

***Preliminary Assessment and Recommendations for
Conservation and Enhancement of
St.Ines- Campal Creek and the Historic Bridges***

By

Goa Heritage Action Group

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Goa Heritage
Action Group

Intent

Goa Heritage Action Group (GHAG) was invited by the PWD, Government of Goa, to participate in discussions on the way forward for the conservation and enhancement of the historic creek and the three historic bridges, namely Minerva (near INOX), Ponte de Portugal (near Vivanta- Campal) and the St Ines Bridge also known as the Tonca Bridge or Old Bridge at the STP and Thomas Garage Junction, where the creek turns to the East.

GHAG members attended the two site visits – at Minerva Bridge and at the third at Thomas Garage.

We now present our Preliminary Assessment and Recommendations for Conservation and Enhancement of St.Ines- Campal Creek and the Historic Bridges to the PWD Executive Engineer for their consideration and appropriate action.



Jamshed Madon (GHAG) Arch Fernando Velho(GHAG) Sadhna Bandekar (PWD Executive Engineer) , Heta Pandit (Chairperson- GHAG), Poonam V. Mascarenhas (Conservation Architect, GHAG), Prajal Sakhardande (Vice Chairman, GHAG), Antonio Corte, Junior Engineer,, Ravindra Hegde, Assistant Engineer, Vipul Sawant, Technical Assistant

GHAG members' with PWD Executive Engineer and team
Site Visit on June 5, 2021



Tonca Pillar and was rebuilt and restored in 2004 by GHAG

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Identity Value:

The two bridges or the humped culverts are rendered with architectonics of an era wherein people walked to complete their errands and pause points were designed to cater for a minute of rest and meet socially. The seats and columns flanking the bridges provide distinctive identity to the city.

Historic and Ecological Value of the Creek and bridges:

Although the first known plan of Panaji dates to period 1776, however, it was only in the second half of the 19th century that Manuel de Portugal e Castro (1826-35), the last Viceroy of Portuguese-India, undertook significant urbanisation work, showing that the capital's move from Old Goa to Panaji was a firm decision.

Thus, from 1827 to 1835, land reclamation took place in Panaji and urbanization process was accelerated with the creation of areas like Campal. To ensure adequate drainage the planner kept the St. Ines creek and the creek by the Governor's Palace- Rua De Ourem, shoring up their banks by building walls and undertook large scale landfills.

These channels were crossed by four bridges on the palace side and by two others on the Campal side. Although the latter had been converted into a public promenade, it was described as the city's last large marsh.

The two bridges that accessed the Campal: the *Minerva or Alexandre Herculano* Bridge (near Inox) and *Ponte Portugal* (near Vivanta- Campal), were finished in 1829 and are still standing today. Once most of the landfills were completed, the early 1830s saw the laying out of squares and streets and the construction of buildings. The third bridge at St. Ines next to Thomas Garage was built in 1859 when the road was built to connect the city of Panaji to Dona Paula. A pillar was also constructed and placed there on 3rd November 1859 to commemorate the event. The same is now called Tonca Pillar and was rebuilt and restored in 2004 by GHAG.



Relative Artistic or Technical Value

Minerva Bridge (near INOX)

The wide bridge is embellished with designed apron of columns and seats in masonry and helps define the urban space of yonder. The scale, building technology and renderings are markers from its early nineteenth century construction period.

Ponte de Portugal (near Vivanta- Campal)

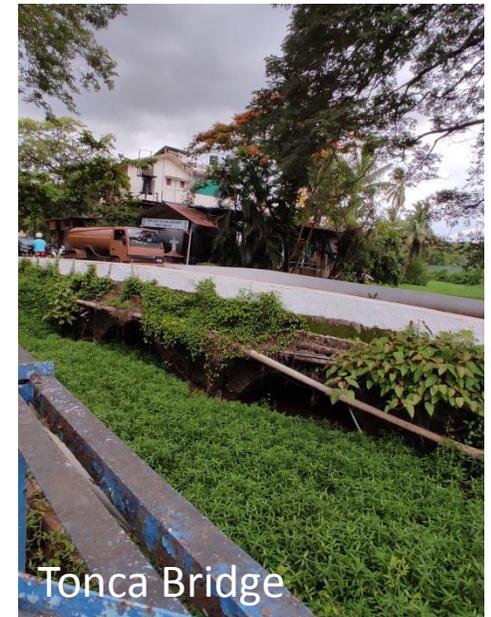
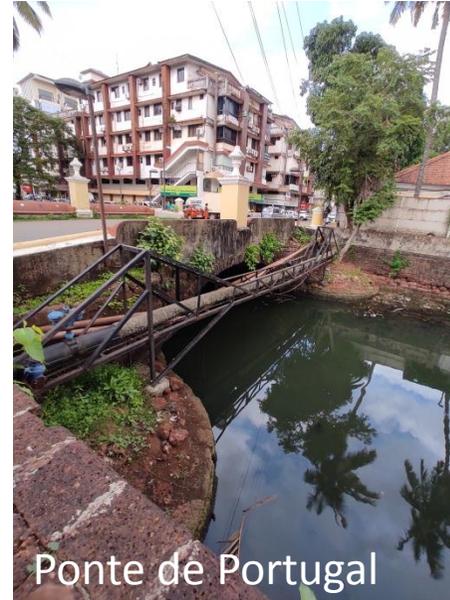
While construction is similar to the Minerva Bridge, treatment is different showcasing sensibility of the designers from the past that was sensitive to render distinction to help in identity while responding to the surroundings at the location.

Tonca Bridge or Old Bridge at the STP and Thomas Garage Junction

This two arched bridge over the creek is much wider and also changes direction towards the east. The super structure is not embellished or perhaps has been altered over the years. It is the least cared for bridge in the city.

Rarity Value

The story of evolution of Panaji as a 19th century city is tied to the engineering sensibility of designing with nature and the St. Ines Creek is the spine of this veritable realised dream that is credited to the tenure of Dom Manoel de Portugal e Castro, the Chief engineer / architect of Panaji.



Statement of Significance

The 'Mapped Heritage of Panaji Goa 2017', our research and publication released in 2018, records the creek and bridges and have been listed to be of Ecological, Social, Cultural, Recreational, and Architectural value and given the Grading of II A.

The Goa Land Development and Building Regulations, 2010 adopted Grade I, Grade IIA, Grade IIB and Grade III as listing classifications and these are guidance mechanisms for controlled change to the built fabric.

Grade II A and II B comprise buildings of regional or local importance, possessing special architectural or aesthetic merit, cultural or historic value although of a lower scale than Grade I. These are local landmarks, contributing to the image and identity of the region. They may be the work of a master craftsman, or models of proportion and ornamentation, or designed specially to suit particular climate. Grade II A & II B deserves intelligent conservation.

Need of the Project

The two streams – 'Conservation' and 'Sustainability' have the same foot hold- 'caretaking of resources – not robbing the next generation of its availability'. Today, resiliency and sustainability means 'carbon' footprint management. Maximising the benefit of carbon already invested is paramount. Carbon investments which also possess cultural value are thus important leverages for conservation of heritage buildings.

Thus Conservation and Enhancement of St.Ines- Campal Creek and the Historic Bridges are an important step forward towards meeting Sustainable Development Goals by Panaji the Capital City of Goa.

Preliminary assessments and Recommendations

St. Ines Creek- Rapid Assessment

- Rapid and often indiscriminate urbanisation of Caranzalem and Taleigao has adversely impacted the rain water egress for the entire valley that is shadowed by Alinho Hill and Dona Paula Hill. The impact is perennial flooding of Panaji city which is at the lowest end in the North.
- The Nature and Gradient of land does not adhere to administrative boundaries and thus the St. Ines creek needs to be Conserved and Rehabilitated to serve efficiently as the primary mitigation instrument of effective draining of rainwater.
- Waste Water mismanagement has rendered the Creek as a nullah and not a rain- water- drainage instrument that it was designed for that also experienced and facilitated the khazan agricultural practices through the tidal action.
- Climate change crisis will be felt very severely in the capital city as the sea level rise will further impact the city water drainage systems in coming decade. Impact is already experienced since last few years.



St. Ines Creek Recommendations for Rehabilitation

- It is imperative that a holistic approach is adopted in treatment of the Conservation of the St. Ines Creek.
- The invert levels need to be established afresh through the entire length of the creek.
- Dredging and cleaning it of all debris and waste will be requisite to know of the scope of work.
- The surviving retaining walls must be repaired and restored while the missing walls should be constructed anew – such as those near the STP towards East and West from the junction at Thomas Garage Bridge.
- Land abutting the creek can be taken up for creating pathways to enhance the quality of life in the City. Periodically placed waste bin along the path will help in waste management and creation of fishing points along the creek can enhance the recreational value while also make it easier for long term maintenance of the creek.
- Stepped retaining walls - leading to the creek can also be considered while constructing the missing retaining walls which can become citizens fishing points after the creek is rendered tidal post conservation.
- Each of the households and other properties that are discharging their waste water into the creek should be identified and notified for remedial action. This anomaly is a health hazard via mosquito and flies borne diseases to name just few- for the entire city and must be treated as such. Creek must be restored to its original tidal water channel and not a nullah.
- In consultation with horticulturist, plants, shrubs, medicinal and flowering to enhance, that are local and also that help in keeping the water clean can be adopted for the environmental enhancement of the entire embankments of the creek. Harmful weeds and trees that can threaten the structural stability of the retaining walls of the creeks should be removed. Consultation is important. Expertise exists in Goa itself and must be employed.

Minerva Bridge (near Inox) and Ponte de Portugal (near Vivanta- Campal) Rapid Assessment and recommendations

These structures have three components-

- sub-structure or the structural part of the bridge;
- the super structure which comprises the surface, the traditionally embellished edges and
- the services that have been added on to and at either side of the bridge.

Thus we can group the attitude taken for each of these components as following:

Assessments	Recommendations
<p>The Sub Structure:</p> <ul style="list-style-type: none"> • The dredging will reveal the status of foundations but as far as one can see, the masonry appears to be sound. • The soffits of the bridges need to be inspected. 	<ul style="list-style-type: none"> • Post dredging, detailed survey must be undertaken to record the status of the structure. Only then – detailed report of action required could be framed. • Preliminary survey suggests that cleaning of the stones, consolidation of the stone masonry where flaking should be undertaken. • Raking and pointing the stone masonry employing shell slaked lime, sand and surkhi mix is strongly recommended as it will enhance the life of the masonry bridges.



Rapid Assessments

The Super structure

- The routine surfacing with tarring has caused much harm.
- The edges with period architectonics in form of benches and columns have suffered neglect and are damaged



Recommendations

- The length of the bridge must be carefully ascertained to ensure that once the resurfacing of the bridge is undertaken , the buffer at two ends allow for tar road to end in splayed joint.
- The tar surface should be completely removed.
- The revealed masonry should be examined and consolidated and then after establishing proper slope and grading, can be given rich concrete surfacing on sound foundation of adequate thickness. After adequate curing, the finishing in 10cm by 10 cm granite cobbles in grey and black with a pattern for visual quality be installed.
- On either side, minimum of 2 ft. of pathway should be provided and granite curb stones can help in segregating this pedestrian zone to make it safe.
- All of the features- the benches, the columns, the balustrades should be repaired or rebuilt if beyond repair in same style.
- All plants and weeds that are threatening the structure should be removed. In consultation with the structural engineer and a horticulturist , areas should be marked on site as no plants zone and be paved in concrete with proper slopes for effective drainage.
- Installing and building up designed planters could then be undertaken to help enhance the atmosphere and presence of these marvels from past.
- Choice of plants should first be ascertained with the horticulturist and in accordance to the requirement, requisite planters be installed.
- Regular maintenance plan should also be incorporated in the detailed Conservation and Enhancement Plan.

Rapid Assessments	Recommendations
<p>The services</p> <ul style="list-style-type: none"> Over the period, services like water pipes, electrical cable, communication cables have been laid with little to no respect towards the significance of the bridges. 	<ul style="list-style-type: none"> All services should be resolved before the resurfacing. Thus to resolve the issues, the Detail Proposal report on the rehabilitation of the Bridge edges must have inputs from the various departments of Services. All should be resolved as these are the major cause of visual blight and are also causing stress to the sanctity of the structures. It is also desirable that to avoid repeat of any such blight, the PWD Executive Engineer must mandate to all other services departments to obtain an NOC from PWD in advent of any future interventions. This also means that not only the services as existing should be resolved but also future needs should be ascertained and provided for in advance.



The 1859-Bridge at the STP and Thomas Garage Junction (Tonca)

Rapid Assessments	Recommendations
<p>The Sub Structure</p> <ul style="list-style-type: none"> • The double arched bridge in masonry of laterite stone appears to be in sound condition. <p>The creek is most filthy at this junction.</p> <ul style="list-style-type: none"> • It is full of garbage, used mattress etc were seen on the site visit. • The bridge has side drains which must be meant to drain the road into the creek but are not functioning as are obstructed indiscriminately. 	<ul style="list-style-type: none"> • The dredging and cleaning of Creek shall reveal actual depth and condition assessment of the bridge can then be fully facilitated. • No demolition should be undertaken as this too is historic and likely to fulfil the requirement of proper water drainage when the creek has been cleaned, repaired and given the requisite slope. • The road drains should be retained below cantilevered concrete apron (see below) for effective drainage of the roads- into the creek and must be adequately cleaned and repaired.
<p>The Super structure</p> <ul style="list-style-type: none"> • The parapets are in masonry and low in height and seem to have been installed in more recent time.Has no character or charm. • The southern end has tree and makeshift temple which is now sitting on dismembered set of masonry stones. • The creek has no retaining wall on the southern end and appears to have been filled ip to create a link road which is in very bad condition with no defined edge. 	<ul style="list-style-type: none"> • The surface treatment can be adopted similar to the mentioned above (for the other two bridges) with caveat that the two ends, the West and the East of the bridge could be designed to be cantilevered concrete aprons, 90cm width, for pedestrian access making it safe. • Thus the parapet can be removed and adequate granite curb stones be installed to segregate the vehicular from pedestrian. • The outer edge can then be given architectural treatment for both aesthetics and performance.

Enhancement of the Cultural Resources

- Built and natural heritage are cultural resources that contribute to the city's quality of life.
- In order to enhance the perception of these, both at daytime and at night must be valued equally.
- The lighting industry for outdoors has developed immensely and Lighting of Public buildings is now a specialised field. A consultant must be hired to design the lighting of each bridge as well as the Creek and allied pathways.
- The primary care must be taken to ensure that the fixtures don't become day-time blights as is mostly seen. While lighting also needs to serve the pedestrians- cause adequately lit areas are safer.
- Other features that will add to the quality of life in the City- is well kept greening of the embankments of the creek, with adequate plants and installation of waste bins and grouping the signage with upright lighting poles. Care must be taken to ensure that any and all interventions must NOT distract from the period architectonics of the historic bridges.

Concluding Remarks

Methodology for optimum results:

1. Rehabilitation of the Creek is the first step.
2. Post dredging- inspect and undertake Detailed Project Report comprising detailed drawings, assessments and corresponding proposals for mitigating the threats which would then guide the preparation of specifications and quantification of the works for the Rehabilitation of the Creek and Conservation and enhancement of the Bridges
3. The project demands inputs of specialists such as Conservation Architect, Structural Engineers with experience in conservation of Heritage Buildings, Horticulturists and Lighting Consultant; to work together with all Government departments that are involved in providing the Services (water, electricity, and waste water management and communication agencies) for the city, under the leadership of PWD Executive Engineer and team. Only then the scope and specifications can be realistic and shall make the project a success that the city deserves.
4. Citizens' participation in caretaking is important and thus the final proposals must be presented to the residents of the city. Public must also be made partners as they are the users. When residents take ownership of the city- it then becomes easier to maintain and keep it safe.
5. Introducing a fine system towards those who pollute or misuse the creek should be pondered as one of the step towards long term maintenance strategy post completion of the Rehabilitation of the Creek and Conservation and enhancement of the Bridges.

The ***Preliminary Assessment and Recommendations for Conservation and Enhancement of St.Ines- Campal Creek and the Historic Bridges Report*** is authored by

Poonam V Mascarenhas (co-founder GHAG) with inputs and participation of

Ms.Heta Pandit, Chairperson, GHAG,

Mr. Prajal Sakhardande, Vice Chairman, GHAG

Mr. Jamshed Madon, GHAG

Arch Fernando Velho, GHAG

Poonam Verma Mascarenhas

(Graduate in Architecture, India; Post Graduate in Conservation of Historic Buildings, U.K.)

Poonam is an architect, building conservation consultant, researcher and writer. She is the founder and director of the Goa-based award-winning studio *Archinova_Environs*, bringing three decades of domestic & international experience. She is the co-founder of Goa Heritage Action Group, a registered society since 2000, Scientific Council Steering Committee member of ICOMOS India and also serves as a Senate member of SPA Vijayawada.

References

Alice Santiago Faria, currently a researcher (CEEC Individual 2017) and “Art and the Portuguese Overseas Expansion” research group coordinator (2016-) at the CHAM – Centre for the Humanities, FCSH, Universidade NOVA de Lisboa, Universidade dos Açores. Coordinates, with Renata Malcher de Araujo, the research project “TechNetEMPIRE – Technoscientific Networks in the construction of the built environment in the Portuguese Empire (1647-1871)” funded by FCT (PTDC/ART-DAQ/31959/2017).

Prajal Sakhardande, author of “Goa Gold Goa Silver Her history Her heritage” is an acknowledged authority on the history of Goa. He currently serves as Vice-Chairperson, Goa Heritage Action Group.

Poonam V Mascarenhas, ‘Mapped Heritage of Panaji Goa 2017’, (GHAG 2018)