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GBI PROFESSIONAL SERIES 2014

QS Practice Notes for GBI Green Building

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15 November 2014

Examples given in this presentation should not be taken as definitive / exhaustive

QS ROLE IN GBI IMPLEMENTATION

- In the overall GBI Implementation process, often the QS's involvement is not only limited to the Assessment Criteria highlighted in the GBI Design Reference Guides.
- The QS is often indirectly involved in matters related to cost and tender/contract documentation relating to green requirements.
- For instance the QS is to provide the parameter of the approved conceptual design in terms of quantities, rates and budget allocated so as to allow the GBIF to work out the cost premium to achieve the different rating grades; providing alternative costing for the suggested green items; in cost administration adopting the green requirements in the tender/contract documents; and etc.

QS PRACTICE NOTES

Greenbuildingindex:
Practice Notes for the
Quantity Surveyors

Greenbuildingindex(GBI)
Certification Submissions
Documentation
&
Verifying and Certifying GBI Green
Incremental Cost for Tax Incentives

← Available for download
from GBI's website

QS PRACTICE NOTES : PURPOSE

- to establish a guidance document to assist Quantity Surveyors (QS) and define their role
 - PART 1: in their submissions for GBI certification
 - PART 2: Verifying and Certifying greenbuildingindex (GBI) Green Incremental Cost for Tax Incentives.
- The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides. This document is however only indicative and is neither an exhaustive nor definitive reference to the GBI rating tool.

COMMON ARCHITECTURAL & STRUCTURAL GREEN ITEMS

| | |
|---|---|
| <u>Energy Efficiency (EE)</u> | SUSTAINABLE SITE PLANNING & MANAGEMENT |
| Double Glazing Unit | IBS - Precast, Modular Systems |
| Insulated Glazing Unit | <u>Material & Resources (MR)</u> |
| Solar Reflective Paint | Timber Flooring - Bamboo |
| Wall Insulation | Engineering Timber Flooring |
| Cavity Brickwall | PolyDeck Polypropylene Outdoor Deck |
| Horizontal Sunshading | FSC Veneer Door + Door Frames |
| Vertical Louvres | <u>Water Efficiency (WE)</u> |
| Vertical Landscape Green Wall | Dual Flush WC |
| Roof Insulation | Sink Mixer with approved flow rate |
| Solar Refeective Coating to r.c roof | Flow regulator to taps |
| Double roof, metal & r.c flat roof | Sub-meter to monitor major water usage system |
| Green roof | <u>INNOVATION (IN)</u> |
| <u>Indoor Environmental Quality (EQ)</u> | Thermal Storage System & RC Storage Tank |
| Low VOC Paint | UV Light in AHU |
| Low VOC Carpet | Condensate Water Recovery |
| Internal blinds | |
| AHU Room Accoustic Insulation | |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES

Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | Materials Re-use and Selection | |
|--|--|---|
| General requirements | <p>To encourage designers to specify the usage of reused building materials in new buildings.</p> <p>Reuse building materials and products to reduce demand for virgin materials and reduce creation of waste. This serves to reduce environmental impact associated with extraction and processing of virgin resources. Integrate building design and its buildability with selection of reused building materials, taking into account their embodied energy, durability, carbon content and life cycle costs.</p> | |
| Stage: Design Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| Provide a narrative describing the materials reuse strategy for the project. | Generally, the designers (Architects, Engineers, Landscape Architects, Interior Designers, etc) will decide on incorporating the reused & salvaged materials into their design and provide the write up or listing. | The concept and listing from designers for GBIF to compile. |
| List of anticipated reused or salvaged materials for the project. | | |
| Cost of each proposed reused or salvaged materials. | QS to establish a cost for the items selected by designers. | Cost advice from QS/ MEP engineers/ Landscape Architect. |
| Cost of each reused or salvaged materials either based on actual cost paid or replacement value of the material. | <p>MEP engineers & Landscape Architect to establish their respective cost for the items selected.</p> <p>The GBIF to compile complete costing from all consultants and tally up the total cost.</p> | <p>Sample as attached in Appendix "AA".</p> <p>Final computation by GBIF.</p> |
| Establish the estimated Total Cost of the materials in the project. | QS to provide the total project construction cost [Cost Plan (prior to Award)/Contract Sum (if Awarded)] to the GBIF. | Statement of the total project construction cost from QS. |
| Establish the estimated Total Cost of the materials for the project excluding MEP items (or use the 45% default value for materials costs; i.e. Total Materials Cost may be derived by multiplying the total construction cost by 0.45) for the project. | The GBIF will then apply the default value for materials cost to derive at the Total Cost of the materials for the project. | |

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Criteria: Materials and Resources (MR)

| Category | Materials Re-use and Selection | |
|---|--|--|
| Stage: Completion & Verification Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| Documentation during the construction stage including photographs of the reused materials. | The designers/GBIF to compile and notify the Contractors/ Resident staff to provide the photographs while working with the reused/salvage materials. | Photographs to be collated by GBIF for submission. |
| As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications. | The designers to compile the as built drawings or as built specifications from the Contractors. | GBIF to submit . |
| List of reused or salvaged materials used in the project after completion and their locations in the building. | The GBIF to compile. | A list from the contractors for GBIF to compile. |
| Cost of each reused or salvaged materials either based on actual cost paid or replacement value of the material. | <p>QS to provide the cost for the items selected based on Contract Document/ Receipt.</p> <p>MEP engineers & Landscape Architect to provide their respective cost for the items selected.</p> <p>The GBIF will compile from all consultants and tally up the total cost.</p> | <p>Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA".</p> <p>Final computation by GBIF.</p> |
| Provide the Actual Total Cost of the materials in the project. | <p>QS to provide the total project construction cost (Contract Sum/Variations Statement/Statement of Final Account) to the GBIF.</p> <p>The GBIF will then apply the default value for materials cost to derive at the Total Cost of the materials for the project.</p> | Letter of Award / Statement of Final Account from the QS. |
| Describe any deviations or additions to the DA submission. | The designers/GBIF to comment. | By GBIF. |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES



Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | Recycled Content Materials | |
|---|--|--|
| General requirements | <p>To encourage designers to specify the usage of recycled content materials in new buildings.</p> <p>Increase demand for building products that incorporate recycled content materials in their production (Recycled content shall be defined in accordance with the ISO 14021 document).</p> | |
| Stage: Design Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| List all recycled content materials and products and their costs. | <p>The designers/contractors to incorporate recycled materials into their design and construction during specification and material selection.</p> <p>The GBIF to advise the designers on the options.</p> <p>The designers to assist GBIF to compile the list of recycled content materials.</p> | A list and Information (certificates/ supplier specifications) from the sources/ suppliers compiled by GBIF. |
| Information on the sources/suppliers on the materials with recycled content must be provided. | The designers/ GBIF/ contractors to request information from the sources/ suppliers. | |
| Calculation on the recycled content value of each material must be provided. | <p>QS to provide the quantities and cost for the items selected based on Contract Document/ Cost Plan.</p> <p>MEP Engineers & Landscape Architect to provide their respective quantities and cost for the items selected.</p> <p>GBIF to compile the quantities, costing and using the recycled contents provided by sources/suppliers to calculate the percentage of recycled content and calculate the value of material cost using the default value.</p> | |
| The percentage of post-consumer and/or pre-consumer recycled content can be established by cost: or by weight (converted to cost). | | |
| The percentage of post-consumer and/or pre-consumer recycled content must be established by weight. | | |
| Calculate the total percentage (based on cost) value of the materials with recycled content of the estimated total value of the materials in the project. | | |
| Submit estimated value of the materials with recycled content against the estimated total value of the materials for the project. | | |
| | | <p>Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA".</p> <p>Final computation by GBIF.</p> |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES



Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | | Recycled Content Materials | |
|--|---|--|--|
| Stage: Completion & Verification Assessment | | | |
| Submission Requirements | Role and Responsibilities | Documentations | |
| As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications. | The designers to compile the as built drawings or as built specifications from the Contractors. | GBIF to submit. | |
| List all recycled content materials and products and their costs used in the project after completion. | The designers/contractors (Architects, Engineers, Landscape Architects, Interior Designers, etc) to compile. | A list and Information (certificates/ supplier specifications) from the sources/ suppliers compiled by GBIF. | |
| Information on the sources/suppliers on the materials with recycled content must be provided. | The designers/ GBIF/ contractors to request information from the sources/suppliers. | | |
| Calculation of the recycled content value of each material must be provided. | QS to provide the quantities and cost for the items selected based on Contract Document/ Variations Statement/ Final Account/ Proof of Expenditure. | Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA". | |
| The percentage of post-consumer and/or pre-consumer recycled content must be established by weight. | MEP Engineers & Landscape Architect to provide their respective quantities and cost for the items selected. | Final computation by GBIF/. | |
| Calculate the total percentage (based on cost) value of the materials with recycled content against the actual total value of the materials for the project. The percentage of post-consumer and/or pre-consumer recycled content must be established by cost. | The GBIF to compile the quantities, costing and using the recycled contents provided by sources/suppliers to calculate the percentage of recycled content and calculate the value of material cost using the default value. | | |
| Calculate the total percentage (based on cost) value of the materials with recycled content of the actual total value of the materials in the project. | | | |
| Establish the estimated Total Cost of the materials excluding MEP items (or use the 45% default value for materials costs; i.e. Total Materials Cost may be derived by multiplying the total construction cost by 0.45) for the project. | | | |
| Describe any deviation or addition to the DA submission. | The designers/GBIF to comment. | By GBIF. | |

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Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| | | |
|--|--|---|
| Category | Regional Materials | |
| General requirements | <p>To encourage sourcing of regional materials to reduce environmental impacts due to transportation.</p> <p>Use building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.</p> | |
| Stage: Design Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| List of products that are extracted/harvested/recovered and manufactured within 500 km of the project site. | The designers/ GBIF/ contractors to compile the list and request information from the sources/ suppliers. | A list and Information (certificates/ supplier specifications) from the sources/ suppliers compiled by GBIF |
| Provide the following: <ul style="list-style-type: none"> • Name of the manufacturer • Product cost • The distance between the project site and the manufacturer • The distance between the project site and the extraction site for each raw material contained within each product | | |
| Provide the following: <ul style="list-style-type: none"> • Name of the manufacturer, • Product cost, AND • The distance between the project site and the manufacturer. | | |
| Determine the estimated total Material Cost. | QS to provide the quantities and cost for the items selected based on Contract Document/ Cost Plan. | Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA". Final computation by GBIF. |
| Determine the Total Material Cost | MEP Engineers & Landscape Architect to provide their respective quantities and cost for the items selected. | |
| If only part of the raw materials for a particular product or assembly originates within 500 km of the project site, provide the percentage (by weight) that these materials is comprised of in the complete product | | |
| Calculate the percent local materials = Total Cost of Local Materials (RM)/Total Material Cost (RM) | The GBIF to compile the quantities, costing and using the recycled contents provided by sources/suppliers to calculate the percentage of recycled content and calculate the value of material cost using the default value. | |
| Calculate the percentage of regional materials used = Total Cost of Regional Materials (RM) /Total Material Cost (RM) | | |

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Criteria: Materials and Resources (MR)

| Category | Regional Materials | |
|--|---|---|
| Stage: Completion & Verification Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications. | The designers to compile the as built drawings or as built specifications from the Contractors. | GBIF to submit. |
| List of products that are extracted/ harvested/ recovered and manufactured within 500km of the project site after completion. | The designers/ GBIF/ contractors to compile the list and request information from the sources/ suppliers. | A list and Information from the sources/ suppliers compiled by GBIF |
| Provide the following: <ul style="list-style-type: none"> • Name of the manufacturer • Product cost • The distance between the project site and the manufacturer • The distance between the project site and the extraction site for each raw material contained within each product | | |
| Provide the following: <ul style="list-style-type: none"> • Name of the manufacturer, • Product cost, AND • The distance between the project site and the manufacturer. | | |
| Determine the Actual Total Material Cost. | QS to provide the quantities and cost for the items selected based on Contract Document/ Variations Statement/ Final Account/ Proof of Expenditure. | Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA". |
| Determine the Actual Total Material Cost. If only part of the raw materials for a particular product or assembly originates within 500 km of the project site, provide the percentage (by weight) that these materials is comprised of in the complete product | MEP Engineers & Landscape Architect to provide their respective quantities and cost for the items selected. | |
| Calculate the percentage of regional materials used = Total Cost of Regional Materials (RM)/ Total Material Cost (RM). | The GBIF to compile the quantities, costing and using the recycled contents provided by sources/suppliers to calculate the percentage of recycled content and calculate the value of material cost using the default value. | Final computation by GBIF. |
| Calculate the percent local materials = Total Cost of Local Materials (RM)/Actual Total Material Cost (RM). | | |
| Calculation on the recycled content value of each material must be provided. | | |
| Describe any deviation or addition to the DA submission. | The designers/GBIF to comment. | By GBIF. |

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Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | | Sustainable Timber | |
|--|--|---|---|
| General requirements | | To promote responsible forest management. To encourage environmentally responsible forest management. | |
| Stage: Design Assessment | | | |
| Submission Requirements | | Role and Responsibilities | Documentations |
| List all new wood products specified in the project and identify which components are at least FSC and MTCC certified timber source. | | The designers/ GBIF/ contractors to compile the list and request information from the sources/ suppliers. | A list and Information (certificates/ supplier specifications) from the sources/ suppliers compiled by GBIF |
| List all new wood products specified in the project and identify which components are FSC and MTCC certified. | | | |
| Provide a list of vendors/suppliers capable of providing FSC and MTCC certified wood products or equivalent for the project. | | | |
| The FSC and MTCC certified wood must be identified as "Pure", "Mixed" or "Mixed (NN)%". | | | |
| Indicate the estimated volume of each wood product. | | QS to provide the quantities and cost for the items selected based on Contract Document/ Variations Statement/ Final Account/ Proof of Expenditure. MEP Engineers & Landscape Architect to provide their respective quantities and cost for the items selected. The GBIF to compile the quantities, costing and using the recycled contents provided by sources/suppliers to calculate the percentage of recycled content and calculate the value of material cost using the default value. | Cost advice from QS/ MEP engineers/ Landscape Architect. Sample as attached in Appendix "AA". Final computation by GBIF. |
| The volume of each wood products must be shown. | | | |

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Criteria: Materials and Resources (MR)

| Category | Sustainable Timber | |
|---|---|---|
| Stage: Completion & Verification Assessment | | |
| Submission Requirements | QS Role and Responsibilities | Documentations |
| As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications. | The designers to compile the as built drawings or as built specifications from the Contractors. | GBIF to submit. |
| List all new wood products used in the project and identify which components are FSC and MTCC certified. | The designers/ GBIF/ contractors to compile the list and request information from the sources/ suppliers. | A list and Information (certificates/ supplier specifications) from the sources/ suppliers compiled by GBIF |
| The FSC and MTCC certified wood must be identified as "Pure", "Mixed" or "Mixed (NN)%". | QS to provide the quantities and cost for the items selected based on Contract Document/ Variations Statement/ Final Account/ Proof of Expenditure. | Cost advice from QS/ MEP engineers/ Landscape Architect. |
| The vendor's chain-of-custody (COC) number must be shown in the invoice to verify FSC and MTCC certifications. | | Sample as attached in Appendix "AA". |
| The volume of each wood product must be shown. | | Final computation by GBIF. |
| Describe any deviation or addition to the DA submission. | The designers/GBIF to comment. | By GBIF. |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES

Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | Storage & Collection of Recyclables / Storage, Collection & Disposal of Recyclables | |
|---|--|---|
| General requirements | <p>To provide dedicated areas and storage bins for non-hazardous materials for recycling during BOTH construction and building occupancy.</p> <p>Facilitate reduction of waste generated during construction and during building occupancy that is hauled and disposed off in landfills.</p> | |
| Stage: Design Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| <p>Floor plans showing the proposed locations of the storage areas for recyclables and their proximity to the building entrance and vehicular access point/s.</p> | <p>The designers/ GBIF/ contractors to compile proposals and drawings</p> | <p>Proposal and drawings compiled by GBIF</p> |
| <p>A copy of floor plan showing the planned location of the storage area for recyclables and its proximity to the building entrance and vehicular access point/s.</p> | <p>GBIF to provide QS with the GBI related specifications to be included in the tender document for contractor to comply with.</p> | |
| <p>A copy of site plan indicating the designated area of storage and collection of construction waste to be recycled.</p> | | |
| <p>Ensure that the space provided for recyclables is in addition to the storage allocated for general waste.</p> | | |
| <p>Describe proposed promotional activities to encourage recycling within the building.</p> | | |
| <p>Describe proposed promotional activities to encourage recycling within the building/plant.</p> | | |
| <p>The drawings should ensure that the vehicular access provides adequate space for maneuvering and sufficient size for loading bays for vehicles collecting the recyclables.</p> | | |
| <p>A description of the labelling of recyclables should be also provided.</p> | | |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES



Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: **Materials and Resources (MR)**

| Category | | Storage, Collection & Disposal of Recyclables | |
|---|--|---|---|
| Stage: Completion & Verification Assessment | | | |
| Submission Requirements | | Role and Responsibilities | Documentations |
| As-Built plans showing the locations of the storage area for recyclables. The plans should indicate the proximity of the storage from the building entrance. | | The designers to compile the as built drawings or as built specifications, and photographs from the Contractors. The designers/GBIF to do a write-up on recycling strategy and promotional activities adopted. | GBIF to submit. Write-up on recycling strategy and promotional activities by GBIF. |
| A copy of marked as-built drawing plan/s showing the location/s of the storage area for recyclables. The plan should indicate the proximity of the storage from the building entrance and mark where vehicular access is. | | | |
| The drawings should ensure that the vehicular access provides adequate space for maneuvering and sufficient size for loading bays for vehicles collecting the recyclables. | | | |
| Photographs showing the location, size, storage provision and labeling of dedicated facilities during retrofit construction. | | | |
| Photographs showing the location, size, storage provision and labeling of dedicated facilities during construction. | | | |
| Photographs showing the location, size, the storage provision and labeling of dedicated facilities. | | | |
| Write up of promotional activities to encourage recycling within the building/plant including evidence of such promotional activities carried out. | | | |
| Write up of promotional activities to encourage recycling within the building including evidence of such promotional activities carried out. | | | |
| Description of how the recyclables are to be handled. | | | |
| A waste recycling strategy and plan that identifies types of recyclable materials diverted from landfills as well as recycling facilities that have been signed up to handle the recyclable waste | | | |
| Describe any deviation or addition to the DA submission. | | The designers/GBIF to comment. | By GBIF. |

PART I: GBI CERTIFICATION: REQUIREMENTS & ROLES

Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: Materials and Resources (MR)

| Category | Construction Waste Management | |
|---|---|---|
| <p>General requirements</p> | <p>Reduce and recycle construction waste materials and divert from disposal to landfills and incinerator.</p> <p>Develop and implement a construction waste management plan that, as a minimum identifies the materials to be diverted from disposal regardless of whether the materials will be sorted on site or co-mingled.</p> <p>Quantify by measuring total truck loads of waste sent for disposal.</p> | |
| <p>Stage: Design Assessment</p> | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| <p>Tabulate the anticipated diverted/ recycled/ landfill waste and the estimated quantity of the diverted/ recycled/ landfill waste.</p> | <p>The contractors to provide the waste management plan.</p> | <p>Waste management plan from contractors.</p> |
| <p>To calculate the percentage, convert all waste materials to either weight (tons) or volume (cubic meter).</p> | | |
| <p>For comingled recycled wastes, summaries of diversion rates is required from the recyclers.</p> | | |
| <p>Provide a table with a list of diverted/ recycled/ landfill waste and the quantity of the diverted/ recycled/ landfill waste.</p> | | |
| <p>A copy of the specification clause that requires the main/ principal contractor to produce the required waste management plan and waste audit.</p> | <p>GBIF to provide the specification to be included in the Tender Document.</p> | <p>Specification from GBIF for QS to incorporate.</p> |

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Criteria: Materials and Resources (MR)

| Category | | Construction Waste Management | |
|---|--|--|--|
| Stage: Completion & Verification Assessment | | | |
| Submission Requirements | Role and Responsibilities | Documentations | |
| <p>A detailed project construction waste management plan produced by the contractor must be submitted along with evidence supporting the waste recycling programme such as Photographs, waste receipts from recycling facilities, authorized documents from the receiving sites/plants/recycling facilities, tabulation of waste disposed and recycled, etc.</p> <p>A copy of the construction waste management plan from the main/principal contractor and a table with a list of diverted/recycled waste/landfill waste, diverted/recycled/landfill waste destination or location and the quantity of the diverted/recycled/landfill waste.</p> <p>To calculate the percentage, convert all waste materials to either weight or volume.</p> <p>For comingled recycled wastes, summaries of diversion rates is required from the recyclers.</p> <p>Submit verified record of truck loads of diverted/recycled/landfill waste against total truck loads, supported by copy of the construction waste management plan.</p> <p>Describe any deviations or additions to the DA submission.</p> | <p>The contractors to provide the waste management plan.</p> | <p>Waste management plan, calculation, verified records, proof, receipts, photographs from contractors. GBIF to monitor, collate and submit.</p> | |
| | <p>The designers/GBIF to comment.</p> | <p>By GBIF.</p> | |

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Note: The guidance document covers only those GBI Assessment Criteria where the QS is directly involved with as per the GBI Design Reference Guides

Criteria: **Water Efficiency (WE)**

| Category | Water Efficiency Fittings | |
|--|--|---|
| General requirements | To encourage reduction in potable water consumption through use of efficient devices. | |
| Stage: Design Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| A brief description of the system and an explanation of how the system meets the requirement for the credit. | <p>The designers/GBIF to do a write-up, drawings and calculation on water efficiency fittings to be adopted and specifications from the manufacturer on the flow rates and test reports.</p> <p>In terms of cost calculation, the designer/GBIF to advise the selected water efficiency fittings for the project and the QS can calculate the incremental cost if any.</p> | <p>Write-up, drawings and calculation on water efficiency fittings to be adopted and specifications from the manufacturer on the flow rates and test reports by GBIF.</p> |
| Listing of each type of consuming fixture, flows and frequency of use to determine the amount of potable water usage for base condition. | | |
| Submit proposed makes of the intended fittings. | | |
| Listings similar to the above but based on water efficient fittings selected and demonstrate the water saving through calculations. | | |

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Criteria: **Water Efficiency (WE)**

| Category | | |
|--|--|---|
| Water Efficiency Fittings | | |
| Stage: Completion & Verification Assessment | | |
| Submission Requirements | Role and Responsibilities | Documentations |
| Inventory of all water efficient fittings incorporated in final building. | <p>The designers/GBIF to do a write-up, drawings, photographs and calculation on water efficiency fittings adopted and specification from the manufacturer on the flow rates and test reports.</p> <p>In terms of cost calculation, the designer/GBIF to advise the selected water efficiency fittings for the project and the QS can calculate the incremental cost if any.</p> | <p>Write-up, photographs and calculation on water efficiency fittings adopted and specification from the manufacturer on the flow rates and test reports by the GBIF.</p> |
| Submit manufacturer's details of the installed fittings. | | |
| Furnish photographs of each type of water efficient fittings as installed. | | |
| Tabulation of all as-installed water efficient fittings and calculations to verify percentage of water saved to meet the requirement for the credit. | | |
| Submit final water consumption calculator of selected water efficient fixtures. | | |
| Actual verified water consumption for the building | The owner to provide the water bill as proof. | Water bill as proof by the owner |
| Describe any deviations or additions to the DA submission. | The designers/GBIF to comment. | By GBIF. |

SAMPLE OF QS ADVISE

Appendix : Sample Cost Statement

QS Letter to GBI

Ref:

GBI

Date

Dear Sirs,

ASCII Serviced Apartments

Statement of Cost for GBI Materials: *Design Assessment/*Completion & Verification Assessment

Enclosed is the Material Costing related to GBI assessment in accordance to the listing provided by the Architect/Engineer/GBI Facilitator.

The Total Project Construction Cost:

- Piling - RM2,000,000.00 (Refer to Letter of Award attached (Appendix A1))
- Main Building Works - RM100,000,000.00 (Refer to Letter of Award attached (Appendix A1))
- Total Construction Cost - RM102,000,000.00

Total Project Mechanical and Electrical Cost : RM26,500,000.00 (Refer to Contract Document Bill 2: Prime Cost Sum and Final Summary attached (Appendix A1))

Total Preliminaries, Contingencies and Profit and Attendance : RM10,000,000.00 (Refer to Contract Document Bill 1: General Conditions and Preliminaries and Bill 2: Prime Cost Sum and Provisional Sum and Final Summary attached (Appendix A1))

SAMPLE OF QS ADVISE

The following material costings are extracted from Contract Document and Quotations based on Supply and Install rates.

Materials Re-use and Selection

| Items | List of reused or salvaged materials | Location | Method | Actual Cost Incurred | | | | | | Replacement Value of the Material | | | | | |
|------------------------------|--------------------------------------|--------------------------|----------------------------|--|-----|------|-----------|------------|---|---|-------|------|--------|------------|---|
| | | | | Items | Qty | Unit | Rate (RM) | Total (RM) | Proof | Items | Qty | Unit | Rate | Total (RM) | Proof |
| 1 Roof & Hoarding | | | | | | | | | | | | | | | |
| A | Steel Trusses | Part Hall Roof Structure | Salvage from old factory | Dismantling and transporting to site | 1 | Item | 2,000.00 | 2,000.00 | Labour Only Contract Rate BQ Ref:4.1/A +5.2/D "B1" | Steel Trusses | 2,000 | kg | 7.00 | 14,000.00 | Supply & Install Fair Market Rate Quotation "B1" |
| B | Metal Roof Covering | Hoarding | | Installation | 1 | Item | 5,000.00 | 5,000.00 | | Hoarding | 50 | m | 250.00 | 12,500.00 | Supply & Install Fair Market Rate Quotation "B1" |
| | Sub-total | | | | | | | 7,000.00 | | | | | | 26,500.00 | |
| 2 Crusher Run | | | | | | | | | | | | | | | |
| A | Crusher Run | Road | Salvage from existing road | Excavating & stockpile on site | 300 | m3 | 10.00 | 3,000.00 | Supply & Install Contract Rate BQ Ref: 4.1/B & 4.1/C "B2" | Filling & compaction of new crusher run | 250 | m3 | 65.00 | 16,250.00 | Supply & Install Contract Rate BQ Ref: 6.1/A "B2" |
| B | | | | Filling & compaction from existing stockpile | 250 | m3 | 20.00 | 5,000.00 | | | | | | | |
| | Sub-total | | | | | | | 8,000.00 | | | | | | 16,250.00 | |

SAMPLE OF QS ADVISE

The following material costings are extracted from Contract Document and Quotations based on Supply and Install rates.

Materials Re-use and Selection

| Items | List of reused or salvaged materials | Location | Method | Actual Cost Incurred | | | | | | Replacement Value of the Material | | | | | |
|------------------------------|--------------------------------------|--------------------------|----------------------------|--|-----|------|-----------|------------|---|---|-------|------|--------|------------|---|
| | | | | Items | Qty | Unit | Rate (RM) | Total (RM) | Proof | Items | Qty | Unit | Rate | Total (RM) | Proof |
| 1 Roof & Hoarding | | | | | | | | | | | | | | | |
| A | Steel Trusses | Part Hall Roof Structure | Salvage from old factory | Dismantling and transporting to site | 1 | Item | 2,000.00 | 2,000.00 | Labour Only Contract Rate BQ Ref:4.1/A +5.2/D "B1" | Steel Trusses | 2,000 | kg | 7.00 | 14,000.00 | Supply & Install Fair Market Rate Quotation "B1" |
| B | Metal Roof Covering | Hoarding | | Installation | 1 | Item | 5,000.00 | 5,000.00 | | Hoarding | 50 | m | 250.00 | 12,500.00 | Supply & Install Fair Market Rate Quotation "B1" |
| | Sub-total | | | | | | | 7,000.00 | | | | | | 26,500.00 | |
| 2 Crusher Run | | | | | | | | | | | | | | | |
| A | Crusher Run | Road | Salvage from existing road | Excavating & stockpile on site | 300 | m3 | 10.00 | 3,000.00 | Supply & Install Contract Rate BQ Ref: 4.1/B & 4.1/C "B2" | Filling & compaction of new crusher run | 250 | m3 | 65.00 | 16,250.00 | Supply & Install Contract Rate BQ Ref: 6.1/A "B2" |
| B | | | | Filling & compaction from existing stockpile | 250 | m3 | 20.00 | 5,000.00 | | | | | | | |
| | Sub-total | | | | | | | 8,000.00 | | | | | | 16,250.00 | |

SAMPLE OF QS ADVISE

Recycled Content Materials

| Items | List of Recycled Content Materials | Cost Incurred | | | | Proof |
|-------|------------------------------------|---------------|------|-----------|--------------|--|
| | | Qty | Unit | Rate (RM) | Total (RM) | |
| 1 | Re-inforcement | 300,000 | kg | 3.50 | 1,050,000.00 | Supply & Install Contract Rate BQ Ref: 4.2/A-G, 4.3/B-K "C1" |
| 2 | Timber Deck | 400 | M2 | 600.00 | 240,000.00 | Supply & Install Contract Rate BQ Ref: 6.2/1 "C2" |
| | Total | | | | 1,290,000.00 | |

Regional Materials

| Items | List of Regional Materials | Cost Incurred | | | | Proof |
|-------|---------------------------------|---------------|------|-----------|---------------|--|
| | | Qty | Unit | Rate (RM) | Total (RM) | |
| 1 | Re-inforcement | 3,000,000 | kg | 3.50 | 10,500,000.00 | Supply & Install Rate BQ Ref: 4.2/2/A-G, 4.3/2/B-K "D1" |
| 2 | Concrete Grade C30, C35, C40 | 30,000 | m3 | 300.00 | 9,000,000.00 | Supply & Install Rate BQ Ref: 4.1/1/A-G, 4.3/1/B-K "D1" |
| 3 | System Formwork | 80,000 | m2 | 32.00 | 2,560,000.00 | Supply & Install Rate BQ Ref: 4.1/3/A-D, 4.3/3/A-F "D1" |
| 4 | Metal Door Frame | 60 | nr | 100.00 | 6,000.00 | Supply & Install Rate BQ Ref: 4.6/1/A-D, 4.8/1/A-F "D2" |
| 5 | Timber Door Leaf | 60 | nr | 300.00 | 18,000.00 | Supply & Install Rate BQ Ref: 4.6/2/A-D, 4.8/2/A-F "D2" |
| 6 | Tiles | 30,000 | m2 | 140.00 | 4,200,000.00 | Supply & Install Rate BQ Ref: 4.11/1/A-D, 4.13/1/A-C "D3" |
| | Total | | | | 26,284,000.00 | |

SAMPLE OF QS ADVISE

Sustainable Timber

| Items | List of Sustainable Timber | Cost Incurred | | | | |
|-------|-----------------------------|---------------|------|-----------|--------------|---|
| | | Qty | Unit | Rate (RM) | Total (RM) | Proof |
| 1 | Timber Door Frame | 3,000 | m | 65.00 | 195,000.00 | Supply & Install Rate BQ Ref: 4.6/1/E-H, 4.8/1/L-M "E1" |
| 2 | Engineering Timber Flooring | 15,000 | M2 | 230.00 | 3,450,000.00 | Supply & Install Rate BQ Ref: 4.7/3/C "E2" |
| 3 | Timber Deck - Eco-deck | 400 | M2 | 600.00 | 240,000.00 | Supply & Install Rate BQ Ref: 4.9/2/A "E3" |
| | Total | | | | 3,885,000.00 | |

Yours faithfully,
For and on behalf of
XXX QS Sdn Bhd

Documents to attach

APPENDIX "A1"

- Piling Letter of Award
- Main Building Works Letter of Award
- Contract Document Bill 1: General Conditions and Preliminaries Summary and Bill 2: Prime Cost Sum and Provisional Sum and Fir
- APPENDIX "B1", "B2", "C1", "C2", "D1", "D2", "D3", "E1", "E2", "E3", etc\
- Extract pages of the respective Bills of Quantities
- Quotations
- Invoices
- Purchase Orders
- Any other document used to justify the rates & qty applied

BASIC INFORMATION TO BE PROVIDED BY OR PROVIDED TO QS

DESIGNER/GBIF TO PROVIDE TO QS

- List of green items required under each respective category and criteria
- GBIF to advise on additional cost required to be included in the project budget
- Specifications, conditions and score to be fulfilled by contractor to be included in the tender document

QS TO PROVIDE TO DESIGNER/GBIF

- To provide the quantity, rate and amount as per the **green items listed by designer/GBIF** provided for in the estimate/contract.

QUANTITY SURVEYOR ENDORSEMENT AS THE SUBMITTING PROFESSIONAL IN THE GBI SUBMITTAL

- The QS shall assist in providing all the relevant green costing for items advised by the GBIF based on contract pricing.
- The final calculations for all the criteria shall be based on GBIF assessment and compiled by GBIF.
- The QS contract pricing cost advice for the relevant green items can either be in letter format or extract of all relevant pages from the contract documents.
- As for the QS endorsement on the GBI submittal where the QS is named as the required signatories in the respective criteria, the QS will endorse on the submittal **AFTER** the GBIF's endorsement.



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