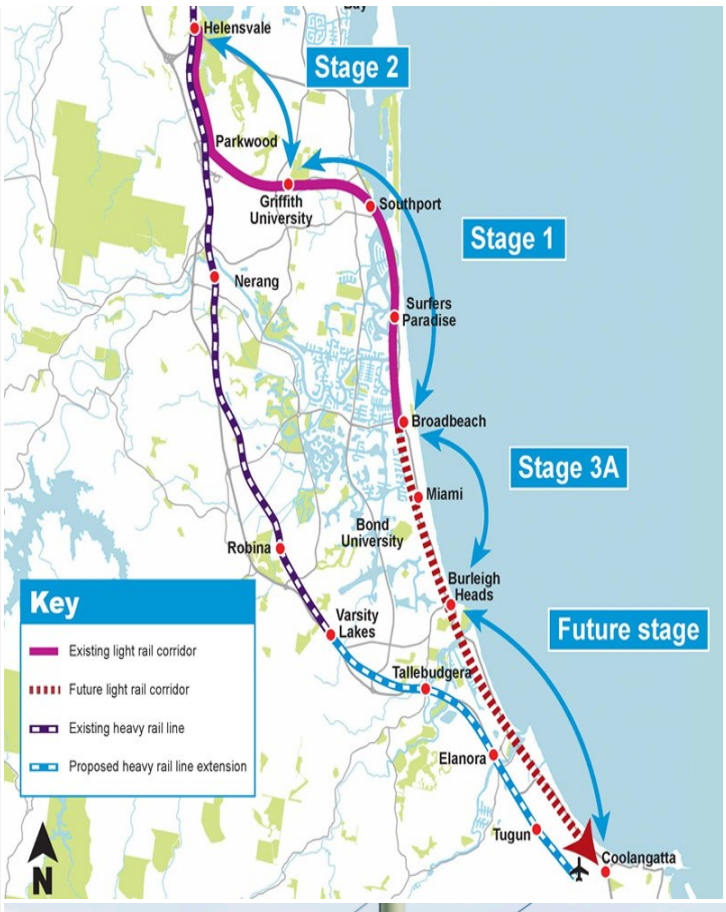
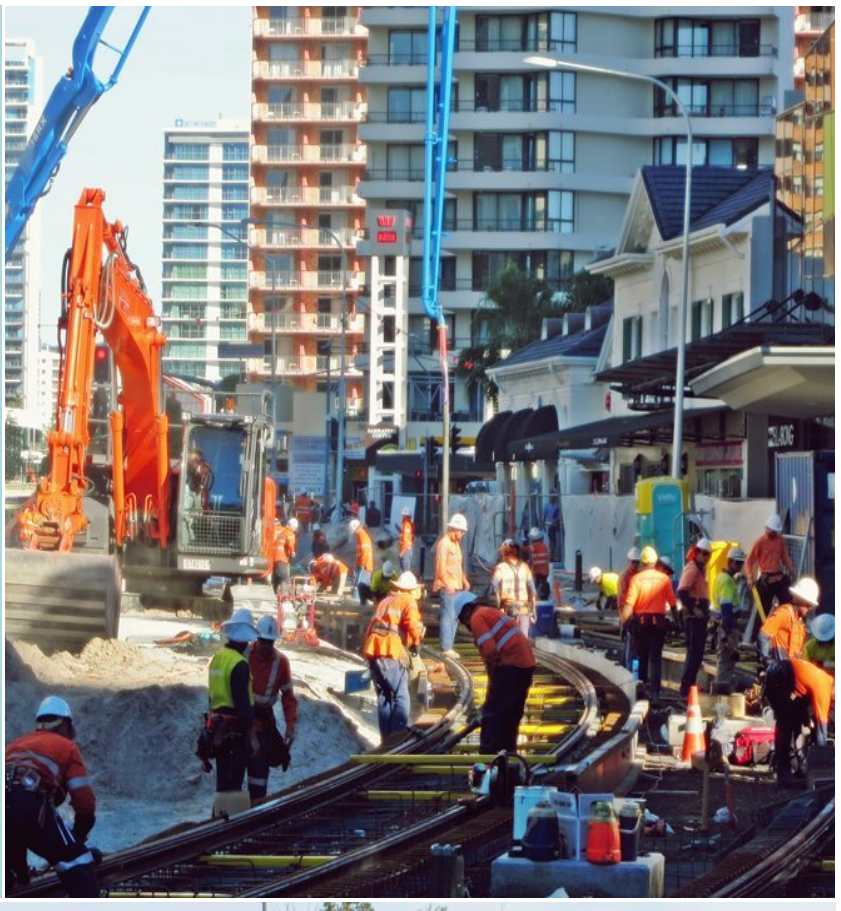
i3d3 RANKING	23	Gold Coast Light Rail (GCLR) Stage 1 and 2

CONSEQUENCES	Project Initiate	Project Implement	Project Influence	Score (%)
Financial (long life)	10	0	31	**14**
Social (loose fit)	43	0	25	**23**
Ethical (least pain)	32	0	45	**26**
Environmental (low energy)	25	22	38	**28**
Score (%)	**28**	**5**	**35**	**23**

The Gold Coast Light Rail (GCLR) project comprises at least four stages of dual track connecting Helensvale in the north to Coolangatta in the south. Stage 1 and 2 are complete and in operation. Stage 3A will commence construction in 2021 and Stage 3B is likely to follow immediately after. The total distance of dual track is expected to be 42 kilometres (km). The length of each stage is 13km, 7.3km, 6.7km and 15km respectively. The likely cost of these four stages is around $4 billion. There are also plans to construct some east-west spur lines including services to Nerang and Robina heavy rail stations. Stage 1 was designed to carry 50,000 passengers per day with a capacity up to 75,000 passengers per day, with 16 stations and an initial budget of $1.6 billion. The method of procurement is Operator Franchise Public Private Partnership, involving collaboration of the Commonwealth, State and Municipal governments. Different design consultants and main contractors have been selected for each stage, but it has been a deliberate strategy to focus on local workers and suppliers as much as possible. Stage 1 pre-works commenced in 2010 and this stage was handed over in July 2014. Stage 2 had its business case approved in August 2015 and was open to the public in December 2017. Stage 3A is expected to begin construction in January 2021 and be completed 40 months later. Stage 3B may be finished in 2024, although it is the more difficult stage and likely to be a higher cost/km than earlier work. GCLR is serviced by Keolis Downer and managed by GoldlinQ Pty Ltd on behalf of government. The project is recognized as a world class public transport system and its patronage has grown by 47% since July 2014. Stage 2 had to be finished before the 2018 Commonwealth Games held in April 2018.





<u>i3d3 ranking</u>

Success is measured on a scale of -100 to +100, where the border of success and fail is set at zero. The above table shows success according to project phases and consequences. Each value in this table is assigned equal weight. Light red shaded cells are problems. Success can be a surrogate for wider project 'quality'.

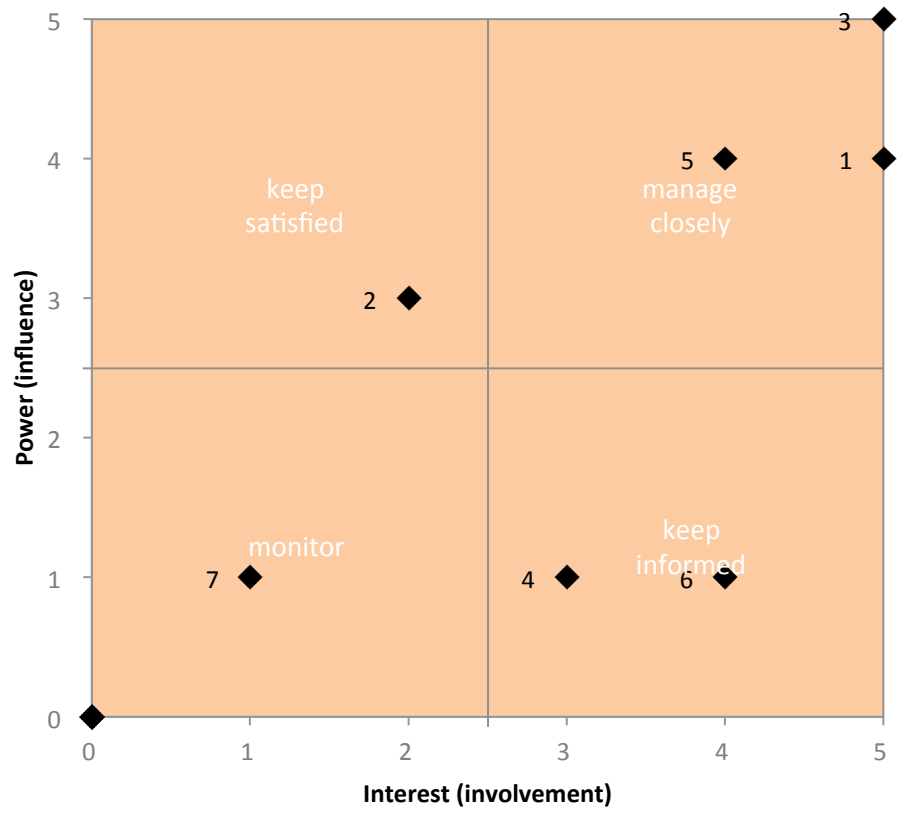
NET BENEFIT	24	Gold Coast Light Rail (GCLR) Stage 1 and 2

BENEFIT REALIZATION	winners 7	losers 0

Stakeholders:

	stakeholder ID#	power 1-5	interest 1-5	expected value (%)
Owner/sponsor	1	4.0	5.0	10
Local community	2	3.0	2.0	43
Shareholders/authorities	3	5.0	5.0	32
Environmentalists	4	1.0	3.0	25
Project team	5	4.0	4.0	5
Client/end-user	6	1.0	4.0	35
Wider society	7	1.0	1.0	20
	8			
	9			
	10			
	11			
	12			

key: 1=minimal 2=low 3=moderate 4=high 5=extreme

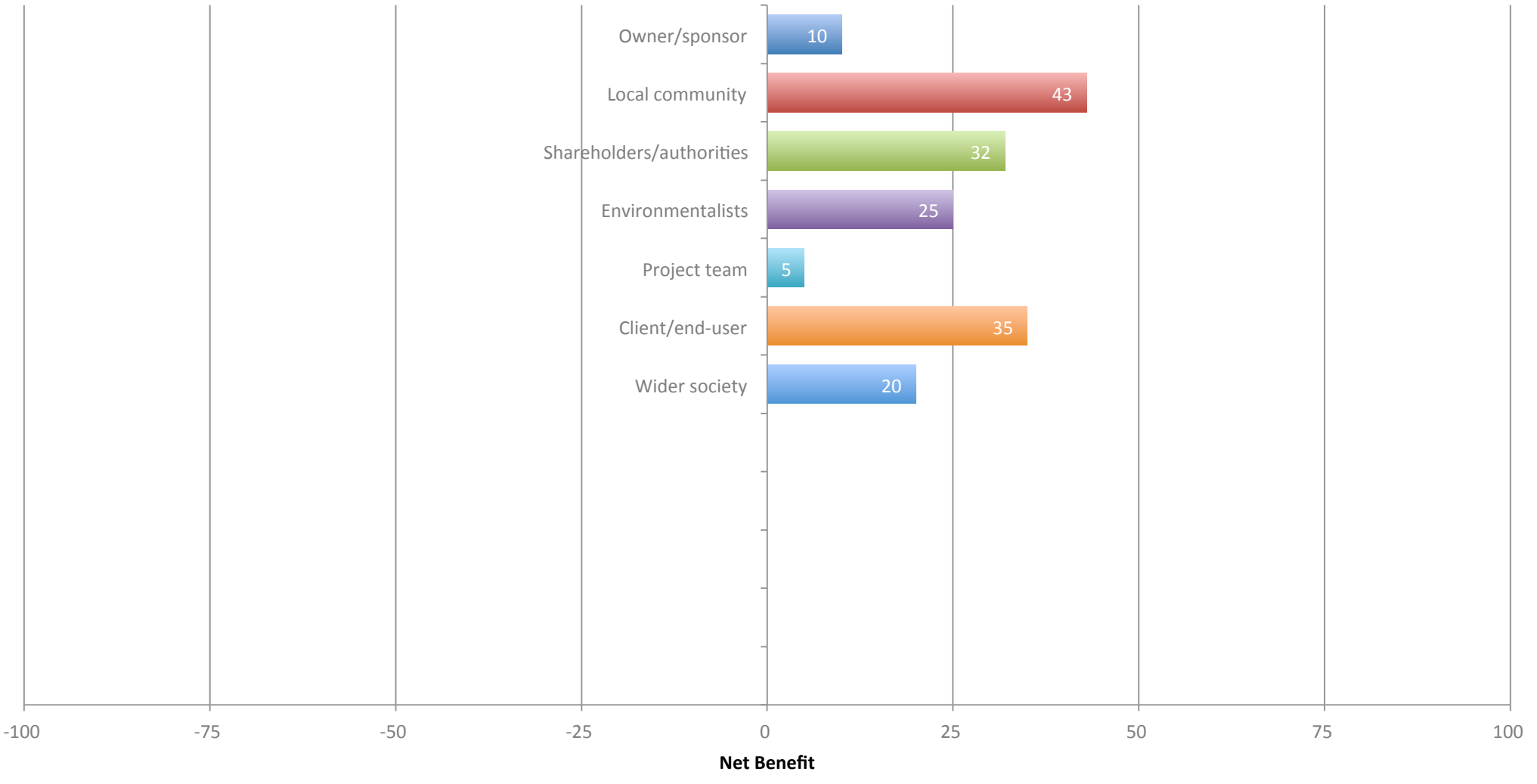


Benefit Register:

	benefit ID#	T/I	D/I	P/E	S/M/L	stakeholder ID#	expected value (%)	realized? Y/N	comments
BCR success score (design) > 0	1	T	D	P	L	1	10	Y	
LPS success score (design) > 0	2	T	D	P	L	2	43	Y	Support inferred from Stage 3A survey data
RAR success score (design) > 0	3	T/I	I	P/E	L	3	32	Y	
EFP success score (design) > 0	4	T/I	I	P	L	4	25	Y	
PDS success score (deliver) > 0	5	T	D	P	M	5	5	Y	All risks were borne by the contractors
EUS success score (delight) > 0	6	T	I	E	S	6	35	Y	
SDG humanity index > 0	7	I	I	E	L	7	20	Y	
	8								
	9								
	10								
	11								
	12								

key: tangible / intangible; direct / indirect; planned / emergent; short term / medium term / long term

mean = 24%



HUMANITY INDEX	20	Gold Coast Light Rail (GCLR) Stage 1 and 2

UNITED NATIONS SUSTAINABLE DEVELOPMENT GOAL (SDG) CONTRIBUTIONS		benefit justification

Financial: 0

investments in infrastructure are crucial to achieving sustainable development

not eligible 9

Not applicable.

Social: 0

not eligible

Not applicable.

Ethical: 0

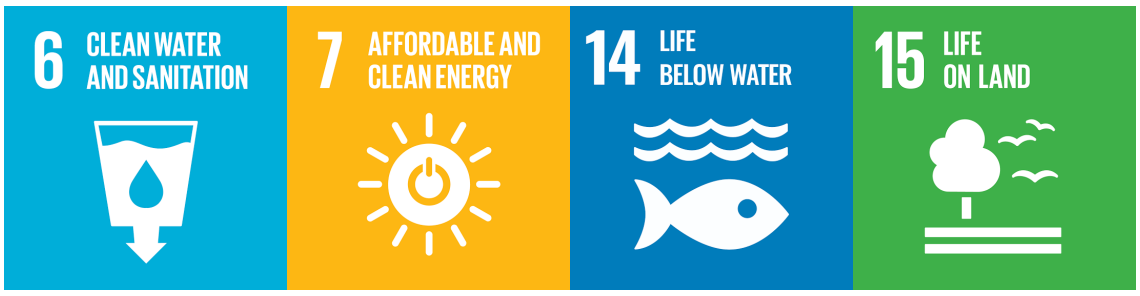
climate change is a global challenge that affects everyone, everywhere

not eligible 13

Not applicable.

Environmental: 20

sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss



not eligible 15

Not applicable.

revitalize the global partnership for sustainable development

enter SDG#17* here > 17

*this SDG is only available when the complexity score (delivery) is 12 or more

This project relies on continuing community patronage as well as financial support from all levels of government

DESIGN (DSS) 28 — Gold Coast Light Rail (GCLR) Stage 1 and 2

SUCCESS FACTOR — feasible 10 — useable 43 — achievable 32 — sustainable 25

Profit:

Benefit-cost ratio (BCR) **1.0997**

year	benefit	discounted benefit	cost	discounted cost
0		-	170	170
1		-	250	240
2		-	300	277
3		-	300	267
4	75	64	100	85
5	80	66	5	4
6	85	67	210	166
7	90	68	210	160
8	95	69	5	4
9	100	70	5	4
10	105	71	5	3
11	110	71	5	3
12	115	72	5	3
13	120	72	5	3
14	120	69	5	3
15	120	67	5	3
16	120	64	5	3
17	120	62	5	3
18	120	59	5	2
19	120	57	5	2
20	120	55	5	2
21	120	53	5	2
22	120	51	5	2
23	120	49	5	2
24	120	47	5	2
25	120	45	5	2
26	120	43	5	2
27	120	42	5	2
28	120	40	5	2
29	120	38	5	2
30	120	37	5	2
		1,568		1,426

discount 4.00 %
currency AUD million

assume BCR (override)

Notes
- Benefits and costs should exclude intangible cash flows
- Discount rate is net of inflation (i.e. real discount rate)
- Cash flows are expressed in Year 0 terms
- BCR can be entered directly using 'assume BCR' cell
- BCR modelled on Stage 3A business case (BCR=1.1)
- AUD170 million in pre-construction works (Year 0)
- Operation and maintenance contract for 15 years is part of PPP agreement
- Passenger growth assumed for 10 years

People:

Statement: *I support this proposed project*

Local project support (LPS) **0.8690**

strongly disagree	disagree	no opinion	agree	strongly agree	responses
229	163	221	576	953	2,142

sample 2,142
return rate 100%

Politics:

Risk and reward (RAR) **1.3226**

ID	reward (opportunities) - * must complete 5	probability 1-3	consequence 1-3	risk level 1-9
A*	Prioritize local jobs and local workers	3	2	6
B*	Contribute to sustainable and liveable urban areas	3	3	9
C*	Critical 2018 Commonwealth Games infrastructure	3	2	6
D*	Reduce traffic congestion	2	2	4
E*	Encourage greater public transport patronage	2	3	6
F	Improved air quality	3	2	6
G	Consolidated land use for future population growth	2	2	4
			mean	5.86

ID	risk (threats) - * must complete 5	probability 1-3	consequence 1-3	risk level 1-9
A*	Loss of on-street parking in some areas	2	1	2
B*	Major disruption during construction period	2	3	6
C*	Relocation of underground services	3	2	6
D*	Contaminated ground remediation works	2	2	4
E*	Danger to construction workers from local traffic	2	3	6
F	Land acquisition costs	2	2	4
G	Noise and dust pollution	3	1	3
			mean	4.43

Planet:

Ecological footprint (EFP) **15.0000**

environmental categories (impacts)	extreme (0 stars)	high (1 star)	moderate (2 stars)	low (3 stars)	minimal (4 stars)	regenerative (5 stars)
non-renewable energy demand (embodied carbon)		Y				
water quality impacts				Y		
air pollution				Y		
natural resource depletion				Y		
biodiversity loss				Y		
non-degradable or non-recyclable waste to landfill			Y			
	0	1	1	4	0	0

DELIVER (PDS)	5	Gold Coast Light Rail (GCLR) Stage 1 and 2

SUCCESS FACTOR	within budget	0	on schedule	0	as specified	0	no surprises	22

Cost:

	planned	actual		change
Construction cost (AUD millions)	1,620.00	1,620.00	✔	0.00%

Time:

Work on site (months)	48.00	48.00	✔	0.00%

Scope:

Length of dual track (km)	20.30	20.30	✔	0.00%

Risk:

√ mean risk level (1-3)	2.45	2.32	✔	-5.13%

Planned risk events

Probability and consequence are assessed after any mitigation strategies have been included in scope, cost and time estimates

ID	risk event - * must complete 5	planned probability 1-3	planned consequence 1-3	planned risk level 1-9
A*	Discovery of unidentified underground services	3	2	6
B*	Unexpected latent ground conditions requiring remediation	3	2	6
C*	Danger to workers from road users	2	3	6
D*	Noise and dust complaints	3	1	3
E*	Contractual risk (cost, time, reputation, weather)	3	3	9
F				
G				
H				
I				
J				
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				
			√ mean	2.45

Actual risk events

Consequence is determined based on final project outcomes, and should include any unanticipated risk events

ID	risk event - * must complete 5	actual probability 1-3	actual consequence 1-3	actual risk level 1-9
A*	Discovery of unidentified underground services	3	3	9
B*	Unexpected latent ground conditions requiring remediation	3	2	6
C*	Danger to workers from road users	3	1	3
D*	Noise and dust complaints	3	1	3
E*	Contractual risk (cost, time, reputation, weather)	3	2	6
F		-		
G		-		
H		-		
I		-		
J		-		
K		-		
L		-		
M		-		
N		-		
O		-		
P		-		
Q		-		
R		-		
S		-		
T		-		
			√ mean	2.32

KPIs

-100 ≤ PDS ≤ 100

		change
value (scope/cost)	✔	0.00%
efficiency (cost/time)	✔	0.00%
speed (scope/time)	✔	0.00%
innovation (risk/cost)		-5.13%
complication (time/risk)	✔	5.41%
impact (scope/risk)	✔	5.41%
profit ($scope^2/cost^2$)	✔	0.00%
people ($scope^2/time^2$)	✔	0.00%
planet ($scope^2/risk^2$)	✔	11.11%
progress (TBL mean)	✔	3.70%

COMPLEXITY	1-3
12 high	
X: scale	2
Y: uncertainty	2
Z: stakeholders	3

DELIGHT (EUS) 35 Gold Coast Light Rail (GCLR) Stage 1 and 2

SUCCESS FACTOR	desirable	31	adaptable	25	practicable	45	serviceable	38

Attractiveness:

	mean	influence
Nice to look at?	2.84	
High quality?	3.73	
Profitable?	2.01	
Well-designed?	2.41	
Valuable?	3.20	
Prestigious?	1.76	
Durable?	3.18	
Popular?	3.22	
Joyful?	1.95	
Unique?	1.07	
User-defined …	1.40	
User-defined …	1.17	
	2.33	20.85%

Flexibility:

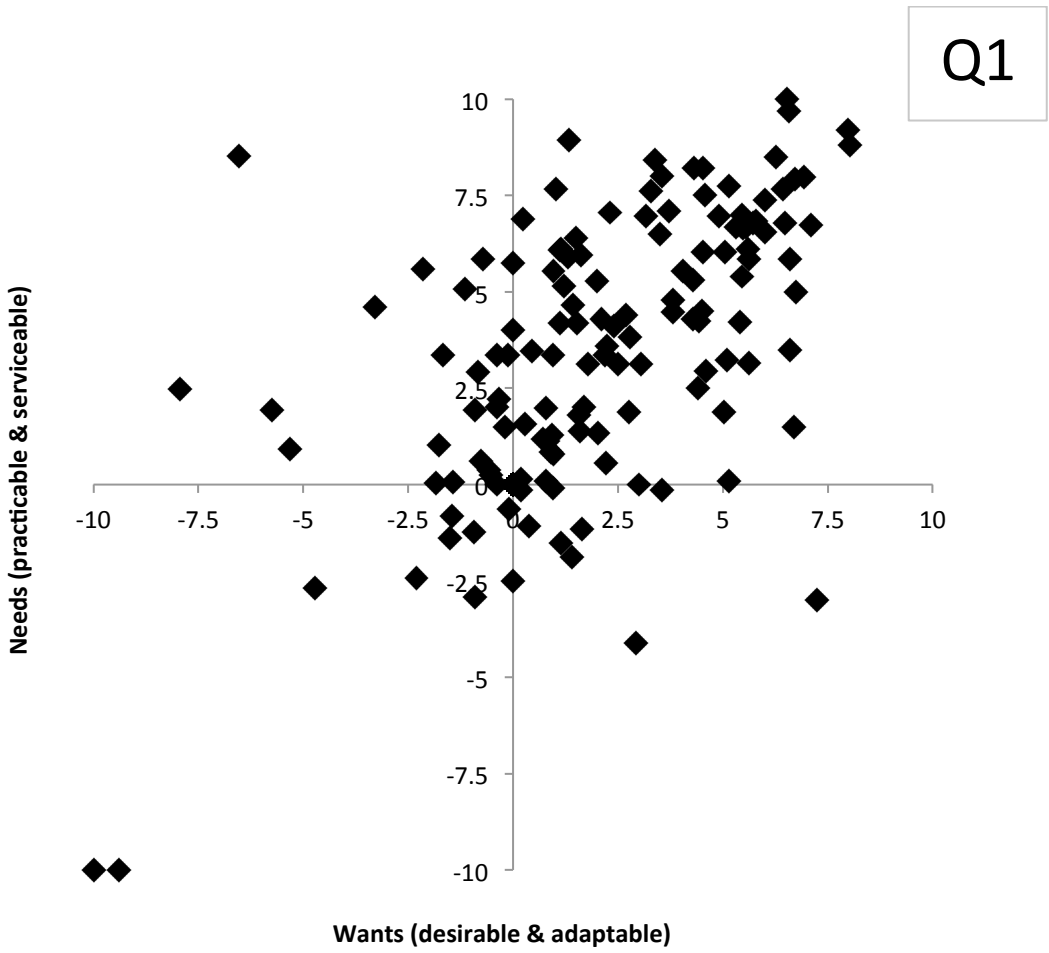
	mean	
Versatile?	2.29	
Easily modified?	1.37	
Able to be customized?	1.48	
Multi-use?	1.67	
Transportable?	1.72	
Better with age?	1.16	
Modular?	1.30	
Scalable?	2.08	
Technically clever?	1.87	
Timeless?	0.97	
User-defined …		
User-defined …		
	1.59	14.25%

Fit for Purpose:

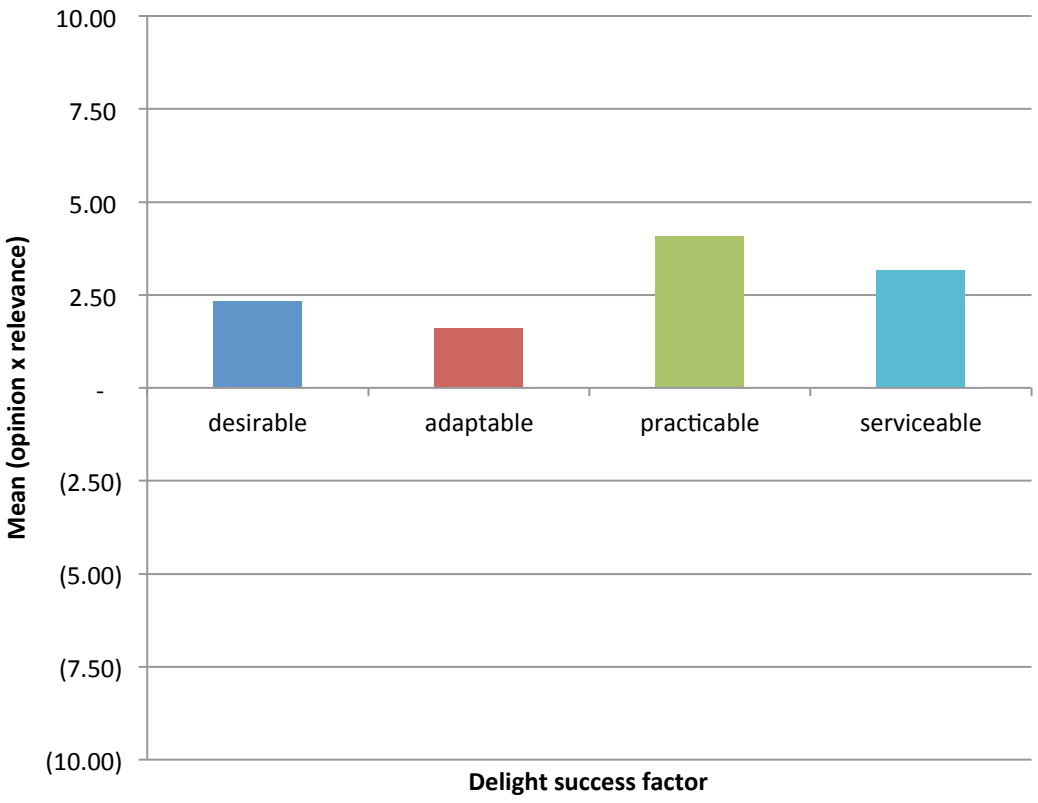
	mean	
Functional?	5.46	
Appropriate?	4.20	
Robust?	4.01	
Safe?	4.55	
Healthy?	3.71	
Problem-solving?	3.77	
Easy to use?	4.05	
Affordable?	3.33	
Comfortable?	4.07	
Ethical?	3.63	
User-defined …		
User-defined …		
	4.08	36.52%

Enduring:

	mean	
Low maintenance?	2.99	
Easily cleaned?	2.73	
Recyclable?	2.44	
Non-toxic?	2.87	
Repairable?	3.84	
Energy efficient?	3.03	
Reliable?	4.12	
Accessible?	3.83	
Regenerative?	3.00	
Habitat-safe?	2.83	
User-defined …		
User-defined …		
	3.17	28.38%
		100.00%



percent Q1	67.39 %
total responses	138



sample	413
return rate	33%
expected delight (LPS)	43%
actual delight (EUS)	35%

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GAPPS Global Alliance for the Project Professions

Instructions

Enter survey responses to the right of this page. Responses are computed as opinion multiplied by relevance, and are in the range -10 to +10. There is provision for 1,000 responses to be entered against each question. Specify the total responses in Cell K38.

Further Information

https://bond.edu.au/cccr
(including latest updates)

Disclaimer

Every attempt has been made to use unbiased evidence-based data (cells with light grey shading) in this study where possible.