

Treasury Corporation of Victoria

# TCV Annual Green Bond Report

February 2018

For further information  
please contact:

Treasury Corporation of Victoria  
Telephone: +61 3 9650 7577  
Facsimile: +61 3 9650 7557  
e-mail: [tcv@tcv.vic.gov.au](mailto:tcv@tcv.vic.gov.au)

Address

Level 12  
1 Collins Street  
Melbourne VIC 3000  
Australia

TCV<sup>\*</sup>

Treasury Corporation of Victoria

## Contents

Contents.....	2
1.0 Introduction.....	3
2.0 TCV Green Bond Overview.....	3
2.1 TCV Green Bond Issue.....	4
3.0 Use of Proceeds.....	5
4.0 Selection of Eligible Projects and Assets.....	6
5.0 Management of Proceeds.....	7
6.0 Reporting.....	8
7.0 Assurance.....	12
8.0 Case Studies.....	13
8.1 Greener Government Buildings.....	13
8.2 Melbourne Water Assets.....	14
8.3 Electrified Rail Projects.....	17
9.0 Appendices.....	22
9.1 Appendix One – DNVL Assurance.....	22
9.2 Appendix Two Assurance Report on Use of Proceeds Statement.....	29

## 1.0 Introduction

The purpose of the TCV Annual Green Bond Report is to provide investors with ongoing update of the TCV Green Bond activities, use of proceeds, impact reporting and case studies on projects currently underway.

## 2.0 TCV Green Bond Overview

In July 2016, TCV launched its inaugural TCV Green Bond issuance with a \$300 million, 5 year maturity bond to a pool of diversified sustainable mandate investors in the Australian and International financial markets.

Key characteristics are as follows:

- TCV Green Bonds are currently rated AAA (outlook negative)/Aaa (stable), and are senior, unsecured obligations of TCV, guaranteed by the State of Victoria and issued off TCV's Domestic Benchmark Bond programme
- TCV Green Bonds are issued in accordance with TCV's Green Bond Framework
- TCV Green Bonds have been certified in compliance with the Climate Bonds Standard (Version 2.1) and will be in alignment with the Green Bond Principles (2016)
- DNV GL Business Assurance ('DNV GL') have been appointed as TCV's independent Verification Agent
- National Australia Bank ('NAB') were appointed as Sole Arranger, Green Bond Structuring Agent and Lead Manager for the proposed transaction.

TCV Green Bonds are employed for financing, and re-financing, of projects and assets across Victoria, which are funded through TCV 'Participating Authorities' (within the meaning of the *Treasury Corporation of Victoria Act 1992*), Victorian Government Departments and State related entities, and are consistent with delivering a low carbon and climate resilient economy. Specifically, this includes projects/assets that directly contribute to:

- climate change mitigation by developing low carbon assets, technologies and practices that reduce or avoid greenhouse gas emissions by reducing energy demand, improving energy efficiency and utilising low carbon energy sources
- climate change adaptation by addressing existing/future impacts of and developing resilience to climate change.

The Climate Bonds Standard prescribes different requirements for different types of Climate Bonds, including 'Use of Proceeds Bonds' which are defined as 'a standard recourse-to-the-issuer debt obligation for which the proceeds shall be credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer and attested to by a formal internal process that will be linked to the issuer's lending and investment operations for Eligible Projects & Assets'.

TCV Green Bonds meet this definition for Use of Proceeds Bonds, and the requirements for certification as Climate Bonds under the Climate Bonds Standard (v 2.1). <http://www.climatebonds.net/standards>

Since the July 2016 issuance there have been no proposed changes to the TCV Green Bond Framework or additional assets or categories of projects proposed to TCV Green Bond Asset Pool. Further detail of Asset Pool and asset reporting has been updated to 30 June 2017 in Section 6.

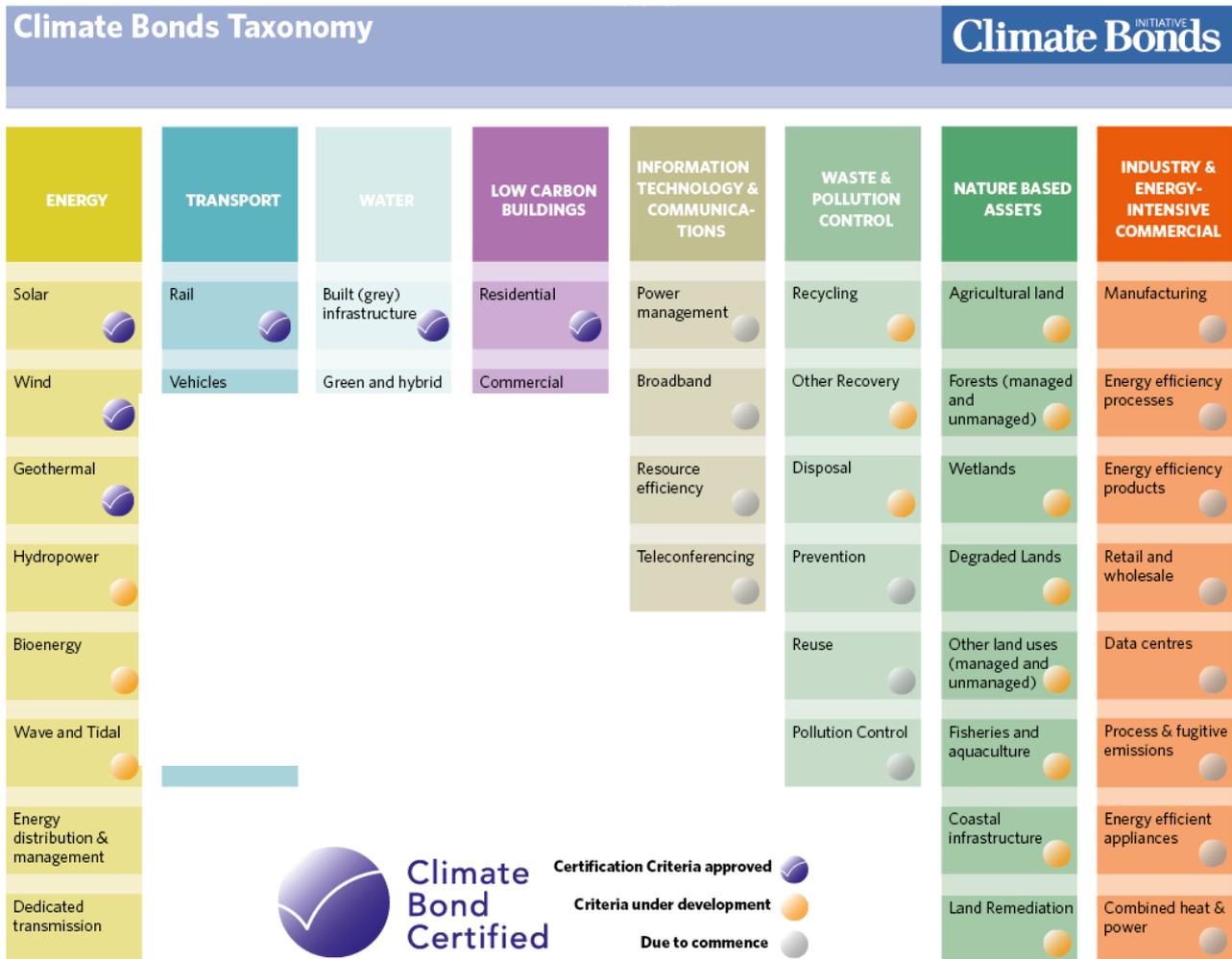
## 2.1 TCV Green Bond Issue

**Table 1**                      **Key Terms**

<b>Coupon and Maturity</b>	1.75%, 27 July 2021
<b>Size</b>	\$300 million
<b>Pricing Date</b>	19 Jul 2016
<b>Re-offer Spread</b>	3yr EFP + 33 bps   ACGB 5.25% May 2021 + 19.75 bps
<b>Currency</b>	Australian Dollar
<b>Listing</b>	ASX
<b>Project Categories</b>	Energy Efficiency, Renewable Energy, Low Carbon Transport
<b>Domestic / Foreign Investors</b>	87% / 13%
<b>Arrangers / Lead Managers</b>	NAB

### 3.0 Use of Proceeds

The proceeds of each TCV Green Bond will be used to finance, and re-finance, projects and assets that are consistent with delivering a low carbon and climate resilient economy. TCV Green Bond proceeds are allocated against a portfolio of Eligible Projects & Assets (both existing and future) which meet eligibility requirements for certification under the Climate Bonds Standard (v2.1).



[https://www.climatebonds.net/standards/standard\\_download](https://www.climatebonds.net/standards/standard_download)

<http://www.climatebonds.net/standards/taxonomy>

TCV Green Bond eligible projects and assets will fall under one of the categories identified within the Climate Bond Taxonomy, with each eligible project/asset meeting the Climate Bonds Standard Eligibility & Guidance documents developed by the Climate Bonds Initiative. Proceeds raised from issuance of TCV Green Bonds will be used for financing, and re-financing, eligible projects and assets that fall within the following categories:

- renewable energy
- low carbon buildings
- low carbon transport (electrified public passenger transport)
- energy efficiency (including property upgrades)
- climate change adaptation and resilience infrastructure
- water infrastructure.

## 4.0 Selection of Eligible Projects and Assets

Only TCV Green Bonds issued to fund projects and assets which qualify as Eligible Projects and Assets under the terms of the Climate Bonds Standard can be certified as Climate Bonds. These are projects, physical assets, or indebtedness incurred to finance physical assets that satisfy the prescribed eligibility criteria for the purposes of the Climate Bond Standard, and are subject to sector-specific technical criteria and must be regarded as contributing to the delivery of a low carbon and climate resilient economy as defined within the terms of the Climate Bonds Standard.

Selection of eligible projects and assets for funding via TCV Green Bonds will be done on behalf of the State of Victoria by a TCV Green Bond Committee, comprised of staff from the Treasury Corporation of Victoria ('TCV') and the Department of Treasury and Finance ('DTF'), with input from specialists from TCV participating authorities, government departments and state related entities with responsibility for managing the earmarked assets and projects, and guidance from TCV's Green Bond Arranger ('NAB') and the Climate Bonds Initiative ('CBI').



## 5.0 Management of Proceeds

TCV Green Bonds will require tracking and reporting on use of proceeds by TCV participating authorities, government departments and state related entities managing the earmarked assets and projects within the TCV Green Bond eligible portfolio. This will be tracked and reported via the use of internal information systems and financial records of the State of Victoria.

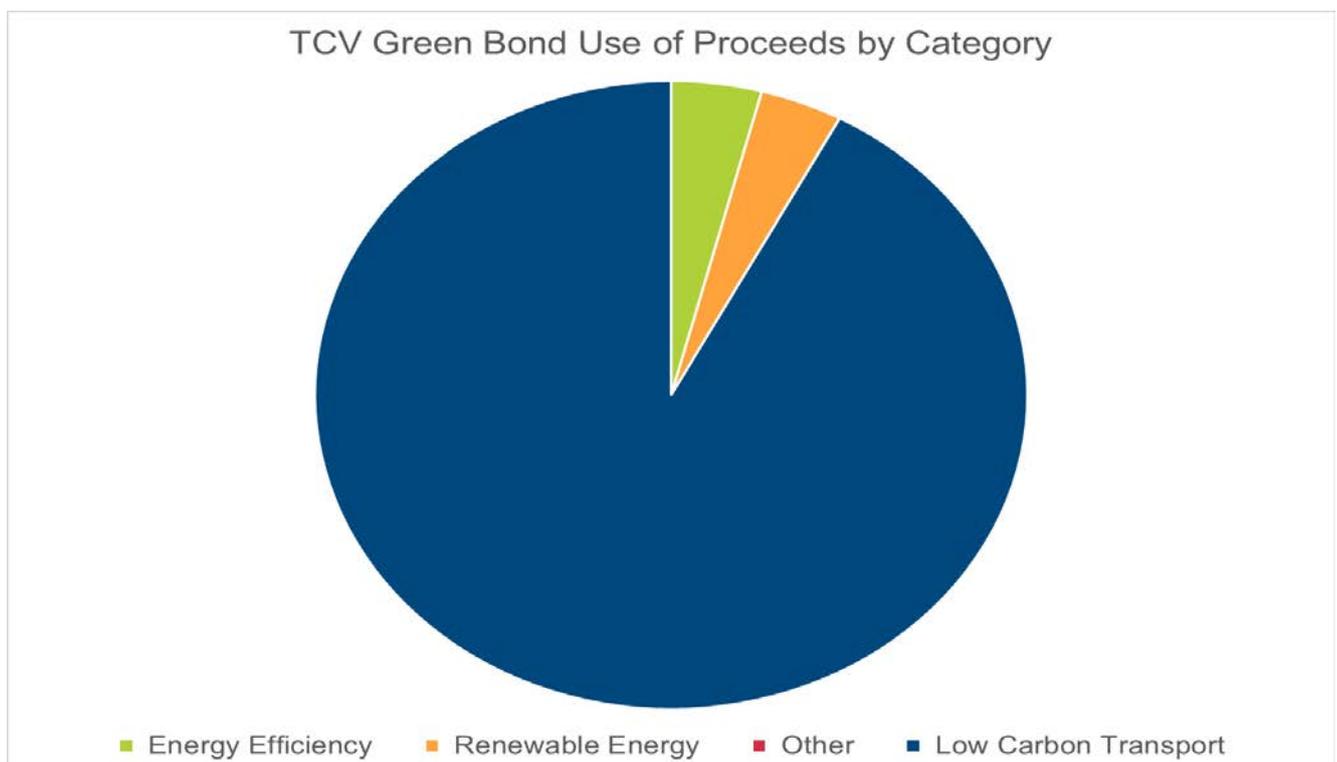
Each TCV Green Bond will have an amount equal to the net proceeds booked under an allocated position, established for each TCV Green Bond issuance within TCV's internal systems. TCV will establish a register of all TCV Green Bond eligible projects earmarked against each TCV Green Bond, updated on a quarterly basis, which will identify each eligible project/asset with a unique identifier and track funds invested in each of these eligible projects/assets.

Under the Climate Bonds Standard, TCV as Issuer is required to demonstrate that the net proceeds of the TCV Green Bond have been distributed and invested in eligible assets and projects within 24 months of issuance date of the TCV Green Bond. This will be validated by the quarterly reporting undertaken for the TCV Green Bond.

Where full distribution of the net proceeds of each TCV Green Bond is not achieved within 24 months of issuance date, TCV will demonstrate that either:

- a) the surplus funds have been invested in other Climate Bond eligible projects and assets not otherwise nominated for inclusion within the current TCV Green Bond portfolios; or
- b) TCV has invested the surplus funds in temporary investments that are:
  - › cash, or cash equivalent instruments such as short-term money market instruments; or
  - › projects or assets that do not include greenhouse gas intensive projects which are inconsistent with the delivery of a low carbon and climate resilient economy.

The following charts show the committed funding and expenditure to 30 June 2017 for the TCV Green Bond Asset Pool:



## 6.0 Reporting

The following tables summarises each eligible project reporting by Category of Investment.

**Table 2 Environmental Performance Data**

Project name	GREEN BOND ELIGIBLE USE OF PROCEEDS CATEGORY (Renewable Energy, Low Carbon Transport, Low Carbon Buildings, Energy Efficiency, Climate Change Adaptation and Resilience, Water)	Mitigation (M) or Adaptation (A)	RE (renewable energy) or EE (energy efficiency)	Annual Energy Savings (MWh)	Annual Energy Produced (MWh)	Renewable Energy Capacity Added (MW)	Annual GHG Emissions Avoided (tonnes CO2 eq.)	Target Results
<b>Greener Government Buildings Program</b>								
<b>Traffic lights (statewide) replacement with LED lamps</b> Lighting upgrade (incandescent to LED). Reduced maintenance from every 3 months to every 8 years.	Energy Efficiency	M	EE	15,271	n/a	n/a	18,174	70% GHG reduction (22,512 tonnes)
<b>Federation Square</b> Lighting, HVAC, cogeneration, bio-energy system, energy generating pavers, rainwater harvesting, solar PV	Energy Efficiency	M	EE	6,279 (Electricity) 23,510 GJ (Gas)	1,767	25kw	6,169	54% GHG Reduction (7,302 tonnes)
<b>Holmesglen TAFE (all campuses)</b> Lighting upgrade, HVAC upgrade, demand based ventilation, building automation system upgrade, cogeneration, window solar film, VSDs	Energy Efficiency	M	EE	Not Yet Completed	n/a	n/a	Not Yet Completed	36% GHG Reduction (7,452 tonnes)
<b>East Gippsland Water</b> Solar aerators, lighting upgrades, pump upgrades, solar PV	Energy Efficiency	M	EE	585	247	80.5kw	696	41% GHG Reduction (1,853 tonnes)
<b>Museum Victoria (all facilities, including Melb Museum, REB, Scienceworks, storage)</b> HVAC upgrade, building controls and optimisation, lighting upgrade	Energy Efficiency	M	EE	Not Yet Completed	n/a	n/a	Not Yet Completed	66% GHG Reduction (17,811 tonnes)
<b>Public Housing (28 high-rise towers)</b> Lighting upgrade, HVAC upgrade, building controls and optimisation, solar PV	Energy Efficiency	M	EE	Not Yet Completed	n/a	70kw	Not Yet Completed	57% GHG Reduction (10,137 tonnes)
<b>Melbourne Polytechnic (all campuses)</b> HVAC upgrade, lighting upgrade, voltage reduction system, building tuning and optimisation	Energy Efficiency	M	EE	1,285	n/a	n/a	1,529	40% GHG Reduction (1,438 tonnes)
<b>Total Greener Government Buildings Program</b>								
<b>Melbourne Water Assets</b>								
<b>Mini Hydroelectric Power Stations - T3</b> Investigation, design and construction of up to 9 mini hydroelectric power stations - Tranche 3	Renewable Energy	M	RE	Zero, because all electricity generated is exported	10,900	5	Zero. REC goes with the electricity exported	
<b>Tranche 2 Mini Hydros</b> Design and construct commercially viable mini hydros.	Renewable Energy	M	RE	Zero, because all electricity generated is exported	5,450	2.5	Zero. REC goes with the electricity exported	
<b>Eastern Treatment Plant (ETP) Solids Handling - Stage 2</b> Provision of additional ETP Sludge Digestion treatment capacity to cater for growth	Other	M	n/a	Not Yet Completed	n/a	n/a	n/a	
<b>ETP Solids Handling - Stage 1A</b> WAS Thickening Process optimisation & provisions of additional treatment capacity to cater for load growth	Other	M	n/a	Not Yet Completed	n/a	n/a	n/a	
<b>ETP Solids Handling - Stage 1B</b> Modifications to the existing primary sludge thickening system to 1) address the impact of systemic problems/trips on plant availability, & 2) facilitate maximisation of treatment asset capacity	Other	M	n/a	Not Yet Completed	n/a	n/a	n/a	
<b>Expansion of Power Station at Western Treatment Plant (WTP)</b> Increased electricity generation from biogas utilising increased biogas following the replacement of the 55E lagoon cover	Renewable Energy	M	RE	4,000	24,000	11.0	4,000	
<b>WTP 55E ASP Upgrade / Renewal</b> Refurbishment of the 55E activated sludge plant to improve the occupational health and safety aspects of maintenance, renewals and overall improvement to whole of life cost efficiency	Renewable Energy	M	RE	Not Yet Completed	n/a	n/a	n/a	
<b>Buy out residual balloon value of AGL power plant at WTP</b> Buy AGL power plant at WTP, which is a renewable energy plant	Renewable Energy	M	RE	Not Yet Completed	n/a	9.9	n/a	
<b>WTP 25W Biogas Cover Upgrade</b> WTP 25W Biogas Lagoon Cover Replacement & Extension of Bio Gas Recovery Main	Renewable Energy	M	RE	Zero, because all electricity generated is exported	4,380	2.0	Zero. REC goes with the electricity exported	
<b>Large scale renewable energy power station at ETP</b> Key project to meet environmental targets to lower energy costs and GHG emission liabilities	Renewable Energy	M	RE	27,500	30,580	14.0	27,500	

Transport Assets (Electrified Rail)								
<b>5 X'Trapolis Train Sets</b> Manufacture and Delivery of 5 (6-carriage) X'trapolis train sets	Low Carbon Transport	M	n/a	n/a	n/a	n/a	n/a	Each Passenger Train equates to 525 cars off the road 40% less CO2 emissions than road travel per Passenger Kilometre
<b>Melbourne Metro Tunnel (expenditure to 30/6/17 excluding PPP funding)</b> \$11 billion Metro Tunnel with twin nine-kilometre underground tunnels and five new underground stations - Green Bond allocation is project expenditure to 30 June 2017	Low Carbon Transport	M	n/a	n/a	n/a	n/a	74 kilo tonnes CO2 pa at 2046 (remove 281.8 million Vehicle Kilometres Travelled (VKT) of Cars and 4.4 million VKT of trucks) (1)	Net reduction of 1.2 grams of CO2 emissions per passenger kilometres travelled after 20 years of operation 20% renewable energy Reduction in CO2 emissions 20% below base case and 15% reduction in materials lifecycle GHG impact below base case
<b>Mernda Rail Extension</b> Eight kilometres of new rail line and three state-of-the-art stations at Marymede, Mernda and Hawkstowe extending the South Morang Railway Line to Mernda	Low Carbon Transport	M	n/a	n/a	n/a	n/a	not currently available	8,000 commuters per day 4 star rating or greater for all Station Buildings
<b>Total Transport Assets (Electrified Rail)</b>								
<b>Total Green Bond Expenditure</b>								
Notes								
1. Source: Metrol Tunnel Environmental Effects Statement (Chapter 22 Greenhouse)								

**Table 3 Use of Proceeds Statement**

<b>Project name</b>	<b>GREEN BOND ELIGIBLE USE OF PROCEEDS CATEGORY (Renewable Energy, Low Carbon Transport, Low Carbon Buildings, Energy Efficiency, Climate Change Adaptation and Resilience, Water)</b>	<b>Borrower</b>	<b>COMMITTED AMOUNT to 30 June 2017 (AUD)</b>	<b>Amount Expended to 30 June 2017</b>	<b>TCV Debt Outstanding (\$ millions)</b>	<b>Amount of Green Bond Proceeds Allocated (AUD )</b>
<b>Greener Government Buildings Program</b>						
<b>Traffic lights (statewide) replacement with LED lamps</b> Lighting upgrade (incandescent to LED). Reduced maintenance from every 3 months to every 8 years.	Energy Efficiency	DTF	\$ 25,000,000	\$ 25,000,000	\$ 18,783	\$ 6,348,536
<b>Federation Square</b> Lighting, HVAC, cogeneration, bio-energy system, energy generating pavers, rainwater harvesting, solar PV	Energy Efficiency	DTF	\$ 6,815,528	\$ 6,815,528	\$ 18,783	\$ 1,730,745
<b>Holmesglen TAFE (all campuses)</b> Lighting upgrade, HVAC upgrade, demand based ventilation, building automation system upgrade, cogeneration, window solar film, VSDs	Energy Efficiency	DTF	\$ 5,703,470	\$ 5,532,847	\$ 18,783	\$ 1,405,019
<b>East Gippsland Water</b> Solar aerators, lighting upgrades, pump upgrades, solar PV	Energy Efficiency	DTF	\$ 1,230,000	\$ 1,230,000	\$ 18,783	\$ 312,348
<b>Museum Victoria (all facilities, including Melb Museum, REB, Scienceworks, storage)</b> HVAC upgrade, building controls and optimisation, lighting upgrade	Energy Efficiency	DTF	\$ 11,347,943	\$ 6,382,764	\$ 18,783	\$ 1,620,848
<b>Public Housing (28 high-rise towers)</b> Lighting upgrade, HVAC upgrade, building controls and optimisation, solar PV	Energy Efficiency	DTF	\$ 13,385,500	\$ 1,559,758	\$ 18,783	\$ 396,087
<b>Melbourne Polytechnic (all campuses)</b> HVAC upgrade, lighting upgrade, voltage reduction system, building tuning and optimisation	Energy Efficiency	DTF	\$ 1,917,000	\$ 1,917,000	\$ 18,783	\$ 486,806
<b>Total Greener Government Buildings Program</b>			<b>\$ 65,399,441</b>	<b>\$ 48,437,896</b>		<b>\$12,300,390</b>
<b>Melbourne Water Assets</b>						
<b>Mini Hydroelectric Power Stations - T3</b> Investigation, design and construction of up to 9 mini hydroelectric power stations - Tranche 3	Renewable Energy	Melbourne Water	\$ 15,250,000	\$ 19,200	\$ 3,847	\$ 4,876
<b>Tranche 2 Mini Hydros</b> Design and construct commercially viable mini hydros.	Renewable Energy	Melbourne Water	\$ 7,360,991	\$ 8,417,337	\$ 3,847	\$ 2,137,511
<b>Eastern Treatment Plant (ETP) Solids Handling - Stage 2</b> Provision of additional ETP Sludge Digestion treatment capacity to cater for growth	Other	Melbourne Water	\$ 43,715,895	\$ -	\$ 3,847	\$ -
<b>ETP Solids Handling - Stage 1A</b> WAS Thickening Process optimisation & provisions of additional treatment capacity to cater for load growth	Other	Melbourne Water	\$ 7,658,900	\$ -	\$ 3,847	\$ -
<b>ETP Solids Handling - Stage 1B</b> Modifications to the existing primary sludge thickening system to 1) address the impact of systemic problems/trips on plant availability, & 2) facilitate maximisation of treatment asset capacity	Other	Melbourne Water	\$ 8,029,875	\$ 124,383	\$ 3,847	\$ 31,586
<b>Expansion of Power Station at Western Treatment Plant (WTP)</b> Increased electricity generation from biogas utilising increased biogas following the replacement of the 55E lagoon cover	Renewable Energy	Melbourne Water	\$ 11,355,000	\$ 293,760	\$ 3,847	\$ 74,598
<b>WTP 55E ASP Upgrade / Renewal</b> Refurbishment of the 55E activated sludge plant to improve the occupational health and safety aspects of maintenance, renewals and overall improvement to whole of life cost efficiency	Renewable Energy	Melbourne Water	\$ 111,908,535	\$ 438,117	\$ 3,847	\$ 111,256
<b>Buy out residual balloon value of AGL power plant at WTP</b> Buy AGL power plant at WTP, which is a renewable energy plant	Renewable Energy	Melbourne Water	\$ 3,500,000	\$ -	\$ 3,847	\$ -
<b>WTP 25W Biogas Cover Upgrade</b> WTP 25W Biogas Lagoon Cover Replacement & Extension of Bio Gas Recovery Main	Renewable Energy	Melbourne Water	\$ 42,155,956	\$ 34,972,278	\$ 3,847	\$ 8,880,911
<b>Large scale renewable energy power station at ETP</b> Key project to meet environmental targets to lower energy costs and GHG emission liabilities	Renewable Energy	Melbourne Water	\$ 55,000,000	\$ 25,667	\$ 3,847	\$ 6,518
<b>Total Melbourne Water</b>			<b>\$ 305,935,151.80</b>	<b>\$ 44,290,743</b>		<b>\$11,247,256</b>

Project name (Continued)	GREEN BOND ELIGIBLE USE OF PROCEEDS CATEGORY (Renewable Energy, Low Carbon Transport, Low Carbon Buildings, Energy Efficiency, Climate Change Adaptation and Resilience, Water)	Borrower	COMMITTED AMOUNT to 30 June 2017 (AUD)	Amount Expended to 30 June 2017	TCV Debt Outstanding (\$ millions)	Amount of Green Bond Proceeds Allocated (AUD)
<b>Transport Assets (Electrified Rail)</b>						
<b>5 X'Trapolis Train Sets</b> Manufacture and Delivery of 5 (6-carriage) X'trapolis train sets	Low Carbon Transport	DTF	\$ 97,870,000	\$ 56,961,000	\$ 18,783	\$ 14,464,759
<b>Melbourne Metro Tunnel (expenditure to 30/6/17 excluding PPP funding)</b> \$11 billion Metro Tunnel with twin nine-kilometre underground tunnels and five new underground stations - Green Bond allocation is project expenditure to 30 June 2017	Low Carbon Transport	DTF	\$ 1,026,500,000	\$ 915,884,000	\$ 18,783	\$ 232,580,920
<b>Mernda Rail Extension</b> Eight kilometres of new rail line and three state-of-the-art stations at Marymede, Mernda and Hawkstowe extending the South Morang Railway Line to Mernda	Low Carbon Transport	DTF	\$ 587,714,000	\$ 115,801,000	\$ 18,783	\$ 29,406,675
<b>Total Transport Assets (Electrified Rail)</b>			<b>\$1,712,084,000.00</b>	<b>\$ 1,088,646,000.00</b>		<b>\$276,452,354</b>
<b>Total Green Bond Expenditure</b>			<b>\$2,083,418,593</b>	<b>\$1,181,374,639</b>		<b>\$300,000,000.00</b>

## 7.0 Assurance

TCV Green Bonds are certified as Climate Bonds under the Climate Bonds Standard by the Climate Bond Standards Board of the Climate Bonds Initiative. Before a bond can be certified, the compliance of that bond with the Climate Bonds Standard must be verified by a third party verification agent.

TCV has retained DNV GL Business Assurance Australia Pty Ltd ('DNV GL'), as the independent verification agent for the TCV Green Bonds.

On an annual basis, TCV has retained DNV GL, or an appropriate assurance provider, to independently verify the annual TCV Green Bond Report, and provide assurance that each outstanding TCV Green Bond is in compliance with the TCV Green Bond Framework and the requirements of the Climate Bond Standards.

Refer to Appendix 1 for TCV Green Bond Annual Verification Report prepared by DNV GL. Note that the inclusion of Hydro and Biogas Projects in the Green Bond Pool is provisional and subject to finalisation of the CBI Standards for Water and Biogas Projects.

In addition, TCV has provided this Annual Green Bond Report and related financial information to its auditors to provide an assurance that the use of proceeds for the TCV Green Bond have been applied in accordance with the TCV Green Bond Framework.

Refer to Appendix 2 for TCV Green Bond Financial Assurance prepared by EY.

## 8.0 Case Studies

### 8.1 Greener Government Buildings

#### Overview

Greener Government Buildings (GGB) is a program that improves the energy efficiency of existing government buildings to reduce operating costs and greenhouse gas (GHG) emissions. Energy is saved through a combination of:

- lighting upgrades (e.g. LED)
- heating, ventilation and cooling upgrades (HVAC)
- solar panels
- building automation and controls.

**Table 4 Project Status**

Project Name	Status	Solutions
Traffic lights (State-wide) replacement with LED lamps	Completed 2012	Lighting upgrade (incandescent to LED). Reduced maintenance from every 3 months to every 8 years.
Federation Square	Completed 2012	Lighting, HVAC, cogeneration, bio-energy system, energy generating pavers, rainwater harvesting.
Holmesglen TAFE (all campuses)	Installing	Lighting upgrade, HVAC upgrade, demand based ventilation, building automation system upgrade, cogeneration, window solar film, VSDs
East Gippsland Water	Completed 2016	Solar aerators, lighting upgrades, pump upgrades, solar PV
Museum Victoria (all facilities, including Melbourne Museum, REB, Scienceworks, storage)	Installing	HVAC upgrade, building controls and optimisation, lighting upgrade
Public Housing (28 high-rise towers)	Installing	Lighting upgrade, HVAC upgrade, building controls and optimisation, solar PV
Melbourne Polytechnic (all campuses)	Completed 2016	HVAC upgrade, lighting upgrade, voltage reduction system, building tuning and optimisation.

**Table 5 Environmental Benefits**

Project Name	Electricity Savings (kWh)	Gas Savings (GJ)	Tonnes of CO <sub>2</sub> -e
Traffic lights (state-wide) replacement with LED lamps	15,271,949	-	18,174
Federation Square	457,444	-	544
Holmesglen TAFE (all campuses)	-	-	-
East Gippsland Water	333,221	-	397
Museum Victoria (all facilities, including Melbourne Museum, REB, Scienceworks, storage)	-	-	-
Public Housing (28 high-rise towers)	-	-	-
Melbourne Polytechnic (all campuses)	1,284,873	-	1,529

## 8.2 Melbourne Water Assets

### Stage 2 Mini-Hydro Power Stations

#### Overview

In 2016/2017, five new Melbourne Water mini hydroelectric power plants were constructed at Dandenong, Wantirna, Mount Waverley, Boronia Reservoirs and Cardinia Creek.

The plants were delivered in pre-assembled, self-contained units, offering simple, weather resistant power delivery solutions which were brought online quickly. The power plant package was lowered onto a concrete base strategically positioned adjacent to existing water storage facilities.

Water flows through the plant at high pressure, which generates renewable electricity that is harnessed and fed into the electricity supply network. Once the water has been diverted through the power plant it flows back into our water supply system, which feeds into the residential water supply network across Melbourne.

#### Project Status

The five new plants were constructed and commissioned during 2016/2017. As at August 2017, the project is complete.

#### Environment Benefits

The mini-hydro plants are harnessing energy that would otherwise go to waste. They use excess pressure inherent in Melbourne Water's water supply system to generate renewable electricity means we are harnessing a natural, sustainable and reliable source of energy, rather than letting this energy go to waste.

The five new mini-hydro plants will deliver in excess of 5100 megawatt hours-worth of power per year, enough to power about 1048 homes. This will prevent over 5600 tonnes of carbon emissions each year, which is equivalent to taking 2165 cars off the road.



## Western Treatment Plant 25W Biogas Cover Upgrade

### Overview

The Western Treatment Plant (WTP) at Werribee treats more than 50% of Melbourne's sewage. All sewage flows through two covered anaerobic lagoons (25W and 55E respectively) where solids are captured and methane (biogas) is produced for renewable energy production thereby reducing the need to import electricity.

The 25W Cover Replacement project commenced in 2014 and built upon the floating cover design from the 55E anaerobic lagoon. Like the 55E, the improved 25W cover was designed with a series of removable segments to allow for maintenance whilst keeping the majority of the cover online, minimising future lost biogas.

### Project Status

- Lagoon desludging, design and construction of the new cover was successfully delivered by Melbourne Water with the John Holland-KBR and GTI joint venture in April 2017
- commissioning including biogas extraction commenced April 2017
- at the end of FY16/17, minor ancillary items were awaiting final installation
- a 30-day performance trial was commenced in June 2017 to examine the performance of the cover under various operating conditions, e.g. normal operation, storage mode and high wind speed mode, etc.



### Environmental Benefits

- Additional biogas will be captured from 25W lagoon after the cover is successfully installed and commissioned. The increased amount of biogas can be utilised to generate additional electricity, ensuring the WTP can meet 100% of its energy demand. Melbourne Water is in the process of expanding its biogas power station under a separate capital project
- utilising anaerobic treatment up-front continues to maximise carbon converted to energy, subsequently reducing the energy demand from downstream aerated processes
- for the 2016-2017 reporting year the avoided GHG emission from the two covered anaerobic lagoons was 331,853 tCO<sub>2</sub>-e.

## Western Treatment Plant 55E ASP Upgrade / Renewal

### Overview

As part of long-term planning for the Western Treatment Plant (WTP), Melbourne Water is constantly investigating new and developing technologies and processes that could improve the plant. A uniquely talented and bright-red bacteria (anammox) may be the next frontier in low-energy, low-cost sewage treatment and MW has commenced leading-edge trials to potentially realise this opportunity for the WTP 55E ASP Upgrade/Renewal Project.

A key step in the sewage treatment process at WTP is nitrogen removal, needed to reduce nutrients discharged to Port Phillip Bay. The conventional method applied globally uses bacteria that demand substantial quantities of oxygen and carbon – and consequently have a high energy demand.

Mainstream anammox (also referred to as deammonification) has the potential to transform the way Melbourne Water treats wastewater and provide substantial power demand and operating cost savings. This is because anammox bacteria shortcut the nitrogen removal process, greatly reducing both the oxygen and carbon needed.

Anammox, however, are a difficult bacteria to cultivate and sustain. To address a number of technical challenges Melbourne Water established a comprehensive trial program. An initial 18-month lab program conducted with Victoria University showed promising results. Melbourne Water is currently commissioning a demonstration-scale plant to prove the process at a larger scale and optimise future plant design. The pilot plant is a world-first at this scale and has already attracted national and international interest. The trial is expected to run for a minimum of two years.

### Project Status

The first part of the WTP 55E ASP Upgrade/Renewal Project, namely the WTP mainstream anammox trial plant was designed and constructed in 2016/17.

Specifically:

- a 130kL/d pilot plant was constructed
- process commissioning of the pilot plant commenced in June 2017.

### Environmental Benefits

The project involved the reuse and modification of an existing pilot plant (from another water utility) to provide the bioreactor and clarifier components of the trial as seen in the photo below.

If implemented for the 55E ASP upgrade/renewal (subject to trial results) the mainstream deammonification could:

- save at least 30% in operational expenditure (energy costs)
- facilitate increased carbon capture and energy recovery upstream at the WTP.



## 8.3 Electrified Rail Projects

### Mernda Rail Extension Project

#### Overview

The Victorian Government is building eight kilometres of new rail line and three state-of-the-art stations at Marymede, Mernda and Hawkstowe as part of the Mernda Rail Extension Project.

Opening in early 2019, the new rail line will help connect one of Victoria's fastest growing areas.

The Mernda Rail Extension Project will include:

- a new premium station at Mernda, integrated with the future Mernda Town Centre
- two new stations near Marymede College and Hawkstowe Parade
- up to 2000 car parking spaces as well as bicycle storage and bus facilities around all stations
- three rail bridges and two road underpasses, meaning no level crossings
- a new walking and cycling path linking into three existing paths, stations, schools and Plenty Gorge Park
- a train stabling yard at Mernda.



The Project delivers vital public transport to Melbourne's northern growth area. It will provide efficient and direct access to the central city business district from the growing residential communities in the City of Whittlesea. It also responds to regional demand for public transport between two major town centres.

The new rail line is essential to relieving traffic congestion in the area and will increase connectivity for local communities, enhancing employment, education, healthcare, entertainment and retail opportunities.

The Mernda Rail Extension Project is being delivered by the Level Crossing Removal Authority, an administrative office in the Department of Economic Development, Jobs, Transport and Resources.

#### Project Status

The contract to design and construct the Mernda Rail extension was awarded to the John Holland KBR Joint Venture in November 2016. Site establishment commenced in December 2016, with earthworks commencing in April 2017.

#### Estimated Environmental Benefits

The project will enable a modal shift from cars to active and public transport, with the development of new shared use paths, an intermodal transport interchange and the extension of the South Morang rail line to Mernda. The new infrastructure is expected to be used by up to 8,000 commuters per day. The projected reduction in CO<sub>2</sub> emissions is not currently available.

Key benefits of the project will include:

- a more reliable and sustainable transport network
- a reduction in the personal and environmental cost of transport, and
- improved access to economic and social opportunities.

The project is required to achieve the following minimum requirements for sustainability:

- a four-star rating, or greater, for all station buildings under the Green Building Council of Australia rating system; and
- an 'excellent' rating of 65 or greater for infrastructure works under Infrastructure Sustainability Council of Australia rating system.

## X'Trapolis Metro Trains

### Overview

X'Trapolis metro trains are manufactured by Alstom in Ballarat, Victoria with 43 per cent local content. The Victorian Government invested \$97.9 million in the 2016-17 Budget for an additional five, six-car X'Trapolis trains for the Melbourne metropolitan rail network.

These trains will help to relieve pressure on the network ahead of 65 new high-capacity metro trains that will progressively enter service from mid-2019. The Government's investment in trains is also supporting thousands of local jobs in the rolling stock industry, and providing opportunities for young workers and people re-skilling from the auto-industry and other sectors.

The X'Trapolis Trains operate on Melbourne's South Morang, Hurstbridge, Belgrave, Lilydale, Alamein, Glen Waverley, and Frankston lines. There are currently 87 X'Trapolis trains in service.

### Project Status

The Alstom facility in Ballarat has been building X'Trapolis trains since 2002. The five trains ordered as part of the 2016-17 Budget are being delivered progressively from September 2017, with the final train expected to enter service in December 2017. The State subsequently committed to an additional nine X'Trapolis trains in September 2016, which are scheduled to be in service by late 2018.

Related to this procurement will be the construction of the Mernda Rail Extension which will generate a requirement for more passenger services and replace private transport from Mernda to Melbourne's Inner City and Central Business District. The Mernda Rail Extension project is anticipated to open early in 2019.

### Estimated Environmental Benefits

The project forms part of the Victorian Government's record investment in trains to enable a modal shift from cars to active and public transport. Train use reduces pollution and road congestion - the more people who travel by train, tram or bus, the fewer cars on the road. The Australian Railway Association estimates that one passenger train can take 525 cars off the road.

Removing cars from the road network reduces the amount of road traffic congestion and CO<sub>2</sub> and/or equivalent emissions. While the projected reduction in CO<sub>2</sub> emissions from this project is not currently available, in its 2011 *The True Value of Rail* report, Deloitte Access Economics estimated that road travel produces more than 40% more carbon pollution than rail travel per passenger kilometre. Passenger rail also requires less land use than road infrastructure.



## Melbourne Metro Tunnel

### Overview

The AUD\$11 billion Metro Tunnel Project will transform the way people move around Melbourne, with 'turn up and go' rail services and improved access to key landmarks. The Metro Tunnel will deliver a new dedicated pathway through the heart of the city for two of Melbourne's busiest rail lines, creating space for more trains to run more often across Melbourne's rail network.

The Metro Tunnel Project will deliver twin nine-kilometre rail tunnels from the north west of the city to the south-east as part of a new railway line. New underground stations will be built at Arden and Parkville in Melbourne's inner north, at Domain in Melbourne's inner south, and under Swanston Street in Melbourne city. The two new city stations will connect directly with the existing Flinders Street and Melbourne Central stations.

The Metro Tunnel Project will also deliver high capacity signalling to maximise the efficiency of a new fleet of High Capacity Metro Trains. The Metro Tunnel is the key to the future expansion of Victoria's rail network, enabling Melbourne's transport system to grow as Melbourne does.

### Project Status

The Metro Tunnel is a complex infrastructure project scheduled for completion in 2026 and is being delivered by the Melbourne Metro Rail Authority. Significant milestones have already been achieved, including:

- key environmental and planning processes are complete, with the Metro Tunnel Environmental Management Framework approved and in place
- key procurement processes are approaching completion, with the Cross Yarra Partnership
- a consortium led by Lendlease, John Holland, Bouygues Construction and Capella Capital selected to build the Metro Tunnel and five new underground stations
- and CPB Contractors and Bombardier Transportation selected to deliver high capacity signalling and communications systems for the Metro Tunnel
- the procurement process is underway to build the rail infrastructure which will link the Metro Tunnel to Melbourne's existing rail network
- early works have commenced, with tram diversion works complete and major utility service relocations complete or underway, and
- major works, including piling and demolitions, are underway at the future locations of the five new underground stations.



### Environmental benefits

The Metro Tunnel is targeting 20 per cent of energy is to be from renewable sources, reductions in Scope 1 and Scope 2 Green House Gas (GHG) emissions by a minimum of 20 per cent below base case and a reduction in materials lifecycle GHG impact by 15 per cent below base case.

The Metro Tunnel will enable the capacity to move more people in peak periods and deliver more reliable, more frequent and less crowded services. This will:

- reduce road congestion and freight costs by encouraging travelers to switch to public transport, especially during peak periods

- lower levels of car use as travel demand increases, resulting in reduced road congestion over time
- catalyse urban renewal and development by providing high quality transport connections to support planned urban renewal precincts, and
- contribute to a more sustainable urban form, with reduced air and noise pollution.

The published Environmental Effect Statement documentation estimated the following operational Greenhouse gas reductions associated with the project:

- the functional unit for the operation of the project, for all sources (portal to portal) and assuming best practice operational Greenhouse Gas emissions is estimated to be 55 grams CO<sub>2</sub>-e per Passenger Kilometres Travelled in 2046, with the operation of Extended HCMT rolling stock only. This compares to the projected national average for passenger rail (in 2030) of approximately 90 grams CO<sub>2</sub>-e per Passenger Kilometres Travelled
- when considering the movement of people across all transport modes, the project would provide a net reduction of 1.2 grams CO<sub>2</sub>-e per Passenger Kilometres Travelled compared to the 'without Melbourne Metro' scenario after 20 years of operation (2046).

## 9.0 Appendices

### 9.1 Appendix One – DNVL Assurance



DNV·GL

## TREASURY CORPORATION OF VICTORIA GREEN BOND

### DNV GL PERIODIC ASSURANCE STATEMENT

#### Scope and objectives

On 19 July 2016, Treasury Corporation Victoria ("TCV" or "Issuer") issued a \$300 million bond in AUD with ISIN: AU0000XVGHK0 (henceforth referred to as "BOND") and has achieved Certification against the Climate Bond Standard (CBS).

TCV has used the proceeds of the BOND to finance the nominated projects and assets falling under the following categories:

- Renewable Energy – Solar and Wind
- Low Carbon Buildings – Energy Efficiency Improvements
- Low Carbon Transport – Electrified Rail Infrastructure
- Water – Wastewater Processing (DRAFT)
- Hydropower (Sector Criteria Pending Release)

DNV GL Business Assurance Australia Pty Ltd (henceforth referred to as "DNV GL") has been commissioned by TCV to provide the initial and periodic verification of the BOND as an independent and approved verifier under the Climate Bond Standard. Our criteria and information covered to achieve this is described under 'Work Undertaken' below. The Periodic Verification was conducted on the information provided by TCV dated 30 June 2017.

No assurance is provided regarding the financial performance of the BOND, the value of any investments in the BONDS, or the long term environmental benefits of the transaction. Our objective has been to provide an assessment that the BOND has met the criteria of the Climate Bond Standard and the associated Technical Criteria on the basis set out below.

The scope of this DNV GL opinion is limited to the Climate Bonds Standard Version 2.1 and the following associated Sector Technical Criteria:

- Solar
- Wind
- Low Carbon Transport
- Low Carbon Buildings
- Water (DRAFT)

DNV GL notes that the TCV Green Bond pool of nominated projects and assets includes Biogas and Hydropower projects. These projects did not have Climate Bonds Standard Sector Technical criteria approved at the time of verification and have not been considered for compliance with the Climate Bonds

Standard. These projects, however are noted in the Bond Pool for future inclusion once applicable Sector Technical Criteria for Hydropower and Biogas (Biofuel) Projects is available.

## Responsibilities of the Management of TCV and DNV GL

The management of TCV has provided the information and data used by DNV GL during the delivery of this review. Our statement represents an independent opinion and is intended to inform TCV management and other interested stakeholders in the BOND as to whether the established criteria have been met, based on the information provided to us. In our work we have relied on the information and the facts presented to us by TCV. DNV GL is not responsible for any aspect of the nominated assets referred to in this opinion and cannot be held liable if estimates, findings, opinions, or conclusions are incorrect. Thus, DNV GL shall not be held liable if any of the information or data provided by TCV's management and used as a basis for this assessment were not correct or complete.

## Basis of DNV GL's opinion

DNV GL has conducted the verification against the CBS v2.1 and associated Sector Technical Criteria through the creation and execution of a verification protocol addressing each requirement of the CBS v2.1 and the associated Sector Technical Criteria. The detail of areas covered in the DNV GL verification is summarised in Schedule 2 below.

## Work undertaken

Our work constituted a high level review of the available information, based on the understanding that this information was provided to us by TCV in good faith. We have not performed an audit or other tests to check the veracity of the information provided to us. The work undertaken to form our opinion included:

### Initial Verification

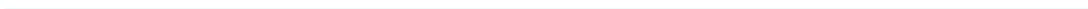
- Creation and execution of a Climate Bond Standard Protocol, adapted to include the relevant Sector Technical Criteria for the BOND nominated projects and assets, as described above and in Schedule 2 to this Assessment;
- Assessment of documentary evidence provided by TCV on the BOND and supplemented by a high-level desktop research, onsite visit for documentation review and interviews with key personnel from the issuer TCV. These checks refer to current assessment best practices and standards methodology;
- Discussions with TCV management, and review of relevant documentation;
- Documentation of findings against each element of the criteria.

### Periodic Verification

- Assessment of documentary evidence provided by TCV on the BOND and supplemented by a high-level desktop research, documentation review and interviews with key personnel from the issuer TCV. These checks refer to current assessment best practices and standards methodology;
- Discussions with TCV management, and review of relevant documentation;
- Review of the nominated projects and assets as described in Schedule 2 as at the time of Periodic Verification;
- Review and testing where possible of Impact Reporting Data;



- Documentation of findings for Periodic Verification as detailed in this document. Our opinion as detailed below is a summary of these findings.



## Findings and DNV GL's opinion

DNV GL has performed the Periodic Verification of the TCV Climate Bond. It is DNV GL's responsibility to provide an independent verification statement on the compliance of the TCV Climate Bonds with the Climate Bond Standard.

DNV GL conducted the verification in accordance with the Climate Bond Standard Version 2.1 and with International Standard on Assurance Engagements *3000 Assurance Engagements other than Audits or Reviews of Historical Information*. The verification included i) checking whether the provisions of the Climate Bond Standard were consistently and appropriately applied and ii) the collection of evidence supporting the verification.

DNV GL's verification approach draws on an understanding of the risks associated with conforming to the Climate Bond Standard and the controls in place to mitigate these. DNV GL planned and performed the verification by obtaining evidence and other information and explanations that DNV GL considers necessary to give limited assurance that the TCV Climate Bond continues to meet the requirements of the Climate Bond Standard.

Based on the limited assurance procedures conducted, nothing has come to our attention that causes us to believe that the TCV Climate Bond is not, in all material respects, in accordance with the requirements of the Climate Bond Standard Version 2.1 and Associated Solar, Wind, Low Carbon Transport, Low Carbon Buildings and DRAFT Water Technical Criteria.

**for DNV GL Business Assurance Australia Pty Ltd**

Sydney, 31 January 2018



**Mark Robinson**

Manager, Sustainability Services  
DNV GL – Business Assurance

### About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organisations to advance the safety and sustainability of their business. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers' decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. With our origins stretching back to 1864, our reach today is global. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping customers make the world safer, smarter and greener.

### SCHEDULE 1: DESCRIPTION OF NOMINATED ASSETS

Eligible Projects & Assets Category	Sub category	Project name	Amount Funded (\$)	Amount Expended to 30 June 2017
Low Carbon Buildings	Energy Efficiency	Traffic lights (statewide) replacement with LED lamps	\$25,000,000.00	\$25,000,000
Low Carbon Buildings	Energy Efficiency	Federation Square	\$6,815,528.00	\$6,815,528
Low Carbon Buildings	Energy Efficiency	Holmesglen TAFE (all campuses)	\$5,703,470.00	\$5,532,847
Low Carbon Buildings	Energy Efficiency	East Gippsland Water	\$1,230,000.00	\$1,230,000
Low Carbon Buildings	Energy Efficiency	Museum Victoria (all facilities, including Melb Museum, REB, Scienceworks, storage)	\$11,347,943.00	\$6,382,764
Low Carbon Buildings	Energy Efficiency	Public Housing (28 high-rise towers)	\$13,385,500.00	\$1,559,758
Low Carbon Buildings	Energy Efficiency	Melbourne Polytechnic (all campuses)	\$1,917,000.00	\$1,917,000
Low Carbon Transport	Electrified Rolling Stock	5 X Traralgon Train Sets	\$97,870,000.00	\$56,961,000
Low Carbon Transport	Supporting Infrastructure and Station &/or Platform Improvements	Melbourne Metro Tunnel State funded works, excluding PPP scope funded to June 2017	\$1,026,500,000.00	\$915,884,000
Low Carbon Transport	Supporting Infrastructure and Station &/or Platform Improvements	Mernda Rail Extension	\$587,714,000.00	\$115,801,000
Renewable Energy	Hydropower	Mini Hydroelectric Power Stations - T3	\$15,250,000.00	\$19,200
Renewable Energy	Hydropower	Tranche 2 Mini Hydros	\$7,360,991.00	\$8,417,337
Renewable Energy	Biogas	ETP Solids Handling - Stage 2	\$43,715,895.00	\$-
Renewable Energy	Biogas	ETP Solids Handling - Stage 1A	\$7,658,900.00	\$-
Renewable Energy	Biogas	ETP Solids Handling - Stage 1B	\$8,029,875.00	\$124,383
Renewable Energy	Biogas	Expansion of Power Station at WTP	\$11,355,000.00	\$293,760
Water	Greenhouse Gas Mitigation	WTP 55E ASP Upgrade / Renewal	\$111,908,534.65	\$438,117
Renewable Energy	Biogas	Buy out residual balloon value of AGL power plant at WTP	\$3,500,000.00	\$-
Renewable Energy	Biogas	WTP 25W Biogas Cover Upgrade	\$42,155,956.15	\$34,972,278
Renewable Energy	Solar or Wind	Large scale renewable energy power station at ETP	\$55,000,000.00	\$25,667
<b>Total Excluding Hydro and Biogas Projects</b>			<b>\$1,944,391,976</b>	<b>\$1,137,547,681</b>
<b>Total</b>			<b>\$2,083,418,593</b>	<b>\$1,181,347,639</b>

## SCHEDULE 2: VERIFICATION CRITERIA

### Summary criteria for assertions of compliance with the Climate Bond Standard v2.1

The criteria against which TCV and its nominated projects and assets have been reviewed prior to inclusion in the Bond are grouped under the requirements as detailed within the Climate Bond Standard Version 2.1 including:

#### Part A: General Requirements

Area	Requirement
Project Nomination	The Climate Bond issued must specify the project collateral or physical assets with which it is associated
Use of Proceeds	Proceeds must be allocated to Nominated Project(s)
Non-Contamination	Issuers are permitted a grace period to allocate or re-allocate funds to Nominated Project(s)
Confidentiality	The information disclosed to the Verifier and the Climate Bond Standards Board may be subject to confidentiality arrangements
Reporting	Reporting on use of proceeds and nominated projects and assets

#### Part B: Low Carbon Contribution - Eligible projects and physical assets

Nominated projects and assets include financing of or investments in equipment and systems which enable the mitigation of greenhouse gasses, as detailed in Appendix B.

Area	Requirement
Solar Energy Generation	Solar electricity generation facilities
Wind Energy Generation	Wind Energy generation facilities

Low Carbon Transport	All infrastructure, infrastructure upgrades, rolling stock and vehicles for electrified public transport pass this criterion, including electrified rail, trams, trolleybuses and cable cars
Low Carbon Buildings	For a 5-year bond, a 30% carbon reduction as quantified in property upgrade contracts
Water	Engineered assets to capture, treat and deliver water, and to protect against flooding.
	<p>Under the requirements of the methodology selected, the issuer must describe</p> <ul style="list-style-type: none"> <li>• The calculations and assumptions used to arrive at the baseline</li> <li>• Projected emissions over the life of the project and associated estimated GHG mitigation impact</li> <li>• A credible, independently verifiable, method of tracking actual emissions and mitigation impact over the life of the bond</li> </ul>

**Part C: Bond structures**

Area	Requirement
Project Holding	The issuer of a Corporate Climate Bond with Nominated Projects linked to a portfolio of assets must continue to hold eligible assets at least equal to the Fair Market Value at the time of issuance of the original principal
Settlement Period	Climate Bond issuing entities must demonstrate that the proceeds of a Climate Bond have been allocated to the Nominated Project(s) within 24 months after the bond is issued
Earmarking	The Issuer of the bond shall maintain the earmarking process to manage and account for funding to the Nominated Projects & Assets

## 9.2 Appendix Two Assurance Report on Use of Proceeds Statement



Ernst & Young  
8 Exhibition Street  
Melbourne VIC 3000 Australia  
GPO Box 67 Melbourne VIC 3001

Tel: +61 3 9288 8000  
Fax: +61 3 8850 7777  
ey.com/au

### Independent Reasonable Assurance Report in relation to the Use of Proceeds Statement to the Directors and Management of Treasury Corporation of Victoria ("TCV")

#### Assurance conclusion

Based on our reasonable assurance procedures, in our opinion:

- Specific information in the Use of Proceeds Statement is fairly stated, in all material respects, based on:
  - the information provided by TCV participating authorities, government departments and state related entities managing earmarked assets and projects within the TCV eligible portfolio
  - internal information systems and financial records of the State of Victoria; and
- TCV's systems and policies managing the TCV Green Bond proceeds and the preparation of the Use of Proceeds Statement are, in all material respects, in accordance with the TCV Green Bond Framework.

#### Scope

We have performed a reasonable assurance engagement for the Directors and Management of TCV in relation to specific information in the annual TCV Green Bond Use of Proceeds Statement, processes for managing the TCV Green Bond proceeds and the preparation of the Use of Proceeds Statement. The specific subject matter and associated criteria of our assurance engagement are detailed in the table below.

Subject matter	Criteria
Certain information in the Use of Proceeds Statement in Table 3 on pages 10 and 11, specifically the: <ul style="list-style-type: none"> <li>• Amount expended to 30 June 2017 as listed in the column titled "Amount Expended to 30 June 2017"</li> <li>• Related project names (project name only; excludes description of project)</li> <li>• Borrowers</li> </ul>	<ul style="list-style-type: none"> <li>• Criteria described in Section 5.0 <i>Management of Proceeds</i> on page 7</li> </ul>
TCV's systems and policies managing the TCV Green Bond proceeds and the preparation of the Use of Proceeds Statement.	<ul style="list-style-type: none"> <li>• Criteria described in Section 5.0 <i>Management of Proceeds</i> on page 7.</li> </ul>

#### Management Responsibility

Management of TCV ('Management') are responsible for the collection, preparation, and presentation of the subject matter in accordance with the criteria and for maintaining adequate records and internal controls that are designed to support the management of Green Bond proceeds and the preparation of the Use of Proceeds Statement.

#### Assurance Practitioner's Responsibility

Our responsibility is to express a reasonable assurance conclusion as to whether the subject matter is presented in accordance with the criteria, in all material respects. Our assurance engagement has been planned and performed in accordance with the Australian Standard on Assurance Engagements 3000 (revised) *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* ('ASAE 3000').

#### Level of Assurance

A reasonable assurance engagement consists of making enquiries and applying analytical, controls testing and other evidence-gathering procedures that are sufficient for us to obtain a meaningful level of assurance as the basis for a positive form of conclusion. The procedures performed depend on the assurance practitioner's judgement including the risk of material misstatement of the specific activity data, whether due to fraud or error. While we considered the effectiveness of Management's internal controls when determining the nature and extent of our procedures, our review was not designed to provide assurance on internal controls. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

A member firm of Ernst & Young Global Limited  
Liability limited by a scheme approved under Professional Standards Legislation



**Our Approach**

A summary of our assurance procedures is shown in the following Table.

	Assurance item	Testing Plan
1	Processes and systems	<ul style="list-style-type: none"> <li>• Mapped out the processes and systems used to manage the eligible lending through interviews with TCV personnel responsible for managing proceeds from the Green Bond</li> <li>• Documented and assessed controls over each significant process and system</li> </ul>
2	Accuracy of specific quantitative information	<ul style="list-style-type: none"> <li>• Agreed the amount expended to 30 June 2017 for each project with the respective TCV participating authorities, government departments and state related entities managing earmarked assets and projects within the TCV eligible portfolio and/or agreed to internal information systems and financial records of the State of Victoria</li> </ul>
3	Green Bond issuance and register of all TCV Green Bond eligible projects	<ul style="list-style-type: none"> <li>• Checked that the 2016 Green Bond had an amount equal to the net proceeds booked under an allocated position within TCV's internal systems.</li> <li>• Checked, on a sample basis that TCV had established a register of all TCV Green Bond eligible projects earmarked against each TCV Green Bond, updated on a quarterly basis, which identified each eligible project/asset and tracked funds invested in each of these eligible projects/assets.</li> </ul>
4	Distribution of the net proceeds of the Green Bond	<ul style="list-style-type: none"> <li>• Checked that the requirements of the TCV Green Bond Framework had been met as of 30 June 2017 by testing that the total amount expended to 30 June 2017 of \$1,181million is in excess of the TCV Green Bond proceeds of \$300million</li> <li>• Specifically, as required by the Climate Bond Standard, we checked that TCV as Issuer demonstrated that the net proceeds of the TCV Green Bond have been distributed and invested in eligible assets and projects within 24 months of issuance date of the TCV Green Bond. This will be validated by quarterly reporting undertaken for the TCV Green Bond.</li> </ul>

**Limitations**

There are inherent limitations in performing assurance - for example, assurance engagements are based on selective testing of the information being examined - and it is possible that fraud, error, or non-compliance may occur and not be detected. There are additional inherent risks associated with assurance over non-financial information including reporting against standards which require information to be assured against source data compiled using definitions and estimation methods that are developed by the reporting entity. Finally, adherence to ASAE 3000 is subjective and will be interpreted differently by different stakeholder groups.

Our assurance was limited to the subject matter above related to TCV's 2016 Green Bond issuance and does not extend to any other information in the TCV Annual Green Bond Report. Our assurance is limited to policies and procedures in place as of 13 February 2018. We do not provide any assurance on projects'/assets' eligibility under the Climate Bonds Standard.

**Use of Report**

Our responsibility in performing our assurance activities is to the Directors and Management of TCV alone and in accordance with the terms of reference for our engagement as agreed with them. We do not therefore accept or assume any responsibility for any other purpose or to any other person or organisation. Any reliance any such third party may place on the Proceeds of Use Statement is entirely at its own risk. No statement is made as to whether the criteria are appropriate for any third party purpose.

**Our Independence and Assurance Team**

In accordance with APES 110, the firm and all professional personnel involved in this engagement have met the independence requirements of Australian or International professional ethical requirements. Our team has the required competencies and experience for this assurance engagement.

Ernst & Young

Ernst & Young

Mathew Nelson  
Partner  
Melbourne, Australia  
13 February 2018

A member firm of Ernst & Young Global Limited  
Liability limited by a scheme approved under Professional Standards Legislation