

Contractor Monthly Reporting – Resource Inputs, Resource Outputs, and Energy and Fuel Reporting

Overview

The Monthly Materials and Waste Reporting Form is an important part of the Combined Contractor Monthly Report, ensuring crucial communication between the Contractor and Main Roads. The information from the reports is utilised in compliance monitoring and Main Roads quarterly and annual reporting. All fields must be complete prior to submission. Incomplete reports will not be accepted. Any changes to the formatting of this report will result be rejected and will require resubmission.

This Reference Guide outlines the instructions for filling in the Resource Inputs, Resource Outputs, and Energy and Fuel Reporting Tabs, definitions of key virgin and recycled materials, and their relevant Main Roads specification. These are separated into road layer, and the key materials have been identified with specialist engineers of each road layer from Main Roads. There is an additional diagram from Austroads that depicts each road layer which can be referred to for further information.

There is also a glossary of key waste, recycling, construction and materials terms which can be found in [Table 2](#) of this document.

Instructions for Completing the Form

The Combined Contractor Monthly Report can be downloaded on our [website](#).

Resource Inputs Tab:

- This tab captures all imported raw/traditional materials and resources that have gone into constructing the road in each road layer.
- The tab captures all raw, recycled and reused materials on site.
- Resource inputs are to be reported for the current month and the project total.
- Please ensure stockpiles and existing materials prepared for future use should be reported in the *Materials Reused within the Project Site* table.
- If you are unsure what layer a certain material has been used in, report it under the embankment layer.
- All materials must be reported in tonnes.
- All materials with an Eco, Ethical, Sustainable or Low Carbon label must also be reported under the *Materials with Eco, Ethical, Sustainable, or Low Carbon Label* table.
- Ensure to name any materials used that are not listed in the forms in the 'other' rows in each table.

Resource Outputs Tab:

- This tab must capture all the waste and recycling generated by the project, from the construction site and the site office.
- The tab is broken into two waste types: Site Office Waste, and Construction and Demolition Waste.
- The current month and the project totals must be reported.
- The landfill or recycling facility the waste has been sent to must be reported.
- The waste diversion rate will be automatically calculated for each waste type. This should be tracked against the target outlined in the project contract. Please ensure to fill in the project's target for each waste type. This target may be chosen by the project team to align with contract requirements, Infrastructure Sustainability Council (ISC) requirements and rating criteria, the [WA Waste Avoidance and Resource Recovery Strategy 2030](#), or Local Government Waste Strategies.
- The data reported will be used to inform the project's Resource Efficiency Strategy and Resource Efficiency Action Plan (ISC Credits Rso-1 and Rso-4).

Energy and Fuel Reporting Tab:

- Use this tab to report on all the energy and fuel use for the current month and project to date.
- This tab will automatically calculate the scope 1, 2 and 3 emissions generated through energy and fuel consumption on the project.
- Ensure to document any 'other' energy or fuel sources as well as the amount used in the most appropriate unit.
- For more information on how the scope 1, 2 and 3 emissions are calculated refer to the [National Greenhouse Account Factors](#).

Table 1 Material Specifications

Material Specifications					
This table outlines the raw materials used in the different road layers, as well as recycled alternatives and where materials can be reused. The Main Roads specifications of these materials are also listed.					
Note: where 'Nil' is listed, there is currently no alternative material or specification however innovations are encouraged on a case by case basis.					
Road Layer	Traditional Raw Material	Recycled Material	Reuse Material	MRWA Raw Material Specification	MRWA Recycled Material Specification
Embankment/ Subgrade	Sand	Crushed Recycled Glass Recycled Sand	Recycled Sand Excess Site Won Fill	Specification 302	Specification 302
	Gravel			Specification 302	Specification 302
	Clay/Silt			Specification 302	Specification 302
	Crushed Limestone	Nil	Nil	Specification 501	Nil
	Mulch (incl. Embankment Batters)	Mulch imported from other sites Approved FOGO products	Mulch reused onsite	Specification 304	Nil
	Lime Additives	Nil	Nil	Specification 302	Nil
	Cement Additives	Nil	Nil	Specification 302	Nil
	Ballast	Recycled Granular Material	Nil	Method specification is required	Nil
	Crusher Dust (Incl. Cracker Dust)	Nil	Nil	Specification 302	Nil
	Bedding Aggregate (refer Spec 404.35 for further information)	Recycled Aggregate Crushed Recycled Glass	Nil Nil	Specification 302 & 404.35 Specification 302	Nil Nil
Topsoil	Topsoil imported from other sites	Topsoil reused onsite	Specification 302	Nil	
Subbase	Gravel	Crushed Recycled Concrete	Reused Granular Material	Specification 501	Specification 501
	Crushed Limestone			Specification 501	Nil
	Crushed rock base			Specification 501	Nil
	Limestone	Nil	Nil	Specification 515	Nil
	Cement (includes 65% slag in type LH)	Nil	Nil	Specification 515	Nil
	Bitumen	Nil	Nil	Specification 501	Nil
Road Pavement (basecourse)	Gravel	Nil	Nil	Specification 501	Nil
	Ferricrete	Nil	Nil	Specification 501	Nil
	Laterite	Nil	Nil	Specification 501	Nil
	Limestone	Nil	Nil	Specification 501	Nil
	Crushed rock base	Nil	Nil	Specification 501	Nil
	Asphalt (not incl. surfacing asphalt)	Nil	Reclaimed Asphalt Pavement	Specifications 510 & 511	Specifications 510 & 511
	Concrete	Nil	Nil	Transport for NSW: ERN9 / R83 & R84	Nil
	Lime	Nil	Nil	Specification 515	Nil
	Bitumen	Nil	Nil	Specification 515	Nil
	Cement (includes 65% slag in type LH)	Nil	Nil	Specification 515	Nil
Road Surface	Aggregate	Nil	Nil	Specification 511	Nil
	Asphalt	Nil	Nil	Specification 502, 504, 507 & 516	Nil
	Bitumen	Nil	Nil	Specification 511	Nil
	Bitumen Cutter (MCC)	Nil	Nil	Specification 511	Nil

	Bitumen Cutter (SCC)	Nil	Nil	Specification 511	Nil
	Emulsion based prime (e.g. ecoprime)	Nil	Nil	Specification 511	Nil
	Synthetic Binders	Crumb Rubber	Nil	Specification 511	Specifications 509 & 516
Additives	Lime	Nil	Nil	Specifications 302, 511 & 515	Nil
	Cement	Nil	Nil	Specification 302, 507 & 515	Nil
	Bitumen	Nil	Nil	Specification 511 & 515	Nil
Road Structures	Concrete	Geopolymer Concrete	Nil	Specification 901	Specification under development, ask Main Roads for further information
		Low Carbon Concrete	Nil	Specification 901	Nil
	Precast Concrete	Concrete Supplementary Cementitious Materials (e.g. fly ash, slag, silica)	Nil	Specification 820	Nil
	Aggregate	Crushed Recycled Concrete	Nil	Nil	Specification 501
	Steel	Nil	Nil	Specification 820	Nil
	Cement Stabilised Backfill	Nil	Nil	Specification 801	Nil
	Sand (incl. bedding sand)	Recycled Mineral Sand	Nil	Specification 820	Nil
		Inert/used manufactured sand	Nil	Specification 820	Nil
	Rock	Nil	Nil	Specification 406	Specification currently under development
	Limestone	Eco-blocks (Reconstituted Structural Blocks)	Nil	Specification 905	Specification 905
Mechanically Stabilised Earth Backfill	Nil	Nil	Specification 826	Nil	
Road Furniture	Steel (W-beam barriers, wire rope barriers, signage posts)	Nil	Nil	Specification 603	Nil
	Concrete (barriers, drainage, and other)	Crushed Recycled Concrete (projects to further investigate)	Nil	Specification 603 Specification 405	Nil
	Paint: Waterborne Paint	Nil	Nil	Specification 604	Nil
	Paint: Thermoplastic	Nil	Nil	Specification 604	Nil
	Paint: Cold Applied Plastics	Nil	Nil	Specification 604	Nil
	Glass beads	Nil	Nil	Specification 604	Nil
	Aluminium (signage)	Recycled Aluminium	Nil	Specification 601	Nil
	Plastic (slotted pipes, subsoil drainage)	Recycled PVC Plastic Pipes (projects to further investigate)	Nil	Specification 403	Nil
	Geotextile Lining (subsoil drainage)	Recycled polyethylene or polypropylene	Nil	Specification 403	Nil
Steel (guideposts)	Nil	Nil	Specification 602	Nil	

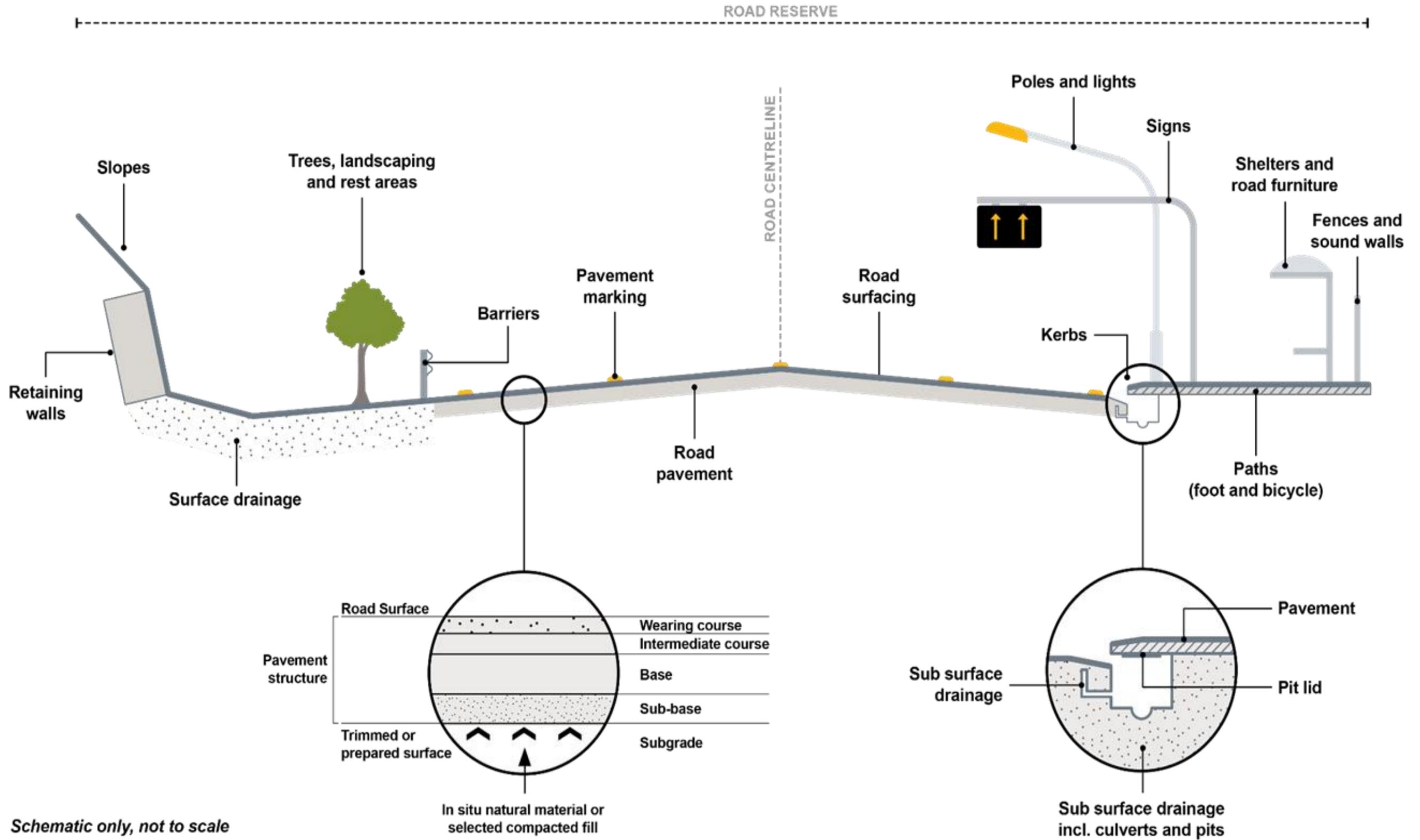
Plastic (guideposts)	Recycled plastic (projects to further investigate)	Nil	Specification 602	Nil
Rubber (guideposts)	Crumb rubber (projects to further investigate)	Nil	Specification 602	Nil
Perspex (impact resistant)	Nil	Nil	Specification 601	Nil
Glass	Nil	Nil	Specification 604	Nil

Table 2 Glossary and Definitions of Key Terms

Glossary & Definitions		Source
Acid Sulfate Soils (ASS)	Natural sediments/soil that contain iron sulphides, which can be harmful to the environment when disturbed or exposed to air. When exposed, ASS can release substances including heavy metals into the surrounding environment, including waterways.	WA Department of Water and Environmental Regulation. (N.D). Acid Sulfate Soils. https://www.der.wa.gov.au/your-environment/acid-sulfate-soils
Additives	Materials added to the cement to improve the properties of the cement.	Allan, P. (2012). Australian Waste Definitions. https://www.awe.gov.au/sites/default/files/documents/australian-waste-definitions.pdf
Asbestos Containing Material (ACM)	A product that contains asbestos fibres that have been mixed with other materials.	Australian Government: Asbestos Safety and Eradication Agency. (N.D). About Asbestos. https://www.asbestossafety.gov.au/about-asbestos/about-asbestos
Basecourse	One or more layers of material usually constituting the uppermost structural element of a pavement on which the surfacing may be placed.	Main Roads Western Australia. (2021). Specification 501: Pavements. https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/specifications/500-series-pavements/specification-501-pavements.pdf
Construction and Demolition Waste	Waste produced by demolition and building activities.	Waste Authority. (2019). Waste Avoidance and Resource Recovery Strategy. https://www.wasteauthority.wa.gov.au/images/resources/files/Strategic_Direction_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf
Containers for Change	WA's state-wide container deposit scheme allowing the community to cash in eligible recyclable containers for 10c each.	City of Perth. (N.D). Containers for Change. https://perth.wa.gov.au/containers-for-change
Contaminated Material	Materials containing a hazardous waste substance.	Allan, P. (2012). Australian Waste Definitions. https://www.awe.gov.au/sites/default/files/documents/australian-waste-definitions.pdf
Cut and Fill	A procedure undertaken at construction sites where embankments are created by removing earth from one point on site and using it as fill in another. The process offers time and cost savings.	Scott, P. (2022). What is cut and fill? https://www.aboutmechanics.com/what-is-a-cut-and-fill.htm
Embankment/Subgrade	The trimmed or prepared portion of the formation on which the pavement is constructed. The Subgrade may comprise in situ or imported materials.	Main Roads Western Australia. (2021). Specification 501: Pavements. https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/specifications/500-series-pavements/specification-501-pavements.pdf
E-Waste	E-waste is made up of discarded electronic and electrical components.	Suez. (N.D). E-waste Recycling. https://www.suez.com.au/en-au/sustainability-tips/learn-about-waste-streams/general-waste-streams/e-waste-recycling
Hazardous/Controlled Waste	Controlled Waste is defined as all liquid waste, and any waste that cannot be disposed as a Class I, II or III landfill site. Controlled Waste also includes asbestos, clinical or related waste, tyres and waste that has been immobilised or encapsulated. In WA, DWER is the authority for this part of the Environmental Protection Act.	Allan, P. (2012). Australian Waste Definitions. https://www.awe.gov.au/sites/default/files/documents/australian-waste-definitions.pdf WA Department of Water and Environmental Regulation. (N.D). What is Controlled Waste? https://www.der.wa.gov.au/images/documents/our-work/controlled-waste/Fact-sheet-1-What-is-controlled-waste.pdf
Landfill	An unlined waste disposal site used for the controlled deposit of solid wastes onto or into land. Landfills in Australia and New Zealand have multiple classes which dictate what types of waste they will accept.	Department of Water and Environmental Regulation. (1996). Landfill Waste Classification and Waste Definitions 1996. https://www.der.wa.gov.au/images/documents/our-work/licences-and-works-approvals/WasteDefinitions-revised.pdf
Off-road	Off-road refers to all stationary energy emissions or fuel use (non-transport), as per the National Greenhouse Accounts Factors. This covers all the stationary combustion of liquid fuels.	Department of Industry, Science, Energy and Resources. (2021). National Greenhouse Accounts Factors. https://www.industry.gov.au/sites/default/files/August%202021/document/national-greenhouse-accounts-factors-2021.pdf

On-road	On-road refers to all fuel emissions, fuel use and fuel combustion for transport purposes, as per the National Greenhouse Accounts Factors.	Department of Industry, Science, Energy and Resources. (2021). National Greenhouse Accounts Factors. https://www.industry.gov.au/sites/default/files/August%202021/document/national-greenhouse-accounts-factors-2021.pdf
Organic Waste/FOGO	Waste materials from plant or animal sources, including garden waste, food waste, paper and cardboard.	Waste Authority. (2019). Waste Avoidance and Resource Recovery Strategy. https://www.wasteauthority.wa.gov.au/images/resources/files/Strategic_Direction_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf
Raw/Virgin Material	Materials or substances used in the primary production or manufacturing of goods. These materials are commodities bought and sold on commodities exchanges worldwide.	Investopedia. (2021). Raw Materials. https://www.investopedia.com/terms/r/rawmaterials.asp
Recycled Materials	Recovering material from waste and turning it into new products. The original product is destroyed usually through a melting process and used to form new products.	Terracycle. (2022). Recycling Terms and Definitions. https://www.terracecycle.com/en-US/pages/definitions
Resource Inputs	Materials used to build an asset e.g. steel, concrete, brick.	Waste Authority. (2019). Waste Avoidance and Resource Recovery Strategy. https://www.wasteauthority.wa.gov.au/images/resources/files/Strategic_Direction_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf
Resource Outputs	The remaining waste following the separation process and recycling system that aligns with the waste hierarchy as described in section 5 of the <i>Waste Avoidance and Resource Recovery Act 2007</i> .	Waste Authority. (2019). Waste Avoidance and Resource Recovery Strategy. https://www.wasteauthority.wa.gov.au/images/resources/files/Strategic_Direction_Waste_Avoidance_and_Resource_Recovery_Strategy_2030.pdf
Reused Materials	Items capable of being used again after minimal processing. In road construction they can be processed and reused onsite, or on other project sites.	Adapted from Law Insider. (2013-2022). Reused Materials Definition. https://www.lawinsider.com/dictionary/reusable-materials .
Road Furniture	All the fixtures on the road and within the road reserve that are intended to provide information or safety to a road user, including traffic lights, sign posts, traffic signs, guardrails, marker posts, fences, reflectors and centre line pads.	Law Insider. (2013-2022). Road Furniture Definition. https://www.lawinsider.com/dictionary/road-furniture .
Road Structures	Definitions for different structures are provided on the Main Roads website . Different structures include the bridge, precast box unit bridge, culvert, and gantry.	Main Roads Western Australia. (2017-2020). https://www.mainroads.wa.gov.au/technical-commercial/technical-library/structures-engineering/asset-management/structure-locations/
Road Surface/Pavement	The portion of the road placed above the design subgrade level including shoulders.	Main Roads Western Australia. (2021). Specification 501: Pavements. https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/specifications/500-series-pavements/specification-501-pavements.pdf
Roadside Litter	Litter on roads, streets, highways and freeways that comes from illegal dumping, passing vehicles, or areas surrounding a road.	Keep Australia Beautiful WA. (N.D). Roadside Fact Sheet. https://www.kabc.wa.gov.au/library/file/Fact%20sheets/Roadside%20Fact%20sheet%20KAB.pdf
Scope 1 Emissions	Scope 1 emissions are direct greenhouse gas (GHG) emissions from "sources that are owned or controlled by a company" (World Resources Institute, N.D).	World Resources Institute. (N.D). A Corporate Accounting and Reporting Standard. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
Scope 2 Emissions	Scope 2 emissions are indirect emissions produced "from the generation of purchased electricity consumed by a company" (World Resources Institute, N.D).	World Resources Institute. (N.D). A Corporate Accounting and Reporting Standard. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
Scope 3 Emissions	Scope 3 emissions are indirect emissions produced "from the consequence of the activities of a company, but occur from sources not owned or controlled by that company" (World Resources Institute, N.D).	World Resources Institute. (N.D). A Corporate Accounting and Reporting Standard. https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf
Sewage/ Waste water	Any used water that is disposed of via the sewerage network. This can include water which is stored into septic tanks.	WA Department of Water and Environmental Regulation. (N.D). Wastewater. https://www.water.wa.gov.au/urban-water/water-recycling-efficiencies/waterwise-community-toolkit/wastewater
Specific Cardboard and Paper Recycling	Cardboard and paper recycling that has been separated from other commingled recycling.	Suez. (N.D). Paper & Cardboard. https://www.suez.com.au/en-au/sustainability-tips/recycling-tips/paper-cardboard
Spoil/General Fill	Uncontaminated excavated clay, gravel, sand, soil or rock that is not mixed with any other type of waste and resulting from construction and demolition activities. Acid Sulphate Soils are not	Infrastructure Sustainability Council of Australia. (2018). Infrastructure Sustainability Rating Tool Version 2.0 Technical Manual. https://www.iscouncil.org/

	included in this, and no organic matter is typically found in general fill.	
Subbase	The material laid on the Subgrade and below the Basecourse either for the purpose of making up the additional pavement thickness required, to prevent intrusion of the Subgrade into the base, or to provide a working platform.	Main Roads Western Australia. (2021). Specification 501: Pavements. https://www.mainroads.wa.gov.au/globalassets/technical-commercial/technical-library/specifications/500-series-pavements/specification-501-pavements.pdf
Topsoil	Upper, most outer layer of soil with the highest concentration of organic matter and microorganisms.	Infrastructure Sustainability Council. (2018). Infrastructure Sustainability Rating Tool Version 2.0 Technical Manual. https://www.iscouncil.org/



Schematic only, not to scale

Figure 1 Road Layers Diagram (Source: Austroads 2021)