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Soundscapes: an urban planning process map

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ABSTRACT

The concept of soundscapes is an established theme in acoustics research, most notably in the areas of environmental noise, noise control and psychoacoustics. However, many disciplines outside of traditional acoustics have recently worked together to confront epistemological assumptions regarding the place of soundscapes in an urban planning context and to develop an interdisciplinary understanding of soundscapes in that realm. Through this interdisciplinary work The Positive Soundscapes Project has identified a means whereby the concept of soundscapes might effectively be incorporated into planning. By identifying the various locations in the planning process in the UK at which the concept of soundscapes might be incorporated a Process Map is developed that will help planners and other urban planning decision makers utilise the tools and methods of soundscape assessment, evaluation and simulation created within the Positive Soundscape Project. This paper identifies where consideration of soundscapes can be considered within the current UK planning process, the way in which soundscape tools may be utilized to influence planning decisions, and how this can enhance the development of positive urban soundscapes.

1. INTRODUCTION

The objective of the process map is to provide an overview of how the concept of soundscape fits into the planning process. In order to do this we consider the scope of the current planning system in the UK, the current focus on noise control, the way in which soundscapes might be incorporated and the benefits of considering soundscapes at an early stage in the planning process. Drawing on research carried out in the Positive Soundscape Project¹, including structured soundwalks in Manchester and London with urban design professionals², focus groups with urban design professionals and lay people, listening tests to develop a soundscape simulator³ and discussions with planners, we posit a Soundscape Process Map that focuses on taking a

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planning application through to obtaining consent, concentrating on the roles of the developer, architect, and Local Planning Authority.

2. THE CONCEPT OF SOUNDSCAPE

A. Soundscapes Beyond Noise Control

European policy on noise and noise control has developed and progressed over the past ten years or so and Adams *et al* provide an outline of the evolution of noise policy in Europe and the UK highlighting the emphasis on levels of noise⁴. However, Schafer has highlighted that emphasizing levels of noise, which is a characteristic of sound that can be quantified, is not the only way of classifying sound⁵. He identifies a more subjective type of soundscape classification, which although useful, is also limited in terms of how it might apply in a planning context. Adams *et al* have pointed out that difficulties with recording and evaluating perceptions of sound and perceptions of positive soundscapes means that, in a planning system which is dominated by scientific rationality, there is much to be overcome in any attempt to incorporate such subjective concepts as sound aesthetics⁴.

Before we can discuss how soundscapes might fit into planning it's necessary to consider the current policy context relating to soundscapes. The way in which sound is handled in regulatory terms can alter the way in which sounds are conceptualized and assessed^{6,7}, and often it is noise, unwanted sound, that is regulated.

Across the European Community Member States, the Environmental Noise Directive (END) influences the assessment and management of environmental noise in order to “avoid, prevent or reduce, on a prioritised basis the harmful effects, including annoyance due to exposure to environmental noise”⁸. Through the use of noise indicators, such as L_{den} and L_{night} , noise maps of large agglomerations have been and are being produced. These noise maps have been used to create action plans to prevent and reduce environmental noise in identified areas. Furthermore, the END specifically mentions “preserving environmental noise quality where it is good” and preserving ‘quiet areas’ and recommends the use of ‘supplementary noise indicators’ for ‘special noise situations’, such as infrequent noise events and combined noise sources⁸. Despite the continued use of the term noise rather than sound, the END affords the possibility of incorporating a soundscape approach and a positive perspective into the management and preservation of good environmental noise (sound) quality.

Furthermore, it has been shown that language and meaning play important roles, influencing how noise is considered in national contexts; in the Dutch policy context noise is considered an environmental problem while in the Swiss policy context noise is considered in relation to living conditions⁷. Additionally, policy practice and how policy is enforced can also influence the level of complaints about noise, which in turn is viewed by some as an indicator of noise annoyance; for example the Dutch complain more than the Swiss about aircraft noise⁷. Baranzini and Ramirez have looked at indirect effects such as the socio-economic costs of noise, finding that ‘quieter areas’ are highly valued and that noise has a lowering effect on rents in Geneva of around 0.7 to 1% per decibel⁹. It is also known that patterns of social behaviour change in response to exposure to certain sounds; the social acceptability, and unacceptability, of certain sounds become known and reacted to¹⁰. Therefore it can be recognized that the perception of sound, and soundscapes, is a subjective issue that requires tools that are not solely based on quantitative assessments.

B. Interdisciplinary Understandings Of Soundscapes

The sonic environment has been recognised as an important component of people's experience of places, impacting upon their health, general well being and quality of life^{11,12,13,14,15}. This has led to political concerns about sound levels and the need to produce noise maps and action plans to mitigate the impact on humans⁸. Additionally, various national surveys have confirmed people's concerns about noise but the focus has been on noise annoyance, in particular relating to

neighbours and road traffic^{16,17}. To date, there are few, if any, examples of the concept of soundscapes directly being incorporated into policy and little understanding of how it might be incorporated, how positive evaluations of sound might be considered and how laypeople's perception and evaluation of soundscapes might be included in the planning process⁴. Through the design of a soundscape process map we show how the concept of soundscape might be usefully and practically incorporated into planning, the ways in which positive evaluations of sounds might be included and the stages at which consultations might most appropriately be effected.

Soundscapes research is a diverse area with an array of disciplines, including acoustics, psychoacoustics, psychology, sociology, architecture, geography, landscape planning, engineering, music, sonic art and anthropology, amongst others, involved in conceptualizing, assessing, evaluating and designing soundscapes. Due to this there has been a range of methodological approaches taken to the study of soundscapes, including both quantitative and qualitative approaches for determining objective and subjective measures of soundscapes and perceived soundscapes. One advantage of soundscape research is that it focuses not only on the negative aspects of the sonic environment, noise, but also on the positive aspects and so it is strongly linked with sound quality research and methodologies^{1,4,18,19,20}.

There have often been calls for both multidisciplinary and interdisciplinary research on soundscapes^{1,21,22,23,24,25,26,27,28}. Sometimes the concepts of multidisciplinary and interdisciplinarity have been conflated and we would argue that there has been a lack of genuinely interdisciplinary research on soundscapes, research which is characterized by disciplines operating jointly, where discipline boundaries are transgressed and where there is a need for a shared perspective on the parts of the researchers²⁹. Many soundscapes projects, where different disciplines have worked together, have operated as multidisciplinary projects where researchers work in parallel within their own disciplines. Research grounded in acoustics assumes a positivist paradigm and takes a quantitative, objective approach to soundscapes³⁰. Research from a psychoacoustic perspective takes a quantitative approach, using behavioural measurement techniques³¹ and subjective responses to presented sounds^{32,33}. Psychologists, sociologists, and geographers may use quantitative and/or qualitative methods to ascertain subjective responses^{2,34} and sometimes objective and subjective measures are combined^{1,35,36,37}. Interdisciplinary projects are needed to deal with the multidimensional experience of soundscape perception and the Positive Soundscape Project seeks to redress this through its aims of moving away from a focus on negative noise and evaluating the relationship between the acoustic/auditory environment and the responses and behavioural characteristics of people living in it¹. Furthermore, it has the objective of bringing together artistic, social, psychological, physical science and manufacturing approaches.

3. SOUNDSCAPES IN PLANNING

A. Planning In The United Kingdom

Each country in the United Kingdom has its own planning system, the essential framework of which was set in the Town and Country Planning Act 1947. The system was a response to concerns about industrialisation and urbanisation, in particular in relation to pollution, urban sprawl and ribbon development. The Town and Country Planning Act 1990³⁸ consolidated a number of changes, notably including Section 106 which allows for planning obligation agreements under which a developer is subject to detailed arrangements and restrictions beyond those which a planning condition could impose. Further amendments have been made to the planning system and The Planning and Compulsory Purchase Act 2004 resulted in a number of substantial changes to the English Development Plan system. It introduced Local Development Frameworks which are made up of Local Development Documents and Supplementary Planning Documents. The Regional Spatial Strategy is the strategic planning document and is produced by the Regional Assemblies in England. Through the production of Local Development Schemes

Local Authorities outline their LDDs and SPDs for a three year period and produce Statements of Community Involvement which outline how they will involve local communities. They must also produce a Sustainability Appraisal and a Strategic Environmental Assessment.

In the UK, planning permission must be obtained for substantive changes to a use of a property as well as for new construction. Through a system of 'Use Classes', changes to a different use class requires planning permission.

Planning Policy Statements, which are gradually replacing Planning Policy Guidance Notes, are statements of the Government's national policy and principles towards certain aspects of the Town Planning framework. They are legally binding and may be treated as material considerations in planning decisions.

Therefore it can be seen that the public realm is important to a planner. However, it is usually public realm from a visual point of view, so planning is about how it looks. As one of the urban design professionals who came on a soundwalk with us said: 'A planner is not necessarily thinking about the space holistically, much less so than an architect, and isn't necessarily thinking about the way people will use the space, how they'll relate to it and be affected by it. Before this soundwalk I'd not thought about it from a sound point of view' (M1, Manchester).

It is within the context of this overall framework that we wish to situate the concept of soundscapes. With reference to work completed in Vivacity 2020, which has identified how the urban design decision making process works³⁹, and by the Design against Crime Solution Centre⁴⁰, which has demonstrated how designing against crime can be incorporated into the planning application process, it has been possible to create a first iteration of how the concept of Soundscape might effectively be incorporated into the planning process.

B. Planning And Noise

There are a number of ways in which the concept of noise has been incorporated in planning in the UK already. In each of the countries of the UK planning policy guidance notes were developed in order to guide local authorities in their consideration of planning proposals in relation to noise, and to protect citizens from any adverse impacts from noise^{41,42,43,44}. These include consideration of the daytime and night time sound levels in the area in which a planning consent is sought for different types of industrial, transportation and mixed sources. The noise implications are considered as part of the rejection or acceptance of the proposal, along with mitigation approaches that might reduce the impact of any noise⁴¹.

In addition to the Planning Policy Guidance notes on noise, a National Ambient Noise Strategy is to be developed to include both environmental and neighbourhood noise⁴⁵. London has already produced an ambient noise strategy which has the practical aim "to minimise the adverse impacts of noise on people living in and working in, and visiting London using the best available practices and technology within a sustainable development framework"⁴⁶. In addition to a focus on noise and reducing transportation noise, there is a focus upon positive sound elements and a consideration of soundscapes in particular. This has led to further work on relative tranquillity and quiet areas⁴⁷ as well as a review of popular soundscape indicators⁴⁸ and exemplar 'sound-conscious urban design' in various cities⁴⁹.

Individual councils are also producing local authority noise strategies and a draft report for the City of Westminster identifies the need to consider noise in the production of sustainable cities due to the cognitive and health effects it can have on people. It also acknowledges the importance of considering positive sounds and the preservation or production of positive soundscapes rather than just the mitigation of negative soundscapes⁵⁰.

Furthermore, in the UK, issues of sound are dealt with by the Local Authority Environmental Health Officer when a complaint about noise nuisance is made. So after a development is built it is no longer within the remit of planning to deal with noise or sound issues. This adds another dimension to the consideration of how the concept of soundscape might be incorporated into urban design. Again, at present, there is a focus on noise and unwanted sound, and while it is vital to consider these complaints and to understand the types of noise

being complained about and the factors that influence the complaints, it is also essential to identify what satisfies people about the sounds of their urban environment; what people do value about the urban soundscape⁴. This is something that will be addressed in a further iteration of the soundscape process map outlined below.

C. Incorporating Soundscapes

By looking at how other process maps related to planning have been conceptualised it has been possible to identify areas that are promising with regard to the incorporation of soundscape into planning. Discussion at a focus group with urban design professionals demonstrated that the way in which the Greater Manchester Police provide an architectural liaison service to the planning department of the local authority with a view to acting as an influencing consultee on new developments in the local authority area might be a model to work from. Using Wootton's process model, which maps this relationship between architect, developer, local authority and police architectural liaison, as a starting point it's possible to start to visualise where soundscape expertise might fit into the process⁴⁰.

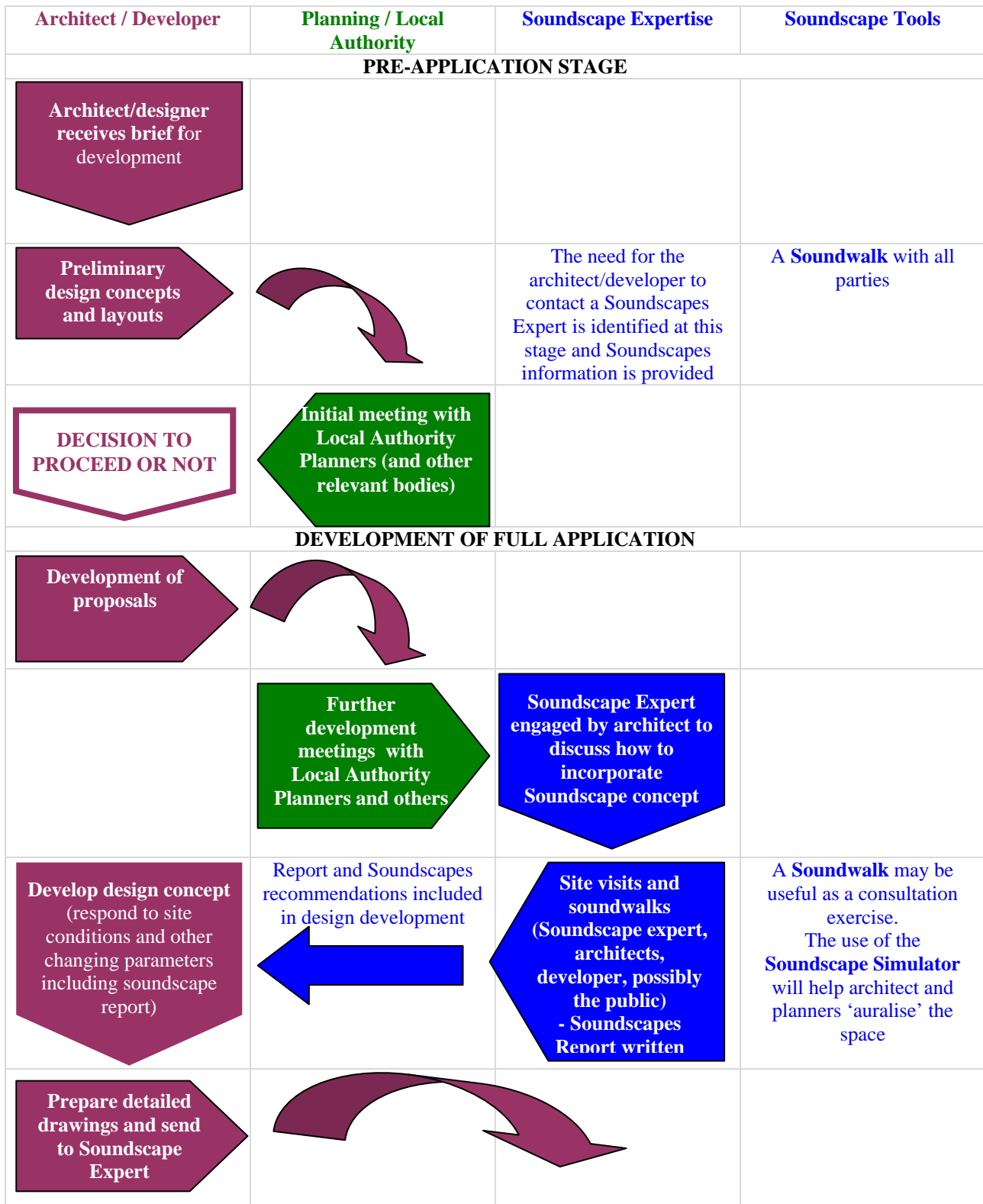
Soundwalks and focus groups with urban design professionals including planners, architects, developers and consultants have helped develop an understanding of how soundscapes might be incorporated. A lot of the work that planners do is reactive to developers and so there is much scope for changing things by working with the developer and architect directly, before plans even get to the planning system (Soundwalk with L1, London). One way of doing this is to involve soundscape experts at the pre-application stage. However there is only so much that can be done by 'encouragement' and there may need to be a legislative (whether local or national) requirement to consider soundscape issues (Soundwalk with L1, London). Some local authorities have a very proactive planning department and give more strategic direction to what they want to see in their areas, but the majority react to what others (developers) come up with (L1). There may be some scope within the local development plans to be more proactive – for example within the Section 106 Agreements that are drawn up with major developers regarding specific large schemes there may be scope to include something related to soundscape as a condition of getting permission. Section 106 (S106) of the Town and Country Planning Act 1990 allows a Local Planning Authority (LPA) to enter into a legally binding agreement or planning obligation with a landowner in association with the grant of planning permission. This agreement is a way of delivering or addressing matters that are necessary to make a development acceptable in planning terms and are increasingly used to support the provision of services and infrastructure, such as highways, recreational facilities, education, health and affordable housing³⁸.

This means that there could be a condition that they have to introduce certain features in a master planned area that relates to the soundscape of the location. This probably requires a 'soundscape expert', rather than a general acoustician, which emphasises the importance of soundscape education being more prevalent for both acoustic consultants and planners and architects. While this might work for areas that are being extensively master planned there might be less scope to influence areas where smaller developments are taking place as there would be the need for neighbouring land owners/developers to liaise to create a positive soundscape. This may be exceedingly difficult within a planning system that considers plans individually.

Given the focus on the visual by planners and the plethora of other issues that are important in making a planning decision it's important to think about the non-tangible measures and benefits that relate to sustainability issues which could be derived from a more qualitative assessment of soundscapes (Soundwalk with L2M, London). The question that arises is how that might be characterised and put across as a benefit in a way that a planner would relate to. It needs to be described to planners in such a way that they can see it as something that's relatively cheap to incorporate but which can provide quite a significant benefit in their own terms, that is in terms of the visual character of an area when the design is being put together. It could quite easily and cheaply be incorporated into planning but it needs to be looked at because the planner is matching up the plans with what's already existent, especially if working in a conservation

area, and they may not feel it's appropriate for sound. So if the benefits can be described in a realistic way, and they can be accrued fairly cheaply, then I think there is plenty of room for soundscapes in the planning system (Soundwalk with L2M, London). This participant felt that the place to work on that is through the training and guidance to planners, although we would extend that to include architects and developers.

The following diagram visually represents how the concept of soundscape might be incorporated into the UK planning process. It focuses on taking a planning application through to obtaining consent, concentrating on the roles of developer, architect, and Local Planning Authority, and locating where soundscape expertise and soundscape tools might be incorporated.



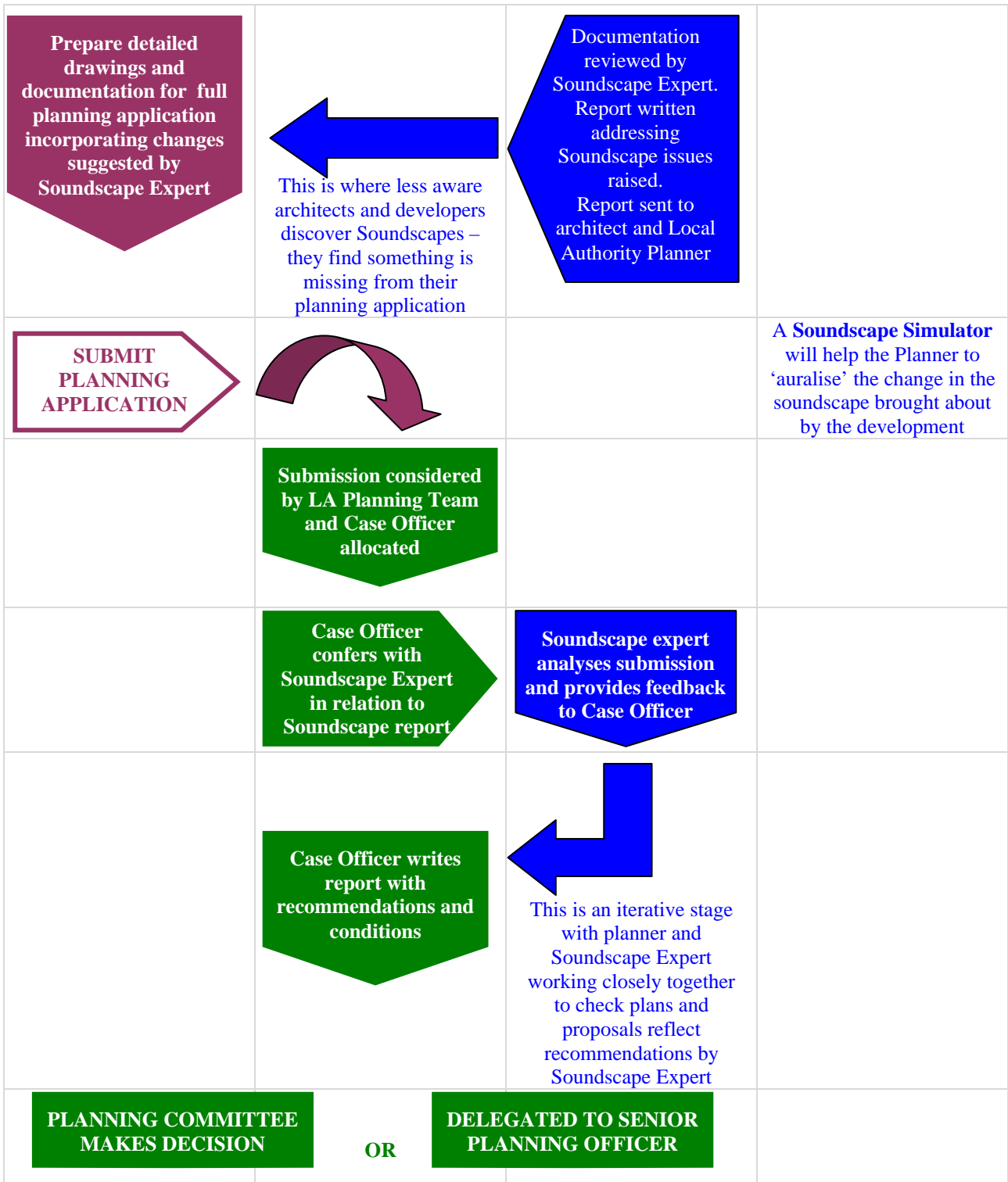


Figure One: A Soundscape Process Map
(adapted from Wootton’s ‘GMP Architectural Liaison Service – Process Model’⁴⁰)

This soundscape process map shows the relationships between the architect, developer and planner throughout the planning application, from the pre-application stage through to a planning committee decision. Within these relationships we have identified the locations at which soundscape expertise would effectively be incorporated and, referring to tools and methods developed through the Positive Soundscape Project, we have highlighted the role of the soundscape expert.

To be most effective, at the pre-application stage, soundscape considerations must be an integral part of the design of a development not added as an afterthought. This would mean consulting a soundscape expert at a very early stage in the design process of any residential or

commercial development. Using a structured soundwalk at this stage would be informative to the architect, developer and planner and might ultimately save time and money, especially if there was to be a statutory requirement to consider soundscapes at this early stage. Retrofitting acoustic and soundscape technology can be costly and early identification of requirements can preempt this.

At the application stage soundscape experts would be consulted by the planning authority on applications where there was a significant change of Use Class and on all major development proposals. A soundwalk could be adapted for use at this stage for public consultation purposes, enabling users of the location to contribute to the soundscape design. At this stage the soundscape simulator would be an effective tool for helping to 'auralise' the changes of the soundscape of the location brought about by the development and to compare the soundscape to other areas with the same Use Class.

For this process to be most effective soundscape experts would need to be statutory (or, less effectively, discretionary) consultees on planning applications. At the decision stage any applications which failed to consider soundscape implications would be refused and the applicant would be advised to consider soundscapes earlier in the process. Planning permissions might include conditions to ensure that soundscape features, and their preservation, maintenance, enhancement or elimination are understood and incorporated.

4. FUTURE DEVELOPMENTS FOR SOUNDSCAPES IN PLANNING

One professional who came on a Soundwalk with us in Manchester felt it would be useful to have a practical case study demonstrating the relevance of soundscapes, so if a developer had a particular use they wanted to bring to an area it would be possible to show examples of how the area might be designed to consider the soundscape. This is something that the final version of the soundscape simulator will enable as it will provide the opportunity to compare and contrast existing soundscapes as well as to 'auralise' and compare a before-and-after development soundscape experience. Additionally, the structured soundwalk developed for professionals enables them to experience soundscape differences in real-world situations and can be adapted to facilitate public consultation on new urban development proposals.

A next iteration of this process map will incorporate other tools and methods that would be useful at other stages in the process and will concentrate on the way in which soundscapes might be incorporated higher in the planning system – i.e. adaptations that might be required to Planning Policy Statements, how Regional Assemblies might include soundscapes in their Regional Spatial Strategy and how Local Authorities might include soundscapes in the development of their Local Development and Supplementary Planning Documents.

For example, incorporating the concept of soundscape into Planning Policy Guidance would make it a factor that had to be considered when designing or developing an urban environment. So in contrast to the current situation where the impact of noise is a material consideration in the determination of planning applications, the impact of a change of soundscape could be a material consideration.

5. CONCLUSIONS

By incorporating the soundscape concept into the planning process at an early stage there is the opportunity to auralise and evaluate soundscape variations brought about by urban development and design changes, prior to construction and in a systematic way. Therefore, for example, the effects on the soundscape within the current urban fabric of placing a new building in a certain orientation can be identified; any unintentional acoustic effects can be identified and ameliorated early on. Similarly, any positive soundscape effects may be identified and enhanced. Incorporating the skills of a soundscape expert into the planning process, and using soundscape tools such as the structured soundwalk and soundscape simulator developed in the Positive Soundscape Project, it is possible to produce a positive urban soundscape experience.

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