

# QUALITY ASSURANCE





**This Product Quality Management Plan outlines the approach adopted by ResourceCo in manufacturing and supplying recycled aggregates and sand to industry.**

**ResourceCo aim to educate our customers on the Quality Assurance/ Quality Control (QA/QC) methodologies implemented onsite to provide a high level of confidence to our customers that products are continually manufactured to a consistent and recognised specification.**

## WHAT WE DO

ResourceCo manufactures a wide range of high quality recycled pavement materials, aggregates, sands, bulk fills and asphalt products at its Wingfield (North) and Lonsdale (South) production facilities.

ResourceCo was established in 1993 and is South Australia's largest recycler of construction and demolition waste, producing over 500,000 tonne of recycled aggregate materials per year for supply back into the market. Source materials consist of crushed concrete, bricks and asphalt generated from small to large scale civil and demolition projects.

Large projects undertaken for civil clients in recent years include Adelaide Desalination Plant, Techport Australia and Aldi Distribution Centre, with significant quantities of recycled aggregates supplied to the customers satisfaction.

ResourceCo has also supplied to major local road projects including the construction of the Darlington Upgrade Project, Port River Expressway, Grand Trunkway upgrade – among many other council and state government road projects.

ResourceCo applies strict quality control and production procedures under its accreditations in ISO 9001 (Quality Management System), ISO14001 (Environmental Management System) and AS4801 (Occupation Health and Safety Management System).

ResourceCo operates permanent processing facilities at Lonsdale and Wingfield. Incoming feedstock is received as 'clean' concrete containing less than 5% foreign materials and 'unclean' concrete containing mixed quantities of brick, rubble and soil. Oversize concrete consisting of footings and large slabs are pulverised to a suitable size prior to processing. ResourceCo also operates two state of the art pugmill plants, at Wingfield and Lonsdale, and can supply cement treated and Optimum Moisture Content (OMC) materials on demand from Wingfield.





All sites are licensed and suitably authorised by the Environment Protection Authority as 3(3) Waste & Recycling Depots under schedule 1 of the *Environment Protection Act 1993*.

#### **DPTI CERTIFICATION**

ResourceCo has obtained performance based mix design certification from DPTI for its 20mm Class 1 Recycled Material at Wingfield. This certification was achieved through comprehensive laboratory testing carried out by both DPTI and ResourceCo's independent National Association of Testing Authorities (NATA) approved laboratory, within DPTI R15 specifications.

ResourceCo underwent renewal of its 20mm Class 2 prequalification certification at Lonsdale and Wingfield in 2016 incorporating a review of all available laboratory test data and site inspections undertaken by DPTI representatives.

A copy of certification certificates can be supplied upon request.

#### **ADVANTAGES OF RECYCLED PRODUCTS**

##### **DENSITY ADVANTAGE –**

Recycled products are approximately 20% less dense than a quarry alternative, therefore by weight they are a cheaper alternative per unit volume filled. This also has an additional flow on cost saving with regard to transport efficiencies to site and final placement.

##### **ENVIRONMENTAL SUSTAINABILITY –**

Use of recycled aggregate produces lower greenhouse gas emissions and reduces the carbon footprint of development projects through:

- Reduced quarrying of natural materials requiring subsequent rehabilitation.
- Reduced need for disposal of otherwise useful construction and demolition wastes to landfill.
- Reduced haulage distance and associated emissions through closer proximity to the metropolitan area.
- Reduction in atmospheric carbon dioxide due to the natural process of carbonation (absorption of carbon dioxide) as concrete materials are crushed and exposed to air.

##### **VERSATILITY –**

Recycled aggregate can be used for a variety of applications from construction and road base applications, to landscaping and domestic uses. Products can be manufactured to meet specific technical requirements of projects.

##### **DURABILITY AND PERFORMANCE –**

Recycled materials are required to meet and perform to the same geotechnical criteria required of quarried material.

# PRODUCTS



**PM1/20RM - BASE COURSE**

(20 and 40 mm also available upon request)

Applications

Class 1 Pavement Materials are intended for use as pavement layers on high trafficked roads.

These products are equivalent to Class 1 Quarried Pavement Materials.



**PM2/20RG – SUB BASE**

(20 and 40 mm also available upon request)

Applications

These products are intended for use as pavement layers on medium trafficked roads or sub-base layers on high trafficked roads.

These products are equivalent to Class 2 Quarried Pavement Materials.



**10 MM AND 20 MM DRAINAGE AGGREGATES**

Applications

These products are suitable for use as drainage aggregate in backfill behind retaining walls and other drainage aggregate applications. They can also be used in decorative and landscaping applications.



**10 MM AND 20 MM CONCRETE AGGREGATES**

Applications

These products are used in the manufacture of sustainable 'green' concrete as an alternative to quarried materials.

These products are equivalent to Quarried 10 and 20 mm Concrete Aggregates.



**-7 MM SAND**

Applications

This product is used as packing sand for trench work and as under floor or engineered fill. It is used in the manufacture of sustainable 'green' concrete and is suitable for use under concrete or pavers.

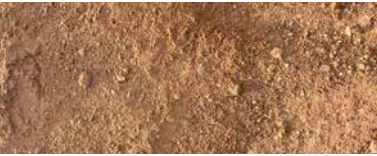
This product is equivalent to a Quarried Sand Material.



**NON SPECIFIED RUBBLES AND FILLS**

Applications

These products are intended for use as a general engineered fill and can be supplied as a graded crushed product from 20 mm up to 75 mm or as a certified Waste Derived Fill.



**Red Plaster Sand**

Applications

This sand can be used for various applications within the building industry. The red colour sets this sand out from the rest and is in high demand for plastering, rendering and screeding of bathroom floors



**Brick Sand**

Applications

These sands are used for brick mortar and highly sort after in the building industry. Tested to meet sand requirements for brick laying. Used for laying bricks/blocks.



**Trenching Sand  
(Unclassified Packing Sand)**

Applications

This and is yellow/orange in colour and is used mainly for bases under concrete slabs can also be used as a paving sand and a base for rainwater tanks.

**TRANSPORT**

ResourceCo Material Solutions can coordinate timely and efficient delivery of our products.



Sampling of our products is undertaken in accordance with 2015 DPTI Specification Part R15 Supply of Pavement Materials - which incorporates the following standards and methodologies.

- AS 1141 Sampling and Testing Aggregates
- AS 1289 Methods for Testing Soils for Engineering Purposes
- AS 2758 Aggregates and Rock for Engineering Purposes
- Road and Traffic Authority NSW Test Procedure

The materials located at Wingfield and Lonsdale are collected in accordance with DPTI sampling specification TP226 Sampling of Soil, Aggregates and Rocks - to ensure a consistent and universal sampling approach. Sample collection and analysis is carried out by an independent third party geotechnical laboratory.

Once at the laboratory, samples obtained in the field are prepared via a process of splitting and subsampling depending on the analysis required in accordance with AS1289 Method 1.1.

An additional sample is retained at the laboratory for DPTI compliance auditing at a later date if required.

## SAMPLING METHODS AND FREQUENCY

ResourceCo undertakes sampling and analysis of its aggregate and sand products in accordance with the DPTI Specification R15 for the supply of pavement materials, as follows.

- Class 1 – DPTI PM1/20RM
- Class 2 – DPTI PM2/20RG
- Sand – DPTI Type C
- 10mm and 20mm aggregates

As ResourceCo's most commonly produced product, the specific tests for grading based Class 2 recycled pavement material (PM2/20RG) are given below, as well as a brief description and rationale for each test.



# TESTING SPECIFICATION

## PM2/20RG DPTI TESTING SPECIFICATION

TEST UNDERTAKEN	TEST METHOD	LIMITS	NOTE
Particle Size Distribution	TP134	26.5mm (100%) 19mm (90-100%) 13.2mm (74-96%) 9.5mm (61-85%) 4.75mm (42-66%) 2.36mm (28-50%) 0.425mm (11-27%) 0.075mm (4-14%)	The most common and important test performed. Effective distribution of particle size allows materials to interlock at the granular level to provide a highly compactable, stable and resilient surface.
Liquid Limit	AS 1289.3.1.2	≤28%	Water content at which materials will begin to act as a liquid, used to determine plasticity index.
Plasticity Index	AS 1289.3.3.1	1% ≤ 8%	Used to determine soil strength and cohesiveness. A minor amount of plasticity allows aggregate particles to bind and compact.
Linear Shrinkage	AS 1289.3.4.1	≤4%	Used to determine the decrease in volume of a soil when dried from its liquid limit. A low value is required to increase pavement stability and prevent cracking.
Los Angeles Abrasion	AS 1141.23	≤45%	Used to determine the abrasion resistance of an aggregate. Measured as the percentage of fines, following an abrasive process. As such a higher value indicates less resistance to abrasion.
Type II Foreign Materials (plaster and other friable material)	RMST276	≤1%	Maximum allowable percentage of this type of foreign material allowable by mass.
Type III Foreign Materials	RMST276	≤0.5%	Includes all other foreign materials including plastic, rubber, paper, cloth, paint and wood but excludes bitumen content.
Bitumen Content	TP470	≤1%	Maximum allowable Bitumen content.

### ASBESTOS TESTING

Asbestos is not permitted to be accepted within our recycling facilities under any circumstances, and all weighbridges are fitted with elevated viewing platforms or CCTV cameras to inspect each load. Trained spotters are also employed to inspect each load entering the site for non-conforming materials, including asbestos.

ResourceCo undertakes extensive additional testing for the presence or absence of asbestos.

### ENVIRONMENTAL TESTING

Environmental sampling is also undertaken periodically throughout the year or as requested on a project by project basis.

### SAMPLING FREQUENCY

ResourceCo undertakes routine QA/QC sampling and analysis by an independent 3rd party geotechnical laboratory in accordance with the following frequency.

# SAMPLING FREQUENCY



## QA/QC SAMPLING FREQUENCY

PRODUCT	PARTICLE SIZE DISTRIBUTION	PLASTICITY INDEX	FULL DPTI R15 SUITE
PM1/20RM	Fortnightly	Yearly	Monthly
PM2/20RG	Weekly	-	Monthly
Recycled Sand	Monthly	Monthly	-
Bitumate	Monthly	-	Quarterly
10mm and 20mm recycled aggregates	Monthly	-	-

## TAILORED SAMPLING PLANS

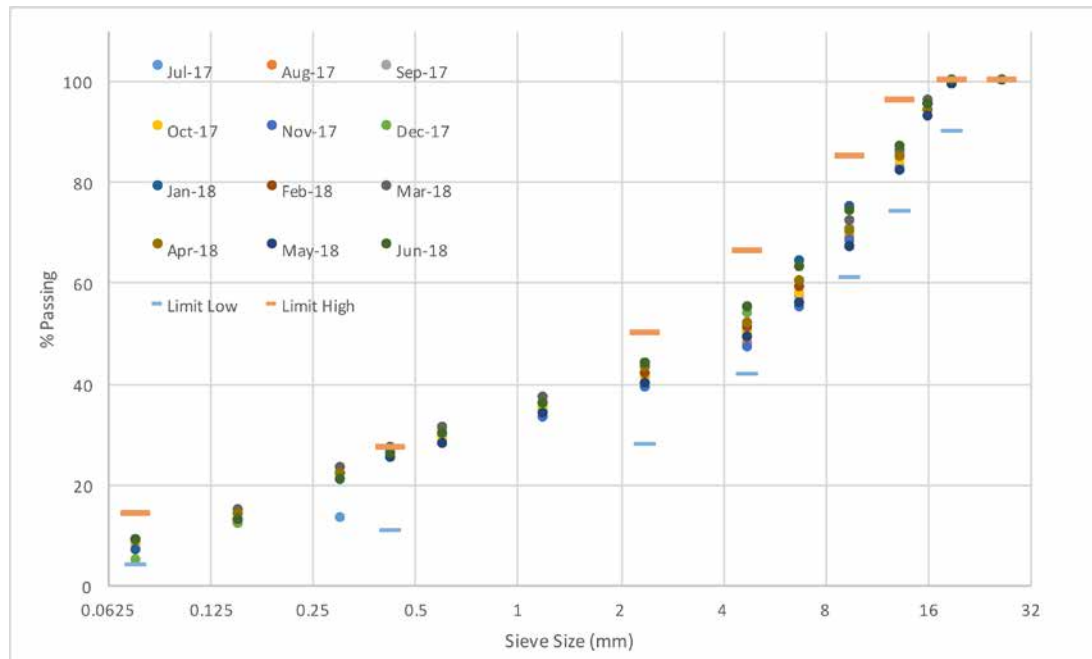
In addition to ResourceCo’s regular sampling and analysis undertaken, tailored sampling and certification can be arranged to meet specific contract specifications. This may include specialized testing not included under the current DPTI requirements or individually lotted and certified material assigned to each project.

## SAMPLING RESULTS

The following outline the sampling results for the 2017/2018 year for both Wingfield and Lonsdale.

## TEST RESULTS

### WINGFIELD PM2/20RG GRADING DATA

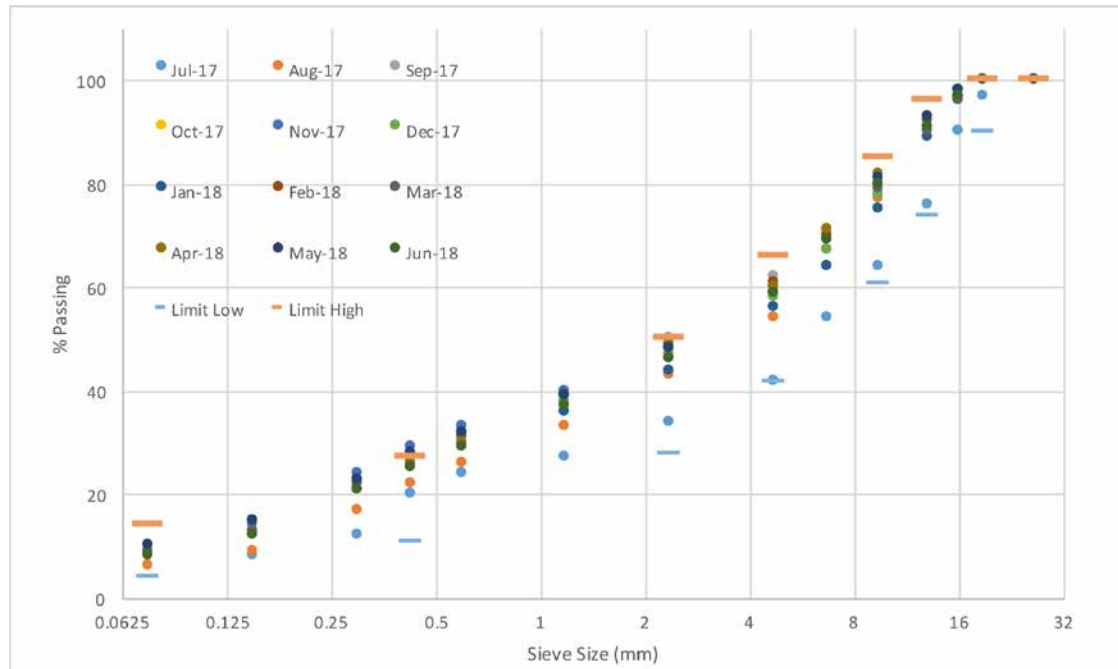


### WINGFIELD TEST RESULTS FY17/18

	LA	Linear Shrinkage %	Liquid Limit %	Plasticity Index %	Density (t/m3)	Foreign Material II	Foreign Material III
Limits	≤45	≤4	≤28	1 ≤ 8		≤1	≤0.5
July	40	1	23	2	1.8	0	0.1
August	42	1.5	22	3	1.9	0	0.1
September	40	1.5	24	3	2	0	0.1
October	39	2	23	4	2	0	0.1
November	39	1.5	23	3	2	0	0.1
December	40	0.5	22	1	1.9	0	0.1
January	39	1	23	2	1.9	0	0.1
February	42	1.5	24	3	1.9	0	0.1
March	42	2	23	4	1.9	0	0.2
April	41	1.5	23	3	1.9	0	0.1
May	No bulk test (low production)						
June	40	1	22	2	1.8	0	0.1
<b>Average</b>	<b>40</b>	<b>1.4</b>	<b>23</b>	<b>3</b>	<b>1.9</b>	<b>0.00</b>	<b>0.1</b>



## LONSDALE PM2/20RG GRADING DATA



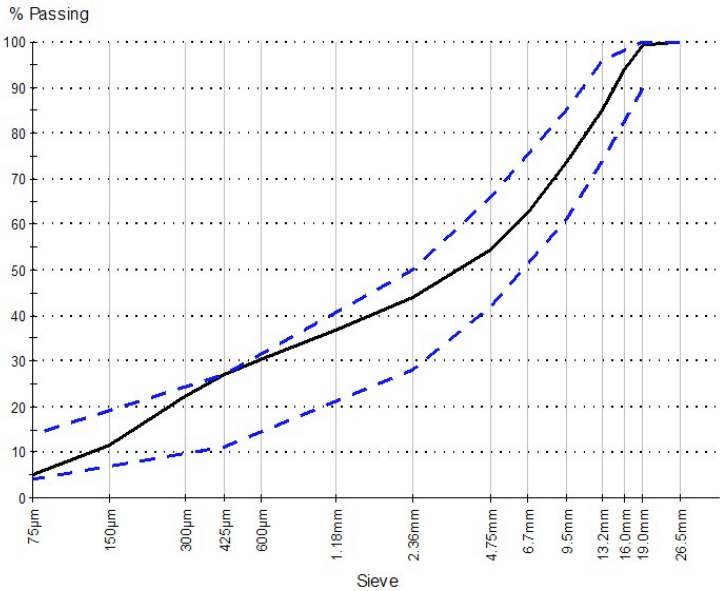
## LONSDALE TEST RESULTS FY17/18

	LA	Linear Shrinkage %	Liquid Limit %	Plasticity Index %	Density (t/m3)	Foreign Material II	Foreign Material III
Limits	≤45	≤4	≤28	1 ≤ 8		≤1	≤0.5
July	40	1	23	2	1.8	0	0.1
August	42	1.5	22	3	1.9	0	0.1
September	40	1.5	24	3	2	0	0.1
October	39	2	23	4	2	0	0.1
November	39	1.5	23	3	2	0	0.1
December	40	0.5	22	1	1.9	0	0.1
January	39	1	23	2	1.9	0	0.1
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March	42	2	23	4	1.9	0	0.2
April	41	1.5	23	3	1.9	0	0.1
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June	40	1	22	2	1.8	0	0.1
<b>Average</b>	<b>40</b>	<b>1.4</b>	<b>23</b>	<b>3</b>	<b>1.9</b>	<b>0.00</b>	<b>0.1</b>

AGGREGATE / LAB SA SOIL TEST REPORT

Sample Details

Sample ID	PR-18/0007-13
Lot No	
Client Sample ID	December Bulk A
Date Received	16/01/2018
Date Sampled	16/01/2018
Source	ResourceCo Wingfield Quarry
Material	20mm Class 2 Recycled Pavement Material
Specification	PM2-20RG - TSA 215.1
Location	ResourceCo Wingfield Quarry
Sampling Method	TP226
Sampled From	Stockpile



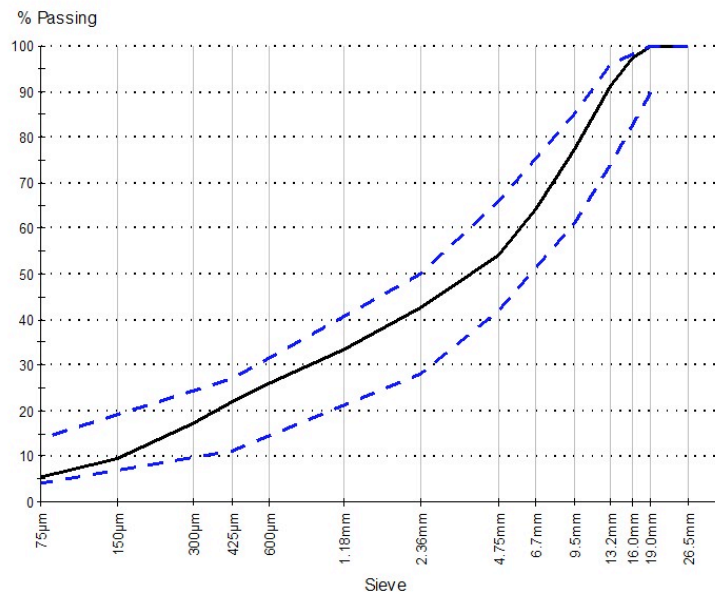
Other Test Results			
Description	Method	Result	Limits
Los Angeles Value	AS 1141.23	40	≤45
Test Grading		B	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	0.5	≤4
Mould Length (mm)		250	
Crumbling		No	
Curling		No	
Cracking		Yes	
Liquid Limit (%)	AS 1289.3.1.2	22	≤28
Method		One Point	
Plastic Limit (%)	AS 1289.3.2.1	21	
Plasticity Index (%)	AS 1289.3.3.1	1	1≤a≤8
Foreign Material Type I (%)	RMS T276		
Foreign Material Type II (%)		0.0	≤1
Foreign Material Type III (%)		0.1	≤0.5

Particle Size Distribution		
Method	TSA-MAT-TP134	
Drying by	Oven	
Sieve Size	% Passing	Limits
26.5mm	100	100
19.0mm	99	90≤a≤100
16.0mm	94	
13.2mm	85	74≤a≤96
9.5mm	74	61≤a≤85
6.7mm	63	
4.75mm	54	42≤a≤66
2.36mm	44	28≤a≤50
1.18mm	37	
600µm	30	
425µm	27	11≤a≤27
300µm	22	
150µm	12	
75µm	5	4≤a≤14

All ResourceCo products are independently tested by Lab SA.

## Sample Details

Sample ID	PR-17/0067-24
Lot No	
Client Sample ID	August Bulk
Date Received	30/08/2017
Date Sampled	30/08/2017
Source	ResourceCo Lonsdale Quarry
Material	20mm Class 2 Recycled Pavement Mat
Specification	PM2-20RG - TSA 215.1
Location	ResourceCo Lonsdale Quarry
Sampling Method	TP226
Sampled From	Stockpile



Other Test Results			
Description	Method	Result	Limits
Los Angeles Value	AS 1141.23	35	≤45
Test Grading		B	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	1.0	≤4
Mould Length (mm)		250	
Crumbling		No	
Curling		No	
Cracking		Yes	
Liquid Limit (%)	AS 1289.3.1.2	28	≤28
Method		One Point	
Plastic Limit (%)	AS 1289.3.2.1	27	
Plasticity Index (%)	AS 1289.3.3.1	1	1≤a≤8
Modified Maximum Dry Density (t/m3)	AS 1289.5.2.1	1.95	
Modified Optimum Moisture Content (%)		11.5	
Oversize Sieve (mm)			
Oversize Material (%)			
Foreign Material Type I (%)	RTA T276		
Foreign Material Type II (%)		0.0	≤1
Foreign Material Type III (%)		0.0	≤0.5

Particle Size Distribution		
Method	TSA-MAT-TP134	
Drying by	Oven	
Sieve Size	% Passing	Limits
26.5mm	100	100
19.0mm	100	90≤a≤100
16.0mm	97	
13.2mm	91	74≤a≤96
9.5mm	77	61≤a≤85
6.7mm	64	
4.75mm	54	42≤a≤66
2.36mm	43	28≤a≤50
1.18mm	33	
600µm	26	
425µm	22	11≤a≤27
300µm	17	
150µm	9	
75µm	5	4≤a≤14

All ResourceCo products are independently tested by Lab SA.





One of Australia's leading waste organisations, we take a keen interest in the Industry and Associations – these close affiliations allow us to maintain our presence and commitment to what we do. As outlined below ResourceCo are affiliated with a number of industry associations to ensure we are well informed about up to date information across industry:

- Australian Council of Recycling (ACOR)
- Australian Land and Groundwater Association
- Civil Contractors Federation (CCF)
- Keep South Australia Beautiful (KESAB)
- Master Builders Association of SA
- Waste Management and Resource Recovery Association of Australia (WMRR)



## PREVIOUS SIGNIFICANT PROJECTS



### PORT RIVER EXPRESSWAY

The Port River Expressway is an important strategic transport route for South Australia.

ResourceCo supplied the cement treated PM2/20RG pavement material used to build this four-lane expressway which carries high volumes of heavy vehicle traffic.

Around 200,000 tonnes of 4.5% cement treated material was laid in a single 330 mm-thick subgrade. This was compacted to 97% before applying the overlaying asphalt.

The pavement material is performing satisfactorily with no observable difference compared to alternative virgin quarry materials.

### ADELAIDE FREIGHT TERMINAL

ResourceCo was contracted by York Civil to supply around 70,000 tonnes of clean recycled pavement material comprising cement treated rubble, recycled sand and recycled aggregate concrete.

Our product replaced existing bitumen paving where trucks park while freight is loaded onto trains at this busy rail yard in Adelaide's inner-north.

According to Brad Broughton from York Civil the project was another case where existing relationships provided the right solution. "ResourceCo offered the best products and price for the job".

ResourceCo's proximity to the site proved to be valuable during this 10-month project. "When you're putting in up to 2,500 tonnes of rubble a day, being able to get enough trucks in a quick turnaround time is important," said Brad.

### NORTHERN CONNECTOR

In late 2016, ResourceCo was contracted by Lendlease to supply around 750,000 tonnes of engineered fill and 150,000 tonnes recycled pavement material; comprising of recycled sand and recycled road base.

ResourceCo's Product forms the sub base for the new expressway from the South Road Superway to the Northern Expressway. ResourceCo's environmental team assisted in supplying thorough records from our Wingfield site, to be able to track and document the re-use of waste fill materials in accordance with the Northern Connector Project's strict Contaminated Material Auditor Protocols.

ResourceCo provided numerous benefits as a supplier for this project, including the proximity of our site to the project location, significantly reducing the transport time and cost of each load, proving invaluable to the anticipated 18 month project.

At the conclusion of the project in June 2020, ResourceCo had supplied 1,095,420 tonnes to Lendlease of Type D, Type A, PM2/20, PM3/20, General Fill, Sand and Cement Treated Class 2 Rubble.









## **Our Beliefs**

We believe we need to be a lot smarter about how we use the earth's limited resources.

We believe we can no longer just discard things because we have used them before. We need to find new ways to recycle and reuse everything.

We can no longer bury, hide or dispose of waste materials that are polluted or toxic. We need to clean them up and use them again.

We can no longer accept that the price of growth is environmental damage. We need to find ways to minimise the impact of our activities.

We can no longer accept that we have limitless supplies of energy. We have to be smarter about using what we have and looking for viable alternatives.

We believe that we have an obligation to leave the planet in a better state than we found it. We will not rest until we do.

**We are ResourceCo.**





## HEAD OFFICE

Level 1, 162  
Fullarton Road,  
Rose Park SA 5067

WINGFIELD  
144-150  
Wingfield  
Road North  
Wingfield SA 5013

LONSDALE  
Lot 6 and 6B  
Meyer Road  
Lonsdale  
SA 5160

DRY CREEK  
Waste Derived  
Fill site,  
Hanson Road  
Extension  
Dry Creek  
SA 5094

MALAYSIA  
Lot 149522 Lebu  
Perusahaan  
Klebag 10  
IGB Industrial Park  
30010, Ipoh  
Perak Malaysia

ResourceCo Asia  
Sdn Bhd (KL)  
A-2-15 Plaza  
Damas 3, Block A  
Jalan Sri Hartamas  
50480 Kuala  
Lumpur

ResourceCo Asia  
(M) Sdn Bhd (Ipoh)  
165A, Persiaran  
Kawasan  
Perusahaan IGB,  
31200 Chemor,  
Perak

## MATERIAL SOLUTIONS

MULGRAVE  
Level 3,  
6 Nexus Court  
Mulgrave  
VIC 3170

SYDNEY  
86 Bourke Road  
Alexandria  
NSW 2015

WINGFIELD  
144-150  
Wingfield  
Road North  
Wingfield SA 5013

## PROPERTY

Level 1, 162  
Fullarton Road,  
Rose Park SA 5067

## ENERGY

Level 1, 162  
Fullarton Road,  
Rose Park SA 5067

## SOUTHERN WASTE RESOURCECO

McLAREN VALE  
2605 Main  
South Road  
McLaren Vale  
SA 5171

LONSDALE  
Onkaparinga  
Eco Precinct  
19 Christie Road  
Lonsdale SA 5160

TATACHILLA  
Southern Corner  
of Tatchilla and  
Main South Roads  
McLaren Vale  
SA 5171

HARTLEY  
North  
Bremer Road  
Hartley SA 5255

MT COMPASS  
Pambula Road  
Hindmarsh Valley  
SA 5211

## TYRECYCLE

MELBOURNE  
30-56  
Encore Avenue  
Somerton  
VIC 3062

ADELAIDE  
8 Meyer Road  
Lonsdale SA 5160

BRISBANE  
Lot 1  
Gypsum Drive  
Redbank Plains  
QLD 4301

SYDNEY  
81/85  
Christie Street  
St Marys NSW 2760  
  
36 Stenhouse Drive  
Cameron Park  
NSW 2285

PERTH  
10 Keegan Street  
O'Connor WA 6163

Company  
collections  
number  
(any state):  
1300 829 253

Factory 2  
2 England Street  
Dandenong  
VIC 3175

## SUEZ-RESOURCECO

WINGFIELD  
Lot 246  
Wilkins Road  
Wingfield SA 5013

HAMPTON PARK  
Hampton Park  
Resource  
Recovery Facility  
274 Hallam Road  
Hampton Park  
VIC 3976

WETHERILL PARK  
35-37 Frank Street  
Wetherill Park  
NSW 2164

## CLEANAWAY RESOURCECO

☎ **1300 696 733**  
✉ [enquiries@resourceco.com.au](mailto:enquiries@resourceco.com.au)  
🌐 [resourceco.com.au](http://resourceco.com.au)

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