

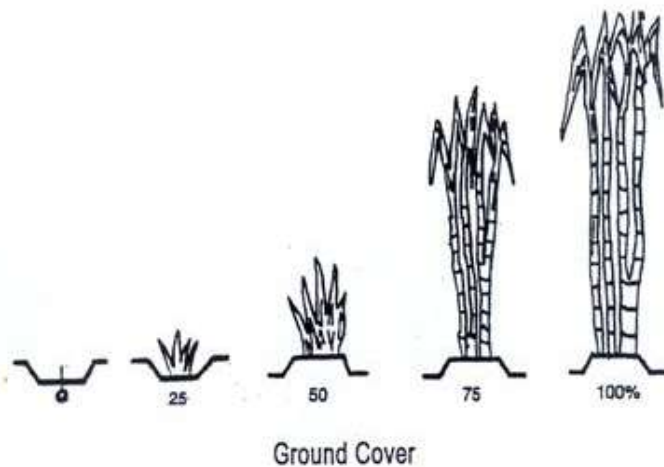
## Milestone 4.1 - Attachment A: Review of irrigation program at Arena solar trial site Killer farm Bundaberg

Irrigated area 55ha for 2019 harvest

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

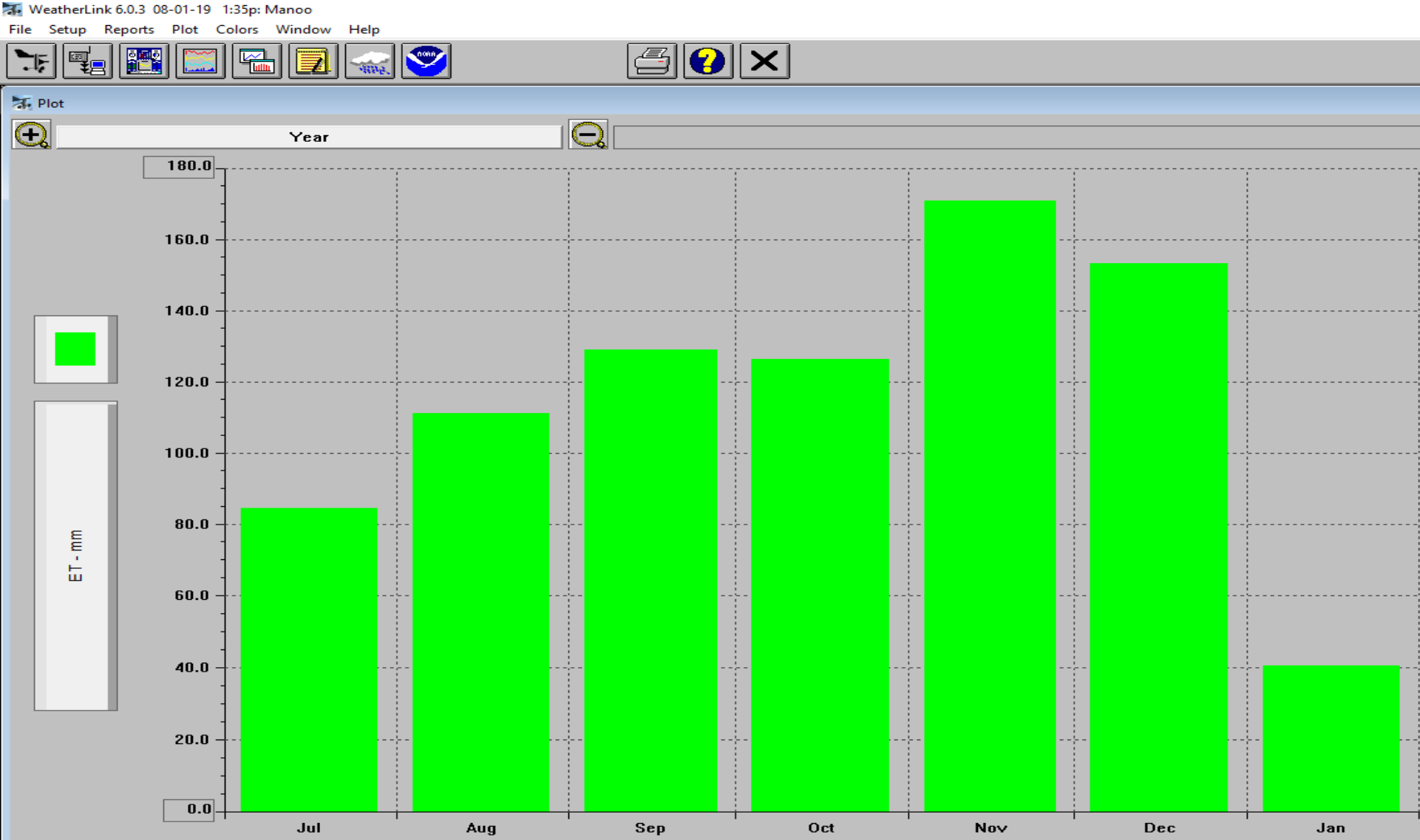
Crop factors are based on the principal of percent of canopy closure

- Calculated crop water use – evapotranspiration (Etc)
- Reference Et derived from weather factors including temperature, humidity, radiation and wind etc.
- The relationship between the crop development stage (crop factor) and Et is used to calculate potential crop water use.



Ground cover	Crop factor
Bare ground	0.1
25% canopy	0.35
50% canopy	0.65
75% canopy	0.95
Full canopy	1.25
Maturing	0.7

Reference evapotranspiration as determined by weather factors recorded and analysed buy trial site weather station



Calculated crop demand and water balance based on rainfall records and reference Et x crop factor

<b>Average crop evapotranspiration based on selected farm crop rotation schedule</b>	<b>July</b>	<b>August</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>15% Autumn plant</b>	<b>0.9</b>	<b>1.75</b>	<b>2.8</b>	<b>3.15</b>	<b>5.4</b>	<b>6</b>
<b>15% spring plant</b>	<b>0</b>	<b>0</b>	<b>1.5</b>	<b>2.7</b>	<b>4.5</b>	<b>5.4</b>
<b>25% early season harvest (ratoon)</b>	<b>0</b>	<b>0.4</b>	<b>1.5</b>	<b>2.7</b>	<b>4.5</b>	<b>5.4</b>
<b>25% mid season harvest (ratoon)</b>	<b>0</b>	<b>0</b>	<b>0.9</b>	<b>1.5</b>	<b>2.3</b>	<b>3.1</b>
<b>20% late season harvest (ratoon)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.9</b>	<b>2.3</b>	<b>2.9</b>
<b>Farm average crop Et (mm/day)</b>	<b>0.2</b>	<b>0.4</b>	<b>1.3</b>	<b>2.2</b>	<b>3.8</b>	<b>4.6</b>

<b>Farm monthly crop moisture demand (mm/ ha)</b>	<b>July</b>	<b>August</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>days per mth</b>	<b>31</b>	<b>31</b>	<b>30</b>	<b>31</b>	<b>30</b>	<b>31</b>
<b>Farm average daily demand (mm/day) based on Et x crop factor</b>	<b>0.2</b>	<b>0.4</b>	<b>1.3</b>	<b>2.2</b>	<b>3.8</b>	<b>4.6</b>
<b>Farm average monthly demand (mm/mth) based on Et x crop factor</b>	<b>5.58</b>	<b>13.33</b>	<b>40.2</b>	<b>67.89</b>	<b>114</b>	<b>141.36</b>

<b>2018 July - December on site rainfall record</b>	<b>9</b>	<b>10</b>	<b>25</b>	<b>141</b>	<b>38</b>	<b>59</b>	<b>282</b>
<b>Crop rainfall surplus - deficit (mm/ha)</b>	<b>3.42</b>	<b>-3.33</b>	<b>-15.2</b>	<b>73.11</b>	<b>-76</b>	<b>-82.36</b>	<b>-100.36</b>
<b>Irrigation applied (mm/ha)</b>							<b>90</b>

Onsite rainfall record for 2018

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	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
<b>2017</b>	---	---	---	---	---	---	---	---	---	---	96.0	103.0	199.0
<b>2018</b>	61.6	241.5	41.4	13.0	21.4	17.4	9.0	10.0	25.0	141.2	38.0	59.2	678.7