

# From famous foundry to 'supersurgery'

Dr Steve Mann, a partner at the Worcester Street Medical Practice in Stourbridge, describes how he and a number of his GP colleagues have worked with architects, Abacus Architects, and main contractor, Amphion Construction, as well as with a number of local NHS and local authority bodies, to co-ordinate construction of a new GP 'supersurgery' – the realisation of a dream – on the former site of what is believed to be one of England's oldest foundries in the West Midlands town. The architects' view on the scheme, one of the key goals of which is to retain both much of the character, and the unusual original metal sub-structure, of the former foundry, is also given.

**H**ow long does it take to give birth to a lion? This is a question we often asked ourselves as this project – the fruition of a long-held vision for improving healthcare in Stourbridge – later dubbed the Lion Project, for reasons which I shall later explain, came together through the various stages. While an elephant gives birth in 22 months, this baby will, on its scheduled completion this Spring, have taken seven years from concept through to completion.

## No longer fit-for-purpose

To begin the story properly, however, and in 2006, the Partners at Worcester Street Surgery, a large teaching practice with (at the time) 21,000 patients in Stourbridge, concluded that their current collection of buildings could not deliver the healthcare that their patients deserved, and the NHS needed. The practice had grown substantially over the years, and, following the merger of two practices in the late 1960s, and two further ones in the past three years, has expanded into a large practice covering 26,000+ patients working out of five buildings in Stourbridge, two of which are owned by the current partnership, and three of which are leased. While this configuration left the main surgery – which was previously the house of a 'senior partner' from the 1960s, and had been extended three times in the past 15 years – in a single building with two satellite surgeries, it was clear that the 'direction of travel' for primary care would leave these buildings behind as being clearly not fit-for-purpose.

The current building, on two floors without a lift, and with only basic disabled access, no purpose-built nursing area, and



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a complete mixture of consulting rooms, was clearly bursting at the seams. Located in a residential area, patient car parking was never an issue; since it had never been planned, there simply was none.

## Medical education role

In addition to serving its patient population, the current practice has also been heavily involved in medical education, involving both medical students from all five years at Birmingham University, and would-be GPs in training, so space was becoming more and more of an issue.

Since Stourbridge is at the southern end of the Black Country, an area with a deep industrial heritage, it became obvious that any site for development would need to be a brownfield site, as it

would have, necessarily, to be of a substantial size to accommodate both the buildings, and the car parking, that would inevitably be needed.

After much searching, and reviewing of the UDP (Unitary Development Plan) with the local authority, it became clear, after many false starts, that the biggest opportunity lay in redeveloping a Grade II\* listed foundry building, that was luckily under the ownership of a local developer who knew the practice well, and was well versed in the local issues confronting it.

## Clearing the initial hurdles

The first hurdle was that of gaining the approval from what was then the local PCT, which had entered into a LIFT arrangement, so any new building had to be sure not to run foul of an exclusivity

arrangement that had been agreed with the LIFTCo. Once these hurdles had been cleared, the partners spent at least six months meeting most weeks with Birmingham-based Abacus Architects to begin to define the structure, layout, and vision, of the new surgery; Abacus were indeed integral to the design we now have, which is both high quality and distinctive.

### An interesting history

The foundry itself was designed by John Urpeth Rastrick for the eponymous Foster Rastrick and Company in 1820, and at the time was considered a state-of-the-art building due to its pioneering use of 50 foot-long cast iron beams, with wrought iron tie bars running north-south, east-west, and diagonally, throughout, as a supporting framework for its roof. Each tie beam had a central boss adapted to receive a crane post. Cast iron beams, of course, seem logical now, bearing in mind that foundries were hot places to work, and that the flammable wooden beams must have been a source of concern. From this revolutionary building emerged a revolutionary machine, the first steam locomotive to run commercially in the USA, the Stourbridge Lion (hence the name we have given the project), which still resides in Baltimore, on loan from the Smithsonian Institute in Washington DC.

### Growing worker numbers

The foundry also built The Delaware and The Hudson, engines that were to run on the Delaware and Hudson Canal Railroad in America. By the 1820s, the Stourbridge Ironworks had grown to employ over 450 workers, and John Rastrick was using processes to utilise waste heat from the furnaces, seven years before patenting the process; maybe an early 'green revolution' was happening in Stourbridge. By the late 1820s the New Foundry (as it was known) could cope with the largest casting requirements, and displayed competencies to undertake large 'leading edge' projects for which it would become internationally renowned.

Having developed a plan that involved clearly maintaining the exterior elevations of the old foundry, we had protracted negotiations with English Heritage, the local Historical Society, and the Planning Department at Dudley Metropolitan Borough Council. There were many challenges, one of the major design ones being that any extension should reflect the local glass-making heritage, but in no way ape the structure of the old foundry, as



*The development combines conversion of the interior of the existing 19th-century foundry (left of picture) with entirely new-build accommodation.*

this would clearly detract from its importance. Features such as ironwork in the car park should reflect the heritage of the building, while the Environment Agency has stipulated that the River Stour, which forms a boundary to one side of the site, should have works to reduce the flood risk to less than 1 in 100 years.

This, combined with bat, water vole, and grey wagtail surveys, all served to make this a lengthy process, while at our final planning committee hearing there was an appeal to turn the foundry into an exhibition hall, but luckily our application was passed with many stipulations, including a provision for the building of an otter holt. We have yet to meet the otters!

### Languishing on 'at risk' register

The foundry subsequently had a long and productive history through many industrial uses – most recently from the late 1950s through to 2004, when it was occupied by Sidney Smith and Sons, manufacturers of manhole covers and gully grates. When the business finally closed, however, the building was to languish on the 'at risk' register with English Heritage.

Initially the partners were keen to develop the building themselves, in partnership with a developer, but eventually, following in-depth discussion and external advice, the partners declined to follow this route. Amphion Construction, which has wide-ranging experience, is leading the project, in partnership with the eventual landlord and final owner, Primary Health Properties plc (PHP).

### A 'creative constraint'

Weaving a modern, state-of-the-art healthcare facility within the confines of a listed building has, in some way, given this project a constraint, which has proven

creative. The external windows and floor levels have defined the interior layout of the old foundry building, with greater space and height predicated on being able to view the ancient cast steel beams with their supporting cast of tie bars. With a pharmacy set to be accommodated inside the old building, we have aimed for a vision of an internal street within the ground floor, with the consulting rooms sitting off a glazed corridor running the whole length of the building. We have also developed the concept that the ground floor will be the 'illness floor', where routine general practice, nursing, minor injuries etc. will be seen, whereas the first floor will be seen as a 'wellness area' where 'health promotion' will be the main thrust of treatment, as we are all well aware that prevention is better than treatment, as cure is often not an option.

### In good structural shape

Despite the dilapidated state of the original building, it was in good structural shape, so the basic construction was that of a new building, using the listed building as a skin, along with the single-storey consulting pods on one side, and a distinctively modern two-storey extension towards the River Stour.

The major challenges really involved working with the local NHS and District Valuer, to design a building that met value-for-money tests, and then securing funding in the form of reimbursement of lease costs via NHS England, which, as we are all aware, has been involved heavily in a top-down reorganisation over the past two years. The current issues revolve around issues such as IT infrastructure, which are key for modern healthcare, yet there is a lack of clear policy guidance at the level of NHS England, which is the body now holding the reins for primary care estates development.

### Start of construction

The formal construction phase started in October 2012, with a planned completion date of Spring 2014. Basic clearing of the site involved the demolition of two old

Building services are designed to reduce reliance on electric lighting and mechanical ventilation systems, by using natural light and ventilation



Courtesy of Abacus Chartered Architects

Artist's impressions of how the new surgery buildings will appear looking west (left) and looking south.

associated buildings – one, the old foreman's office, had been largely destroyed by fire, and an outhouse on the banks of the River Stour was taken down, as it was beyond repair, and occupied a riverside location that would be affected by works to the river itself. There is a local infestation with the ubiquitous Japanese Knotweed, a subject being addressed thoroughly on every site report. The river itself currently has steep banks, and is, in places, channelled by old brickwork. The plan is that the river will be running inside graded banks, providing a more natural aspect, along with new trees and shrubs. We are applying for public funding for artworks for the riverbanks. There is also a cast iron bridge over the Stour providing another access to our site; this will be reinstated as part of the redevelopment. We have commissioned a stained glass window for the large round window on the front elevation, along with artwork for the interior courtyard gardens to reflect the history and industrial architecture of this iconic building.

### Neglect and vandalism

The foundry, while structurally sound, had been subject to a lot of neglect and vandalism, and one of the major items of work has been the cleaning of the brickwork, undertaken using a mixture of chalk and water to remove paint without damaging the face of the bricks. Several brick arches have been reformed, while a number of distressed bricks needed replacing – not unusual after nearly two centuries. Cosmetically, the transformation of the brickwork and new lime mortar has been amazing. Similarly, so has been the renewal of the massive slate roof, with each slate approximately 16 in by 28 in, half being reused, and half being new to the building.

Due to the fact that the old foundry will be part of the new medical centre, a BREEAM 'Excellent' rating was not felt to be achievable within the economic constraints we had, so BREEAM 'Very Good' is where we are. We investigated ground source heat pumps, but, as documented, the very significant funding

was not available. Subject to the tariffs for solar panels, and agreement with PHP, these are a renewable option we will pursue, since the roof of the extension is ideal for such an application.

### A simple aesthetic

The new wing will follow a simple aesthetic, with the ground floor being set back, contrasting with a terrace and balcony on the first floor. The façade is glazed, with the glass providing solar protection. The consulting pods are simple and single-storey, with sheet metal and glazing forming the walls, and each room overlooking internal courtyard gardens. Sustainability is important – initially by re-using the fabric of an historic building – while some of the new elements will be pre-fabricated, and low maintenance. Building services are designed to reduce reliance on electric lighting and mechanical ventilation systems, by using natural light and ventilation to reduce running costs. The building also has a high thermal mass to reduce temperature variations, supplemented by comfort cooling where essential.

The development as a whole is approximately 3,073 m<sup>2</sup> gross, or 2,694 m<sup>2</sup> net in size, of which slightly under 50 per cent is within the old foundry building. We can only guess at the future of healthcare and its NHS provision, but there is no doubt that more care will be taking place outside hospitals, in community and even home settings, in coming years.

### Synergies offered

This new building will provide a full range of conventional general practice as we understand it. We will have a co-located pharmacy, and clearly synergies will exist between the medical and pharmacy models. We foresee offering services that would historically have been hospital-based, be they outpatients, minor operations, investigations, blood tests, X-rays, or scans. There will be a dental practice, along with an enhancement of our current physiotherapy and counselling services. As an organisation we are keen too to explore collaboration with the third

or voluntary sector, as this will maximise the community benefit of this superb facility. The practice also has a long history of education, which will allow us to capitalise and improve education for health professionals across all spectra at both an undergraduate and postgraduate level, along with running bespoke educational events using the lecture theatre and seminar/board rooms.

### Becoming a reality

As the new building has become reality, there is increasing interest across the healthcare sector in its widest sense around further developments adjacent to us.

There is a large job of work to do in bringing five buildings, their patients, and staff, into a single new building. This has involved both consultation with the public, and our Clinical Commissioning Group, about closing existing surgeries, and the migration to a single site. We have had a major consultation with our staff about the new roles we will need in the new building, and similarly there are ongoing negotiations regarding public transport access to the new facility. Our Travel Plan runs to over 150 pages, detailing every aspect of travel, although there does seem a disconnect between 'green travel plans', and the concept of ill patients arriving at a health facility by anything other than a motor car.

### A learning experience

Being involved in a project of this size and complexity has taught us a great deal. The easy but still very time-consuming lesson is that, even though we have expert architects, you must be involved in every detail to make sure things work for your organisation. Visiting other new surgeries and chatting with the staff there has given us a valuable insight into what will and will not work. Once the vision we had was clear, there was a lot of work in sharing it widely with planners, patients, and staff alike, to try and make dreams reality. We spent a long time reviewing room specifications to make sure that, when contracts went out to tender,



Various aspects of the construction work ongoing at the sizeable site.

we got what we wanted, rather than what someone else thought we wanted. All of this involved many long meetings, some more pleasurable than others, and recently finally choosing interior soft and hard furnishings with a team from TEC72 has been motivating, as it is making the project 'real'. We never thought a doctor's chair could be so exciting.

### Complex NHS structures

The biggest frustration of late has been picking our way through the structures of the NHS, and indeed it has sometimes seemed impossible to get a simple answer to a simple question, as budgets and funding streams etc are anything but clear. NHS England has the major say in GP surgery developments. However, our IT sits with our local hospital NHS Foundation Trust, and other costs sometimes within the same envelope, i.e. IT hardware sits with the CCG, so patience, persistence, and clarity, are all essential, along with good record-keeping of all significant decisions.

### The architects' view

In compiling some key information for the planning application for the new development, the architects, Abacus Architects wrote:

'The foundry building was created as an

engine of industry of its time; its creator intended it to be useful. By conserving the fabric and integrity of the building, we intend to secure this legacy. It is essential that a viable long-term use is secured for the foundry building and the site, which will not only conserve the existing building, but also incorporate long term flexibility.

'These aims will be achieved by the implementation of a design philosophy which involves a loose fit approach to the design of any new insertions. Insertions such as an internal steel frame, M&E systems, and spatial subdivisions, will be designed to have a minimal impact on the fabric of the building. This approach will, by its nature, eliminate any permanent associations the building could have to the new use. There is an opportunity to implement a design in this manner; by securing the long-term flexibility of this building and site we will maintain it as a resource for future generations.

### Maintaining the building's 'strong presence'

'The existing foundry has a strong presence, and we have endeavoured to maintain this status in the framework of the proposed scheme. The historic context will be acknowledged by creation of a new public square, opening up the existing frontage to the river. A new building to the

west frames the edge of this public area, establishing civic presence, and at the same time closing off the existing unattractive view to the west.

'It is important to retain the historical links with the former uses of the site and foundry building. Special features and details will be retained as far as is practical; for example features such as the smoke hoods, crane brackets, and other details, will be retained in certain areas to help maintain a historical reference with the building's past, securing a tangible connection with its historical context, the site, and its surroundings.

### Unusual structural system

'The foundry has a clear span roof with a very unusual structural system, which gave the building an uninterrupted and flexible internal space. The significance and rarity of the roof structure is exploited in the new interior by the integration of the structure into the contemporary interior design. The main entrance leads into a full-height atrium space, which fully exposes the two main trusses in the centre, and the full volume behind the pedimented front. The central spine of the first floor has been designed to reveal the centre sections of the roof trusses, and to take advantage of the line of rooflights to flood this area with natural light.

'The existing roof structures are



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Part of the superstructure taking shape. Completion of the new 'supersurgery' is expected in late March.



The consulting pods at ground floor level have sheet metal and glazing forming the walls.

visually strong, and powerfully impressive, pieces of engineering. By exploiting the opportunity to integrate the new interior with these significant historical structural elements, we believe we can create a legible and dynamic interior.

'The proposed design acknowledges the importance of the existing Grade II listed boundary wall on the southern edge of the site, and retains its independence and integrity, with the repair and replacement of its fabric being kept to a level which will maintain its viability.

### A satisfactory repair structure

'The principal constraint associated with this site is the development of a satisfactory repair strategy for the existing Grade II\* listed building. The successful integration of the new structures is an important component of the proposal, by the careful consideration of their location on the site, their interfaces with the existing foundry building, and the materials to be used. This is to be done with the minimum of compromise to the integrity of the listed building, in terms of its fabric, features, and significance in its setting, while simultaneously developing a solution which will allow the successful creation of a state-of-the-art primary healthcare facility.

'The impact of the new interior in relation to the existing fabric is considered an important consideration. Consequently, the structural frame for the new internal spaces is set within the skin of the existing shell as a structurally independent steel frame, with minimum points of contact with the existing building.

### Design principles

#### The existing building

'Central to the scheme is the retention of the 'New Foundry' building, which will include a comprehensive programme of restoration and repair. Conversion and adaptation from the previous 19th-century industrial usage to a modern healthcare facility will present both challenges and opportunities.

'An important principle of the design is that new interventions should slot within the existing fabric without compromising the integrity of the listed building. The proposal aims to resolve this by way of a contemporary expressed steel and glass structure which will echo the traditions of the foundry building, and the industrial heritage of Stourbridge. The proposed design will open up a section of the building at the entrance and waiting areas to expose the existing roof trusses in a full height volume.

#### Bridge link

'A bridge link across the void will connect first floor medical areas along a new internal street, extending the length of the building naturally lit from above.

'A key aim of the design concept is that the existing building should remain the principal focus. Additional floor space will be required to provide for the needs of a modern healthcare facility. A new wing will be built on a north-south axis, and the rear of the building will have single-storey additions. The scale and massing of the new buildings will be designed so that they are subservient to the existing building.

'In order to retain a clear legibility in the chronology of the various parts, the new buildings will be designed so that they contrast in appearance with the existing building by use of sheet material and glazing in a contemporary style.

#### The new courtyard garden

'At ground floor level, the proposed plan extends into an existing area at the rear, where a series of single-storey consulting pods, separated by open landscaped courtyards, are concealed behind a listed wall adjacent to Lowndes Road. The connection between the listed building and the consulting areas takes the form of a glazed circulation link mirroring the main internal street, with views into the landscape areas. The consulting pods at ground floor are represented as simple, single-storey elements, with areas of sheet

metal and glazing forming the walls.

#### The new wing

'The location of the new wing repeats the axis of the listed footbridge, linking back to the west end of the foundry with a simple controlled aesthetic. Designed over three storeys, the new wing contains an education centre, doctors' rooms, and administration offices. The ground floor contains a gym and ancillary medical services, which will be autonomous units with an independent frontage and entrance to allow for out-of-hours access. The ground floor will accommodate commercial uses set back behind a colonnade.

'A glazed façade is proposed at first floor, with contrasting glazing panels providing solar protection. The solid wall elements express the circulation stairs at the ends of the building, matching the consulting pods in material and colour. The end of the wing exploits views onto the river terminated by an external terrace from the first floor staff room.

#### Contrasting rear elevation

'By contrast, the rear elevation will create a solid wall comprising brickwork and cladding in context with the adjacent 20th-century industrial building. Recessed voids set back from the boundary provide natural light to first and second floor, without compromising fire integrity. The education suite is set back from the perimeter of the building, with a glazed façade, and a deep overhanging roof, which reinforce the relationship of the first floor with the roofline of the existing foundry. At second floor the terrace provides an outside space accessible from the study rooms, which presents a pleasant contrast with the enclosed character of the new wing, squeezed, as it is, hard up against its neighbour.

'The link between the new wing and the listed building will retain the integrity of the existing envelope by repeating the form of the rear extension. The main entrance into the existing building is via the arched opening in the pediment centre section.'