A new way of building

Atkins response to 'A City For All Londoners'

To meet London's housing needs, we've said we need 50,000 new homes a year[1]. A challenge in and of itself, but what about the knock on impact to our social infrastructure? Using the GLA's population yield calculator, our planners estimate that 50,000 new homes would also mean building 760 new classrooms for students, and an estimated 140 ha of greenspace (that's a new Hyde Park every year)[2]. Faced with numbers like these, we can no longer think of our infrastructure in isolation, and need to find 'a new way of building'. To do this, we believe we need to:

- Take a wholly integrated approach to our infrastructure;
- Embrace new methods of construction;
- Capitalise on smart technology and data; and
- Make sure we have the skills to deliver.

Integrated infrastructure

Outcome focused delivery

The Mayor has a strong vision of a city that benefits everyone and where no community feels left behind. To achieve this, the construction and engineering sector will need to focus the delivery of infrastructure on outcomes. This means recognising that infrastructure is a means to an end - an enabler of everyday life - and is there to make a positive impact on people's lives. We can no longer deliver just another new building or road. From the earliest stages of planning, we need to be thinking about how our infrastructure can create better outcomes for every Londoner.

For Atkins, excellent infrastructure delivery is about doing it right, doing it once and doing it smarter. We can't do this in today's world without technology or a clear understanding of outcomes. For our industry, this means more collaboration, efficiency and disruptive thinking, and delivering on our promises. It means outcome focused delivery, enabled by technology and data. If we use it right, technology can help us build intelligently and really help London grow and its communities prosper. If we do this in a wholly integrated way - looking not just at a new station or housing development in isolation, but at placemaking, with all of the social infrastructure that creates thriving communities for people to work and live - then we can achieve the Mayor's ambitions for London to be a growing, inclusive city.

London 2012 legacy

For London, 2012 wasn't just a sporting event; it was about creating a lasting legacy and regenerating one of the city's poorest areas. Atkins took an integrated approach to delivering our work on 2012, looking not only at the buildings but at everything that goes between them, what we call 'development infrastructure'. So our work wasn't just about stadiums, it was about the social elements that create spaces that complement people's lifestyles and achieve social and physical wellbeing. By focusing on outcomes, the Park has become the heart of east London, a thriving place of continual growth and renewal.

New methods of construction

Offsite construction

London is facing a huge infrastructure gap. We need 50,000 new homes a year just to ensure that every Londoner has somewhere to call home. Our transportation networks are already at capacity, and with

[1] Atkins is a campaign partner for London First's Fifty Thousands Homes campaign, a campaign to get support and real action to address London's housing shortage **fiftythousandhomes.london**.

[2] Based on our experience in London we've assumed for open space 1.2ha per / 1000 population.

London's population expected to reach 12 million by 2050[3], people won't be able to get around the city for work and leisure. Our schools are also struggling to keep up with demand, with an estimated 507 new schools needed by 2020[4].

We do not believe we can continue to address these challenges within the constraints of traditional methods of construction. We need to look to new methods, like offsite, pre-fabricated solutions, to deliver what the city needs in the times and costs required. We also believe that we don't have to sacrifice quality to do this. Our experience has shown us that buildings built offsite can offer just as good outcomes for the people who use them, providing comfortable, flexible and high quality spaces to live, work, travel and learn.

The possibilities that offsite construction methods can offer have already begun to present genuine, lasting and cost-effective solutions to some seemingly intractable problems: housing shortages in areas of high population density; the need to update dilapidated school stock in these straitened times; and delivering robust buildings for engineering and military projects, often in hostile environments.

Custom House Station

Our strategy for the construction of Crossrail's Custom House Station included pre-fabricated components constructed offsite. By doing this, we were able to minimise work on site, drive down programme time and preliminary costs and reduce the impact on the local community. We were able to do this with fewer deliveries and vehicle movements around the site, lessening the impact on air quality and noise. Constructing components offsite also ensured more consistent and high quality production. This approach can and has been used on schools, houses and other buildings that need to be constructed quickly and cost effectively, without compromising quality.

Flexible, mixed-use developments

The Mayor calls for a greater emphasis on mixed-use spaces. We believe a way to achieve this is by treating new developments as 'curated clusters'. A curated cluster is a mixed use urban environment that is 'curated' to select the best of what is currently there (be it jobs, character or townscape) whilst being active in attracting new uses and employment sectors. It is an intensely used, high quality and vibrant urban environment that is flexible and adaptable to how people will live and work in future, and is continually curated to ensure it remains a place that meets evolving challenges.

The outcomes we can achieve by managing developments in this way include: establishing conditions to support SMEs (particularly in new growth sectors like creative and technology industries), providing new and affordable kinds of workspaces and ways of working, creating spaces with flexible terms and leases and temporary uses, and creating communities that are green, walkable and full of character. The curated cluster process also sets up new developments so that their 'health' (measured by jobs, community and environment) is continually monitored and managed through the latest technology.

Capitalising on smart technology and data

Intelligent mobility

As 'A City For All Londoners' makes clear, transportation does not exist in isolation. London's integrated transport network, underpinned by Oyster, provides a world-class opportunity to bring better connectivity between people, place, work, retail, social and environmental factors. This connectivity must be designed as part of a 'whole system' approach to city planning linking housing and transportation, so Londoners can live, work and enjoy the full breadth the city has to offer via an integrated network designed around effectiveness, inclusion, ease and fairness.

[3] Estimation from Atkins' Future Proofing London report.
[4] Estimation from Scape Group The School Places Challenge report.

Taking what we call an 'intelligent mobility' approach to the physical connectivity which London's integrated networks provide would see London harness the data that network users already provide to inform housing, employment and public realm investment decisions. It could also see driverless vehicles on the road network, easing congestion and improving efficiency as they do not require parking spaces, can use bus lanes and run at optimal efficiency. Twinned with low emission technology, driverless vehicles also reduce the impact on the environment, meaning clean vehicles can run close to new housing developments.

We believe this integrated, low emission network can be delivered through Oyster and controlled centrally by a strategic command function, linking transportation, work, place and other factors into one data driven city network that can manage peak loading, events and incidents and ensure an efficient, safe and clean city for all Londoners.

Intelligent mobility in action

Although a future-focused initiative, intelligent mobility programmes are already starting to shape London. For example, the 'Smarter London' programme, which is looking to sensor-enable most of the city, and use a central data platform to manage the city. TfL has also initiated trials of driverless cars in London using 100 Volvo CAVs (Connected Autonomous Vehicles).

The skills to deliver

A stronger link between education and businesses

For years the construction and engineering sector has faced a serious skills deficit. The *Engineering UK 2016: The State of Engineering* report found that between 2012 and 2022 "engineering companies will need to recruit 2.56 million people: with 257,000 of them being new vacancies." As our industry is called on to deliver more for London, we must ensure we can attract and provide the right skills to create a workforce that can deliver London's infrastructure needs.

'A City For All Londoners' says that London has a relatively high rate of youth unemployment. Surely an industry looking for employees and young people looking for employment is a match made in heaven? Unfortunately skills are the major blocker here; with fewer young people studying STEM subjects, the young people desperate for jobs don't have the skills we as employers need. As an engineering firm, we can't lower our standards for skilled employees, but we can help level the playing field, so that kids from less advantaged areas can compete equally. We've had great success already through our Pathways to Engineering programme (described below) with eight young people from East London joining Atkins as apprentices following our first intake of interns during the Olympic Games. What we're now looking for is other companies to sign up to this or similar schemes. If the GLA were to sponsor schemes like this, and we were to get just an additional 50 companies on board, that's at least 400 more young people from disadvantaged backgrounds finding not only employment, but a career every year in London.

Pathways to Engineering

Run in partnership with Citizens UK, Pathways to Engineering provides engineering work experience, training and support to young people to help them jumpstart a career in engineering, with all students given the opportunity to apply for an apprenticeship with Atkins upon the successful completion of the programme. The students, who come from east London schools and colleges, will be provided several employability and engineering sessions throughout their school year, giving them the experience and empowerment they need to apply for work experiences and apprenticeships with companies like Atkins.

With the Mayor now controlling further education, we feel the promotion and implementation of STEM training must be a priority, and the best way to achieve this is through a stronger link between education and businesses. This can be in the form of apprenticeships delivered in association with further education institutions or preparatory programmes like Pathways that are led by businesses. We are already seeing a positive movement toward this, with the Government's post 16 skills plan focusing much more on workplace skills. Even following the college-based technical route will now require young people to spend time in industry

on work placements. What we need the Government to do is to make it easier for companies to train apprentices in the workplace. Some public sector frameworks make it hard for people to be billed to their projects when they only work four days a week, dissuading companies from putting apprentices on some of the biggest and most interesting projects. If we demand our companies to take on more apprentices, we must also enable this within our contracts