

QUARTER 4 – 2017

30 June 2017

# Fourth Quarter FY 2017 – Quarterly Report & Appendix 4C



**greatcellsolar**

Global leaders in hi-tech solar

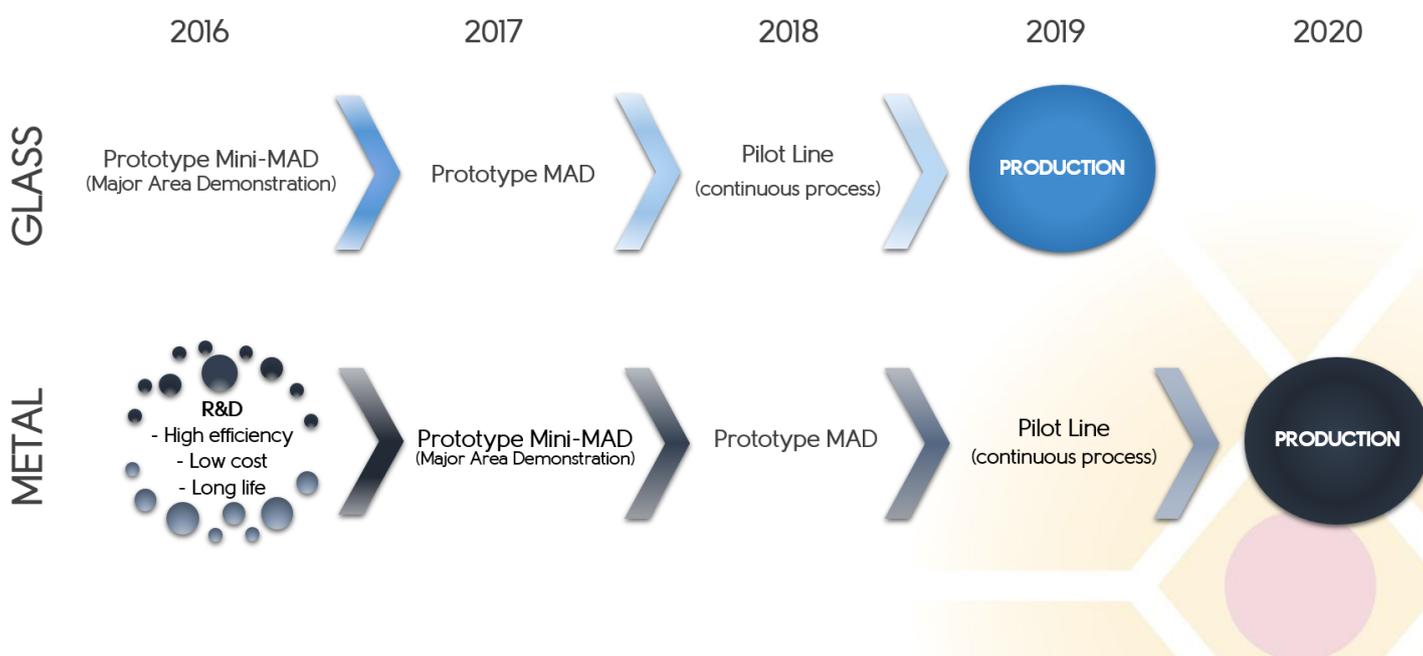
## Fourth Quarter FY 2017 – Quarterly Report & Appendix 4C

- **Dyesol Limited Rebrands Globally to Greatcell Solar Limited (GSL)**
- **Commercialisation Schedule Update**
- **Greatcell Announces \$5M Share Purchase Plan**
- **TAB Milestone of 13% Stabilised Efficiency Achieved for Glass Strip Cells**
- **Greatcell Signs MOU with Major Chinese PV Panel Manufacturer**
- **\$2.5M CRC-P Grant Participants' Agreement Signed**
- **FY2017 R&D Rebate estimated at \$3.9 million**

### COMMERCIALISATION SCHEDULE

The Commercialisation Schedule has been updated and recast to capture the timing of our current technology development and business plans. These changes reflect current progress with technology scale-up, testing and accreditation, grant application processing, equipment procurement and facilities fit-out. Accreditation, funding and equipment purchases need to be closely co-ordinated to minimise financial and technical risk. The schedule is coordinated with the plans of our principal collaborators. Given the recent excellent progress on Metal it is reasonable to expect that it may be accelerated at a later date.

Having screened major equipment suppliers in both Europe and China, typical lead times for manufacture and delivery are a minimum of 6 months. Hence, the more significant and extended role of the mini-MAD project where there has been excellent development progress at minimum additional capital expenditure.



## CORPORATE AND FINANCIAL

During the 4<sup>th</sup> quarter GSL received an ASX query, in relation to its 3QFY2017 Appendix 4C. Greatcell duly responded that circumstances were insufficiently certain to plot the funding path forwards because a number of important positive transactions were in negotiation and incomplete. These discussions would, inter alia, dictate future funding requirements once respective collaboration roles were defined.

Our on-going discussions with a number of significant parties in China, is an excellent example of these circumstances. However, as at least one of these discussions has since been resolved, the board has decided to proceed with a modest capital raising keeping in mind its foremost intention to minimise shareholder dilution. Greatcell will, therefore, proceed with a share purchase plan (SPP) of \$5 million to fund its activities in the near term knowing that a number of open discussions have yet to be concluded which could be favourable to existing shareholders. Further SPP details will be available to shareholders in a following ASX release and SPP booklet.

The quantum of the raising announced today is emphasised in the context that fundraising in the past 3 years, in particular, has been very modest as Greatcell has successfully transitioned to the state-of-the-art PSC technology. It is also fair to say, that newly attracted stakeholders, such as those participating in the \$2.5 million Department of Industry CRC-P grant, are well positioned to understand the importance and potential of 3<sup>rd</sup> generation PSC PV technology.

The agreement that defines the roles and responsibilities of participants in the generous \$2.5 million CRC-P grant awarded earlier in the year has now been approved and signed by the corporate executive of each organisation. Again, we are very pleased to have the support of the Commonwealth Department of Industry in our scale-up endeavours.

Greatcell also has two significant grant applications being considered by relevant government grant bodies. It cannot comment with any authority on the likelihood of their success, however. The merits of the proposed ARP Project are compelling in the Company's view. If approved, the scale-up project could attract as much as \$6 million in direct government assistance. However, the Company's proposal is in competition with other renewable energy projects across Australia and optimism needs to be contained.

Recently, Greatcell received a clarifying communication from the CEO, Tasnee, its strategic shareholder, to help it better understand any possible impact that the Tronox acquisition of Cristal may have, as Cristal is a close technical partner of Greatcell:

*“Tasnee invested in Dyesol in 2013 in support of its revolutionary, 3<sup>rd</sup> generation solar technology. It is currently considering ways to further develop and commercially exploit that investment interest, both in Saudi Arabia and other parts of the world. The 30% Dyesol shareholding is not subject to the current sale process of its subsidiary, Cristal to Tronox of the United States.”*

Subsequent to the announced acquisition, timed to close towards the end of the calendar year, Cristal and Greatcell have continued to work in close co-operation, particularly in relation to modified TiO<sub>2</sub> and ZrO<sub>2</sub> development, and expect that to continue unchanged.

Rebranding has been a great success. Without notable exception, all our major stakeholders have embraced the timing and importance of repositioning in order to have a brand that captures the very essence of the Company and its technology. It is brand foundation work that will bear fruit as we push on to bring our technology to the global stage.

Greatcell has recently extended its finance facility with CBA that enables advance payment of up to 90% of accrued R&D tax offset credits. This facility enables us to better manage our available cash over the year. The Company will also be entering into discussions with CBA on providing other facilities that better match the needs of the Company as we enter into an exciting stage of development where our capital resources need to be effectively managed. CBA, as a tier 1 bank, has commercial facilities better suited to our emerging needs where significant investment is required on equipment and production oriented facilities.

## RESEARCH AND DEVELOPMENT

The Technical Advisory Board (TAB), chaired by Professor Michael Grätzel, passed the 4QFY2017 milestone: 13% “Stabilised Efficiency” 1 cm<sup>2</sup> Glass Strip Cells. Actual conversion efficiency numbers were as high as 13.8%, with very low variance, negligible degradation and are helping drive scale-up architecture choices and objectives.

Mini-MAD scored highly in its most recent internal assessment and is performing well within reach of where we expect it to perform at this stage in our first significant scale-up of the revolutionary Perovskite Solar Cell (PSC) technology. Of particular note, is the excellent uniformity of coatings we have achieved over the 450mm by 650mm FTO glass substrate using our advanced solution coating processes and the very high active area (>93%), demonstrating high tolerances and good registration. The CRC-P project with CSIRO/CSR focused on the development and improvement of large area glass solution coatings will build on this knowledge. The panel conversion efficiency is also very good and gives us confidence that further expected improvement will take this technology to commercial readiness. Testing is both indoor and outdoor and has presented some minor scale challenges as Greatcell, and its partners, transition to larger devices.

## MANUFACTURING AND COLLABORATIONS

The key influence we believe driving recent boardroom decisions and defining new trends in global solar is the gradual withdrawal of subsidies and the recognition that C-Si is reaching a performance plateau. In the absence of subsidies, where will the new competitive advantage lie? Surely, it is in new technology. If Greatcell can help halve the cost of panels e.g. < \$0.50/Wp and significantly lower, we will enter an era where solar is unequivocally cheaper versus fossil fuels and alternative renewables. Conventional power generators will be increasingly threatened when, with the assistance of combined generation and storage, electricity consumers refuse to prop up an outdated power grid in the advanced stage of obsolescence. We believe energy independence and security at the election of the consumer will catch on much faster and be more widespread than generally anticipated.

In a more detailed study recently undertaken by Greatcell at the request of ARENA, Greatcell also demonstrated conclusively that PSC was competitive relative to Cadmium Telluride (CdTe), the second generation solar technology successfully commercialised by First Solar of the US. At scale, these studies project production costs of US\$0.25/Wp and an LCOE < US\$0.04/kWh. Subsequently, our Chief Technology Officer, Dr Damion Milliken has accepted an invitation to join the ARENA advisory panel.

Our plan for a manufacturing presence in the key markets of Australia, China and Turkey is slowly evolving. Each has its own market – domestic and export – appeal, accompanied by strong (or emerging) government support in the form of financial risk sharing and energy policy. With only 2% of global power produced by solar energy and less than 8% by renewables in total there is ample room for sustained take up as we target carbon emissions reduction and less reliance on harmful fossil fuels.

The Jinko Solar MOU was lodged on ASX on July 19 and will focus on the evaluation of GSL’s PSC technology over an extended period. We will oversee and advise on testing during this technology evaluation period. Concurrently, Greatcell will proceed with its Australian based mini-MAD and MAD prototype developments planned to be co-located at CSIRO in Clayton, Victoria. Discussions with the Victorian Government outlining the strategic significance of this initiative have commenced. VDL Enabling Technology Group has already commenced a pilot line feasibility study in anticipation of a successful outcome to the MAD prototype project.

Discussions have continued with our long established partner in Turkey, Nesli DSC, towards the supply of technology and equipment for the manufacture of Perovskite Solar Cell (PSC) modules. However, the difficulty in securing funding support within Turkey to activate the contract has persisted, despite recent optimism. Efforts will continue and we continue to believe a positive solution will emerge.

## FINANCIALS

The net operating monthly cash burn (Sec. 1.9) for the final quarter of the financial year 2017 averaged \$474k. Net cash usage from operating and investing activities for the year to 30 June 2017 totalled \$6.1m including the R&D rebate.

At the end of the fourth quarter, cash balances totalled \$995k.

Since the end of the quarter, Greatcell Solar has drawn down an additional \$800k from its CBA finance facility bringing the total drawdown to approximately 85% of the accrued R&D tax offset credit for the financial year. It is also expecting the 2<sup>nd</sup> tranche payment of \$350,000 of its CRC-P grant in August.

### **About GREATCELL SOLAR LIMITED**

Greatcell Solar is a global leader in the development and commercialisation of Perovskite Solar Cell (PSC) technology – 3<sup>rd</sup> Generation photovoltaic technology that can be applied to glass, metal, polymers or cement. Greatcell Solar manufactures and supplies high performance materials and is focussed on the successful commercialisation of PSC photovoltaics. It is a publicly listed company: Australian Securities Exchange ASX ([GSL](#)) and German Open Market ([D5I](#)). Learn more at [www.greatcellsolar.com](http://www.greatcellsolar.com) and subscribe to our mailing list in English and German.

### **About PEROVSKITE SOLAR CELL TECHNOLOGY**

Perovskite Solar Cell (PSC) technology is a photovoltaic (PV) technology based on applying low cost materials in a series of ultrathin layers encapsulated by protective sealants. Greatcell Solar's technology has lower embodied energy in manufacture, produces stable electrical current, and has a strong competitive advantage in low light conditions relative to incumbent PV technologies. This technology can be directly integrated into the building envelope to achieve highly competitive building integrated photovoltaics (BIPV).

The key material layers include a hybrid organic-inorganic halide-based perovskite light absorber and nano-porous metal oxide of titanium oxide. Light striking the absorber promotes an electron into the excited state, followed by a rapid electron transfer and collection by the titania layer. Meanwhile, the remaining positive charge is transferred to the opposite electrode, thereby generating an electrical current.

- Ends -

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# Appendix 4C

## Quarterly report for entities subject to Listing Rule 4.7B

Name of entity

**GREATCELL SOLAR LIMITED**

ABN

**92 111 723 883**

Quarter ended ("current quarter")

**30 JUNE 2017**

### Consolidated statement of cash flows

1.	Cash flows from operating activities	Current quarter \$A'000	Year to date (12 months) \$A'000
1.1	Receipts from customers	266	1,164
1.2	Payments for		
	(a) research and development	(449)	(3,139)
	(b) product manufacturing and operating costs	(27)	(140)
	(c) advertising and marketing	(101)	(372)
	(d) leased assets	(149)	(597)
	(e) staff costs	(1,311)	(5,427)
	(f) administration and corporate costs	(448)	(2,178)
1.3	Dividends received(see note 3)	-	-
1.4	Interest received	22	49
1.5	Interest and other costs of finance paid	(9)	(42)
1.6	Income taxes paid	-	-
1.7	Government grants and tax incentives	783	4,956
1.8	Other (provide details if material)	-	-
<b>1.9</b>	<b>Net cash from / (used in) operating activities</b>	<b>(1,423)</b>	<b>(5,726)</b>

## Consolidated statement of cash flows

2.	Cash flows from investing activities	Current quarter \$A'000	Year to date (12 months) \$A'000
2.1	Payments to acquire:		
	(a) property, plant and equipment	(62)	(331)
	(b) businesses (see item 10)	-	-
	(c) investments	-	-
	(d) intellectual property	-	-
	(e) other non-current assets	-	-
2.2	Proceeds from disposal of:		
	(a) property, plant and equipment	-	-
	(b) businesses (see item 10)	-	-
	(c) investments	-	-
	(d) intellectual property	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (loans to related parties-net)	4	(17)
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>(58)</b>	<b>(348)</b>
<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from borrowings	750	2,812
3.6	Repayment of borrowings	(43)	(163)
3.7	Transaction costs related to loans and borrowings	(12)	(65)
3.8	Dividends paid	-	-
3.9	Other –Treasury shares purchase	-	(169)
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>695</b>	<b>2,415</b>

## Consolidated statement of cash flows

4.	Net increase / (decrease) in cash and cash equivalents for the period	Current quarter \$A'000	Year to date (12 months) \$A'000
4.1	Cash and cash equivalents at beginning of quarter/year to date	1,773	4,561
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(1,423)	(5,726)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(58)	(348)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	695	2,415
4.5	Effect of movement in exchange rates on cash held	8	93
4.6	<b>Cash and cash equivalents at end of quarter</b>	<b>995</b>	<b>995</b>

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	995	1,773
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>995</b>	<b>1,773</b>

6.	Payments to directors of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to these parties included in item 1.2	143
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
6.3	Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2	
	Directors and associates remuneration	143

7.	Payments to related entities of the entity and their associates	Current quarter \$A'000
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
7.3	Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2	

8.	Financing facilities available <i>Add notes as necessary for an understanding of the position.</i>	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
8.1	Loan facilities	2,500	2,500
8.2	Credit standby arrangements	NIL	NIL
8.3	Other (please specify)		
8.4	In January 2017, the Company established a \$2.5 million Financing Facility with the CBA that allows an advanced drawdown of up to 90% of accrued Research and Development Tax Offset credits. The eligible R&D tax offset cash rebate expected from the ATO for the financial year ending 30 June 2017 forms the primary security for the Facility. The Facility incurs a line fee of 4% on the Facility Limit, and a Liquidity Fee of BBSY (Bank Bill Benchmark Rate for the Funding Period) plus 0.25% p.a. on amounts drawn down.		

9.	Estimated cash outflows for next quarter	\$A'000
9.1	Research and development	450
9.2	Product manufacturing and operating costs	30
9.3	Advertising and marketing	100
9.4	Leased assets	149
9.5	Staff costs	1,350
9.6	Administration and corporate costs	400
9.7	Other (provide details if material)	-
9.8	<b>Total estimated cash outflows</b>	<b>2,479</b>

10.	Acquisitions and disposals of business entities (items 2.1(b) and 2.2(b) above)	Acquisitions	Disposals
10.1	Name of entity	-	-
10.2	Place of incorporation or registration	-	-
10.3	Consideration for acquisition or disposal	-	-
10.4	Total net assets	-	-
10.5	Nature of business	-	-

## Compliance statement

1. This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
2. This statement does give a true and fair view of the matters disclosed.

Sign here:



Date: 28 July 2017

Print name:

Richard Caldwell, *Managing Director*

## Notes

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.