# BOTSWANA DEVELOPMENT CORPORATION LTD
# GABORONE, BOTSWANA

# DEVELOPMENT OF THE ICON BUILDING AND ANCILARY BUILDINGS, BOTSWANA INNOVATION HUB PLOT 69184 GABORONE

# ARCHITECTURAL COMPETITION
# TERMS OF REFERENCE & GUIDELINES

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## 1. BACKGROUND INFORMATION

Botswana is a fast developing African economy which, according to the World Economic Forum 2008-2009 Report, frog leaped upwards by 20 positions in the global competitiveness index within a year, making it the third most competitive country in Africa.

The need to further stimulate economic development underpins the Government of Botswanaôs decision to establish the Botswana Innovation Hub (BIH). It is envisaged that the BIH will position Botswana as a location for high technology businesses and act as a catalyst for knowledge intensive industries to facilitate the countryôs transformation into a knowledge economy and to improve the countryôs ability to compete in the global market. The Hub will have a whole suite of services that will assist entrepreneurs, scientists and researchers to turn their research findings into bona fide products for commercialisation.

BIH will be established in Gaborone, the capital city of Botswana and centre of the countryôs business activity. Over 50 % of the countryôs population live in and around Gaborone. The location is logistically placed adjacent to the international airport and close to the highway that connects Botswana to South-Africa, Namibia, Zimbabwe and Zambia. About 57 hectares of land, neighbouring the Diamond Hub has been secured for the first phase of the project.

At the centre of the BIH shall be an area called the BIH Headquarters Site. This site shall be developed to form the centre piece / the ñiconòof the Botswana Innovation Hub. It will be a landmark development housing the BIH headquarters as well as offices rented out to tenants and common facilities such as conferences, restaurants, laboratories, meeting rooms, sports facilities, etc.

To be able to attract foreign investors, world class premises that are efficient and flexible will be essential. Thus, the premises of BIH will be designed based on 4 main principles: orientation to high-tech customers, flexibility, plenty of common-use premises and use of

environmentally friendly technologies. Tenants should enjoy high quality flexible premises that will match their development needs.

It is the intention of the Botswana Government to develop BIH as a green concept ensuring a solution that conserves both energy and water, and that takes maximum advantage of the solar resource. The gardens will as much as possible preserve indigenous trees and be designed for low water consumption.

The Botswana Innovation Hub project is being implemented by Botswana Development Corporation (BDC) who is responsible for the physical development (infrastructure and buildings) of the hub.

Botswana Development Corporation Limited (BDC) is the investment arm of Botswana Government, and was established to be the country's main agency for commercial and industrial development. The Government of Botswana owns 100 percent of the issued share capital of the Corporation. (For more information on BDC please visit our website at **www.bdc.bw**).

For general information on Botswana, please visit **www.bedia.co.bw**. The BIH website **www.bih.co.bw**.

## 2 PROJECT SCOPE

BDC wishes to develop the BIH Headquarters site as a ñstate of the artò office park (with related uses) on a portion of lot 69184 Block 8 Gaborone. The land, approximately 150 000m2 is currently vacant and is subject to an on going urban planning exercise.

## 3. PROJECT SIZE

The BIH Headquarters will be a multi-user development of approximately 25 000 sqm floor area.

The offices will total some 20,000m$^2$ floor area. The offices for the tenants will have to be flexible enough to accommodate different size users. They suites sizes will range from 2000

3.1 Site Boundaries

The BIH headquarters site is part of the 65 ha BIH site. The BIH site is subject to an ongoing master planning and infrastructure development exercise. The site will be subdivided into a number of smaller plots one of which will be the BIH Headquarters site.

3.2 Topographical Survey

A topographical survey of the BIH site has been undertaken and is shown on the attached Appendix A.

3.3 Geophysical Survey

A geotechnical evaluation of the BIH site has been undertaken and the results thereof are contained herein as Appendix B.

3.4 Zoning and Town Planning Parameters

The following are relevant:-

a) Zoning ï mixed use will be supported
b) Combined site area ï to be approximately 100 000 m²
c) Height restriction ï limited by civil aviation rules on buildings near air ports.
d) Total floor area is estimated at 25 000 m² gross floor area:
   20,000$m^2$ offices
   5, 000$m^2$ other facilities (i.e. a 300 conference facility, 100 seater Restaurant, 3No Meeting Rooms setting 30-40 people, 2No laboratories 200$m^2$, gymnasium 150$m^2$
e) Coverage ï not specified
f) Parking requirements ï 4 bays per 100m² of GLA should be allowed
g) Water Lake

## 4. GUIDELINES

4.1 BDC would like to encourage lateral thinking in terms of originality of design.

4.2 The development need not necessarily be to full bulk on the site.

4.3 An important aspect of the competition is to show how the various elements (park, offices, restaurant, conference, lakes, gardens etc) would and could work together.

4.4 One element of the office section could form a tower block if this were deemed to be appropriate.

4.5 Energy efficiency is a concept which should be given careful consideration to in terms of, particularly, environmental control and lighting.

The generation of hot water in the development will be produced by solar energy.

4.6 Architectural design is fraught with the problem of ñdatingò and preference would obviously be given to designs which are ñtimelessòin both conception and execution.

4.7 Access control and security issues should be addressed in accompanying narrative.

4.8 The Capital cost of the project is estimated at 300 million BWP.

4.9 BDC would like to engender a relaxed ñpark likeò environment. The achievement of this could pose a challenge given the number of parking bays which would be required if development is carried out to the fullest extent possible.

4.10 The currency used in the contract shall be Botswana Pula (BWP)

5. **Features to be considered in the architectural design:**

To bring in novel thinking and emphasise the engineering, architectural and detail designs, it is proposed that they be made according to following novel principles:

I. Reduced Site Disturbance

Building time guidelines for minimising the environmental building foot print. Conserving existing natural areas and restoring damaged areas to provide habitat and promote biodiversity.

II. Storm Water Management

Limiting disruption and pollution of natural water flow by managing storm-water runoff. This will be achieved by using maximum pervious materials for the broader landscape area. Green areas with close by landscape materials will be incorporated into the hard parking area in order to provide shade by trees as well as absorb the runoff from the surface area. This will also help in controlling radiated heat from the paved parking area.

III. Light Pollution Reduction

Minimising light trespass from the building and site, improving night sky access and reducing the development impact on environments. This feature would also save energy in direct electricity, and on reduced air conditioning, too.

IV. Ozone Protection

Ozone depletion can be reduced by specifying new HVAC equipment that uses no CFC or HCFC or Halons in the refrigerants.

V. Water Efficiency and Water Efficient Landscaping:

Limiting or eliminating the use of potable water for landscape irrigation. This should be achieved by using recycled water and use of native plants which thrive in the natural environment. The storm and rain water from parking areas as well as from roof tops should be collected and stored (i.e. pond) for secondary usage.

VI. ii) Innovative Wastewater Technologies

Maximising water efficiency within the facility to reduce the burden on ground and municipal water supply and wastewater systems. This should be achieved by using water-efficient fixtures in toilets and kitchenettes, i.e. low flow toilets, taps & showers, and sensors to reduce the potable water demand.

VII. Energy Efficiency

Optimise Energy Performance: Achieving increasing levels of energy performance above the prerequisite standard to reduce the environmental impacts associated with excessive energy use. This may be achieved by designing the building envelope and building systems to maximise energy performance. Use of geo-thermal technologies may also be looked into for use with HVAC, if possible. Furthermore usage of district cooling systems for the energy efficiency and cost reduction, if possible.

VIII. Solar energy collection

Optimise Energy Performance with space savings and investment cost cutting: Designing car park shading structures as a support structures for medium scale solar panel power plant site. This would allow 13-15 m2/parkingspace utilisation as solar power plant integrated with shade structures

IX. Back up power arrangement for office use

To provide uninterruptible power for infrastructure, ICT, office and laboratory use, BIH seeks to cooperate the Diamond Hub project to cordially invest on power back up on common centralised system. The Diamond Hu is to be located in the direct vicinity of the BIH.

X. Storage & Collection of Recyclables

Facilitating the reduction of waste generated by the facility occupants that is collected and disposed of. This can be done by designating an area for recyclable collection and storage that is appropriately sized and located in a convenient area; identifying local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard and organic wastes; instructing occupants on building recycling procedures; considering employing cardboard balers, aluminium can crushers, recycling chutes and other waste management technologies to further enhance the recycling programme ï introducing a recycling culture.

Increasing demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

XI. Indoor Environment Quality and Low-Emitting Materials:

Reduce the quantity of indoor air contaminants that are odorous, potentially irritating and/or harmful to the comfort and well-being of installers and occupants. These include adhesives & sealants, paints and coatings, carpet, and composite wood.

XII. Daylight and Views

Provide for the building occupants a connection between indoor spaces and the outdoors (courtyards) by introducing daylight and views into the regularly occupied areas of the building.

This could be done by designing the building to maximise interior day lighting ï full advantage should be taken from the orientation of the buildings on a north-south axis. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing. Incorporating daylight in the interior spaces may be achieved by using light shelves which can reduce the electricity bills by 40%. Occupant access to views can increase efficiency of work by a considerable amount.

## XIII. Windows:

The designers may use wrap-around floor-to-ceiling glass curtain walls fitted with narrow mullions and high-performance glass. These glass facades may offer a wealth of benefits to building occupants, ranging from improved views to daylight, with the continued advancement of glass curtain wall technology. This has the added advantage of making buildings much more air tight and highly insulated than those of conventional high-rise buildings.

The designer may use the curtain wall to make a unique and innovative marriage of glass, metals, stone and to a large extent high-tech materials such as aluminium panels or thin stone veneer panels.

The modern material in glass technology has given rise to the development of large multilayered glazes, composite glazes, soldering glazes, sintered tiles, intelligent windows, and fibre-reinforced glass, as well as fibre-reinforced ceramic composites.

Smart coatings are structured coating systems which may be provided for an optimum response to a certain external stimulus, such as temperature, stress, strains or the environment, in a selective way. Smart windows are an excellent example of a smart coating system. These windows protect from solar energy in summer, and transmit solar energy in winter. The coatings are not smart in themselves, and they have no built-in intelligence with smart systems such as micro-sensors, microprocessors or micro-actuators, which provide a pre-programmed response. On the contrary, the smartness as a property rests with the coating design, and the smart behaviour results from the scientific combination of intrinsic coating materials. Thus, the window can switch from heat absorption to heat reflection depending on the ambient temperature. These new technologies may be used.

The Room Program

**BIH ARCHITECTURAL DEVELOPMENT PLAN - AREA USE CONCEPT AND BUILDING CONCEPT FOR REALIZATION IN CA. 4-5 PHASES**
**ICON BUILDING**

The Room Program has been produced as an example taking in consideration the following features

BIH Main Building, approximate, 8 200 GFA:
- Main entrance and hub for the BIH area, with reception services etc.
- Public areas and facilities for client meetings, congresses, common happenings
- Common areas and facilities for all BIH enterprises and their personnel
- Company offices for BIH enterprises
- First building project in BIH

Concept office buildings, approximate , 4 times 4200 totalling 16 800 GFA
- Detached buildings or wing buildings, to be constructed in phases, one at a time
- Flexible office concept; can be tailored to open office / detached office rooms
- Also tailoring to specific needs (data centers, laboratories, etc.)

**BUILDINGS, GROSS FLOOR AREA TOTAL 25 000 GFA**

**AREA PLAN FEATURES**
- Car parking bays under solar cover, potentially solar panels
- A showcase of African green building
- Building technology on high international level; innovative building and operating environment
- Sustainable ways to provide greenery

## 6. Proposed ICT infrastructure in BIH

ICT requirements for BIH designing

1. Minimum of two full-featured data center facilities with appropriate electricity/air conditioning/physical security etc.
2. Wiring closets throughout buildings with appropriate electricity/air conditioning/physical security etc.
3. Smaller wiring closets (wiring boxes) for wireless network access points with appropriate electricity/physical security etc.
4. End-user cabling

Main principles for data center facilities planning:

1. At least two data centers shall be situated in different physical buildings (or equivalent) in BIH area, operated by service providers/tenant as for its own usage

2. The ceiling, floors and surrounding walls of the data center facilities shall be of reinforced concrete or similar material. All structural materials in the facilities must be non-flammable.

3. The power supply for data centers shall be secured against faults in power supply equipment and disturbances in the distribution of electrical energy from the public electricity network. Plan should include own generator (and space for it) or equivalent at least main data center and on-line UPS systems for both centers.

4. The structure, installation and locking systems of the doors to the facilities shall hold against attempts to break-in with heavy tools.

5. The equipment facilities shall not have any exterior windows.

6. Prevention of water damage must be taken into account in the design and construction of the facilities. If the floor of the room is below the ground level or if water damage otherwise may occur, the room shall be equipped with a leakage dewatering system which is not dependent on electricity supply from outside.

7. The data center facilities must be equipped with an access control system in which access rights can be specified for individual electronic opening devices, and in which each access is registered.

8. The data center facilities must be equipped with a recording surveillance camera system.

9. The data center facilities must be equipped with an automatic security alarm system that reports any intrusion into the facilities from the outside.

10. The premises shall be equipped with an automatic fire alarm system, which will alert control personnel.

11. If the temperature in the data center facilities falls below or rises above a set level, the control personnel shall be alerted.

12. If the floor of the room is below the ground level or if water damage otherwise may occur, the room shall be equipped with a humidity alarm system which will alert the control personnel

13. Cabling between data center facilities shall be secured and protected. There shall be two different paths for cabling between data centers and/or outside telecommunication connection points. Protection shall hold against attempts to break-in without specific tools. Cabling shall be mainly fiber optic and cabling shall be equipped with an automatic alarm system, which will alert control personnel if cable in use is broken/disconnected.

14. Main principle will be that clients bring their servers etc. to data centers. Data centers will need flexibility to make different areas/accesses for different clients. There shall be flexibility to make walls between different clients and air conditioning/alarming etc. shall take these into consideration.

15. Data center will produce a lot of heat. This shall be taken into consideration when designing energy efficiency (heat energy recycling etc.)

Main principles for wiring closets planning:

16. The ceiling, floors and walls of the wiring closet must be constructed in such a way that the wall elements cannot be removed from the outside without breaking them.

17. Uninterruptible power supply (UPS) systems for alternating current shall be used to ensure the power supply for service components in the wiring closet. Minimum back-up time shall be 2 hours and switching between public electricity network shall be automatic.

18. The structure, installation and locking systems of the doors to the closets shall hold against attempts to break-in with conventional hand tools.

19. The windows of wiring closets must be physically protected when they are placed less than 4 meters above ground level. In addition, the windows of rooms providing access to the wiring closets must be physically protected, if the windows are placed less than 4 meters above ground level.

20. Prevention of water damage must be taken into account in the design and construction of the wiring closets.

21. The facilities must be equipped with an access control system in which access rights can be specified for individual electronic opening devices, and in which each access is registered.

22. The facilities must be equipped with an automatic security alarm system that reports any intrusion into the facilities from the outside.

23. Cabling between a wiring closet and data centers should be secured against faults. There should be cabling from one wiring closet to both data centers.

24. Cabling between wiring closets and data center facilities shall be protected. Protection shall hold against attempts to break-in without specific tools. Cabling shall be mainly fiber optic and cabling shall be equipped with an automatic alarm system, which will alert control personnel if cable in use is broken/disconnected.

25. If the temperature in the wiring closet falls below or rises above a set level, the control personnel shall be alerted

26. Main principle will be that clients bring their switches etc. to wiring closets. Wiring closets will need flexibility to make different areas/accesses for different clients. There shall be flexibility to put lockable racks and also walls if necessary between clients.

Main principles for AP wiring boxes (for wireless access points):

27. There shall be a wiring closet (or equivalent) for a wireless access points (= AP wiring box) in every 30 meters (circular coverage, approx.).

28. AP wiring boxes shall be protected. Protection shall hold against attempts to break-in without specific tools. Wiring boxes for wireless access points shall not disturb wireless transmission compared to radio covering (previous requirement). Target is to cover all building spaces with wireless network access.

29. There shall not be any visible cables between wiring closets and AP wiring boxes.

30. Cabling or connection point shall be equipped with an automatic alarm system, which will alert control personnel if cable in use is broken/disconnected.

31. Uninterruptible power supply (UPS) systems for alternating current shall be used to ensure the power supply for service components in the AP wiring box. Minimum back-up time shall be 30 minutes and switching between public electricity network shall be automatic. This can be done with PoE (power over Ethernet) switch and UPS in main wiring closet.

Main principles for end-user connection planning (mainly physical requirements):

32. There shall be possibility to made client connections by fiber optic cable, copper cable and/or wireless access. Client will choose its connection methods, but these three shall be made possible for the client.

33. There shall not be any visible cables from wiring closets to end users.

## 7. FORM OF SUBMISSION

7.1 Your submission should include plans, at a scale of not greater than 1:200, together with sections and elevations. Paper size of not greater than A1 should be utilised for proposals.

7.2 At least one colour 3D perspective of the proposed development should be presented.

7.3 A listing of proposed materials making up the fabric of the development should be included in order that an independent costing exercise can be carried out.

7.4 The submission should be accompanied by a detailed report outlining design rationale and including an outline specification for materials and finishes

7.5 Submissions should consist of 8 No hard copies in bound format together with one electronic copy contained on CD in PDF format.

7.6 Submissions should have a covering letter on the company letterhead; otherwise all submission material should be free of information which identifies the company who originated the drawings etc. This in order that the adjudication can take place anonymously.

Submissions should be addressed to:-

The Secretary
BDC Tender Committee
and delivered to BDC Building
Plot 50380
Fairgrounds, off Machel Drive
Gaborone

7.7 Submissions should be received at the above address no later than **12 noon on Monday the 15th June 2009.**

## 8 CONDITIONS OF PARTICIPATION

By participating in this architectural competition, all entrants must be aware of the following:-

8.1 Any enquiries must be in writing addressed to Botswana Development Corporation Ltd, Private Bah 160, and Gaborone, Botswana or by e-mail to Letsweletse@bdc.bw Attention L.M Ramokate or douglas@bdc.bw for the Attention of D. Phefo.

Any questions which are asked which have a response which could potentially have a significant impact on the competition will be circulated to all practices. Any and all written queries will be responded to on condition that less than 50% of the allowed time has elapsed.

8.2 BDC reserves the right not to make an award or to cancel this competition at any time and shall not be bound to accept any proposal at all.

8.3 The decision of BDC will be final and binding and no correspondence of whatsoever nature will be entered into in regard to the outcome of the competition.

8.4 BDC reserves the right to negotiate with the successful architect in regard to certain elements of the winning design.

## 9. DEVELOPMENT PROCUREMENT

A final decision on the method of procurement of the construction of the development will only be made once architectural submissions have been adjudicated.

It may be therefore that BDC may wish to explore more innovative and less traditional means of procurement.

The following methodologies are currently being explored;

## 10. REMUNERATION

10.1 Competition Phase

The companies who submit designs will receive a compensation fee of 5,000.00 Euros. plus VAT .

10.2 Implementation Phase

The company who is ranked 1st in this competition will be appointed the architect for the development.

Whichever method of procurement is ultimately utilised the architect will be expected to provide a full service in accordance with the standard client/architect agreement except for work stage 5 which duties will be carried out by the project manager.

The total fee which would be agreed would be 4.% of the contract construction budget excluding tenant installation allowance.

This fee would be fixed in respect of the final cost of the building work provided that the client does not request a significant change of scope once the budget has been agreed upon.

Should the architect subsequently be required to carry out the design of interior layouts for particular tenants/owners then the cost of that work would also be added to the construction budget in calculating the total fee due.

In terms of cash flow, 10% of the agreed fee would be payable on appointment and the balance of the fee payment schedule would be negotiated depending on the modus operandi of procurement.

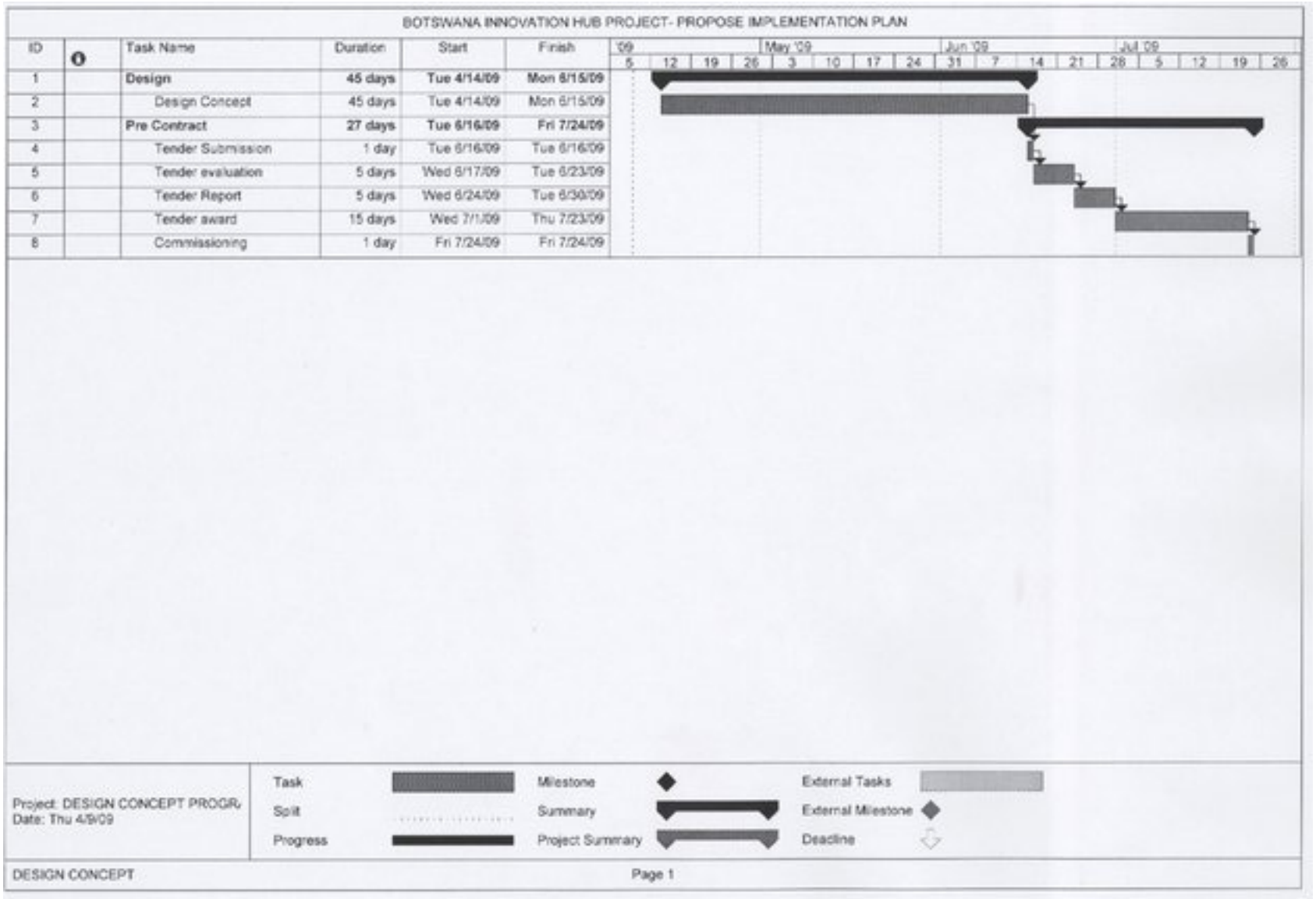
In addition to the above fees a fixed amount of P100 000 plus Vat would be set aside for the production of a design model.

## 11. ELIGIBILITY

Should any of the competing architectural practices be from outside Botswana then, by taking part in this completion they are binding themselves that for them to be awarded the tender, they will either:-

a) Form a joint venture arrangement with an established registered local architectural practice or,

b) Open an office in Gaborone Botswana with competent resident staff for the duration of the project.


BOTSWANA INNOVATION HUB PROJECT- PROPOSE IMPLEMENTATION PLAN
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Task Name
Duration
Start
Finish
'09
May '09
Jun '09
Jul '09
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1 Design 45 days Tue 4/14/09 Mon 6/15/09
2 Design Concept 45 days Tue 4/14/09 Mon 6/15/09
3 Pre Contract 27 days Tue 6/16/09 Fri 7/24/09
4 Tender Submission 1 day Tue 6/16/09 Tue 6/16/09
5 Tender evaluation 5 days Wed 6/17/09 Tue 6/23/09
6 Tender Report 5 days Wed 6/24/09 Tue 6/30/09
7 Tender award 15 days Wed 7/1/09 Thu 7/23/09
8 Commissioning 1 day Fri 7/24/09 Fri 7/24/09
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Date: Thu 4/9/09
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Summary
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External Milestone
Deadline
DESIGN CONCEPT
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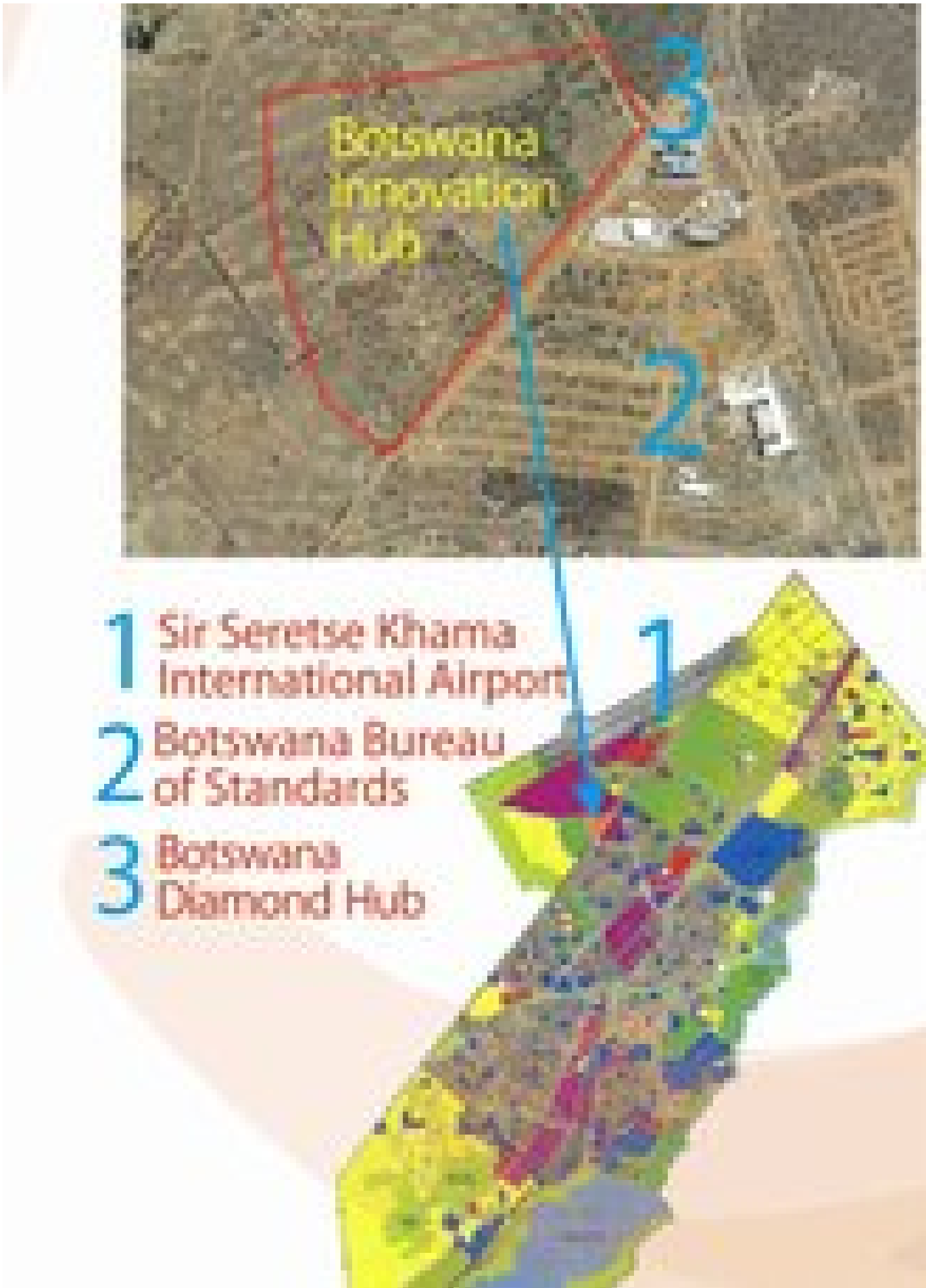
Botswana Innovation Hub
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2
1
1 Sir Seretse Khama International Airport
2 Botswana Bureau of Standards
3 Botswana Diamond Hub