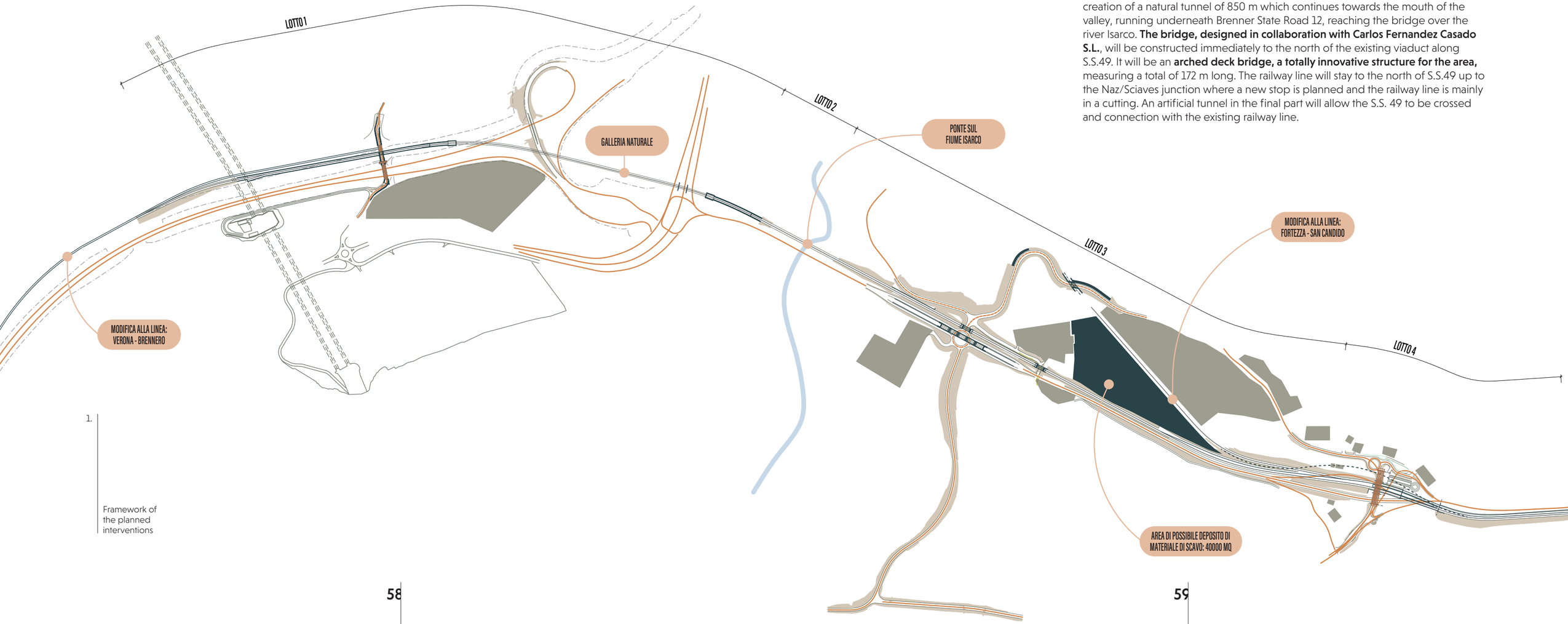
The new Val di Riga line

A shared project to improve railway mobility in Alto Adige

Feasibility study

The new Val di Riga railway line is a link between Rio Pusteria and Brixen (BZ) which will directly connect the San Candido-Fortezza line to the Verona-Brenner line in a southerly direction. The general aim of the operation is to achieve a significant reduction in travel times between Brixen and Rio Pusteria through the construction of a straighter railway connection than the current one. NET Engineering was responsible for the Feasibility Study and Preliminary Design on behalf of Strutture di Trasporto Alto Adige (STA – Alto Adige Transport Structures). Many alternative projects for each of the four lots of the operation developed from the Feasibility Study. In detail, there were 7 variants, differing for the position and type of crossing of the A22 motorway and the approach to the River Isarco, for the section joining the existing Fortezza-Brixen railway line to the projected bridge over the River Isarco; 5 different solutions were devised for the type of bridge to cross the river and there were 3 alternative projects on the portion di line connecting the bridge over the Isarco to the Naz/Sciaves stop; they were differentiated for the position of the line with respect to Strada Statale (State Road) 49. Lastly, there were 4 different hypotheses for the new Naz/Sciaves railway station. The design alternative was found from not only comparing the various solutions but also taking into **consideration the human-based and natural constraints.**and the indications of the bodies and municipalities involved which had the opportunity to make their requests in intense stakeholder engagement.

The route chosen is about 4 km long overall and the first 700 metres lies alongside the historic Verona-Brenner line and the A22; the motorway is crossed through the creation of a natural tunnel of 850 m which continues towards the mouth of the valley, running underneath Brenner State Road 12, reaching the bridge over the river Isarco. **The bridge, designed in collaboration with Carlos Fernandez Casado S.L.**, will be constructed immediately to the north of the existing viaduct along S.S.49. It will be an **arched deck bridge, a totally innovative structure for the area,** measuring a total of 172 m long. The railway line will stay to the north of S.S.49 up to the Naz/Sciaves junction where a new stop is planned and the railway line is mainly in a cutting. An artificial tunnel in the final part will allow the S.S. 49 to be crossed and connection with the existing railway line.



1. Framework of the planned interventions

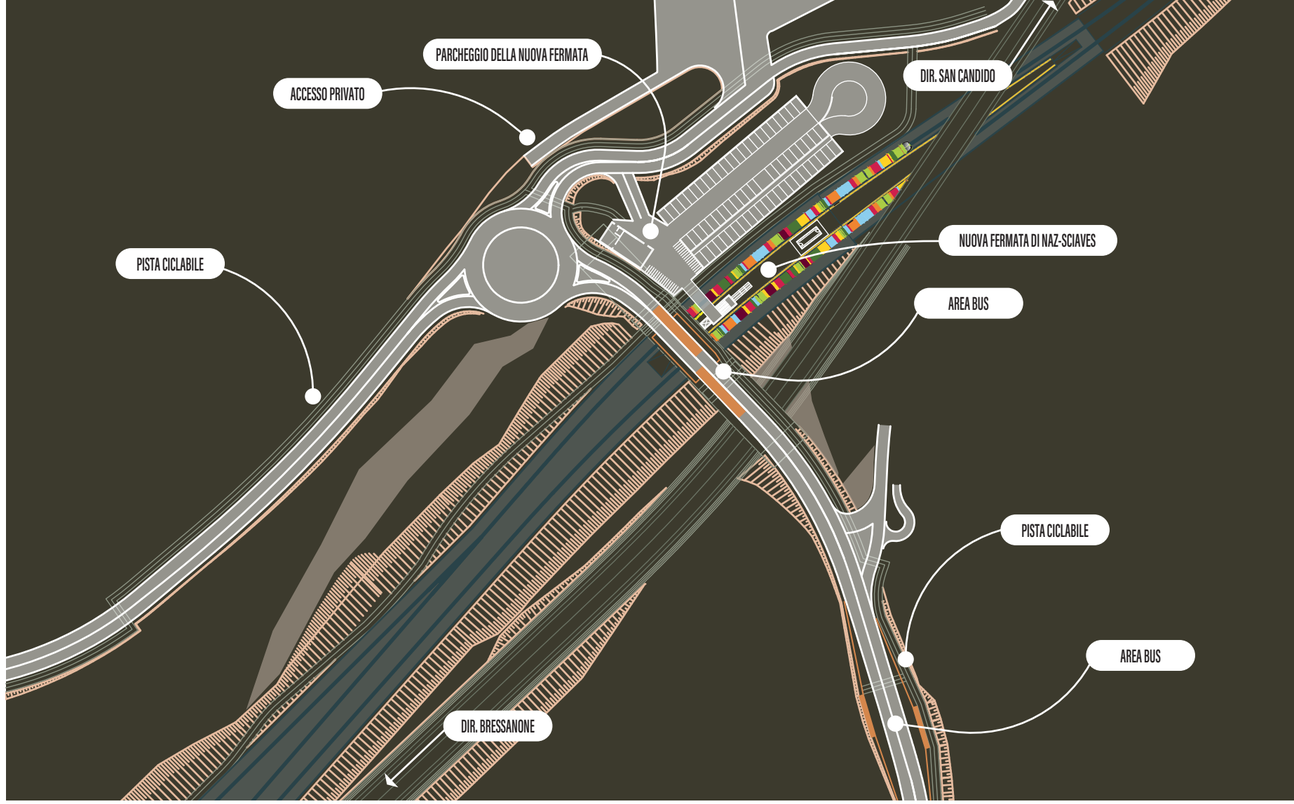
Preliminary Design

The preliminary design of the alternative project chosen not only dealt with aspects of the new railway infrastructure but also topics connected to it, such as the reinstatement of the road systems crossed, safeguard of the general hydrographic network, resolution of interference with network services, the construction site and, last but not least, the adaptation of the PRG (Piano Regolatore Generale – General Zoning Plan) and related buildings in Brixen station.

As the new railway route is in an area featuring considerable geological, naturalistic and landscape variability, NET Engineering was also concerned with the **development of the environmental pre-feasibility study with the intention of not changing the aesthetic-perceptive historic-cultural and natural value of the landscape**. The choice of using a tunnel to cross the A22 enabled, amongst other things, the wooded area on the right of the Isarco to be continued, just as the section in a cutting has preserved the perception of the valley. The bridge over the Isarco, the largest landscape work in the project, was designed to preserve the perception of the landscape from various points of view both through low impact choices and also in relation to its position alongside the existing bridge of the S.S.49.

Another of the important aspects concerning the Preliminary Design was the updating of the Brixen railway station PRG, i.e. the change to the structure of the track level with the creation of new pavements and related underpasses and a preferential track of 650 m for goods traffic.

2. 3D rendering of the new bridge over the Isarco river



3. Planimetric excerpt of the junction and the new Naz-Sciaves stop

Stakeholder engagement

The Feasibility Study and Preliminary Design for the new Val di Riga line were developed in constant, intense discussions with the client and then with all the main stakeholders – the Autostrada A22 (A22 motorway), municipalities of Varna and Naz/Sciaves, and private citizens.

The involvement of all the players concerned with the project from the very beginning, the in-depth study of the problems found and the development of many alternatives responding to the needs presented through valid technical solutions aided the establishment of trust in the designers by STA and the municipalities. As a result, stakeholder engagement led to the development of a project that offered an answer to the client's needs and in which, at the same time, everyone could recognise their contribution.