Australian Government

Carbon Neutral Program

Public Disclosure Statement

An Australian Government Initiative | Climate Active | Green Building Council Australia

THIS DOCUMENT WILL BE MADE PUBLICLY AVAILABLE

Certification Summary

Responsible Entity name: Mirvac Industrial Developments Pty Ltd

Building / Project Name: Switchyard

Project Address: 300 Manchester Road, Auburn NSW 2144

Certification Type: Certified carbon neutral for the upfront carbon emissions of the delivery phase of a building

This Switchyard has been certified carbon neutral for the upfront carbon emissions of the delivery phase of the building by the GBCA against the Climate Active Guideline: Upfront Carbon for Buildings under the Climate Active Carbon Neutral Standard for Products and Services (the Standard).

Total emissions offset	48,549 tCO2-e
Offsets bought	100% VCUs
Renewable electricity used in the construction of the building	N/A
Technical Assessment	Completed
Third Party Validation	Completed

greenstar

Carbon Neutral Information

Description of the certification

In line with Mirvac Net Positive Carbon by 2030 organisational strategy, the upfront carbon for the construction of Switchyard, Auburn project is net zero emissions in accordance with the Climate Active Guideline: Building Upfront Carbon.

As per GBCA_R-27924, a site-wide LCA study has been conducted in line with the same LCA and EN15978 standard requirements as per Green Star Design & As-Built v1.3. The scope and boundary of the LCA encompasses all six (6) buildings within the site with a total GFA of 72,801m2 and total site area of 128,351m2.

The project consists of six (6) industrial buildings of similar form and function (i.e. industrial warehouse spaces and associated office tenancies). All were designed by the same architect and structural engineers and were constructed simultaneously by the same head contractor and sub-contractors (all services were designed and installed by the same sub-contractors). The same construction materials from the same manufacturers were used for each building: reinforced concrete and post-tensioning was used for various slabs and foundations; steel fibres were used in all warehouse slabs; all buildings have very similar structural steel components and designs (with only minor differences depending on the size of the building). Each building's façade was constructed with a mix of bricks and metal cladding, and all buildings feature metal roofing and polycarbonate sheeting. All buildings include the same nominated building systems (mechanical, electrical, hydraulic, fire, vertical transport and solar PV) and have the same sustainability features throughout.

A description of each building is provided below:

Building 1 consists of three (3) warehouses (Warehouse 1, Warehouse 2, and Warehouse 4) and the Hub building. The Hub building comprises a Ground Floor café, Management Office and amenities with open plan office space to the First Floor. Warehouse 1 comprises open plan office and kitchenette to the First Floor. Office 2 comprises a Ground Floor lobby/foyer, with open plan office space, kitchenette and amenities to the First Floor. Office 4 comprises a Ground Floor lobby/foyer, with open plan office space, boardroom, tasting room and amenities to the First Floor. Below Building 1 is the basement carpark with eighty-four (84) car parking spaces, End of Trip (EOT) facilities and bike store. The building includes various landscaped areas, sixty-two (62) external car parking spaces.

Building 2 consists of three (3) warehouses (Warehouse 5, Warehouse 6, and Warehouse 7). Office 5 comprises Ground Floor office space with meeting rooms, lunch room, open office space, store rooms and amenities and open office space, quiet rooms, meeting rooms, engineering workshop / training room and amenities to the First Floor. Office 6 comprises a single storey office and proshop. Office 7 comprises a Ground Floor lobby/foyer, with open plan office space, kitchenette and amenities to the First Floor. Amenities for Warehouse 7 are located on Ground Floor. The building includes various landscaped areas, one hundred and forty-one (141) car parking spaces.

Building 3 consists of four (4) warehouses (Warehouse 8, Warehouse 9, Warehouse 10 and Warehouse 11), each with a double storey office. Offices 8, 9, 10 and 11 each comprise a Ground Floor lobby/foyer, with open plan office space, kitchenette and amenities to the First Floor. Amenities for the warehouses are located on Ground Floor. The building includes various landscaped areas, eighty-one (81) car parking spaces.

Building 4 consists of three (3) warehouses (Warehouse 12, Warehouse 13 and Warehouse 14), each with a double storey office. Offices 12, 13 and 14 each comprise a Ground Floor lobby/foyer,

with open plan office space, kitchenette and amenities to the First Floor. Amenities for the warehouses are located on Ground Floor. The building includes various landscaped areas, seventy-one (71) car parking spaces.

Building 5 consists of eight (8) warehouses (Warehouse F, G, H, I, K, L, M and N), each with a double storey office. Offices F, G, H, I, J, K, L, M and N each comprise a Ground Floor lobby/foyer, with open plan office space, kitchenette and amenities to the First Floor. Amenities for the warehouses are located on Ground Floor. The building includes various landscaped areas, fifty-nine (59) car parking spaces.

Building 6 consists of five (5) warehouses (Warehouse A, B, C, D and E), each with a double storey office. Offices A, B, C, D, and E each comprise a Ground Floor lobby/foyer, with open plan office space, kitchenette and amenities to the First Floor. Amenities for the warehouses are located on Ground Floor. The building includes various landscaped areas, forty-five (45) car parking spaces.

The building is registered with the GBCA to achieve either:	Green Star – Homes rating	☐
	Green Star rating (Legacy tools) [Design & As Built v1.3]	☒
	Green Star Buildings rating	☐
The Responsible Entity has achieved either	Green Star Homes rating and • Green Star Buildings - Life Cycle Impacts	☐
	Green Star – Design & As-Built rating and • Credit 15 – Greenhouse Gas Emissions • Credit 19A - Life Cycle Assessment	☒
	Green Star Buildings rating and all the below *Green Star Buildings* credits • Upfront Carbon Emissions – Minimum Expectations	☐

	• Energy Use - Minimum Expectations • Energy Source – Exceptional Performance • Other Carbon Emissions – Exceptional Performance
Date of practical completion.	31/08/2023

Emissions Boundary

Inside the emissions boundary

Embodied emissions in construction materials incorporated into the structure (A1-3)

Embodied emissions in materials used during construction

Transport of materials to the construction site (A4)

Construction energy (A5), including electricity, diesel, petroleum

Construction waste (A5)

Green Star DAB v1.3 LCA study includes emissions from all other LCA modules (Module B through to D)

Outside the emissions boundary

The following modules/emissions are excluded from scope of Green Star DAB v1.3 LCA:

- Tenancy fitouts
- Integrated operational energy (B6+)
- Tenancy operations (B6)

Inside emissions boundary

Quantified

Embodied emissions in construction materials incorporated into the structure (A1-3)

Embodied emissions in materials used during construction

Transport of materials to the construction site (A4)

Construction energy (A5), including electricity, diesel, petroleum

Construction waste (A5)

Green Star DAB v1.3 LCA study includes emissions from all other LCA modules (Module B through to D)

Non-quantified

N/A

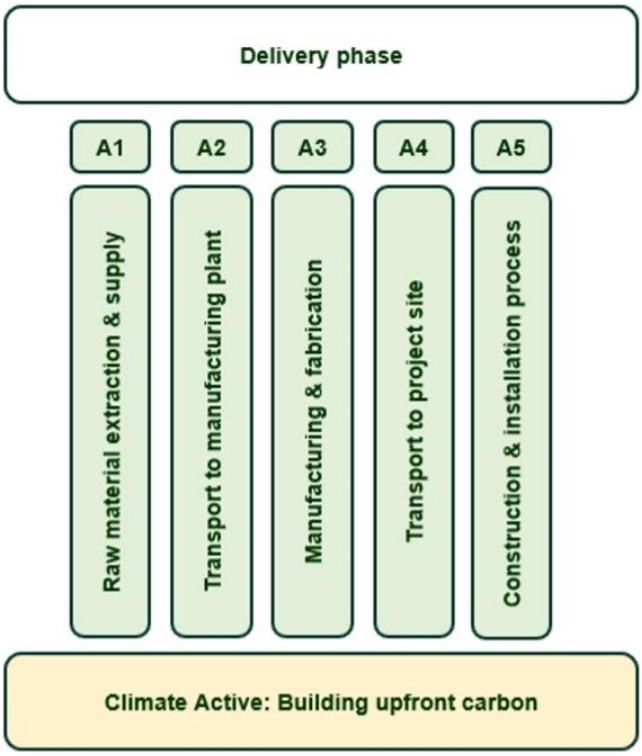
Outside emissions boundary

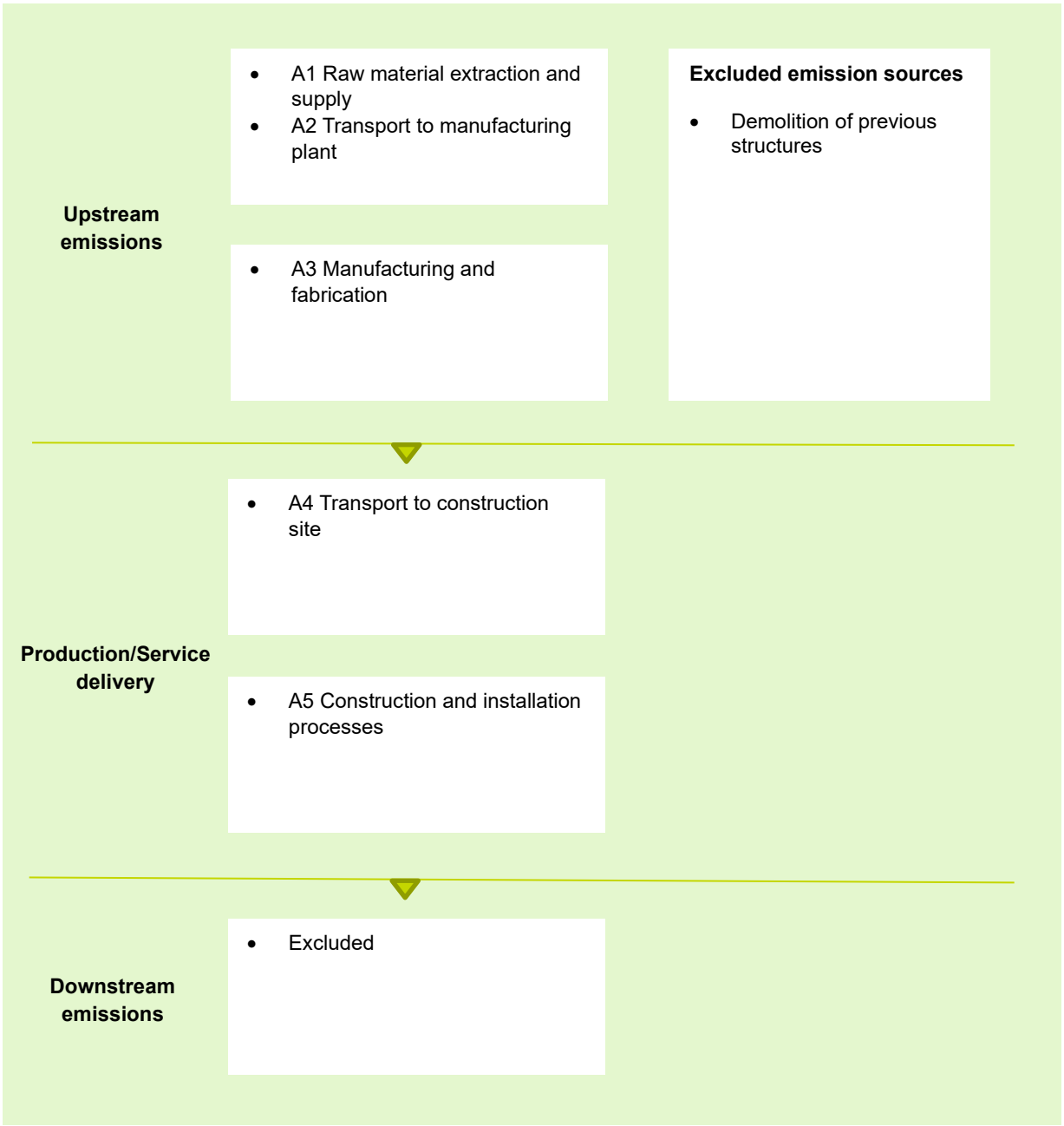
- Tenancy fitouts

- Integrated operational energy (B6+)

- Tenancy operations (B6)

Product Process Diagram





Data Management plan for non-quantified sources

N/A

Emissions Reductions

Emissions Reduction Strategy

Reduction of upfront carbon emissions was achieved through careful selection of low carbon alternative materials. For instance, all concrete contains various percentage of flyash supplementary cementitious materials. Other examples include use of steel fibre reinforcing in warehouse slabs and some foundation elements in lieu of conventional reinforcing steel bar and mesh; use of post-tensioning strands in suspended slabs within Building 1.

Locally-sourced concrete within close proximity to construction site was procured to reduce transport emissions associated with concrete

Various internal finishes with EPDs, such as carpet tiles, were also selected

Emissions relating to Module A0 have not been included.

The project is targeting a 5-star Green Star Design & As-Built v1.3 rating based on the Multiple Building Single Rating (MBSR) approach.

Each building features the following initiatives to reduce operational emissions:

- High performance double glazing, enhanced building fabric and reflective roof colours (to reduce HVAC energy)
- Energy efficient LED lighting with motion sensors in office amenities and daylight sensors in the warehouse. External lighting also features daylight and motion sensors to minimise lighting energy.
- Energy efficient ventilation fans, fan coil units (FCUs) and high efficiency air-cooled VRV condensing units.
- Electric and solar hot water to each office/tenancy.
- Water efficient fixtures and taps to reduce general water consumption as well as rainwater reuse for toilet and urinal flushing and landscape irrigation.
- Solar PV systems have been installed on the roof of each building: 200kW for Building 2, 100kW for Buildings 1, 3, 4, 5 and 6.
- Building-specifid metering coupled with site-wide embedded network monitoring systems have been installed to allow for ongoing monitoring and tuning of building systems
- All base building services are electric (i.e. no gas used for space heating or hot water). Gas is provided for future BLD1 Hub café tenant cooking provisions. The Café tenant DB has been sized for additional spare capacity for future installation of electric cooktop to allow for reduction of gas emissions in the future.

Strategies to reduce upfront carbon include:

- Dematerialisation and optimisation of structural elements through use of reinforcing steel fibres and post-tensioning strands.

- Prioritising low carbon materials such as flyash concrete
- Procurement of structural materials (concrete, reinforcing and structural steel) with EPDs
- Diverting over 90% of construction waste from landfill (as per Construction and Demolition Waste Credit under Green Star)
- Completed a site-wide life cycle assessment

Climate Active carbon neutral products and services

N/A

Emissions Summary

Summary

Stage	At Practical Completion (t CO2-e)
Materials - Basement works (Substructure)	8311.01417345768
Materials - Structural (Superstructure)	15107.0151318931
Materials - Façade	12342.9521237681
Materials - Internal finishes	1544.64446572963
Materials - Fittings and equipment	858.729733935797
Materials - Services equipment	592.885875679878
Construction - Builders works	3.25003800066562
Construction - Services installation	3931.00848393342
Construction - Landscaping	3247.5319702344
Site Electricity	911.322469969882

Stage	At Practical Completion (t CO2-e)
Site Fuels	1500.00936969323
Total Emissions	48350.36384
Emissions intensity per functional unit	0.664140395
Please outline if any uplift factors were included in the emissions total	None

Carbon Offsets Summary

Co-benefits

This project builds on Wildlife Works' first REDD project (Phase I, Rukinga Ranch) which has been protecting forests, flora and fauna since 2006. The aim of this new, larger project is to bring the benefits of direct carbon financing to surrounding communities, while simultaneously addressing alternative livelihoods and protecting vital flora and fauna. Human-wildlife conflict has been a problem in the past, as local agents are directly reliant on the environment as a means for subsistence. This Phase II project directly addresses such sources of conflict in a holistic, sustainable approach, and on a large scale. This Phase II project is classified by VCS as a mega-project, as it is estimated to reduce over 1 million tonnes of CO2-e per year.

Table 6. Offsets retired

Project description	Type of offset units	Registry	Date retired	Serial Numbers / hyperlink*	Stapled quantity	Vintage	Quantity	Eligible Quantity (tCO2 – e) (total quantity retired)	Eligible Quantity used in previous reporting periods	Eligible Quantity banked for future reporting periods	Eligible Quantity used for this reporting claim	Percentage of total (%)
The Kasigau Corridor REED Project - Phase II The Community Ranches Project, Kenya	Verified Carbon Units (VCUs)	VERRA	23/07/2024	12137-387432440 - 387462357 -VCS-VCU-259-VER-KE-14-612-01012020-31122020-1	29918	2020	29918	29918	0	0	29918	62%

Table 6. Offsets retired

The Kasigau Corridor REED Project - Phase II The Community Ranches Project, Kenya	Verified Carbon Units (VCUs)	VERRA	23/07/2024	12137-387462379-387476133-VCS-VCU-259-VER-KE-14-612-01012020-31122020-1	13755	2020	13755	13755	0	0	13755	28%
The Kasigau Corridor REED Project - Phase II The Community Ranches Project, Kenya	Verified Carbon Units (VCUs)	VERRA	23/07/2024	12137-387431482-387432357-VCS-VCU-259-VER-KE-14-612-01012020-31122020-1	876	2020	876	876	0	0	876	2%
The Kasigau Corridor REED Project -	Verified Carbon Units (VCUs)	VERRA	11/07/2025	12137-387624755-387625374	620	2020	620	620	0	0	620	1%

Table 6. Offsets retired

Phase II The Community Ranches Project, Kenya				-VCS-VCU-259-VER-KE-14-612-01012020-31122020-1								
The Kasigau Corridor REED Project - Phase II The Community Ranches Project, Kenya	Verified Carbon Units (VCUs)	VERRA	11/07/2025	12137-388989489-388989695-VCS-VCU-259-VER-KE-14-612-01012020-31122020-1	207	2020	207	207	0	0	207	0.4%
The Kasigau Corridor REED Project - Phase II The Community Ranches	Verified Carbon Units (VCUs)	VERRA	11/07/2025	12137-387526813-387529637-VCS-VCU-259-VER-KE-14-612-01012020-	3173	2020	3173	3173	0	0	3173	7%

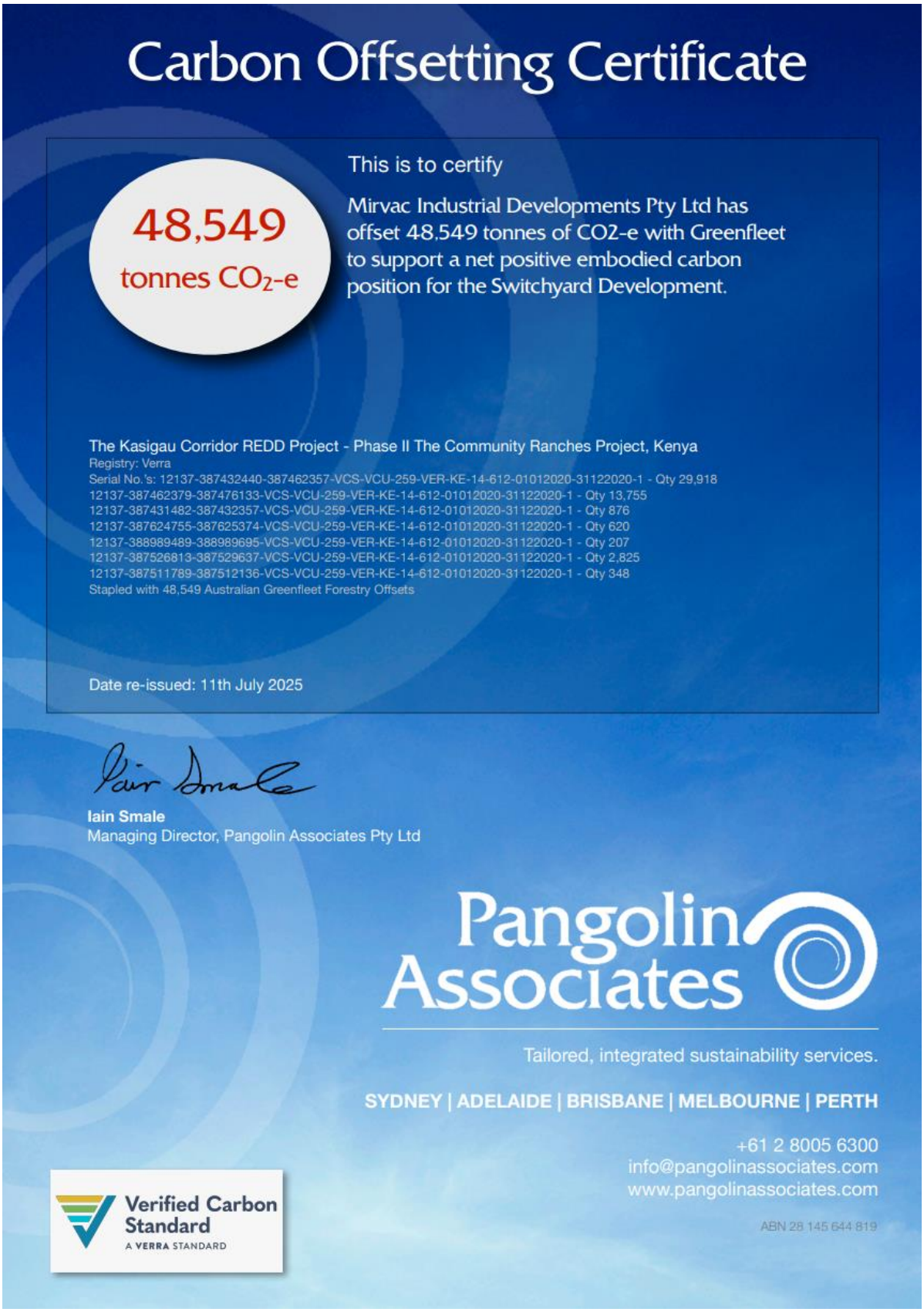
Table 6. Offsets retired

Project, Kenya	31122020-1 12137-387511789-387512136-VCS-VCU-259-VER-KE-14-612-01012020-31122020-1

	Total offsets retired this report and used in this report	48549
	Total offsets banked for use future years: (if any)	0

Type of offset units	Quantity (used for this reporting period claim)	Percentage of total
Verified Carbon Units (VCUs)	48549	100%

Appendix A: Offset Retirement



—— Report end ——