A Comparison of Green Building Frameworks through Criteria Analysis

Adriana Stoltman

Abstract:

The world is quickly changing, so improvements need to be made in our fight against climate change. Reacting to climate change has caused the creation of numerous rating systems such as LEED, BREEAM, and Green Mark. All of these rating systems were found to have some subcategories that assessed cultural preservation. Using the scorecard of one building with a platinum-level LEED certification, it was translated to BREEAM and Green Mark; each score differed substantially due to the different criteria. A chart was set up to transfer the points achieved by the LEED building into multiple rating systems. It was concluded that to determine if a building is truly sustainable, it must be assessed by multiple rating systems. It also became clear that points for simple bike racks and public transportation were given frequently and acted as buffer points. These less impactful categories allowed it to mask if the building lost points in energy consumption or carbon emissions. The cost of becoming deemed a “truly” sustainable building has frequently increased in the past decade. On the other hand, large corporations that can afford to put thousands of dollars into getting assessed may have better chances of getting a higher score. In addition to this, vernacular structures must be promoted due to the significant impact it has on a society. Overall, the difficulty in achieving green building certifications and the lack of substantial rating categories affect the quality of green architecture in the United States.

Author Summary

Green building has been a topic of heavy debate for decades due to the increasingly negative effects of climate change. I decided to research the quality of some popular green building rating systems by picking a LEED rated building and transferring the points into BREEAM and Green Mark. This resulted in very different scores as a result of the varying focuses of the systems. These results emphasize that no one rating system can fully prove that a building is truly sustainable.

Definitions of Terms/ Processes:

Green Building: the concept of conserving natural resources by creating sustainable buildings, including those derived from planning, design, construction, operation, and demolition.
Sustainable development: the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission 1987).
Vernacular: an architectural style that is designed based on local needs, availability of materials, and local traditions.

Introduction:

All buildings consume resources and energy throughout their project life cycle. Practitioners recognize this reality, while still aiming to improve the rate of consumption during society’s ever increasing demands. Thus, practitioners rely on *green buildings*. Green building has become the forefront of infrastructure developments in numerous sectors, not limited to the Architecture-Engineering-Construction (AEC) or manufacturing industries. *Green building* and

sustainable development are often used interchangeably to reference environmentally friendly architecture.

With the increase in droughts, temperatures, and severe storms, various agencies such as LEED, Fitwel, Green Globes have developed specific green building frameworks to measure the sustainable successes of a project or scope. This paper compares three of these green building frameworks to provide insight into similar and contrasting criteria when working to achieve a sustainable certification. This paper first offers sustainable development goals and provides background as well as requirements needed to achieve green building certifications. Second, it offers a comparison between the green building certifications and results of a project translated across different rating frameworks. Third, it highlights the importance of protecting cultural aspects of the design when creating sustainable buildings. The paper concludes by emphasizing the need to revise green building certification requirements and make it more accessible to small businesses that want to help the environment but don't know where to start.

Related Literature:

Green Rating Frameworks

Practitioners apply various green rating frameworks to evaluate a building or infrastructure's sustainable achievement in reducing the overall impact of the built environment on human health and the natural environment [10]. These guidelines and metrics break down criteria across all building types to determine the project's sustainable success. This paper discusses three main building rating systems: Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Method (BREEAM), and the Green Mark System.

Leadership in Energy and Environmental Design (LEED)

LEED is a voluntary green certification program that targets an increase in the environmental health and performance of new construction and existing building sites and structures [10]. Developed in 1993 by the Natural Resources Defense Council and the US Green Building Council, the program encompasses different rating systems that best fit the market, not limited to LEED Building Design and Construction, LEED Interior Design and Construction, or LEED Operations and Maintenance. This paper focuses on LEED Building Design and Construction for new building scopes. LEED requirements are primarily based on US standards but are also internationally applied.

Figure 1
LEED Criteria*(Source: Adriana Stoltman 2023)*

Benchmark:	**Sustainable Sites**	**Water Efficiency**	**Energy/ Atmosphere**	**Materials/ Resources**	**Indoor Environmental Quality**	**Innovation**	**Regional Priority Credits**
Summary of Criteria	The evaluation of how sustainable the plot of land is	The evaluation of how efficient the building is with water	The evaluation of how the site is using energy and its effect on the environment	The evaluation of the type and amount of materials being used	The Evaluation of the quality and environment of the building	The evaluation of how creative the methods of sustainability are	The Evaluation of the priority of essential subcategories
Total Points:	28	10	37	13	12	6	4
Symbols:							

The LEED scorecard breaks down scoring by seven performance benchmarks: (1) Sustainable Sites, (2) Water Efficiency, (3) Energy and Atmosphere, (4) Materials and Resources, (5) Indoor Environmental Quality, (6) Innovation, and (7) Regional Priority (Table 4x8). Benchmarks are weighted unequally, with more emphasis on Energy and Atmosphere. The resulting score is translated into the following standings:

Figure 2
LEED Certifications

(Source: USGBC 2023)

LEED requires multiple fees in order to assess a building's sustainability. As of May 1st, 2023, LEED will increase their prices for registration and certification by 12%. This will leave LEED costing non-members a minimum of 5,600 dollars to register for their certification, not including the extra fees [3]. This might make it harder for smaller companies to prove they are sustainable because they can't afford the title. On the other hand, larger businesses have an advantage because they wouldn't spend the money if they didn't know what score they were going to get. Overall, the high prices of these certifications prevent us from seeing what buildings are the most sustainable.

Building Research Establishment Environmental Assessment Method (BREEAM)

BREEAM is a sustainability assessment framework for master plan infrastructure developments [9]. The assessment evaluates the full life cycle of a project against nine performance benchmarks: (1) Governance, (2) Social and Economic well-being, (3) Resources and Energy, (4) Land Use and ecology, and (5) Transport and movement (Table 3x6). For each performance benchmark, a score is generated and multiplied by a weighting. The resulting score is translated into the following standings:

Figure 3
BREEAM Criteria

Benchmark:	Governance	Social/Economic Well Being	Resources/Energy	Land Use /Ecology	Transport /Movement
Summary of Criteria	The evaluation of the process of planning before retrofitting or building	The evaluation of the economic and social impact of the building	The evaluation of the type and amount of materials being used	The evaluation of how the site is being used and if the wildlife is being preserved	The evaluation of the amount of accessible transportation and how safe the area is.
Total Points:	8	47	31	18	15

(Source: adapted Adriana Stoltman 2023)

Figure 4
BREEAM Scoring and Rating

STANDING	UNCLASSIFIED	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
SCORE	<30%	≥30%	≥ 45%	≥ 55%	≥ 70%	≥ 85%

BREEAM Scoring and rating (Sorce: adapted by Adriana Stoltman 2023)

The BREEAM certification process begins with selecting an applicable BREEAM standard. At the project's feasibility and planning stages, a pre-assessment is produced by the assigned licensed assessor. Throughout the project's remaining design and construction stages, intermittent assessments and certificates are given until the final review is conducted and final certification is awarded in the post-construction stage [9]. This rating system is primarily applied in the United Kingdom building market, and the certification increases the building's value as an indication of building resilience to environmental, social, and economic demands.

BREEAM requires multiple fees for each step in the assessment. Figure 5 below shows the cost to be assessed based only on the size of the site. These prices only include the amount of square feet being assessed. This does not include the price for an accessor or the varying stages. As stated previously in the LEED section, these high prices hinder the effectiveness of the rating system by preventing others from being assessed.

Figure 5
BREEAM Pricing Chart

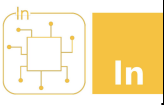
Assessment Size (ft^2)	Fee		
	Interim Design stage	Final Post Construction Review stage	Total/PCA*
Non-Residential developments			
<50,000ft^2	$2,235	$1,000	$3,235
≥50,000 - <500,000ft^2	$3,375	$1,490	$4,865
≥500,000ft^2	$6,370	$2,870	$9,240
Residential developments			
Minimum fee	$1,135 per assessment	$650 per assessment	$1,785 per assessment
≤100 dwellings	$22 per dwelling	$12 per dwelling	$34 per dwelling
101st to 1000th dwelling	$8 per dwelling	$4 per dwelling	$12 per dwelling
1001 plus dwellings	$3 per dwelling	$2 per dwelling	$5 per dwelling

(Bregroup 2022)

Green Mark and Green Mark International

The Green Mark Certification scheme was introduced in 2005 and tailored for tropical climate developments [6]. To increase international acceptance and alliance with UN Sustainable Development Goals, Green Mark developed an extension system known as the Green Mark (GM) International for assessing new construction projects with a primary focus on energy efficiency [6]. The merit of energy efficiency is evaluated under five performance benchmarks, each equally weighted with 15 maximum points:

Figure 6
Green Mark International Criteria*(source: Adapted by Adriana Stoltman 2023)*

Benchmark:	**Health and Wellbeing (Hw)**	**Whole Life Carbon (Cn)**	**Resilience (Re)**	**Maintainability (Mt)**	**Intelligence (In)**
Summary of criteria:	The evaluation of how well the building is designed, retrofitted, constructed, and operated to protect the mental, physical and social wellbeing of its occupants	The evaluation of the building whole life carbon performance, use of sustainable construction methods, and the sustainable fitting-out buildings	The evaluation of buildings resilience and adaptation to climate change.	The evaluation of how adequately the building optimizes its lifecycle performance.	The evaluation on the building's adoption of relevant smart technologies and systems.
Total Points:	**15**	**15**	**15**	**15**	**15**
Symbols:					

Each subcategory is weighted equally which helps allow for all of them to receive the same attention when looking at the final score. The certification process begins when an application is submitted for review. Upon acceptance, a Letter of Offer (LOO) will be issued, and a Green Mark accessor assigned to evaluate the project. Then, the project is evaluated throughout the remaining design stages and at the completion stage (as built). At completion and receipt of building documents and records, final verification and Letter of Award (LOA) are issued [6]. For each criterion, a score is generated and added to the total. The resulting score from pre-requisites and evaluation by criteria is translated into the following standings:

Figure 7
Green Mark International Full Certification Scoring

	Prerequisites Energy Savings + Base Sustainability Requirements						Intelligence	Health and Well-being	Whole Life Carbon	Maintainability	Resilience
	GM International						• 15 points for each sustainability section • ≥10 points in each section to qualify for a badge for exemplary performance				
	≥50%	≥50%	>50%	≥55%	≥60%	ZE					
A. Full GM International Certification											
$SLE_{(incl\ ZE,PE)}$					✓	✓	N/A				
Platinum $SLE_{(incl\ ZE,PE)}$					✓	✓	40 points				
Gold PLUS $SLE_{(incl\ ZE,PE)}$					✓	✓	30 points				
Platinum				✓			40 points				
Gold PLUS			✓				30 points				
Gold		✓					20 points				
Certified	✓						15 points				

(source: BCA 2022)

Green Mark takes pride in keeping building sustainable even after the assessment is over. Unlike other green rating systems, where a fee can be paid annually to retain the award, Green Mark certifications are only valid for five years or up to the next renovation cycle. This makes these awards more reliable and less outdated as sustainable technology continues to progress.

Integration of Culture Architecture

The task of architecture is to create embodied and lived existential metaphors that concretize and structure our being in the world, while the role of architecture in designing infrastructure and society reflects, materializes, and externalizes ideas and images of an ideal life [11]. Culture can be defined as the values, symbols, and beliefs that bring together a group of people. These are commonly embodied through dance, language, and architecture. Vernacular architecture gives a sense of identity and place in an environment. For instance, Venice's architecture is easy to identify because of the unique features of its buildings and the cultural significance attached to them. These cultural connections create a continuous narrative that makes spaces feel unified. Humans need to be able to locate themselves in a space similar to needing to associate themselves in a time [11].

This concept emphasizes the importance of architecture to not only provide sustainable solutions, but also maximize the positive feelings that can be evoked through culture. It is critical to preserve and create buildings that contain vernacular designs and combine green building goals with cultural aesthetics in architecture.

Figure 8
Italian Vernacular Architecture

(source:https://propertyreport.ph/news-and-events/2021/08/20/22123/from-capitello-to-bahay-kubo-the-intersections-between-italian-and-filipino-architecture/)

Building in Context

Building in context is defined as gaining a large sum of knowledge not only of the physical features of the site but also of the socio-cultural factors. The Whole Building Design Guide discusses three steps:

1. Define boundaries and determine the character of the preexisting context
2. Determine the appropriate response
3. Evaluate the character of the proposed intervention

Following these three steps can further protect our environment while also producing a culturally rich atmosphere. For instance, an architect who was building in context would look at the site constraints as well as how the land was used in the past to integrate socio-cultural factors into their design. With climate change affecting numerous people around the world, it is essential that agreement can be made between these similar concepts.

Figure 9
Central Europe Vernacular Architecture

(source:https://fineartamerica.com/art/vernacular+architecture)

In the Climate Change and Cultural Heritage Conservation Literature review by Ann Horowitz, it was found that details used in certain traditional buildings have enhanced durability. These principles apply to a range of historic, traditional, and vernacular buildings within similar climates [7]. Although vernacular buildings present larger challenges in preserving their natural beauty, it is essential to build in context to maximize the project's green building impact. By gathering this extra information, it becomes easier to personalize design while protecting the environment. Overall, this is a promising way to conserve cultural heritage in infrastructure while recognizing and mitigating its impact on climate change and the environment.

By gathering this extra information, it becomes easier to personalize the renovation while protecting the essential features. Rather than making a broad spectrum of rules, the sustainable changes should be customized to fit the exact situation. Overall, this is a way to conserve vernacular design in infrastructure while still focusing on lessening the effect of climate change in the environment.

Figure 10
Indonesian Vernacular Architecture

(source:juliesartoni.blogspot.com)

Methodology:

Motivation:

As practitioners around the world evaluate their project's sustainable achievement, often one green rating framework, among many that exist, is applied. Each framework ranks the building through its own series of metrics and criteria. This research investigates the applications and resulting scores of applying more than one green rating system to understand the rating system differences when evaluating projects. Moreover, it is critical to determine how different environmental considerations can change the effectiveness of giving out scores in the first place.

Research Methodology:

The research methodology is completed through three parts: (1) Select commercial buildings of study; (2) create a chart for LEED vs. BREEAM and LEED vs. GM. (3) translate the LEED rating to BREEAM and GM, and compare the results. This study focused on a non-extreme but varying microclimate region with a high central business district: San Francisco, CA. San Francisco, in its sharp topographic location, presents itself as the leader in proper waste disposal, lowered carbon emissions, and green building design [8]. The building is also within an area that prioritizes the preservation of cultural architecture through building codes and regulations. In San Francisco's Article 10: Preservation of Historical Architectural and Aesthetic Landmarks, they explain that the purpose of this legislation is to promote the protection, enhancement, and use of structures that provide significant examples of architectural styles as well as protect historical landmarks [1]. However, this building was mainly selected due to the availability of its scoring sheets, which were difficult to come across and extremely necessary for the study.

Translating Points:

The initial step was to look at the different subcategories' requirements and goals in order to determine which ones could be compared. This allowed for comparison to be made between the differing LEED, BREEAM, and Greenmark subcategories. Next, it was essential to group the categories that had similarities. Certain subcategories were able to be easily distributed due to being compared one to one:

Figure 11

LEED vs. BREEAM 1x1 comparison

LEED	BREEAM
Building Reuse	Existing Building/Infrastructure
0/5 Points	0/2 Points

(Source: Adriana Stoltman 2023)

In the diagram above, the subcategories are being compared one to one, which makes transferring the points easier. Since there is 0/5 in the LEED scoring, this translates to 0/2 for the BREEAM scoring. In order to ensure that the data was accurate, the percentages of the points in differing systems were matched accordingly.

Figure 12

LEED vs. Green Mark 1x1 comparison

LEED	Greenmark
Stormwater design	Sociological
½ Points	⅘ Points

(Source: Adriana Stoltman 2023)

On the other hand, when comparing LEED to Green Mark, the percentages don't match in the figure above because they have different stipulations. There is a set process in Green Mark of how to get awarded specific points. Some of these stipulations were met, and therefore, it ended up being more points than LEED would have awarded.

By using a chart, LEED results from the selected building are translated into BREEAM and GM. The points are totaled and scored to the respective rating. For sub-criteria in BREEAM or GM that are applicable to multiple LEED subcategories, they are equally split in scoring to avoid double counting. Some of these subcategories are not applicable due to not matching any LEED subcategories.

Case Study:

This section applies the research methodology to select a building using the flowchart identified in Section III, Research Methodology. It also documents the potential ways in which green rating systems can improve in determining which buildings are truly sustainable and encourage the use of cultural designs throughout the country. The building selected is Pinterest Headquarters, located at 505 Brannan Street, San Francisco, California, as mentioned in the Methodology section.

Figure 13
505 Brannan Street, San Francisco California

(source: [3])
This building scorecard was extremely difficult to come across due to the absence of publications. In order to conduct this research, it was essential that specific details on what each subcategory assessed were gathered. There are approximately 57 subcategories within LEED's rating system that are assessed for each building. The building selected was initially rated using the LEED system, explained in the Related Literature section. This commercial building received the title of platinum with a score of 85/110. To achieve this title, a building must get a score higher than 80. Within LEED's rating system, this building gained a perfect score in water efficiency, regional priority credits, and indoor environmental quality. They received the lowest score in their use of materials and resources.

LEED vs. BREEAM

LEED and BREEAM differ in their categories and weighting substantially. There were subcategories that were not applicable for comparison due to one not existing within the other rating system. BREEAM took into consideration the socio-economic factors that would come with manufacturing this building, while LEED had no category that fit that criteria. When comparing BREEAM to LEED, it is apparent that BREEAM has a greater focus on the social and economic impact of their assessed building; however, LEED has a greater emphasis on the building's use of energy and effect on the atmosphere. In the figure below, the total points this building would have earned from BREEAM is 47.2% due to each point being weighted differently. This is a major contrast from being a top-ranking LEED-certified building to a mediocre BREEAM building.

Figure 14
LEED vs. BREEAM Scorecard.

LEED	BREEAM
77%	47.2%
Platinum	Good

(Source: Adriana Stoltman 2023)

Comparing these two vastly different systems resulted in differing highest and lowest categories. When translating the data, BREEAM achieved the highest score in the "transportation and movement" category. The lowest category was social/economic well-being. This was a result of LEED not assessing the economic situation of their buildings. Overall, this conversion led to a very different outcome and rank. More details about scoring conversion can be found in Appendix A.

LEED vs. Green Mark

LEED and GreenMark have more similar rating systems due to having multiple options to achieve points instead of set requirements. LEED's categories fit with Green Marks' broader options. In the figure below, it is clear that the total scores are fairly equal to one another. This is predictable due to their similar subcategories.

Figure 15
LEED vs. GM Scorecard.

LEED	GreenMark
85/110	42.75/60
Platinum	Platinum SLE

(Source: Adriana Stoltman 2023)

These two systems had quite similar categories and translated over smoothly. When translating the data, Green Mark achieved the highest score in the "health and well-being" category. The lowest category was the "maintainability" section due to LEED not having a category related to it. The LEED rating achieved 77%, while the Green Mark is 71%. Overall, the scores are quite similar, and the Green Mark rating gives the building around the same rank. As, mentioned previously, more information about scoring translations can be found in Appendix A.

Results and Discussion:

After comparing the different rating systems, it became apparent that they each put a greater emphasis on different categories. As referenced in the Related Literature section, LEED puts a lot of emphasis on its "energy and atmosphere" category by making it worth the most amount of points. Similarly, BREEAM puts the most emphasis on its "social and economic" category. GM is the only rating system discussed in this study that weighs each category equally by making them all 15 points.

When examining the characteristics of each system, it is impossible to determine which one is promoting the most sustainable buildings. This is due to the fact that they are looking at

such vast areas of sustainability, with some categories being completely overlooked. In addition, there are multiple points that tend to enhance a score to a platinum level, even though it is not helping the environment as much as one might expect. This proves that green rating systems need to be revised to maximize the positive effect they have on the environment.

GreenMark and BREEAM did an adequate job of rewarding the use of cultural and vernacular designs in architecture. They each have a section or subcategory dedicated to protecting or promoting the cultural aspect of design. As referenced throughout the paper, it is essential to focus on making buildings eco-friendly; in addition to that, culture provides community and comfort to people throughout the world. It is just as important to keep that part of our history alive for the sake of future generations. As proven throughout the section on Integration of Culture in Architecture, it is less harmful to the environment to upgrade historical buildings than to demolish them. Overall, building in context will help to preserve the beauty and art that is traditional architecture.

This comparison between LEED vs. BREEAM and LEED vs. GM was only performed on a commercial building. Further studies for a greater understanding of how ratings translate over different AEC sectors should include a case study on buildings from industrial, mixed-use, or residential projects. This study also presents opportunities to expand the research to other more extreme climate environments with other green ratings. The selected case study for 505 Brannan is limited to the San Francisco climate. It is advantageous to explore various climates and how the green ratings may or may not vary. It is also important to note that in the LEED rating scores, some “0s” could potentially be accounted for within another rating system, but it was unable to be determined due to a lack of access to information on the particular site.

Conclusion:

In conclusion, the International Green rating systems support the initiatives of finding different ways to measure sustainable architecture. In order to advance green building, it is essential that more research is conducted on the effectiveness of these systems. Due to the high prices, it makes it difficult for small businesses to assess and improve their buildings. Overall, Green rating systems could aim to improve their subcategories to ensure that what is being rated is truly minimizing effects on the environment, improving the economy, and promoting vernacular architecture as much as possible.

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Appendix A
Figure 16
LEED v.s BREEAM

LEED Points	BREEAM Points	Not Applicable
• Site Selection 1/1 • Water efficient landscaping 4/4 • Development density/community 5/5 • Innovation in design 4 • Alternative transportation 13/13 • Site development 1/2 • enhanced refrigerant management 2/2 • Low emitting materials 4/4 • Indoor chemical and pollutant source control 1/1 • Stormwater design 1/2 • Innovative Wastewater technology 2/2 • Water use reduction 4/4 • Heat island effect 2/2 • Light pollution 0/1 • Building reuse 0/5 • Construction waste management 2/2 • Materials reuse 2/2 • Regional materials 2/2 • Certified wood 1/1 • Optimize energy performance 6 /21 • Enhanced Commissioning 2/2 • Regional Priority Credits 4/4	• Landscape 5/5 • Public realm 2/2 • Inclusive design 3/3 • Transportation/movement 15/15 • Land use 3/3 • Enhancement of ecological value 0/3 • Green infrastructure 2/4 • Flood risk management 1.5/3 • Water strategy 1/1 • Water pollution 2.5/3 • Rainwater harvesting 3/3 • Micro climate 3/3 • Light pollution 0/3 • Existing building/infrastructure 0/2 • Low impact materials 5.25/6 • Energy strategy 3/ 11 • Consultation plan 1/1 • Design review 2/2 • Demographic need properties 1/1	LEED: • Brownfield redevelopment • Tenant design and Construction guide • Measurement and verification • Green power • Outdoor air delivery monitoring • Increased ventilation • Construction IAQ management plan • Controllability of systems • Thermal comfort •LEED accredited professionals • On site renewable energy BREEAM: • Consultation engagement • Community management of facilities • Economic impact • Training/skills • Housing provision • Delivery of services, facilities • Utilities • Local parking • Local vernacular • Flood risk assessment • Noise pollution • Adapting to climate change • Resource efficiency • Transport carbon emissions • ecology strategy
Total Scores **LEED- 77%** **Platinum Building.** **BREEAM-47.72%** **Good Building**		

Figure 17
LEED v.s Green Mark

LEED Points	Green Mark Points	Not Applicable
• Alternative transportation 13/13 • Outdoor air and delivery monitoring 1/1 • Low emitting materials 4/4 • Thermal comfort 1/1 • Daylight and views 2/2 • Stormwater design 1/2 • Innovation in design 4 • Building reuse 0/5 • Construction waster management 0/1 • Materials reuse 2/2 • Regional materials 2/2 • Certified Wood 1/1 • Construction IAQ management plan 1/1 • Tenant design and construction guide1/1 • Heat island effect 2/2 • Light pollution 0/1 • Innovative Wastewater technology 2/2 • Water efficient landscaping 4/4 • Water use reduction 4/4 • Enhanced refrigerant management 2/2 • On-site renewable energy 4/4 •LEED accredited professional 1 • Site development 1/2	• Physiological 3.5/5 • Psychological 2/5 • Sociological 4/5 • Innovation 8/8 • Construction 2.75/5 • Integrated 0/5 • Fit out 3/5 • Protect 4/5 • Manage 2.5/5 • Restore 2/5 • Responsive 4.5/5	LEED: • Site selection • Development density/ community • Brownfield redevelopment • Optimize energy performance • Measurement and verification • Green power • Indoor chemical and pollutant source control • Regional priority credits Green Mark: • Maintainability • Carbon • Data driven
Total Scores: **LEED-77%** **Platinum Building** **Green Mark- 71%** **Platinum**		