

# Transforming the RST

*Peter Wilson, Project Director at the RSC, discusses the company's approach to sustainability issues in the transformation of the Royal Shakespeare Theatre in Stratford-upon-Avon*

Having been asked to write this article for *Theatres Magazine*, and starting to think about what to write, I very rapidly reached the conclusion that defining sustainability, for the Royal Shakespeare Company and our Stratford-upon-Avon Theatres Transformation Programme, was an essential starting point. Taking a very broad view of creating a sustainable theatre building, our primary concern has been to create a building that will ensure we will be able to operate successfully and cost effectively in the future. Such a wide definition makes it possible for me to include almost every decision that we have taken along the way!

I will, therefore, start with the biggest decisions that have framed the creation of the brief for the project and therefore the design. The first decision was that the RST needed to be a new format of auditorium based on a scaled-up version

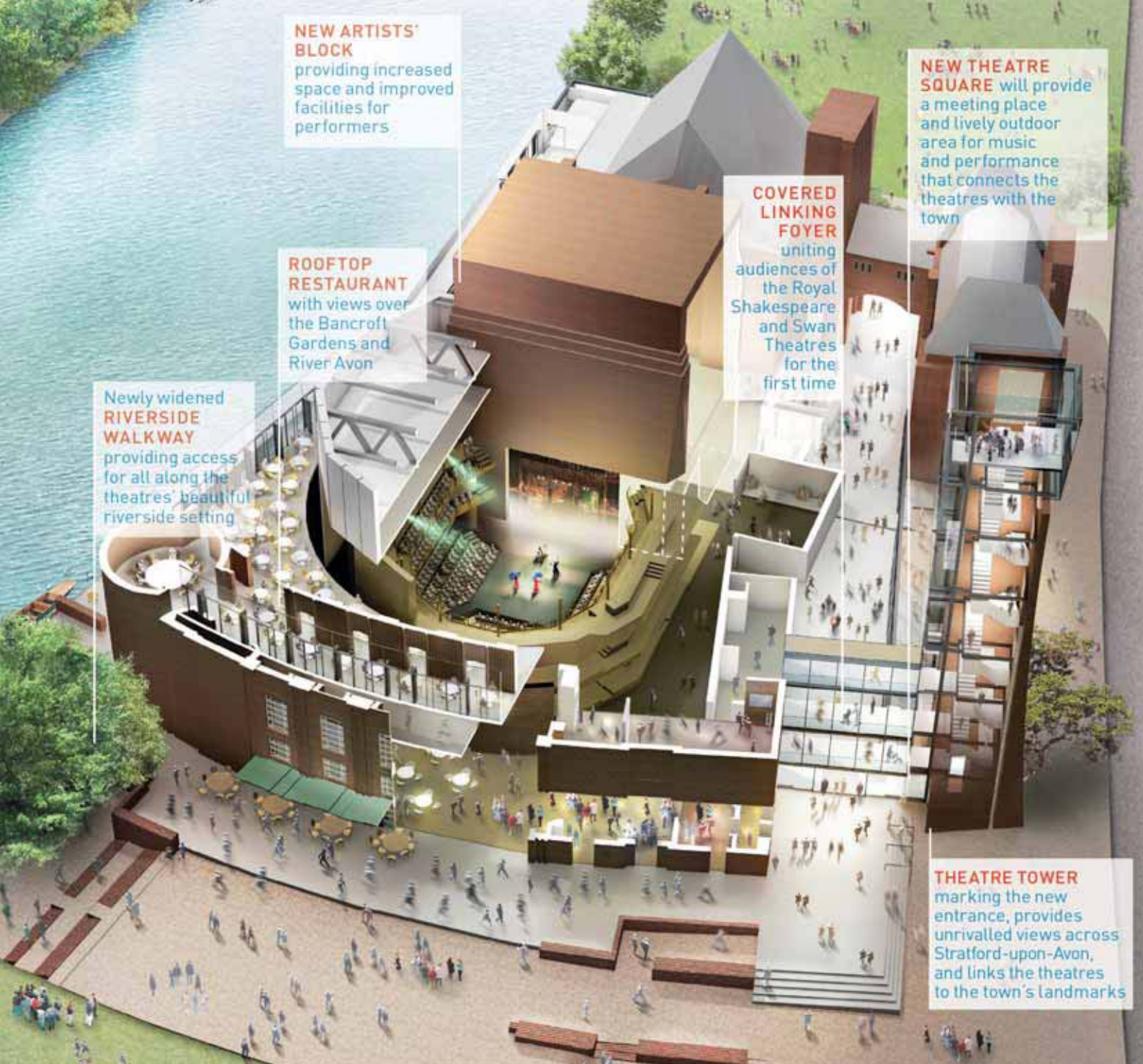
of the Swan Theatre. Since the Swan Theatre was created in the 1980s, the majority of those who direct and perform there have preferred it, and to sustain our ability to present excellent theatre, it was essential that we could replace the cinema style, fan shaped proscenium arch theatre that Elisabeth Scott had designed in the 1930s. The second decision, born of the difficult and all too recent experiences of the former project team that had begun work in the late 1990s, was that our project should transform the RST rather than sweep away all to provide a reconfigurable space that could be any sort of auditorium. This decision has had two consequences. The familiar form of Elisabeth Scott's 1930s building, with its art deco façade, foyers and bars and its brick flytower that has dominated the Stratford riverside for seventy years could be retained and re-used and also,

a subtle but significant sustainability argument, the form that productions can take and therefore the budgets for those productions would be constrained by the form of the theatre.

The adaptive re-use of buildings is often argued to be a practice that is sustainable for obvious reasons – the shell of the building took energy to create and would take energy to dismantle: demolition creates waste that must be disposed of responsibly and that takes yet more energy to achieve. However, one would have to undertake some very complex calculations to be sure that adaptation is a lower energy solution than new build, and then there is the consideration that the old fabric may not perform as well in terms of the conservation of energy as an entirely new structure, so there is the lifetime cost of running the building to consider. How this was tackled by the design team is described later.

Once we decided that our major project involved a conversion, however radical, of the existing buildings, we were faced with those inevitabilities of arts projects – a finite budget and a potentially infinite ambition. The Company's major goal was a well-defined thrust stage auditorium – a prototype for which was already being realised in our temporary home, the Courtyard Theatre, which was to open in 2006. The part that a thrust auditorium plays in the RSC's ambitions to sustain itself in the future is clear: a more intimate space will play its part in engaging, maintaining and developing its audiences and this will also help RSC to attract talented actors and directors in the future. So what else should we need? Income and audience





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**Newly widened RIVERSIDE WALKWAY** providing access for all along the theatres' beautiful riverside setting

**THEATRE TOWER** marking the new entrance, provides unrivalled views across Stratford-upon-Avon, and links the theatres to the town's landmarks

development is never far from the top of an arts organisation's survival agenda and the Company aspired to attract the many visitors to Stratford who don't come for the theatre to at least enter the building. Issues of viability are crucial factors in meeting the core aim of being able to operate successfully in the future. They are being met by our project in a number of ways: by influencing the routes by which people can walk to the theatre; by making the building more "open" and attractive through architectural means, including the extension of the new internal circulation into a viewing tower (flypaper for audiences is how Michael Boyd, our Artistic Director has described it); and by using the RSC's extensive collection of theatre costumes,

props and other memorabilia as an extended display throughout the public areas of the building which, as well as enriching the experience for audiences, also extends the purpose and life of the daytime building for the hoped-for casual visitors to Stratford. Prominent restaurants, cafés and bars extend the daytime offer and, of course, their all-day income will supplement our resources. What could be more sustainable than to extend the usefulness of the building throughout the whole day?

Michael Boyd's avowed intention to build long-term ensemble acting companies also has to be supported and we have not neglected facilities backstage, with new dressing rooms, staff





The original  
Shakespeare  
Memorial Theatre

canteen, green room, alongside improved technical facilities and simplified circulation routes. Not every decision that we have made has been motivated by a “green” agenda – cooling for the new dressing rooms for instance.

I have strayed into the engineering specification of the building and, I suspect in this instance, this is what was expected of me, rather than a wider discourse on sustainability. As clients we understood some of the basic issues: air conditioning the auditorium costs a lot; using tungsten lamps outside of the auditorium is not to be encouraged; we should consider using materials from sustainable sources; we need controls that ensure that lights are not left on when not needed and so forth. We relied upon our design team professionals and in particular upon our architects, Bennetts Associates, and our engineers, Buro Happold, both practices with a good track record in dealing with sustainability. Bennetts Associates are founder members of the Green Building Council. I am indebted to Rab Bennetts of Bennetts Associates and Stephen Jolly of Buro Happold for their contributions to what follows, which I have shamelessly lifted from position papers that they have written! Rab observes that there is widespread consensus that true sustainability requires a balance between economic, social and environmental factors, but the resulting complexity has led to confusion over priorities and the criteria that need to be assessed. To resolve this, his practice places the emphasis on the environmental agenda, with the focus on measurable criteria such as greenhouse gas emissions, water usage and biodiversity. This has been

useful advice, as we have necessarily had to make choices – there is a risk that by wholeheartedly embracing a sustainability agenda, project costs can exceed available funds!

The underlying approach to the reduction of greenhouse gas emissions has been the methodical analysis of the different demands for energy generated by the project, the reduction of these demands, and increased efficiency of the supply of the loads and planning for the future use of low carbon technology. This analysis of supply and demand will allow the ongoing commitment to progressive reduction of carbon emissions through a better understanding of why and where energy will be used in the project over the lifetime of the building and its systems. The project team has undertaken some bench-marking of the performance of other similar buildings to give us targets to exceed.

The RSC is not unusual as a listed theatre. By retaining the important heritage parts of the building, the use of new materials and the production of construction waste will be reduced. The heat loss of the heritage fabric will be upgraded within conservation constraints by adding insulation. The roof will be replaced, whilst other elements will be wrapped in modern construction. An important initiative is the minimisation of uncontrolled ventilation by draught proofing the flytower and refurbishing the heritage windows. This will allow the use of controlled natural ventilation to all perimeter spaces.

Circulation areas will be protected by internal and external lobbies to allow large movements of people between the front of house and the auditorium without unwanted air movement.

The environmental comfort of the audience will be driven by air quality not air temperature. Studies in the original auditorium confirmed the link between carbon dioxide air content and audience dissatisfaction. The fresh-air ventilation rate will be carefully controlled. Too much fresh-air in cold weather will increase the carbon emissions of the building. Increasing the fresh-air ventilation rate in warm weather will reduce cooling energy consumption by allowing the audience to be more tolerant of higher air temperatures. A low-level ventilation system will be used to deliver the fresh-air directly to the seats and remove heat gains and pollutants at source.

Reductions in the demand for production energy will be achieved through the use of the latest lighting and stage equipment technology. Production energy consumption will be monitored to allow a long-term commitment to the progressive reduction of lighting and equipment loads through a better understanding of the dependencies between production designs and carbon emissions. Heat recovery systems will capture the warmth generated by the production and recycle it to reduce the primary energy consumption of the building.

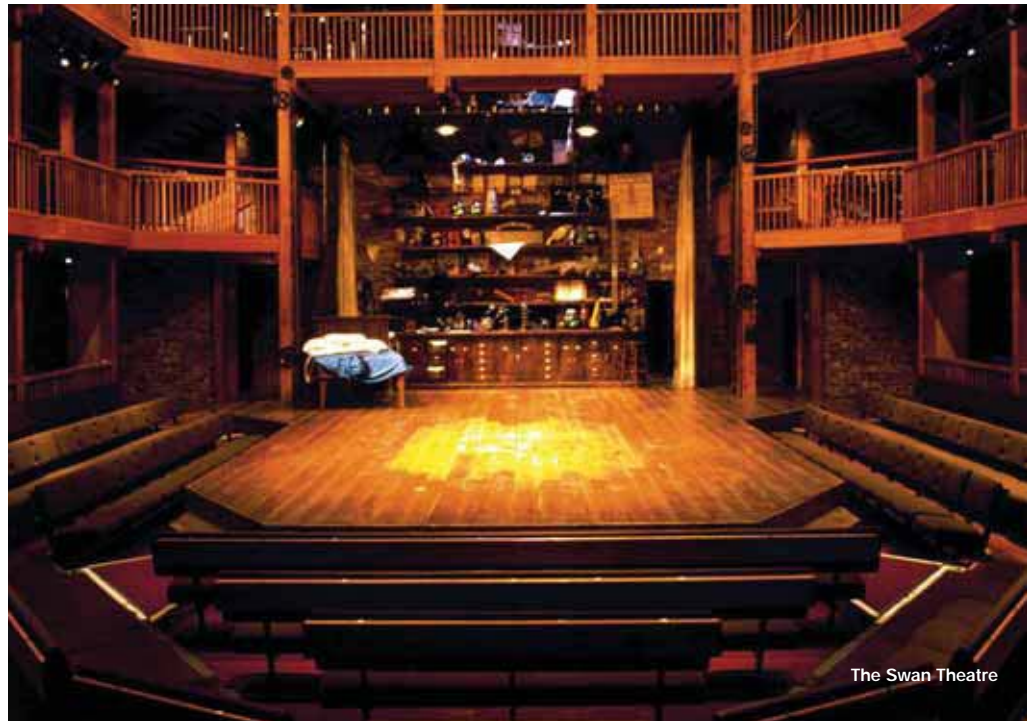
Heating the building fabric and the fresh-air ventilation will be one of the largest energy loads in the project. Low temperature heating systems will be used to allow the efficient future use of heat pumps to generate the heating energy with a high coefficient of performance. Site investigations have confirmed the suitability of the project for the use of a large scale closed loop ground coupling system that will supply over two-thirds of



The original foyer at the Royal Shakespeare Theatre

the heating and cooling energy demand in the future. This initiative – known also as a ground source heat pump – was one that we had really hoped to employ from the re-opening. Unfortunately, the Company could not afford the capital cost which was inflated by the cost of reinstating the landscape – energy is still too cheap to justify such initiatives on running cost savings alone. However, we have protected our future by purchasing the necessary connection and routes through the hard landscaping around the theatres.

As a more general client footnote it is worth adding that we have taken a long-term view of the potential for changes of use and adaptability of the building, from providing alternative servicing positions for our shops, bars and box office facilities, to undertaking a study with our theatre consultants, Charcoalblue, of alternate staging possibilities within the new auditorium, concentrating on shallower thrust and apron stage options similar to the new Rose of Kingston. It has been reassuring that a client requirement that we should not need to remove the roof in another seventy years time in order to accommodate change has been validated by this study. Accepting that change in future is inevitable is a difficult idea for those involved in creating a new building, yet its sustainability depends upon it being a loose fit for the activities that it embraces. There's a wonderful book called *How Buildings Learn: What Happens After They're Built* by Stewart Brand, that is never far from my thoughts when considering the future of the buildings I have been lucky enough to work on. I commend it to you as the ultimate handbook of sustainability in construction.



The Swan Theatre



The RSC's temporary Courtyard Theatre  
Photo: Stewart Hemley