



Project Net Zero Carbon Report

Rivermark

Version 1.0

Prepared by: Hesperia Sustainability Group

POTENTIAL IN PLACE



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Purpose of this Document

The Project Net Zero Report has been developed on the basis of As Constructed project documentation. The intent of this document is to summarise the project position in terms of embodied carbon emissions, reduction strategies implemented and their effectiveness, and any carbon offsetting undertaken.

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1. Executive Summary

This project is Net Zero based on the methodology outlined in this report. The methodology is designed to align to the reporting required under the World Green Building Council Net Zero Carbon Commitment, which Hesperia is a signatory to.

NOTE: Rivermark is a land-only development for Hesperia’s involvement. Upfront Embodied Carbon emissions are covered in this report. Operational carbon emissions are not addressed as they are not directly relevant to Hesperia in this case.

NOTE 2: At the time of writing, Rivermark Stage 1 has been completed and the Life Cycle Assessment conducted. In order to determine the figures used in this report, the figures from Stage 1 have been extrapolated to cover all planned stages of Rivermark, twelve stages in total over 10 years to 2032. An assumed reduction in carbon intensity of 3% per year has been included in forecasts to account for Hesperia’s ongoing reduction efforts. The extrapolated figures for future stages will be checked, and the retired offset amounts trued-up if necessary, when future Life Cycle Assessments are completed.

Description	Quantity	Detail
As Constructed Upfront Carbon Footprint (tCO ₂ e)	19,600	Includes modules A1 - A5 of EN15978, for Rivermark Stages 1-12
Upfront Carbon Intensity (tCO ₂ e/m ²)	0.047	47 kg CO ₂ e/m ² . Based on Stage 1 LCA – expected to reduce over future stages.
Percentage Carbon Reduction on reference case (%)	0% (Stage 1) 23% reduction forecast over all 12 stages	Reduction efforts commenced after Stage 1.
Offsets Retired (tCO ₂ e)	19,600	Verified (Climate Active compliant) offsets.
Percentage of Project Offset (%)	100%	Net Zero outcome
Percentage of Nature Based Offsets (%)	50%	Yarra Yarra Biodiverse Revegetation project
Offsetting co-benefit outcome	64	Hectares of revegetation
	156,800	Trees and shrubs planted



2. Net Zero Methodology

Hesperia is a signatory to the World Green Building Council (WGBC) Net Zero Carbon Commitment. See Hesperia's profile page here:

[HESPERIA - World Green Building Council \(worldgbc.org\)](https://www.worldgbc.org/HESPERIA)

The commitment is primarily to address carbon emissions in our projects, although we also committed to achieving Carbon Neutral Organization status, which has been in place since 2020. Hesperia's corporate Carbon Neutral Organisation disclosures are available here: [Hesperia | Climate Active](#)

The detail of this methodology is available in a separate document on Hesperia's website.

For this project the Net Zero position is summarised below. The process steps are implementations of the WGBC Commitment components designed to suit the delivery and management of property assets.

Embodied Carbon

Process	Project Response
General approach	Addressed through 'Upfront Carbon' (modules A1-A5 of the LCA of EN15978)
Measure	LCA of detailed inventory from Stage 1 works extrapolated across all 12 Stages of Rivermark, to be checked against further LCA studies.
Reduce	Initiatives have been incorporated for Stages 2-12, expected to achieve a minimum 23% reduction against the reference case.
Offset	100% of the greenhouse gas footprint as calculated for Stages 1-12 has been offset using verified offsets.
Report	This project report is a public disclosure. Portfolio level reporting is made by Hesperia annually to the World Green Building Council (WGBC) and through corporate annual reporting:
Assess ongoing risks	Recheck forecast figures as future stages complete. Monitor carbon intensity against reduction target.
Philanthropy and Research Funding	Rivermark is a case study for the Net Zero Precincts project with the RACE2030 CRC and has contributed financially to this research project.

Operational Carbon (not directly relevant to Hesperia's work on this land-only development)

WGBC method item	Project Response
General approach	Addressed through design guidelines intended to reduce carbon intensity and improve the energy efficiency of homes that will be built at Rivermark. Incentives offered for residents to take up low carbon initiatives.



3. Project Information

Rivermark is a residential land development located in the East of the Perth Metropolitan area, in the suburb of Viveash.

Description	Detail
Project Name	Rivermark
Location	143 Cranwood Crescent, Viveash
Total Site Area (m2) (12 Stages)	517,291
Gross Floor Area (m2)	NA (no built form)
Net Lot Area (m2)	277,692
Floors (#)	NA (no built form)
Primary Usage	Residential Land Development
Structural Life (Years)	100
Design Life (Years)	100

4. Emissions Boundaries

For this land-only development project, operational carbon footprint has not been addressed. All works undertaken by Deliver the serviced lots to the final owners have been included.

4.1 Life Cycle Assessment (LCA) Modules

The Net Zero outcome is based on the measurement and offsetting of 'upfront embodied carbon of construction'. The LCA scope covered modules A1-A5 on this basis.

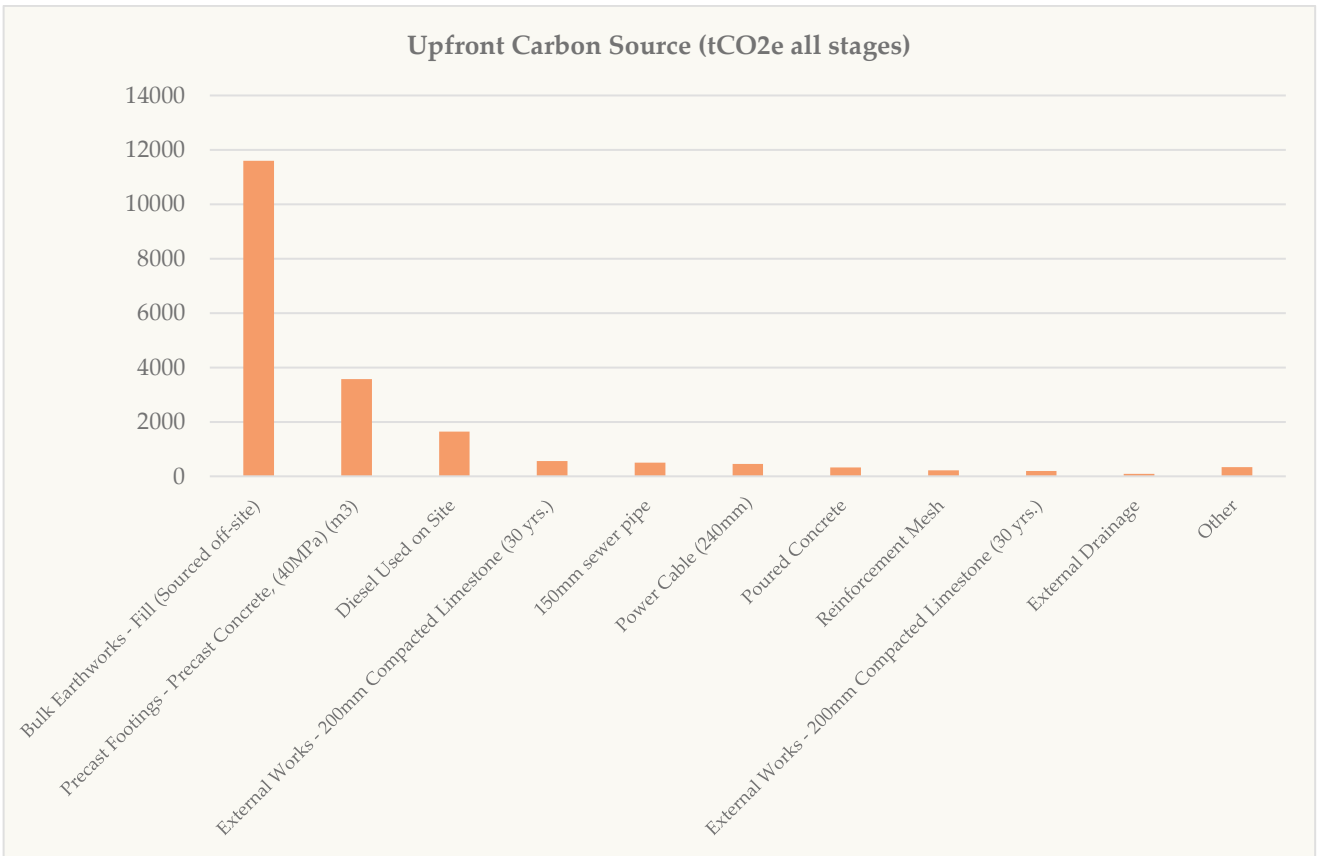
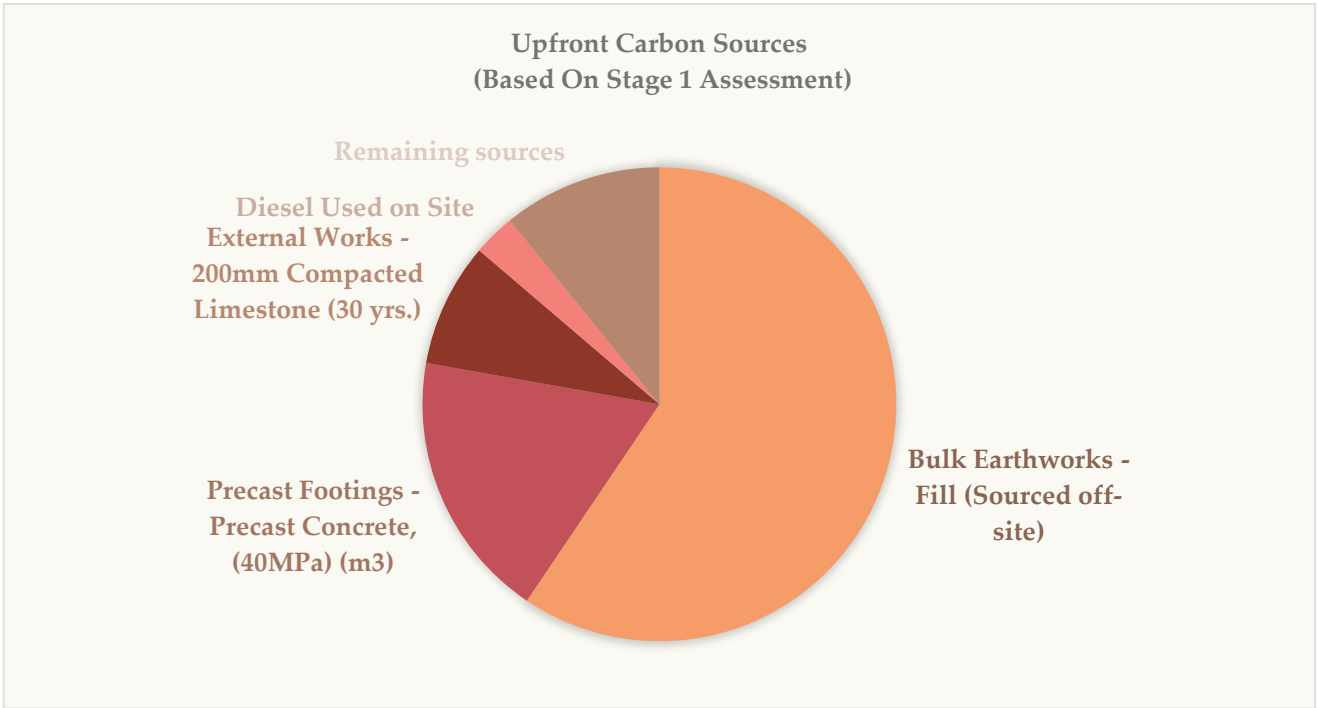
4.2 Scopes

Scopes 1, 2, and 3 are included for all aspects of construction. Scope 1 includes onsite diesel and gas consumption. Scope 2 includes site electricity consumption. Scope 3 includes all supply chain emissions based on the inventory of materials and the associated transport, and waste streams.

5. Upfront Carbon Sources Summary

The table below outlines the ten major impacts on Upfront Carbon for the development. The contribution of each item is due to a combination of the quantity and the carbon intensity of that item.

Carbon Source	Carbon Quantity (kg CO ₂ e)	Share of Total (%)
Bulk Earthworks - Fill (Sourced off-site)	11652	59%
Precast Footings - Precast Concrete, (40MPa) (m3)	3595	18%
Diesel Used on Site	1657	8%
External Works - 200mm Compacted Limestone (30 yrs.)	565	3%
150mm sewer pipe	510	3%
Power Cable (240mm)	460	2%
Poured Concrete	322	2%
Reinforcement Mesh	217	1%
External Works - 200mm Compacted Limestone (30 yrs.)	197	1%
External Drainage	87	0.4%
Other	339	2%
Total Global Warming Potential (GWP)	19600	100%



6. Upfront Carbon Reduction Strategies

The project precedes the Hesperia Project Sustainability Standard and is considered a 'legacy project' inclusive in Hesperia's Net Zero portfolio commitment. Although the project did not benefit from the design process that would have led to a carbon reduction strategy being documented and reduction outcomes being assessed.

The following initiatives were not included in Stage 1 but are locked into project documentation for future stages:

- The use of recycled asphalt in road construction 64% by volume across the whole project.
- The use of 200,000m³ of recycled sand and crushed brick for clean fill across the site
- Concrete drainage pipework to be replaced with high-density polyethylene (HDPE) which is a relatively low-energy material to produce.
- Recycled timber, soil, bricks, and other materials in landscape elements.

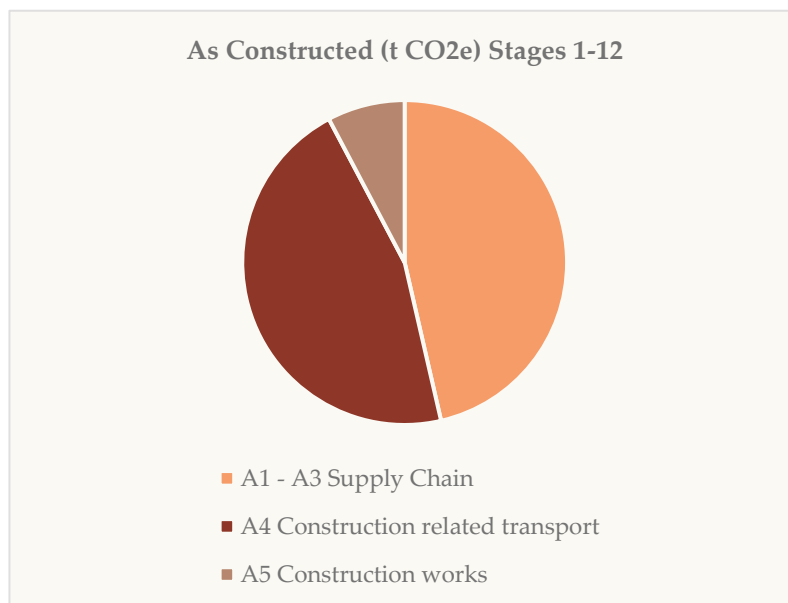
As future stages are completed, these initiatives will be documented appropriately, and improved on wherever practical. This is why Hesperia is confident of achieving a reduction in emissions intensity going forwards. This has been forecast as a 3% reduction stage-on-stage.

7. Emission Summary

The table below provides an overview of the total Greenhouse Gas footprint, the reduction in Upfront Carbon (forecast based on the targeted reduction for future stages), broken down by LCA module, for the completed 12-stage development.

The Life Cycle Assessment Report (attached) provides a detailed overview of the emissions for Stage 1. Low carbon concrete and recycled fill were not sufficiently documented to enable LCA to include a reduction in Stage 1. These will be suitably documented and augmented in future stages, contributing significantly to the forecast reduction. Any reduction in diesel consumption through efficiency and fuel switching will have an impact of the project’s footprint, so will be promoted on future stages.

Emissions Summary					
Category	As Constructed (t CO2e) Stages 1-12	Reference (t CO2e) - inferred	FORECAST Change (t CO2e)	FORECAST Change %	Key Reduction Initiatives
A1 - A3 Supply Chain	9,093	11202	2109	-23%	Low carbon concrete and recycled fill.
A4 Construction related transport	8,991	11076	2085	-23%	Diesel reduction / replacement.
A5 Construction works	1,516	1867	351	-23%	Diesel reduction / replacement.
Totals	19,600	24,145	4,546	-23%	See notes in text.



8. Offsetting

Offsetting has been based on using verified carbon offset units equal to the final footprint assessment for the project. The chosen offset projects demonstrate strong environmental and social co-benefits.

Offset Project Type	Project Description	Verified Offset Quantity Retired (1 offset equivalent to 1 tonne CO ₂ e)
Australian Biodiversity	<p>Biodiversity Reforestation Carbon Offsets (BRCO) from the Yarra Yarra Biodiversity Corridor Project.</p> <p>Serial numbers (BRCO): 12PWA470581B - 12PWA480380B</p> <p>Carbon Neutral retires an equal number of verified carbon credits from an international project for all Biodiverse Reforestation Carbon Offsets to satisfy claims of carbon offsetting (and carbon neutrality where applicable).</p> <p>Serial numbers (Chengde): CN7624: 1,117,328,409 - 1,117,338,208.</p>	9,800
International renewable energy / other	<p>Musi River Hydro, Indonesia - Renewable hydropower for the island of Sumatra, VCS. Project ID 1805.</p> <p>VCU Serial Number: 15612-702444887-702454686-VCS-VCU-262-VER-ID-1-487-01102017-31122017-0</p>	9,800
Totals		19,600

9. Operational Carbon Emissions Forecast

Rivermark is a residential land development where it is anticipated that no built form will be delivered by the developer. All land will be sold to other parties or, in the case of public open space and other public amenities, ceded to the local council. Hesperia has little direct control over what the subsequent owner does with their property and less influence over how they operate any eventual buildings or facilities.

However, Hesperia does provide advice and, in some limited cases, implements sales conditions to ensure that the eventual built form meets some benchmarks for performance and reduced environmental impact.

Mandatory items for homes built at Rivermark include:

- 4.5kW solar photovoltaic system.
- Minimum 3 Star WELS rated shower fittings.
- Minimum 6 Star WELS rated basin taps.
- Minimum 4 Star WELS rated taps generally, excluding outdoor and bath taps.
- Dual plumbing and rainwater-ready design to encourage connection of a rainwater system by current or future owners.
- Swimming pools must be fitted with a fixed retractable pool cover.

Guidance is provided on thermal performance for comfort and energy, optimising natural light, materials selection, landscape design and a range of topics that will lead to a better quality, more comfortable home with a lower carbon footprint.

10. Attachments and Data Sources

The below documents are to be published with the Net Zero Report

Documentation	Description
Life Cycle Assessment Report	A report summarising the results of an LCA generated through the eTool modelling platform.
Offset Retirement Certificate	Certificates and registry cancellation evidence for retirement of offsets to match the measured GWP of this project.

10.1 Supporting Documentation

These documents are not published with this report but are archived against the project and made available to auditors.

Data Source	Description
As Constructed Materials Inventory	Provided primarily by civil engineers, TABEC, and the project contractors.
As Constructed Drawings and Specifications	As-Construction Documentation for all relevant disciplines.
Review of Life Cycle Assessment	NA for this project
Carbon Mitigation Workshop Summary	NA for this project
Product EPD's	NA for this project
Product Third Party Certificates	No EPDs or other certificates used in calculations for this project.