

# Cornaredo, model city

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## Introduction

An important regeneration project has been undertaken, between February and August 2005, in the town of Cornaredo, a residential place sited few kilometres west of Milan. Sustainability has been a key consideration throughout the development of options and proposals.

A series of traffic calming schemes have been introduced throughout the City in order to tackle problems related to heavy flows of vehicles and HGVs, extremely high accident record and air/noise pollution.

The new road layout increased safety for pedestrians and cyclists thanks to cycle and pedestrian paths and protected zones, optimised traffic fluidity and reduced road traffic speed.

This result was achieved thanks to the careful redevelopment of the urban space, the creation of raised platforms and mini-roundabouts at existing crossroads, which make it possible to reduce the speed at road intersections and the intelligent use of smog-eating paving slab.

## Policy

There is now an increasing awareness of the environment and the concept of sustainability has well established. Sustainability is about satisfying the needs of the present generation without jeopardising the needs of future generations. This principle was formally expressed as European planning policy in the European White Paper and as national planning policy in the government Transport White Paper (and in the programs of many European countries, as in the UK the government Transport White Paper).

The main emphasis of these documents is to achieve a more sustainable system by encouraging better integration between land use and transport, tackling pollution and congestion, improving public transport, reducing car use and promoting travel choices other than private car. Thus travel by foot, bicycle and public transport are all to be encouraged.

## The existing site

The village of Cornaredo, 20.000 inhabitants, is located in the hinterland of Milan, only 15 Km west of the city. Due to its position, the village suffer from commuting traffic of vehicles going eastbound in the morning and westbound in the evening.

The congestion of the national road SS11 induces people to pass through the city of Cornaredo to drive to Milan.

To discourage the rat-run traffic, to reduce the very bad accident record and to recreate a sustainable environment, adequate to the nature and the size of Cornaredo, a 20mph Zone Plan has been implemented in the city centre.

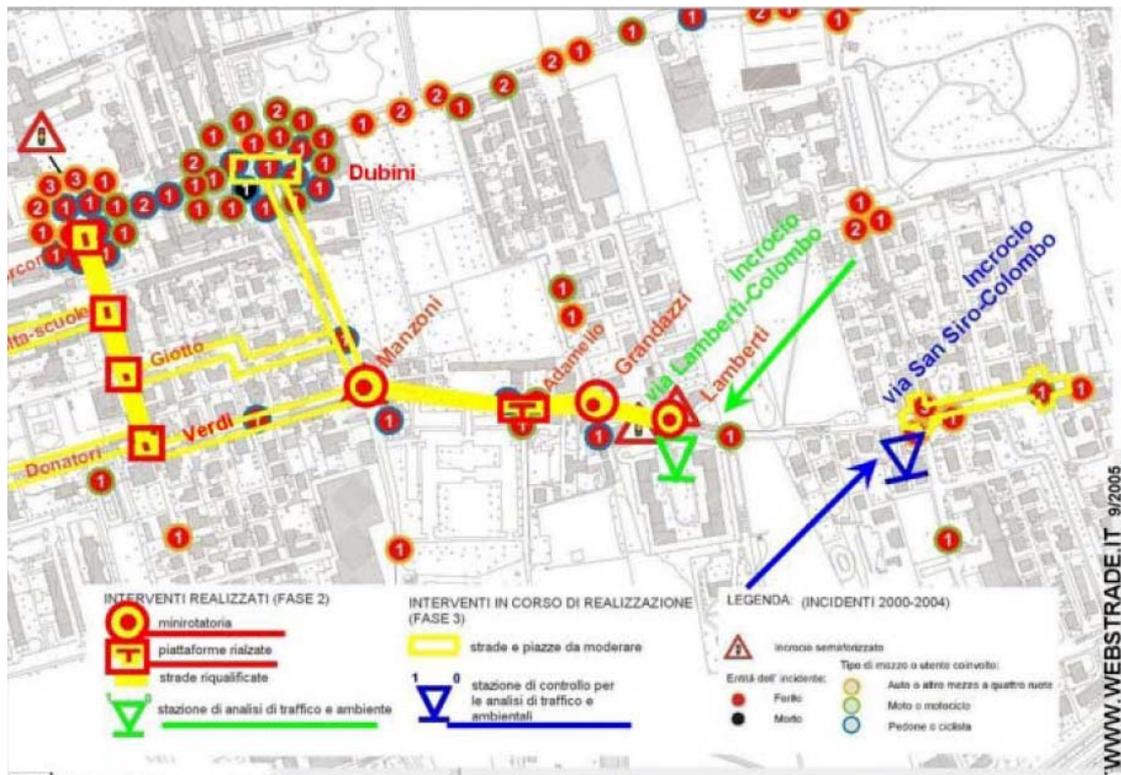


Figure 1 - Accident location in the last five years in Cornaredo and overview of the major proposals

Traffic surveys, speed surveys and air quality surveys have been undertaken before and after the regeneration works, using the latest technology machines, in order to analyse the existing situation and the effects of the new scheme.

Via Colombo, approximately 1 km long, is the main road which pass through the city in the east-west direction and is parallel to the SS11. This is mainly a 30 mph residential road but it was affected by an important rat-run traffic with a significant percentage of Heavy Good Vehicles (HGVs). The surveyed daily traffic was around 9.000 vehicles with important rat-run traffic eastbound in the morning and westbound in the evening. There were around 900 vehicles/hours and significant queues and delays during the morning (7-9) and evening (17-20) peak hours. Off-peak there were problems related to high-speed vehicles ( $v_{85}=59$  km/h,  $V_{max}=123$  km/h). The traffic lights installed along Via Colombo were not suitable to manage the mono-directional traffic of the peak hours and the speed problems off peak.

Via Marconi is perpendicular to Via Colombo and is linked to the SS11. It is a mainly residential road and it also passes through the nursery and primary school of Cornaredo, 100 m south of the junction with the SS11. This junction experimented a dramatic accident record.

### Proposals

The 20mph plan has involved a stretch of Via Colombo long 340 m and a stretch of via Marconi long 235 m.

On Via Colombo three existing traffic lights have been replaced by mini-roundabouts and traffic calming measures along the road.

On Via Marconi several traffic calming and management measures have been adopted between four existing junctions. Along the stretch of the road passing through the

schools a narrow road section has been built with opposite one-way traffic flow to reduce speed and discourage rat running traffic.

The following latest state-of-art solutions have been adopted to address the problems.

- Raised kerbs at the crossroads, mini-roundabouts with raised kerb to reduce speed and to ease the pedestrian crossing of the road



Figure 2 - Mini-roundabout with raised kerb

- Special paving slabs, of different shapes and colours, have been used to clearly identify pedestrian and cyclist paths. The slabs utilised have excellent anti-slip properties, are resistant to abrasion, non deformable and frost resistant. The long duration (over 40 years) of paving slabs and the reduced maintenance and restoration costs, are advantages over asphalt, which requires periodic surfacing.
- The paving slabs used have special smog-eating properties. They are produced using a special kind of cement which acts as a catalyst able to oxidize highly toxic substances in the presence of light and air, turning them into non-toxic compounds. This is very effective in breaking down nitrogen dioxide and carbon monoxide gases from car fumes.<sup>1</sup>
- All the horizontal signalisation has been completely substituted by physical signage made by special high brightness slabs of different colours and shapes, encouraging the use of eco-friendly technology and materials.

<sup>1</sup> A similar kind of pavement to cut pollution has been recently used, as a trial scheme, in Bloomsbury, Central London.



Figure 3- Horizontal road traffic signs using paving slabs

- Special street “turtle” lighting system has been used at the mini-roundabouts to improve safety and visibility at night



Figure 4 - Special “turtle” street lighting system

## Results

Traffic, speed and air quality surveys have been undertaken at the end of the works to quantify the effectiveness of the jobs.

Dramatic results have been obtained as described below:

- An important reduction of traffic flows has been recorded. In particular, the new road layout discourage the use of the road by HGVs
- The mini-roundabouts manage better than the previous traffic lights the peak hour traffic, reducing queues and delays and improving the traffic fluidity. They are also very effective in reducing the high speeds during off peak hours.
- A significant speed reduction has been recorded ( $V_{85}=27-30\text{km/h}$ ) in the 20mph. Drivers are now more carefully and willing to give way to pedestrian and vulnerable road users.
- A significant air quality improvement has been recorded thanks to the reduction of traffic and speed and the use of special pavement labs. The noise level has also been significantly reduced.
- An increased use of the road by pedestrian and cyclists has been obtained.



Figure 5 - Cyclists using the new mini-roundabout

## Conclusions

The main aim of the jobs undertaken in Cornaredo was to recreate streets that are safe and attractive places for people, residential streets designed primarily to meet the needs of all pedestrians, cyclists, local residents and disabled people, opening them up for social inclusion while still retaining access for essential private traffic and public transport.

At the same time, it was important the regeneration of important squares and the improvement of existing crossroads, in order to create a safer and better urban environment.

The safety of the streets has substantially improved. No car accidents have occurred for the year since the reopening of the street and the perceived road safety of the inhabitants has dramatically improved. The streets are now more attractive for pedestrian and cyclists and many people are starting again to walk to school and to shops.

The reduction of traffic flows and speed, the improvement of the urban space and design, the reduction of smog and noise, a more efficient use of the road for cyclists and pedestrians are key factors showing that all the aims have been satisfactory achieved.



Figure 6 – The new urban environment “pedestrian friendly” on the street near the school after the traffic calming works.



Figure 7 – The traffic in the local roads is allowed but at low speed: “slow but fluent”.

More readings

[www.webstrade.it/cornaredo](http://www.webstrade.it/cornaredo) The Cornaredo case study pages, for the citizen participation program of the Home Zone project in the Italian city (in Italian).

[www.webstrade.it/cornaredo/sanpietro/index.htm#Download](http://www.webstrade.it/cornaredo/sanpietro/index.htm#Download) The complete final report with a before-after study of the Cornaredo experience. Download the environmental and traffic impact study of the project (in Italian).

<http://www.magnetti.it/pavimentazioni/renova.html> (The new concept photocatalytic slab, of the Italian firm Magnetti spa)

[http://news.bbc.co.uk/2/hi/uk\\_news/england/london/4577832.stm](http://news.bbc.co.uk/2/hi/uk_news/england/london/4577832.stm) An innovative experience of hi-tech pavement designed to cut pollution in London.