

REPORT ON STUDY VISIT, TRAINING AND KNOWLEDGE EXCHANGE SEMINAR

IN VILLA BEATRICE D'ESTE (BAONE -
PADUA) AND CASTELFRANCO
VENETO (TREVISO), ITALY

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REPORT ON STUDY VISIT IN VILLA BEATRICE D'ESTE (BAONE)

**Held on 07 March 2018
h. 9.30 – 12.30**



1. ORGANISATIONAL INFORMATION REGARDING THE STUDY VISIT

The study visit to the complex of Villa Beatrice d'Este was held in the 07 March 2018. Around 25 people participated in the visit and a training session was added to the visit, in order to transfer knowledge to partners about the risk management in medieval ruins. The training session was given by Prof. Claudio Modena, former professor in the University of Padua for structural engineering, with strong experience in managing risks and restructuring historic heritage.

After the training session all participants had a guided tour of the ruins site with specific attention on the remaining ruins of the former monastery from X century.

Here below are presented the agenda and the list of participants to the study visit.

1.1. Agenda of study visit to Villa Beatrice d'Este, 07/03/2018

9.00: Participants registration and departure from Montagnana to Villa Beatrice d'Este

10.00 - WELCOME SESSION

Sergio Calò, Director of Venetian Heritage Cluster

Enoch Soranzo – President of the Province of Padua

10.15 - TRAINING SESSION: training on management of medieval ruins

Risk management in medieval ruins

Claudio Modena – SM Ingegneria – National Research Council (CNR)

11.00 - Coffee BREAK

11.20 - Visit to the site of Villa Beatrice d'Este with focus on medieval ruins of the X century monastery (pilot action site)

12.30 – LUNCH



Picture 1. Study visit of the complex of Villa Beatrice d'Este



Picture 2. Training session inside Villa Beatrice d'Este



2. HISTORY OF VILLA BEATRICE D'ESTE

2.1. History of the property and reconstruction stages

Villa Beatrice got its name from the Blessed Beatrice I d'Este (1192 – 10 May 1264, daughter of Azzo VI of the Este family) who lived in that building on the mount Gemola from 1221 to 1226, when in the place of the Villa there was a small abandoned monastery from X century, previously inhabited by hermits. She founded there a Benedictine nuns' monastery in May 1221 (with around 10 nuns), that became soon beneficiary of generous legacies.

On Mount Gemola since at least X century there were two monasteries, one called Martino Milanese (cited in a parchment from 1215) and the second dedicated to Saint John Baptist of Benedictine rule, then passed to Cassinese rule, as reported in a wooden table and a lapidary inscription sited in the old oratory of the Villa, stating: *"This antique monastery dedicated to the Blessed Virgin, to Saint John Baptist, to Saint Francis of Assisi and to Blessed Beatrice d'Este was restored by the will of Azzo VII Marquis of Este. Passed to the property of Francesco Rupertis Andrea and Francesco Bregolino..."*.

A second Beatrice (Beatrice III, queen of Hungary and niece of Beatrice I) followed the way of her aunt and ended her life in the monastery of Mount Gemola in 1239.

Between 1409 and 1413 the nuns of the monastery had to find refuge in Este, due to the war by king of Hungary Sigismund against Venice Republic. Again in 1509 the nuns had to escape because of the war of Cambrai from Maximilian I against Venice.

In 1578 the 50 nuns of the monastery were transferred to Padua and the mortal coil of Beatrice were moved to Saint Sophia's church in Padua, while the property of the monastery was put on sale to pay for the debts accumulated by the former occupants.

After a long period of abandonment (and the idea to convert it in a Lazzaretto for lepers in 1630, accompanied by a detailed description of the monastery, which was very useful to reconstruct its former shape), the monastery appears in a document from 1657 as private property of a Venetian merchant (Francesco Rubertis), who turned it in a private villa. After that transformation from a religious site to a family villa, no more major modifications were brought, except for the former cemetery area, partly changed by the construction of a *"barchessa"* (outhouse) at the beginning of 20th century (year 1903) by the new owners (family Melati).



Picture 3. Present facade of Villa Beatrice d'Este



Picture 4. Interior of Villa Beatrice d'Este: main hall

In 1972 the entire site was bought by the Province of Padua. The restoration of the structure in '70s and '80s was preceded by careful historic researches that permit now to glimpse, inside the villa, some traces of the antique monastery. During the renovation works particular attention was given to the analysis and valorisation of remnant parts of the monastery. Below the front large square (once divided into two cloisters) still exists the antique flooring in trachyte (local volcanic rock). Inside the *barchessa* are still visible parts of the original church floor, some tombs and the entrance threshold of the antique monastery.



Picture 5. Exposition of the naturalistic museum inside Villa Beatrice d'Este

Today some rooms of the ground floor of the main structure of the villa are destined to the naturalistic section of Provincial museums, showing vegetational and faunal aspects of the territory of Euganean Hills and surrounding plane.

2.2. Adaptations and conversions of some parts of the monastery

In general, the remaining part of the monastery were either inserted in later buildings or remaining visible as permanent ruins.

The Villa is presently used as a museum about natural heritage of the surrounding territory. Public events and private parties (e.g. weddings) are celebrated in its premises.

In the 1970s and 1980s, basing on past studies, documentation concerning preservation and reconstruction works was produced, with a list of findings about old parts of the monastery as:

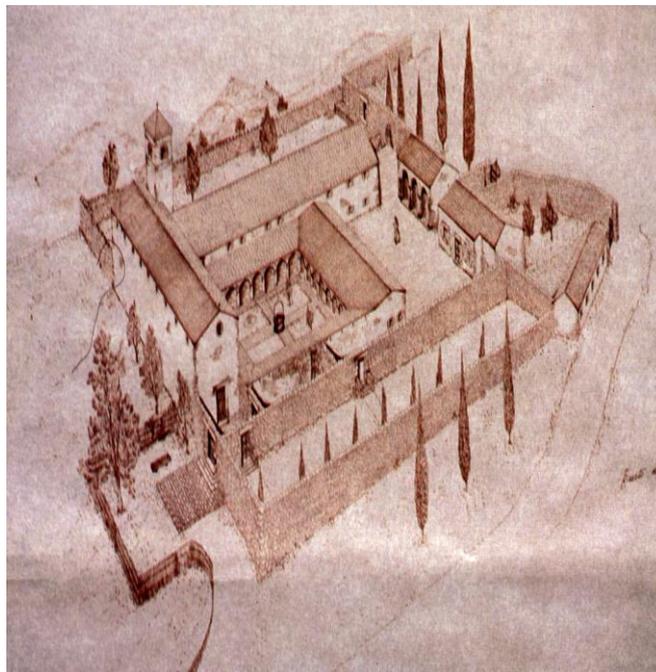
- Small doors, typical of monasteries
- A stone from nearby quarries with Greek inscription, used as construction stone
- Parts of terracotta floor (destroyed)
- A small tank with canalizations (destroyed)
- Some tombs inside and outside the antique church with many skeletons (recovered)
- The threshold, part of the façade and the corner stone of the façade of the antique church, plus a niche in the north wall inside the antique church
- A part of trachytic floor (recovered)
- A small wall with steps (recovered)
- Parts of perimetric and partition walls (recovered)



- A door to the *brolo* (fruit garden in the back courtyard)
- Several ceramic fragments in a dump, including a piece representing a pregnant woman holding an apple in her hands (symbol of prosperity)



Picture 6. Wooden Mock-up of the antique monastery - Reconstruction of the original structure of the monastery from X century

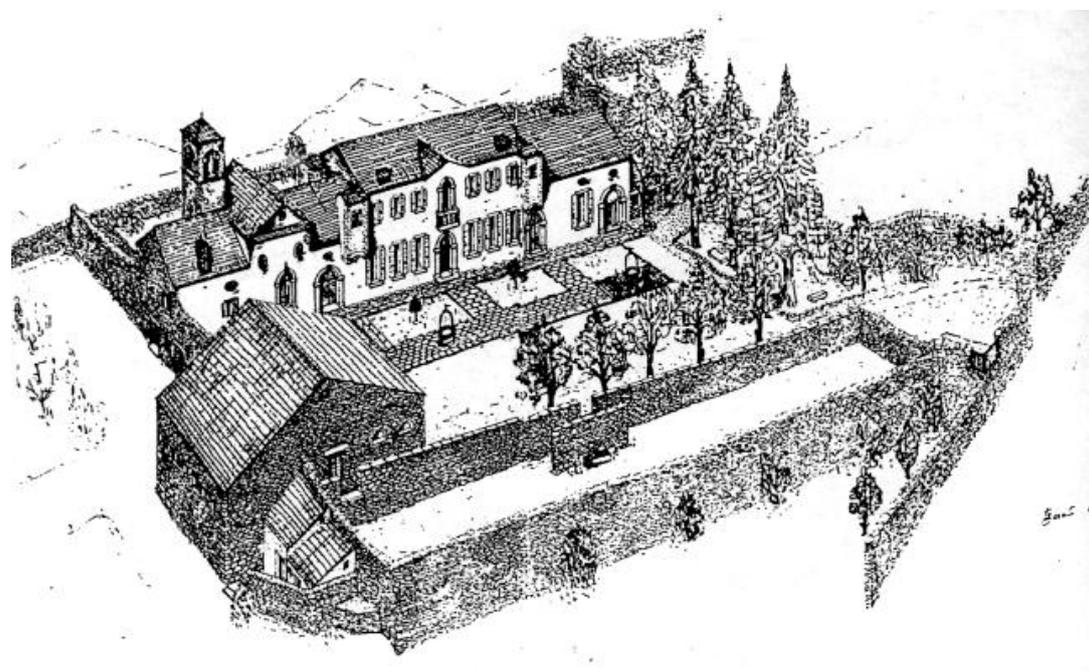
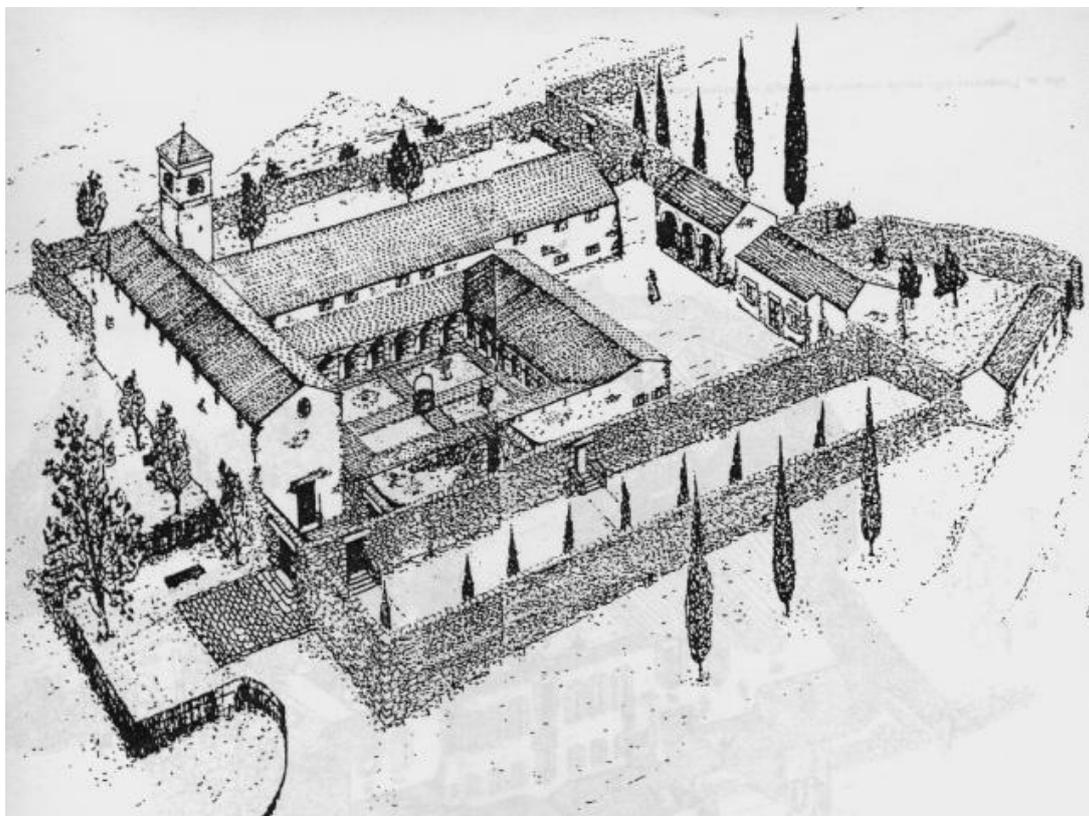


Picture 7. Graphic reconstruction of the original structure of the monastery from X century

After the intervention (with some parts covered again in order to better preserve them), there are still some remaining visible parts of the ancient monastery:



-
- Well – pit: the well in the front courtyard is probably the original one of the monastery
 - Cemetery: the cemetery was partly covered by the *Barchessa* but is still visible
 - Main building: On the ground floor, rooms are adapted for exhibition purposes (naturalistic, environmental and landscape aspects of the Euganean Hills) and are open to visitors
 - Fruit and vegetable garden: the area used as garden by the monastery is still visible, rounded by walls (*hortus conclusus*)
 - Portal/gate and entrance road: pebbled paved and walled way, is still present
 - Walls: remnants of surrounding walls. Some internal walls are inserted in renovations



Picture 8. Comparison of graphic reconstruction of the original structure of the monastery from X century and Villa constructed on the former monastery since XVII century.



3. CHARACTERISTICS OF THE CONTEMPORARILY EXISTING COMPLEX

3.1. Villa Beatrice d’Este and the surrounding areas - the current condition Characteristics of the area where the ruin is located

The villa/monastery is on the top of Mount Gemola, with a 360° view on the surrounding landscape. It was visually connected to other monasteries as Mount Rua (still existing) and Olivetani monastery on Mount Venda (ruined).

A close higher hill, just out of the former garden of the monastery, seems to be of artificial constitution and needs to be better analysed and studied.

The museum of natural heritage, present in the premises of the Villa, is an opportunity to work on the maintenance and information about the surrounding vegetation, both as landscape protection and information about plants used by monks (for food, medicine, crafts, etc.) in order to re-establish a connection between the side and the surrounding elements.

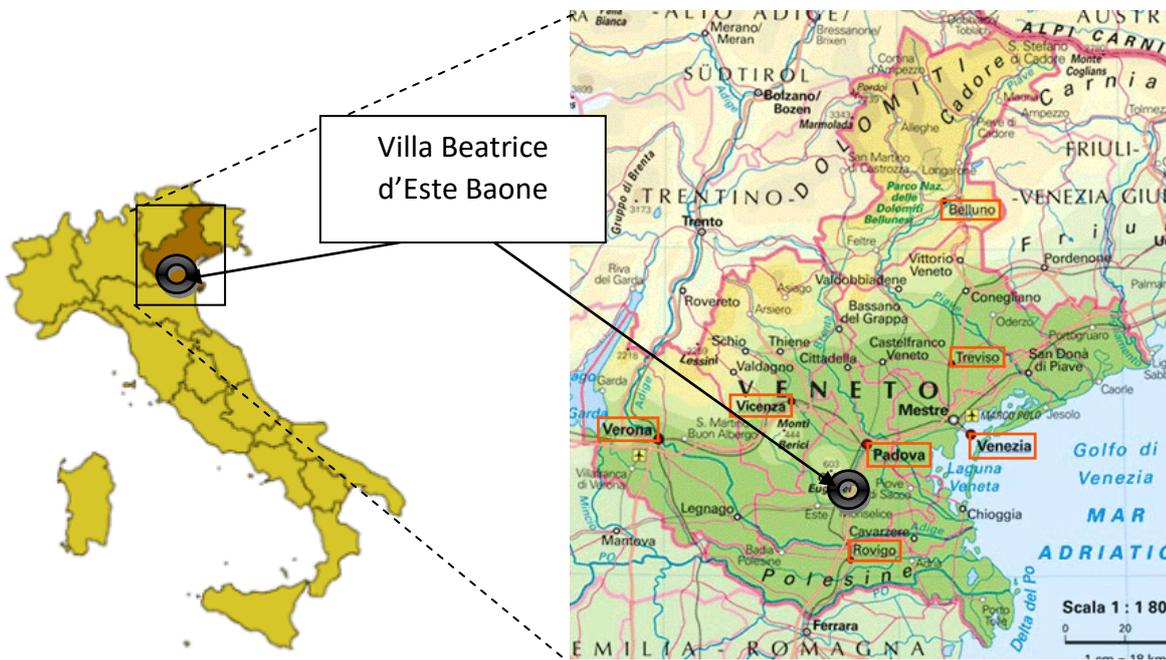


Figure 1: Location of Veneto Region and Baone

The small Municipality of Baone (in the Province of Padova, Region of Veneto, North-East of Italy) counted 3123 inhabitants in 2017 (according to National Statistical Institute).



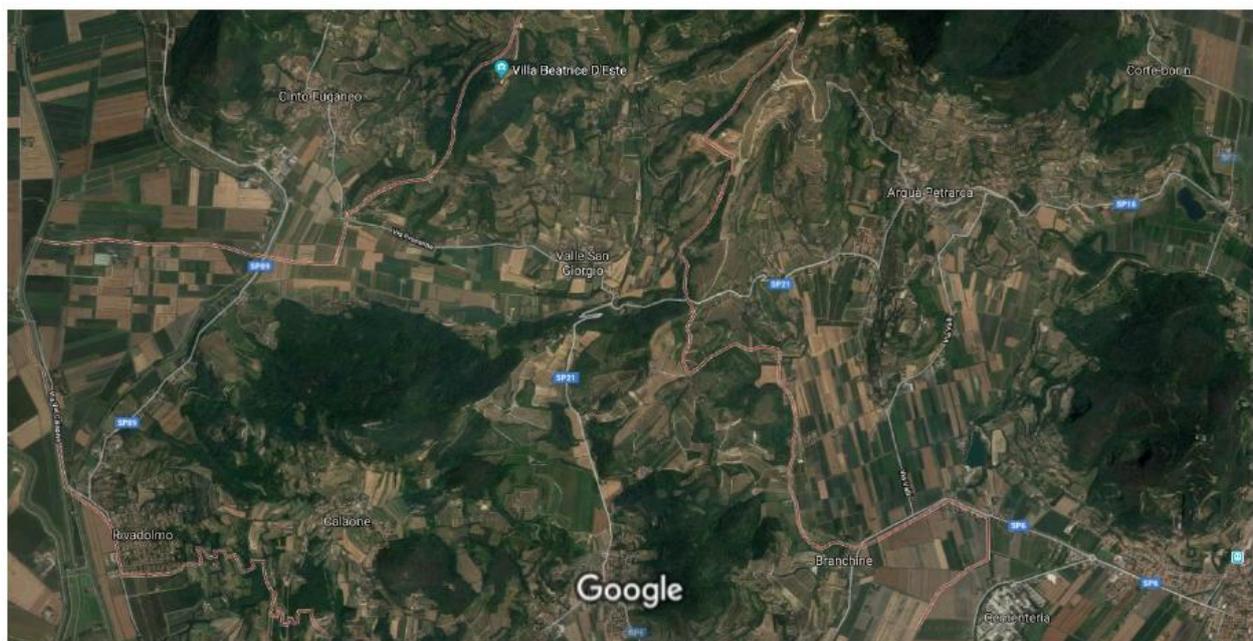
Its territory is mainly hilly, on the South side of the Euganean Hills and is entirely included in the Regional Natural Park of Euganean Hills. The Municipality territory consists in the main centre and three further administrative divisions: Valle San Giorgio, Calaone and Rivadolmo.

The economy in the territory of the Municipality is dominated by farmers and wine producers, while the closeness to wider centres of Este and Monselice made possible a limited presence of commercial and industrial activities, preserving in this way the territory and its landscape.

Mount Gemola is in the South part of Euganean Hills, surrounded by Mounts Rusta (North), Cero and Castello (South-West), Ricco (South-East), Fasolo and Ventolone (East), Cinto (West).



Figure 2: Location of Baone (source: maps.google.com)



Immagini ©2018 Google, Dati cartografici ©2018 Google 500 m

Figure 3: Location of Villa Beatrice d’Este in Baone – satellite photo (source: maps.google.com)



First documents about Baone are from 1077 and 1079, while in XII and XIII century a presence of castles is documented on the following mounts: Cero, Castello, Murale, Baone and Buso.

Calaone was an important site for the family of Estensi during their presence in Este (1056-1239): before the family moved to Ferrara their main residence was in the safe castle of Calaone, attracting minstrels from all Europe.

In Salarola, near the centre of Calaone, are ruins of the first site where the community where Blessed Beatrice I d'Este started her religious life, while in the division of Valle San Giorgio is sited the monastery (Villa Beatrice) where she lied until she died and where found refuge another Blessed with the same name, Beatrice III d'Este, queen of Hungary, after king Andrea II Arpad died.

In the following centuries several noble families from Padua and Venice built in this area their villas an palaces: Ca' Venier, in Baone main square, Ca' Orologio in Baone, Villa Mantua Benavides in Valle S.Giorgio, and Ca' Barbaro in the homonym locality.

Being a thermal area, the thermal site of Val Calaona was renowned since antique times and an important wellness site in XIX century, then abandoned after first World War.

- **Access from district roads**

The easiest way to reach Villa Beatrice d'Este is from South, passing by the town of Monselice (from South-East) or Este (from South-West). Monselice is connected to the Highway A13 (Padua-Bologna), that leads to Padua in around 20 minutes and to Bologna (and its airport) in around 1 hour. From Padua to the Venice airport is about half an hour more.

From Monselice and Este the road becomes a mountainous, windy road, but with no difficulties either by car or coach. The villa itself is accessed through an asphalt road. There is a car and coach park nearby (on the North side before entering the villa premises).

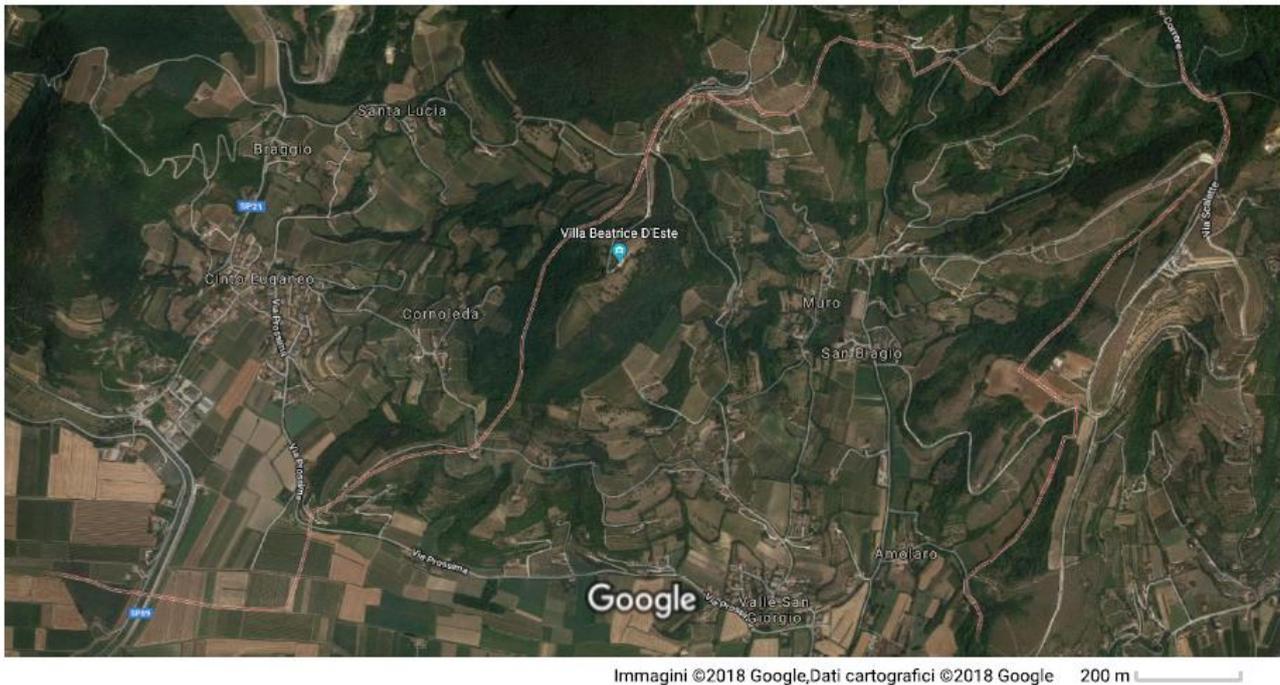


Figure 4: Close-up of the location of Villa Beatrice d’Este in Baone and its connection to other sites in the territory – satellite photo (source: maps.google.com)

- **Adjacent towns and villages**

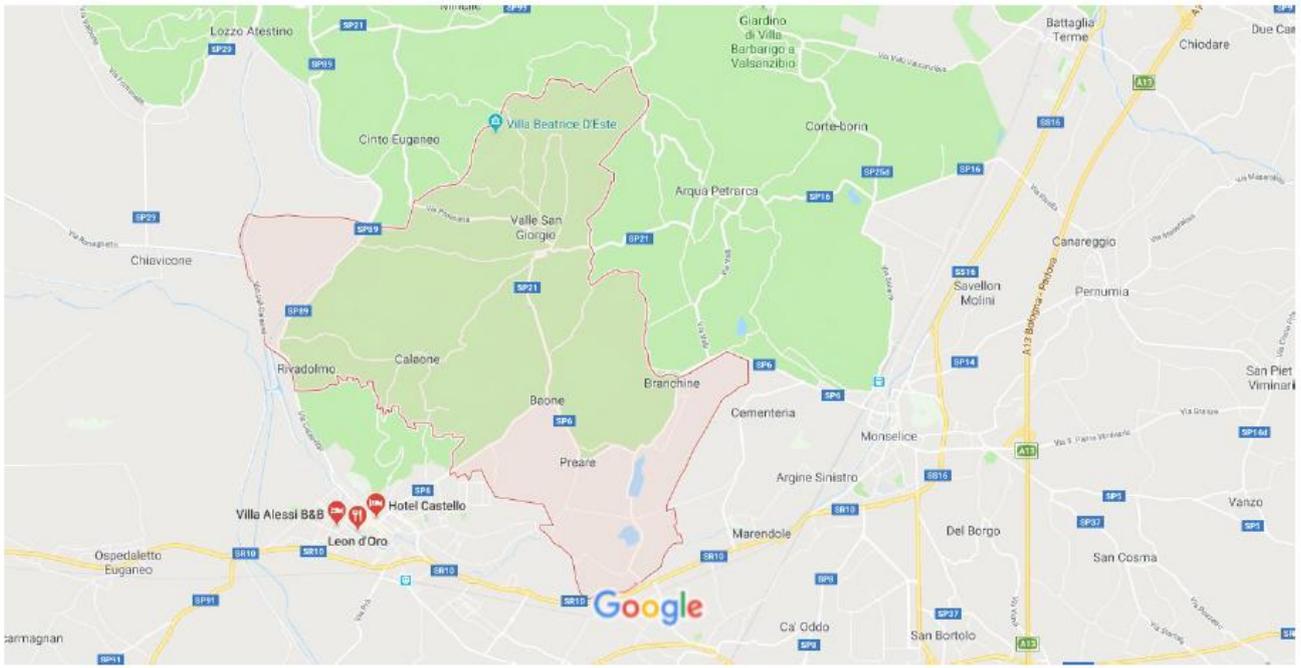
The main towns around Villa Beatrice d’Este are Monselice and Este.

Minor villages are Baone, Cinto Euganeo, Lozzo Atestino, Galzignano Terme and Arquà Petrarca.

Arquà Petrarca is a renowned village, both for its characteristic medieval atmosphere and its important history, as it hosts the house where the Poet Francesco Petrarca lived his last years. Medieval atmosphere is also well represented by the close castles of Monselice and Lozzo Atestino (Valbona castle). A bigger “caste” is the Catajo, sited in Battaglia Terme along the main road going North from Monselice, a villa from XVI century made in shape of an oriental castle.

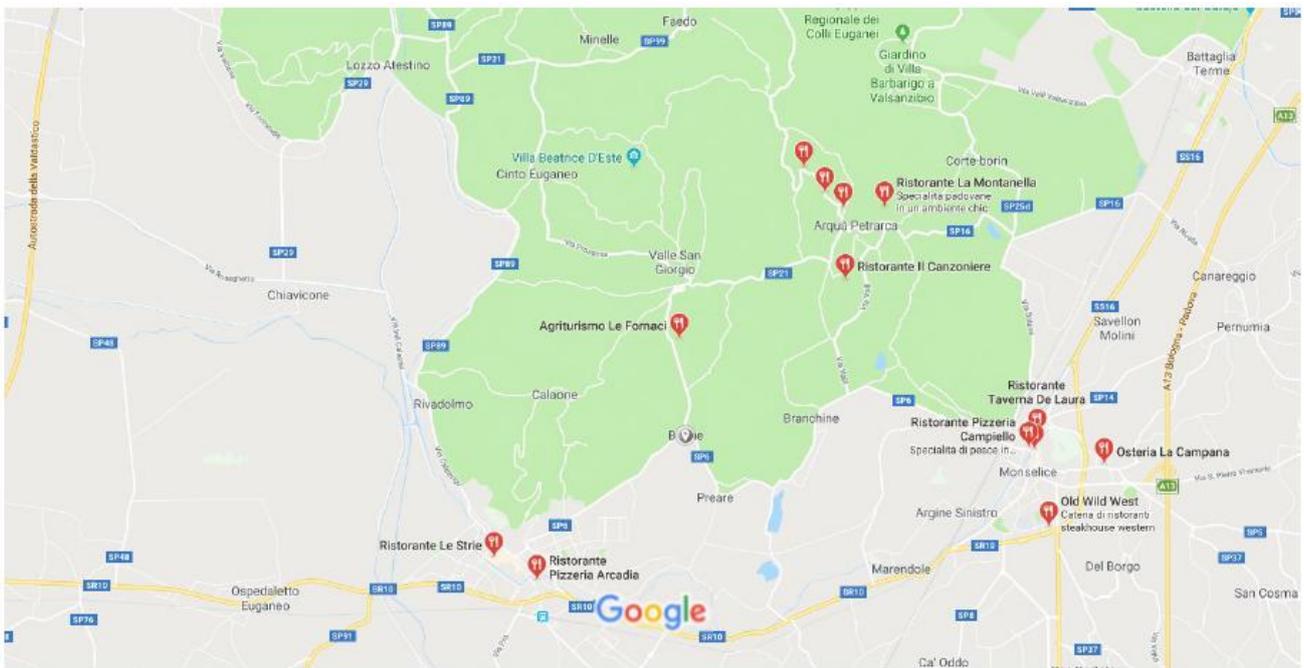
- **Accommodation and restaurants**

There are not many restaurants and hotels nearby Villa Beatrice d’Este, they are mostly sited in the close villages of Este and Monselice. Several restaurants are in the surrounding Euganean Hills, especially in Arquà Petrarca, plus a few agro-tourism restaurants spread in the area.



Dati cartografici ©2018 Google 1 km

Figure 5: Accommodation in and outside Baone (source: maps.google.com)



Dati cartografici ©2018 Google 1 km

Figure 6: Restaurants in and outside Baone (source: maps.google.com)



3.2. Characteristics of the ruin

The Villa premises cover the area of approximately 1 ha. They are situated on the hill Gemola on a height of 280 meters above sea level. The villa is accessed by asphalt roads with load-bearing capacity suitable for both cars and coaches. The top of the hill, where the complex is, is plain but suddenly starts to be steep just out of the monastery complex.

The main building is along the north-south direction and has got a low and prolonged profile, with the bell tower as the only element to interrupt this uniformity. Around the main building are small courtyards connecting it harmoniously with the surrounding landscape. The small church of Saint John Baptist is on the left side, while the present naturalistic museum is developed in the right wing.

The monastery was built around two spaces: a big cloister and an agricultural courtyard, as in Benedictine tradition. All buildings were closed inside a rectangular wall made of trachyte's stones (extracted from the same hill), in line with cardinal axes, in some parts similar to defensive walls.

Water was collected from rainfall in tanks, while a small spring was about one kilometre far by a steep path.

The church was on the north side in order to protect the community from winter cold winds (quite strong, being on the top of the hill). The church was East-West oriented, with the entrance on the West and the altar on the East. It was built in a single nave, long and narrow. It was built on a previous shorter church. The bell tower was on the left of the church, opposite to present.

The church was long in order to host the wide and long (more than 12 meters) wooden choir on two floors on the side of the monastery, probably to permit sick and old nuns to participate in services entering directly from the dormitory.

A kind of churchyard, surrounded by high walls, was ahead to the entrance portal of the church. Four door-holes were opened in the walls: the first led to the outlands, and was the main gate of the Monastery; the second led to the church; the third led to the graveyard, at that moment still active; the last gate introduced to the cloister of this monastery. Another entrance gate to the monastery, the so-called 'ordinary gate', was situated on the side of the 'rustic yards'. Alongside the churchyard, west to the church and the cloister symbolizing the sunset of the sun as well as of the human life, was situated lengthwise a vast burial ground, surrounded by walls. It was consecrated in 1288 by Bonaventura Eremitano.

The hermit in the monastery was very strict and encompassed every moment of the nuns' life. The young novice entered the monastery churchyard, then passing to the cloister where she lived her hermit nun status, then leaving the monastery passing through the church gate, going to cemetery that would be her perpetual abode.



The monastery had likely some kind of defensive structures, such as a watchtower or a fortress, to be used in the case of attack by the armed gangs that used to rampage through the Euganean territory: the nuns, in fact, had the possibility to take refuge in these structures in order to organize a first defense or to call for help ringing bells or starting fires.

The cloister was situated south to the church, was square-shaped and surrounded in each side by a porch, 27 m long and 3.50 m deep. This portico had seven arches for each side, twenty-eight in total, that were likely underpinned by columns. Moreover, it had thirty-two cross vaults, probably not too high in order not to inhibit a good enlightenment of the inner parts of the church.

In the first times, the cloister was a simple courtyard, without any portico. A document dated to 1291 refers just to one porch; the four-porticos compound was build in 1542. Unfortunately, no trace has survived of the porticos: probably, the columns with the bases and the capitals, were dismantled and taken away when the monastery was converted into a private villa.

In the center of the cloister was situated a well, that took water on an underground cistern, that used to collect rainfall water channeled by the roofs and directed down to the short slope of the yard south to the monastery. The cistern was built in 1264 thanks to an endowment consisting of 100 *lire ferraresi*, offered by Mabilia Pallavicina, widow of Azzo VII, brother of Beatrice.

On the right side of the church was located the sacristy, which had two doors, one leading to the cloister and one opening in the church. It's upon this building that then has been built the little chapel now linked to the villa. From the sacristy there was a gate leading to the chapter house, that probably adjacent to the East-West axes, had also another door leading to the cloister, even if in any document the chapter house is named. In any case, many documents refer to a large room beside the sacristy, and due to its position, it is wise to suppose that it had the function of chapter house.

Close to these rooms was located the nuns refectory, probably the most ornate room in the whole monastery. It had similar dimensions to the so-called chapter house, as well as a door opening on the cloister and three doors for each inner side wall. Moreover, it was the closer room to the working spaces – located on its right – and to the kitchen and the canteen on its left.

At the abandonment of the monastery in order to be transformed into a farm, one of the working rooms became the straw repository, and the other one the hay repository; thus, they took the name of “straw room” and “hay room”.

The orchard (the so-called ‘brolo’) was similar to the graveyard for the dimension and for being surrounded by very high walls, in order to let the nuns work without breaking their hermit. The campaign level was intentionally lower than the height of the cistern, in order to easily obtain water with a distribution pushed by gravitational force.

Behind the two working rooms there was a short corridor, that had a corresponding corridor also on the first stage. From the corridor at the ground floor it was possible to access a portico on the Southern side of the monastery and, thanks to a wooden stair, to the corridor at the first floor.



Within this corridor were located the two-rooms apartment of the abbess on the right side, and the dormitory of the nuns, a long space subdivided by wooden walls, on the left side.

The apartment of the abbess was, thus, central and designed to control the life of the whole monastery, both the nuns' rooms and the working and agricultural spaces.

In 1541 a new space outside the hermit-space and close to main entrance of the monastery: it was the newly-built guest-house dormitory, devoted to host visitors coming from afar and those who spent some time at the monastery. Probably it could be identified as the long and narrow space mapped into a cadaster dated to 1871.

Through a door located on the South side of the cloister, it was possible to enter the farming area, where the farmer labourers used to live and where the animals and the agricultural tools were reposed. This space included two different courtyards of irregular shape, surrounded with walls, farmyards, monastic and rural buildings, at the moment not standing but mapped into the cadaster realized in 1871.

Ancient documents attest also a dovecot, a two-floor building connected to the monastery, even if its location is at the moment still not sure. An identification proposal could identify it with the well-built structures that demarcate the small square-courtyard in the lower part of the monastery, and that connect two rural spaces, those of the courtyard and of the farmyard.

In 1657 the rich Venetian merchant Andrea Robert started to readapt the whole monastery building into a manor house.

The architectural structure and plan of the ancient monastic building obviously influenced a lot the aspect and the subdivision of spaces of the new building. Some integrations and modifications were undertaken in order to assure the full operability for the new purposes, even if the previous subdivision of spaces was – as far as possible - preserved. The hierarchical disposition of the main rooms was preserved as well: for instance, the manor hall found its place in the previous refectory, and some other important rooms at the ground floor were installed into the previous chapter room. The reasons for this phenomenon are mainly two: firstly, the original organization of the rooms was probably useful also for the new purpose of the building as a manor house. In second place, the difficulty the new owner could eventually had to face in order to move the building materials from the downhill plain upward at the top of the small hill where the monastery was located. In any case, both the monastery and the next manor house share a fundamental character: both the structures were designed as small farming and agricultural plants, aiming to be as much as possible self-sustaining.

The long and big church was dismantled, and some traces of its inner walls are still visible: near the North boundary wall of the manor house, is preserved a niche belonging to the previous church. The house of the housekeeper took the place of the presbytery room, even if it probably looked not very similarly to the current one: probably it had a small doorway with a big stone gate.



An essential element of a manor house, such as the private manor church, replaced the previous sacristy.

The bell-tower, that was previously located at the left of the choir, was dismantled and rebuilt close to the new little church, still on the left of the altar.

The rustic wing of the palace placed on the North side of the new little “palace”, was then completed thanks to a the so-called “chariots room”. Thus, the chapter room underwent some adaptations as well as the two large laboratories on the right of the plant, where Found their place the kitchen, a stair and, probably, a canteen.

The new architectural complex preserved the previous two main gates: on the North side, the “chariots gate”, underlining a new North-South axe that reflects the orographic main axe of the mountain relief; on the South side, the ancient rural gate, opening on the farms and the farmyards.

A new small gate was opened towards the enclosed yard, creating a new orientation that highlighted the role of the manor hall as the main focus of the new structure, as well as the cloister, then no longer standing, was the core structure of the monastery.

The shift of the East-West axe led to the loss of centrality of the ancient well, and this fact involved the necessity to build a new cistern with its own wellhead, in order to find a new architectural balance.

Three horizontal terraces, stretched and parallel and enclosed by walls, recall the inflexible Renaissance architecture and geometry: the ancient cemetery, that was transformed into a garden, the courtyard and the orchard. Three different spaces that suspending a man between the Earth and the sky. The man is left alone, dealing with his personal and the universal tragedy, comparing his own dimension with another dimension without time. This aspect, probably, is the strongest continuity aspect with the sacredness and the inspiration of the ancient monastery.



Figure 7: The area of Villa Beatrice d’Este – aerial view from satellite (source: maps.google.com)

- **Entrance gate**

The entrance gate is followed by a long pebbled road until the hilltop and the entrance to buildings



Picture 9. The entrance gate and pebbled way to the Villa, with walls from the former monastery

- **Squares and car parks**

The villa premises are provided with a car park before the entrance gate, also available for busses and coaches.



The car park at the Castle premises has capacity for around 20 vehicles. Additionally, there are parking lots on the North side of the villa premises, usually dedicated to property managers and staff.

The square in front of the villa is normally not used for parking, but can host some vehicles. Usually it is dedicated to outdoor events.

- **The premises of Villa Beatrice - the buildings**

Both inside the main building (central hall) and in the Barchessa there are rooms for conferences, didactic activities and laboratories

- **Ruined walls and parts of the monastery**

Original walls from the former monastery are still present in some parts and can still provide evidence about the shape and functions of the single parts of the monastery.

- **Nature paths:**

There is a number of tourist paths in the surrounding area, that can be linked to activities of the ancient monastery (e.g. natural plants used by monks).

4. MONASTERY'S STATE OF PRESERVATION

The architectural structure of the central building is composed of walls mixed with stones and bricks that have received over time, many interventions of structural consolidation. The surface is covered by lime plaster. Also this has been consolidated and restored also aesthetically, starting from the colours and the original matter.

The walls and the architectural structures that surround the central building are in stone and you can see different sagging and problems of movement of the structure. In the past have been made some work of consolidation putting mortar among the stones, but the work is not complete on all the walls. This problem can be dangerous for the safety of visitors;

Another common problem for all buildings and external structures is the presence of biological attacks (upper and lower vegetation).

More general problem for the areas around the central building is the flow of rainwater, there are drainage systems. This uncontrolled water flow can damage the stone walls by ceding parts of the ground below it.



There are no obvious problems due to air pollution. the isolated and hilly area is surrounded by vegetation.

Other general site problem is logistics, that is the possibility to join him to make easy controlling flows of visitors and their safety and structures from accidental damage.

The inner part of the central building is in good conservative condition. It is used for some cultural meetings and historical re-enactments, and has a small museum.

For the whole site it is useful to finish the consolidation of the walls in stone and to make maintenance of the structure and of the precious surfaces (antique plasters) in respect of the original material.

Will be very useful also make maintenance and periodic biological preservation with inhibiting to avoid the attack of plants that can spoil and dropping the stones.

5. CHARACTERISTICS OF THE PROBLEMS RELATED TO THE MANAGEMENT OF THE RUINED SITE

Structure reinforcement - the consolidation of the walls and stone structures that surround the central structure can be executed punctually with hydraulic mortar coloured. This is useful to allow the safety of all visitors;

Protecting external face of the walls and antique paster - to refine the conservation intervention you can spread a breathable protective stone to avoid cracking of the surface. Other protective breathable protection can be applied to surfaces such as antique plaster;

Drainage and rainwater discharge - This work of hydraulic engineering is necessary in the outermost parts of the site to avoid ground subsidence. The work to take away the rainwater through channelling flush with the ground. The gutters need to be cleaned and covered with a grate that allows the security of people visiting;

Other buildings and elements of the premises -There is a car park at about 700 metres, but the road to get to the site is a small path travelled by car. You cannot reach the site in wheelchairs for disabled or if you have motion problems. you need to make it accessible to all the site with some roadwork and adaptation of land, such as stabilizing work of the trail, drainage system and fitting with parking;

Vegetation - as explained above in Chapter 5 for the complete removal of vegetation is required before problem through the preparation of an inhibiting biological and excision of vegetation by hand, then you have to keep putting the inhibiting at least every 6 months.



6. CHARACTERISTICS OF THE PROBLEMS RELATED TO THE CONTEMPORARY USE OF THE RUINED SITE

Contemporary use of the Villa is natural museum and site for celebrating events as weddings or historic re-enactment festivals. The present use is not in conflict with the ruins site, it could be instead of support to the diffusion of awareness and knowledge about this specific heritage, providing a new approach and theme during the visit of the site.

7. CONCLUSIONS

The whole site has a stabilized impression. Information about the former monastery is quite good and complete, so it is easy to provide a reconstruction (real in scale, or virtual) of the ancient buildings and their structure and functions.

Potential improvement can be connected with a use of model technologies helping to create a better image of the appearance and historical changes of the site, especially of the former buildings of the Benedictine monastery.

8. RECOMMENDATIONS

Some recommendations can already be provided after the study visit and related discussion (the site manager participated actively in the visit also on behalf of the owner).

Preservation

Some works are needed to make more visible the remaining parts of the monastery and connect them to the reconstruction of their original shape and function.

Use

Visit to the site is simple and supported by the existing structure (museum).

An implementation of new technologies like 3D modelling, holographic projections or even virtual reality could be tested and used to improve the visit experience and provide more specific information on the site of the monastery.

Management

The present management of the site (private manager assigned by the public authority) is dedicated to its valorisation in terms of visits, transfer of information, organisation of events, laboratories and other activities. It is to be recommended to keep the same type of management



and implement it with more resources (dedicated staff). These resources can be supported by a more attracting visit experience, thanks to innovative technologies, functioning also as attractors. A business/action plan can help a lot in defining next decision and investments to improve the economic sustainability of this site.

This work will have to include multidisciplinary knowledge: creativity, conservation, new technologies and social approach, tourism and communication.

9. ATTACHMENTS

TRAINING SESSION: training on management of medieval ruins

Risk management in medieval ruins

Claudio Modena - SM Ingegneria - National Research Council (CNR)

Multimedia presentations:

- Prof. Claudio Modena
- ITAM/CAS



REPORT ON STUDY VISIT IN CASTELFRANCO VENETO

Held on 07 March 2018

h. 15.00 – 17.00



1. ORGANISATIONAL INFORMATION REGARDING THE STUDY VISIT

Nel pomeriggio il gruppo si è spostato a **Castelfranco Veneto** in provincia di Treviso. Situato in posizione centrale fra i capoluoghi veneti di Treviso, Padova e Vicenza, è una città murata con un castello medievale.

1.1. Agenda of study visit to Castelfranco Veneto, 07/03/2018

15.00 – Visit of Castelfranco Veneto and its pilot action site

15.40 – Study meeting about pilot site

Opening meeting by Castelfranco Veneto Mayor Stefano Marcon / Deputy Mayor Gianfranco Giovine.

Luca Pozzobon, Architect and municipal manager - technical activities for restoration of the Castle.

Massimiliano d'Ambra, Architect – the restoration of the tower of Castelfranco

16.00 – FIFTH SESSION: knowledge exchange seminar

Innovative ICT applications for the valorisation of medieval ruins

Fabio Masci, The Edge Company s.r.l – show of possible ICT applications to medieval ruins (virtual reality, augmented reality, etc.)

16.30 - Brief presentation of the project implementation status

AoB – next steps and decisions

LP representative

17.00- Conclusion



Together with the visit to the walls, another part of the meeting was held in the main hall of the City Hall. Two professional architects, who were in charge of the restoration and preserving activities of the castle, joined the meeting, as well as a local enterprise that presented a newly-developed technology ICT (Augmented and Virtual Reality) that could be applied to the ruins.





1.2. List of study visit participants



2. HISTORY OF CASTELFRANCO VENETO

2.1. History of the property and reconstruction stages

The Castelfranco wall settlement was founded between 1195 and 1199 when the newly-formed Municipality of Treviso felt the need to guard the border with its rivals Padua and Vicenza, in an area where the Muson river was the only breakable natural demarcation.

The construction was directed by Count Schenella di Collalto, who completed it in a decade. Around the walls of the castle a moat was dug in which the waters of two tributaries of the Muson river were diverted: the Avenale and the Musonello rivers.

Built the castle, the Municipality of Treviso sent there a colony of a hundred families of free men, to whom were granted farms and houses exempt from taxes and burdens, from which the toponym *Castelfrancho*: precisely, a castle "free" from taxes.

Castelfranco had to sustain a first siege in 1215 and a second, five years later, by the Paduans. In 1220 Frederick II of Swabia was crowned emperor in Rome: the sovereign's aims on the Venetian territories imposed a truce between Padua and Treviso, which was broken when Ezzelino III da Romano appeared on the scene. He, with imperial force help, subdued Treviso as well as Padua to his dominion, becoming imperial vicar of these territories. For a quarrel between Ezzelino and his brother, Alberico da Romano, the castle passed for treaty to William of Camposampiero, who in 1246 returned it to Ezzelino. Ezzelino further fortified it with two rings and a tower on the South side (towards Padua).

Finally, the domain returned to Treviso on 27th September 1259, at the death of the "tyrant" Ezzelino.

In 1329 Castelfranco passed to Cangrande della Scala, lord of Verona.

On 23rd January 1339 the castle passed, with Treviso, to Venice. After a brief domination of the Carraresi (1380-1388), Castelfranco follows the fate of the Venetian Republic, when in 1509 the castle was occupied by the troops of Maximilian of Hapsburg, who made it their headquarters. After the war ended in 1515, from 1517 Castelfranco definitively returned under the dominion of the Serenissima Republic of Venice.

This is the period of maximum splendour for Castelfranco, especially from an economic point of view.

In the eighteenth century, with the decadence of the capital, Castelfranco projected itself towards the centres of the mainland (first of all Padua) that had become the new poles of culture.



After the fall of Venice in 1797, Castelfranco passed from the French to the Austrians and vice versa, until it became definitely Austrian in 1814. The Austrian domination ceased on 15th July 1866, with the annexation of Veneto to the Kingdom of Italy.

Since 1824, the municipal council of the castle had become the owner of the walls, having decided to acquire the castle from the state property.

2.2. Adaptations and conversions of some parts of the town walls

The castle was made up of a square-based wall enclosure, with four corner towers and four middle doors, each with a tower on top.

The main tower is called the tower "in front" because it is located in front of the road that leads to Treviso. This tower was raised above the others, in later times, and equipped with bell and dome. Corresponding to this, to the west, there is the door of Musile, also called Cittadella. Two other doors had little importance: one was called "of the Beghi", from the name of an illustrious family who had its house close to the door, and the other was called "of the dead", because they led the dead to the old cemetery through it.

The current historic center is still defended by the 17-meter-high, 1,7-meter-thick, red-brick walls, and characterized by a series of towers: from eight original towers, today only the remain the four corner ones, the tower of the dead in the south, and above all the imposing civic tower, which is 43 meters high and which shows on the main facade a clock and the lion of St. Mark, both installed in 1499.



Picture 10. Tower and north-west walls (Picture by Dario Dal Lago)



Picture 11. Backside and Campanile of the Dome (Picture by Oursana)



Picture 12. Access door to the historical centre from Vicenza (Picture by A.Vecchi)



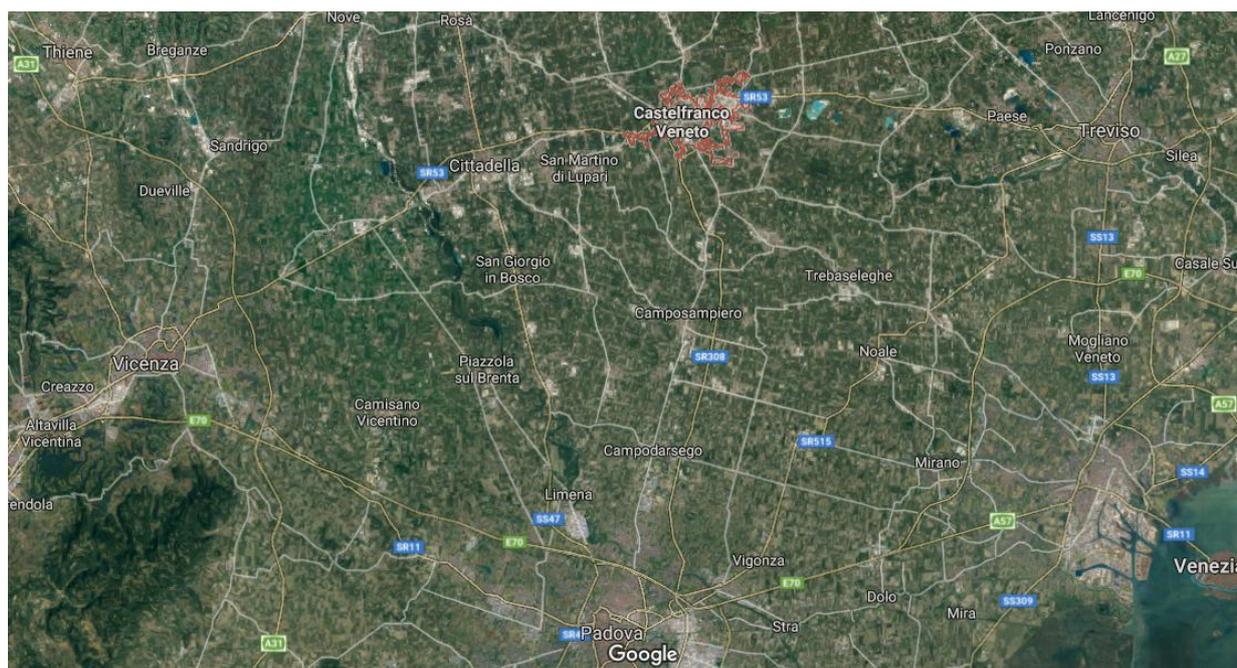
3. CHARACTERISTICS OF THE CONTEMPORARILY EXISTING COMPLEX

3.1. Castelfranco Veneto and the surrounding areas - the current condition

Historical-territorial overview

Castelfranco Veneto is an Italian town of 33.420 inhabitants in the province of Treviso in Veneto. It is the third municipality of the province by population after the province seat capital Treviso and the town of Conegliano.

The municipality of Castelfranco Veneto extends over a completely flat area, located at the western end of the province of Treviso, on the border with the province of Padua. Such a position allows to easily reach it from four province capitals (Treviso, Venice, Vicenza and Padua), as well as other major towns such as Bassano del Grappa, Cittadella and Montebelluna.



Picture 13. Photomap

In the period of maximum splendour for Castelfranco, during the dominion of the Republic of Venice, the colonization of the territory and the exploitation of the still vacant funds is favoured and, consequently, the commercialization of agricultural products is strengthened. In addition, the urban fabric is consolidated with commercial masonry buildings, characterized by arcades and warehouses on the ground floors.

Meanwhile, the countryside becomes a popular holiday destination for the patrician families, who here built their villas. These phenomena allow Castelfranco to gradually cut ties with Treviso and to enter the territory autonomously.



A lively cultural climate develops in the city, becoming a point of convergence for artists and architects.

The municipality holds a total of 16 Venetian villas protected by the Regional Institute of Villas Venete (IRVV), including Villa Revedin, Rinaldi, Bolasco Piccinelli.

Castelfranco Veneto is today a commercial and industrial centre of great importance compared to the neighbouring municipalities of the Treviso province.



Picture 14. Historical centre



Picture 15. The Municipality coat of arms

Access from roads and rails

Thanks to its privileged position, Castelfranco is served by a very varied and complete transport network: in the area converge in fact three important railway lines, which intersect in the city station and two major road arteries, the SS 53 Postumia that connects Vicenza to Treviso, and the SS 245 Castellana between Mestre and Bassano del Grappa.

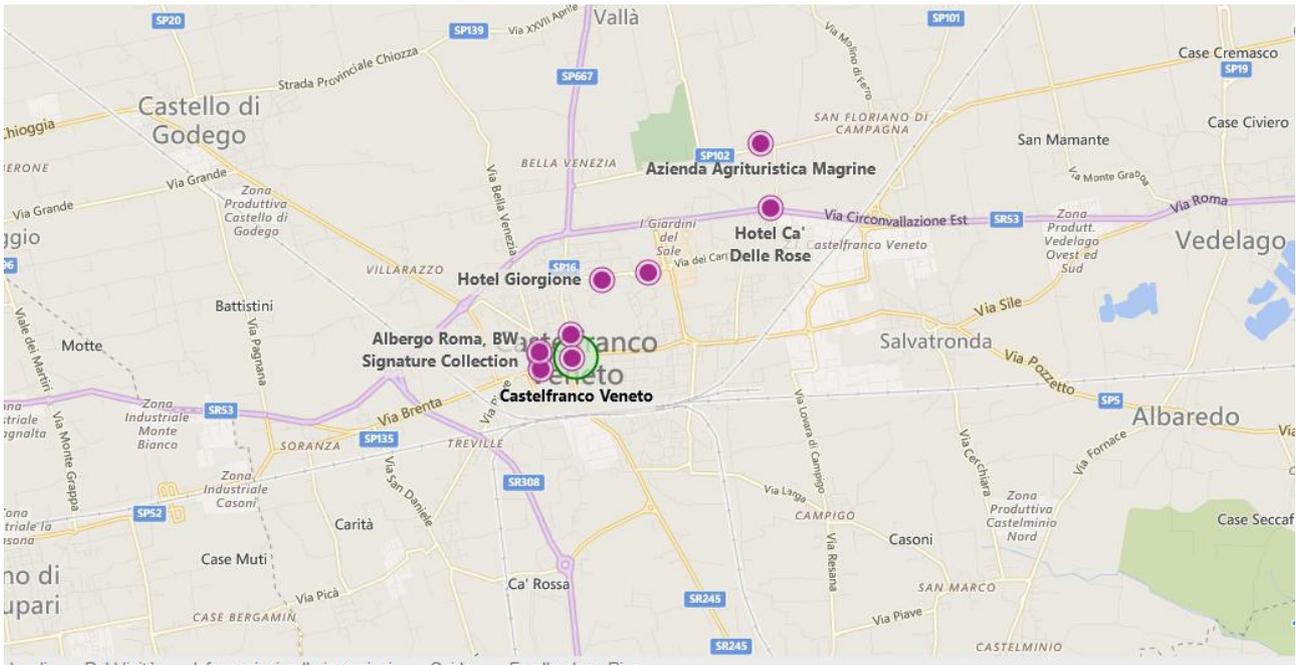
Adjacent towns and villages



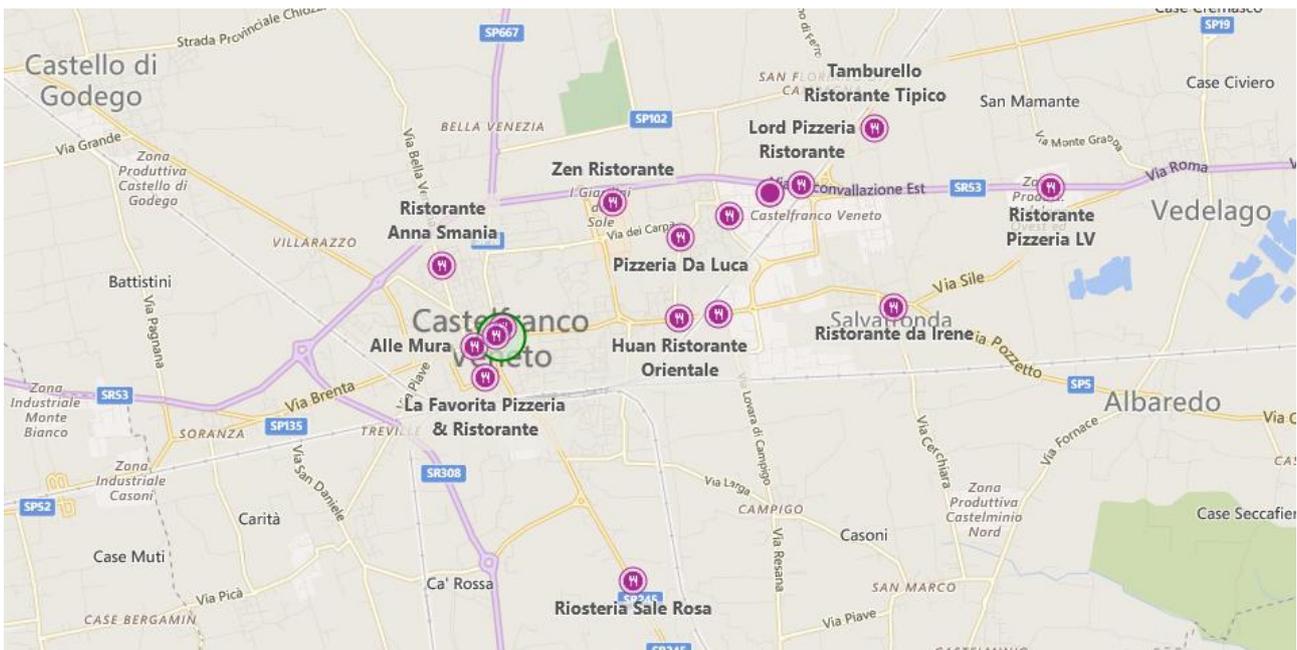
Castelfranco has several hamlets: Campigo, Salvarosa, Salvatronda, San Floriano, Sant'Andrea oltre il Muson, Treville, Villarazzo.

The main towns around Castelfranco are: Castello di Godego, Loreggia, Resana, Riese Pio X, San Martino di Lupari (PD), Santa Giustina in Colle (PD), Vedelago.

Accommodation and restaurants



Picture 16. Accommodation in and outside Castelfranco Veneto (source: bing.com/maps)



Picture 17. Restaurants in and outside Castelfranco Veneto (source: bing.com/maps)

Characteristics of the ruin

The element that most characterizes the city of Castelfranco is the castle, which encloses the historical centre.

Beyond a recent renovation of the Torre Civica (2013), in recent years the restoration or securing of the city walls and towers have been reduced to a minimum, due to lack of funds and need of an integrated plan for restoration.



Picture 18. Walls still to be cleansed



Picture 19. Tower in renovation



4. TOWN WALLS' STATE OF PRESERVATION

The tower and surrounding walls are made of terra cotta bricks from nearby quarries.

The static preservation of the medieval structure of the tower and the walls connected to it is quite good. Some renovations and static consolidation were performed not many years ago with internal-external metallic reinforcements and the internal construction of a staircase and some spaces that allow access to people. There is no easy possibility of access to the tower and the surrounding walls and access for disabled people is impossible.

The bricks that make up the structure are in poor state of preservation, in fact, they present disintegrations, fractures, falls and a strong biological attack. There is also no water drainage system, and this causes problems of humidity, soil failure and therefore possible further static problems. Therefore the intervention of static consolidation of the tower must be followed by the static consolidation of the land and the surrounding walls.

Short note on materials-brick in terracotta

The cooked bricks and terracotta are manufactured from mixtures of clays (especially the type of mount-Rillonite and Illite) and quartz sand. In cooking the clay crystals are destroyed and the Mulla (a crystalline aluminium silicate) is formed, with small amounts of quartz. The presence of sodium and potassium in clays causes the melting of a part of the clay. The presence of sodium and potassium in clays causes the melting of a part of the clay.

After cooling, the molten clay is not capable of reforming a crystalline structure. The amorphous, hard and fragile mass (glass, glazed material, silicate) is formed instead. The glass acts as cement between the quartz crystals and partially fills the pores.

As a general rule, you get a glass every time a silicate melts.

The amount of glass formed influences the mechanical resistance of the brick and in turn depends on the temperature reached during cooking and the composition of the mixture.

In general it can be said that increasing the cooking temperature increases the strength of the brick.

Since many clays also contain iron, the cooked material is yellow when cooked at more also temperatures, red if cooked at high temperatures and in oxygen-rich atmosphere.

The support is made up of terracotta bricks with an entrapment mortar in lime and sand of medium particle size and variable height. Superficially the mortar appears uncohesive, with widespread gaps and some visible remakes with a clearer tone.

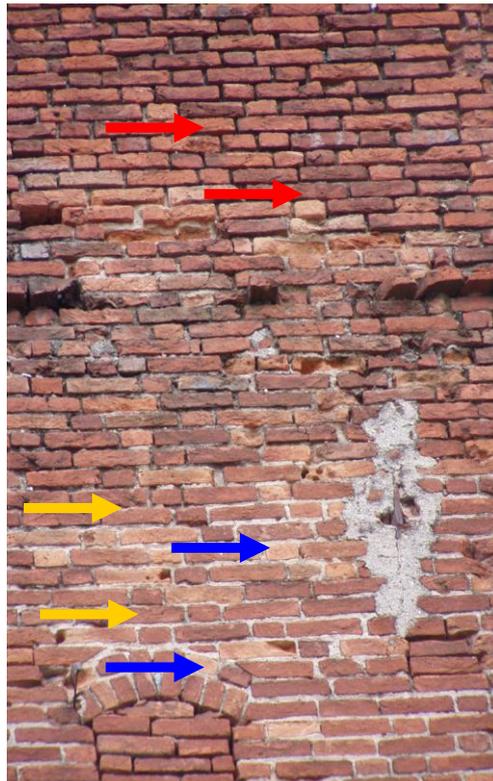
The mixed cooked bricks of type Mezzanelli-Albasi (800 °-700 ° C) and of bases cooked at higher temperatures and in atmosphere full of oxygen, have the following characteristics: (indicated respectively with the blue, yellow and red arrow in picture 20):

- Red colour, excellent porosity and waterproofness, resistant to compression;



- Red-orange, good porosity and quite waterproof, medium rigid;
- Yellow-orange, friable and porous with spots of brittleness;

The whole tower and the walls are made of cooked bricks and have undergone clear rehashes through the cladding always made in terracotta. Most of the pontie pits have been left exposed. The major degradates are found in the lower fascia, but the entire surface is affected by deterioration over time.



Picture 20. Different types of bricks

The types of degradation are as follows:

1. Superficial decohesion with dusting phenomena;
2. Diffuse cracks and fissures;
3. Widespread and deep flakes and gaps with loss of plasticity;
4. Efflorescence Saline;
5. Presence of simple biological attacks and superior vegetation;
6. coating of mortar;
7. Inserts of metal elements;
8. Atmospheric dust storage;



5. CHARACTERISTICS OF THE PROBLEMS RELATED TO THE MANAGEMENT OF THE RUINED SITE

To make the tower usable, but especially accessible and usable the stretch of walls that connect it to the city is necessary to make a conservative restoration. This intervention must respect the historical value and the original materials of the tower and the walls. All materials used must be compatible (chemically, physically and aesthetically) with the original material of the walls.

This is not the context for a thorough restoration project, but we insert the main voices:

The project shown here includes the following steps.

1. Construction of a fully equipped, complete and functional yard for the execution of all the works
2. Realization of the service scaffold in tubular metal, adequately dimensioned and equipped of the necessary protections.
3. Removal of parasitic vegetation and elimination of vegetation, even of tall stem, grown in the immediate vicinity of the wall curtain.
4. Appropriate reduction of the leaf apparatus of the precious vegetation and securing the Plants, in order to allow the planned work without damaging them.
5. Accurate removal of the ground on the top of the wall and all incongruent elements with the historical artifact (metal parts, wood, sections of fencing, piping and switchboards, etc.).
6. Preliminary cleaning of the surface of the product.
7. Preliminary realization of laboratory analysis on the historical stone materials used, on the mortars
8. Originating in entrapment and for drawing, and on the original plaster.
9. Realization of stratigraphic-morphological investigation of the rise of the artifact to be restored.
10. Archaeological assistance to be provided during the excavation phases on site.
11. Careful removal of cement plaster and ammalorato plaster.
12. Removal of cement-based mortar.
13. Requalification of the masonry parts of recent realization judged incoherent with the preservation of the historical artifact.
14. Restoration and consolidation of masonry by dripping and clogging, using binder selected on the basis of laboratory surveys carried out on samples taken on site.



15. Integration of the upper part of the existing wall and the arrangement of existing gaps, using materials and laying techniques consistent with the existing artifact, derived from the analysis of Laboratory performed on samples taken on site.
16. Integration of the most restrained size gaps.
17. Protection of the top part of the artifact from meteoric infiltration.
18. Cleaning and sealing of the edges of the pontie holes still present on the product.
19. Cleaning of all metal parts of historical interest and subsequent protective treatment against Corrosion.
20. Subfoundation of the wall at the bottom of the walls, through the creation of a base of support in masonry of full bricks.
21. Treatment of cracks now stabilized by insertion of stainless steel bars Andor Corten, and reconnection with punctual sewing operations-SCUCI, and final clogging of the parts Open.
22. Drafting of the joints, all along the masonry wall.
23. Installation of new steel inspection containers for the housing of existing electric panels and burying all the cables now shouldering to the wall.
24. Replacement of the current wooden gate with a new gate, always in wood, of characteristics consistent with the historical artifact.
25. Installation of a night artificial lighting system, consisting of headlights recessed on the ground, with Safety glass and low-temperature lamps.
26. Realization of a new briks staircase, in lieu of the removed one.
27. Realization of draining-ventilating trench at the base of the wall, on the side towards the interior of the city.

These entries should be added to the work of adjusting the section of the connect between the walls and the tower for the disabled, children and elderly people with difficulty in movement. Also to be added the work to realize the drainage of rainwater.



6. CHARACTERISTICS OF THE PROBLEMS RELATED TO THE CONTEMPORARY USE OF THE RUINED SITE

The ruined site was abandoned until short time ago, no use was made of this site. Nowadays a partial reconstruction and valorisation work is being made in order to adapt the site to be used as a museum and part of the visit to the walls and towers of the town.

The renovation needs to consider structural problems, in order to provide a safe visit and the reconstruction of destroyed parts of the tower.

The main problems are:

- the securing of the site (static, conservative and protection);
- added appropriate facilities with the Visual characteristics and regulations;
- develop the use of ICT technologies to take advantage of content that includes sections on the needs of persons and groups;

7. CONCLUSIONS

After the visit and the technical exchange and opinion among partners to identify problems and possible solutions, with comparison among similar situations in the different partner countries, the main conclusion were that, besides the work to be done in order to make the site more usable, more work is needed to identify the contents and activities that can be inserted into this case study, in order to make the site more exploitable and allow to create an economic sustainability of the site itself.

8. RECOMMENDATIONS

The main recommendation is to structure the business plan of the activities to be included in the medieval structure, because the activities must be able to generate profit (economic and social) to allow the sustainability of both the activities of visit and maintenance works.

Preservation

The tower considered is in good conditions, besides the internal wall that was destroyed by conquerors, and an accurate work of reconstruction and restoration was done, as well as for a part of the walls, while another part of walls connected to the tower still have to be restored.

Use



The planned use is mainly museal, however it can be recommended to equip the tower and the walls with an ICT system to give the possibility to enhance the history and culture of these medieval walls. In this regard the technological systems to be included (i.e. electrical, wiring, fire safety, etc.) must be compatible with the respect of historical surfaces and they must allow access for easy maintenance. An example would be the inclusion of fire protection system by means of sensors that communicate with WiFi system, as per European norm EN n. 12845 and 54_31.

The design of advanced integrated technologies should make knowledge of information easily accessible by visitors. This system must be profiled for different types of people who want to visit the site.

Management

For the use as a museum with ICT technologies, a specific management solution can be recommended, in particular a private able to valorise the visit experience while creating an economically sustainable management of the site thanks to preparation of visit itineraries and organisation of activities in the site.

This work will have to include multidisciplinary knowledge: creativity, conservation, new technologies and social approach, tourism and communication.

9. ATTACHMENTS

KNOWLEDGE EXCHANGE SEMINAR: ICT technologies for the valorisation of medieval ruins; work for the restoration of the medieval tower in Castelfranco

Slides by Dr. D'Ambra

Slides by The Edge Company



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