GSAS
TECHNICAL GUIDE

Dr. Yousef Alhorr, Founding Chairman

2014   V2.2

GORD
TRUST
A Member of QATARI DIAR

GLOBAL SUSTAINABILITY
GSAS
2009
ASSESSMENT SYSTEM

GSAS
PUBLICATIONS SERIES

GSAS TECHNICAL GUIDE
v2.2 - 2014

Dr. Yousef Alhorr
Founding Chairman

GORD
المنظمة الخليجية للبحث والتطوير
Gulf Organisation for Research & Development
A Member of QATARI DIAR

GLOBAL SUSTAINABILITY
GSAS
2009
ASSESSMENT SYSTEM

CRAFTING A GREEN LEGACY

DR. YOUSEF MOHAMED ALHORR,
FOUNDING CHAIRMAN

GORD has come a long way since pioneering the Global Sustainability Assessment System (GSAS), formerly known as (QSAS), the Middle East's first integrated and performance-based green building assessment rating system in 2009.

Our mission to encourage the development and implementation of sustainability principles and imperatives stems from the sustainable goals outlined in His Highness, The Emir Sheikh Hamad bin Khalifa Al-Thani's Qatar National Vision 2030, which aims to achieve sustainable economic development and environmental leadership.

GSAS draws from top-tier global sustainability systems and adds new facets and dimensions to the current practices in assessing the sustainability of the built environment. Modelled on best practices from the most established global rating schemes including, but not limited to, BREEAM (United Kingdom), LEED (United States), GREEN GLOBES (Canada), CEPAS (Hong Kong), CASBEE (Japan), and the International SBTOOL, GSAS has grown into a pan-regional system offering a comprehensive framework, and equally flexible to incorporate the specific needs of the local context of different regions. In Qatar, GSAS is currently the only rating scheme to be acknowledged by Qatar Construction Specifications (QCS 2010).

Primary goals of GSAS include creating a better living environment, minimizing resource consumption and reducing environmental degradation due to the fast pace of urbanization taking place in this era. Such objectives, coupled with the increasing evidence of climate change effects on a global level, have contributed strongly to the unprecedented pace of adaptation to sustainability practices not only in the developed countries, but also in developing countries at a pace that is unexpected.

GSAS Version 2.0 has become the most comprehensive system, to date, that addresses the built environment from a macro level to a micro level targeting a wide range of building typologies. The new system will have design assessments for all typologies integrated into one comprehensive manual. The manual provides recommendations and guidelines for the effective implementation of the sustainability goals of each criterion. As more research is carried out on the rating system, the manuals will be further developed to keep users informed on updates within the constantly evolving GSAS rating systems.

I would like to acknowledge the efforts and contributions from the State of Qatar, all our members, and international partners-especially the TC Chan Center for Building Simulation and Energy Studies at the University of Pennsylvania and the Center's associated consultants who helped establish the system and take it into new dimensions. Last but not least, the continuous support from Qatari Diar Real estate Investment Company is highly appreciated, and without its support, GSAS would not be able to achieve what it has achieved in such a short time.

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Preface

The GSAS Technical Guide v2.2-2014 made specific revisions to update several key issues, including but not limited to:

- Addition of Healthcare, Parks, and Railways schemes.

  - Healthcare scheme provides information for rating the ecological impacts of new healthcare buildings, including specialist hospitals, general hospitals, out-patient hospitals, and primary care health centers.

  - Parks scheme provides information for rating the ecological impacts of new and existing parks, including its on-site amenities, such as landscape areas, walkways, and picnic spaces, as well as any minor service facilities including restrooms, storage sheds, or small information centers.

  - Railways scheme provides information for rating the sustainability and ecological impacts of new main station buildings including spaces that serve various functions of a railway station such as but not necessarily limited to platform/ concourse, offices, station control room, ticketing, retail, food/beverage areas, and ancillary areas.

- Expansion of Sports scheme to accommodate the specific needs of air conditioned open stadiums.

- Introduction of Education and District schemes to replace Schools and Neighborhoods schemes, respectively with an enhanced and expanded criteria list.

  - Education scheme provides information for rating the ecological impacts of educational facilities for students in kindergarten through 12th grade, as well as college and university facilities. This includes classrooms, libraries, auditoriums, cafeterias, kitchens, offices, and other spaces that are part of academic buildings.

  - District scheme provides information for rating the ecological impacts of district and urban development project by evaluating the planning and design of urban development projects, including several components such as infrastructure networks, transportation networks and public or open spaces.

- Revisions to GSAS calculators.

- Revisions to the GSAS manuals suite.

- Revisions to the GSAS toolkits.

- Introduction of GSASgate, the enhanced online project management suite.

- Introduction of online GSAS-CGP exam.

- Addition of defined terminologies for clarity.

- Revisions to the certification procedures and policies.

- Updates on GORD centers of excellence.

Unless otherwise specified, the provisions of this guide shall not apply to projects that were registered prior to the effective date of issuance of GSAS v2.0. Where specified, the provisions of this guide shall be retroactive on projects deemed appropriate by GORD Trust.

CHAPTER: 1

GSAS
Overview

1.1. **About the** **Developer**	**1.1.1.** Gulf Organisation for Research & Development (GORD) – a not for profit subsidiary of QATARI DIAR Real Estate Investment Company (QD) - located at Qatar Science and Technology Park (QSTP); whose purpose is to promote healthy, energy & resource efficient, and environmentally responsible building practices in Qatar and the entire middle east region.
1.2. **GSAS** **Framework**	**1.2.1.** In the entirety of this text, GSAS shall mean Global Sustainability Assessment System, the first of its kind performance-based sustainability rating scheme for the construction industry in the middle east region developed by GORD in collaboration with TC Chan Center at the University of Pennsylvania, USA.

1.2.2. The primary objective of GSAS is to create a sustainable built environment that minimizes ecological impact while addressing the specific regional needs and environment of the region.

1.2.3. The development of the GSAS rating schemes took advantage of a comprehensive review of combined best practices employed by a mix of established international and regional rating systems.

1.2.4. The development of GSAS, works on ground-up approach, developing from scratch to allow for the seamless integration between the country's specific requirements and sustainable goals.

1.2.5. It started from the review of the existing 140+ building rating schemes, tools, and guidelines around the globe and narrowed down to the 40 whole building rating schemes, *Fig. 1.1.*

Groundwork

Expert Review

Rating System
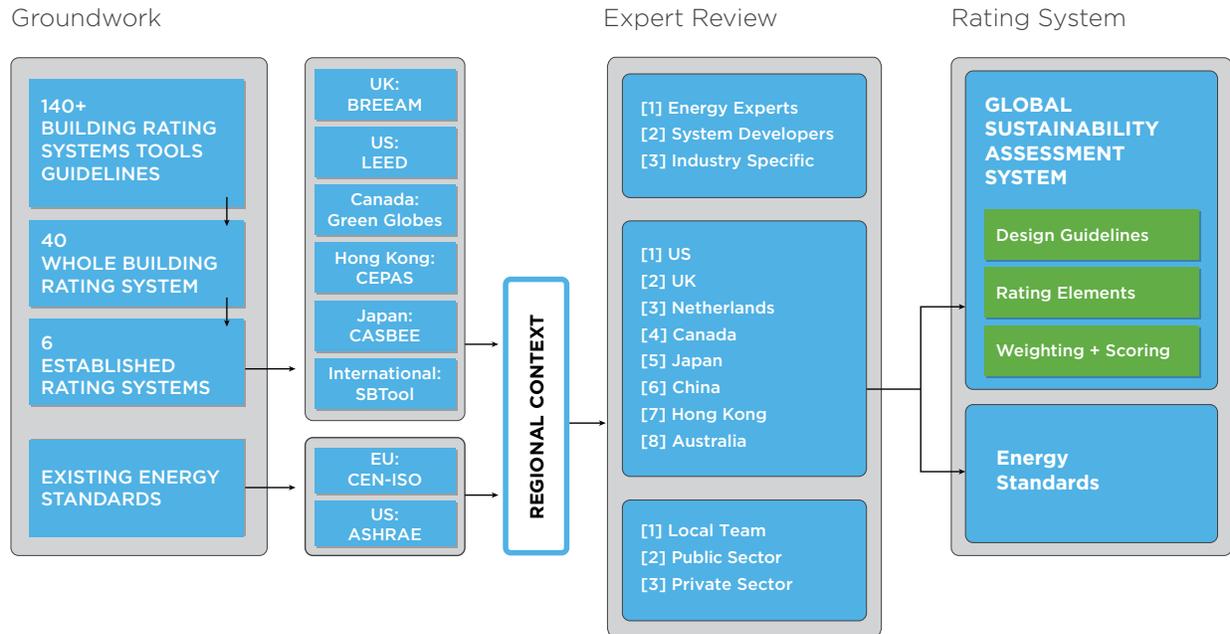
Figure 1.1.

1.2. GSAS Framework

1.2.6. Based on the findings of the initial review process, out of the 40, the methods of the 6 most established rating schemes were selected, the BREEAM from UK, the LEED from US, the GREEN GLOBES from Canada, the CEPAS from Hong Kong, the CASBEE from Japan, and the International SBTOOL were further analyzed.

1.2.7. Together with the review of the existing energy standards from other countries, the GSAS Energy Standard looked deeper into ASHRAE Energy Standard from US and the CEN-ISO Energy Standards from the European Union.

1.2.8. The CEN-ISO framework was adopted where energy is assessed from four perspectives namely, energy demand, energy delivery, primary energy and emissions.

1.2.9. The energy assessment methodology is composed of performance-based normative calculation that follows the framework of the CEN-ISO standards, and NEN standards.

1.2. GSAS Framework

1.2.10. The normative calculation procedure introduced in GSAS has distinctive advantages: easiness, transparency, robustness, and reproducibility.

1.2.11. The normative calculation method based on the CEN-ISO standards is increasingly applied in EU countries for building energy regulatory purposes and thus adopted in the development of the GSAS energy performance calculation toolkits.

1.2.12. The toolkits require only the minimum input parameters and are transparent with the CEN-ISO calculation method.

1.2.13. The energy toolkit calculates the outcomes for the building's energy consumption and CO_2, NO_x, and SO_x emissions.

1.2.14. GSAS then translates the calculated consumption and emission outcomes into effective Energy Performance Coefficient or EPC values by utilizing reference values, and assigns the appropriate criterion scores.

1.2.15. GSAS consists of several categories, criteria, and measurements that are associated with environmental goals.

1.2.16. Goals define values to be achieved to lower the impact on the environment. These goals were translated to what is known as the GSAS Categories that are key aspects affecting the overall building sustainability.

1.2.17. The sets of categories are further broken down to specific criteria that specify the intent and are linked to measurements that are performance-driven and objective, if possible.

1.2.18. Measurements are further broken down into three components – measurement principles, measurement methods, and demonstration requirements.

**1.2.
GSAS
Framework**

1.2.19. Categories, criteria, and measurements are defined to be performance-based and quantifiable, where possible.

1.2.20. Prescriptive measurements are provided as recommendations in Design Guidelines.

1.2.21. Aggregation method of the scoring weights is applied from the ground up and is used in the system at the criterion, sub-category, and category levels, which allow for the flexibility of modifying an individual component without interfering with the entire system.

**1.3.
GSAS
Categories**

1.3.1. GSAS is divided into eight categories, each with a direct impact on environmental stress mitigation. Each category measures a different aspect of the project's environmental impact, *Fig. 1.2.*

Figure 1.2.

1.3.
GSAS Categories

1.3.2. These categories are then broken down into specific criteria that measure and define these individual issues. These issues range from a thorough review of water consumption to an assessment of light quality.

1.3.3. Each criterion specifies a process for measuring individual aspects of the criterion's environmental impact and supporting it with the required documentation. A score is then awarded to each criterion based on the level of achievement.

1.4.
Measurement Principle

1.4.1. Each criterion in GSAS is provided with explanations of measurement principle and method that can be found in the assessment manuals and design guidelines.

1.4.2. Measurement principle summarizes the overall principle of how the criterion is measured.

1.4.3. Measurement method describes the steps and requirements the project must take in order to demonstrate criterion compliance.

1.5.
Evaluation Procedure

1.5.1. Each criterion in GSAS is provided with explanations of evaluation procedure that can only be found in the training manual.

1.5.2. Step-by-step process of how to properly assess the criterion is described in this procedure.

1.5.3. The procedure includes an explanation of any drawings, calculations, or simulations to be used to complete the submittal process.

1.5.4. If the evaluation procedure differs between typologies, the procedures are separated and identified by the appropriate typology.

1.6. Submittal Requirements

1.6.1. Each criterion in GSAS is provided with explanations of the submittal requirements that can be found in the assessment and training manuals.

1.6.2. The project shall submit the documentations required for each criterion to demonstrate compliance.

1.6.3. Submittal requirements are generally design documents supporting the input values in the GSAS calculators and toolkits.

1.6.4. Submittals for drawings, schematics, sketches, design reports, simulation reports, and vendor's data shall be saved in pdf format.

1.6.5. All submittals shall highlight the information supporting the input values in the GSAS calculators and toolkits.

1.6.6. All submittals shall be saved in clear and readable copies.

1.6.7. Submittals for calculations shall be saved in excel format.

1.6.8. Submittals for criterion not pursued by the project shall be in the form of a letter informing GORD Trust of its intention and the expected lowest score for the abandoned criterion.

1.7. Scoring Mechanism

1.7.1. GSAS scoring are quantifiable on the scale of -1 to 3 (-1, 0, 1, 2, 3). Using negative scale allows criteria with greater impact to be emphasized and to trade off that negative impact by creating higher level of building performance in the remaining criteria. Except for the criteria in the Urban Connectivity and Management & Operations wherein scoring is either 0 or 3 only.

1.7.
Scoring
Mechanism

1.7.2. Criterion Score list the range of possible compliance levels and the measurement range associated with each level, *Fig. 1.3.* In the example E.1 criterion, the score is determined by first calculating the EPC value achieved by the project for energy demand performance. Then from the scoring table, a score is given corresponding to the achieved EPC value. For example, assuming the project complied with the required documentations in support of the EPC calculator and the calculated EPC resulted to 0.90. Therefore, the project complied with Level 0 performance for E.1, hence a score of 0 is given.

[E.1] Energy Demand Performance	
Criterion Score	Measurement Range
-1	EPC>1.0
0	0.8<EPC ≤ 1.0
1	0.7<EPC ≤ 0.8
2	0.6<EPC ≤ 0.7
3	EPC ≤ 0.6
Where: EPC = Energy Performance Coefficient	

Figure 1.3.

1.7.3. Each criterion shall have its corresponding scoring weights and the total of all criteria shall always be 100%, *Fig. 1.4.* The given score obtained from 1.7.2 shall be multiplied to the scoring weight to get the equivalent scoring points for that criterion. For example, the scoring points for E.1 shall be $0 \times \frac{5.20\%}{100\%} = 0.00$ points based on level 0 criterion score achieved from 1.7.2 and 5.20% weights from Fig. 1.7.3 for criterion E.1 of the Commercial Typology.

GSAS Commercial Typology Scoring Weights

Elements	%	Elements	%	Elements	%	Elements	%	Elements	%
UC.1	1.42	S.4	0.72	S.15	0.36	M.4	1.21	IE.9	1.83
UC.2	1.78	S.5	0.72	S.16	0.45	M.5	1.45	IE.10	1.83
UC.3	1.28	S.6	0.60	E.1	5.20	M.6	1.45	CE.1	8.13
UC.4	0.38	S.7	0.30	E.2	5.20	IE.1	1.37	CE.2	4.88
UC.5	1.07	S.8	0.45	E.3	3.64	IE.2	1.83	MO.1	0.55
UC.6	0.28	S.9	0.30	E.4	4.55	IE.3	1.83	MO.2	1.85
UC.7	0.68	S.10	0.40	E.5	5.42	IE.4	1.37	MO.3	2.31
UC.8	1.14	S.11	0.45	W.1	16.00	IE.5	1.83	MO.4	0.37
S.1	0.90	S.12	0.60	M.1	1.45	IE.6	1.37	MO.5	0.37
S.2	1.20	S.13	027	M.2	1.70	IE.7	1.37	MO.6	0.55
S.3	0.90	S.14	036	M.3	0.73	IE.8	1.37	**TOTAL**	**100.00**

Figure 1.4.

assessments for each criterion, the scoring points are already obtained and then tabulated, *Fig. 1.5.* The cumulative score shall determine the star rating of the project. In this case the project's cumulative score of 0.75 points will receive a 2-star rating based from the project scoring table in *Fig. 2.2.* The user shall use the GSAS Toolkit to assign initial scores to individual criteria and also to perform the summation to obtain the final score for the project, hence the corresponding star rating will be demonstrated.

1.7. Scoring Mechanism

1.7.4. All scoring points accumulated for each criterion shall be summed up to obtain the cumulative or aggregated score of the project. The project cumulative score shall always fall within the range of -1.00 points to 3.00 points. For example, after completing the assessments for each criterion, the scoring points are already obtained and then tabulated, *Fig. 1.5.* The cumulative score shall determine the star rating of the project. In this case the project's cumulative score of 0.75 points will receive a 2-star rating based from the project scoring table in *Fig. 1.7.* The user shall use the GSAS Toolkit to assign initial scores to individual criteria and also to perform the summation to obtain the final score for the project, hence the corresponding star rating will be demonstrated.

GSAS Commercial Typology - Project Achieved Score

Elements	%	Elements	%	Elements	%	Elements	%	Elements	%
UC.1	0.00	S.4	-0.01	S.15	0.01	M.4	0.00	IE.9	0.00
UC.2	0.00	S.5	0.00	S.16	0.00	M.5	-0.01	IE.10	0.05
UC.3	0.01	S.6	0.00	E.1	0.00	M.6	0.00	CE.1	0.08
UC.4	0.00	S.7	0.00	E.2	0.00	IE.1	0.01	CE.2	0.10
UC.5	0.03	S.8	0.00	E.3	0.00	IE.2	-0.02	MO.1	0.02
UC.6	0.00	S.9	0.00	E.4	0.00	IE.3	0.05	MO.2	0.00
UC.7	0.01	S.10	0.01	E.5	0.00	IE.4	0.04	MO.3	0.07
UC.8	0.01	S.11	0.00	W.1	0.32	IE.5	-0.02	MO.4	0.00
S.1	0.01	S.12	0.02	M.1	0.01	IE.6	-0.01	MO.5	0.00
S.2	-0.01	S.13	0.00	M.2	-0.02	IE.7	0.00	MO.6	0.02
S.3	-0.01	S.14	0.01	M.3	-0.01	IE.8	-0.01	*Cumulative Score (x)*	**0.75**

Figure 1.5.

1.8. Assessment Stages

1.8.1. GSAS assessments certify the project in three phases, *Fig. 1.6.*

1.8.2. The first certification assesses the project's design.

1.8.3. The second certification assesses the project's construction process.

1.8.4. The third certification assesses the facilities operations.

PROJECT DEVELOPMENT	DESIGN STAGE	CONSTRUCTION STAGE	OPERATIONS STAGE
Design Certification	Letter of conformance (LOC)	Final Design Certificate	
Construction Certification		Construction Certificate	
Operations Certification			Operations Certificate
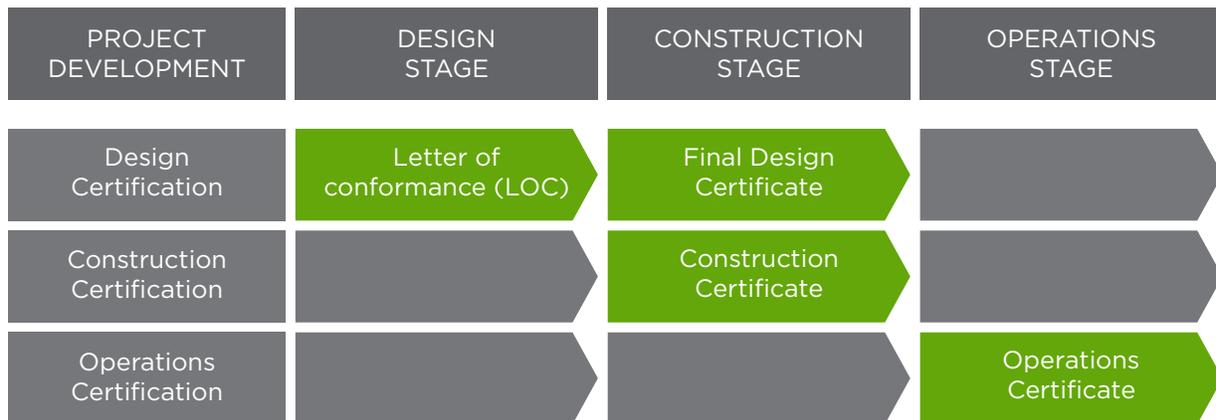
Figure 1.6.

1.9.
Toolkits and Calculators

GLOBAL SUSTAINABILITY ASSESSMENT SYSTEM (GSAS)		
DESIGN STAGE		

Project Information		
Project Name:	(to be Completed)	
Project Location:	(to be Completed)	
Gross Area (m²):	(to be Completed)	
Building Typology:	Residential - Single	

No	Category	Point 1.108
UC	Urban Connectivity	0.255
S	Site	0.283
E	Energy	0.250
W	Water	0.320
M	Materials	0.000
OE	Outdoor Environment	0.000
CE	Cultural & Economic Value	0.000
MO	Management & Operations	0.000
Level Achieved		**3 Star**

Chart — Points Attainable (red) and Achieved (blue):

Category	Points Attainable	Achieved
Urban Connectivity	0.270	0.26
Site	0.300	0.28
Energy	0.750	0.25
Water	0.510	0.32
Materials	0.270	0.00
Outdoor Enviornment	0.510	0.00
Cultural & Economic Value	0.390	0.00
Management & Operations		0.00

Points Attainable ■   Achieved ■

Level Achieved

Legend	
Level	**Range**
-	X < 0
★	0.0 ≤ X ≤ 0.5
★★	0.5 < X ≤ 1.0
★★★	1.0 < X ≤ 1.5
★★★★	1.5 < X ≤ 2.0
★★★★★	2.0 < X ≤ 2.5
★★★★★★	2.5 < X ≤ 3.0
Level Achieved	
3 Star	
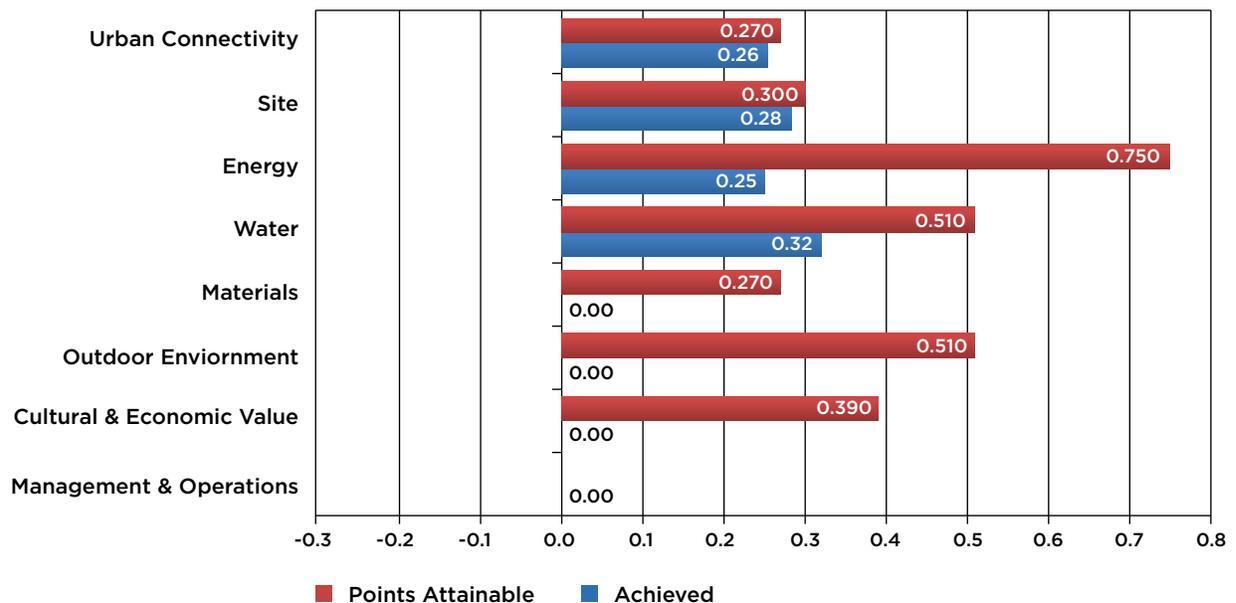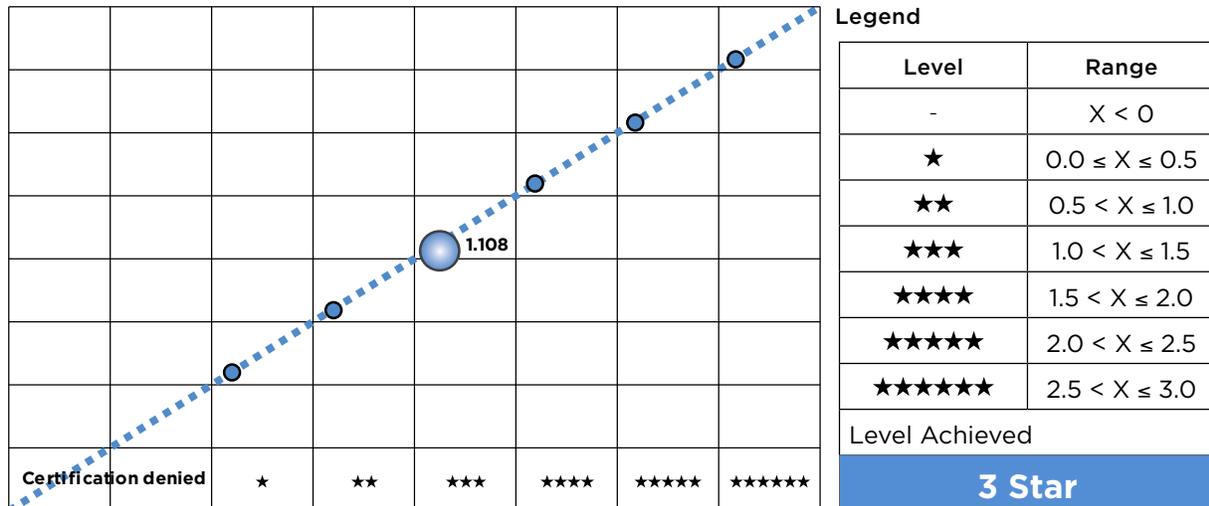
1.9. Toolkits and Calculators

1.9.1. Toolkits are computational systems that are provided to facilitate the evaluation of a project's performance under the assessment system.

1.9.2. The toolkits compute the final project score and certification level for the project using each criterion score entered by the user.

1.9.3. Calculators are normative measures provided for many criteria to evaluate the project's performance under the assessment system.

1.9.4. The calculators must be downloaded from the online project management system and completed for the appropriate criteria in order to fulfill the assessment requirements.

1.10.
Levels
of Certification

1.10.1. GSAS project certification provides six levels of certification to measure the project's impact.

1.10.2. Each level of certification corresponds to a star rating from a minimum of 1-star up to maximum of 6-stars, *Fig. 1.7.*

Cumulative or Aggregated Score (X)	GSAS Star Rating (★)
0.00 ≤ x ≤ 0.50	★
0.50 ≤ x ≤ 1.00	★ ★
1.00 ≤ x ≤ 1.50	★ ★ ★
1.50 ≤ x ≤ 2.00	★ ★ ★ ★
2.00 ≤ x ≤ 2.50	★ ★ ★ ★ ★
2.50 ≤ x ≤ 3.00	★ ★ ★ ★ ★ ★

Figure 1.7.

1.10. Levels of Certification

1.10.3. Each level of certification or star rating achieved by the project has corresponding range of cumulative scores, *Fig. 1.8.*

1.10.4. A project that obtains a cumulative score below 0 shall mean that it does not meet the baseline and shall therefore be denied the GSAS certification.
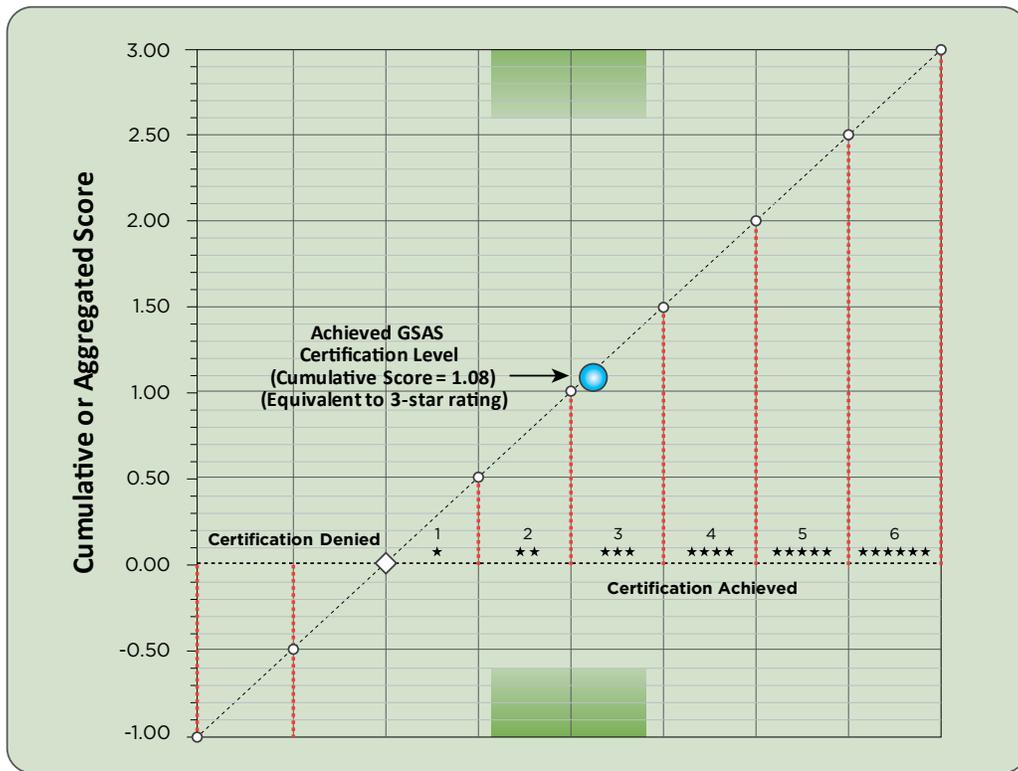
Figure 1.8.

CHAPTER: 2

GSAS Schemes

2.1. GSAS Schemes Description

2.1.1. GSAS schemes are comprised of the following:

2.1.1.1. Districts

2.1.1.2. Parks

2.1.1.3. Commercial

2.1.1.4. Core + Shell

2.1.1.5. Residential / Group Residential

2.1.1.6. Education

2.1.1.7. Mosques

2.1.1.8. Hotels

2.1.1.9. Light Industry

2.1.1.10. Sports

2.1.1.11. Railways

2.1.1.12. Healthcare

2.1.1.13. Workers' Accommodation

2.1.1.14. Construction

2.1.1.15. Operations

2.1.1.16. Bespoke Schemes

2.1.
GSAS Schemes Description

2.1.1.1.   Districts

Districts scheme is used for evaluating the planning and design of urban development projects, including several components such as infrastructure networks, transportation networks and public or open spaces.

It consist of a set of criteria and measurements used to assess the individual aspects of environmental impact and documenting the degree to which the requirements of Global Sustainability Assessment System (GSAS) have been met.

2.1.1.2.   Parks

Parks scheme is used for rating the ecological impacts of new and existing parks, including its on-site amenities, such as landscape areas, walkways, and picnic spaces, as well as any minor service facilities including restrooms, storage sheds, or small information centers.

It is used for the design assessment of the following types of park:

Mini Park that includes small public plots, serving a residential cluster with limited facilities and services.

District Park that includes large open spaces with increased public facilities and services and usually used for recreational and social focus.

Community Park that serves two or more neighborhoods and serves broader purpose for recreational needs, open space preservation, and cultural events.

Large Urban Park that preserves a unique landscape in an urban environment and provides large open spaces to a diverse community. It also provides many public facilities and services.

2.1.
GSAS Schemes
Description

Regional Park that preserves large tracts of open space, generally well outside of city limits. It also provides many public facilities and services, though at a lower density than large urban parks. It has also more natural, open space than developed park facilities and public spaces.

2.1.1.3.   Commercial

Commercial scheme is used for the assessment of commercial building types include spaces that serve various functions such as offices, conference rooms, foyers, retail spaces, and ancillary areas.

2.1.1.4.   Core + Shell

Core + Shell scheme buildings consist wholly or partly undersigned infill, and the owner/developer may not have control over the fit-out of the spaces.

2.1.1.5.   Residential / Group Residential

Residential scheme building types include spaces used primarily for housing. This includes single-family housing units as well as multi-unit dwellings.

2.1.1.6.   Education

Education scheme buildings include educational facilities for students in kindergarten through 12th grade as well as college and university facilities. This includes classrooms, libraries, auditoriums, cafeterias, kitchens, offices, and other spaces that are part of academic buildings.

2.1.1.7.   Mosques

Mosques scheme building types include the building containing the congregational worship areas.

2.1.
GSAS Schemes Description

2.1.1.8. Hotels

Hotels scheme building types include a variety of spaces including guestrooms, lobbies, banquet halls, offices, conference rooms, dining areas and kitchens, fitness centers, retail spaces, and ancillary areas.

2.1.1.9. Light Industry

Light Industry scheme building types include both operational and office areas as well as the general building as a whole.

2.1.1.10. Sports

Sports scheme include any buildings or venues that are designed to host a sporting event that support activities for athletes/competitors, support staff, and spectators.

2.1.1.11. Railways

Railways scheme is used for rating the sustainability and ecological impacts of new main station buildings including spaces that serve various functions of a railway station such as but not necessarily limited to platform/concourse, offices, station control room, ticketing, retail, food/beverage areas, and ancillary areas.

2.1.1.12. Healthcare

Healthcare scheme is used for rating the ecological impacts of new healthcare buildings, including specialist hospitals, general hospitals, out-patient hospitals, and primary care health centers.

2.1.
GSAS Schemes Description

2.1.1.13. Workers' Accommodation

The Workers Accommodation scheme is developed based on the international labor standards and best practices employed in different parts of the world. The objective should be to ensure "adequate and decent housing accommodation and a suitable living environment for workers". This scheme defines the relevant criteria to meet the sustainability objectives of GSAS when designing workers accommodation.

2.1.1.14. Construction

Construction scheme is used on the assessment of the aspects of the construction process that has a lasting environmental impact, performs measurements related to normative standards and accepted practices, and considers what impacts the project can mitigate. The issues range from a thorough review of noise pollution to an assessment of construction expenditures.

2.1.1.15. Operations

Operations scheme is used for the evaluation of the environmental impact of building operations, verifies the original design intent, evaluate changes made through renovations and changes, and considers what impacts the project can mitigate.

2.1.1.16. Bespoke schemes

Please conact GORD for further information.

CHAPTER: 3

Project Certifications

3.1.
GSAS Overall
Certification Process

3.1.1. Form M01 shows the GSAS overall certificate flow chart for the design stage, construction stage, and operations stage, *Fig.3.1.*

GSAS OVERALL CERTIFICATION
FLOWCHART (Form - M01)

Figure 3.1.

3.2.
Certification During Design Stage

3.2.1. The design certification assesses the project's design deliverables from design stage up to post-construction stage, *Fig.3.2.*

3.2.2. Project shall receive *a Letter of Conformance (LOC)* upon approval of Resubmission indicating the achieved GSAS star rating of the completed design documents that are ready for construction, *Fig.3.2.*

3.2.3. GSAS design certificate shall only be issued after completing part I conformance to design audit and upon approval of final submittals indicating the final GSAS star rating achieved by the project's design documents, *Fig.3.2.*

3.3.
Certifications During Construction Stage

3.3.1. *GORD Trust is committed to ensuring the implementation of GSAS standards in the projects, by carrying out inspections during the construction phase.* There are two distinct types of certifications to be pursued during construction as described in 3.5., 3.6 and 3.7.

3.4.
Part (I) Conformance to Design Audit

3.4.1. Upon receiving the Letter of Conformance (LOC) from GORD Trust, the Owner (or Client) should nominate a Representative with a valid Service Provider license to be responsible for facilitating the conduct of Part (I) conformance to Design Audit (CDA). See also 3.9.1.8. and 3.9.1.10.

3.4.2. During construction and after construction is completed, GORD Trust shall conduct a number of routine and random audits which shall be facilitated by the Client Representative. *Fig.3.2.*

Figure 3.2.

3.4.
Part (I)
Conformance to Design
Audit

3.4.3. The goal of these audits to verify the validity of the data provided during the design stages as well as to ensure that the sustainability performance objective of the project is adequately met as per the initial design assessment.

3.4.4. The Client Representative's role, where defined includes, but is not necessarily limited to, submission of relevant documents during and after the completion of the construction to GORD Trust.

3.4.5. Upon successful completion of design audit, completion certificate and plaque of recognition shall be issued to the project, for having conformed to the performance set forth in the GSAS design assessment manual and the final GSAS star rating achieved by the project.

3.4.6. **Audit Visits**

3.4.6.1. Shall be conducted by GORD Trust or its "Authorized Representative" on a "Routine" or "Random" bases where in time and scope is agreed before hand and short notice is given to the Client Representative.

3.4.6.2. Shall serve as GORD Trust audit protocol where the compliance requirements submitted during the design development are validated during construction.

3.4.6.3. Shall be conducted for sampling purposes, as part of GORD Trust quality assurance process.

3.4.
Part (I)
Conformance to Design
Audit

3.4.6.4. The number of visits will be per Construction Audit table published by GORD Trust.

3.4.6.5. For projects with multiple phases of constructions, site visits will be conducted depending on the project schedule and will be treated on a case-to-case basis.

3.4.7. Roles and Responsibilities

3.4.7.1. Owner (or Client)

3.4.7.1.1. Shall appoint (or assign) an authorized representative to lead the overall planning, scheduling, and coordinating of the required GSAS construction audit visits.

3.4.7.1.2. The Client Representative may come from the design consultancy firm, program/project management firm, construction management firm, construction supervision firm or an independent sustainability advisor firm holding a valid GSAS Service Provider license.

3.4.7.2. Client Representative

3.4.7.2.1. Shall facilitate project site audit and collection of data to validate the claimed scores for the design certification.

3.4.7.2.2. Shall sufficiently demonstrate that evidences, such as site inspection report, photographs, bill of materials, and other construction documents, are supporting the measurement principles of the GSAS criterion before submitting to GORD Trust for final review.

3.4.
Part (I)
Conformance to Design Audit

3.4.7.2.3. Shall work for the Owner and not for the Contractor to ensure an independent verification during construction.

3.4.7.3. GORD Trust (or its approved field inspectors)

3.4.7.3.1. Conduct random and routine visits at various stages of the construction.

3.4.7.3.2. Review of the submitted data and evidences by Client Representative as mentioned from above.

3.4.7.4. Contractor

3.4.7.4.1. Must be a valid GSAS Service Provider and shall appoint a GSAS-CGP with a valid certificate to coordinate with the Client Representative and ensure seamless construction audits.

3.4.7.4.2. Shall extend the required assistance and necessary support to the Client Representative for the successful implementation of site audit visits and collection of data.

3.4.7.4.3. Shall prepare and sign-off all submittals and evidences relevant to the design parameters of the issued LOC for the project.

3.4. **Part (I)** **Conformance to Design** **Audit**	**3.4.8. Sample Appointment Letter of Client Representative** **3.4.8.1.** See *Fig. 3.3.* for the sample letter of appointment for the design audit (Part I) works.

ON PROJECT
OWNER'S
LETTERHEAD

Date:
Ref:

Client Representative Appointment Letter

Att. GORD Trust,
Gulf Organisation for Research & Development,
QSTP,
Doha-Qatar.

Dear Sirs;
We are pleased to appoint _____ *(name of appointed Firm)*, holding a valid Service Provider license *(SP no.xxxx)*, as our representative for GSAS Construction Audits for the _____ *(project name)* which issued the LOC Ref. No. (_____) on the following terms and conditions:

1. The appointee will carry out the duties and responsibilities as outlined by GORD Trust.

2. The delegation of the authority however, does not relieve us from the responsibility and accountability for this project.

3. Should the appointee-unable to deliver within GORD Trust expectations, we are hereby responsible to find a suitable replacement within (4-6) weeks upon the receipt of a written notice from GORD Trust.

By: _____   Signature:_____
(Name of the Owner/Client Authorized Signatory)

Title: _____   Date: _____
(Title or Position of the signatory)

Owner/Client Stamp: _____

Figure 3.3.

3.5.
Part (II)
Site Construction
Practices Audit

3.5.1. GSAS construction scheme certification process identifies the relevant project stages and the detailed GSAS assessment and certification process for (Part II) Site Construction Practices Audit (SCPA). See *Fig.3.4.*

GSAS CONSTRUCTION SCHEME CERTIFICATION PROCCESS

RELEVANT PROJECT STAGES   **GSAS ASSESSMENT AND CERTIFICATION PROCESS**

PRE - CONSTRUCTION

- Tender action
- Contract award

CONSTRUCTION

- Mobilisation
- Construction to Practical Completion
- Practical Completion

USE

- Post - Practical Completion

Project Registration → Project Ceritication & Inspection Visits Fees payable to GROD

Letter of assignment issued by Proect Owner/Client (identifying a CGP who will act on behalf of Contractor*, i.e. *Contractor's CGP*)

Introductory meeting GSAS team/Contractor's CGP & review of Construction/Handover programme**

Contractor's CGP passes pre-construction site background noise survey information to GSAS team (S.9 part 1)

Contractor's CGP passes the following to GSAS team for review:
1. Sewer & Waterway Contamination Plan (UC.5)
2. Solid Waste Load Plan (UC.10)
3. Energy Conservation Plan (E.6)
4. Water Conservation Plan (W.2)
5. Recycled Materials Calculator (M.3)
6. Support of National Economy Plan & Calculator (CE.2)
7. Recycling Management Plan (M0.3)
8. Leak Detection Plan (M0.4)
9. Mechanical Equipment Protection Plan (M0.10)
10. Contruction Health & Safety Plan (M0.11)

GSAS interim submittals information review - comments passed to Contractor's CGP

GSAS team site inspections (typology dependent - refer to GSAS Part (‖) Site Construction/Inspection visits schedule for more detail)

Construction Peak

Contractor's CGP submits Dust Control Calculator (UC.9)

Contractor's CGP submits site noise recordings for the period covering Mobilisation to Practical Completion (S.9 part 2)

Contractor's CGP submits updated full and final submittals information to GSAS team

GSAS review & GSAS compliance sign off

Issuance of GSAS Construction Certificate

Appeal → Review Appeals

NOTES:
* - *Contractor's CGP can be*
EITHER a member of Contractor's team (N.B must be GSAS CGP trained person)
OR an independent GSAS services provider company

** - The above flowchart assumes single-phased construction programme.
Multi-phased projects may require a more specific certification process roadmap, which must be agreed as early as possible
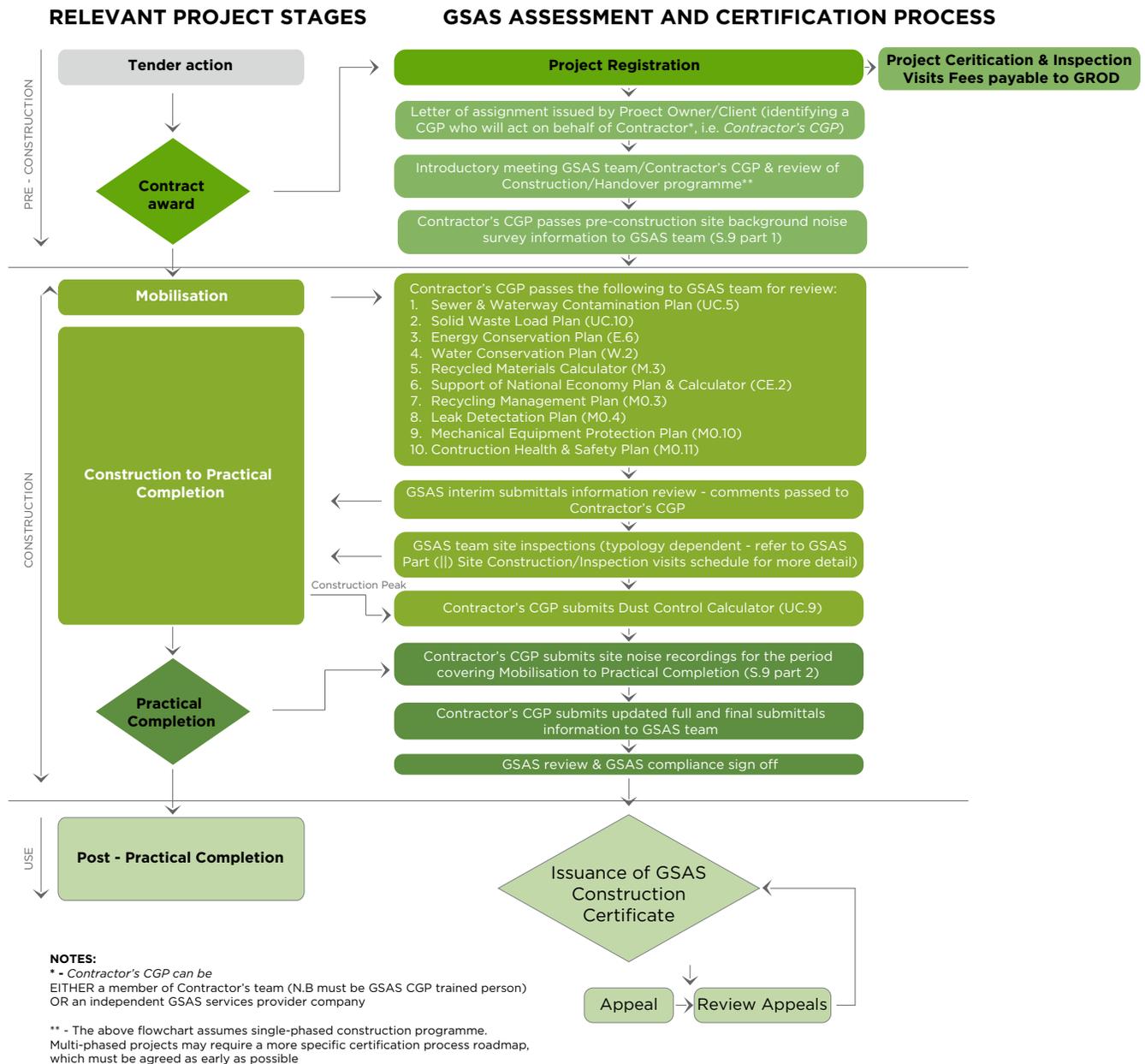
Figure 3.4.

3.5. Part (II) Site Construction Practices Audit

3.5.1. The Site Construction Practices certification assesses the environmental impact of the construction process for a building or a project.

3.5.2. The assessor evaluates the aspects of the construction practices that have a lasting environmental impact, performs measurements related to normative standards and accepted practices, and considers what impacts the project can mitigate.

3.5.3. This certification is not related to Design certification as it assesses the practices of contractors performing the construction activities.

3.5.4. Audit Visits

3.5.4.1. Shall be conducted by GORD Trust or its "Authorized Representative" on a "Routine" basis wherein time and scope is agreed beforehand and short notice is given to the Contractor.

3.5.4.2. Shall serve as GORD Trust audit protocol where the compliance requirements submitted during the design development are validated during construction.

3.5.4.3. The number of visits will be per Construction Audit table published by GORD Trust.

3.5.4.4. For projects with multiple phases of constructions, site visits will be conducted depending on the project schedule and will be treated on a case-to-case basis.

3.5.
Part (II)
Site Construction
Practices Audit

3.5.5. Roles and Responsibilities

3.5.5.1. GORD Trust (or its approved field inspectors)

3.5.5.1.1. Conduct routine visits at peak stage of the construction.

3.5.5.1.2. Review and verification of the submitted data and evidences by Contractor CGP.

3.5.5.2. Contractor

3.5.5.2.1. Must be a valid GSAS Service Provider for construction and shall appoint a GSAS-CGP focal person who shall register and assess the construction practices applied to the project.

3.5.5.2.2. The Contractor's CGP must be under the employ of the Contractor applying for the construction certification.

3.5.5.2.3. Shall facilitate site audit and collection of data to validate the claimed scores.

3.5.5.2.4. Shall sufficiently demonstrate that evidences, such as site audit report, photographs, surveys, site measurements, and other construction documents, are supporting the measurement principles of the GSAS criterion before submitting to GORD Trust for final review.

3.6.
Certification During
Operation Stage

3.6.1. The Building Operations certification assesses the environmental impact of a new or existing building in operation.

3.6.2. In Building Operations certification, the assessor (Client representative for operations assessment) registers the project, verifies the original design intent, evaluates changes made through renovations or additions, submits criteria submittals for review and verification, considers what impacts the project can mitigate, appeals the verification results, and receives completion letter and plaque of recognition for the project.

3.7.
Registration and Certification Policies

3.7.1. Mandatory compliance to the following GSAS policies for project certifications is a pre-requisite for certification:

3.7.1.1. The assessed average energy performance (Energy Category) of the project shall not receive a negative score.

3.7.1.2. The assessed water performance (Water Category) of the project shall not receive a negative score.

3.7.1.3. For Districts Assessment, seventy percent (70%) of the net built-up area shall be certified.

3.7.1.4. Remaining 30% of the net built-up area in the Districts Assessment may consist of small auxiliary buildings and building typologies not covered in GSAS assessment, such as substations, guardhouses, pump stations, treatment plants, stores, etc.

3.7.1.5. For Mixed Development, ninety percent (90%) of the net built-up area in the assessment shall be certified.

3.7.1.6. Net built-up area in the Mixed Development shall exclude car park built-up area.

3.7.1.7. Remaining 10% of the net built-up area in the Mixed Typology may consist of small auxiliary buildings and building typologies not covered in GSAS assessment, such as substations, guardhouses, pump stations, treatment plants, stores, etc.

3.7. Registration and Certification Policies

3.7.1.8. Client or the project developer or owner who wishes to obtain design certification shall appoint an authorized GSAS Service Provider(s) for design who shall register the project for design assessment and (Part 1) Conformance to Design Audit (CDA), *Fig.3.2.*

3.7.1.9. Client or the project developer or owner who wishes to obtain operations certification shall appoint an authorized GSAS Service Provider for operations who shall register the project for operations assessment, *Fig.3.2.*

3.7.1.10. Contractor who shall perform the construction of a project that has already obtained LOC shall appoint a GSAS-CGP who shall coordinate the (Part 1) Conformance to Design Audit requirements, *Fig.3.2.*

3.7.1.11. Contractor who wishes to obtain construction certification must be an authorized GSAS Service Provider for construction who shall register the project for (Part II) construction Audit, *Fig.3.2.*

3.7.1.12. Projects aspiring for GSAS Operations certification can either apply for EPL assessment or WPL assessment or both. Also for major renovation projects, full GSAS schemes can be applied.

3.7.1.13. Contact GORD for more details and for the latest updates to GSAS Registration and Certification Policies.

3.8.
Pre-Certification
Review Services
(PCR Services)

3.8.1. To support the sustainability development of the projects, GORD Trust currently offers the Pre-Certification Review services to its Clients:

3.8.1.1. Provide review of the GSAS supporting design documents and toolkits during the various stages of design development.

3.8.1.2. Attend the kick-off meeting.

3.8.1.3. Fees and charges are subject to the terms and conditions of the contract.

3.8.3. GORD acknowledges that sometimes different projects may require different support. To obtain a fee proposal, email your request at gord-trust-info@gord.qa.

3.8.4. Form M02 shows the GSAS certification process for projects that do not avail the pre-certification review (PCR) services offered by GORD to its Clients, *Fig.3.5.*

3.8.5. Form M03 shows the GSAS certification process for projects that avail the pre-certification review (PCR) servives offered by GORD to its Clients, *Fig.3.6.*
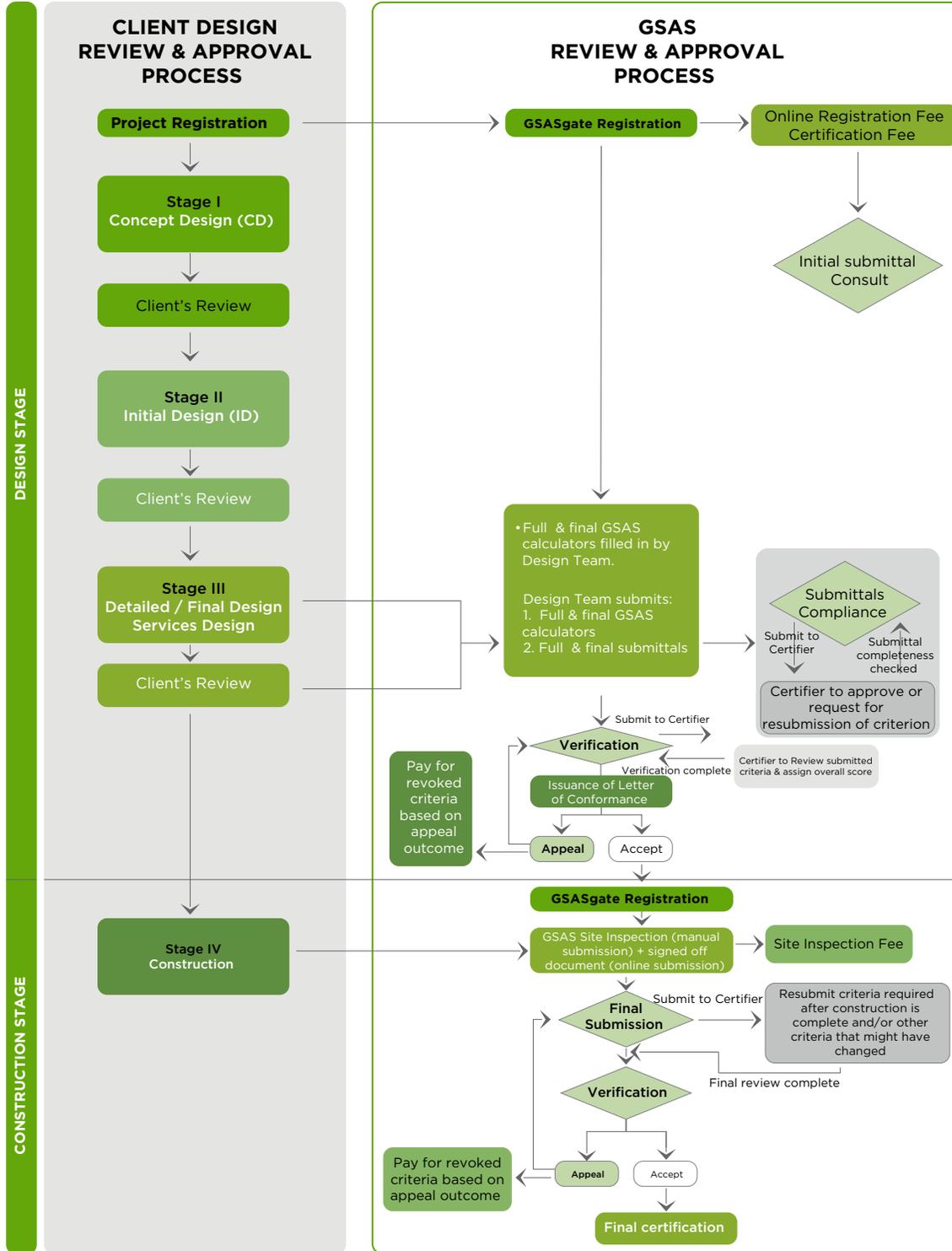
GSAS CERTIFICATION PROCESS (Form - M02)

Figure 3.5.

GSAS CERTIFICATION PROCESS (Form - M03)
(with Pre Certification Review-PCR)

CLIENT DESIGN REVIEW & APPROVAL PROCESS

GSAS REVIEW & APPROVAL PROCESS

DESIGN STAGE

Project Registration

Stage I Concept Design (CD)

Client's Review

Stage II Initial Design (ID)

Client's Review

Stage III Detailed / Final Design Services Design

Client's Review

GSASgate Registration

Online Registration Fee
Certification Fee

- Project description and preliminary architectural concept design drawings passed on to GSAS team.
- CD Stage GSAS team/project team kick-off meeting
- GSAS simplified toolkit filled in by Design Team
- CD Stage GSAS Design team review meeting & CD Stage GSAS compliance sign off

Initial submittal Consult

- Design Team passes on the following to GSAS team:
  1. GSAS calculators indicating preliminary score & design assumptions
  2. (Work in progress) Design drawings
- GSAS team/Design Team interim review meeting
- Design team updates GSAS simplified toolkit
- DC1 Stage GSAS review meeting with Design Team & DC1 Stage GSAS compliance sign off

- Full & final GSAS calculators filled in by Design Team.
- 2no GSAS team/Design team meetings during FD Stage
  Design Team submits:
  1. Full & final GSAS calculators
  2. Full & final submittals
- GSAS final design stage review & GSAS compliance sign off

Submittals Compliance

Submit to Certifier

Submittal completeness checked

Certifier to approve or request for resubmission of criterion

Submit to Certifier

Verification

Certifier to Review submitted criteria & assign overall score

Verification complete

Pay for revoked criteria based on appeal outcome

Issuance of Letter of Conformance

Appeal   Accept

CONSTRUCTION STAGE

Stage IV Construction

GSASgate Registration

Site Inspection Fee

GSAS Site Inspection (manual submission) + signed off document (online submission)

Submit to Certifier

Final Submission

Resubmit criteria required after construction is complete and/or other criteria that might have changed

Final review complete

Verification

Pay for revoked criteria based on appeal outcome

Appeal   Accept
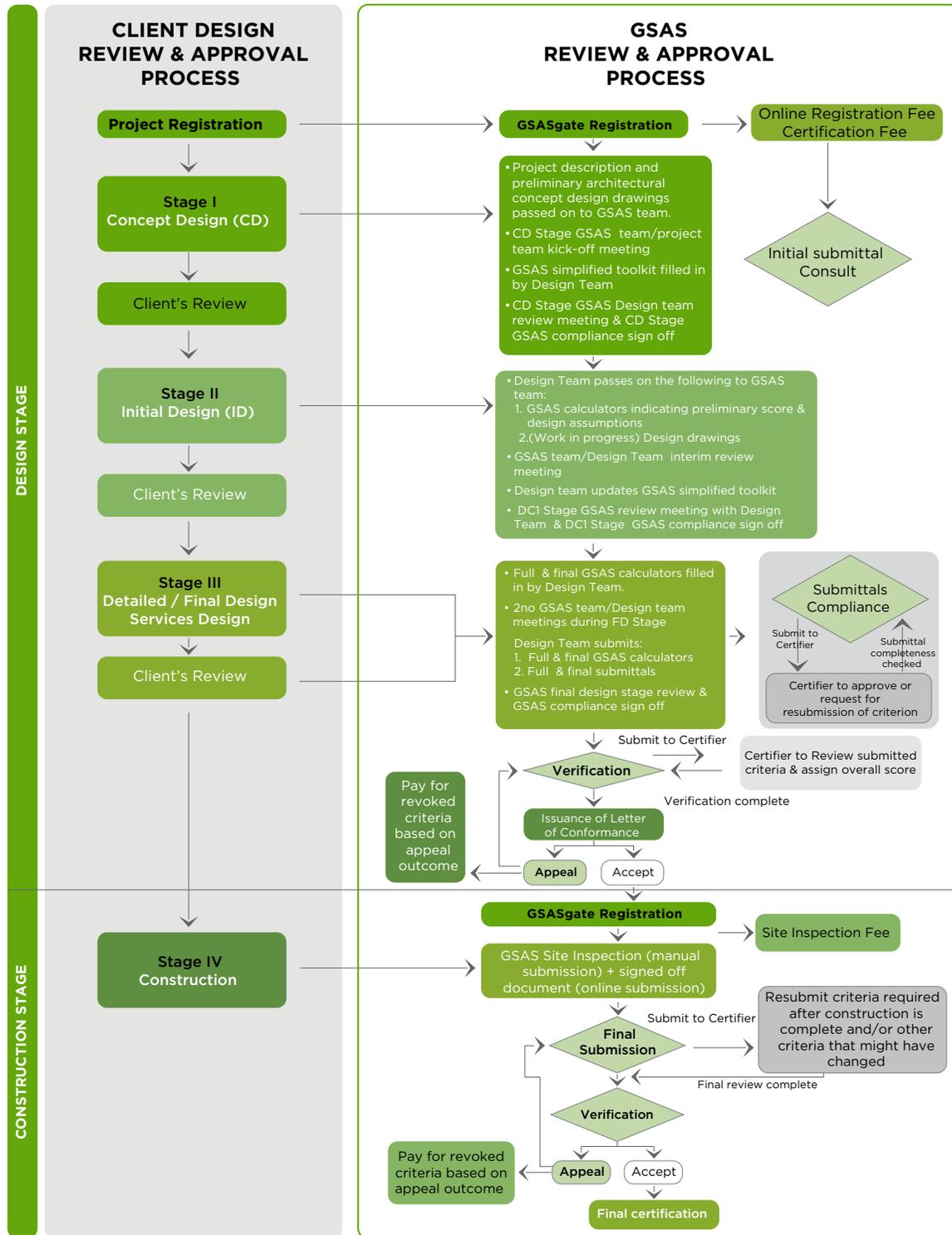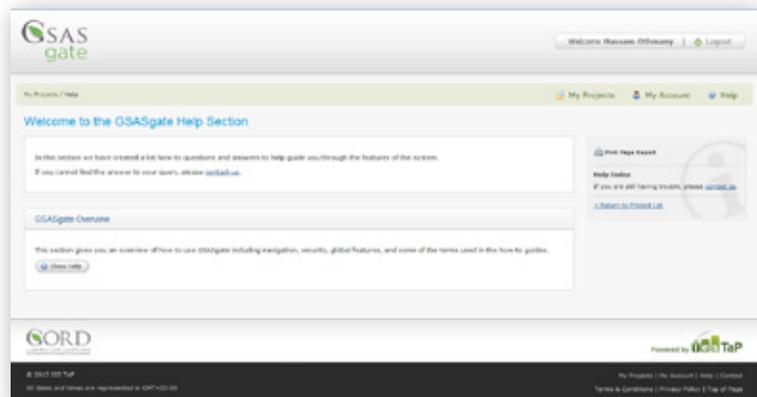
Final certification

Figure 3.6.

**3.9.
GSASgate Online Project
Management System**

1.9.1. All projects seeking certification shall register online unless otherwise instructed.

1.9.2. All projects under v2.0 shall access GSASgate project management after obtaining login email and password.

1.9.3. To maintain access to GSASgate, system usage fee shall be paid annually.

1.9.4. Tutorial for using GSASgate can be accessed from the homepage of the system.

CHAPTER: 4

Membership
Requirements

4.1.
For GSAS-CGPs

4.1.1. To manage a project for certification, the GSAS Project Manager must be a GSAS-CGP^{TM}.

4.1.2. GSAS-CGP^{TM} shall mean GSAS-Certified Green Professional.

4.1.3. This scheme is the starting certification for candidates who wish to apply for all other certifications schemes in the future.

4.1.4. This title is conferred to those candidates who have earned the GSAS-CGP^{TM} certification's full requirements and by demonstrating a well-rounded understanding and knowledge of the GSAS project management through participation in the GSAS 3-day training workshop and passing the GSAS exam.

4.1.5. The GSAS-CGP^{TM} proctored, open-book examination is designed to tests a candidate's knowledge of all GSAS criteria in order to prepare the candidate for managing a GSAS project from registration to certification.

4.1.6. Upon passing the exam, the candidate is given a GSAS-CGP^{TM} certificate which entitles the holder to exercise the rights and privileges of a GSAS-Certified Green Professional as provided for in the GORD Academy Policies and Manuals.

4.1.7. GSAS-CGP^{TM} certificate is renewable every three (3) years.

4.1.8. By participating in the GSAS-CGP^{TM} certification program, each person who earns and maintains this certification agrees to be listed on GORD Academy's public website.

4.1.9. Only those individuals who are bonafide GSAS-CGP^{TM} will be listed on the site.

4.1. **For GSAS-CGPs**	**4.1.11.** The GSAS-CGP^{TM} membership is renewable every three years. **4.1.12.** Renewal of the membership requires payment of the renewal fee,attendance of GSAS refresher course and gaining appropriate CEC's. See GORD Academy Guide to renewal policy.
4.2. **For Service** **Providers**	**4.2.1.** The only corporate membership that is privileged to conduct project assessment and certification is through Service Provider membership. **4.2.2.** The corporate must have at least one bonafide GSAS-CGP^{TM} working full-time with the company to be granted membership. **4.2.3.** The Service Provider membership is renewable every year. **4.2.4.** The company must ensure that the certificate and individual membership of its GSAS-CGP^{TM} are valid. **4.2.5.** There are several schemes that a Service Provider can apply for membership; Building Typologies, Districts and Parks, Sports, Railways, Health Care, Construction, Operations and Infrastructure. Each has equivalent annual fees. **4.2.6.** The Service Provider may apply for all types of services or combinations of each type service. **4.2.7.** See www.gord.qa for Service Provider membership fees.

**4.3.
Registration and
Credentialing
Policies**

4.3.1. To become a GSAS-CGP^{TM}, a candidate must attend the 3-day training workshop, pay the corresponding fee, and pass the exam. See 5.6.6 for the training workshop registration fee and online testing fee.

4.3.2. A candidate must take the online exam within four months following completion of attendance to the GSAS 3-day training workshop. A candidate is allowed only two chances to re-take the exam within the four months period from the date the last exam was taken. Failure to pass the exam, the candidate must reapply for the 3-day training workshop and pay the corresponding fee.

4.3.3. Each GSAS-CGP^{TM} certificant shall renew his/her certificate every 3 years. Renewal of the certificate for the succeeding 3 year cycle requires payment of certificate renewal fee. See 5.6.4 for certificate renewal fee.

4.3.4. Renewing certificant must also show proof of attendance to the GSAS-CGP^{TM} refresher course. Visit *www.gord.qa* for the current refresher course offerings. All refresher courses are conducted for a fee in a function room type, half a day seminar.

4.3.5. The courses provide certificant the chance to update his/her knowledge based on the latest addenda or versions to GSAS manuals, toolkits, and online PMS.

4.3.6. The renewal period shall start at the end of the 3-year cycle beginning from the date that the certificant has earned his/her certification.

4.3.7. Individuals who fail to submit evidence of the required attendance to GSAS refresher courses before the certification's validity period expires shall be considered "non-renewing" and shall immediately cease using the specific certification titles after their names.

4.3.
Registration and
Credentialing
Policies

4.3.8. The names of non-renewing certificant shall be removed from the list of GSAS certified professionals on GORD Academy's public website.

4.3.9. To be reinstated, non-renewing certificant shall submit reinstatement fee and evidence of the required attendance to GSAS refresher courses. See 5.6.4 for reinstatement fee.

4.3.10. Extenuating circumstances shall be reviewed on a case-to-case basis by the Academy's Certification Committee.

CHAPTER: 5

GORD Centers of Excellence

GORD

المنظمـــة الخليجيـــة للبحـــث والـتطويـــر

Gulf Organisation for Research & Development

A Member of QATARI DIAR

5.1.
About GORD

5.1.1. Gulf Organisation for Research and Development (GORD), the authority for knowledge on sustainability in the MENA region has launched the Global Sustainability Assessment System (GSAS) as the standard for excellence on sustainability in the MENA region. Three centres of excellence exist within GORD:

• GORD Trust

• GORD Institute

• GORD Academy

GORD
TRUST
A Member of QATARI DIAR

5.2.
GORD Trust

5.2.1. The center is responsible for the development of sustainable building standards, and certifications for developments during the design, construction, and operation phases, and all other future certification schemes.

GORD
INSTITUTE

A Member of QATARI DIAR

5.3.
GORD Institute

5.3.1. The center runs scientific research programs in partnerships with local and international organizations, from both academic and applied research perspectives. The aim is to advance knowledge and investigate new approaches to enhance sustainability in the built environment.

GORD
ACADEMY
A Member of QATARI DIAR

5.4.
GORD Academy

5.4.1. The center is responsible for offering memberships, training and development programs, which are designed to meet the educational needs of the professionals and practitioners working in the construction industry.

CHAPTER: 6

GSAS Publication Series

6.
GSAS
Publications

6.1. GSAS Districts: Design Assessment v2.0

DISTRICTS
GSAS ASSESSMENT

Dr. Yousef Al Horr, Founding Chairman   2013   V2.0

GORD
TRUST
A Member of QATARI DIAR

GSAS
2009
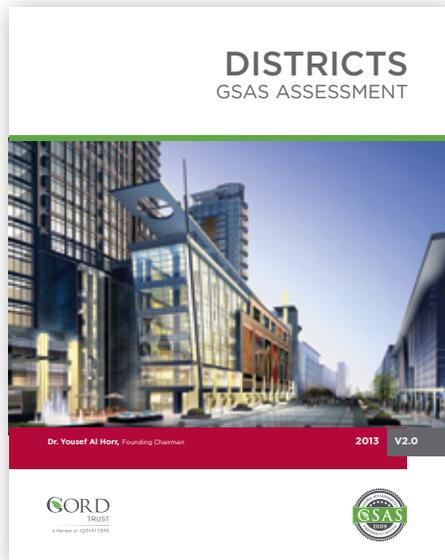
Fig 6.1.

6.1.1. Provide information for evaluating the planning and design of urban development projects, including several components such as infrastructure networks, transportation networks and public or open spaces.

6.1.2. Guide design and construction professionals through design assessment for both new and existing districts.

6.1.3. The manuals consist of a set of criteria and measurements used to assess the individual aspects of environmental impact and documenting the degree to which the requirements of Global Sustainability Assessment System (GSAS) have been met.

6.1.4. Provide information for the design assessment of each criterion in the following categories: Urban Connectivity, Site, Energy, Water, Materials, Outdoor Environment, Cultural & Economic Values, Management & Operations.

6.
GSAS
Publications

6.2.   GSAS Districts: Design Guidelines v2.0

DISTRICTS
GSAS GUIDELINES

Dr. Yousef Al Horr, Founding Chairman   2013   V2.0

GORD
TRUST
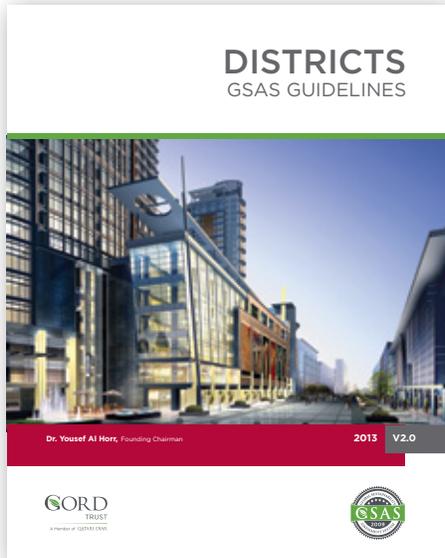
Fig 6.2.

6.2.1.   Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.2.2.   Intended to be used as a practical resource to supplement the design assessment manual.

6.2.3.   Contains descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.2.4.   Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.
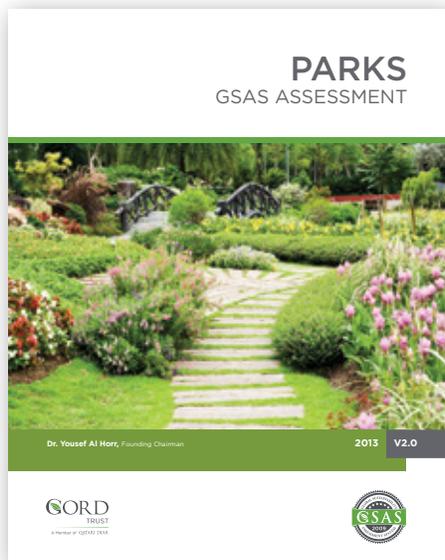
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<tr><td>

6.
GSAS
Publications

</td><td>

6.3.   **GSAS Parks: Design Assessment v2.0**

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</table>

Fig 6.3.

6.3.1. Provide information for rating the ecological impacts of new and existing parks, including its on-site amenities, such as landscape areas, walkways, and picnic spaces, as well as any minor service facilities including restrooms, storage sheds, or small information centers.

6.3.2. Provide information for the design assessment of the following types of park:

6.3.2.1. Mini Park that includes small public plots, serving a residential cluster with limited facilities and services.

6.3.2.2. District Park that includes large open spaces with increased public facilities and services and usually used for recreational and social focus.

6.3.2.3. Community Park that serves two or more neighborhoods and serves broader purpose for recreational needs, open space preservation, and cultural events.

6.3.2.4. Large Urban Park that preserves a unique landscape in an urban environment and provides large open spaces to a diverse community. It also provides many public facilities and services.

6.3.2.5. Regional Park that preserves large tracts of open space, generally well outside of city limits. It also provides many public facilities and services, though at a lower density than large urban parks. It has also more natural, open space than developed park facilities and public spaces.

6.
GSAS
Publications

6.4. **GSAS Parks: Design Guidelines v2.0**

PARKS
GSAS GUIDELINES

Dr. Yousef Al Horr, Founding Chairman   2013   V2.0

GORD
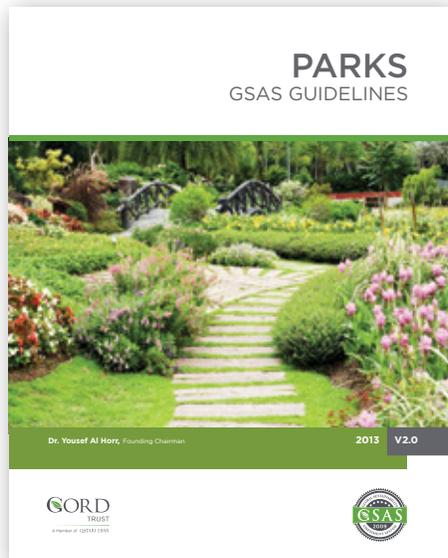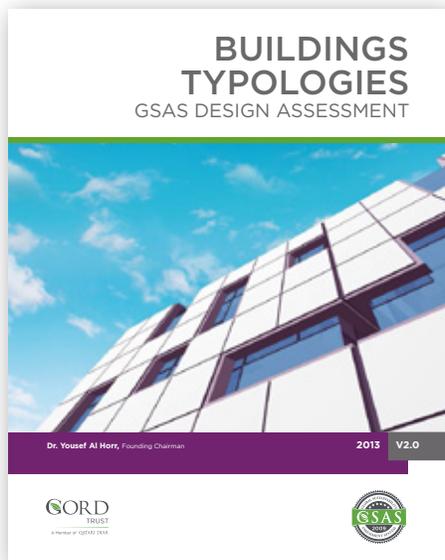TRUST
A Partner of QATARI DIAR

Fig 6.4.

6.4.1. Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.4.2. Intended to be used as a practical resource to supplement the design assessment manual.

6.4.3. Contain descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.4.4. Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

6.
GSAS
Publications

6.5. **Building Typologies**
Design Assessment v2.0

BUILDINGS
TYPOLOGIES
GSAS DESIGN ASSESSMENT

Dr. Yousef Al Horr, Founding Chairman   2013   V2.0

GORD
TRUST
A Member of QATAR TRUST

GSAS

Fig 6.5.

6.5.1. Provide information for the design assessment of each of the following typologies:

6.5.1.1. **Commercial** - It is used for the assessment of commercial building types include spaces that serve various functions such as offices, conference rooms, foyers, retail spaces, and ancillary areas.

6.5.1.2. **Core + Shell** - Core + Shell buildings consist wholly or partly undersigned infill, and the owner/developer may not have control over the fit-out of the spaces.

6.5.1.3. **Residential / Group Residential** - Residential building types include spaces used primarily for housing. This includes single-family housing units as well as multi-unit dwellings.

6.5.1.4. **Education** - Education buildings include educational facilities for students in kindergarten through 12th grade as well as college and university facilities. This includes classrooms, libraries, auditoriums, cafeterias, kitchens, offices, and other spaces that are part of academic buildings.

6.5.1.5. **Mosques** - Mosques building types include the building containing the congregational worship areas.

6.5.1.6. **Hotels Scheme** - Hotels building types include a variety of spaces including guestrooms, lobbies, banquet halls, offices, conference rooms, dining areas and kitchens, fitness centers, retail spaces, and ancillary areas.

6.5.1.7. **Light Industry** - Light Industry building types include both operational and office areas as well as the general building as a whole.

6.
GSAS
Publications

6.6 **Building Typologies**
Design Guidelines v2.0

**BUILDINGS
TYPOLOGIES**
GSAS DESIGN GUIDELINES

Dr. Yousef Al Horr, Founding Chairman   2013   V2.0

GORD
TRUST
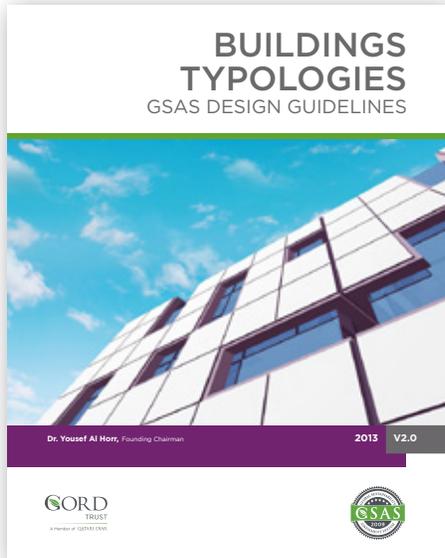A Partner of QATARI DIAR

GSAS
2009

Fig 6.6.

6.6.1. Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.6.2. Intended to be used as a practical resource to supplement the design assessment manual.

6.6.3. Contain descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.6.4. Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

6.
GSAS
Publications

6.7.   GSAS Sports: Design Assessment v2.0

SPORTS
GSAS DESIGN ASSESSMENT

Dr. Yousef Al Hort, *Founding Chairman* | Dr. Esam Elsarrag   2013   V2.0

GORD
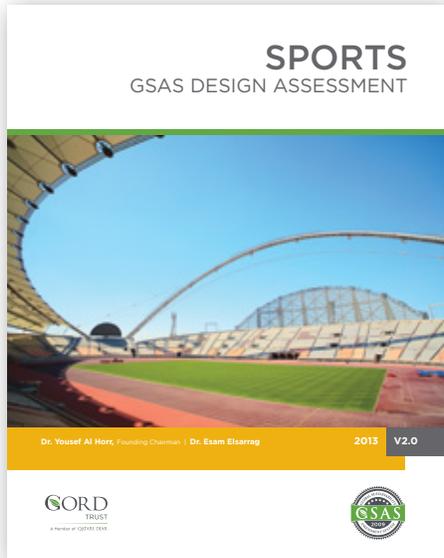TRUST
A Member of QATAR TASK

GSAS

Fig 6.7.

6.7.1.   Sports facilities include any buildings or venues that are designed to host a sporting event that support activities for athletes/competitors, support staff, and spectators.

6.
GSAS
Publications

6.8.   GSAS Sports: Design Guidelines v2.0

SPORTS
GSAS DESIGN GUIDELINES

Dr. Yousef Al Horr, Founding Chairman | Dr. Esam Elsarrag   2013   V2.0
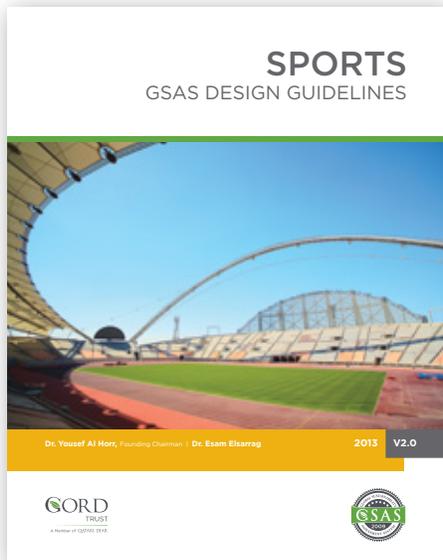
Fig 6.8.

6.8.1.   Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.8.2.   Intended to be used as a practical resource to supplement the design assessment manual.

6.8.3.   Contain descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.8.4.   Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

6.
GSAS
Publications

6.9.   GSAS Railways: Design Assessment v2.0

RAILWAYS
GSAS DESIGN ASSESSMENT

Dr. Yousef Al Horr, Founding Chairman | Dr. Esam Elsarrag   2013 | V2.0
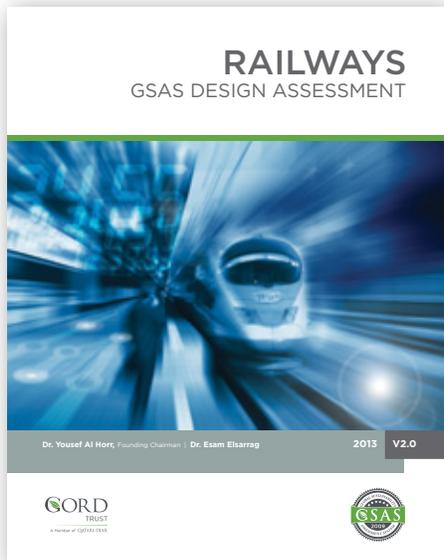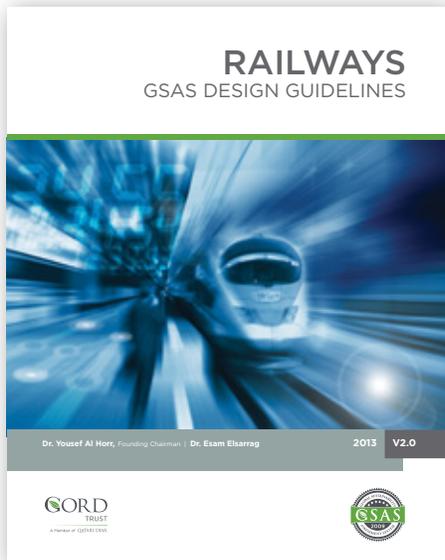
GORD
TRUST
A Member of QATARI DIAR

GSAS
2009

Fig 6.9.

6.9.1. Provide information for rating the sustainability and ecological impacts of new main station buildings including spaces that serve various functions of a railway station such as but not necessarily limited to platform/concourse, offices, station control room, ticketing, retail, food/ beverage areas, and ancillary areas.

6.
GSAS
Publications

6.10.   **GSAS Railways: Design Guidelines v2.0**

RAILWAYS
GSAS DESIGN GUIDELINES

Dr. Yousef Al Horr, Founding Chairman | Dr. Esam Elsarrag   2013   V2.0

GORD
TRUST
A Member of QATARI DIAR

Fig 6.10.

6.10.1.   Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.10.2.   Intended to be used as a practical resource to supplement the design assessment manual.

6.10.3.   Contain   descriptive   information   for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.10.4.   Projects   shall   consider   and   assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

6.
GSAS
Publications

6.11. **GSAS Healthcare: Design Assessment v2.0**

Fig 6.11.

6.11.1. Provide information for rating the ecological impacts of new healthcare buildings, including specialist hospitals, general hospitals, out-patient hospitals, and primary care health centers.

6.
GSAS
Publications

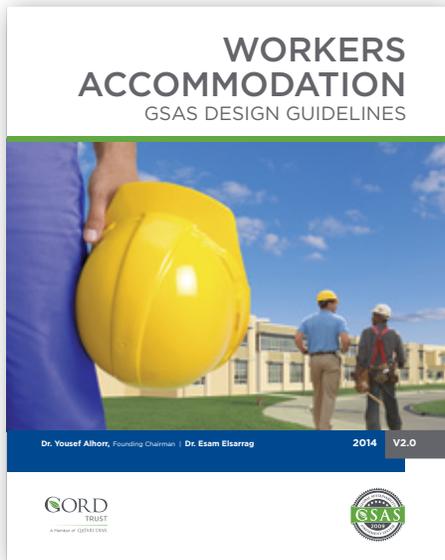**6.12.   GSAS Healthcare: Design Guidelines v2.0**

Fig 6.12.

6.12.1. Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.12.2. Intended to be used as a practical resource to supplement the design assessment manual.

6.12.3. Contain descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.12.4. Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

**6.13.   GSAS Workers' Accommodation:
Design Assessment v2.0**

WORKERS
ACCOMMODATION
GSAS DESIGN ASSESSMENT

Dr. Yousef Alhorr, Founding Chairman | Dr. Esam Elsarrag   2014   V2.0

GORD
TRUST
A Member of [QESU] QISE

GSAS
2009
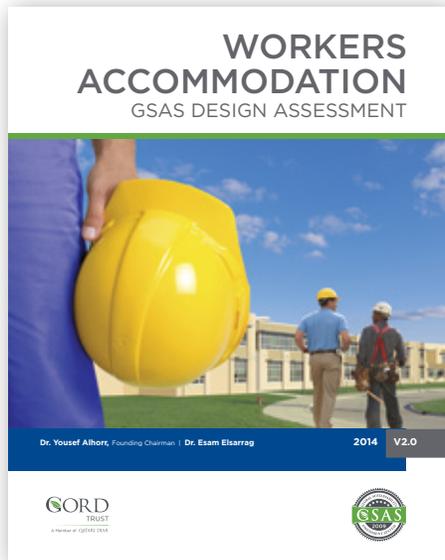
Fig 6.13.

6.13.1. The Workers Accommodation scheme is developed based on the international labor standards and best practices employed in different parts of the world.

6.13.2. The objective should be to ensure "adequate and decent housing accommodation and a suitable living environment for workers".

6.13.3. This scheme defines the relevant criteria to meet the sustainability objectives of GSAS when designing workers accommodation.

<table>
<tr><td>

6.
GSAS
Publications

</td><td>

6.14.   **GSAS Workers' Accommodation:**
              Design Guidelines v2.0

</td></tr>
</table>

Fig 6.14.

6.14.1. Documents that continuously evolve to include timely and relevant sustainable strategies that could help mitigate the negative effects of the project.

6.14.2. Intended to be used as a practical resource to supplement the design assessment manual.

6.14.3. Contain descriptive information for consideration to help attain the specific credit for each criterion in the GSAS categories. These suggestions are in the form of recommended methods, strategies, and technologies.

6.14.4. Projects shall consider and assess the potential advantages and benefits of the recommended design guidelines in relationship to the specific goals, requirements and conditions of the project.

6.
GSAS
Publications

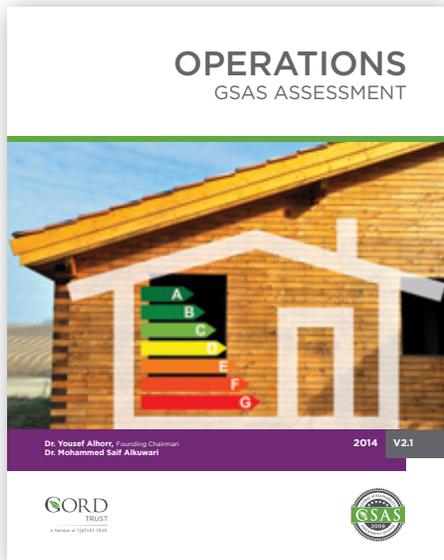## 6.15.   GSAS Operations: Design Assessment v2.1

Fig 6.15.

6.15.1.   Provide information for the evaluation of the environmental impact of building operations, verifies the original design intent, evaluate changes made through renovations and changes, and considers what impacts the project can mitigate.

6.
GSAS
Publications

**6.16.   GSAS Operations:
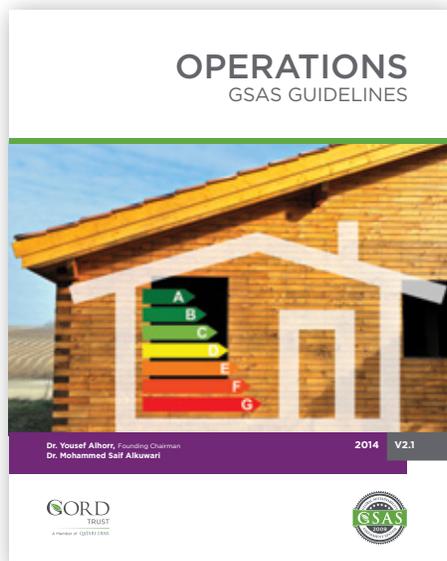   Design Guidelines v2.1**

Fig 6.16.

6.16.1.   Provide recommendations and guidance for the effective implementation of the sustainable goals of each criterion within the facility Operations of new and existing buildings.

6.16.2.   Intended to supplement the Operations Assessment manual.

**6.
GSAS
Publications**

**6.17.   GSAS Construction:
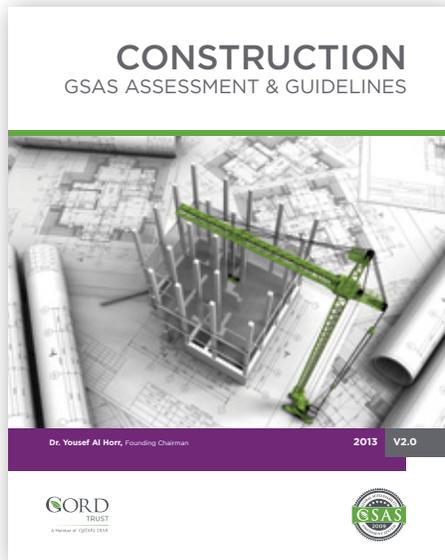   Design Assessment & Guidelines v2.0**

Fig 6.17.

6.17.1.   Provide information on the assessment of the aspects of the construction process that has a lasting environmental impact, performs measurements related to normative standards and accepted practices, and considers what impacts the project can mitigate. The issues range from a thorough review of noise pollution to an assessment of construction expenditures.

6.17.2.   Provide recommendations and guidance for the effective implementation of the sustainable goals of each criterion within the Construction assessment of the aspects of the construction process.

6.17.3.   Intended to supplement the Construction Assessment manual.

6.
GSAS
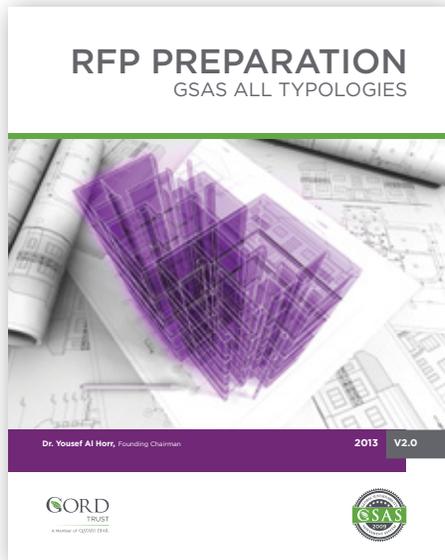**Publications**

6.18.   Other Publications

Fig 6.18.

6.18.1. RFP Preparation

A guide to facilitate the preparation of an RFP and Project Brief in the pre-design stages of development.

6.18.2. Building Energy Application Manual

Master document for the application and implementation of the CEN/ISO energy performance standard and all its related standards to all buildings in the country. The Building Energy Application is a guide for using the CEN standards with localized normative references of energy performance and regulation code for the region.

6.18.3. Building Energy Guidelines

A series of guidelines for designers to improve building energy performance in the region.
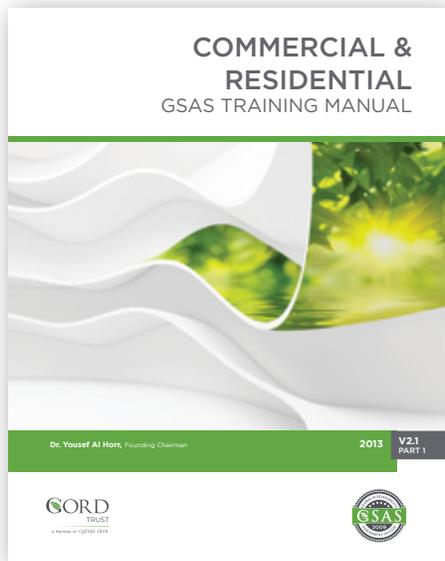
6.
GSAS
Publications

Fig 6.19.

6.19.   Training Manual - Part (1)

6.19.1.   A comprehensive resource for GSAS users throughout the entire design phase of a project.

6.19.2. It is used as a study guide to become a GSAS Certified Green Professional or Trainer.

6.19.3. Incorporates eight typologies, Commercial, Core + Shell, Residential, Education, Mosques, Hotels, Light Industry, and Sports, to provide explanations and examples of how to complete the submittal process for each building type.

6.19.4. The training manual introduces each category and then provides a comprehensive description and example for each criterion.

6.
GSAS
Publications

**COMMERCIAL &
RESIDENTIAL**
GSAS TRAINING MANUAL

Dr. Yousef Al Horr, Founding Chairman   2013   V2.1
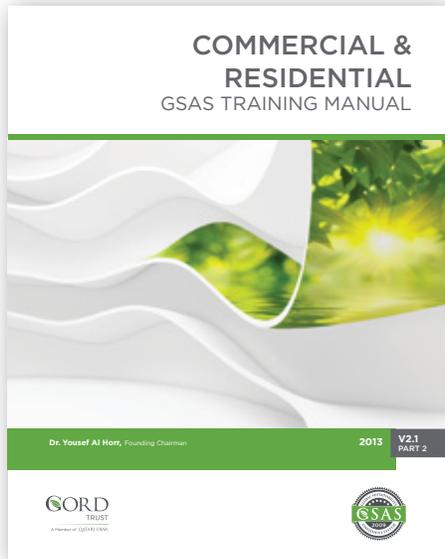PART 2

Fig 6.20.

6.20.   Training Manual - Part (2)

6.20.1. A comprehensive resource for GSAS users throughout the entire design phase of a project.

6.20.2. It is used as a study guide to become a GSAS Certified Green Professional or Trainer.

6.20.3. Incorporates eight typologies, Commercial, Core + Shell, Residential, Education, Mosques, Hotels, Light Industry, and Sports, to provide explanations and examples of how to complete the submittal process for each building type.

6.20.4. The training manual introduces each category and then provides a comprehensive description and example for each criterion.

Glossary

Glossary

For the purposes of this document, the following definitions shall apply to the terminologies used in this Technical Guide. Where terminologies are not listed in this glossary, they shall be defined using their ordinarily accepted meanings within the context in which they are used. The latest edition of *Merriam-Webster's Collegiate* Dictionary shall be the source for the ordinarily accepted meaning.

Appeal	The process in the GSAS certification where the project can appeal the score given by GORD Trust.
Assessment, Construction	A GSAS rating scheme for assessing the construction process employed in the project.
Assessment, Design	A GSAS rating scheme for assessing the design of the project from concept stage up to project completion.
Assessment, Operations	A GSAS rating scheme for assessing the facility operations.
Assessor	A competent professional who is certified to evaluate the project compliance, document the required submittals, and score the criterion.
Best Practice	A technique or methodology that has been accepted in the construction industry to reliably lead to a desired result.
Building Typologies	Different types of buildings that are covered in the GSAS rating schemes.
Built-Environment	Structures and infrastructures built by humans to provide the setting for human activity.
Category	A set of issues that define the broad impacts and address ways in which a project can mitigate the negative environmental effects.
Certification	The process of labeling a project's compliance with GSAS schemes.

Certification, Final	The stage in the GSAS certification process where the project undergoes final verification, as the basis for GORD Trust's issuance of the final certificate.
Certification, Level Of	The 6 qualifying levels of certification that a project may achieve ranging from 1-Star to 6-Star.
Certifier	A competent professional who is trained and qualified to certify the design assessment, construction assessment, and/or operations assessment of the project.
Code, International	The code recognized internationally and practiced in the State of Qatar.
Code, Local	The governing code within the State of Qatar.
Commercial	A GSAS scheme that covers the assessment of Commercial buildings.
Core + Shell	A GSAS scheme that covers the assessment of Core + Shell buildings.
Criterion	Individual issues in the category that outlines the mitigation and measurement principles and compliance to submittal requirements and scoring levels.
Criterion, Shared	Criterion in GSAS rating schemes that are assessed for the entire development and the achieved score can be inherited by the other buildings in the assessed development.
Criterion, Unique	Criterion in GSAS rating schemes that are individually assessed for each building.
Design Guidelines	GSAS manual consisting of recommendation to be used as guidance for realizing sustainable buildings in the country, in association with the other GSAS reference documents.
Districts	A GSAS scheme that covers the assessment of Districts.

Education	A GSAS scheme that covers the assessment of Educational facilities.
Fees	A payment made by a professional or a company to GORD in exchange for professional services related to GSAS.
Green Building	The practice of creating a sustainable built environment and using processes that minimizes ecological impact while addressing the specific regional needs and local environment.
Health Care	A GSAS scheme that covers the assessment of Health Care facilities.
Hotels	A GSAS scheme that covers the assessment of Hotels.
Audit, Design	A design certification activity during construction stage to verify project's conformance to the design parameters of the issued LOC.
Audit, Construction	A construction certification activity during construction to verify the performance of the project's construction practices to GSAS Construction Assessment.
Site Audit, Site.	A project inspection activities at site during construction and organized into two types: random and routine.
Letter Of Conformance (LOC).	A letter issued by GORD Trust to the project for conforming to the requirements of the GSAS design certification.
Light Industry	A GSAS scheme that covers the assessment of Light Industry buildings.
GSAS Assessors	A competent GSAS professional who holds a Level 5 qualification in GSAS and can manage the GSAS certification process.
Manager, GSAS Project	A competent professional who can manage the GSAS assessment process and holds a valid GSAS-CGPTM certificate and membership.

Mixed Development	Describes the major building typologies within the development.
Mixed Use	Describes the major occupancy use of a building or set of buildings for more than one purpose.
Mosques	A GSAS scheme that covers the assessment of Mosques.
PCR	Provides review of the GSAS supporting design documents and toolkits during the various stages of design development.
Railways	A GSAS scheme that covers the assessment of Railway Stations.
Regulations	Implementing sets of rules or guidelines in the construction industry by the government of Qatar.
Residential	A GSAS scheme that covers the assessment of Residential buildings.
Resubmission	A stage in the GSAS certification process where the project undergoes resubmission, as the basis for GORD Trust's issuance of the letter of conformance.
Rights & Privileges	The benefits afforded to GSAS members.
Scheme, Full	A concept of assessment in the GSAS schemes that assesses the project's compliance to the entire GSAS criteria.
Score, Aggregate	The weighted average score of the project comprised of multiple buildings.
Score, Cumulative	The single final score achieve by the project that serves as the basis for the GSAS star rating or level of certification.
Score, Inherited	The score that is assessed for the criterion and passed as inherited score for the same criterion for other buildings in the same development.
Score, Point	The unit of measurement for scores.

Score, Weight	A weighing factor assigned for each criterion that when multiplied to the level of achievement that a project has reached, will score points for that criterion.
Shall	Indicates a mandatory requirement.
Should	Indicates a recommendation or that which is advised but not required.
Sports	A GSAS scheme that covers the assessment of design, construction, and operations of sports facilities.
Standards, International	Normative standards recognized internationally.
Standards, Local	Normative standards in the State of Qatar.
Submission, Final	Final stage in the GSAS certification process where the project prepares for the submittals of the final documents after construction is complete.
Submission, First	Initial stage in the GSAS certification process where the project undergoes preparation of submittals for project certification.
Submission, Manual	Manual process of submitting documents in the GSAS certification process that utilized submittal toolkits and CD copy of the project's electronic files.
Submission, Online	Web-based uploading of the submittals in the GSAS certification process that utilized the GSAS online project management suite.
Suite, Manuals	Sets of manuals comprising of GSAS assessments, guidelines, applications, and request for proposals.
Suite, PMS	Sets of resources available online in the management of project certification.
Suite, Tools	Sets of supporting calculators and toolkits in the GSAS certification process.

A globally recognised symbol of sustainable engineering

The GSAS system awards one of six levels of certifications to projects, from one star to six stars, depending on their environmental and social impact. Assessment can be conducted to certify the project in the design, construction and operations phases.