- **Example 2:** a tranquil open space being created by a developer as part of the planning permission for a larger development (possibly residential), where there is an existing community and an existing deficit in tranquil green space – how to engage with the community to create a better environment for everyone (both existing and incoming residents).

Introduction

Town B is Welsh Town. It has a vibrant high street, a good range of businesses, schools and mixed residential units but few quieter or tranquil places to go. However, after extensive consultation with stakeholders, a need for more high quality sound environments that are tranquil open spaces was identified. As a result, the local masterplan was updated to include this provision for all new developments.

The masterplan noted that high quality sound environments that include areas of quiet and tranquil open space should, in addition to many other benefits, also provide respite from noise[1] caused by sound sources like road traffic. This is because reducing noise pollution had been identified as a key part of improving the quality of life and wellbeing of residents and protecting and enhancing local environmental quality.

Project Proposal

Responding to a proposal from **Town B** for a major residential development, **Developer A** proposed that the provision of high quality sound environments that include quiet and tranquil open spaces for the development be designed and specified with a Soundscape Expert[2] (SE). **Developer A** explained in their proposal that the SE would help devise a wide

[1] Noise is defined as unwanted sound.

[2] Soundscape is a multidisciplinary applied practice. Therefore, the Soundscape Expert for a project is decided by the project team based on the type of soundscape specialist skills needed to interact with stakeholders and advise on their perceptual response to sound regarding the proposed development. Those suitably qualified to carry out the work, should be decided for each project based on the scale, impact and requirements of development in consultation with the local planning authority, guided by the framework set out in Table 1. “Suitably qualified” in this context may refer to those with relevant professional qualifications, experience and/or local knowledge (i.e. referred to in PD ISO/TS 12913-2:2018 as “local experts” [8, p.2 and p.14]) depending on the scale, impact and requirements of the development.

Related soundscape specialisms should be decided in consultation with the local planning authority, and include any relevant discipline, practice or local expertise necessary to meet the outcomes of the project depending on the scale, impact and requirements of the development, guided by the framework set out in Table 1. For example, in addition to soundscape engagement experts (i.e. separate from urban sound planning experts), related soundscape specialisms may include experts from the fields of acoustics, architecture, spatial planning, engineering, environmental psychology, sociology, human

range of options based around the human perception of sound to complement traditional noise control approaches for this scenario.

The council, residents and urban design team liked the creative possibilities proposed by the development/SE team. They commented that the approach would make it far easier for the acoustics team (which included the SE in this instance) to be involved at the earliest stages of the design where the perceptual impacts of the development would be discussed and decided in relation to other parts of the project. This meant, for example, that acoustics and soundscape considerations could be included holistically with discussions regarding biodiversity, green space, sustainable drainage, landscaping, and water.

Project Planning Stage

During the initial project planning stage, the development/urban design team assembled to review the plan for the residential development and the design and delivery outcomes for the project. Together with the acoustics/SE team they agreed the following Soundscape Objectives (SOs) for the project which specified that the designed space should:

- reduce noise pollution
- be safe and clean
- be attractive and appealing
- be accessible, connected and inclusive
- create quiet, tranquil spaces as well as vibrant areas (i.e. to hear background sounds of nature and people)
- enhance biodiversity and create nature conservation areas
- have high quality green and blue spaces
- have high quality recreational areas for children and young people
- promote active living, health and wellbeing

The Soundscape Assessment

factors, human behaviour, medicine, communications, mental health, social work, auraldiversity (e.g. autism and hearing loss), sound artists or other relevant non-acoustic specialisms depending on the nature of the development.

Questionnaire and Interview Survey results (Initial Survey)

As with the project for **Town A**, the purpose of the SA in the project for **Town B** was to collect data from people to better understand people's perceptions of the existing area in order to inform the soundscape design objectives for the project.

Therefore, the aim of the Soundscape Assessment for this proposed development was to gain an understanding of how people felt about (or perceived) the existing sound environment and how this might affect their daily lives. In other words, what they liked and/or disliked about the current sound environment and their preferences for design aims of the new sound environment.

There are several methods for collecting people's perceptions of the sound environment (see Chapter 7, Step 3) including Soundscape Questionnaires, Interviews, Focus Groups and Soundwalks[3]. Given the direct impact of this project on people's homes (i.e. visual and indoor soundscape quality) (see Forward and Chapter 5, sections 1 and 2) and outdoor amenity, the design aimed to have significant effects on people's health and wellbeing. Given the high importance people place on the quality of their living spaces, the SE recommended that a Soundscape Questionnaire and 1:1 in-depth Interviews were conducted to gain an initial understanding of the depth, range and scale of people's perceptions of the local sound environment and preferences regarding their desired sound environment for quiet or tranquil open space near their homes.

These surveys showed that people in the area desired environments not dominated by mechanical, industrial and transportation noise (i.e. specifically traffic or plant). They commented that such sound would interrupt their enjoyment and any restorative aspects of the proposed outdoor space as the sound of the traffic would dominate and mask the sounds of people or nature.

Regarding preferred sounds, people emphasised the council's consultation findings which detailed the desire by residents to hear more sounds of nature, including water and birds,

[3] British Standards Institution. (2018). PD ISO/TS 12913-2:2018. Acoustics – Soundscape – Data collection. London: BSI.

combined with also seeing these sources. The visual quality of the area was cited as equally important to the desired quality of the sound environment. Survey participants stressed that **both** were critical to the success of the outdoor space and to ensure the sustainability of any solutions implemented.

Regarding outdoor spaces where more sounds from people would be likely and/or encouraged, those surveyed emphasised that these sounds should not be overly dominate, but rather a "pleasant buzz" in the background so that a sense of community and connection could be felt, but quiet conversations or reading a book nearby could also be enjoyed without interference.

Preliminary Soundscape Map and Recommendations

Analysing the data from the initial survey, the SE developed a Soundscape Map (SM) of the open space area mapped to the plan for the development and the Soundscape Objectives. The multi-dimensional SM included the areas of proposed noise "hot spots" identified by residents, mapped with their preferences for certain types of sounds and the development plan proposals.

The SE was then able to propose a range of Soundscape Design Options (SDOs) (see Box Out), in conjunction with the acoustics team, to support the project aims of the plan for the development. The agreed SDOs were then mapped onto the SM for the second survey.

The soundwalk (Second survey)

After developing the SM and recommendations, the SE developed a series of Soundwalks (SW). Based on the feedback regarding noise concerns and sounds of preference, the SWs were conducted at representative times of day/evening/night. In accordance with the SW protocol, a survey of participants' feedback was taken along with acoustic and psychoacoustic (see Chapter 7, Step 4) data at the proposed locations of the SDOs.

The SW enabled the project stakeholders – including local experts (see Footnote 1), policy makers, members of the project team, businesses and the urban designers – to experience 'firsthand' the existing sound environment perceived and expressed by participants in the initial survey. The acoustic and psychoacoustic data collected during the SW enabled the

mapping of the sound levels and characteristics with the perceptual experience of the participants for each context and SDO point on the map.

Finalising the Soundscape Map and Recommendations

Analysing the data from the initial and second surveys, the SE finalised the Soundscape Map (SM) and SDO recommendations in conjunction with the acoustics and urban design teams. The multi-dimensional SM included the areas of noise concern identified by residents, mapped with their preferences for certain types of sounds and the development plan proposals. The agreed SDOs were then mapped onto the SM to be included in the public consultation for the development plan.

Consultation

Following consultation with stakeholders, the local council and the project developers were pleased to hear that residents could clearly see and understand how the development would enhance the local sound environment and deliver the Soundscape Objectives identified in the masterplan.

Residents could also understand how the SDOs would aim to improve the health, wellbeing and quality of life for those living in and near the development. They could see how the use of soundscape planning for this development could set a new benchmark for future sustainable development in the area and, ultimately, all other development in the town for the benefit of all.

Post Completion Survey

Six months after the development was completed, the SE conducted a Post Completion Soundscape Survey (PCSS). The PCSS repeated the steps conducted for the initial and second surveys (see The Soundscape Assessment section above).

The survey outcome showed that perception of the sound environment in the quiet and tranquil open space was pleasant and highly valued by residents.

It could also be shown that this positive outcome was directly contributing to the aims of development, for example residents commented on how:

- the tranquil open space had become a focal point for the local community;
- it was a great place to rest and relax in the quiet areas, while still being able to engage with others in the busier, activity based areas;
- the space was very well utilised by all age groups for exercise, play and sporting activities;
- beautiful the area was with the mix of green and blue spaces and the biodiversity meadow areas;
- happy they were with their investment of finances, time and resources, as house prices had increased since moving to the area.

Conclusion

The plan for the new residential development in **Town B** was hailed as a success nationally in Wales and throughout the UK. The area has become an exemplar for other towns and cities, winning biodiversity and green design awards, as well as awards for community engagement.

Commenting on the benefit of developing SDOs for the project, the town council noted that while the space would have looked very attractive, the proximity of nearby roads would have subjected the area to considerable noise pollution thereby reducing the effects on quieter areas and places of tranquility.

The SDOs, however, provided a range of design options for the project team to consider that enhanced the visual appeal of the area and also the sound environment, tailored to people's perception in context.

The leader of the council concluded "We are extremely proud of what's been achieved with this project. While it's true that incorporating soundscape planning in the development process added extra time and steps to this project, the results speak for themselves. Residents are very happy and the urban design team is inspired with new ideas for further regeneration and development. Moreover, the recognition the town has received has in turn attracted additional investment to the area."

[BOX OUT]

Sound travels through the environment and is shaped, altered, reduced or stopped based on the structures and/or materials it interacts with. Just like an invisible musical instrument, the structure, shape and materials used in the built environment affects how we hear and perceive sound. This knowledge opens up many creative options for urban design teams to consider when planning developments.

Some examples of quiet and low-noise design solutions for a tranquil open space are listed below.

Urban form

- Using the newly constructed dwellings to shield the tranquil green space from traffic noise
    - Designing the dwellings so that occupants receive maximum benefit from the tranquil area (bedrooms oriented to face the quieter or tranquil green space rather than onto the road) and
    - Avoid poor positioning of anything that might impair the enjoyment of the quieter or tranquil green spaces (e.g. citing of air conditioning units and air source heat pumps)
- Quiet road surfaces
- Quiet paving and walkways

Safety

- Access to the green space should be carefully considered, to ensure people feel safe and are encouraged to use it for its intended purpose, but not have it as a short cut for motor vehicles.

Restoration (supporting quiet as well as active modes)

- Living (green) walls (with low-noise design and/or materials)
- Water features (acoustically designed)
- Berms and raised beds (using low-noise materials)

- Quiet seating areas
- Quiet surfaces in play areas