International Gas Union

Zimella – Cervignano d'Adda pipeline
ND 1400 (56"), DP 75 bar

snamretegas.it

March 2014

A large diameter – long distance project in the Po Valley

Laying a pipeline or…

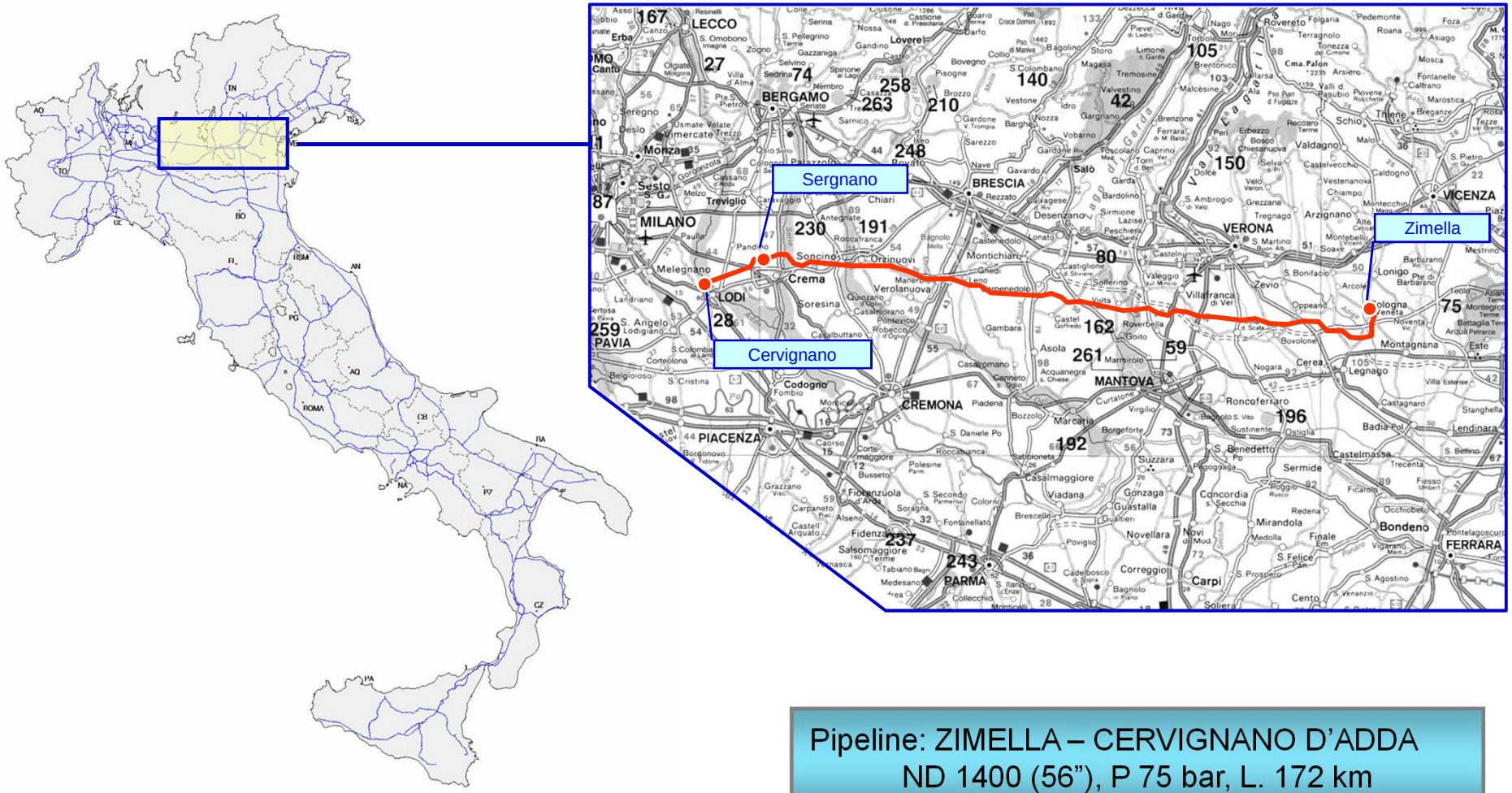
… assembling a puzzle?

Main crossings

- 204 river crossings
- 144 road crossings
- 6 Railway crossings
- 17 Trenchless (Microtunnel/Direct Pipe)

Longest section without interference ~ 500 m

Geographical Location



Pipeline: ZIMELLA – CERVIGNANO D'ADDA
ND 1400 (56"), P 75 bar, L. 172 km

Project highlights

- Reinforcing national transmission network along the East-West direction to increase existing capacity for connecting the Entry Points located in the South, in the Centre and in the North East of Italy, to the consumption hubs and the natural gas storages located mainly in the North-Western regions.
- Replacing existing pipelines along the same path and restoring existing connections to guarantee the supply to residential and industrial consumers in the area.
- The pipeline is part of Snam Rete Gas Infrastructure II & III project financed by EIB due to the European support to the development of Italian Network in the view of increasing South-North bidirectional flows in southern Europe

Main Public Permits

Environmental Impact Assessment: Decree No. 124, issued by the Ministry of the environment and the protection of land and sea on March 29, 2011.

Authorization " Unica " (D.P.R 327/01): Decree issued by the Ministry of economic development on 25.01.2012, declaring compliance with urban plans and public eminent domain.

Landscape Authorization (D.lgs. 42/04 e s.m.i.): Lombardy Region on March 21, 2011. Veneto Region: No. 17 permits obtained by crossed Municipalities

Other permits by local authorities:

Regions	2
Provinces	5
Municipalities	45
Private Properties	1,020

Main suppliers and contractors

Line pipes suppliers

- ILVA SpA (I)
- Salzgitter (D)
- Corinth (G)

Construction contractors

1st lot (46 km) Temporary ass. Salp SpA – Icop SpA

2nd lot (42 km) Max Streicher SpA

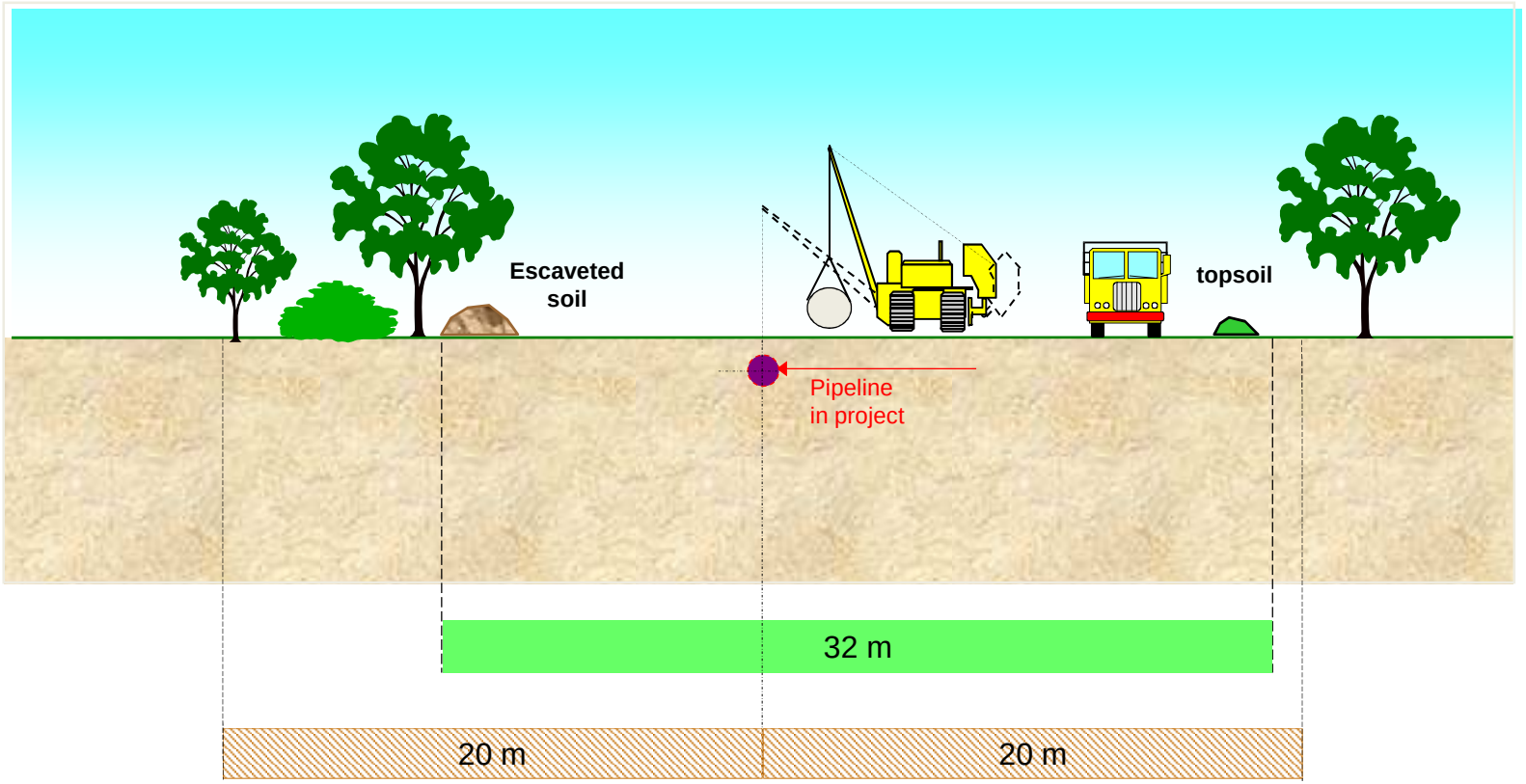
3rd lot (53 km) Max Streicher SpA

4th lot (31 km) Bonatti SpA

General technical data

Zimella – Cervignano d'Adda pipeline ND 1400 (56"), P 75 bar		
Lenght	172	km
Nominal Diameter	1,400	mm
Design Pressure (DP)	75	bar
Steel Class	EN L450MB	/
Line thickness	18.7-21.8	mm
Minimum test Pressure	≥ 97.5	bar
Line valves	33	n
Pig traps	1	n
Minimum burial depth	1.50	m
Right of way	20+20	m

ND 1,400 pipeline - Adopted working strip



Working strip = 32 m

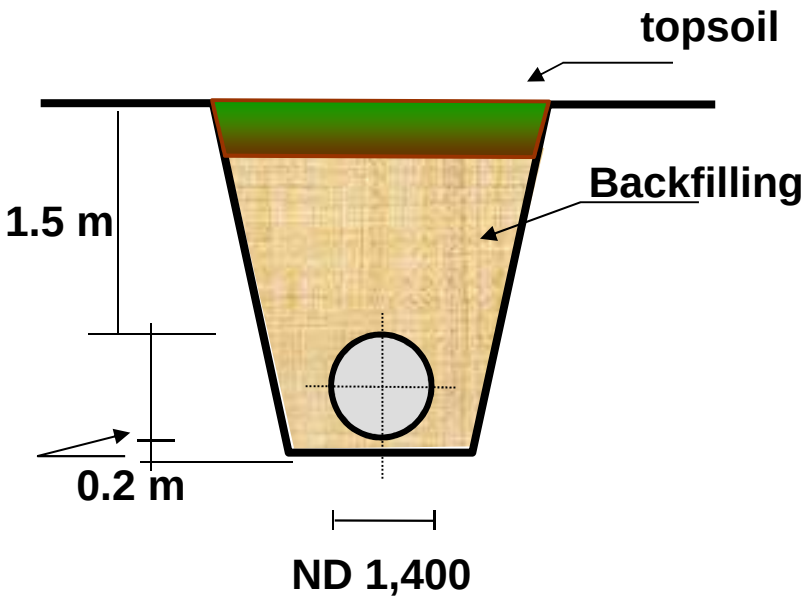
Permanent Right-of-way = 40 m (20 m + 20 m)

Construction steps - Opening the working strip

Construction steps - Stringing

Construction steps - Wellding

Construction steps - Digging the trench



Construction steps - Lowering of the pipeline in the trench

Construction steps - Backfilling

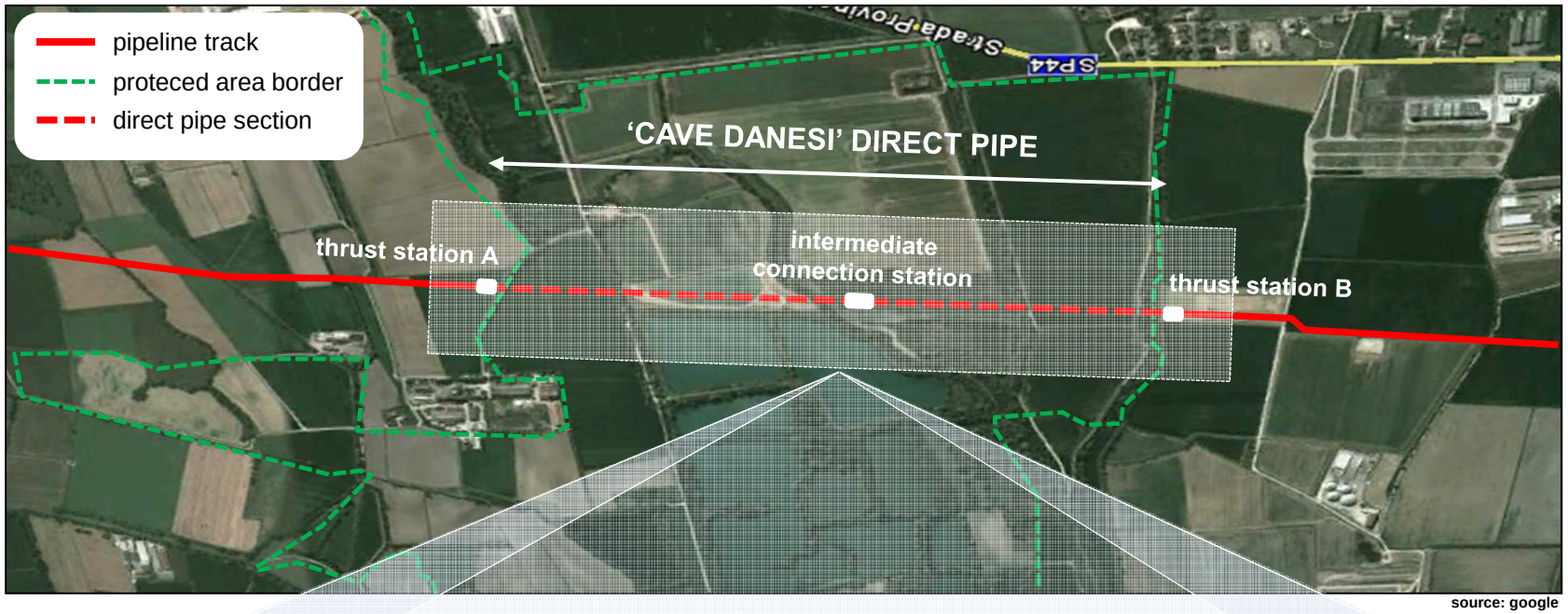
Construction steps - Restoration

Examples of restoration in plain area

Crossing an environmentally protected area with Direct Pipe technology

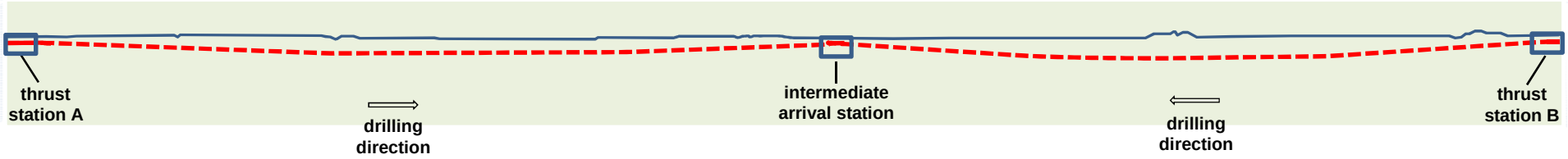
- Crossing of SIC IT20A0018 – ‘Cave Danesi’
- Total lenght 1,380 m
- 2 opposite ND 1,400 drillings connected by an intermediate station

‘Cave Danesi’ Direct Pipe



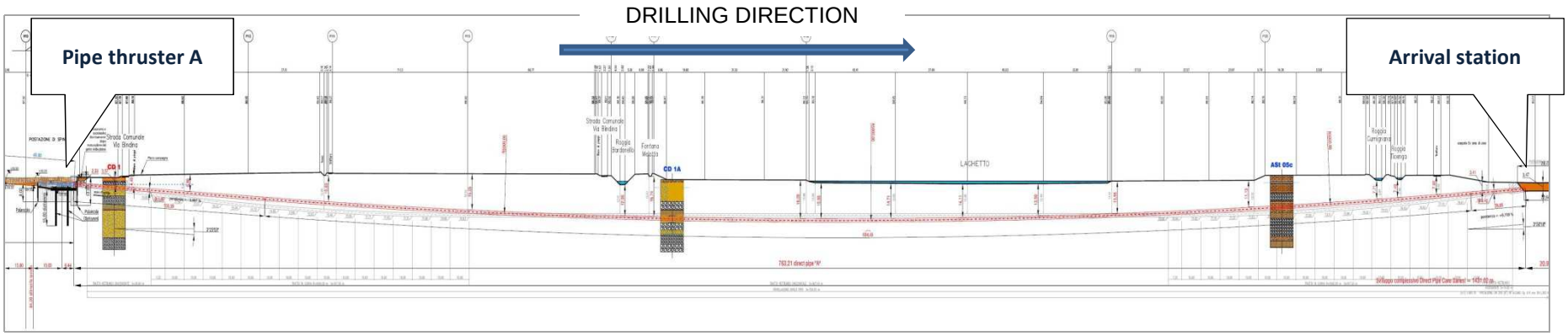
source: google

DRILLING PROFILE SKETCH

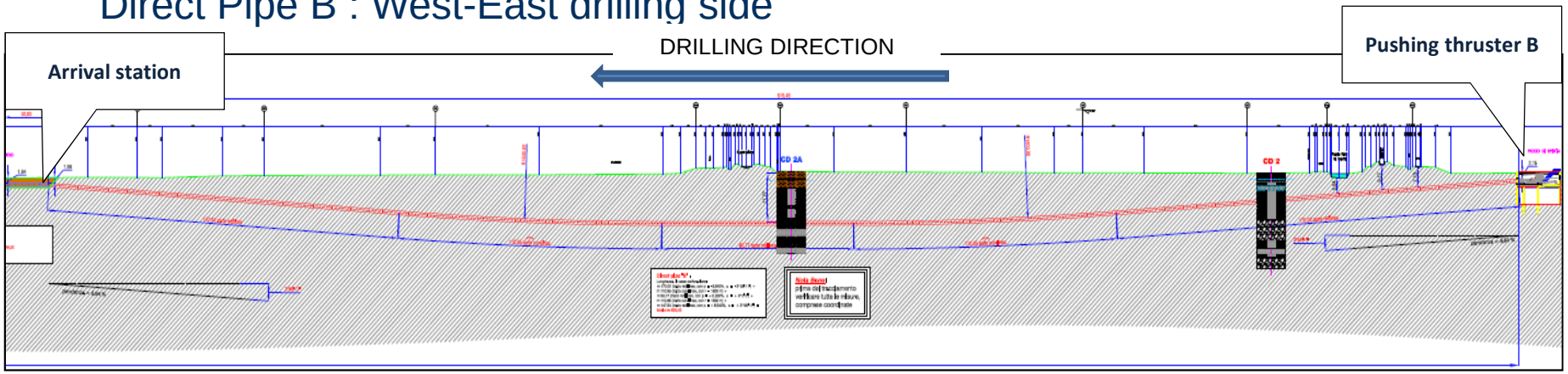


‘Cave Danesi’ Direct Pipe

Direct Pipe A : East-West drilling side



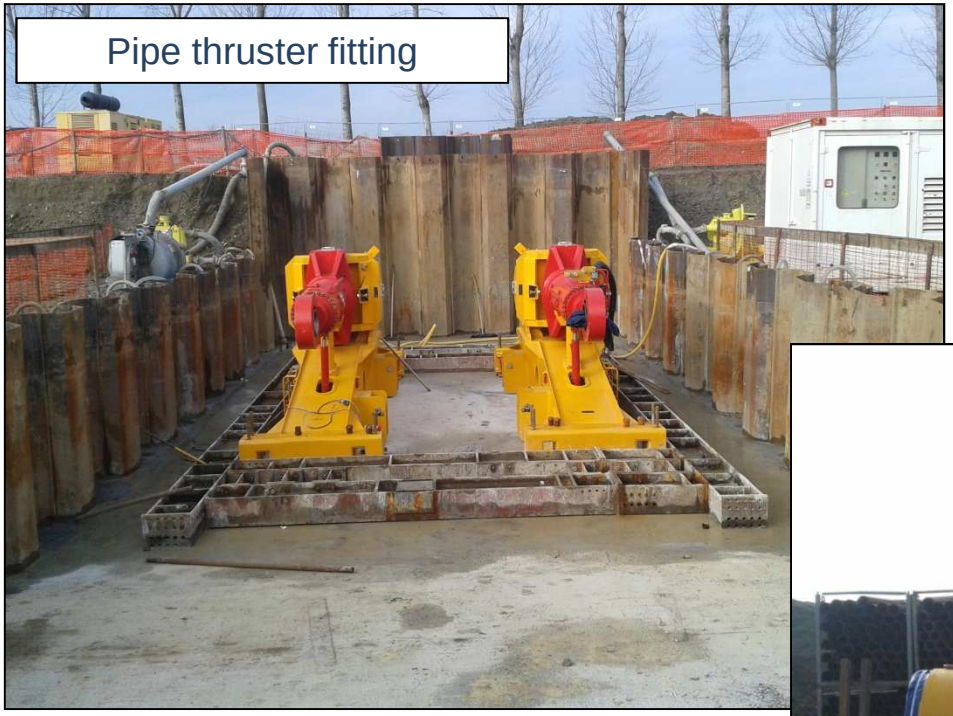
Direct Pipe B : West-East drilling side



Direct Pipe general data

‘Cave Danesi’ Direct Pipe			
Lenght	Drilling A	764	m
	Drilling B	619	m
Hole diameter		1422	mm
Profile	Entry and exit angle	5-6	%
	Vertical bendin radius	5	km
Maximum Depth	Below ground surface	17	m

Direct Pipe A



Pipe thruster fitting

Direct Pipe equipment

Similar to pipe jacking, the soil is excavated with a microtunneling machine

Milling head particular

The excavated material is removed through the slurry system circuit placed in the prefab pipeline

“Pipe Thruster“ and “Pipe Clamp” particular

The position along the specified tunnel route is monitored by the controlled pipe jacking station

Direct pipe A

Milling head ready for the insertion

The Direct Pipe method allows the excavation of the borehole and the simultaneous trenchless installation of a prefab and tested pipeline in one single continuos step.

THANK YOU