figure 2 of the *Graphic Supplement*. However these would not allow access to the whole site, for example around the boundaries.

8. The rows will be grouped around twenty-six inverters, which upscale the DC current generated by the panels to AC current for the public grid. These comprise units up to 9.240 x 5.355m in plan and unstated height, estimated 2m, resembling the units of a small electrical substation, not housed in a building. The layout of these is shown on Figure 2. In addition, there will be a site office, comprising a 12 x 4 single-storied industrial-type building and two 40-foot containers for equipment storage, located beside the site office. These will be in the Stage 1 area, near Branch Drain Road.

9. A 1.8m high post and wire 'deer fence' will surround the entire perimeter. See *Visual Simulations* of 01 September 2022. There will be two site access points, off Buckleys and Caldwells Roads, and no external lighting on the site.

10. Apart from the tracks and buildings, pasture will remain beneath and between the panels, allowing continued maintenance grazing throughout the farm. The means of stock (sheep) management is not described but is assumed would be carried out via the two planned gates.

11. Within the site all trees will be removed, but most boundary trees retained and where necessary reinforced, for visual screening. Elsewhere around the boundaries, where plantings are minimal or have gaps, additional 3m-wide native buffers or double staggered exotic shelterbelts will be planted to reinforce what exists. Locations of the various plantings are shown on the map Figure 3 'Existing and Proposed Site Vegetation' in the *Graphic Supplement*, noting the revised map of June 2022.

C. EXISTING ENVIRONMENT

12. **Site Use and Vegetation:** The site comprises agricultural farmland currently used for dairying, with post and wire fencing, pivot irrigators, macrocarpa and other shelterbelts along fencelines, two farmhouses and various sheds and structures. One of the houses and some macrocarpa in the south along Hanmer Road are old and reflective of earlier farming in the area. The land is flat and given the roadside drains, apparently seasonally wet.

13. **Wider Context:** The locality surrounding the site comprises flat dairy farmlands of similar character to the site, with a pattern of fencing, shelter plantings, roads, houses and sheds reflecting the district's rural history. Figure 2 'Site Appraisal Plan' in the *Graphic Supplement* locates eighteen neighbouring houses and ancillary buildings, many screened from it by shelter plantings, on Buckleys, Hanmer and Branch Drain Roads. Three other houses exist on the south side of Grahams Road. These are accepted as more distant and

[1] AEE, p.5, para 4

heavily screened from the site, and not considered further. This Review also will consider four unbuilt sites with potential for house construction, as discussed later. See Map 1, p.6 below.

14. The site is described in the Landscape Assessment as *'located within a highly modified rural landscape'*[2] and *'within the Low Altitude Plains Landscape Character Area as identified in the Selwyn District Landscape Study'*[3], and this is accepted. The landform is an alluvial floodplain of the Waikirikiri/Selwyn River and smaller Irwell River. Both are seasonally dry watercourses liable to periodic flooding. A spot height near the centre of the site is marked 32m above mean sea level. It is 8kms from Waihora/ Lake Ellesmere and 16kms from the coast.

15. **Landscape Values:** The *Landscape Assessment* s.4.3 identifies the site as characterised by linear forms (shelter belts, paddock patterns) and *'possessing a distinctive rural character which is sensitive to changes in character and land use'*[4]. It identifies the following **rural amenity values**:
    - *Sense of spaciousness and openness;*
    - *General lack of structures;*
    - *Distinct linearity of forms.*

16. These are agreed but with an important additional rural amenity value:
    - *Sense of relative naturalness from predominant green of grass sward and trees.*

    This will be the amenity value most sensitive to and affected by the proposed development. Together, these four values make up the rural character of the site.

17. Identification of the site's 'distinctive rural character' in s.4.3, and its three rural amenity values, is accepted. However, the amenity value important to this application, the site's dominant **relatively natural character**, comprising grass surfaces and amenity trees, will also be considered by this Review. While the farmlands are not natural in an ecological sense, this remains a predominantly 'green' environment where exotic vegetation dominates and natural processes (soil, groundwater, weather, seasons, wildlife) continue within the human patterns.

18. **Mana whenua values** are identified on the site but the issues are understood to have been resolved with iwi, so will not be considered here[5]. Native plantings initially proposed to protect that site are no longer needed.

19. **Visual Catchment:** The Landscape Assessment[6] limits the visual catchment to the immediate surrounding area, noting *'Overall, the Site has limited visibility in the broader landscape, due in part to the flat nature of the Site and intervening vegetation.'* This is accepted. Visibility is greatest from the four roads and some of the eighteen houses and

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2 *Landscape Assessment*, s.4.3, p.8
3 *Landscape Assessment,* s.4.1, p.7
4 *Landscape Assessment*, s.4.3, p.8
5 *Email* C. Kelly to C. Scotchbrook, 21 April 2022, item 4.
6 *Landscape Assessment*, s.4.4, pp8-9

four unbuilt sites (paragraph 13 above refers). Effects on these will be considered in the Assessments Section below.

20. The visual scene is described in the *Graphic Supplement* by a series of 10 site photos which helpfully characterise typical views of the site.

21. **Soils:** From maps in the SDC Baseline Assessment DW016, 'Versatile Soils', the site straddles Land Use Capability Class 2 soils in the north and Class 3 in the south.[7] The north of the site therefore is within the 'Versatile' range (Classes 1 & 2) and the south well within the range of capability for arable cropping, pastoral grazing, and Multiple use (Classes 3 & 4).[8] The proposal is to continue management grazing of the pastures remaining beneath the panels[9].

22. 'Management grazing' is a sub-optimal use for versatile soils, and while the productivity of solar generation presumably outweighs that of optimised grazing such as dairying, economically, the versatile soils of Selwyn District will become less-used under this proposal. This in theory is reversible in terms of the 35 year lease the applicants propose taking over the land. Therefore the food-producing potential of the soils would be recoverable, minus remaining roads and foundations. In landscape terms therefore, the effects of this application on this particular site are likely minor as regards soil loss, but nonetheless it is drawn to Council attention that, should multiple such solar conversions be established in coming years, their cumulative effects could become negative to the food-producing potential of Selwyn's versatile soils. Should that become the case, a policy directing solar conversions away from Class 1 and 2 soils would be desirable, to maintain both solar generation and food production in the Selwyn District.

D. METHODOLOGY

23. The *Landscape Assessment* methodology is defined in **Appendix 1** of that document, noting in particular the distinction between effects on the visual environment and those on landscape character. Also the seven-point scale used for the rating of effects, which is standard within landscape assessment. For clarity, where the assessments of this present Review use this sevenfold scale, the categories will be stated in quotation marks and with a capital letter, e.g. 'Low' or 'Very Low'.

24. The methodology followed is appropriate. The site photographs effectively describe the site and neighbourhood although the maps are small scale and must be cross-referenced to the text to fully understand the proposal. For instance, it is not clear where the gravel roads are proposed on site but which have been assumed for this Review to be the orange lines on Figure 2, Site Appraisal Plan.

25. **Visual Catchment:** Having viewed the site perimeters it is accepted that the 'visual catchment' described in *Landscape Assessment* s.4.4 and *Graphic Supplement* Figure 2 suitably identifies the extent of potentially affected parties, visually. However, other unhoused sites also will be considered and the assessment of identified and other sites will be discussed in section E below.

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[7] See DW015, '*Versatile Soils*', Baseline Assessment for Selwyn District Council (undated), Fig 4 (p.5).
[8] Ibid, Fig 1 (p.3).
[9] Landscape Assessment, s.6.1.2, last paragraph.

26. **'Less Than Minor', 'More Than Minor':** Section 95E of the RMA requires an application to be notified unless the effects on a person will be 'less than minor'. Likewise, Section 95D requires notification unless effects on the environment are 'no more than minor'. In the *Landscape Assessment,* the final section of Appendix 1 contains a definition of these terms in relation to the seven-point scale:
    - **Less than Minor** *refers to 'Very Low' and the lower half of 'Low' effects;*
    - **Minor** *refer to the upper half of 'Low' effects and to 'Moderate-Low effects; and*
    - **More than Minor** refers to Moderate effects and all higher on the seven-point scale.

    This Review accepts, and will follow, that usage.

E. ASSESSMENT

27. The *Landscape Assessment* s.6 contains the applicant's assessment of 'Landscape Effects' (s.6.1) and 'Visual Effects' (s.6.2). The latter will be considered first.

LANDSCAPE EFFECTS: VISUAL

28. The Landscape Assessment states *'Due to the flat topography of this landscape, the visual catchment of the site is limited to the immediate surrounding area.'*[10] Within this catchment it identifies:
    - 18 neighbouring private houses; and
    - the public using Buckleys, Hanmer, Caldwells, Grahams and Branch Drain Roads.

    This definition of the visual catchment is **accepted** although as stated, several unbuilt lots will also be considered.

29. The *Landscape Assessment* further states that visual effects of the solar farm will be dependent on several variables, notably the nature of the components, their distance from the viewer and the complexity of the intervening landscape.[11] These it conflates into a systematic assessment in Table 2, pp. 17-21 of the *Landscape Assessment*. This process also is **accepted**, but with the additional unbuilt sites.

Affected Parties

30. The private properties are represented in the *Landscape Assessment* by eighteen houses shown on Figure 2 of the *Graphic Supplement*. The public roads are represented by ten Photo Locations on that map. As already stated, this Review also will consider a further four private properties, at present unbuilt farmland, but comprising lots larger than 20ha, which have the potential for a house to be built in the future. Under RMA practise, these are affected parties. Continuing the numbering of the *Landscape Assessment,* they are marked 19 – 22 on **Map 1** attached. Twenty-two private properties are therefore considered affected parties under this Review, including the 18 in the *Landscape Assessment*.

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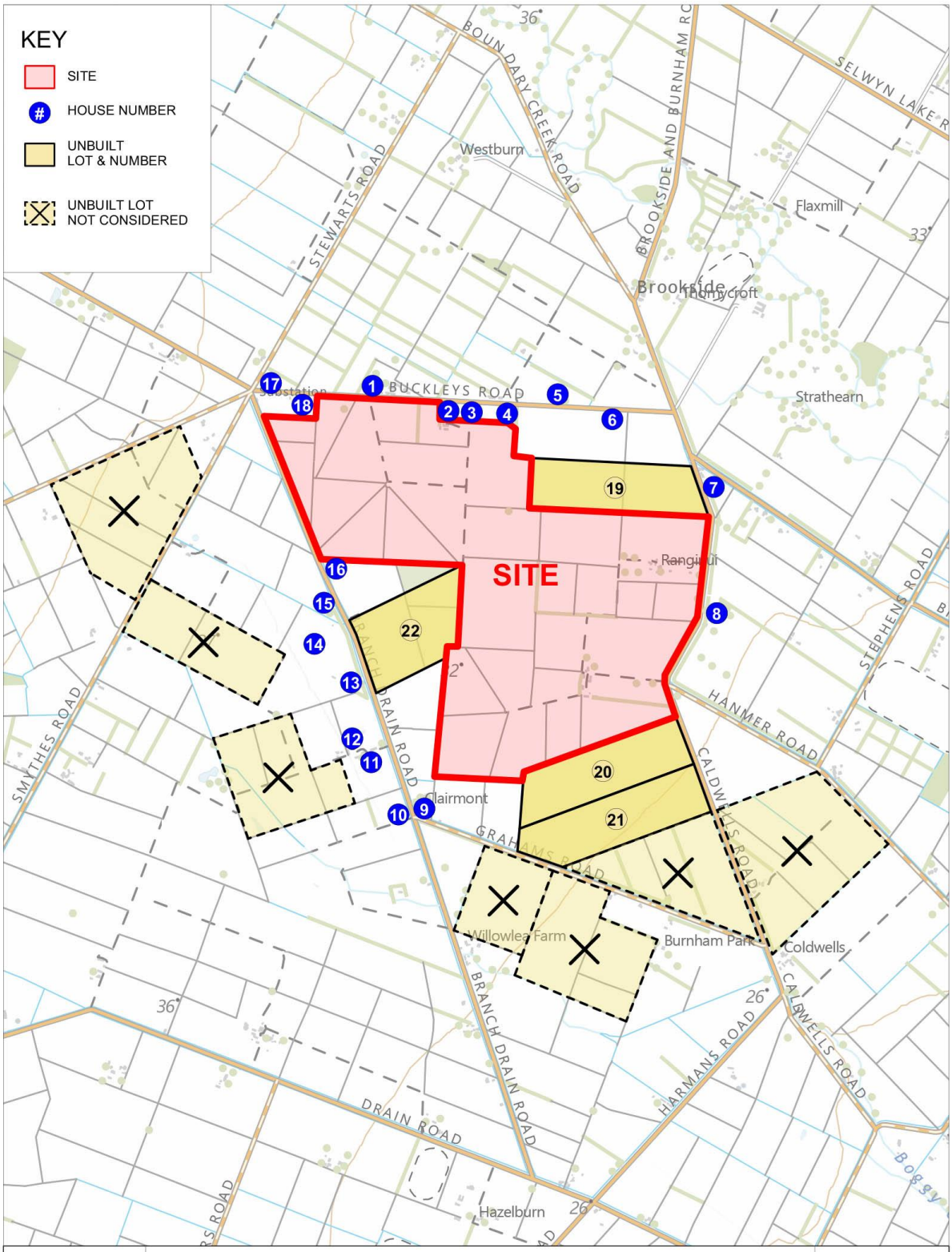
[10] *Landscape Assessment*, s.6.2. p.13

[11] *Landscape Assessment,* s.6.2, p.13.



MAP 1 IDENTIFIED HOUSES & UNBUILT SITES

31. In addition to the above four unbuilt properties, a further nine over 20ha exist in the wider locality south and west of the application site. However, these are judged to be sufficiently removed from the site as to be not affected. They are marked on Map 1 but will not be considered further.

32. **Parties to** the **Application:** The *AEE*, under 9.0 **Consultation**, lists four addresses from which written approval has been obtained. These comprise the four properties making up this application site[12], one of which includes houses 1 & 2 above. House 9, which is not part of the site, also is listed in 9.0 and noted 'in progress', which is taken to mean that no written approval yet exists. It therefore is taken that apart from 1 & 2, houses 3 – 18 are third party neighbours not part of the application, and all potentially affected parties.

33. Two further houses within the site, at 821 and 883 Hanmer Road, also are parties to the application and have not been assessed for visual or landscape effects, either by the *Landscape Assessment* or this Review.

34. **Other Houses:** Paragraph 13 above noted three houses on the south side of Grahams Road, in its eastern half. These are not noted on Table 2 or Figure 2 of the *Landscape Assessment*, being outside the map frame. While in theory these are close to the site, it is accepted following inspection that they have no realistic outlook to it, being well distant from its boundaries in the flat terrain (700 – 900m), and having multiple lines of shelter planting between. Even were the planting removed, they would have no realistic view of the site.

Reflectivity

35. The AEE states that the solar panels will have a reflectivity of 'below 4%',[13] which in visual terms is a very low value. However, observation of trial panels in Buckleys Road, seen during the site inspection, suggest a certain amount of sheen may draw attention to the panels at times of low sun – for instance early morning or late afternoon (Photo 1). En mass, these could potentially be of significantly different visual character to the prevailing pastoral landscape, and the reflectivity at such times would be notably greater than 4%. In the absence of local experience in practise, and in the interests of affected neighbours, this Review will bear in mind at least the potential for such effects, until proven otherwise.

36. Photo 1 shows trial panels angled flatter than those proposed for the solar farm, which probably would be more akin to those at photo left. However, those at the left could not be observed from the public road. My observation is that the flatter panels have a reflectance significantly greater than 4% and are of an industrial character which stands out visually against their rural context of pasture grass and shelter trees. The effects of both the industrial character and potential reflectance therefore will need careful consideration to ensure they are indeed mitigated by the measures proposed in the application. In this unproven state my assessments will be conditional on there being no glare or reflectance penetrating the boundary plantings in practise.

[12] As listed in *AEE* s.3.0, p.3

[13] *AEE*, s.4.0, p.5, third paragraph.

PHOTO 1:
Trial solar panels photographed from Buckleys Road. Under the sunny conditions prevailing at that time, they have a sheen which stands out visually from their rural context.

Visual Effects on Private Dwellings

37. Visual effects on the eighteen identified private houses (dwellings) were assessed by Boffa Miskell from the public road opposite each house but the houses themselves were not visited. This is standard practise. Table 2 of their *Landscape Assessment* (pp. 17 – 21) presents the conclusions.

38. Of the 18 houses in Table 2, 12 are stated to have no view of the proposed solar farm, mostly due to existing intervening shelterbelts or screen plantings. The remaining 6 houses are identified as having a greater degree of visibility.

39. To gauge the validity of this, the road adjacent to each house was revisited by me, in preparing this Review. As a result, the Boffa Miskell conclusions are **accepted** generally, although the nature of the visibility will be further considered below.

40. For most houses the lack of visibility is dependent on continued existence of plantings within the property of the neighbouring house. This applies particularly to houses 3, 4, 8, 9, 16 and 18, which are close to the site boundary and have relatively narrow bands of screening. Also to be considered is visibility of the proposed solar panels during the growth period of proposed screen plantings within the application site. Thirdly, it is dependent on any reflectivity that may occur not being visible through the screens.

41. The first two of these issues are raised in Boffa Miskell *Landscape Assessment* Table 2, which includes a detailed consideration of each house and with minor exceptions, is **accepted**. These are recorded in columns 3 & 4 of Table 1, p.10 below. In addition, this Review has assessed the effects of the solar farm on neighbours if any screen plantings might be lost during the life of the solar farm. This is included in column 5 'if screen lost' in Table 1 below.

42. Loss of screen plantings due to, for example, wind storm, fire or disease, occurs from time to time in the Selwyn rural environments, and would be beyond the control of the

applicant or neighbours. The assessment in column 5 of Table 1 is included because the effects on some neighbours would be 'High' if such a loss occurred, due to the size and scale of this proposed development close to a residential setting. The screen plantings proposed in the application are accepted as suitable mitigation in most circumstances but attention is drawn to the strong effects if any might be lost. Column 5 shows ten built and three unbuilt properties where these effects kin such cases would be more-than-minor.

Visual Effects on Unbuilt Properties

43. The Council also requires an assessment of effects on vacant sites which have the potential for a house to be built in the future – that is, lots of over 20ha. Four unbuilt lots have been found in this category, and which are likely to be affected visually by the solar farm. Continuing the *Landscape Assessment* numbering, they are:
    - 19 893 Hanmer Road
    - 20 Caldwells Road I, near Hanmer Road
    - 21 Caldwells Road II, between Hanmer and Grahams Roads
    - 22 198 Branch Drain Road

    These are shown on Map 1. Seven other sites, also over 20ha but not considered likely to be affected by the solar farm, also are marked with a cross on Map 1.

44. Three of the four lots border the site directly. The fourth, site 21, is removed from it behind site 20. Potential effects on any of the sites will vary with direction to the proposed panels and the siting and type of house that might eventuate. For the assessment below, a 2-storied house in the centre of the lot is taken as the model, while acknowledging some other development could occur. In Table 1, the properties are assessed on the same basis as the Boffa Miskell assessments.

Assessment of Effects on Private Land, Summary:

45. Table 1 (p.10) combines the Boffa Miskell and my added assessments, with shading to indicate levels of planning significance. It is noted that Column 2 'with screen' contains all 'less-than-minor' assessments, which fulfils the aims of the applicants proposed mitigation plantings. However Column 3, my reassessment, contains ten properties with 'minor effects', either from being very close, or in some cases, with visually-permeable screening. These are the properties which will benefit most from the applicants' proposed screening.

46. It also is noted that thirteen properties would likely have more-than-minor visual effects, some 'Very High', if the section of site mitigation plantings close to them were lost, perhaps by fire or wind storm. These houses or sites are very close to the proposed solar arrays, some of which would look south onto the north-oriented panels.

47. The proviso regarding reflectivity applies to all assessments in Table 1. Should it occur, this could affect houses 1,2, 3, 8, 9 and 16, and unbuilt sites 19, 20 & 23 particularly. These are close to the application site and/or east or west of the panels, which could potentially affect them at sunrise or sunset.

TABLE 1: ASSESSMENTS OF VISUAL EFFECTS FROM BUILT AND UNBUILT LOTS

Site no.	address existing house	Boffa Miskell assessments		G. Densem assessments			Comment
		1. before screen growth	*2. with screen*	*3. before screen growth*	*4. with screen*	*5. if screen lost*	
EFFECTS FROM BUILT LOTS ***(Boffa Miskell Site Numbers)***							
1	150 Buckleys Road						NOT CONSIDERED
2	115 Buckleys Road						NOT CONSIDERED
3	105 Buckleys Road	*Low*	*V. Low*	*Low*	*V. Low*	*High*	*v. close (60m), existing screen*
4	79 Buckleys Road	*V. Low*	*V. Low*	*Low*	*V. Low*	*High*	*close (100m), exist screening*
5	56 Buckleys Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*Mod*	*mod. distant (300m), exist screening*
6	23 Buckleys Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*Mod*	*mod. distant (350m), exist screening*
7	932 Hanmer Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*Mod*	*mod close (230m), existing screen*
8	870 Hanmer Road	*Low*	*V. Low*	*Low*	*V. Low*	*High*	*close(100m), existing screen*
9	180 Grahams Road	*Mod Low*	*V. Low*	*Mod Low*	*Low*	*Mod High*	*close (150m), 2-storied, exist screening*
10	191 Branch Drain Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*screened by house 9*
11	229 Branch Drain Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*Low*	*mod. close (300m), existing screening*
12	233 Branch Drain Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*Low*	*mod. close (300m), existing screening*
13	265 Branch Drain Road	*Low*	*V. Low*	*Low*	*V. Low*	*V. Low*	*distant, exist screen permeable*
14	277 Branch Drain Road	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*V. Low*	*distant, back from road*
15	313 Branch Drain Road	*V. Low*	*V. Low*	*Low*	*V. Low*	*Mod Low*	*mod. close (200m), exist screening*
16	324 Branch Drain Road	*V. Low*	*V. Low*	*Mod Low*	*Mod Low*	*V. High*	*v. close (40m), exist screen permeable*
17	10 Stewarts Road	*V. Low*	*V. Low*	*Low*	*V. Low*	*Mod*	*close (100m), exist screen, sub-station*
18	187 Buckleys Road	*V. Low*	*V. Low*	*Low*	*V. Low*	*V. High*	*v. close(50m), exist screen, 2 sides*
EFFECTS FROM UNBUILT LOTS ***(G. Densem Additional Numbers, see Map 1)***							
19	893 Hanmer Road			*Mod High*	*Mod Low*	*V. High*	*v. close, 2 sides, exist screen permeable*
20	Caldwell Road I			*High*	*Mod Low*	*High*	*v. close, long frontage*
21	Caldwell Road II			*Low*	*V. Low*	*Low*	*distant, screened by site 20*
22	198 Branch Drain Road			*High*	*Mod Low*	*High*	*v. close, 2 sides*

RMA-EQUIVALENT EFFECT

	MORE THAN MINOR
	MINOR
	LESS THAN MINOR

NOTES

1. before screen growth:	*1 & 2 from Boffa 'Landscape & Visual Effects Assessment', Table 2, pp.17-21. Refers to effects on neighbours without (year 1) and with (year 5) mitigation on application site, including screening on neighbours properties.*
2. with screen:	
3. before screen growth:	*3 & 4: G. Densem review of columns 1 & 2 but excluding screening on neighbour's sites*
4. with screen:	
5. if screening lost:	*5: G. Densem added assessment of effects on neighbours if relevant screening were lost from the application site and neighbour's site.*

Conclusions, Visual Effects on Private Houses and Unbuilt Land

48. Table 1 shows the effects of the solar farm shaded into three categories for their RMA-equivalent levels of effects. Columns 3 & 4 show my reassessments align significantly with those of the application (columns 1 & 2). Five of the 22 sites, nos. 10, 16, 19, 20 & 22 (the last three unbuilt) will have minor effects after mitigation has established, the remaining 17

being 'Less Than Minor'. This Review therefore **accepts** the proposed mitigation plantings as adequate, subject to the potential effects of reflectivity and sun strike.

49. Comparison of columns 4 & 5 show how dependant the proposal is on its mitigation planting, and how significant (i.e. 'High') the effects on some private neighbours would be should those plantings be lost, whatever the risk of that might be.

Visual Effects on Public Roads

50. The *Landscape Assessment* considers visual effects from **'public locations'**, essentially roads, in s.6.2.1, pp. 13 – 16. These it illustrates with ten 'site context photographs' at typical locations, shown on Figure 2 of the *Graphic Supplement*. Included is a detailed written description and assessment of the outlook and effects on each of the four roads surrounding the site. It also has added *Visual Simulations* from five locations[14]. At issue is change to views into the site, as they will be experienced from passing traffic, before and after establishing the solar farm.

51. Current v*iews* from all four roads are described as a mixture of 'open' and 'no views'. Following establishment, the applicants propose to mitigate visual effects by additional boundary plantings, with the aim of closing all views into the site. The effects therefore will be a closing off of all current views into the site. Their assessment is that the visual effects on each road will be[15]:
    - **Buckleys Road**: initially 'Moderate-Low' on a short open length, reducing to 'Very Low' once mitigation plantings are grown. Rest of road, 'Very Low' due to existing plantings;
    - **Branch Drain Road**: initially 'Moderate-Low' visual effects along both the northern half where the site borders the road, and the southern half where the site is set back from the road. These both reduce to 'Very Low' once mitigation plantings have grown;
    - **Grahams Road**: initially 'Low' due to existing screen plantings and distance to site, reducing to 'Very Low' once proposed additional plantings have grown;
    - **Hanmer/Caldwells Road**: Initially 'Moderate' effects due to openness of this frontage, reducing to 'Very Low' once plantings have grown.

52. The reduced impacts due to new plantings are stated to take 3 – 4 years to come into effect. All planting will be carried out during stage 1. This will reduce the time lag for growth in stages 2 & 3, a positive proposal by the applicants. In all cases the stated impacts are 'negative'.

53. Having travelled the four roads, these assessments are **accepted**. The 'cost' of this development to the travelling public will be the closing up of views into this rural land from all four roads. This is a lessening of the 'amenity' of open rural views enjoyed by the public but would be little different from numerous shelterbelts on rural sites throughout the District. It therefore is regarded as an issue of landscape character rather than visual effects.

[14] Visual Simulations, Graphic Supplement, 01 September 2022. The simulations are in Buckleys, Hanmer, Caldwells, and Branch Drain (2) Roads. For each, the view at existing, 1 year, 3 years and 5 years is shown.

[15] See *Landscape & Visual Effects Assessment*, s.6.2.1, pp.13 – 16.

Conclusion, Visual Effects

54. The overall conclusion of the *Landscape Assessment*, in s.6.2.3, is that for **road users, i.e. the public**, the adverse visual effects of the proposed farm will be 'Moderate' (temporary and localised), reducing to 'Very Low' with mitigation plantings. Public locations are stated to be the least affected by the proposal due to the transient nature of the road use.

55. Adverse visual effects on **private locations (houses)** range from 'Moderate-Low' to 'Very Low' before mitigation, the higher effects considered to be localised. Once mitigation plantings have reached target heights of 4m. this is stated to reduce to 'Very Low' or 'Neutral'. In the assessment 'private locations' is limited to houses and does not include effects on farmland that may closely abut the site.

56. On both accounts, these conclusions are **accepted** by this Review, with the provisos that:
    - they may not apply if reflectivity should prove an issue; and
    - they are dependant over time on the integrity of the application site mitigation plantings, sections of which could conceivably be lost to fire, wind or etc. In such cases the effects on neighbours would be 'Moderate' or 'High' depending on the site affected.

EFFECTS: LANDSCAPE CHARACTER

57. Having characterised the site and surrounding landscape amenities in s.4.3, the *Landscape Assessment* in s. 6.1.2 describes and assesses the effects of this proposal on the landscape character of the site.

58. It sees the site transitioning *'from a rural productive landscape to that of a landscape containing energy infrastructure'*, and *'the large expanses of open space will be reduced to areas between solar panels.'*[16] However it concludes (same paragraph) that the continued presence of grazing animals will maintain a sense of the rural character of the site, and that *'the general form and pattern of the Site will be retained, thereby maintaining a key characteristic of the rural landscape'*.

59. My impression is that the 'sense of remaining rural character' will be greatly less than the sense of industrialised solar panels that will come into existence, and that in establishing the solar farm, a marked change in landscape character will occur.

60. The three following paragraphs of s,6.1.2, (p.13), make the points:
    - that the solar panels will have a low profile in the flat topography and any effects would be localised and not prominent;
    - that the proposed boundary plantings will assist in integrating the proposal into the landscape, softening the infrastructure and providing a vegetative backdrop;
    - that the proposed indigenous plantings will enhance biodiversity values in this area, concluding there will be a temporary (very localised) 'Moderate-Low' adverse effect on rural character and amenities of the site, reducing to 'Very Low (adverse)' once proposed boundary plantings are established.

[16] *Landscape Assessment*, p.12, last paragraph.

61. Section 6.1.2 concludes by assessing initial 'Medium-Low' effects on landscape character, decreasing to 'Very Low' with mitigation.

62. In my view this analysis misses the point regarding landscape character. Change to the inherent character of a place will occur irrespective of its visibility. It cannot be mitigated by screening, just disguised. Also, the addition of diversity, while ecologically desirable, is contrary to the prevailing vegetative character of the agricultural site, which comprises mostly exotic pasture grasses and shelter trees, and regular internal subdivision by them along fencelines and hedgerows. These entirely will be removed, with the loss of significant amounts of existing tree canopy. The proposed ecological benefits do not lessen change to the exotic landscape character. In my view, the effects will be greater than assessed in s.6.1.2. We thus have to satisfy ourselves that this is acceptable in magnitude and type, and not unduly contrary to existing patterns or District Plan intentions.

63. It is acknowledged that the changes are generally reversible, and that within or beyond the 30-year lease, the site could revert to agricultural use and tree cover, however hypothetical.

Existing Trees

64. **Tree** Pattern**:** The tree pattern of the site will be significantly altered by removal of all internal shelterbelts and plantings. The existing spatial compartments will be opened up to one large visual compartment. Additionally, more winds will penetrate to ground level, both within the site and immediate surrounds. This will alter the amenity values listed in s.4.3 of the *Landscape Assessment*, namely the sense of spaciousness and openness. Greater openness is not the same thing as the characteristics of existing open patterns and trees removed. It also will alter the characteristic linearity of existing fences and shelterbelts, which will be replaced by different patterns of solar arrays and the bulking up of plantings around the site periphery,

65. My impression is that the increased open pattern will have 'More-than-Minor' effects on landscape character within the site, but if visually contained by boundary plantings as planned, will have 'Less-than-Minor' such effects beyond the site. For the purposes of this application, my conclusion is that effects of the change of character will be 'less-than-minor' beyond the site, so long as it not seen from outside.

66. A caveat is that, should any road or neighbour suffer practical effects from the increased openness, such as greater wind damage or glare, then the effects would become locally 'More-than-Minor'.

67. Old **Trees:** The site boundary currently contains a stand of large macrocarpa trees south of the entrance to 883 Hanmer Road (Photograph 2). The Existing and Proposed Site Vegetation Plan (Figure 3) makes no reference to this substantial group, but shows a native landscape buffer continuously along this frontage. The future of these trees is therefore uncertain. While scruffy, the macrocarpa are indicative of the continuity of farm heritage in this area, and typical of many long-standing farming districts. Their removal would break the continuity of this heritage and their amenity values, in comprising a typical element of its character. If removed, it would lower the visual skyline of this part of the site and Hanmer Road to a uniform 4 metres, and potentially open the road and a nearby dwelling (house 8) to increased winds.

PHOTO 2:
Old macrocarpa stand on site boundary, Hanmer Road, south of entrance to no. 883.

Landscape Heritage

68. The **roading**, ownership and farming patterns of this locality is a reflection of its human and natural history. This is dominantly European but with a 'whisper' of previous Maori occupation from several farm names and mana whenua values. Maori and European patterns both are based on the underlying natural geography of gravel plains, groundwater and climate.

69. **The** site reflects local history in the early farmhouse 'Ranginui' at 883 Hanmer Road. Its curtilage of road entrance, driveway, period house and out-buildings, has forms that will have existed since the early days of European farming. Likewise the macrocarpa trees previously mentioned, and the underlying ownership patterns. Farming methods and ownership may have changed but the property physically reflects a continuity of farm history in the district and which is part of the site's cultural landscape character. The plans suggest the house may remain but the characteristic farm patterns will not survive this development.

Natural Character

70. Paragraph 16 above raised the issue of relative naturalness of the pastoral landscape. This site is characterised by its green, grassed ground plain which, along with the underlying soil and groundwater processes and surrounding trees, while altered, continue to follow the patterns and timetables of nature. This is not naturalness in the ecologists' sense, but remains the 'relative naturalness' of New Zealand's farmlands. Looking at the site day by day, we draw pleasure (amenity) from its dominantly nature-dependant farm processes and seasonal changes. The site's 'green' character is in my view a primary amenity of the site.

71. While the underlying sward will largely remain beneath the proposed solar arrays, the impression of the site will become dominated by the solar arrays not the pastures, which will be out of sight at a lower level. For instance, see 'Proposed View after 1 year' in *Visual Simulation* Viewpoint 1 (01 September 2022). It also will become devoid of internal shelterbelts. The *Landscape Assessment* acknowledges this change[17] but in my view undervalues it.

[17] *Landscape Assessment,* s.6.1.2, p.12, last paragraph

Proposed Plantings

72. The existing and proposed site vegetation shown in *Graphic Supplement* Figure 3 is **accepted** as appropriate, noting the planting bordering Branch Drain Road at the north end has now been moved 10m back from the road to lessen winter shading (Viewpoint 1). Also noting the lack of reference to the old macrocarpa on Hanmer Road.

73. Height**:** It is **accepted** that the applicants' minimum target height of 4m is sufficient for visual screening. This is based on simulations for Viewpoints 1 - 5 *'Proposed View after 5 years'*. It also is based on the one-storied construction of most neighbouring houses. The two-storied house at 180 Grahams Road (House 9) appears to have its own partial macrocarpa hedging. The 4-metre minimum height should apply to both exotic and native shelterbelts and would be consistent with practise throughout the locality, where shelterbelts are regularly topped. To this effect, it is recommended below that shelterbelts be no less than 4m high.

Conclusions, Landscape Character

74. This application will change the site from a sense of dominant pastureland and agricultural patterns to a sense of dominant solar panels, and technical patterns. While the ground will remain in maintenance grazing and the site perimeter will have screen plantings, the character will become dominated by the mass (151,944) of man-made panels. The sense of the new will be quite different from that of the old.

75. New vegetation around the site boundaries will mitigate views of the panels, albeit at the cost to openness of views from public roads. In theory the development would be reversible in the medium-long term, and productive soils might be not irrevocably lost. Also, the positive effects of the renewable generation are significant, although at the cost of local landscape values.

76. On balance, the *Landscape Assessment* conclusion of 'Moderate-Low' temporary localised effects on landscape character, decreasing to 'Very Low' with plant growth (s.6.1.2, last paragraph, p.13), seems **optimistic** within the site:
    - the effects on landscape character will not be mitigated by screening, just hidden from public and neighbours' view;
    - the applicant's assessments take no account of the change from rural to industrial character, or the loss of traditional rural patterns.
    - on the other hand, these effects are localised and contained within the site.

77. My **conclusion** is that the effects on landscape character are at least 'Moderate-High', (More than Minor) within the site but 'Low' (Less than Minor) beyond the site, and this will remain so over the life of the solar farm.

Operative District Plan Provisions Relating to Landscape Character

78. The Operative District Plan has Policies and Rules on landscape character, but only relating to identified areas of landscape values, for instance Outstanding Natural Landscapes, or the margins of rivers or lakes. They do not give guidance for character in the regular farmlands of the Plains.

79. Section B3.4 of the Operative Plan, 'Quality of the Environment: Issues' states:

"The rural area has a character which is distinct from townships. There are common perceptions which many people share about the character of the rural area. These include:

- *Predominance of vegetation cover.*
- *Dominant land uses (but not all land uses) are associated with primary production: agriculture, horticulture, forestry, pastoralism.*
- *Views of mountains, basins and river valleys which are not modified by structures.*
- *Being able to see, hear and smell animals and birds.*

80. Also,

"….This District Plan has policies and rules to maintain a generally pleasant living and working environment. However, residents should not expect an environment which is as conducive to residential activities as Living zones. The Rural zone is principally a business area and the policies and rules are designed to allow people to undertake farming and other business activities relatively freely."

81. Objective B3.4.2 states that:

"A variety of activities are provided for in the rural area, while maintaining rural character and avoiding reverse sensitivity effects." It also recognises that *"….while a variety of activities may be appropriate in the rural area, rural character must be maintained…."*

82. Finally, Policy B3.4.3 recognises that:

"There are many places in the rural area which are not outstanding landscapes or natural features or which do not contain significant ecological sites but which people find pleasant places to live in or visit, for example, rolling hills, meandering streams, and fields with animals and crops, which are all typical rural scenes. These areas can be sought-after locations for activities that need large sites and to be separated from people. Some of these activities can make areas less pleasant – they can affect their amenity values."

83. These extracts establish rural amenity as an identified value of the rural zones in the Selwyn Operative Plan, generally requiring that developments mitigate adverse effects on amenity values. While not exactly the same thing as Landscape Character, the Operative Plan requires that:

- *rural character be maintained; and*
- *the amenities arising from that character should not be made less pleasant by development.*

Thus the existence of an issue is established but not carried through to Policies and Rules.

84. **Conclusion:** Were such developments to be repeated throughout the locality, my view is that the cumulative effects across several sites would amount to a significant loss of rural landscape character, even if individually, each were screened from outside view. However,

the 'More-than-Minor' effects within this particular site do not in themselves appear to contravene Plan provisions.

F. REVIEW, SUMMARY

85. The following summarise the findings of this Review, with the relevant paragraphs where the discussion occurs.

86. Visual **Catchment:** The visual effects of the flat site are **accepted** as including only the immediate surrounding area (paragraph 19).

87. **Viewing Audience:** It is **accepted** that those with views of the site comprise some private neighbours and users of public roads bordering the site (paragraph 19)

88. **Soils:** The loss of soil productivity under this proposal is **accepted** in view of the positive effects of the proposed solar generation and its limitation to this one site. However should losses become cumulative over several sites following possible future applications, the Council should adopt measures to maintain the food producing potential of the soils of Selwyn District (paragraphs 21 – 22).

89. **Visual Assessment:** The following conclusions of the *Visual Assessment* are **accepted:**
    - After the maturing of mitigation plantings (4 metres height), there will be 'Less-then-Minor' visual effects on neighbouring private houses and unbuilt lots, unless sun strike may occur (Table 1, p.8.);
    - Until mitigation plantings are matured, there will be will be 'Less-then-Minor' visual effects on twelve private houses, 'Minor' visual effects on four private houses and two unbuilt lots, and 'More-than-Minor' visual effects on two unbuilt lots (Table 1, p.8);
    - In the event that screening was lost, there would be 'More-than-Minor' visual effects on ten private houses and unbuilt lots overall, and in eight cases, 'High' or 'Very High' visual effects (Table 1);
    - After maturing of mitigation plantings (4 metres height), there will be 'Very Low' visual effects on users of the four surrounding roads (paragraph 51);
    - Until mitigation plantings have matured, there will be 'Moderate', 'Moderate-Low' or 'Low' effects on various on users of the public roads (paragraphs 51).

90. **This** acceptance is dependent on the stated mitigation plantings attaining a height of at least 4m. and remaining over time (paragraphs 52, 73).

91. **These** conclusions are dependent on there being no reflectivity eventuating from the panels to the extent of causing annoyance to neighbours or road users (Paragraphs 35–36).

92. **Rural Character Assessment:**
    - The conclusion of the *Landscape Assessment*, that effects on Landscape Character will be 'Moderate-Low' initially, reducing to 'Very Low' with mitigation is not accepted as regards the internal environment of the site. This Review maintains they will be 'More-than-Minor' internally and will not reduce with mitigation;
    - Such landscape character effects are not contrary to any District Plan provisions;

- Given the effects will be contained within the site, and will not affect private neighbours or the wider public, it is concluded that the 'More-than-Minor' effects on landscape character are not contrary to District Plan provisions.

93. **Possible** more-than-minor effects on ten close residential neighbours and unbuilt lots suggest these owners should be considered affected parties under this application.

94. **Cumulative Changes:** Were effects on rural character and naturalness to become cumulative, through future applications over several sites, the landscape character of wider localities within Selwyn District would be likely to be changed, and the Council should in that case further consider the effects of change at this scale.

95. **Heritage Trees?** Lack of clarity regarding the stand of large macrocarpa trees on Hanmer Road is drawn to Council attention (paragraph 68). These have general heritage value but are not noted in the application. It would be preferable to keep them during development (paragraph 67).

G. RECOMMENDATIONS

96. **Arising** from the application, the following are recommended:

Recommendation 1:
That the application be accepted as regards its landscape effects, with the conditions in Recommendations 2 – 6 below;

Recommendation 2:
That all existing and proposed boundary plantings be retained or established, as proposed in the 'Landscape Assessment' document and Figure 3 of the Graphic Supplement and subsequent amendments;

Recommendation 3:
That all required screen plantings be maintained at a height of at least 4 metres;

Recommendation 4:
The all screen plantings be maintained throughout the life of the solar farm and if lost through any cause, be replaced by like plantings as soon as reasonably possible, and at least within one planting season;

Recommendation 5:
That in the event of reflectivity from the proposed panels causing nuisance or annoyance to neighbours or road users, the applicant will take measures to block or otherwise eliminate the nuisance.

1. Additional to the application, the following is recommended for Council attention:

Recommendation 6:
That the Council continue to monitor the potential for cumulative landscape effects arising from applications for renewable energy schemes within its rural areas, notably the loss of rural landscape amenity and productive soils.

Graham Densem
ANZILA
19 Sept 2022