

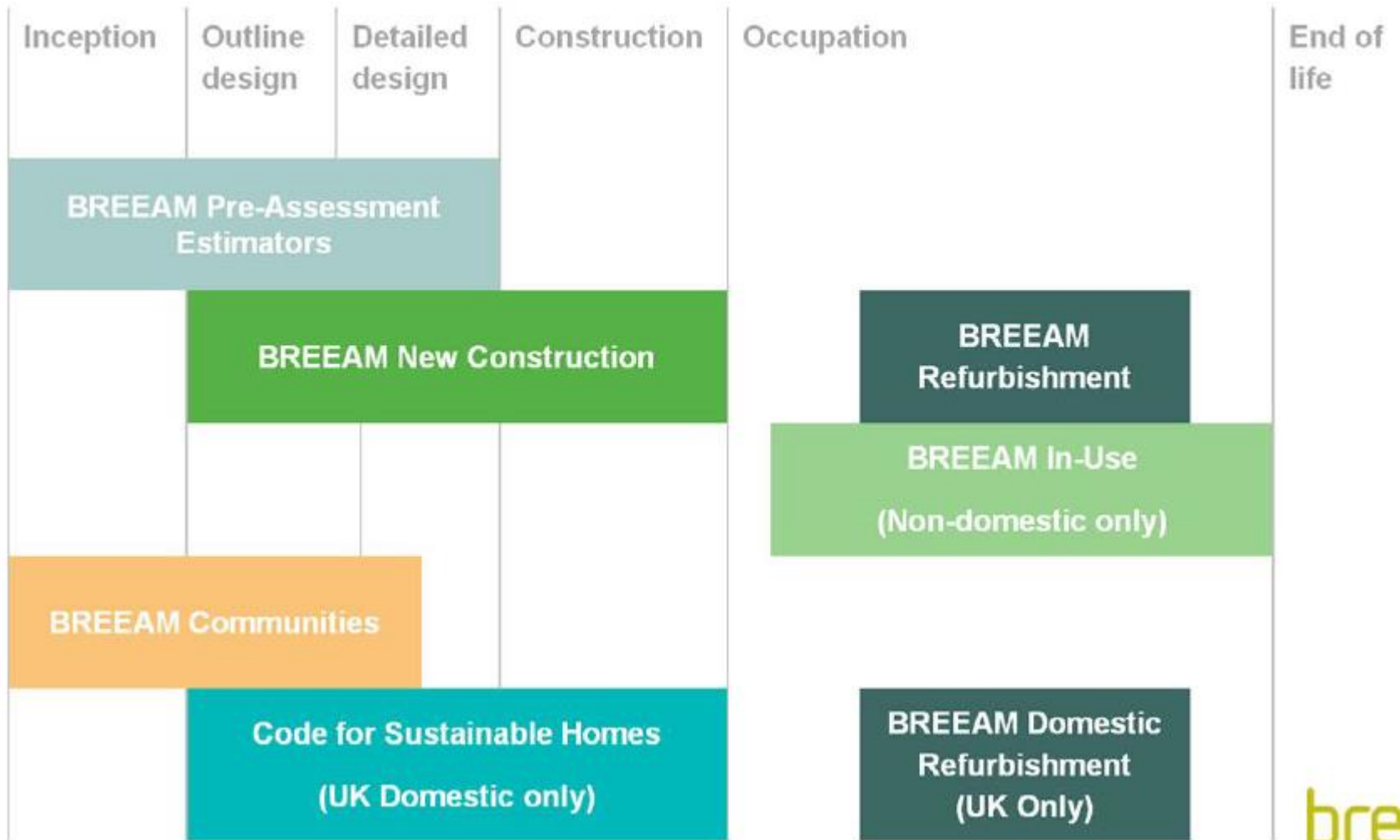


Sustainable buildings and Acoustics

18 April 2018

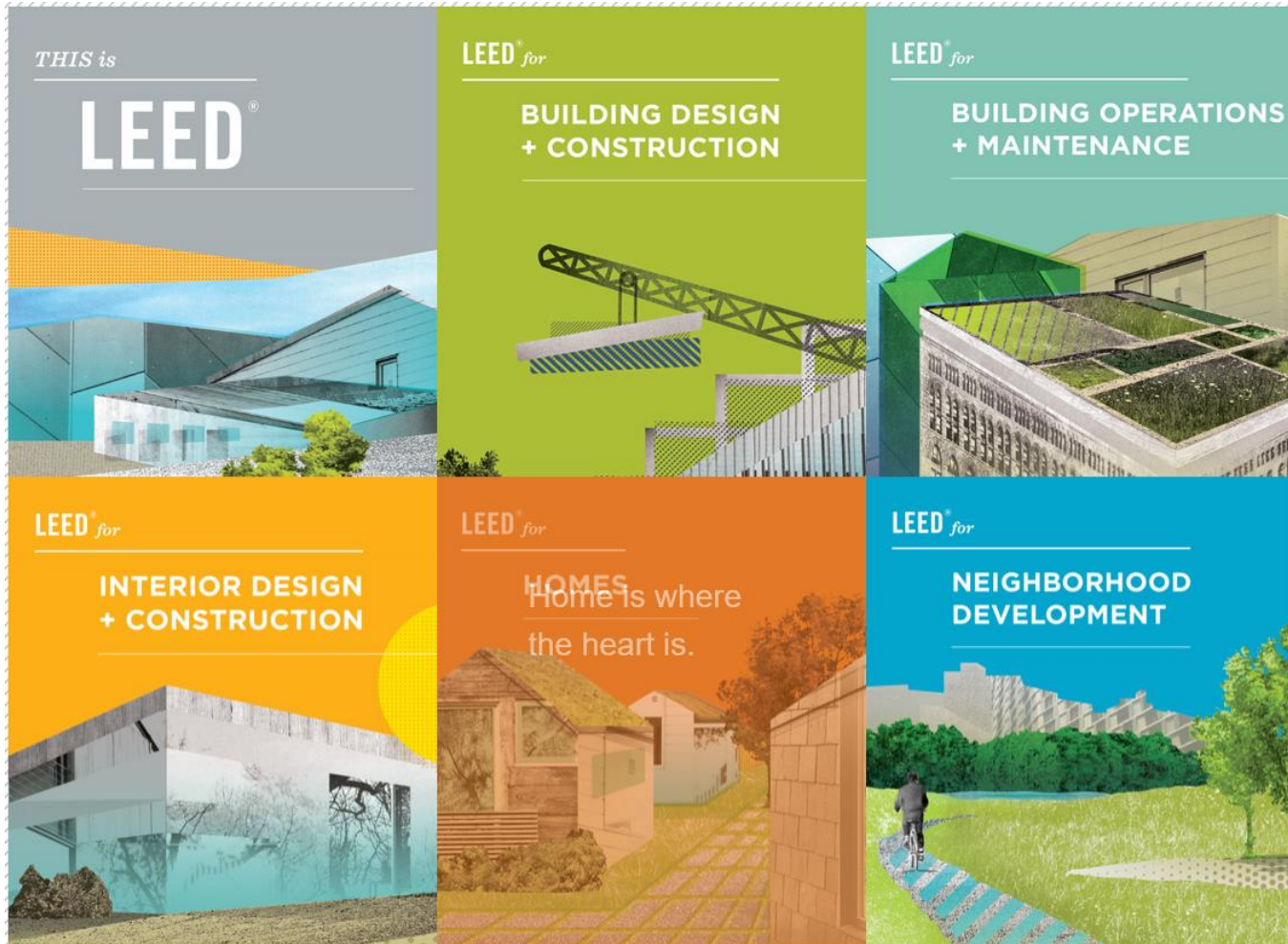


BREEAM Scope



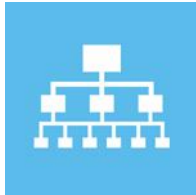


LEED Scope





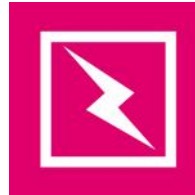
BREEAM assessment issues



Management
MAN



Health and Wellbeing
HEA



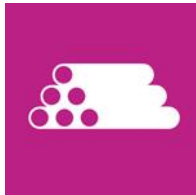
Energy
ENE



Transport
TRA



Water
WAT



Materials
MAT



Waste
WST



Land use and ecology
LE



Pollution
POL



Innovation

LEED Credit Categories





BREEAM Scorecard

	Indicative no. credits available	Indicative no. credits Achieved (detailed approach)	Indicative no. credits Achieved (simple approach)	Indicative contribution to score	Minimum standards level achieved for issue	Additional Minimum standards criteria	
MANAGEMENT							
Man01 Sustainable Procurement	9	4		2.00%	Outstanding	N/A	
Man02 Responsible Construction Practices	2	1		0.52%	Excellent	N/A	
Man03 Construction Site Impacts	5	3		1.57%	N/A	N/A	
Man04 Stakeholder Participation	4	2		1.04%	Pass	Are minimum standards will be achieved? Please select	
Man05 Life cycle cost and service life planning	3	0		0.00%	N/A	N/A	
Total indicative environmental section performance	23	10		5.22%			Note: For an Outstanding rating, the building user information credit must be achieved
HEALTH & WELLBEING							
Hea01 Visual Comfort	4	1		1.00%	Outstanding	Will high frequency ballasts be fitted? Please select	
Hea02 Indoor Air Quality	4	1		1.00%	Outstanding	Will asbestos materials be banned? Please select	
Hea03 Thermal Comfort	2	1		1.00%	N/A	N/A	
Hea04 Water Quality	1	1		1.00%	Outstanding	Will cisterns 1 be met? Please select	
Hea05 Acoustic Performance	2	0		0.00%	N/A	N/A	
Hea06 Safe Access	1	1		2.00%	N/A	N/A	
Hea07 Hazards	1	0		0.00%	N/A	N/A	
Hea08 Private Space	0	0		0.00%	N/A	N/A	
Total indicative environmental section performance	15	5		5.00%			
ENERGY							
Eno01 Energy Efficiency	15	3		2.12%	Very Good	N/A	
Eno02 Energy Assessment	2	1		0.70%	Outstanding	Will the first sub-metering credit be met? Please select	
Eno03 External Lighting	1	1		0.70%	N/A	N/A	
Eno04 Low and Zero Carbon Technology	2	0		0.00%	Very Good	N/A	
Eno05 Energy Efficient Heating System	2	0		0.00%	N/A	N/A	
Eno06 Energy Efficient Transportation System	2	0		0.00%	N/A	N/A	
Eno07 Energy Efficient Laboratory System	N/A	N/A		N/A	N/A	N/A	
Eno08 Energy Efficient Equipment	2	0		0.00%	N/A	N/A	
Eno09 Total Energy	0	N/A		N/A	N/A	N/A	
Total indicative environmental section performance	27	5		3.52%			
TRANSPORT							
Tran01 Public Transport Accessibility	5	0		0.00%	N/A	N/A	
Tran02 Proximity to Amenities	1	0		0.00%	N/A	N/A	
Tran03 Access to main modes of transport	2	0		0.00%	N/A	N/A	
Tran04 Maximum Car Parking Capacity	0	0		N/A	N/A	N/A	
Tran05 Travel Plan	1	0		0.00%	N/A	N/A	
Tran06 Home Office	0	0		0.00%	N/A	N/A	
Total indicative environmental section performance	9	0		0.00%			
WATER							
Wat01 Water Consumption	5	2		1.38%	Outstanding	N/A	
Wat02 Water Monitoring	1	1		0.47%	Outstanding	Meter on the main supply specified? Please select	
Wat03 Water Leak Detection and Prevention	2	0		0.00%	N/A	N/A	
Wat04 Water Efficient Equipment	1	1		0.47%	N/A	N/A	
Total indicative environmental section performance	9	4		2.60%			
MATERIALS							
Mat01 Life Cycle Impact	6	6		6.84%	N/A	N/A	
Mat02 Responsible Sourcing	3	2		2.27%	Outstanding	Will all timber be legally harvested/sourced? Please select	
Mat03 Innovation for Sustainability	1	1		1.94%	N/A	N/A	
Mat04 Optimisation for Sustainability	1	1		1.94%	N/A	N/A	
Total indicative environmental section performance	11	10		11.96%			
WASTE							
Wst01 Construction Waste Management	3	2		3.00%	Outstanding	N/A	
Wst02 Recycled Aggregates	1	0		0.00%	N/A	N/A	
Wst03 Operational Waste	1	0		0.00%	Very Good	N/A	
Wst04 Separation, Store and Collect Evidence	0	N/A		N/A	N/A	N/A	
Total indicative environmental section performance	5	2		3.00%			
LAND USE & ECOLOGY							
LE01 Site Selection	3	0		0.00%	N/A	N/A	
LE02 Ecological Value of Site and Protection of Ecological Features	2	0		0.00%	N/A	N/A	
LE03 Ecological Site Planning	3	0		0.00%	N/A	N/A	
LE04 Local Farm Impact on Biodiversity	2	0		0.00%	N/A	N/A	
LE05 Building Footprint/Residential Density	0	0		0.00%	N/A	N/A	
Total indicative environmental section performance	10	0		0.00%			
POLLUTION							
Poll01 Impact of Refrigeration	4	1		0.71%	N/A	N/A	
Poll02 Air Pollution	3	0		0.00%	N/A	N/A	
Poll03 Surface Water Run-off	5	3		2.36%	N/A	N/A	
Poll04 Reduction of Night Time Light Pollution	1	1		0.71%	N/A	N/A	
Poll05 Noise Mitigation	1	1		0.71%	N/A	N/A	
Total indicative environmental section performance	14	6		4.29%			
INNOVATION							
Inv01 Innovation	10	1		1.00%	N/A	N/A	
Total indicative environmental section performance	10	1		1.00%			

BREEAM Assessment Issues

Indicative no. credits available

MANAGEMENT

Man01 Sustainable Procurement	9
Man02 Responsible Construction Practices	2
Man03 Construction Site Impacts	5
Man04 Stakeholder Participation	4
Man05 Life cycle cost and service life planning	3
Total indicative environmental section performance	23

HEALTH & WELLBEING

Hea01 Visual Comfort	4
Hea02 Indoor Air Quality	4
Hea03 Thermal Comfort	2
Hea04 Water Quality	1
Hea05 Acoustic Performance	2
Hea06 Safe Access	1
Hea07 Hazards	1
Hea08 Private Space	0
Total indicative environmental section performance	15



LEED Scorecard

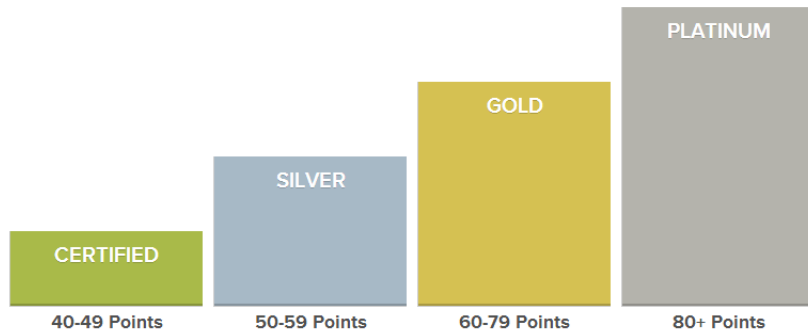
Credit categories	Available	Achieved
Sustainable Sites	26	16
Credit 2 Building Exterior and Hardscape Management Plan	1	1
Credit 3 Integrated Pest Management, Erosion Control, and Landscape Management Plan	1	1
Credit 4 Alternative Commuting Transportation	3 to 15	12
Credit 6 Stormwater Quantity Control	1	1
Credit 7.1 Heat Island Reduction—Non-Roof	1	1
Water Efficiency	14	8
Prereq 1 Minimum Indoor Plumbing Fixture and Fitting Efficiency		
Credit 1 Water Performance Measurement	1 to 2	2
Credit 2 Additional Indoor Plumbing Fixture and Fitting Efficiency	1 to 5	5
Credit 3 Water Efficient Landscaping	1 to 5	1
Energy and Atmosphere	35	18
Prereq 1 Energy Efficiency Best Management Practices		
Prereq 2 Minimum Energy Efficiency Performance		
Prereq 3 Fundamental Refrigerant Management		
Credit 1 Optimize Energy Efficiency Performance	1 to 18	14
Credit 2.1 Existing Building Commissioning—Investigation and Analysis	2	2
Credit 5 Enhanced Refrigerant Management	1	1
Credit 6 Emissions Reduction Reporting	1	1

Credit categories	Available	Achieved
Materials and Resources	10	3
Prereq 1 Sustainable Purchasing Policy		
Prereq 2 Solid Waste Management Policy		
Credit 4 Sustainable Purchasing—Reduced Mercury in Lamps	1	1
Credit 6 Solid Waste Management—Waste Stream Audit	1	1
Credit 8 Solid Waste Management—Durable Goods	1	1
Indoor Environmental Quality	15	9
Prereq 1 Minimum IAQ Performance		
Prereq 2 Environmental Tobacco Smoke (ETS) Control		
Prereq 3 Green Cleaning Policy		
Credit 1.1 Indoor Air Quality Best Management Practices—Indoor Air Quality Management Program	1	1
Credit 1.3 Indoor Air Quality Best Management Practices—Increased Ventilation	1	1
Credit 1.4 Indoor Air Quality Best Management Practices—Reduce Particulates in Air Distribution	1	1
Credit 1.5 Indoor Air Quality Best Management Practices—Facility Alterations and Additions	1	1
Credit 2.1 Occupant Comfort—Occupant Survey	1	1
Credit 2.4 Daylight and Views	1	1
Credit 3.1 Green Cleaning—High Performance Cleaning Program	1	1
Credit 3.2 Green Cleaning—Custodial Effectiveness Assessment	1	1
Credit 3.6 Green Cleaning—Indoor Integrated Pest Management	1	1
Innovation in Operations	6	5
Regional Priority Credits	4	4
Total	110	63



LEED and BREEAM Rating explanations

LEED Rating Levels



- Certified (40-49 points)
- Silver (50-59 points)
- Gold (60-79 points)
- Platinum (80+ points)

BREEAM Assessment Ratings

Assessment score (%)	Assessment rating	Star rating
< 10	Unclassified	-
≥ 10 to <25	Acceptable	★
≥ 25 to <40	Pass	★★
≥ 40 to <55	Good	★★★
≥ 55 to <70	Very Good	★★★★
≥ 70 to <85	Excellent	★★★★★
≥ 85	Outstanding	★★★★★★

BREEAM Rating	% score
OUTSTANDING	≥ 85
EXCELLENT	≥ 70
VERY GOOD	≥ 55
GOOD	≥ 45
PASS	≥ 30
UNCLASSIFIED	< 30



BREEAM certificate





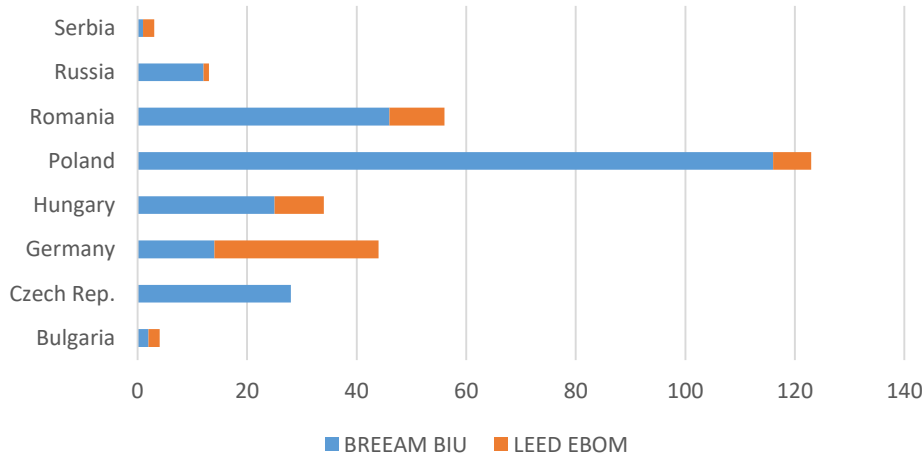
Certificates



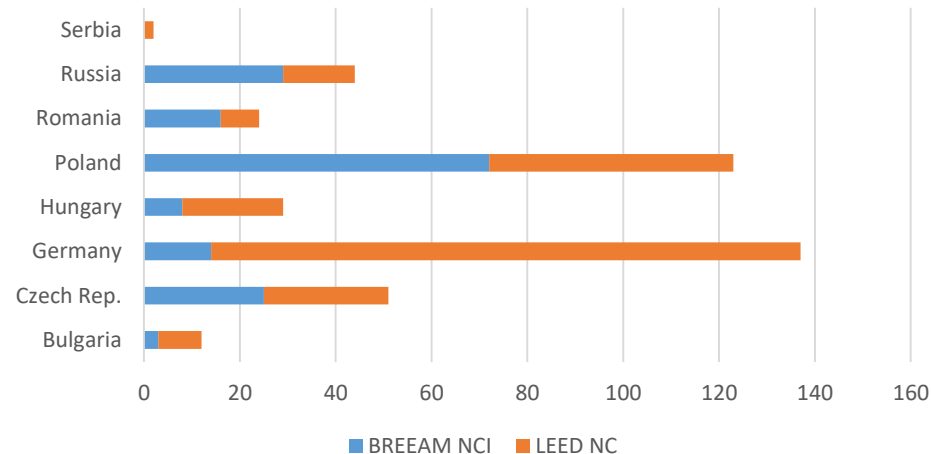


LEED and BREEAM Number of Certified Buildings

Existing Buildings



New Construction



EU overview

- Existing Buildings – BREEAM is dominating except Germany
- New Constructions – LEED is overall slightly better positioned (mainly due to high usage in Germany); in Russia, Romania and Poland BREEAM is leading

New Construction International 2016

Hea 05 Acoustic performance:

- Acoustician appointment no later than completion of outline design to provide early design advice (sources, layout, zoning, requirements, treatment ...)
- Spaces comply with the indoor ambient noise level targets
- Ambient noise measurements
- Reverberation times

Pol 05 Reduction of noise pollution

- No noise-sensitive areas or buildings within an 800m radius

OR

- Noise impact assessment has been carried
- Difference no greater than +5dB during the day (07:00 to 23:00) and +3dB at night (23:00 to 07:00) compared to the background noise level
- Measures have been installed to attenuate the noise at its source



LEED and Acoustics

BD+C v4

ACOUSTIC PERFORMANCE

- Achieve a maximum background noise level of prescribed dBA from HVAC
- Calculate or measure sound levels.
- Comply with design criteria for HVAC noise levels resulting from the sound transmission paths
- Meet the composite sound transmission class (STCC) ratings
- Sound Reinforcement and Masking Systems



Certificates

THANK YOU
FOR YOUR TIME

Q & A

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