From past to Crescent: Vinci refurbishes a Georgian gem

Vinci has had to do things the traditional way on a complex refurbishment of Buxton's Grade I-listed Crescent and Grade II-listed mineral baths

PROJECT REPORT
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Project Buxton Crescent Hotel & Spa
Value £50m
Contractor Vinci
Structural engineer Aecom
Client Danubius Hotels Group
Start date March 2016
Completion date September 2018

"If you're drinking a bottle of Buxton anywhere in the world, it's sourced from about 3 m behind that wall," says Vinci senior project manager Cary Hadfield.

Standing in Buxton's natural baths, which were built in the 1850s and sit adjacent to the town's historic Georgian-era Crescent, Mr Hadfield relates the story of a previous contractor that ended up disrupting the source of spring water only a few metres away.

"Everything was shut down for an hour while they checked the water and the filtration system, but even then the bill to our client was £180,000."

This puts in perspective how careful Vinci needs to be throughout the programme to bring two of Buxton's most historic buildings back into public use.

The contractor is converting the Grade I-listed Buxton Crescent and the Grade II-natural baths into an 80-bedroom, five-star hotel for client Danubius – and has discovered more than its fair share of surprises.

A Georgian-era gem

Buxton's Crescent, built between 1779 and 1789, is arguably one of the finest buildings of its type in the whole country.

Grade I-listed, it was built by the fifth Duke of Devonshire as part of his attempts to make Buxton England's foremost spa town.

Originally it was used as six typically opulent Georgian homes, and has gone through a number of incarnations since then.

Part of the building acted as a hotel until 1989, while other parts were occupied by Derbyshire County Council, which used it as offices and a public library until these were closed and the council moved away in 1992.

Since then it has sat empty, which almost threatened to be the final chapter for this stunning heritage building.

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> CARY HADFIELD, VINCI

A similar fate befell the adjoining Grade II-listed natural baths, which sit over the source of the town's famous mineral water. They have been largely empty since 1972, with only a tourist office remaining in part of the building until the early 2010s.

But now, Vinci has been tasked with bringing these two listed assets up to 21st-century standards with a comprehensive refurbishment for client Danubius Hotels Group.

The contractor will also erect a new-build element adjoining the Crescent, clad in stonework from the same quarry used for the building's original construction.

This section of the building will act as an indoor-outdoor swimming pool, fed with natural water from the springs below, as well as a sun terrace.

But Vinci has found the project far more complicated than initially expected, as Mr Hadfield explains.

Due to the listed nature of the Crescent building, extensive investigations before works began were impossible, which meant Vinci started the job without a full idea of what to expect.

"The various conservation bodies wouldn't allow any overly intrusive surveys to be done until a building contract had been signed," Mr Hadfield says.

"There was a nervousness that we or the client or someone working on the client's behalf would go in and rip the building to pieces to get a feel for it, and then for whatever reason, the building contract might not get signed."

Into the unknown

Following a two-stage tender process, a contract was eventually finalised and Vinci started on site in March 2015.

Mr Hadfield says Vinci expected the Crescent to be in a poor state, with most of it having been left to rot for nearly 20 years, but the ▶

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CARY HADFIELD, VINCI

team still found progress very slow indeed.

"While we knew we had an old building and expected to do a lot of remedial work, until day one on site when we starting taking floors up and ceilings down, we really didn't know what we were dealing with," he says. "There's no one issue – I could talk about timber rot, masonry failure, floor beams failing – it's an accumulation of those things that makes the project challenging."

Walking around the building, it's clear the structural damage has been immense – most, if not all, of the ceilings are propped up with either temporary works, or new steel or wooden beams – and in many cases, both.

Many original features still remain, and the high-ceilinged rooms retain an aura of their past glories even in their dilapidated state.

Nevertheless, Mr Hadfield explains the firm had to take an incredibly cautious approach to refurbishing the interiors, with most of the ceilings not structurally sound enough to allow working on more than one floor at a time.

The team started on the ground floor, following a rigid sequence to make sure each area of the building would be safe to work in before any full refurbishment works could begin in earnest.

"We would take a ceiling down above us and we would see that not just the floor joists but the structural timber members were in a shocking state – not even good enough for us to go up above and work off to survey the ceiling above that," he adds.

Revised programmes

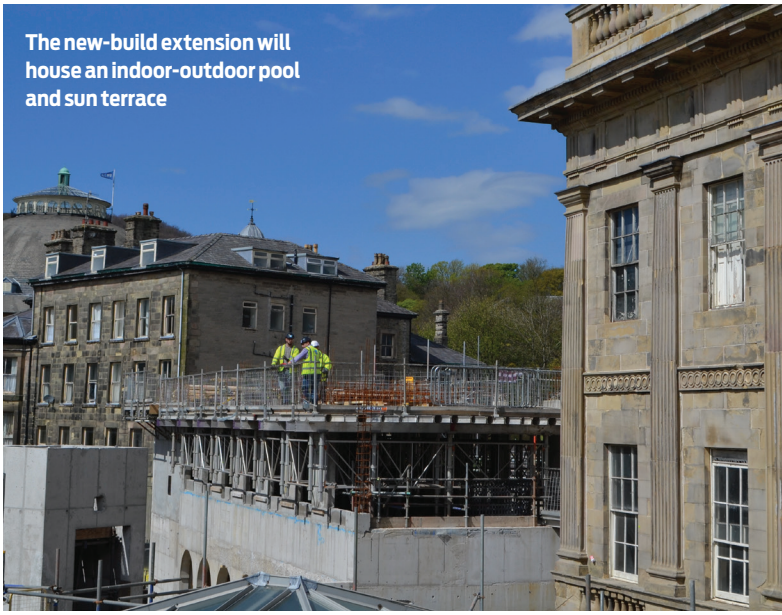
This painstaking approach has guaranteed both quality and safety in the repair works, but Mr Hadfield admits it has taken much longer than initially expected as a result.

"Although we've obviously got a contract programme, it's almost out the window," he says. "We're on revision 18 of that current programme and we're constantly reprogramming for things we find."

At the time of *CN's* visit the programme is at week 61, and Mr Hadfield says the team has still not been able to survey every bit of the Crescent because some of it remains unsafe to access.

"We're probably a good 95 per cent of the way through, as we're up at roof level now, but even so, a year in we expected to be much further on than that."

And while many floors have had to be supported by steel beams, bespoke joinery and temporary works, even getting these materials in has proved difficult (see box).



The new-build extension will house an indoor-outdoor pool and sun terrace

Mr Hadfield explains that the team has been unable to crane-lift anything into the building, with steel beams broken down into sections so they can be safely lifted in by hand. This approach has had to be used across the building, which he describes as "back to the old ways of real, hard manual labour".

And again, the dilapidated condition of the Crescent's interior has made installing these supports all the more difficult.

Away from the main Crescent building, the team has had other headaches to deal with, not least the Buxton spring water that is sourced just a few metres beneath the site.

Both the new-build section of the building and the Grade II-listed natural baths, which Vinci is fully refurbishing as part of the job, sit almost directly above the source.

The water is pumped from here by Nestlé, which bottles it at a plant only a few miles away. With the source a multi-million-pound business so close to the site, the client and the contractor have had to take everything into account during the works.

Any works that are deemed to have an impact on the spring below have to be first planned by a team of four hydrogeologists – two from Nestlé, one from the client and one from the local council – which prepares a method statement for Vinci to work from.

Demolishing by hand

This detailed planning has been particularly vital during construction of the new-build element and refurbishment of the mineral baths, Mr Hadfield says.

"For 200-odd years [the water source] has had the weight of the buildings above keeping everything restrained down at ground level. If we were to suddenly demolish those buildings, there's a real risk that the ground would perhaps not spring open, but certainly there would be some movement.

"If the ground starts to open up slightly, water will take the path of least resistance, so if it suddenly finds an easier way to get from point A to point B, both ourselves and Nestlé have a big problem."

The answer was for Vinci to demolish parts of the existing buildings a section at a time. Existing floor slabs, which were due to be replaced, were knocked down in sections, and the team left the demolition rubble in situ while constructing a new slab above to maintain similar pressure on the ground.

Once a section of the new slab is in, the demolished slab can then

A FEAT OF TEMPORARY WORKS

The poor state of the building's structure meant that getting materials from one floor to the other has proved difficult.

"It's complicated as the floors aren't designed to take heavy loads," Mr Hadfield says. "If we put in a genie hoist and start jacking up a piece of steel, that's a big load you're putting on these floors." As a result, masses of temporary works have had to be used to support the floors while the team has been refurbishing them, which again has been no easy task.

Mr Hadfield admits the number and variety of temporary works had caught the team by surprise, with the non-uniform design of the building meaning that most of the work was delivered using bespoke designs from structural engineers Aecom.

"Whereas normally you would have a design for propping a section of the building which you could just repeat throughout, every time we've come to prop an opening or a beam, it's had slightly different conditions from the one before," he says.

"At one point we had nine full-time temporary works engineers working on this job – I've never seen anything like it."

be removed, which Mr Hadfield admits is a slow process.

Similarly, the team cannot risk applying energy – for example, vibration – into the ground, which would alter the state of the stone and gravel below. This would lead to a similar effect as changing the pressure on the ground from above.

As a consequence, much of the demolition has been done by hand for the new-build element and baths. "What should be a pretty simple structure, while we're able to plan it and programme it, probably takes twice as long as it would do if we were just building this in the middle of a field," Mr Hadfield explains.

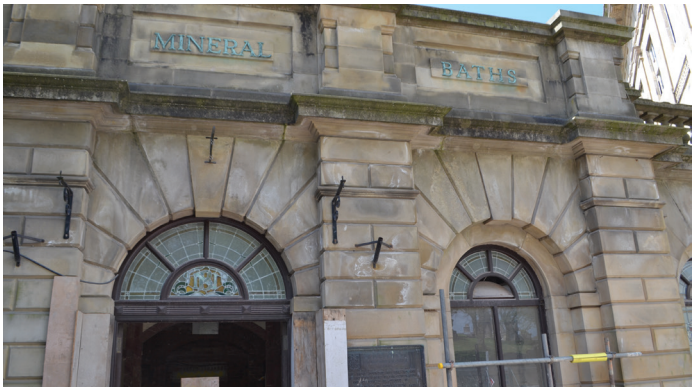
"You can imagine as the four hydrogeologists write the method statements, they're not thinking about costs or programme, they're just thinking about 100 per cent certainty that we're not going to disturb the springs."

This is just one of the various challenges that Vinci has found on the building, which has led the team to a new way of working.

In an industry often forced to innovate to solve problems, Vinci has had to take the opposite approach, such are the restrictions on what can and can't be done.

Mr Hadfield says that although most of Vinci's team comes from a design-and-build background, anyone working on site has had to "reset their approach" to work while on the job. "We're used to solving problems ourselves, but we can't do that here," he says.

"If we try and innovate and do something with the best of intentions, and it goes wrong, nobody's going to thank us. "I've had to drill that into my team from the start: innovation is out the window. Anything we've told you about being innovative and solving problems and thinking for yourself – don't do it here."



The adjoining mineral baths are a Grade II-listed building

For Vinci, it's been all about an old-school approach to a heritage building – hard graft, a meticulous approach and a focus on quality, rather than getting the job done as quickly as possible with modern technology to speed things along the way.

As the team works towards its completion date in September 2018, this traditional approach looks set to stand Vinci in good stead to bring one of Britain's finest heritage assets back to life.

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