Noise Control

- Noise Exposure in Vienna
- Road Traffic Noise
- Rail Traffic Noise
- Aircraft Noise
- Noise Control through “Cooperative Noise Remediation”

“Vienna is doing everything it can to keep noise exposure as low as possible.”
A major city and noise are inextricably linked. Vienna is doing everything it can to keep noise exposure as low as possible for the population. Measures such as noise control walls, Tempo 30 zones, residential area designations, pedestrian precincts, parking space management and optimal noise control on the metro and tram systems play a crucial role in this connection.

Nevertheless, noise exposure – as in other cities, too – often remains above the target limits. As a result, increasing use is made of unconventional methods as well as tried and tested ones in combating noise. The “Cooperative Noise Remediation” project where people causing noise and those affected by it try to find a solution together or the mediation procedure at Vienna’s airport are cited as representative examples in this connection. The basis for reducing environmental noise should also be provided with the help of an EU directive that has been in force for a short period. Experts are working on noise maps and action plans across Europe for this purpose. The latest computer technology is also providing valuable help in combating noise. In-house IT programs have been developed for both traffic and rail noise and the Municipal Department for Environmental Protection (MA 22) uses mobile noise measurement equipment to measure noise on the spot.

Noise is omnipresent in the city as traffic noise, as noise from construction sites or from pubs and restaurants, business establishments or noise from one’s next door neighbours. Admittedly the perception of noise is subjective while it is clear that everybody participates in the noise of the city – with some causing noise and others suffering from it. In a study carried out by IFES in 2003, 8,300 Viennese over the age of 15 were asked about various issues including noise pollution. Compared with a study carried out in 1995, noise pollution at home both during the day and in the evening and at night has remained virtually the same with minor falls of one per cent being recorded in each case.

The city of Vienna, particularly MA 22, the Municipal Department for Road Management and Construction (MA 28), the Municipal Department for the Inspection of Business Establishments, Electrical and Gas Equipment, Fire Prevention and Official Authorisation of Events (MA 36) and the Municipal Department for Traffic Management and Organisation (MA 46) as well as the Municipal District Offices, is endeavouring through various measures and cooperation on projects to improve the noise situation in terms of road traffic and generally in the city on an ongoing basis. These include the following measures:

- Expanding and upgrading the cycle path network to increase the incentives for using bikes to get to work on the one hand and to make the facilities for cyclists more attractive on the other hand.
- Continuously extending the Viennese metro network.
- Planning noise control projects along the roads at municipal level and along railway tracks in collaboration with the federal government.
- Re-designating streets of houses as designated residential areas or pedestrian precincts and establishing new Tempo 30 zones in the Vienna urban area.
- Encouraging noise control windows along major A and B routes if the limits are exceeded by more than 60 decibels during the day or more than 50 decibels at night.
- Using noise reducing road surfaces on road sections that are particularly noisy.
- Sealing music facilities in accordance with the Veranstaltungs- und Veranstaltungsstättenentgesetz (Events and Event Venues Act) and in accordance with the Gewerbeordnung (Trade, Commerce and Industry Regulation Act).
- Involving experts from the Vienna Department for Environmental Protection on noise issues in various administrative procedures (trade processes,
construction methods, authorisation of events, etc.
• Speeding up public transport with modern transport equipment also contributes to its being a good alternative to using the car.
• Managing parking space, including reducing the amount of time spent looking for parking spaces.

Long-Term Noise Control Measures are Effective
Many measures, some of which were started as early as the mid-1980s, have contributed successfully to reducing noise pollution for the Viennese in recent years. The noise level of cars depends, among other things, on how fast they are driven. The lower the speed, the more quietly the car travels.

As a result, the first Tempo 30 zones covering a distance of 31 kilometres were introduced as early as 1987. At the year end 2005, Tempo 30 applied to a total of 1,353.4 kilometres, which is 48 per cent of the entire municipal road network in Vienna. Each year, new Tempo 30 zones covering between 20 and 100 kilometres are added. In addition, there are 130 designated residential areas and 73 pedestrian precincts. The extent of both designated residential areas and pedestrian precincts in Vienna has increased since 2000. In 17 of Vienna’s 23 districts there is already at least one pedestrian precinct!

The positive impact in terms of noise is complemented by the continuous expansion of the cycle path and metro networks as well as the management of parking space. This has not only cut the number of vehicles entering the area where parking space is managed by around 16 per cent, it has also sharply reduced the time spent trailing round looking for parking spaces. The installation of noise control windows and sound insulating ventilators also contributes to mitigating the noise of traffic. Financial support is available from the Province of Vienna.

Information on this subject is available from the Municipal Department for Technical and Financial Assessment in Matters of Housing Construction and Promotion, Specialised Urban Renewal (MA 25), on the Internet at http://www.wien.gv.at/ma25/ and by phone from (01) 4000/74870.

Road Traffic Noise
In surveys in Vienna, traffic is the most frequently cited source of noise and is perceived by people as being particularly disturbing. Great importance is therefore attached to reducing traffic noise in residential areas along heavily used main roads but also with regard to the continuing increase in traffic volumes.

Low Noise Road Surfaces
This is why adequate noise control for the residential population is also included in plans for developing new main roads such as the A 22 – Nordbrücke extension to Lundenburgergasse. Admittedly, it is often very difficult to construct noise control walls on existing roads in the densely constructed urban area. At the end of the day, improvements in the noise situation can often only be achieved by moving the carriage.
way away from residential buildings and installing a noise reducing topping.

The road topping plays a vital role in reducing noise. At the speeds normally travelled in the city, the rolling noise of car tyres is the major source of noise. The use of coarse-grained surface topplings (e.g. concrete paving with an “exposed aggregate concrete surface” or grainy split mastix asphalt) in the course of upgrading B roads and motorways contributes to keeping vehicle rolling noise down. MA 28 installed coarse-grained surface topplings of this kind for example on Untere Donaustraße and Hadikgasse in the period 2004/2005.

**Noise Control Walls**

There are currently some 8,800 metres of noise control walls with an area of around 31,000 square metres on Vienna’s main B roads. In the last two years, two important noise control projects amounting to 1,510 metres in length were implemented at a cost of € 1.25 million in Wientalstraße and in Donaustraße. There are currently 56.3 kilometres of noise control walls with an area of around 206,000 square metres along Vienna’s urban motorways. New noise control walls were also constructed or existing ones increased in height in 2004/2005 – in total 5,620 metres at a cost of around € 2.44 million.

In addition, in the period 2004/2005 MA 28 planned noise control walls along the Eastern Motorway, the Nordbrücke extension and the South-East Tangent motorway (Landstraße intersection) amounting to 13,200 metres in length and 46,000 square metres in area at an estimated cost of around € 7 million, which should be constructed or completed in 2006. Following tough negotiations in recent years, the construction of the first noise control wall at Theodor-Körner-Hof is also planned for October 2006. The “SYLVIE-Lärmschutzwand Theodor-Körner-Hof” project, which was developed within the framework of the EU’s LIFE-Environment support programme, is to mitigate the noise exposure from rail and road along the Südgürtel and improve the quality of life for people living alongside it.

**Environmental Noise Directive**

The implementation of the “Environmental Noise Directive” (Directive by the European Council 2002/49/EC on the assessment and abatement of environmental noise) will provide data on the noise situation in conurbations caused by road and rail traffic, aircraft and IPPC facilities (industry) for the first time. The following measures are gradually being carried out in this connection:

- Calculation of the burden imposed by environmental noise using noise maps produced in accordance with common valuation methods for the member states.
- Informing the public about environmental noise and its effects.
- Development of action plans by the member states based on the results of the noise maps with the aim of preventing and reducing environmental noise as far as necessary and particularly in cases where the extent of the exposure can be detrimental to health and of maintaining environmental quality in cases in which it is satisfactory.

The noise maps for the Vienna conurbation, among other areas, are to be drawn up by 2007. They are to be subjected to review at least once every five years (and if necessary revised) and made accessible to the public – probably via the Internet. The action plans

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including appropriate measures to reduce the noise problems are to be worked out by the responsible authorities by 2008. They are also to be reviewed and adapted every five years and made accessible to the public. Progress is being made on the work needed to implement the Environmental Noise Directive for the city of Vienna.

Road Traffic Noise Immissions Land Register

Anybody wishing to know how loud the noise from the street outside his house is can check on the Internet at www.wien.gv.at/umweltschutz/lois. This site provides comprehensive information on the subject of noise, including the “Road Traffic Noise Immissions Land Register” (SLIM), which encompasses the entire major road network. The database will be extended further in the course of implementing the Environmental Noise Directive. Currently, priorities for noise control measures are being set with the help of SLIM. The effects of organisational changes to traffic such as relocating traffic or imposing speed limits can be scrutinised this way. The data are also used by the Planning Department to issue noise certificates or to calculate the spread of noise under different circumstances. In future, the noise maps produced under the EU’s Environmental Noise Directive will be used for this purpose.

Rail Noise

According to the “Leben und Lebensqualität in Wien” (Life and Quality of Life in Vienna) study, around nine per cent of the population suffer from noise emanating from trains and wagons moving along rail tracks. With this type of noise the sounds are caused by the wheels touching the track and depend on the axle load, the speed of travel, the means of drive operation and from the state of the rails. Austria was the first European country to issue noise regulations for rail vehicles in 1993. Since then the “Schienenfahrzeug-Lärmzulässigkeitsverordnung” (law regulating noise levels permissible for rail vehicles) has regulated noise emissions by vehicles externally (affecting abutting owners) and internally (affecting passengers). In turn, the “Schienenverkehrslärm-Immissionsschutzverordnung” (rail traffic noise – immission control ordinance) limits the noise to which the residential population is exposed.

Noise Control along Railway Lines

Sound immissions on the railway lines in the Viennese urban area operated by the Österreichische Bundesbahnen (ÖBB – Austrian Federal Railways) were calculated with the rail traffic noise land register in 1993.

In 2003, the rail traffic noise emissions land register was evaluated with regard to train data with a forecast of the traffic data for 2016. An update of the immissions data along railway lines shown on the register will be available with the noise maps that have been prescribed by law through the implementation of the EU Environmental Noise Directive. The data from the land register and in future the noise maps and action plans resulting from the EU Environmental Noise Directive will be used to plan noise control measures for housing on existing railway lines.
used in zoning and development planning and in planning noise control measures for residential buildings on existing railway lines and generally in planning in Vienna.

In constructing the Leopoldau station noise control wall, the influence of transparent noise control elements was tested in comparison with a highly absorbent model. From an urban design and operational viewpoint the use of transparent noise control elements is often demanded, for instance around stations. The tests conducted by the Noise Control team at MA 22 were able to demonstrate for the first time from a technical viewpoint that this results in a deterioration of up to five decibels. Seven different combinations of transparent elements were tested. Plans are in place to repeat the tests under different sound dissemination conditions with ÖBB Bau AG in future.

Redevelopment of Existing Track Sections in Vienna

The project to redevelop existing track sections was started in April 2001 following the agreement between the federal government and the Province of Vienna and provides for the redevelopment of those sections of track that predate the Schienenverkehrslärm-Immissionsschutzverordnung (rail traffic noise – immission control ordinance) coming into force. The implementation of the redevelopment measures is based on the rail traffic noise land register (emissions and immissions) on the one hand and on a list of priorities created by MA 22 on the other hand. This is based on the federal government’s uniform nationwide criteria, the noise exposure and the number of abutting owners affected.

By the end of 2005, noise control projects had been completed in the area of the Westbahn (western railway) (a residential home for the blind), at Leopoldau station and along Handelskai (only window grants) as part of the programme to redevelop existing track sections, which is financed 50 per cent by the federal government and 50 per cent by the Province of Vienna (MA 22). The rating of the noise control projects is based on the rating sound level of 55 decibels at night. Construction work on the Johnstraße to Penzing station and Nordwestbahnhof area (Taborstraße to Stromstraße) projects is planned to start in 2006. The execution of the Bahnhof Wien/Nord-Hellwegstraße noise control project is directly linked to the redevelopment of the Wien Nord railway station and the reconstruction of the section up to Traisengasse, which is to be carried out in two phases. Apart from the project along the Handelskai, which only involved grants for windows, all the other projects envisage a combination of noise control walls and grants for windows to comply with the rating sound level of 55 decibels at night. Plans are also being worked on for the following sections: Südbahn (Atzgersdorf station to the provincial boundary and Einsiedlergasse to Meidlinger Hauptstraße), Westbahn (Amisgasse to Deutschordensstraße), Wien Nord–Bernhardsthal section (area around Wasserparkbrücke to Werndlagasse), Wien-Süd–Nickelsdorf (area around Ghegastraße to the ÖBB workshop in Simmering) section and Penzing–Heiligenstadt section (Rankgasse to Wilhelminenstraße).

Metro and Trams are becoming even Quieter

WIENER LINIEN is also focusing increasingly on noise control. For example, low-noise wagons with sound insulating aprons and sound absorbing underbodies have been developed for the tram. New methods of absorbing the structure-borne noise from the tracks also ensure that less noise penetrates homes situated along the tracks. If tracks are to be upgraded or a new section built, the anticipated structure-borne sound emissions in the surrounding homes have been measured as a precaution since 1985. If the results are unfavourable, the tracks are laid on a sound absorbing track system.

Regular maintenance of the tracks involving grinding and/or greasing as well as noise control walls along sections of the metro also lead to less noise being produced. Incidentally, the metro is virtually silent when travelling underground. Thanks to optimal use of
sonic technology in constructing tunnels and track systems, there is virtually no noise. Driving noise is reduced by lining tunnels with sound absorbing material.

As with road noise, there is a land register showing noise from trams and the metro, which is used when planning and executing sonic remediation measures around WIENER LINIEN’s facilities. Noise control will be part of future projects from the outset. For example, a comprehensive review of the environmental impact of the extension of the U2 metro line towards Aspern, which is currently under construction, was carried out within the framework of an EIS (environmental impact study).

Aircraft Noise

In contrast to road traffic noise where a constant sustained noise is generated by heavy traffic, in the case of aircraft noise each flight movement is perceptible as an individual noise even during periods of heavy traffic. Even if the noise does not exhibit a high sound pressure level, it can be clearly distinguished from other sounds through the distinctive turbine or propeller noise. Short-term sound peaks occur particularly when taking off and landing.

Air traffic regulations are the responsibility of the federal government (legislation and execution). The current air traffic act contains a whole series of regulations some of which relate to noise control.

Flughafen Wien AG is committed to dealing with the environment sensibly and with consideration. The company focuses on the subjects of noise and pollutant emissions but also on questions of supply and disposal and the efficient use of energy. Among other things the “Mediationsverfahren Flughafen Wien” (Mediation Process Vienna Airport) was concluded in 2005 with the official signing of the final documents. The negotiations focused on two issues: the problems of aircraft noise with the existing two-runway system and managing the problems of capacity at Vienna International Airport in future. Representatives of action groups, Flughafen Wien AG, Austrian Airlines Group, Austro Control, the political parties, from authorities and lobbies as well as the mayors of the surrounding municipalities worked out common solutions.

“Dialogue Forum Vienna International Airport” Established

The “Current Measures” sub-agreement on the issue of aircraft noise was signed in May 2003. Work on the issue of the future was also concluded on 22 June 2005. The final documents contain a summary of the results, which were signed by 55 parties to the mediation process, and legally binding agreements. They define the position of a third runway, record the agreed framework conditions such as night flight regulations, noise caps and technical noise control as well as the payments to environmental funds and the dialogue forum and so provide the basis for further concerted action. The “Dialogue Forum Vienna International Airport” association was established immediately after the end of the mediation process. It has the task of continuing the dialogue from the mediation process and of discussing issues that emerge from current developments. The aim of the association is to involve all those affected in the discussion process if possible.

More information is available on the Internet at www.viemediation.at or at www.vie-umwelt.at.

FANOMOS Measures Flight Noise

FANOMOS (Flight Track and Noise Monitoring System) is an important tool
“FANOMOS” is an important tool for monitoring current flight movements. It measures flight noise immissions and records the flight track, speed and height of all planes in conjunction with radar data. In 2005, 31 mobile measuring series were carried out in addition to the results from the 14 fixed measuring stations. The results were published in the evaluation report of the dialogue forum.

Under the European Council’s Directive 92/14/EEC only “chapter 3” aircraft (defined in Annex 16 of the Agreement of the International Civil Aviation Organisation (ICAO)) may take off and land in Vienna. Types of aircraft that are louder, “chapter 2” aircraft and below require a certificate of exemption. Since the beginning of 2004, the info line “Environment and Aviation” (0810 22 33 44) has been available for complaints about air traffic.

Experience has shown that great success can be achieved in cases of conflict through the willingness of those involved in the action. As the conflict about noise becomes more complex, the room for manoeuvre is reduced.

In 2004, MA 22 provided financial assistance to a successor project to SYLVIE in Schleifmühlgasse in the 4th district under the project name “Cooperative Noise Remediation at District Level”. The aim was to work out solutions for the differing interests of abutting owners, pub operators and in connection with the summer festival that takes place every year in Schleifmühlgasse.

MA 22 will continue to provide technical support for any future cooperative noise remediation processes, however, they will have to be financed through the districts or by other means.

The city of Vienna has adopted another approach to noise remediation with the SYLVIE project. The project, which was carried out by the Municipal Department for Environmental Protection (MA 22) within the framework of the EU’s LIFE-Environment 1999 support programme, has investigated the influence of citizen involvement in addition to the focus on technology in noise remediation. Further information is available on the Internet at www.sylvie.at.