

Standard Specification for Low Carbon Concrete using iron and steel slags!

National Slag Association

Annual Meeting 2022 - September 18th - 21st









Precursor:
GGBFS
Fly ash



Activator



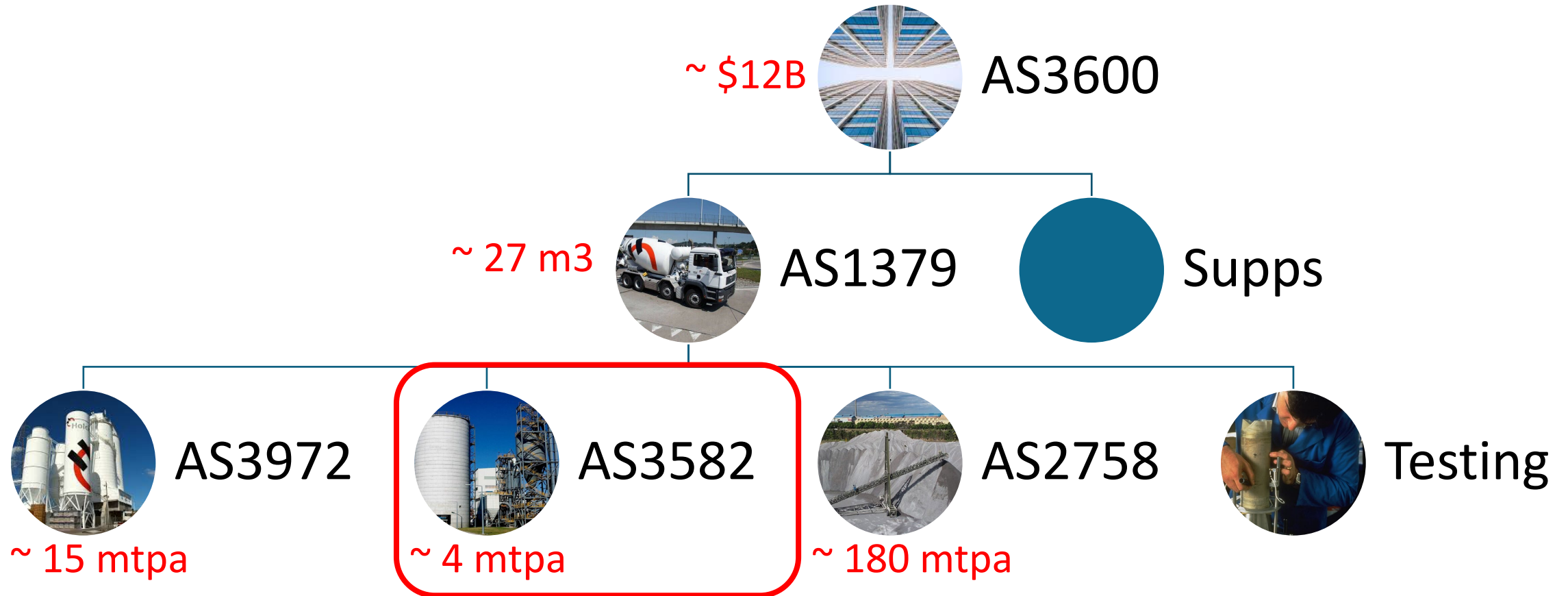
Aggregate

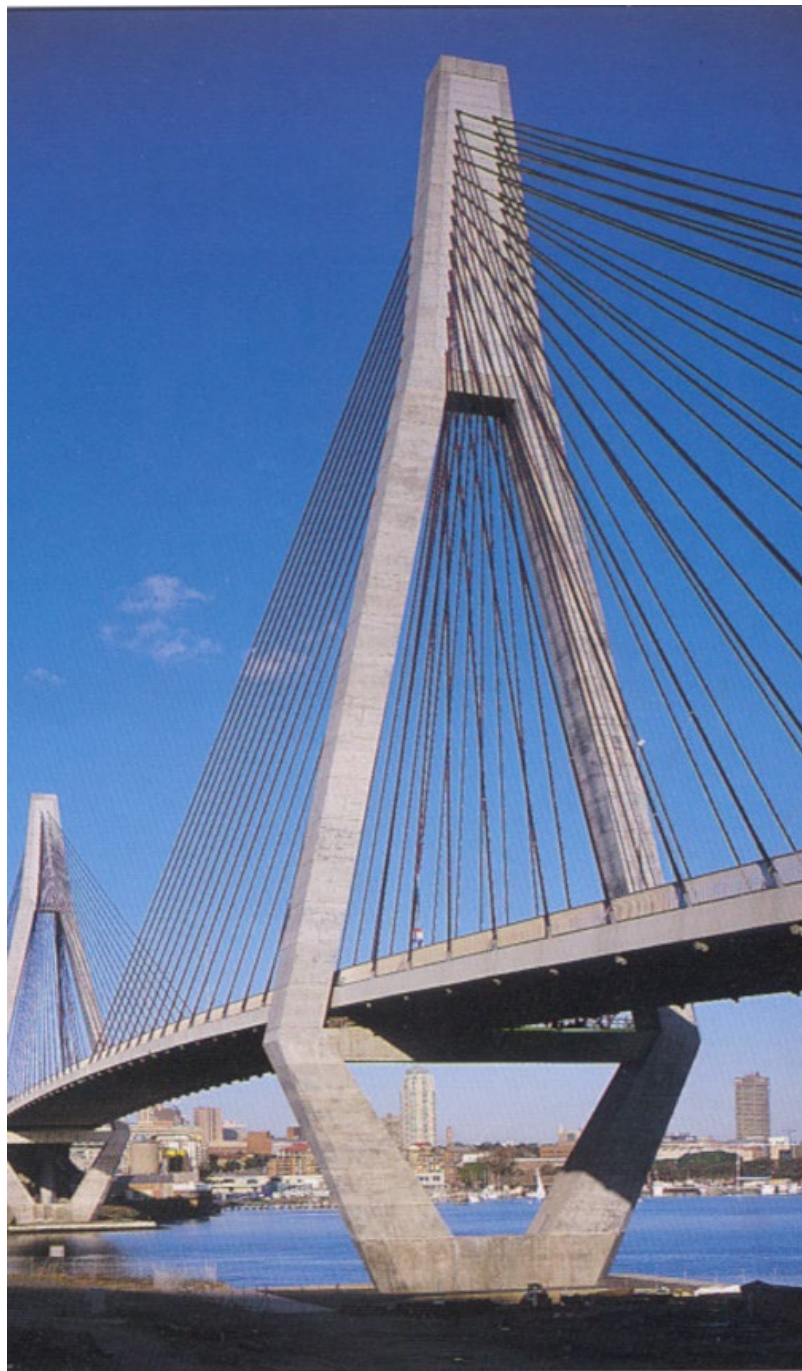


Geopolymer
concrete

No Portland Cement

Standards for Concrete







Apoza
AUSTRALASIAN
POZZOLAN
ASSOCIATION



**Ash Development
Association of Australia**

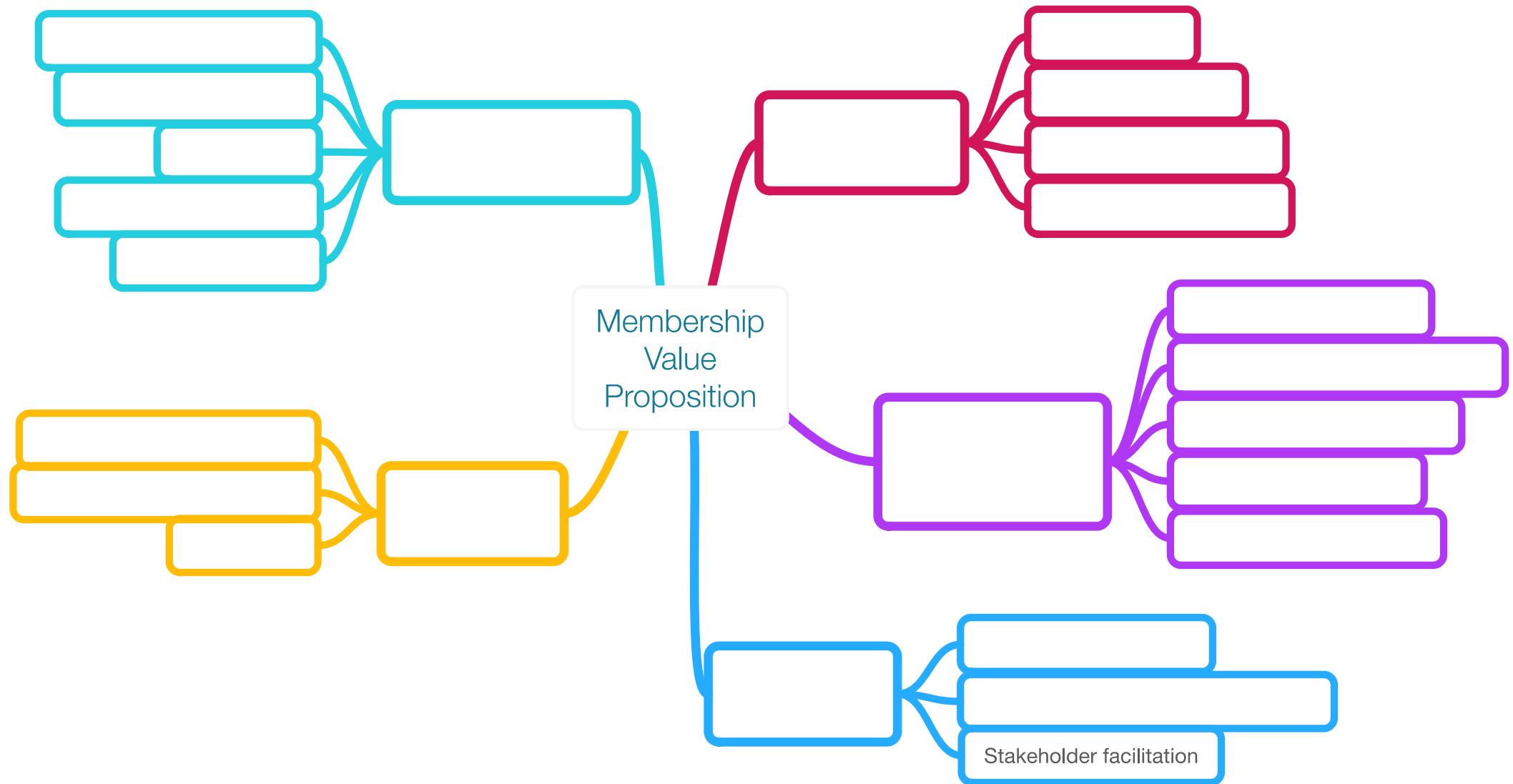


**FUTURE
BATTERY
INDUSTRIES** CRC



Who we are...

- Formation 1990 – (32 yrs young)
 - Major steel and cement manufacturers
 - Support local market development of iron & steel slags
- Objectives -
 - Advise and inform government's
 - Build environmental awareness
 - Achieve user, stakeholder and community, acceptance
 - Change perception of slag – its not a “waste”
 - Increase recognition of slag as a valued material and part of circular economy





Australasian (iron and steel) Slag Association Inc.

Membership Annual Survey Results

January to December 2020

Prepared by
HBM Group Pty Ltd

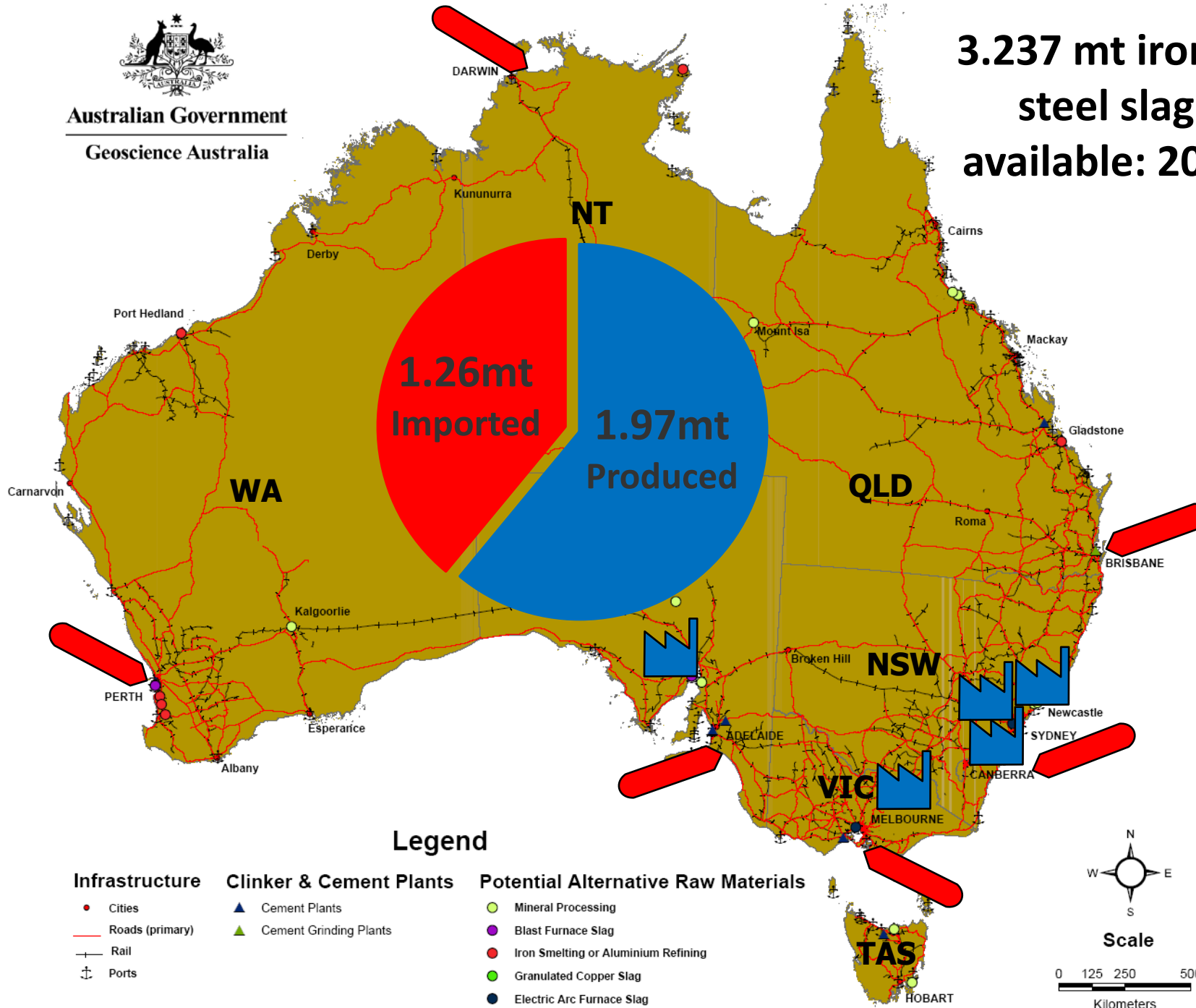
Ed: 1	Australasian (iron & steel) Slag Association Incorporated	Page: 1 of 4
Date: September, 2021		ASA_survey_results_2020.doc

Australasian (iron & steel) Slag Association													
2020 Slag Production & Sales Survey													
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A1. Total Produced in 2020 (Jan-Dec)	573,015	529,265	380,134	174,858	41,500	272,303	1,971,075	1,788,244	1,907,509	1,838,842	1,885,481	1,889,246	1,927,688
A2. Total Imported in 2020 (Jan-Dec)		1,266,075					1,266,075	1,066,244	1,107,098	787,630	1,047,918	1,006,980	968,585
A3. Total Stored [not used]	0	0	0	0	0	0	0	0	0	18,453	25,800	0	382,746
A4. Total Removed from Storage during 2020	0	0	0	0	0	0	0	0	55,000	4,794	25,800	0	100,020
SECTION B Auto Calculations							Combined	Combined	Combined	Combined	Combined	Combined	Combined
B2. Total for use in 2020 (Auto calc)	573,015	1,795,340	380,134	174,858	41,500	272,303	3,237,150	2,854,488	3,069,606	2,631,266	2,959,199	2,896,226	2,996,293
SECTION C Use (tonnes)	Slag	BFS	GBFS	SFS	EAFS	KOBM	Other	Combined	Combined	Combined	Combined	Combined	Combined
C1. Cement or Binder products		0	1,660,473	0	0	0	0	1,660,473	1,590,487	1,624,576	1,508,340	1,587,686	1,479,762
C2. Feed stock for Clinker/Glass products		13,335	13,335	60,300	0	0	0	86,970	115,714	88,362	94,878	88,919	126,645
C2. Grit Blasting products		0	0	0	0	0	0	0	0	0	0	0	0
C2. Structural Fills/Embankments		0	0	739	0	0	0	739	3,726	12,502	12,646	14,317	13,260
C2. Road Base/Sub-base		255,113	46,611	0	88,873	0	24,523	415,120	204,382	192,901	321,309	219,432	122,728
C2. Rockwool products		0	0	0	0	0	0	0	0	0	0	0	0
C2. Mineral Fillers (e.g Asphalt)		0	0	0	0	0	0	0	0	0	0	0	0
C2. Agricultural applications		0	0	0	0	0	0	0	0	0	0	275	275
C2. Water treatment/filtration products		0	0	0	0	0	0	0	0	0	0	0	0
C2. Asphalt & Concrete Aggregates		132,230	0	73,090	0	0	0	205,320	277,932	299,225	347,549	301,429	335,347
C3. Mining Applications		0	0	0	0	0	0	0	0	0	0	0	0
C3. Waste Stabilisation/Solidification		0	0	0	0	0	0	0	0	0	0	0	0
C3. Miscellaneous/Other		21,621	27,033	77,262	0	0	0	125,916	119,604	154,446	236,523	236,198	294,965
SECTION D Summary Results		BFS	GBFS	SFS	EAFS	KOBM	Other	Combined	Combined	Combined	Combined	Combined	Combined
D1. Total of all sold in 2020 (Auto calc)		422,299	1,747,451	211,391	88,873	0	24,523	2,494,538	2,311,844	2,372,012	2,521,245	2,447,981	2,372,982
		73.70%	97.33%	55.61%	50.83%	0.00%	9.01%	77.06%	80.99%	77.27%	94.64%	94.64%	95.06%



Australian Government
Geoscience Australia

3.237 mt iron &
steel slag
available: 2020

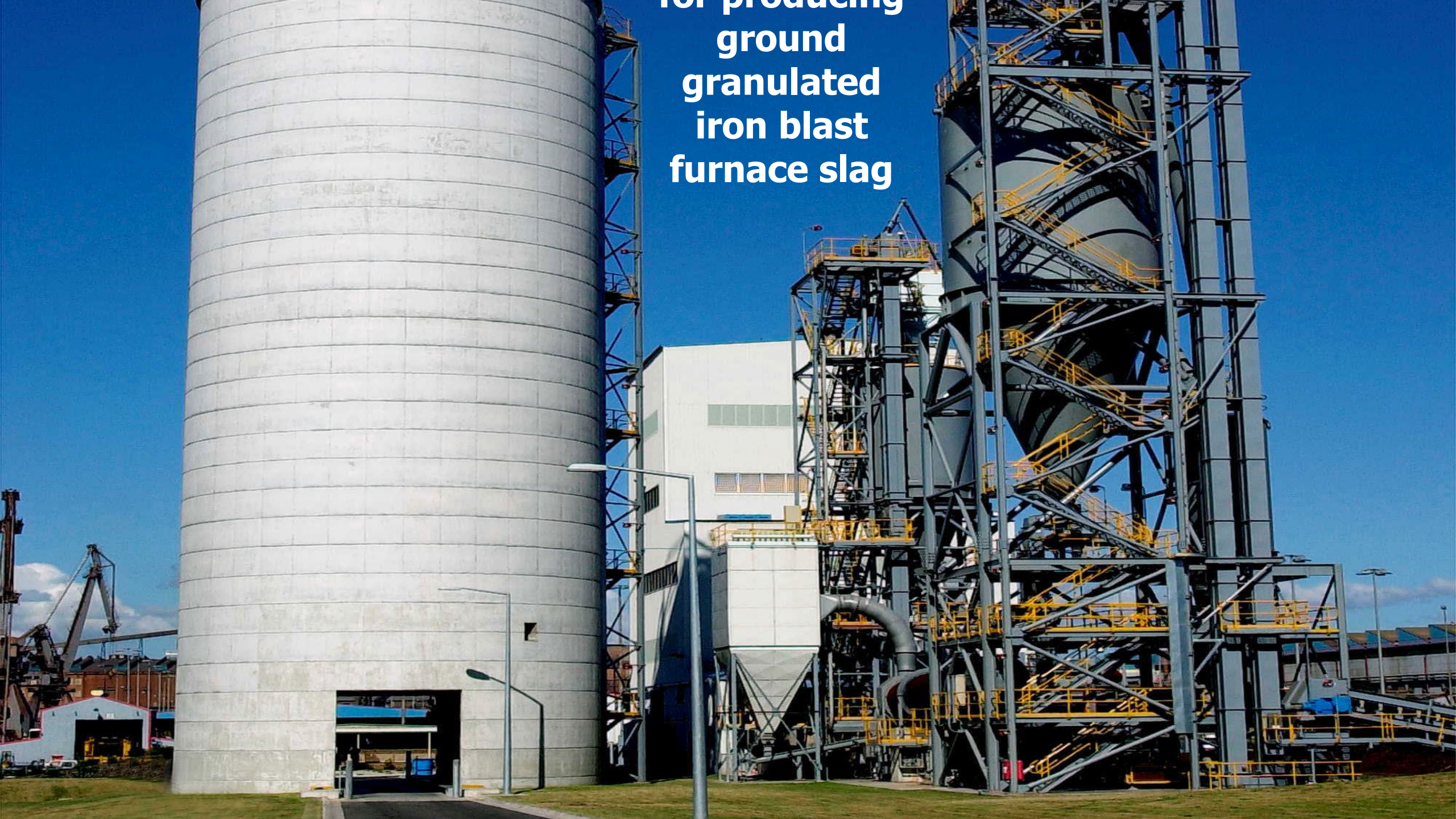


Australasian (iron & steel) Slag Association

2020 Slag Production & Sales Survey

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C2. Feed stock for Clinker/Glass products	13,335	13,335	60,300	0	0	0	86,970	115,714	88,362	94,878	88,919	126,645	56,154
C2. Grit Blasting products	0	0	0	0	0	0	0	0	0	0	0	0	0
C2. Structural Fills/Embankments	0	0	739	0	0	0	739	3,726	12,502	12,646	14,317	13,260	13,260
C2. Road Base/Sub-base	255,113	46,611	0	88,873	0	24,523	415,120	204,382	192,901	321,309	219,432	122,728	122,728
C2. Rockwool products	0	0	0	0	0	0	0	0	0	0	0	0	0
C2. Mineral Fillers (e.g Asphalt)	0	0	0	0	0	0	0	0	0	0	0	0	0
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C3. Waste Stabilisation/Solidification	0	0	0	0	0	0	0	0	0	0	0	0	0
C3. Miscellaneous/Other	21,621	27,033	77,262	0	0	0	125,916	119,604	154,446	236,523	236,198	294,965	294,965
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	73.70%	97.33%	55.61%	50.83%	0.00%	9.01%	77.06%	80.99%	77.27%	94.64%	94.64%	95.06%	89.70%

**for producing
ground
granulated
iron blast
furnace slag**



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**Imported
Granulated
Iron Blast
Furnace Slag
being
unloaded**

An aerial photograph of a large cargo ship named "Pacific Basin" docked at a port. The ship has a blue hull and a red upper section. Four yellow cranes are positioned on the deck, and a yellow container is being lifted. The ship is moored at a concrete pier with various vehicles and equipment. In the background, a city skyline is visible across the water, and a tall white tower stands on the shore. The sky is blue with scattered clouds.

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Key features of ISS products

- Co-product of iron and steel manufacture process
- Dedicated, separate processing w/ high consistency
 - Iron Blast Furnace Slag (BFS/GBFS)
 - Steel Furnace Slag (SFS/EAF)



Innovation Journey towards new Standards



Precursor:
GGBFS
Fly ash



Activator

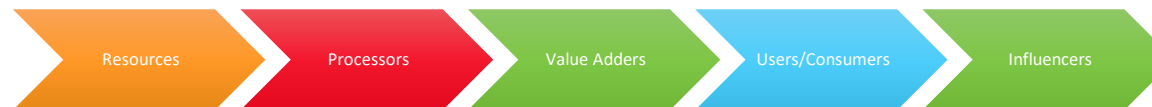


Aggregate



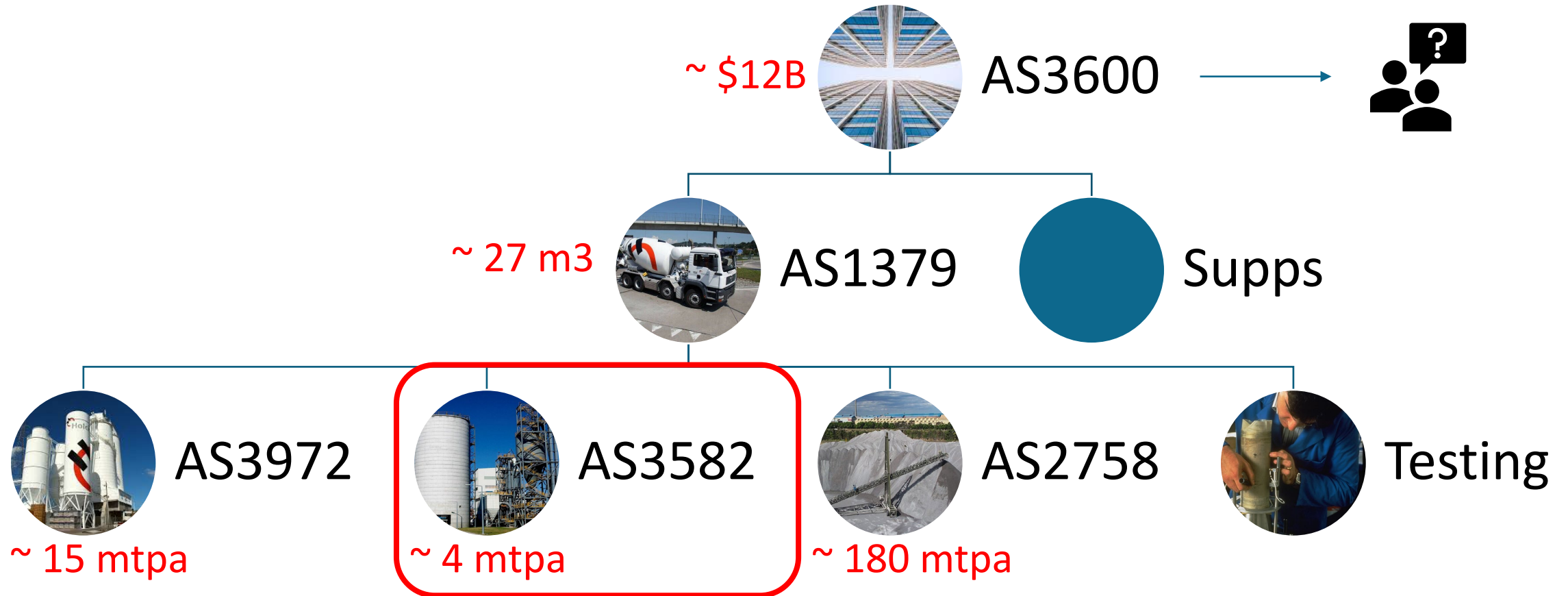
Geopolymer
concrete

No Portland Cement



Issues	Rank					
Standards/Codes	1	Yes	Yes	Yes	Yes	Yes
Economics	2	Yes	Yes	Yes	Yes	Yes
Variability	3	Yes	Yes	??	No	Yes
Durability	4	No	No	Yes	Yes	Yes
Placing & Finishing	5	No	Yes	Yes	??	Yes
Manufacturing	6	No	Yes	Yes	No	No

Standards for Concrete











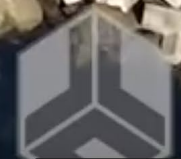
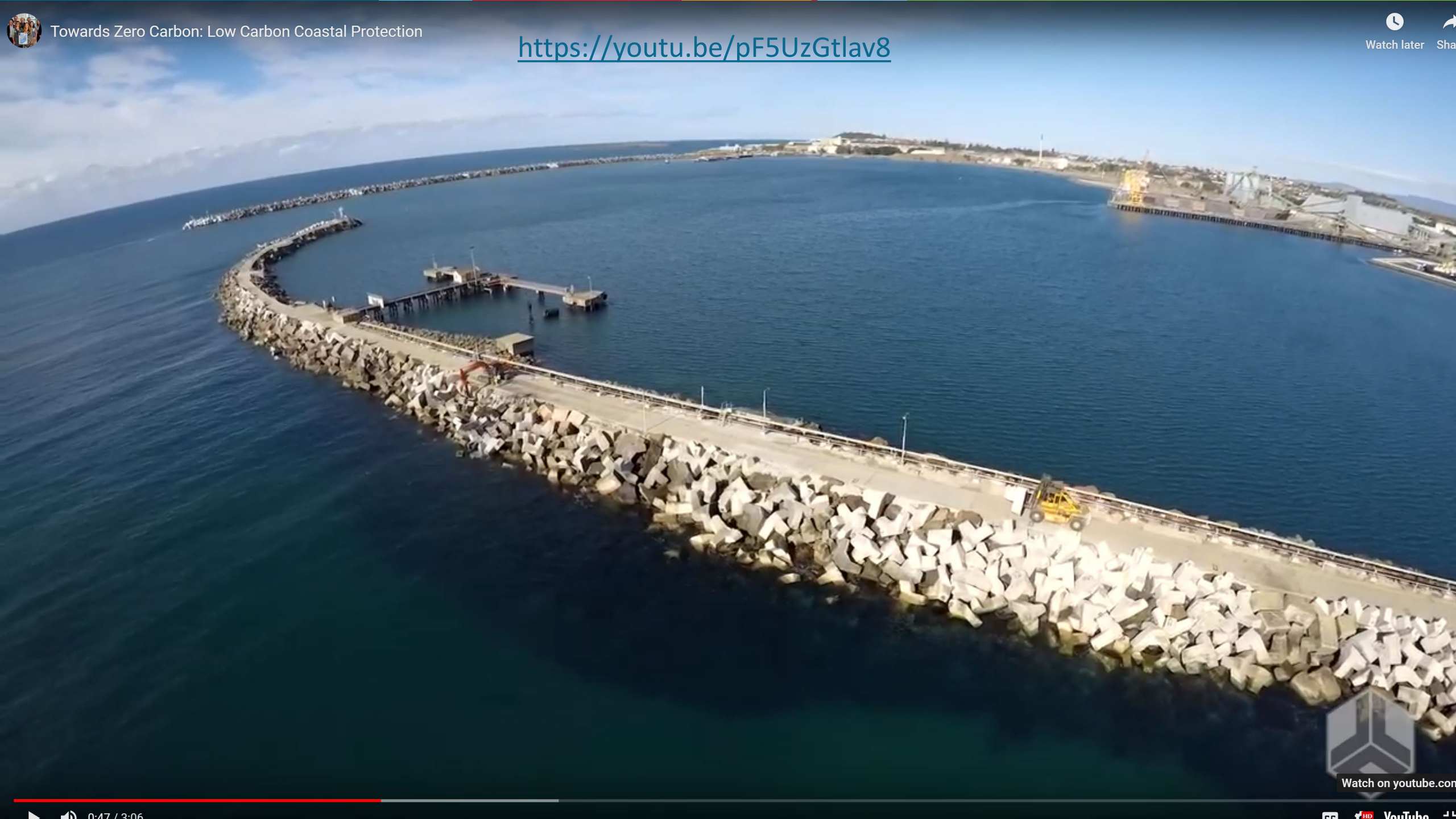
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Watch later



Share



Watch on youtube.com



0:47 / 3:06



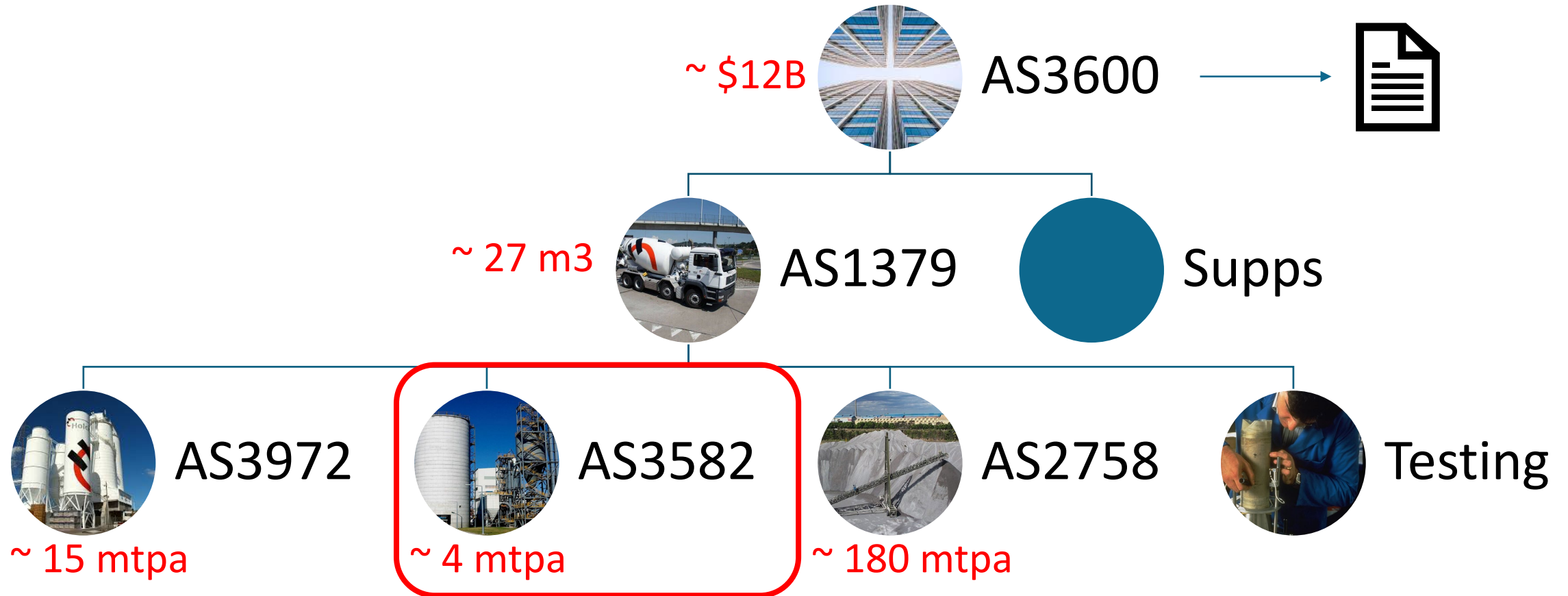
YouTube







Standards for Concrete



Conclusions

- Low carbon concretes are quickly becoming main-stream
- SCM's will play major role in achieving lower emission concretes
- Standards/ Specifications remain a key enabler for change and uptake



Thank you,
welcome any
questions you
may have

E: cheidrich@asa-inc.org.au