

Milestone 5.1 – Attachment A: Review of irrigation program at ARENA solar trial site Killer farm Bundaberg

Irrigated area 55 ha for 2019 harvest

Based on potential (reference) evapotranspiration (ET_0) determine by weather and climate monitoring at the trial site

Annual Evapotranspiration (ET_0) recorded at Manoo trial site weather station



2018 – 2019 Potential Irrigation demand -irrigation applied

	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June
Daily evapotranspiration (Recorded)	2.7	2.9	4	4.2	6	5	6	5	4	4	3	2.5
Potential crop evapotranspiration based on crop factors per crop class												
Early harvest ratoon (mm/ha)	0	0.5	1.5	2.7	4.5	5.4	6.0	5.0	4.0	4.0	3.0	2.5
Mid harvest ratoon (mm/ha)	0.0	0.0	2.4	2.9	4.8	4.5	6.0	5.0	4.0	4.0	3.0	2.5
20% late harvest ratoon (mm/ha)	0.0	0.0	0.0	0.9	2.3	2.9	5.4	5.0	4.0	4.0	3.0	2.5
Per day (av) mm/ha	0.0	0.2	1.3	2.2	3.9	4.3	5.8	5.0	4.0	4.0	3.0	2.5
Average farm monthly crop moisture demand												
Days per mth	31	31	30	31	30	31	31	28	31	30	31	30
Daily demand (mm/day/ha)	0.0	0.2	1.3	2.2	3.9	4.3	5.8	5.0	4.0	4.0	3.0	2.5
Monthly demand (mm/mth/ha)	0	5	39	68	116	132	180	140	124	120	93	75
2018-19 Rainfall (Manoo site weather station)												
2018-19 monthly (mm/mth) no effective rain calc due to low volume	9	10	25	141	38	59	9	33	51	35	20	10
2018-19 crop water balance and irrigation requirement												
Potential monthly crop water balance (deficit - mm/mnth)	9	5	-14	73	-78	-73	-171	-107	-73	-85	-73	-65
Irrigation required (mm/mth/ha) incl 20% app efficiency allowance	0	0	-17	0	-94	-88	-205	-128	-87	-102	-87	-78
Long term average historical comparison												
Average rainfall Bundaberg region												
Average monthly effective (mm/mth) effective rain factor .7 applied	27	24	25	55	59	89	120	109	79	39	47	35
Crop monthly water balance (deficit - mm/mth/ha)	0	0	-14	0	-57	-44	-60	0	-45	-81	-46	-40
Irrigation required (mm/mth/ha) incl 20% app efficiency allowance	0	0	-17	0	-68	-52	-72	0	-54	-97	-55	-47

Irrigation requirement

Long term average rainfall 1012mm/yr (effective factor 0.7 = 708 mm)

= 4.60 ML/ha

2018 – 2019 rainfall 441mm/yr (no effective factor applied due to low rainfall and minimal chance of runoff or drainage)

= 7.80 ML/ha

2018 – 2019 actual irrigation applied

= 2.9 ML/ha