

## TALON POSITIONED TO THRIVE IN THE TRANSITION TO A NET ZERO CARBON FUTURE

- Talon acquires licensing rights for patented zero CO<sub>2</sub> emissions Superheated Steam Technology process that simultaneously enhances recovery of hydrocarbons (methane) from coal seams whilst sequestering CO<sub>2</sub> and producing hydrogen (IP)
- Licensing rights for the IP to be held by GreenFlame Energy Pty Ltd ("GreenFlame") which is 60% owned by Talon and 40% owned by the IP owner
- GreenFlame to acquire Strike Energy's 67% participating interest in PEL96, which contains the Jaws deep coal seam gas project to trial the Superheated Steam Technology
- Significant opportunity within PEL96 to utilise substantial pre-existing infrastructure and wells located over some of Australia's thickest coals seams
- Initial appraisal program to be funded from Talon's existing cash reserves
- International expansion opportunities with licence agreements in 8 countries
- Potential application at Talon's Gurvantes XXXV coal bed methane project in Mongolia

Talon Energy Ltd (Talon or the Company) is pleased to announce that it has executed a Shareholder Agreement (SHA) with Applied Vapor Solutions LLC (AVS) in respect of a 60% shareholding in GreenFlame Energy Pty Ltd (GreenFlame).

GreenFlame holds an exclusive patent licence for the application of a zero CO<sub>2</sub> emissions Superheated Steam Technology process that simultaneously enhances recovery of hydrocarbons (methane) from coal seams whilst sequestering CO<sub>2</sub> and producing hydrogen.



PEL96 Pilot in Cooper Basin South Australia

GreenFlame has also entered into a conditional agreement with Strike Energy Limited (**Strike**) for the acquisition of Strike's 67% participating interest in PEL96, located in the South Australian Cooper Basin. PEL96 holds the Strike operated Jaws deep coal seam gas project. PEL96 will be the initial focus for GreenFlame in the application and pilot appraisal of the AVS patented Superheated Steam Technology.

Because this Superheated Steam Technology can substantially increase coal rank on contact by pyrolysis, it essentially does in seconds what takes nature and the Earth's geological coalification processes millions of years to do (Flores, 2014)<sup>1</sup>. The technology also has the potential to significantly enhance both CO<sub>2</sub> storage (sequestration) and methane production from coal seams. Sequestering CO<sub>2</sub> at supercritical temperatures also significantly enhances coal seam permeability and methane production, even from low rank, low gas content and undersaturated coals. Indeed, the process actually generates methane, and increases CO<sub>2</sub> storage to where pyrolyzed coals can hold over 100x more CO<sub>2</sub> than conventional sandstone reservoirs.

Furthermore, with hydrogen production a by-product of coal pyrolysis and CO<sub>2</sub> sequestration, Talon has a unique opportunity to be at the forefront of the next energy revolution while still meeting the emission constrained energy demands of today.



AVS' Superheated Steam Generator

With up to 135m of coal, and some of Australia's thickest coal seams, PEL96 has been identified as an ideal trial candidate for both CO<sub>2</sub> sequestration and enhanced coal seam gas production, as well as having the potential for zero emissions electricity generation. With PEL96 having substantial pre-existing infrastructure, and wells requiring minimal retrofitting, Talon can move rapidly into the technology appraisal phase without lengthy approvals processes and very costly drilling programs. As a result of this existing infrastructure, initial trials are capable of being funded from Talon's current cash reserves, and subject to final documentation, commencement of field activities is being targeted for early 2022.

**Commenting on the transaction with GreenFlame, Talon's Managing Director, David Casey said:**

*"The transaction with AVS and GreenFlame is an important step for Talon and the industry in general. Increasingly, our industry is seeing the requirement from governments, regulators, and investors, to demonstrate the ability to work towards a low emission energy future. Talon is cognisant of these requirements and takes its position as a player in the energy transition seriously".*

*Thanks to the considerable existing infrastructure on PEL96 we are confident that the initial pilot appraisal and application of GreenFlame's licensed compact Superheated Steam Technology can be conducted on an extremely cost-effective and timely basis. It is not often that an opportunity presents itself where a*

potential ground-breaking technology can be so readily applied to an existing asset. If proven successful, this transaction will place Talon at the forefront of not only emissions reduction, but also hydrogen production and enhanced gas recovery from its own, and potentially other coal seam gas projects. All three of which are important factors in the global low emission energy transition process. With licencing to apply the technology to seven additional countries overseas, we see an exciting and very large opportunity in GreenFlame for Talon."

## AVS Superheated Steam Technology

### Enhanced Coal Seam Gas Methane Production

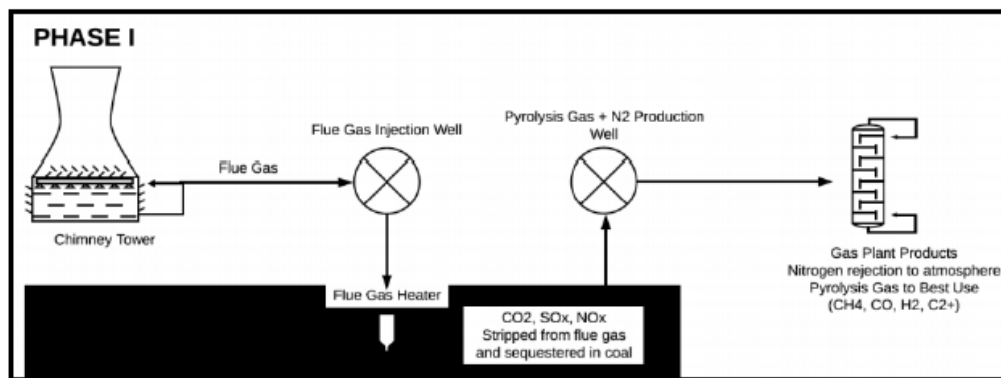
Increase peak production rates and ultimate recovery. The AVS Superheated Steam Technology involves injecting a mixture of high temperature superheated steam/CO<sub>2</sub>/flue gas that pyrolyzes coal, creating coal seam permeability and generating methane. As such, the process resolves low permeability and low gas saturation issues.

### CO<sub>2</sub> Sequestration

Pyrolysis increases the rank and microporosity of the coal, and at the same time increases the potential for coal sequestration (Tang and others, 2005)<sup>2</sup>. Testing demonstrates that coal adsorbs up to three times as much CO<sub>2</sub> by volume than methane (depending on coal rank). As CO<sub>2</sub> displaces methane from the coal surface, it can be successfully sequestered as part of the methane production process. Extremely high levels of CO<sub>2</sub> can be sequestered in coal if it is used as the injected gas for the pyrolytic process. Hughes (2018) determined that coal seams can sequester more than 200kg of CO<sub>2</sub> per m<sup>3</sup>, that if applied to a typical Coal Seam Gas project with 20m of coal has the potential to sequester Australia's annual greenhouse gas emissions, which in 2019 equated to 526mm metric tonnes of CO<sub>2</sub> equivalent (Statistical, 2021)<sup>4</sup>, in an area of only 125km<sup>2</sup>.

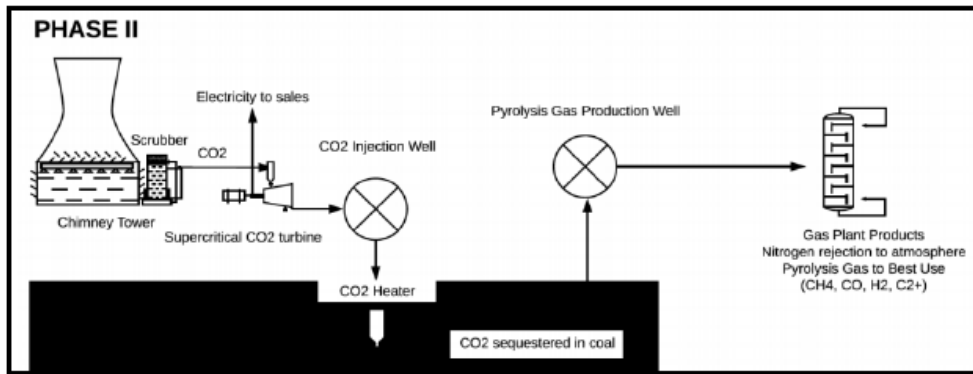
### Hydrogen Production

Volatile matter in the coal is transformed by the introduction of heat into valuable fuel gases (including hydrogen). Production of hydrogen can be achieved by varying the temperature, pressure and types of generating fluid delivered by the superheater. The ability to produce and sell hydrogen from coal pyrolysis gases can make the process of CO<sub>2</sub> sequestration profitable.



### Power Generation

Potential for generation of emission-free electricity with significant cost savings to conventional steam turbines. Hot supercritical CO<sub>2</sub> is more efficient in turbines than conventional steam (Hughes, 2018)<sup>3</sup> and the technology allows for the simple heating of CO<sub>2</sub> which is then run through a turbine (producing electricity) with the turbine exhaust then being injected into the reservoir to perform the coal pyrolytic process. Gas is then produced and processed in plant facilities.



## Overview of PEL96

As part of the transaction, subject to receipt of any required third-party approvals, GreenFlame will acquire a 67% participating interest in PEL96 from Strike. PEL96 is located in the Cooper Basin, South Australia, and hosts the Jaws coal seam gas project currently operated by Strike.

PEL96 has been the subject of substantial exploration and the deployment of a pilot program by the existing joint venture, which ultimately concluded the project to be sub-economic.

Review of the technical data has indicated that the coals located in PEL96 are an excellent candidate for the application of the Superheated Steam Technology and to test its efficacy in relation to methane production, CO<sub>2</sub> sequestration and hydrogen production.

Importantly for GreenFlame and Talon, in respect of the initial test work on the Superheated Steam Technology, there remain a number of wells which are suspended as part of the Jaws and Klebb pilot projects. This represents a very material saving in terms of time and expenditure for Talon and GreenFlame and will allow for cost effective initial testing of the technology through the injection of supercritical CO<sub>2</sub> into existing wells without the need for additional drilling.

## Transaction Overview

### 1. Shareholding in GreenFlame Energy Pty Ltd

- GreenFlame is jointly owned by Talon (60%) & AVS (40%); Talon has appointed 2 directors, David Casey and Matt Worner, and AVS has appointed 1 director.
- AVS has granted GreenFlame an exclusive licence for the Superheated Steam Technology for Australia, India, Indonesia, Mongolia, New Zealand and South Africa (**Tier 1**); and Argentina and Colombia (**Tier 2**) (**Selected Countries**).
- AVS granted a royalty by GreenFlame equal to 3% of revenues generated by the Superheated Steam Technology.
- AVS to provide the first 3 technology units to GreenFlame at cost; with additional units to be at cost plus 15%.
- Talon to provide initial funding to GreenFlame of up to \$A1.5 million (**TPD Funding Amount**) and based on a budget designed to provide proof of concept for the Superheated Steam Technology.
- Upon the provision of the TPD Funding Amount:
  - Talon shall be entitled to receive 90% of any GreenFlame proceeds and revenues; and
  - AVS shall forgo the royalty,

until such time as Talon has recouped the AVS Funding Amount plus 20%.

## 2. GreenFlame to hold exclusivity to the Superheated Steam Technology for an initial 3-year period.

- If at the end of the 3-year exclusivity period:
  - a. GreenFlame has purchased and is operating (or can demonstrate that it has made significant advances towards operating) an additional five (5) Units, GreenFlame shall have the right to extend the Initial Exclusivity Period for a period of 12 months (**Extension Period**) in respect of any or all of the Selected Countries; or
  - b. GreenFlame has not purchased and is not operating an additional five (5) Units but still wishes to enter into the Extension Period, it can pay an annual fee to AVS of A\$300,000 per Tier One Selected Country (**Tier One Fee**) and/or A\$150,000 per Tier Two Selected Country (**Tier Two Fee**) to be extended.
- Thereafter, the Extension Period can be renewed annually by GreenFlame in respect of individual Selected Countries by way of the payment by GreenFlame to AVS of the Tier One Fee or the Tier Two Fee (as applicable). Where in any calendar year, GreenFlame has not elected to renew the Extension Period and has not paid the applicable fee in respect of a Selected Country, that country will no longer qualify as a Selected Country and may not be reinstated as a Selected Country (unless otherwise agreed by AVS and GreenFlame).
- If, at any time, GreenFlame is operating fifteen (15) units per year, the Exclusivity Period shall be extended indefinitely without the requirement of an annual fee or the purchasing of additional units.

## 3. Acquisition of PEL96 from Strike Energy Limited

GreenFlame has entered into a formal Share Purchase Deed (**SPD**) to purchase Strike Energy 96 Pty Ltd (**SE96**) from Strike. SE96 holds a 67% participating interest in PEL96 (**SE96 Interest**). The acquisition is subject to the receipt of any required third-party consents and approvals. Upon completion of the acquisition of SE96, GreenFlame will be holder the Operator role for PEL96.

GreenFlame will provide a nominal fee for the acquisition of SE96, along with the replacement by GreenFlame of the applicable South Australian government bond relating to the SE96 interest, in an amount of A\$200,000. GreenFlame shall assume responsibility for the current rehabilitation liabilities relevant to the SE96 Interest, which are currently estimated at A\$1.56 million.

**This announcement is authorised for lodgement by the Managing Director.**

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## References

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2. Tang, Q. G., Jessen, K. and Kovscek, R. A., 2005, Laboratory and simulation investigation of enhanced coalbed methane recovery by gas injection, Springer Link 73 (2), 141-159p.
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4. Statistical, 2021, Annual volume of greenhouse gas emissions in Australia from 2010 to 2020. [Statistica.com/statistics/1014951/Australia-yearly-greenhouse-gas-emissions/](https://www.statista.com/statistics/1014951/Australia-yearly-greenhouse-gas-emissions/)