PROPOSED FLOOD LIGHTING OF THE GARRISON RACECOURSE WITHIN THE "HISTORIC BRIDGETOWN AND ITS GARRISON" WORLD HERITAGE SITE

Review of Options and Visual Impacts

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Preface

1. When the Barbados Turf Club (BTC) decided to provide night racing under floodlights by erecting 21.34 m (70 ft) poles and lighting arrays, this led to the submission of a planning application (no. 2398/10/2009B), permission for which was refused in April 2011 on aesthetic grounds. The lighting scheme was designed by Musco Lighting (Musco) of the USA and involved the erection of 28 masts or poles and 13 lights fixed to the roofs of buildings. The poles would be evenly distributed around the inside of the race track and jogging track, each pole having an array of light bulbs to light the race track.

2. Following the refusal of permission, the Barbados Turf Club (BTC) requested a review of decision and proceeded to obtain expert advice on the most appropriate system of lighting which would mitigate against any visual impact which the 21.34 m poles would have during daylight. The BTC commissioned Richard Gill Associates Ltd to undertake such a study, with assistance from Donald Hankey (The Lord Hankey) as an international expert in conservation, architecture, planning and policies of historic sites and their context.

3. This report is based on the study by Donald Hankey and Richard Gill on behalf of the Barbados Turf Club (BTC). Between 18 and 22 June, 2011, meetings and discussions were held with Sir David Seale and Directors of the BTC, and with their CEO, Mrs Rosette Peirce, and also with Mr Gordon Ashby and Mr Peter Stevens of the Barbados National Trust, and in his legal capacity Mr Stephen Walcott concerning the rights and stakeholder interests in the use of the Savannah. There were informal discussions with other persons and the staff of the BTC assisted in the investigation of the water and electrical services on the racecourse.

4. Prior to his departure from the UK, Donald Hankey had learned about the physics and standards of track lighting, lux levels appropriate for recording on film and TV, and potential forms of lighting distribution from Lighting Design International and Iguzzini Illuminazione in the UK. In Barbados he was able to peruse the previous designs from Musco Sports Lighting of Oskaloosa, Iowa in the USA, and from Innotech of Barbados with the assistance of Abacus Lighting of the UK. He was lent a copy of the submission for World Heritage site status so that he should appreciate the historical background and Outstanding Universal Values (OUV) of the Garrison and its Racecourse on the Savannah in their historical and urban context. From previous work on Speightstown, Bridgetown and the Garrison's buildings, he already knew something of the conservation and planning issues and policies of Barbados. However, the time at his disposal was limited to understand every commercial, cultural, historical and functional detail, and so he concerned himself with ensuring that the principles might be correctly addressed.

5. Further work has been done as part of this study to explore the potential of utilising shorter lighting arrays 12 m to 15 m high. During that period, "Historic Bridgetown and its Garrison" was inscribed as a **World Heritage Site**.

6. Following informal discussions with professional officers of the Town & Country Development Planning Office, the request for review by the Minister was withdrawn and a new application (no. 0615/04/2013B) was submitted to the Chief Town Planner (CTP) in April, 2013. This new application provided the opportunity to provide further evidence to support the proposal in the context of the Outstanding Universal Value (OUV) of the Site, including the opportunity for Richard Gill and key representatives of the BTC to meet with the Barbados World Heritage Committee under the chairmanship of Mr. Mark Cummins, Chief Town Planner.

7. The initial Hankey report has been modified by Richard Gill to retain the principles and substance stated there, but taking account of the Inscription of the Bridgetown and its Historic Garrison as a World Heritage Site, a further design by Abacus (UK) for low height lighting arrays, the erection of "mock-up" light poles 31.34 m high and the meeting afterwards with the Barbados World Heritage Committee. It omits certain ideas and recommendations from the initial study which were tested and discarded and represents the joint findings of Donald Hankey and Richard Gill.

Introduction

8. The objectives of this study are to review the significance of the Outstanding Universal Value of the Garrison Savannah, to determine the likely visual impact of the proposed flood lights and, where appropriate, to explore floodlighting alternatives. Since the proposed poles and lighting arrays will create visual impacts, the challenge is to determine their likely appearance and the extent to which impacts can be mitigated, both visually and in terms of the likely social, cultural and economic benefits of night racing.

9. The Chief Town Planner, as Chairman of the Barbados World Heritage Committee and in his own capacity, requested a Heritage Impact Report which would consist of the Hankey/Gill study, the Market study and a new Social Impact study. The Market and Social Impact reports are therefore attached to this overall document as Parts 2 & 3.

10. This project for lighting the Racecourse at night involves many factors which are treated in the following sequence in this report:-

    - Background to Racing under the Barbados Turf Club.
    - The Objectives and Vision of the BTC
    - The Planning and Context of the Historic Environment.
    - Design Parameters – Illumination Levels – safety for horses and jockeys.
    - The Schemes Produced by both Musco and Abacus with Masts.
    - Aesthetic Concerns of the Town and Country Development Planning Office.
    - Impact of the Proposed 21.34m (70 ft) poles.
    - Mitigation of Visual Impacts of 21.34m (70 ft) Poles.
    - Other Mitigation: The Benefits of Floodlighting and Night Racing to the Outstanding Universal Value (OUV) of the Historic Garrison.
    - Conclusion – Resolving Conflicts in Preserving the Outstanding Universal Value.

Background to Racing under the Barbados Turf Club

11. The Garrison Savannah was used for horse racing and polo when the area was a military garrison and the tradition of horse racing has continued to this day. The Barbados Turf Club (BTC) was established in 1905 and from inception race meetings have been held consistently each year at the Garrison Savannah during daylight hours. Racing was first held on Thursdays and then moved to Saturdays and Bank Holidays.

12. Racing attracted large crowds up until the early 1970's when Bridgetown retailers started to open their stores a full day on Saturdays. The drastic decline of the number of horses imported in the late 1970's and early 1980's dealt a severe blow to the viability of racing and it was not until the staging of the Gold Cup, first held in January and then moved to the first Saturday in March, that visitors began to come to the Garrison and to enjoy a day of racing in very "primitive" facilities.

13. In 1993 the Club "bit the bullet", so to speak, and refurbished its Plant for the first time since inception in 1905. Twelve Corporate Boxes, an additional Stand and considerable improvements to Tracks and Racing Rails when the dangerous board post and rails were removed and replaced with PVC railings and posts and when general landscaping to the Garrison itself carried out. The establishment of a "joggers" track was established at the same time, much to the delight of fitness conscious Barbadians. Even with the refurbishment of Plant, crowds attending racing continued to dwindle as other sports took priority over daylight hours on Saturdays, while visitor numbers fell from a combination of the attraction of sun and sea and the need to return home on a weekend day.

14. The Club has not been in a financial position to increase prize stakes for the past twenty years. As a result, the number of racehorse owners taking part in the sport has decreased, with the number of imported horses and those bred locally reducing to alarming numbers. Indeed, if the trend of reducing numbers of horses taking part in racing is not reversed, racing at the Garrison will come to the end in the not too distant future.

15. Horse Racing is an entertainment sport where crowds come to watch perceived "champions" take part with full fields ensuring lucrative betting pay outs. The need to race at a time of day and day of week that will not clash with other sports is most necessary for the sport to survive in the future. The establishment of facilities to flood light the race track and to conduct racing at "prime time" is essential.

The Objectives and Vision of the BTC

16. The BTC wishes to ensure that the racing and associated functions continue to offer an increasingly attractive entertainment and benefit to the Island, and that this historic racecourse becomes an increasingly unique and attractive destination for foreign horses and their owners.

17. The race course is a prime facility for the Island, and the BTC wishes to ensure that the historic environment of the Garrison can retain its historic functions, and can be a complement to its historic setting.

18. The BTC wishes to encourage a larger audience at race meetings, and to hold more race meetings throughout the year, and to do so within the capacity of the course and the Savannah's other functions.

19. In order to enlarge its audience and increase revenue, the BTC recognises that it has to have meetings at night – when holiday makers can have diverse entertainment at the races; so that tourists by day on the beach can benefit from Barbadian life at the races; so that residents who are fully employed by day can attend race meetings by night; and so that races can be streamed overseas on sports channels dealing with the sport including betting. The BTC recognises that the tourism economy operates under increasing pressure from other sophisticated destinations, and that to be attractive events at the race course must respond to the recreational needs and expectations of the audience. It also recognises the potential economic and financial benefits of races being transmitted live to audiences overseas.

20. The BTC recognises that racing on its own is not a complete entertainment and that, as at other important racing destinations, a diversity of entertainment may participate at the race meetings and may extend the time before, between and after races when such entertainment adds to the enjoyment of the race goers and the general public.

21. The BTC recognises that The Savannah represents a valuable destination for recreation and entertainment, that diverse activities must be co-ordinated and managed to their mutual benefit, and that night time activities require effective systems of lighting that are complementary to the lighting of the racecourse and aesthetic character of the Garrison World Heritage Site.

22. The BTC wishes to see that investment into upgrading and extending the use of the race course is sustainable in relation to its market potential and the operating and maintenance costs, and that adequate prize money should be offered to encourage local and international competition and participation on more than the three great occasions held each year at present.

The Planning and the Context of the Historic Environment.

23. The World Heritage nomination document demonstrates the high quality of the heritage environment of the Garrison which uniquely has the Savannah Racecourse that has been in use since the middle of the 19th Century (1845), and that for many years included polo and cricket among its attractions.

24. As well as providing space for military activities, the Savannah was also intended to provide recreation for the military personnel, with a large portion of the accommodation blocks located around its periphery. Notable amongst these are the troops' and officers' mess which are now government buildings, the prison (now the Museum), the guard house and barracks and the many notable private houses around the perimeter of the race course. Many of these properties are set behind trees which give a parkland character to the setting of the racecourse and make a significant contribution to the qualities of the historic environment.

Photo 1: View of the Savannah from the North East.

Photo 2: View of the Savannah from the South West

Map 1: The Savannah in relation to the Boundary of the World Heritage Site

Map 2: The racecourse showing the principal buildings and its setting, the proximity to the surrounding roadway, the historic houses and the military buildings to the south west that are still occupied by the Barbadian armed forces.

25. The excellent description of the Garrison can be read in detail in the World Heritage nomination document "Historic Bridgetown and its Garrison". The current conservation legislation and policy of Barbados supports the conservation process. The principal considerations derived also from international best practice that must be respected in this historic environment are summarised as follows:-

    a). **The Savannah must remain in recreational use**. There are many stakeholders in the use of the Savannah. The racecourse is an original recreational use: "the oldest functioning circuit of its kind in the entire American continent." It must be able to thrive in relation to the modern tourism and domestic markets and must be attractive in relation to other destinations on the Island in order to "foster the economic, environmental, physical and social well-being of the residents of Barbados"[1].

[1] Barbados Physical Development Plan Amended 2003

The Savannah racecourse must, if possible, remain a viable function, and to that end it has to adapt and attract an adequate range of participants. It is a famous function in a famous World Heritage setting. But the history of the BTC's finances, the hard economic times, and the past need for public financial support, show the importance of extending the days available for racing, while operating the race course profitably, safely, and attractively for the public. To do this requires racing to take place both by daylight and also when both the local residents and the tourists are most available – in the cool of the evening after sunset.

The range of complementary recreational functions that can be associated with racing occasions should be encouraged through careful management and co-ordination with those responsible for the Savannah. This will increase both enjoyment and participation in the racing. The lighting of associated functions and spectator areas may need to be considered carefully in combination with the provision of lighting for the racecourse in order to reduce the impact of lighting masts on the historic setting.

The dilapidated condition of some historic buildings around the Savannah reflects the need for economic stimulus through improved intensity of use, attraction and numbers of visitors.

While World Heritage Site status is to be valued as a stimulus to tourism, to cultural identity and association with a place, and to understanding the past, its values and associated themes need to be understood, interpreted and presented. The presentation of the Garrison, its buildings and history is an essential element in any occasion taking place on the Savannah.

b). **New Development must respect the special character and quality of the area** through selecting appropriate size, design materials and colour, that are not unduly obtrusive and do not impact upon the historic quality, scale and materials of the historic environment . In reality some degree of change is always required to accommodate the modern world (electrical, communications, safety and drainage services), and every age contributes to the character and history of a place (new functions, roads, services, lighting, and safety measures). In historic areas such as the Savannah, such measures may not be permanent, but all additions should respect the cultural historic and aesthetic design context, which at the Savannah retains a great degree of historic integrity and authenticity (see nomination document P182).

The Savannah is surrounded on the north-west, north and east sides by trees, mostly some 15-18m high and these screen the surrounding historic buildings. On the south and south-west and west sides (see map No 2), the Fort (buildings 52-55), Barracks (Building 59), Guard House and housing (Buildings 1-13) are mostly around 5-8m high, and the tree screen is lower or absent. Only the tower of the Guard House stands some 17m high.

New design elements that have been introduced over the last few decades include:- the stands at the finishing straight; the television booths on top of the stands; street lighting and traffic lights to roads around the Savannah; the macadam jogging track that also serves as the TV cars route set inside the practice course; the glass facades of the enclosed stands; the existing telegraph poles on the Savannah in front of the stands which are some 10.5m high and are mid grey in colour. These do not compete with the white of the racecourse barriers, and recede against the dark background of the trees. Wherever it is possible, new design elements should not intrude on this historic setting more than the existing power and telegraph poles, rugby masts and street lighting etc. In particular, the tree bounded

skyline should not, when seen from across the Savannah, be broken with a rhythm of lighting arrays seen in silhouette against the sky unless there are over-riding benefits to be derived. Masts of any height close to the observer will appear in silhouette.

The BTC takes very seriously the compatibility of the racecourse with its historic environment and makes every effort to find affordable proposals which are compatible with this historic environment.

c). **Effective conservation concerns physical, functional, and economic, as well as aesthetic, historical, cultural and contextual factors.** As for all heritage, its viability, maintenance and management depends upon its sustainable use, which should preferably approximate to its original use, and which should also be supported by realistic management and business plans. Our concern here with the lighting of the Savannah for the purpose of races and other events is to reduce the mass and intrusive nature of flood lighting, when seen by daylight, and the light spill and glare that could occur by night over the surrounding historic areas.

d). **All heritage has to remain viable** and either is of such general interest and value in its original form that no change can be permitted (e.g the pyramids, museum objects etc) or some degree of adaptation for safety or functionality is required, to achieve affordable use, maintenance and conservation. In the case of the Savannah, its continued function as a racecourse requires enhanced use, attraction to the market, and complementary nature of its functions to the people of Barbados in order to deliver adequate profitability.

Design Parameters – Illumination Levels – safety for horses and jockeys

26. **The wind speed and illumination parameters** for floodlighting should be as follows:-
    a). Design for hurricane wind speed up to 130 mph
    b). Illumination levels will suit TV simulcasts for broadcasting and must create a safe environment for both jockeys and horses. The British Horse racing Authority (BHA) advise 700 lux. The course is designed for a minimum of 500 lux at present and this depends upon the type of TV equipment to be used and its ability to accommodate variable light levels.
    c). Design will limit offsite spill and glare.
    d). Energy consumption will be reduced through the use of advanced technology.
    e). The jogging track, upper and lower paddocks will be illuminated by using separate circuits.
    f). Any lighting of the Savannah should reduce contrast of light and dark and lighting systems must be complementary to the lighting of the racecourse itself.

27. **Safety for Horses and jockeys** relates to obstacles that might be impacted and to shadows. The BTC is very conscious of these dangers. Comments from Brian Stewart of Hong Kong's Happy Valley Racecourse and Rob Hartley of the British Horse Racing Authority were sought. Essential criteria are noted here:-

    i). "The vertical lighting illuminance should reach a minimum of 700 lux.

    ii). The location of all columns used to mount lamps must take account of sight lines from all Stewards' boxes. Columns must be at least 2.5 metres from the running rail, and if less than 4 metres must also be padded. The positioning of the columns must also be

such that they produce an illuminated side-on view from the grandstand – silhouetting of the horses is not acceptable. Columns must also be located in such a way that they do not cast across the racing surface a shadow or shadows liable to affect a horse's performance. This also includes all occasions where a racecourse with floodlighting is staging a non-floodlit fixture.

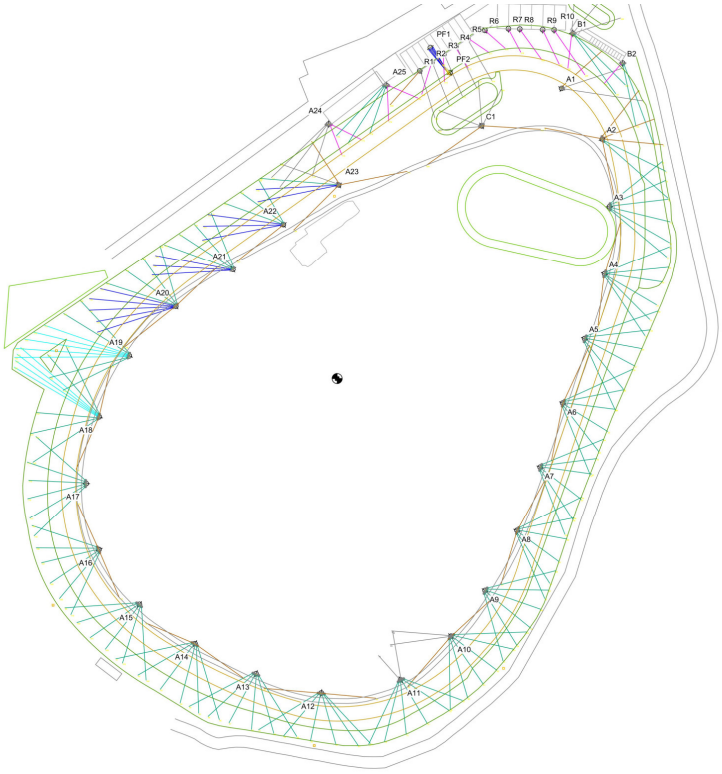
iii). All necessary steps are to be taken to ensure the provision of acceptable colour picture quality from floodlit racing, and of usable camera patrol pictures for the Stewards. A nominated representative of the Managing Executive must therefore liaise closely with the Racecourse Department and Integrity Service Providers so as to ensure that such lighting is provided which allows cameras to operate correctly as far as exposure, colour rendition, resolution and other factors such as flare and lag effects are concerned.

A potential catenary support system was conceptualized for the lights spread out over the race track to avoid concentrated areas of shadow and allowing cheaper and shorter throw for the lights. But the lights were not then well placed for vertical illumination and posts had to be too close to the course. This concept was abandoned following a critical assessment and is not included in this report.

28. **Shadows can be a serious consideration**. In view of the orientation of the course there will be shadows on the course in daylight which must be taken into account. Since racing does not take place in the early morning, shadows from lighting masts will fall over the course in day light racing. Using the a stereographic Sun path Diagram for latitude 13^0 North, it is concluded that:-

- **Between January and July at 1600 hours the shadows fall at 21^0- 32^0**
- **And between January and July at 1730 hours the shadows fall at 0^0 – 11^0 between 10^0 North of West in June and 7^0 South of West in January**

Shadows cast by sunlight should be considered. Taking the proposed Musco scheme dated 24 November 2009 (see Map 3), with 21.34m high lighting standards on the East part of the course, and the lighting masts set some 19 m inside the race course, the **shadows from the Lighting arrays on the East side** of the course will fall over the race track from 1520 hours in July and from 1430 hours in January. Such shadows would be of a lighting array, with lights on the top of the masts casting a pool of shadow up to 1.2 x 2.0m on the ground on both the practice course and the race course. According to the British Horse Racing Authority (see para 18 (ii) above) we have to ask if such shadows would be "liable to affect a horse's performance". In mitigation, shadows by day would be subject to less contrast than any shadows by night. There will be no shadows over the course for night racing.



Map 3: Musco proposal for 21.34m lights showing poles and illumination of track

The Practice Track will always have shadows over it with 12-20.34m high masts, for afternoon racing on the East side of the course and in the morning over the practice course on the South East side of the course. Practice takes place mostly in the mornings.

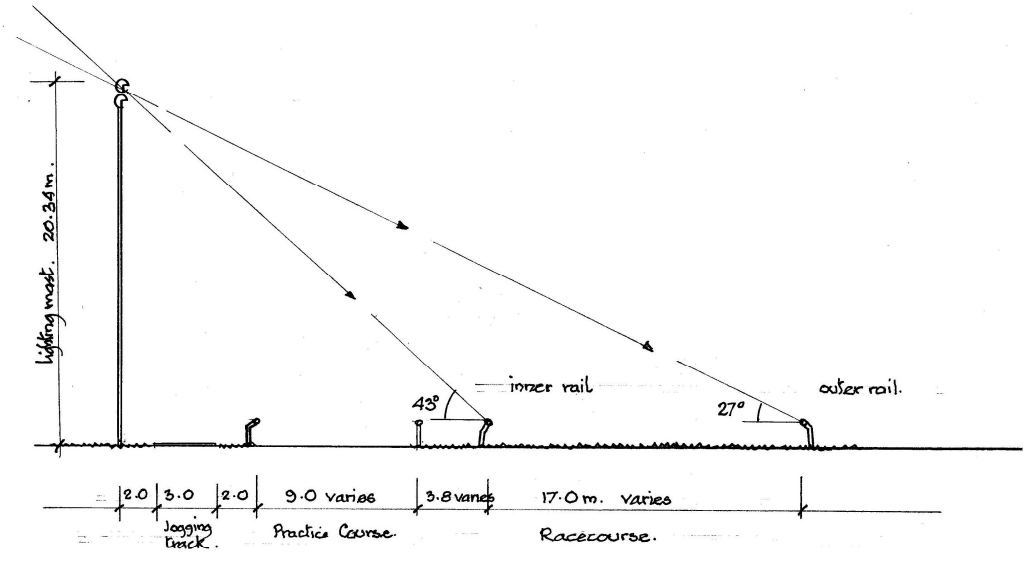


Diagram of the basic course cross sections **Scale 1: 200**

There is therefore a possible risk that all masts with lighting arrays during daylight racing or practice racing will produce pools of shadow over which the horses may jump or shy with the present tendered schemes, in places at different times of the day, from 1500 hours onwards with the Musco proposals.

What implication this may have for the danger to horses and riders is a matter of horse psychology, but it suggests that shadows must be limited in their bulk as far as possible for daylight racing to avoid upsetting horses. The BTC should decide what risk obtains, if any, with any of these shadows when racing by day.

The Schemes Produced by both Musco and Abacus with Masts

29. Two tenders were originally submitted in 2004 from Musco Sports Lighting of Oskaloosa, Iowa and from Abacus Lighting Limited of Nottinghamshire, England. Both tendered for high masts.

Musco offered a package deal using parabolic light fittings which cannot be mounted lower than 20m to achieve coverage of the course and reasonable control of spillage and glare. The Abacus proposal was similar, but more expensive, and so proposals to the CTP incorporated the Musco lights.

During the research for this study, both firms were asked to submit alternative proposals for 12-15 m poles. Musco were not prepared to offer lower lights on the grounds that they would not be effective and would create excess light spillage and problems for horses.

Abacus offered an alternative system of double asymmetric metal halide fittings from a lower height (15m) which they considered would create good control of spillage and glare, based on the same light distribution and fixed mast principles. Abacus confirmed that lower masts at 12 m height would in their opinion produce excellent vertical and horizontal lux levels with masts at 30 – 40 m centres. There would be 38 masts with 22 other lights (instead of 28 and 13 for the 21.34 m poles). However, it was later confirmed that no system of low level lighting has been provided at any race track worldwide and provision of them in Barbados would be a “first of its kind”. The cost of this option is also very high compared to the 21.34 m proposal and is not affordable.

Abacus also offered 21 m telescopic masts which could be lowered to 7-15m high, but the costs would be 6 times more than for fixed masts. They also offered hinged masts as at Kempton Park racecourse in the UK, which, when retracted, would each be lowered or raised in four minutes, costing twice the cost of fixed masts.

The Musco 21.34 high masts are illustrated in the following photographic montages (Photos 3 & 4). These lighting arrays will be seen in darker silhouette against the sky when the sun is behind them.

Photo 3: View looking south across the Savannah with Abacus or Musco lighting arrays at 21.34m (70 ft) height.

Photo 4: View across the Savannah looking south-west with Abacus or Musco lighting arrays at 21.34m (70 ft) height.

Aesthetic Concerns of the Town and Country Development Planning Office

30. When the Musco proposals were originally submitted for planning permission, concerns and suggestions of **The Chief Town Planner** and several agencies in 2010 included the following:-

- the potential to be injurious to the visual amenity thereby impacting significant Garrison buildings
- although there was no objection in principle to the use of lights, the maximum height of the poles and pylons should not exceed 35 feet *(10.65m)*
- the use of telescopic masts should be considered

- due to the possible intrusive nature of development that may detract from the conservation area, the design of the lighting must be sensitive to the historic and architectural nature of the area
- the importance (of) the conservation / heritage issues needed to be addressed in the determination of an application of this nature.
- outdoor lights should be shielded so that emitted rays are projected at least 15 degrees below a horizontal plane running through the lowest point on the fixture when light is emitted
- options for the lighting masts, fixed, hinged and telescopic were suggested and height at 15m
- the colour of the masts should be considered.

We are of the opinion that hinged masts costing double that of fixed masts would take a long time to operate if not automatic and, if automatic, would cost four times the cost of fixed masts. Telescopic masts would cost 5 times the price for fixed masts. While these options bring the mast height down to 7.5 or 1.4m height (telescopic or hinged) they are also more subject to vandalism and would need (if hinged) wire cage protection at least 1.5m high by around 1.6m length. Such volumes might interrupt views of the horses racing by day, and create significant rhythms that affect the historic setting. These options have been ruled out because their costs are not affordable.

31. For aesthetic considerations and for the historic environment perspective, we set out the following observations in relation to the above comments:-

a). The fixed lighting arrays when seen from the opposite side of the course appear in silhouette against the sky at 21.35m (70feet). There would be aesthetic intrusion into the heritage environment from the masts and lighting arrays that would set up a regular design rhythm around the course. The objective of design in this historic environment must be to respect the context and if possible not to introduce new design rhythms into the tree lined environment of the Savannah. However, the jogging track, race track and rails already provide a design rhythm in the open Savannah, and this is further accentuated by the trees and buildings which provide an edge to the space. The addition of lighting arrays would not be a new design rhythm, but would accentuate the existing features in a manner which would impact on their visual appearance. The present Savannah makes street lighting and telegraph poles of a dark grey wood colour.

b). The TCDPO previously considered masts at 10.675m (35feet) height to be acceptable in principle. But this height is too low for any system of lighting arrays from masts since the risk of glare and light spill becomes too great and the cost is unaffordable. An alternative distribution of lights that brings them over the track and closer to the horses was designed. These would require some adjustment of the practice course and jogging track and were in any case found to be impractical. They may have caused shadows falling across the course and were considered a danger to horse and jockey.

c). All masts, lighting fittings and light arrays close to the observer will been seen as a silhouette against the sky, as for any road lighting, most of which are between 9-11m high around the Savannah mounted on wooden masts.

d). Relevant heights above the race course to be taken into account are:-

The top of the grandstands	13m
The floor of the back of the covered stand	6.5m
The floor of the Board room	6.5m
Eye height in the board room	8.0 – 8.5m
The tree canopy on the North West straight	15 – 18m
The tree canopy behind the grandstands	17 – 19m
The tree canopy in front of Blocks A,B and C	18 – 22m
The tree canopy on the South East side of the course	16 – 21m

The tree canopy on the South and West sides of the course is intermittent and only 10-15m height. Buildings are between 7 – 10 m height excepting the Guard Room Tower which is over 20m height.

When lighting arrays are seen by day against a higher background tree canopy, as on the north-west, north and south-east sides of the course, such masts may, in our opinion, be permanent and no higher than the tree canopy. This could be achieved by masts at 15m height without the need for mitigation.

On the south and west sides of the course, fixed masts with light arrays at 12-15m height will by day mostly be seen in silhouette from the other side of the course. In our opinion the 12m high masts illustrated in Photos 5 & 6 (below) do not intrude into the historic setting when seen from the opposite side of the course from where they are less significant.

Photo 5: Potential lights at 12m height

Photo 6: Potential 12 m lights against tree background (enlarged)

Photo 7: Mock-up 70 ft. Grey pole seen from west side of the Savannah compared with the photo montage of the proposed lights below taken from the north-west (Photo 3)

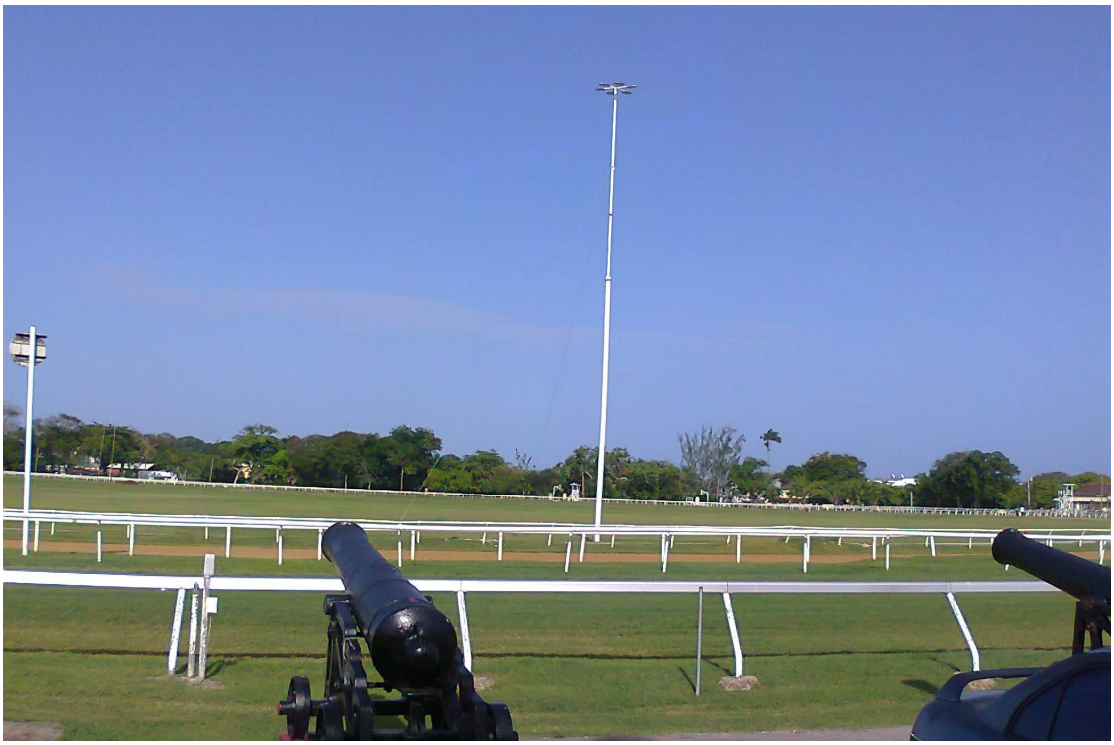


Photo 8: Mock-up 70 ft. White pole on west side of Savannah - view from nearby

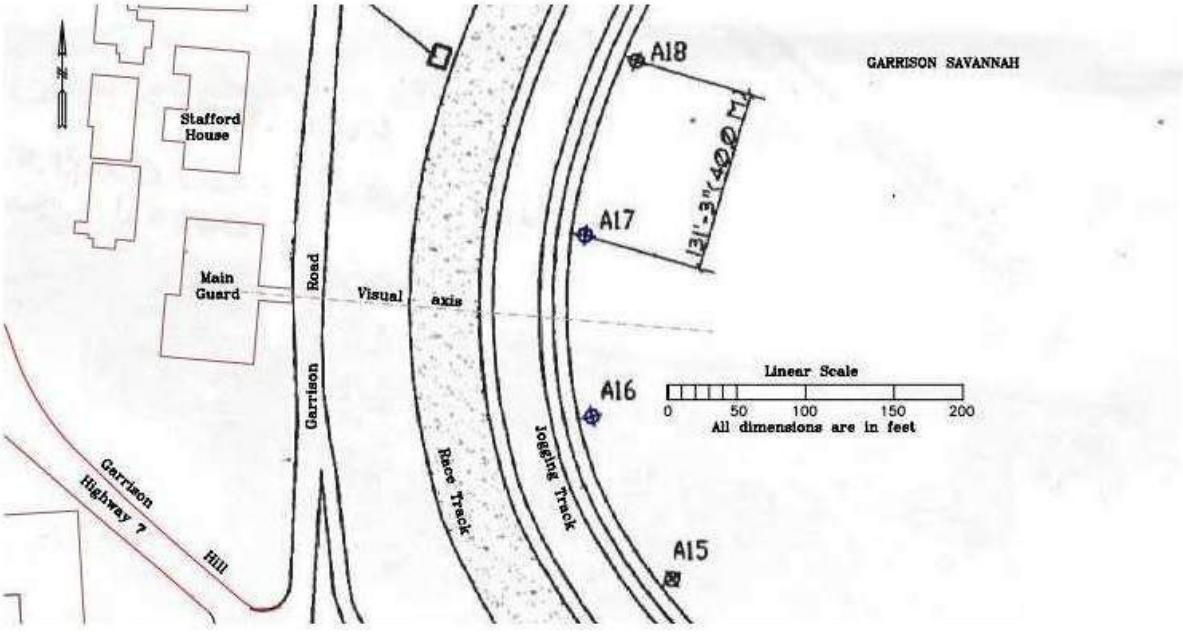
Impact of the Proposed 21.34m (70ft.) Poles

32. For aesthetic considerations and for the historic environment perspective, we set out the following observations in relation to the above comments (see also Photos 3 & 4, 7 & 8):-

    a). When viewed from very close, the visual impact of the higher poles does not increase appreciably with height, since the upper section of the pole is not noticeable unless specifically viewed by looking upwards. Further back, the whole pole becomes visible.
    b). The 70 ft poles will be wider in diameter than lower poles (for strength) and this will marginally increase their visual impact, especially when viewed from nearby. The further the pole is from the observer, the less the apparent difference in diameter.
    c). The closer the poles are to each other, the greater the impact. The 70 ft poles will be spaced further apart than the lower ones, with some reduction in impact.
    d). When viewed from across the Savannah, the 70 ft poles will be visible above the tree line on the east and north sides and above the line of buildings to the west and south.
    e). During daylight, the 70 ft poles will have a visual impact when viewed from across the Savannah in any direction. This was judged by accurately inserting scaled images on to photographs of the Savannah (Photos 3 & 4) and then by erecting two “mock-up” poles, one on the east and one on the west side in designed locations (Photos 7 & 8). These were viewed by members of the Barbados World Heritage Committee, other government personnel and the general public. The poles were found to be less intrusive than originally

envisaged by the writers and several members of the Committee have voiced a similar opinion. The grey pole was clearly less impactful than the white one when seen at a distance over the tree line. Photo 7 compares the mock-up pole with the photo montage of that area.

f). The Main Guard Building with its historic Clock Tower is impacted to a minimum by the poles as presently designed in that the main axis of the building passes centrally between the two nearest poles. This provides a 131ft wide "window" when the poles are viewed from the portico of that building. Any final adjustments to pole locations must ensure that this "window" is maintained, as it would be unacceptable for that axis to be visually obstructed by a pole.



Map 4: Proposed poles in relation to the Main Guard Building

g). The visual impact of the lights <u>at night</u> to residents and other users of properties around the Savannah is limited by the manufacturer's design which controls and contains light spill and glare. Properties on the east and north-west sides of the Savannah are partly or mostly screened by mature trees and those on the west side are not residential. The lights are designed to illuminate the track rather than the whole Savannah and will therefore be more "focussed" than lights at other sporting sites in Barbados such as Kensington Oval or the UWI's cricket complex (where cricketers must be able to see a ball struck high into the air).

Mitigation of Visual Impacts of 21.34m (70ft.) Poles

33. The mitigation of the visual impact of the proposed poles can be achieved to varying extents as follows:

1). By reducing the height of the poles to minimise any visual impact.

It has been established that the two companies which manufacture and install floodlights in many parts of the world are Musco (USA) and Abacus (UK). Musco is adamant that the lighting arrays must be high above the race track to provide proper illumination and safety for horses. They have argued that the 70 ft. high lights have been proved to be safe and functional and are not prepared to take the risk of designing and installing lower arrays of lights. They are not therefore prepared to offer a lower alternative.

Abacus, on the other hand, have also provided 70 ft lights in many parts of the world, but consider that they can provide the lower 12-15 m high lights using a different bulb and that they will function satisfactorily. However, the lower lights have never been tried for horse racing and they therefore prepared a unique design for the Garrison. The cost quoted for the 12 m poles is about 2.8 times that of the 21.34 m Musco poles. The difference in cost cannot be afforded by the BTC, which is also not prepared to take the risk of danger to horses and jockeys by providing an untried system in Barbados.

We have not explored the cost of an intermediate height of, say 16-18 m, as they would extend above the tree and roof lines and provide visual impact similar to (though somewhat less than) the impact of the 21.34 m (70 ft.) poles. This option would also attract the higher installation costs related to "one-off" design features and a greater number of poles than in the Musco scheme.

We therefore conclude that it is impractical and un-affordable to mitigate the height of the 70 ft. poles by substituting a lower alternative.

2). **By ensuring that the colour of the poles is least impactful**.

Initially, it was considered that a mid-grey and green pole would be the least impactful for lower poles against a background of trees and buildings. However, grey and white were considered more appropriate options for poles extending above the tree and roof lines. Grey and white "mock-up" poles were temporarily erected at the Savannah, one on the east side and one on the west side. When considered from a distance, the grey pole was less impactful against the clear skyline, the white against clouds. Either colour may be used.

3). **By removal of some of the poles and other objects which add "clutter" to the Savannah**.

The rationalisation of lighting and other structures on the Savannah, as well as the ongoing improvements and additions to the BTC stands and other buildings, will help to mitigate the visual impact of the proposed lights.

Other Mitigation: The Benefits of Floodlighting and Night Racing to the Outstanding Universal Value (OUV) of the Historic Garrison.

34. To further mitigate any visual impacts which the 70 ft. Lighting poles and arrays will have on the Outstanding Universal Value (OUV) of the Historic Garrison, it has to be shown that the proposed night racing under floodlights will provide benefits through the long term preservation of horse racing and the growth of cultural, social and recreational aspects.

Preservation of Horse Racing

35. Since costs are of great significance to the survival of the BTC and the historic horse racing functions of the Savannah, it is most important that the economics of running the course are realistically taken into account. The loss of the racecourse to Barbados would be bad for tourism and for the Island's economy and would be a loss of Outstanding Universal Value to this World Heritage Site. These matters are difficult to judge with precision, but the World Heritage Committee, ICOMOS, and other conservation agencies recognise that economic sustainability remains a prime objective of any effective land and building conservation.

    The provision for night racing will inject income from overseas betting rights through direct TV links as well as from local patronage in increased betting, catering and entertainment. This will allow the BTC to achieve its objectives which include:

- Considerable capital investment in improved stands, grounds, betting stands and landscaping
- The payment of increased prize money, leading to increased income of jockeys, grooms and other personnel
- Improving the quality of horses with the resulting importation of new blood lines to achieve better local breeding.

Cultural and Social Benefits

36. **The Market Study (Section 2)** has demonstrated support for night racing, with views by most respondents that patronage would increase once an attractive set of amenities and facilities was established. Most patrons said that they would attend and there was support for dining facilities, entertainment, security, public transportation, activities for children and as a family event.

    The lighting of the joggers track would extend and promote healthy activity and most people favoured an evening Independence Parade. From the results of the survey, the BTC could develop Unique Selling Propositions to increase the viability of Night Racing at the Garrison.

37. **The Social Impact Assessment (Section 3)** provided a comprehensive overview of the surrounding community, in which their views on the proposed night racing included those on the benefits and disadvantages of that activity.

38. **The Marketing and Social Impact Studies together** support the view that the installation of floodlights for night racing on the Savannah will have a number of potential cultural and social benefits which would enhance the Outstanding Universal Value of the Historic Garrison. Most potential benefits stated in the following list were mentioned by respondents in one or both studies:

- Better lighting of the Savannah and extended use of the jogging track
- Improved safety and policing
- Sports tourism with extended sports activity
- More opportunities for cultural events – a potential Garrison festival
- Increased opportunities for surrounding stakeholders
- Increased employment
- Generation of foreign exchange
- Protection of heritage
- Restoration of buildings in the area
- Beautifying the area
- More stands at the race course
- Increased tourist attraction
- Marketing like night cricket

The provision of floodlights for night racing can be viewed as a catalyst for stimulating the use and maintenance of not only the race course and horse racing activity, but also that of all the properties in the Historic Garrison.

Conclusion – Resolving Conflicts in Preserving the Outstanding Universal Value

39. The sustainability of horse racing on the Garrison Savannah depends on increased attendance and betting, with night racing as the catalyst, using the 70 ft. High Musco lights. The additional income through local betting and TV links to international sports channels with the associated betting revenue will allow the BTC to improve the racing facilities including stands and offer increased prize money to stimulate an improvement in the quality of horses through importation of new stock and local breeding.

It has been shown that the erection of poles and lighting arrays will create visual impacts which can only be physically mitigated in a limited way. It has also been demonstrated that there is presently no practical, safe and affordable alternative involving lower poles with reduced visual impact. However, the cultural and social benefits of the project are likely to be substantial, especially the use of the jogging track at night, opportunities for catering, entertainment, sport, cultural use, military

parades and other uses at night. Other properties such as the Barbados Museum, George Washington House and the old Cookhouse can take advantage of the night racing to extend their use.

The degree of permanence of the poles and arrays is also relevant to the long term view of the Historic Garrison. Lighting poles may be considered as part of the infrastructure to achieve the proper objectives of World Heritage, which include the sustainability of essential elements and Outstanding Universal Value. Lighting poles are not permanent in the sense that an ancient monument or major historic building. In this case, the poles can be justified as part of the infrastructure which is required to achieve the long term sustainability of horse racing and the attraction of the Historic Garrison. At some time in the future, at the end of the useful life of the 70 ft. Poles and lights, it may be possible to replace them with an affordable and proven alternative floodlighting system which has a smaller visual impact and has been proven to be safe.

The poles must be positioned so that they do not block the vista of the Savannah from the main axis through the portico of the Main Guard building.

Finally, future low height secondary lighting of the Savannah will need to be carefully designed and coordinated to maintain the Garrison Heritage as the Savannah becomes more intensely used in the evenings.