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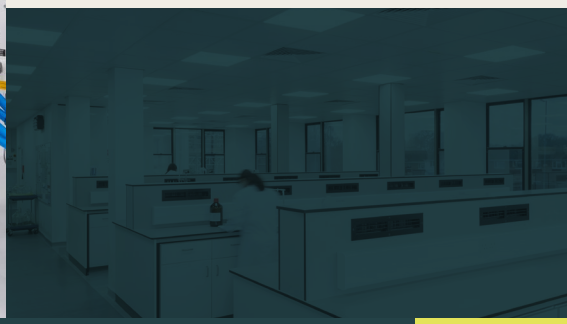

Laboratory & Controlled Environments Guide

Helping you find the right formula for your scientific space.

area

UKSPA
BUILDING · TECHNOLOGY · BUSINESS

Like pioneering research on the most prestigious benches, the lab space is evolving.

This may sound like nothing new for an industry at the forefront of change, but the events of the past few years have propelled life sciences into the future. Today, this rapidly-growing sector is one that many organisations are now looking to transition into. But from finding a building that's fit for purpose to the latest "smart lab" technology, there's so much to consider.

Area is one of the UK and Europe's leading and most progressive laboratory design and fit-out specialists. We have an established track record of working within the pharmaceutical sector and our deep understanding of designing and building accredited laboratory spaces is second to none. From cutting-edge research laboratories to hard-working controlled environments, we've designed and built them all. This specialist knowledge and experience help our clients save time, money and improve quality control - all whilst achieving an aesthetically-pleasing laboratory space that's future-proofed for years to come.

So if you're looking to create a new controlled environment for your business, this guide will equip you with all the information you need. Helping you prepare a laboratory space that's fit for today and ready for the challenges of tomorrow.

Our clients include:

Abbott · GILEAD · Alere · ThermoFisher SCIENTIFIC · TwistDx · BD · Lonza · SARTORIUS

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Key factors to consider when selecting a building for laboratory space

1

Pull together a URS & business plan

Essentially, a user requirements schedule (URS) is the car manual for your lab. It comprehensively identifies exactly what the system is and what it needs to do. Not only will it inform the way you select, develop and implement your solution, but it'll help measure its success too.

But whether you're a startup or an established organisation, you'll also need to put together an ironclad business plan. This ensures everyone involved has a strong understanding of the laboratory's objectives, financial data and competitors.

Will your lab also be occupied by one business or take a more collaborative approach? Despite being once limited to university-level researchers, "rent a bench" has become much more popular in the last couple of years and could be something to consider.

Compile all this information and you'll be well-informed to embark on the next phase: finding the right space.

2

Select a building fit-for-purpose

Office-to-lab transitions can be tricky because there's so much to consider. More often than not, buildings developed in line with BCO guidelines will not provide the facilities or services to support many laboratory environments. For example, the standard office floor-to-ceiling height is often too short and labs also require much larger duct routes. You'll also need to ensure the windows are properly sealed and the building has loading bays that are capable of taking much larger deliveries. Make sure you check the water and drainage facilities too.

With all this in mind, consider what activities are going to be performed in the space and then decide whether that activity can be carried out within a standard office building. If the building infrastructure and its structural capacity aren't fit-for-purpose, you may require a more specialised space.

3

Mechanical & electrical services (M&E)

Are the current heating, ventilation and conditioning (HVAC) facilities suitable for a laboratory environment? Do you have enough available power? What about backup generators and thermal capacity? Take the time to consider all of the M&E services you require to support the various laboratory activities you'll be carrying out in the space. Detailed planning with your project team will ensure that services such as emergency lighting systems, heating systems, security access control and fire protection systems are added to the design (where appropriate). Furthermore, specialist laboratory requirements - including gas storage and delivery, fume extraction and general air handling - should also be explored.

4

Lease obligations

Importantly, ensure there are no lease obligations that preclude you from undertaking certain activities in the building. Some leases may not allow the production, manufacture and storage of some materials. Consequently, this must be investigated as part of the acquisition.

5

Business growth & extension possibilities

Is the activity going to be the same for the lifespan of the lease? If you will require supplementary plant space and additional mechanical and electrical services in the future, make sure your selected building will be able to support these requirements. Take a good look at the floor print beforehand - that includes the roof. Is there space for extended areas if you decide to extend your operations?

6

Future proofing

Along with ensuring you have the right amount of space for today and tomorrow, ensure you've incorporated the latest technology. This doesn't have to be cutting-edge tech; instead, it could mean centralising your system so that information is readily accessible from anywhere. This same solution could allow researchers to book a bench in your lab environment - similar to co-working spaces. Remote working isn't going away so it's a good idea to ensure your laboratory space is ready for it.

7

Seek early advice

We'd always advise seeking early advice *prior* to selecting a building. Along with your chosen project team, you'll be able to explore the points above and select a building that meets your requirements; one that can support all activities undertaken in that space.

8

Environmental impact

There are a number of potential disruptions that could affect your neighbouring environment - as well as other businesses. Therefore, as part of the planning process, an environmental assessment should be carried out. This will ensure factors such as air quality, noise, and potential delivery issues - including the transportation of harmful chemicals - will not be an issue.

9

Sustainability

According to Harvard research, a standard laboratory uses five times as much energy and water per square foot as a typical office building. Factoring this in and looking at ways to lower your consumption early on can radically reduce your carbon footprint. Also, make sure you reuse as much existing space as you can before starting any bespoke construction.

02

10 key opportunities in lab design & how to achieve them

The boom in science and innovation was already underway long before the pandemic. However, the last couple of years has seen a real surge in the marketplace.

As countless offices sit empty due to remote working, many saw this as the perfect opportunity to transform these spaces into something scientific. Although this process is not without its challenges, the key to success here is preparation. With that in mind, here are 10 key opportunities in lab design and, most importantly, how to achieve them.

Laboratory & Controlled Environments Guide

01

Opportunity: Rule with regulations & regionality

Depending on where you're planning on building your infrastructure and what activities you'll be carrying out in the lab, there may be different rules and regulations you'll need to follow, e.g. from the Food and Drink Association (FDA) in the US or the Medicines and Healthcare Products Regulatory Agency (MHRA) in the UK.

How to get there:

Factor in adequate time to do the research in your area. That way, you'll fully understand what's involved and how to apply their processes. The good thing is that when you're working with Area, we take care of all of this for you. That means every box is ticked - no stone left unturned.

02

Opportunity: Join a growing movement

According to a report from Newmark, the industry's rapid growth has created a need for 34% more lab space than in 2020. At this point, there's no doubt that this is a growing movement well worth being a part of. Just bear in mind that this may be great news for the marketplace, but it also puts huge pressure on stocks and supplies. Don't worry, we've got you covered.

How to get there:

Today, forward-planning is more crucial than ever before. So make sure that you research supply options - with a solid 'Plan B' in place - and give yourself plenty of leeway on timings. We're always on hand with expert and timely advice, whenever you need it.

03

Opportunity: Hit the ground running

With so much involved in preparing a laboratory, time's always going to be an issue - it's unavoidable. But with enough pre-preparation, there's no need for timings to slow you down.

How to get there:

Just make sure you've factored in ample time to plan and implement the project. It can currently take around 9-12 months to transition an office space into a lab environment - so early planning is crucial.

04

Opportunity: Become accredited by the best in class

To stand out and show your pedigree, this process shouldn't be overlooked. Because it may not always be mandatory but it is recommended. It can be a lengthy process to get to where you need but don't worry, it's all in the planning.

How to get there:

Just factor in adequate time before kicking off. How long does accreditation take? This varies depending on the laboratory environment but can be a 3-4 month process in an office-laboratory refurbishment. But depending on the exact specification and accreditations, it can take even longer. For example, it can take a laboratory six months to one year just to prepare for the UKAS ISO/IEC 17025 accreditation assessment. After that, it takes approximately 8 weeks to complete.

05

Opportunity: Get the best out of your space

Along with the technical and regulatory considerations, you'll need to consider what the function of the space will be used for. But with so much involved, where do you start?

How to get there:

As part of the analysis stage, assess what facilities will best support the activity being undertaken in that space. Also, take some time to consider the number and the type of people who will be using it. A solid workplace analysis process will help establish this.

06

Opportunity: Strike a balance between client-facing facilities & back-of-house spaces

In terms of design, there's often a disparity between what clients see and what's "behind the scenes". To help promote products to clients, forward-facing facilities, e.g. demonstration spaces, evaluation rooms and glass pods for testing, are often designed to a higher specification than the more functional back-of-house facilities. But whatever field you're in, the overall brand experience just can't be overlooked; to promote a sense of authority and expertise, all aspects of your space must be singing from the same hymn sheet. Get this down and you'll be sure to stand out from the crowd.

How to get there:

To ensure the laboratory spaces are visibly appealing to your clients, as well as being aligned to accompanying office workspaces, carefully select the worktops, graphics and flooring finishes. These details might seem small but when they're added together, they make a huge difference in how your brand's perceived on the outside.

07

Opportunity: Reuse & relocate existing equipment & machinery

Reusing equipment from your existing facility is both cost-effective and more sustainable. However, it can be a lengthy process to make sure everything is transported to your new location and not damaged along the way. It's OK, though, don't let that stop you.

How to get there:

Just ensure you get a trusted moving partner on board early to help with the relocation planning of expensive equipment and machinery. Inspect their processes rigorously and ask about insurance if goods get damaged in transit.

08

Opportunity: Go forensic with change control

Whether you're moving equipment, installing/updating systems or implementing brand new processes, you'll need to allow for change control. This is a systematic method to assess the impact of any change on the laboratory's procedures, outputs and services.

How to get there:

Block out time in the project to get this done. It can take up to 3-4 months to effectively connect the dots, ensuring everything aspect of operations is quality assured - so start early.

09

Opportunity: Set the standard in sustainability

From reusing plastic and glassware to participating in LEAF and "take back" schemes, there are now many steps you can take towards becoming a more sustainable lab. One of which is making a conscious choice around the suppliers you work with.

How to get there

At Area, sustainability is one of our highest priorities. With that in mind, we always ensure our materials are responsibly sourced, reused and repurposed (where possible). So whatever we use, it's guaranteed to stand the test of time.

10

Opportunity: Make cost savings (without cutting quality)

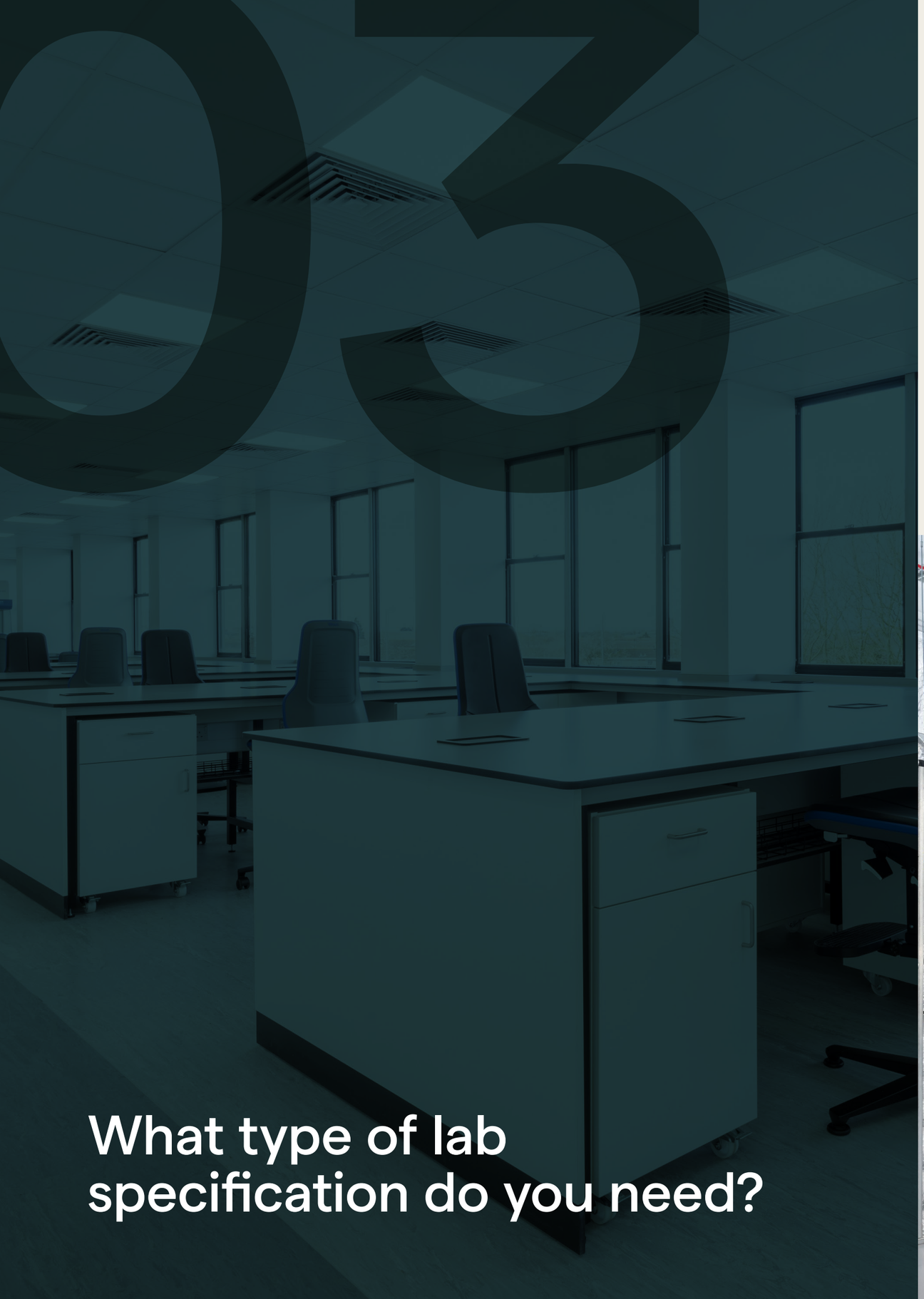
With all this in mind, laboratory spaces are not cheap to build. Costs can quickly get out of control and leave businesses in debt or without essential items if finances are not tightly managed. Don't worry, we can help steer you in the right direction so there are no nasty surprises down the line.

How to get there

Take a look at our lab specification guide on the following page to give you a steer on what type of lab space you'll need and get a clear idea of the costs involved.

As you've probably gathered from reading this far, there's no 'one-size-fits-all' for laboratory environments. However, we can give you an idea of the sort of space you'll need with the following specification.

Just look at the lists below to see if your requirements suit a **low**, **medium** or **high** lab specification. Obviously, the increase in specification, the increase in time, costs and resources. Crucially, working this into your plan now will help you understand what's required to execute your project.



What type of lab specification do you need?

Low-spec Lab

Containment Level 1 (CL 1) for low-risk work involving Group 1 biological agents, Biosafety Level (BSL) 1 genetically modified microorganisms and genetically modified animals or plants.

- Biosafety Hazard 1 – microorganisms that are considered to be BSL-1 are not known to cause disease in healthy adults and therefore present minimal health or safety risks
- Cellularised lab areas
- Modifications to standard air conditioning and ventilation system
- Additional lighting
- Medium specification flooring
- Multiple power and data points
- Specialist equipment
- PPE requirements (own clothes, no need to wear PPE)
- Disinfection – never a need to decontaminate an entire space
- Cross-contamination control (low risk)
- Handling systems – standard specification
- Drainage – standard building drainage systems
- The complexity of lab equipment – bench-top equipment
- Lighting control – standard lighting
- Airflow – normal base-build systems
- Lab gases – N/A
- Accreditations – N/A
- Operating/emergency procedures – standard life support, e.g. fire alarms

Medium-spec Lab

Containment Level 2 (CL 2) for medium-risk work involving Group 2 biological agents, Biosafety Level (BSL) 2 genetically modified microorganisms and genetically modified animals or plants.

- Biosafety Hazard 2 – microorganisms that are considered to be BSL-2 pose a moderate risk. Examples of BSL-2 microbes are HIV and hepatitis B
- Cellularised lab areas
- Slab to slab walls
- Separate ventilation system
- Air pressure cascade
- Additional specialist lighting
- Hard cleanable flooring resistant to chemicals
- Multiple power types, connections and data requirements
- Secure access and egress
- Specialist equipment and finishes
- PPE – cover-up outerwear and using low-level personal protection
- Disinfection – wash-down
- Handling systems – dedicated extract
- Drainage – bespoke drain connecting to building drainage
- Basic humidity control
- The complexity of lab equipment – free-standing equipment which still fits within normal office space
- Clean rooms – class 1 clean rooms, possible dirty room user (HEPA filtration)
- Lighting – controllable light spectrum
- Airflow – turbulent or not all laminar airflow
- Lab gases – bottled
- Accreditations – self-assessment
- Operating/emergency procedures – sprinkler systems, drench showers, powder showers, air curtains, etc.
- Shared Autoclaves

High-spec Lab

Containment Level 3 (CL 3) for high-risk work involving Group 3 biological agents, Biosafety Level (BSL) 3 genetically modified microorganisms and genetically modified animals or plants.

- Biosafety Hazard 3 - microorganisms that are considered to be BSL-3 can cause serious or potentially lethal diseases through respiratory transmission. An example of a BSL-3 microbe is Mycobacterium tuberculosis (the bacteria that causes tuberculosis)
- Slab to slab walls
- Hermetically sealed lab areas with cleaning agents such as Hydrogen Peroxide Vapour (HPV)
- Airlock entry (risk assessed)
- Separate ventilation system with HEPA/ UV filtration
- Additional lighting
- Seamless, disinfectant resistant, hard flooring
- Multiple power and data points
- Secure access and egress – touch-free (retinal scanning, facial recognition or motion control)
- Specialist equipment and finishes
- PPE – changing facilities, disposable lab clothing, ventilators, Tyvek suits
- Biosafety hazard – controlled substances, DNA/ genome level molecules, bio weaponry, disease management
- Disinfection – complete room or lab with base-build services
- Cross-contamination – manufacturing process rather than R&D
- Handling systems – internal transportation methods (driving air from one area to another)
- Drainage – site-wide dedicated drainage system
- Humidity control – sealed rooms for the lowest humidity
- Complexity – large, dedicated equipment with size and weight requirements
- Clean rooms – classes 2, 3 & 5, complex molecular filtering requirements
- Lighting – UV light systems, dark rooms
- Airflow – bespoke pressurised air environments
- Lab gases – direct serve (piped-in system)
- Accreditations – ISO level, for example, 17025, 15189, 17025
- Operating/emergency procedures – gas suppression and outbreak control
- Dedicated Autoclaves
- Decontamination shower
- Inactivation of GMMs in effluent from handwashing sinks and showers and similar effluents
- High IP-rated sockets and conduits
- Observation windows

Note: Biosafety Hazard 4 (BSL-4) - the microorganisms that are considered to be BSL-4 pose a high risk of aerosol-transmitted infections, “Infections caused by these microbes are frequently fatal and without treatment or vaccines.” Examples of BSL-4 microbes include Marburg viruses and Ebola. These types of high-end labs are rare and need dedicated suppliers to design and build.

04

The sustainability of science - how to balance the equation

Resource-intensive spaces can sometimes leave large carbon footprints. But this fact hasn’t been lost on the scientific community; one that’s well-known for creating innovative solutions to some of the world’s most pressing problems.

With climate concerns growing, so too are the ways in which you can reduce your carbon footprint. With that in mind, here are just some of the ways you can create a more sustainable space for your science.

8 steps toward a more sustainable lab

1. **Order from sustainable suppliers** - from green chemistry to waste reduction, there now are countless vendors that consider the “full lifecycle” of lab supplies. Just look for the sustainable stamp of approval from registered accreditors, e.g. ACT.

2. **Use renewable resources** - construction material-related emissions account for 28% of the total global emissions from buildings and the construction sector. That’s why Area always endeavours to use renewable resources where possible, e.g. ferrock, recycled steel and insulated concrete forms.

3. **Invest in insulation** - heating energy accounts for about 20% of the UK’s total carbon emissions. The good news is that insulating your building can radically reduce the amount of fuel needed to heat it and lower its carbon emissions. This is something we consider from the offset.

4. **Only order when necessary** - reducing wasteful ordering is a massive plus for the environment. It’s easy to lose track in a lab environment but resources like the Biolabs freezer program and Rheaply Asset Exchange Manager are designed to help scientists keep track of and share their resources.

5. **Dispose of chemical waste responsibly** - it goes without saying that this should never be flushed down the drain or thrown in the trash. Not sure which chemicals are harmful? You can find more information on identifying hazardous waste and the Hazardous Waste Regulations on the Environment Agency website.

6. **Use glass (and recycle plastic)** - when it’s taken care of, glass can be used over and over again. So although glass is more expensive to buy at first, it’ll save your operation money in the long run. However, if you do have to use some plastic materials, make sure these are recycled appropriately.

7. **Conserve energy where you can** - there are numerous ways you can do this - mostly by making minor adjustments. Add “turn off” stickers to any appliance that can be switched off when you leave. Try installing timers on the plug sockets for water baths, film developers and other pieces of kit. This will allow them to come on automatically during normal working hours but save energy at other times. Make sure computers are powered down overnight, whilst other bits of equipment can be adjusted to lower power modes when they’re not being used. Finally, the very simple act of closing a fume hood can have a huge environmental impact.

8. **Integrate renewable energy** - solar PV panels are widely becoming the climate-friendly form of renewable technology. That’s because solar power only needs clean water to function and doesn’t release any greenhouse gases. We’re now working with clients that have opted for solar arrays in their laboratory spaces.

Case study: Creating a more sustainable space for science

Client: Xerimis
Location: Schiphol, Netherlands

Xerimis partnered with Area to help them deliver a new environmentally-sustainable logistics centre in the Netherlands. Located near Schiphol Airport, this 45,000 sq ft site would act as their next global hub. It would allow the organisation to increase their capabilities and satisfy the growing needs of its customers worldwide.

Driven by sustainability, integration and innovation, we embarked on an intensive 6-month co-design phase. This was an iterative process where specialised machinery was organised and tested to ensure optimum functionality and compatibility within the space. We also ensured every element adhered to strict GMP (Good Manufacturing Process) standards. To support process workflow, a new mezzanine was installed – catering for future expansion.

Making the best use of space, the new Schiphol site is the result of two existing warehouse units integrated into one production and warehouse facility. With sustainability at its core, natural materials were incorporated wherever possible.

Despite high-power usage requirements on-site, Xerimis was focused on making things as energy-efficient as possible. With that in mind, we installed a solar array which generated over 200 KvA of electricity for the facility. This network is also supported by a backup battery system, with redundancy power that ensures consistent temperatures for vaccine storage.

This infrastructure allowed the facility to efficiently power the production floor, its “drive-in” fridges and freezers and all of the modular ultra-cold rooms. These could consistently keep vaccines as cold as 80 degrees Celsius - the optimum temp to combat COVID-19.

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“We are very proud to be supporting Xerimis’ growth strategy with our dedicated team providing a consistent service and delivery process in line with the intricacies of local codes, statutory requirements and regulations. This project and collaborative delivery process have truly epitomised our core values of responsibility, honesty and innovation.”

Lee Day
Director, European Projects
Area

05

The future for laboratory & controlled environments

Life science is big business - and it's only set to grow.

London and its regional network are currently home to nearly 50% of the UK's life sciences companies. It has four of the world's top ten universities, nineteen of the top twenty global pharmaceutical companies and some of the world's leading research centres. Notable names include the Francis Crick Institute, Harwell Campus Oxford, and Sanger Institute Cambridge.

Staggeringly, this Oxford-Cambridge Arc - commonly known as 'The Golden Triangle' - currently accounts for 7% of England's economic output and supports over two million jobs. Forecasts predict that this is set to grow to £235 billion by 2030.

That's because universities in the Golden Triangle are responsible for the biggest supply of graduate and post-graduate talent. In fact, more than 185,000 life-sciences students study here - with over 55,000 annual graduates. Without question, this is the largest life-sciences talent pool in Europe; future talent that's both driving innovation and offering world-class research for commercialisation.

Most notably, this region was the birthplace of the Oxford/AstraZeneca vaccine; a crucial component in turning the tide on coronavirus. But the pandemic and its resulting lockdowns also created another phenomenon in life sciences: collaboration.

Today, organisations are becoming less and less precious about intellectual property. Because if COVID-19 taught us anything, it's that there's value in collaborating.

In particular, MedCity has been vital in establishing a 'front-door' to the life sciences sector in London, Cambridge and Oxford. Working with industry, SMEs, investors, academia and government, it's responsible for empowering collaboration in the sector. Since its inception in 2014, Med City has been transforming innovations into commercial products that both benefit patients and the economy. Essentially, there's never been a more exciting time to join the life sciences space.

With that in mind, here are the top future trends to watch out for in the industry. Helping ensure you're business is prepared for tomorrow - and is ready to thrive in it.

01 Flexible labs mean faster R&D

Much like traditional co-working spaces, when lab spaces can be rearranged and opened up for more researchers, they encourage faster and more effective research and development (R&D).

Over the next year or so, we predict that there will be a continued shift from dedicated lab benches to spaces that can be "rented" by researchers on an ad-hoc basis. In fact, many developers are already taking inspiration from modern offices; more and more flexible labs include movable benches and "plug-and-play" research equipment.

02 Cloud-based collaboration from anywhere

The past few years taught us that a remote model is a viable option - and not just for office workers. More and more labs are relying on cloud-based technology to facilitate faster drug development and other types of R&D. That's because it's quicker, more secure and allows for agile ways of working. Crucially, it can centralise vast amounts of data which has countless benefits for researchers around the world. But this isn't the only tech that's transforming the way researchers work.

03 Tomorrow's smart labs automate processes

As technology accelerates at a rapid rate, we'll also see more life science organisations create their own "smart labs". Advances in automation, robotics and artificial intelligence (AI) have spurred the invention of a number of useful lab-based tools. These include sample freezers powered by sensors, lab benches that clean themselves and smart safety goggles that display useful information in real-time. Watch this space, these innovative tools are likely to become readily available in future.

The good thing is that there's already an incentive for innovative companies to get involved in science and technology. And their projects don't even need to be successful to reap the rewards.

04

R&D tax relief

Rewarding innovation and fueling growth, the Research & Development tax relief scheme can transform a business. Companies that work on innovative projects in science and technology can claim tax relief on projects – even if they're unsuccessful. In order to qualify, you just need to explain how your project:

- Looked for an advance in science and technology
- Had to overcome uncertainty
- Tried to overcome this uncertainty
- Could not be easily worked out by a professional in the field

There are different types of tax relief depending on the size of your company and if the project has been subcontracted to you or not:

- **SME:** Fewer than 500 staff and either not more than €100 million turnover or €86 million gross assets. Most companies, including start-ups, fall into this category.
- **Large companies:** 500 staff or more and either more than €100 million turnover or €86 million gross assets.

But that's not the only help that's available for organisations in this field. There's also super-deduction.

05

Super-deduction

For expenditure incurred from 1 April 2021 until the end of March 2023, companies can claim 130% capital allowances on qualifying plant and machinery investments. Taxes are cut by up to 25p for every pound a company invests.

But what are capital allowances?

Capital allowances let taxpayers write off the cost of certain capital assets against taxable income. They take the place of accounting depreciation, which is not normally tax-deductible. Businesses deduct capital allowances when computing their taxable profits.

So what's classed as plant and machinery?

Most tangible capital assets used in business are considered plant and machinery (for the purposes of claiming capital allowances). This includes things like:

- Solar panels
- Computer equipment & servers
- Tractors, lorries & vans Ladders, drills & cranes
- Office chairs & desks
- Electric vehicle charge points
- Refrigeration units
- Compressors
- Foundry equipment

Finally, there are a couple of other investment options available in non-dilutive and dilutive funding.

06

Non-dilutive funding

Non-dilutive funding is a loan where no equity is given in exchange for capital. It's generally awarded to life sciences companies in later stages of development when more risk has been mitigated.

Alternatively, there's dilutive funding. This includes things like crowdfunding, angel investment, venture capital, corporate investment or family offices. They all have different approaches, timescales and support packages for start-ups so do your research beforehand to figure out which one's best for your project.

You can find more grant opportunities on the UK government website. And for help with grant writing, get in touch with the Research Design Service (RDS).

Relocating & fitting out labs checklist

Relocating and fitting out labs checklist

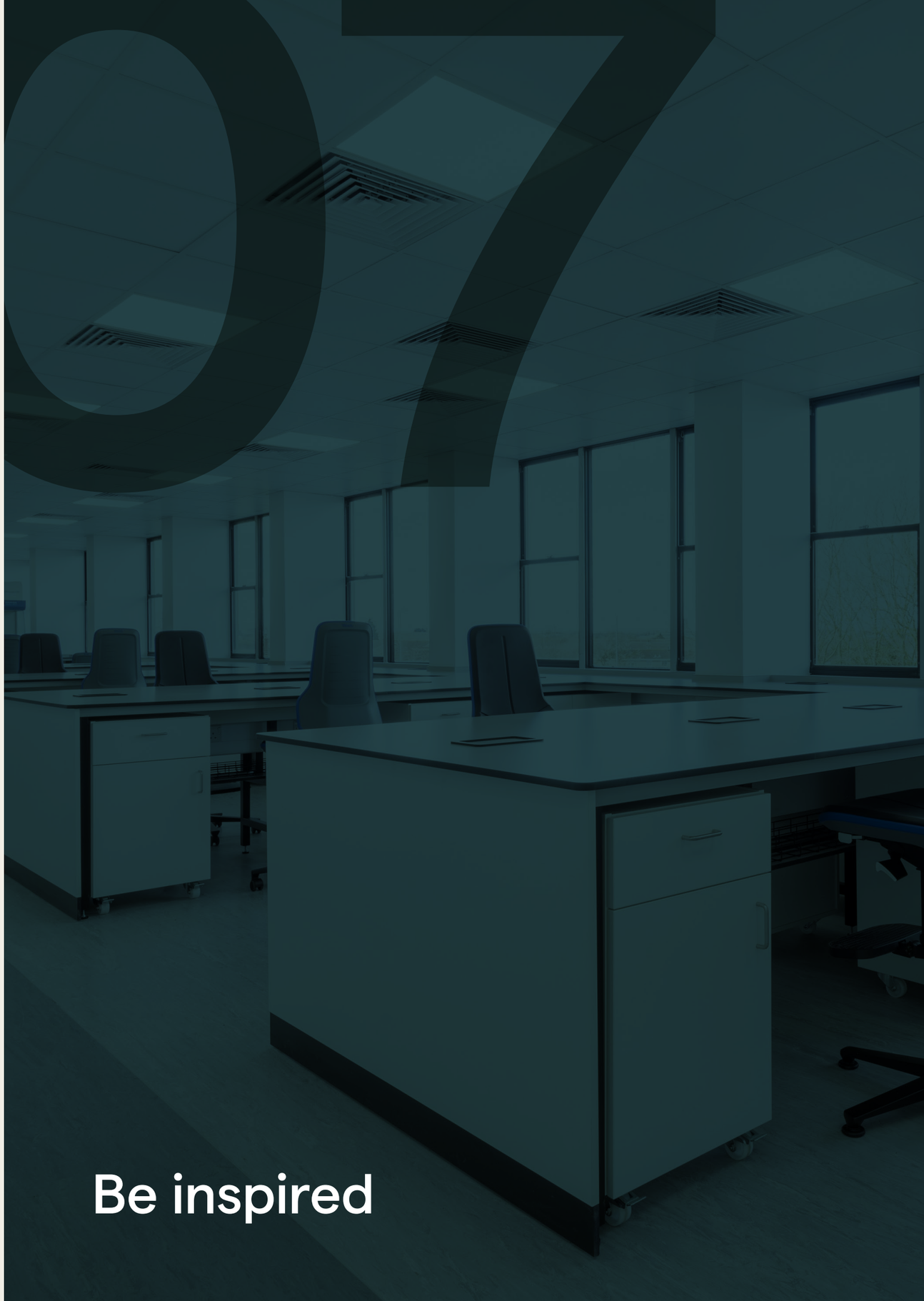
Prepare for your next science and innovation project by asking your organisation the following.

Base building elements

Task	Status
Is the primary electrical supply size sufficient for lab equipment use?	
Is there a generator backup of sufficient size for requirements?	
If there is no generator, is there sufficient space for a new one if required?	
Do other tenants in the building have a preference for services? For example, an uneven balance of electrical supply.	
Is the water supply of sufficient size and quality for lab use?	
Is the building drainage capable of the waste removal requirements for the lab?	
Is the building sprinklered and does this affect plans for lab processes?	
Is there sufficient floor-to-ceiling height to accommodate equipment and services	
Is there sufficient space allocated in the risers to accommodate fume hood ducting or other extract systems or space for new internal/external risers?	
Are the existing windows airtight and capable of holding a pressure cascade regime?	
Is there sufficient space on the roof or in the plant compound for new equipment?	
Is the roof in sufficiently good condition to penetrate for exhaust vents?	
Is there structural capacity of the floors/slabs sufficient to hold large scientific equipment?	
Is the building sufficiently insulated for occupation by labs/supporting offices?	
Does the building have an appropriate loading bay for deliveries and waste away?	
Does the space have sufficient access to the loading bay to support the lab's processes? (multi-tenanted buildings can restrict usage of the loading bay, reducing efficiency)	
Does the building have a goods lift that is accessible to the lab floors and has sufficient space/height for equipment movements?	
Is there sufficient capacity in the base to build HVAC systems to support labs?	
Does the building have an existing (or provision for) medical gas supply and storage?	
Are there other lab tenants in the building and if not have other tenants got any veto rights on the type of neighbour they will accept?	
Is the incoming telecoms/fibre internet of sufficient capacity?	
Will wayleave be needed to install new services?	
Does the existing building fire strategy allow for laboratory usage?	
Are there any utilities that may cause instability of equipment? (tube lines, construction sites etc.)	
Do the existing building security systems need to be aligned?	
Are the existing finishes that are being retained compatible with the required cleaning regime?	
Is there sufficient and appropriate space to store hazardous waste?	

Design elements

Task	Status
Define lab dimensions in square meters	
Define location in the building – floor, wing, sector etc., room numbering	
Define occupancy numbers – number of operatives	
Define cleanliness level - containment level 1, 2, 3, 4 / ISO14644 level / clean room A, B, C, D grading	
Decide partition type – plasterboard, glazed / part glazed, aluminium, steel, blockwork, bespoke modular	
Decide wall finish type – plasterboard, whiterock, laminate, polyurethane, acoustic performance, sterishield paint, blinds, manifestation, pass-through hatch	
Decide Floor finish – solid, screed, resin, vinyl tile, vinyl sheet, ceramic tile	
Decide ceiling finish – height, exposed, soffit height, grid, solid MF, vinyl faced, metal plank, lay in, clip-in, acoustic baffles, fire barriers	
Decide skirting – coved, molded, painted timber, bump rails	
Decide doors – size, finish, vision panel, red glass, lock, signage, closers, air tightness, fire performance	
Decide lab benching – leg construction, trespa type top, under bench storage, above bench shelving, integrated lighting, anti-vibration, downflow	
Decide lab furniture – technicians' chairs, stools, waste containers, storage, shelving	
Define lab equipment – dimensions, weight, power and data requirements, connections, installation logistics, the calibration process	
Define water requirements – reverse osmosis, de-ionised, distilled, domestic, lab grade, hot & cold, waste away, sinks, spill process, drainage, break tanks	
Define PPE process – gowning area, wash hand basins, full PPE changing, storage, clothes lockers, step overs, showers, PPE disposal	
Define welfare – WCs, showers, tea points, dishwashers, staff fridges, microwaves	
Define cleaning regime – cleaner sinks, washing machine	
Define power requirements – 240v DC, 110vDC, 3 phase, single/double RCD sockets, IP rating, dado trunking, ceiling-mounted, floorbox, clean earth, filtered supply, anti-static	
Define data requirements – RJ45 points, Cat 5 / 6 / 6a cabling, phone points	
Define mechanical requirements – pressure cascade, humidity, air cleanliness, air quality, airlocks, summer / winter temperature control, mechanical ventilation, cooling system, extract system, fresh air rates, drainage, fume hoods, noise criteria, heat loads	
Define gases – nitrogen, CO2, Oxygen, compressed air, vacuum, Argon, medical air, natural gas, liquid nitrogen, bottles or piped, copper or 304 steel pipework, press-fit or welded, manifolds, alarms and sensors equipment interfaces, monitoring, fumigation HPV	
Define AV requirements – AV screens, cameras, whiteboards, projectors	
Define lighting – lamp type, lighting control method – manual, PIR, dimmable, daylight linked, photocell, red light, light boxes, lux levels, uniformity, quality (4000K = daylight)	
Define life support systems – Fire detection, smoke detection, heat detection, xenon beacons, oxygen depletion, gas sensors, purge ventilation, gas suppression, sprinklers, kill switches, isolators	
Define security requirements - CCTV, access control, intruder alarm, mag locks, panic alarms, window breaks, public address	
Define DDA requirements – hearing loops, access, WCs	



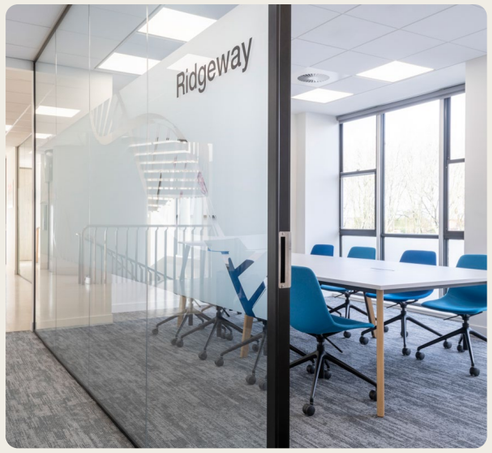
Designing a state-of-the-art facility that's both functional & flexible

Client: Thermo Fisher Scientific - Patheon
Location: Swindon, United Kingdom

Delivering an unrivalled combination of innovative technologies, purchasing convenience and pharmaceutical services, Thermo Fisher Scientific is the world leader in serving science.

In an effort to strengthen its operational output during the pandemic, the organisation announced that its pharmaceutical services brand, Patheon, would be expanding its footprint in North America and Europe. Crucially, this brand new site based in Swindon would act as a production hub for the worldwide supply of the Pfizer, BioNTech COVID-19 vaccine.

Area was trusted to transform the existing 300,000 sq ft site into a new full-scale commercial manufacturing facility; one that would provide short and long-term capacity for the pandemic and other commercial manufacturing projects.



The expansion included an 8,000 sq ft Chemistry laboratory consisting of chemistry, in-process, finished product, QC technical services and raw materials testing facilities. It also included an expansion of their 7,000 sq ft Microbiology laboratory for detailed testing and analysis of raw materials and finished products and a 2,500 sq ft changing room facility that was completely refurbished. Finally, the facility houses a new 6,000 sq ft activity-based working office environment - designed to improve collaboration between senior managers and support services.

The new open-plan workspace has a variety of work points, meeting rooms, soft seating options, booths and focus areas – giving their people the choice and flexibility to do their best work.

Laboratory & Controlled Environments Guide

"With these investments, we've nearly doubled our global footprint for drug development and commercial manufacturing, which allows us to support our customers with unmatched flexibility, expertise and scale at a time of unprecedented demand."

Mike Shafer
Senior Vice President, Pharmaceutical Services
Thermo Fisher Scientific

Creating space that inspires innovation

Client: Watson-Marlow Fluid Technology Solutions
Location: Havant, United Kingdom

BioPure, part of the Watson-Marlow Fluid Technology Group, was looking for a new facility to support its ambitious growth. More specifically, this state-of-the-art hub would need to increase the provision of vital fluid path components to the biopharmaceutical industry. BioPure not only needed an environment that would strengthen its position as an industry leader but also help foster innovation long into the future. That's why the organisation enlisted Area to take on the challenge.

With a focus on change management throughout, this project was both unique and complex. It included large client-facing areas, flexible offices, cleanroom manufacturing spaces and warehousing. In the manufacturing space, these four new cleanrooms needed to satisfy ISO 14644 class 7 classification for clean environments. Furthermore, the workflow for BioPure was absolutely critical. With that in mind, equipment was meticulously positioned to ensure the optimum functionality of the space.

Located in Havant, Hampshire, this brand new 120,000 sq ft development is over five times the size of BioPure's former premises. The extensive project included everything from project specification and management to implementing the brand new cleanroom designs and engineering. Crucially, it integrates the production facility with the workspace. Particularly, the new activity-based working environment; tailormade to improve the interaction and collaboration between various departments.

The move has enabled BioPure to provide a more comprehensive level of support, whilst maintaining the highest level of quality control on its products and services.

Expanding & reinventing critical pharmaceutical workspaces

Client: Sartorius
Location: Havant, United Kingdom

After acquiring Danaher Corporation's life science companies in April 2020, Sartorius decided to unify its organisational structure and co-locate new divisions under one roof. This new site in Havant would provide greater capacity for their growing team, while also playing a vital role in supporting the biopharmaceutical industry - more important than ever.

Sartorius looked to deliver the new 58,000 sq ft site; a complex project which would include large client-facing areas, flexible offices, laboratories, warehousing and outdoor spaces. And a project of this scale took some serious planning and infrastructure to deliver.

It was evident upon review of the foundation details and geology of the area that additional pad foundations would be required. This would allow adequate bearing capacity to support the 20-tonne jib cranes in the 18-bay production space. What's more, a power upgrade was necessary to accommodate the tools - in addition to the high-density vertical carousel.

However, it wasn't just about the machinery; where they operated was crucial. Critical to the Sartorius project's success was workflow; equipment was meticulously positioned to ensure the best functionality of the space. And this is a project that continues to evolve.

As Sartorius continued to play a key role in the UK's response to COVID-19, the project quickly doubled in size. In addition to a 28,000 sq ft production space, the facility accommodates a 4,000 sq ft customer test laboratory to demonstrate the functionality of Sartorius equipment.

08

Simplifying the process

Our process

At Area, we've got a proven track record of working within the pharmaceutical and healthcare sectors. That's why we can confidently offer our clients a full turnkey solution that includes both office and laboratory design. Here's how it works.

01 **Produce URS (User Requirement Schedule) Document**

Our comprehensive URS document informs the way we select, develop and implement your solution. Not only that, it'll help measure its success too.

02 **Create equipment lists**

From must-haves like computers and keyboards to additional items such as eye-tracking software, we'll find the right technology, materials and furnishings for the most accessible space.

03 **Create room data sheets**

Next, we create detailed room data sheets (RDS) that describe not only the finishes, fixtures and fittings but also the mechanical and electrical requirements for your lab or controlled space.

04 **Design**

We take a consultative approach to generate bespoke ideas and inspiration. But whatever the spec, our scientific spaces are always compliant, productive and great places to work.

05 **Construction**

Area has a vast network of specialist trades, suppliers and manufacturers. So whatever the requirements or budget, we can build exactly to your specifications.

06 **Testing & commissioning**

Area follows established guidelines to ensure laboratory facilities meet industry safety standards. With that in mind, everything is thoroughly tested before the installation stage.

07 **Lab furniture & equipment install**

Our experience and understanding of ISO standards, materials and accreditation requirements ensure your furniture and equipment is fit for purpose and built to last.

08 **Calibration & accreditation**

Area performs calibration at regular intervals to check the condition of measuring instruments. Also, we don't just point you towards the right certification; we'll ensure you pass it too.

09 **Change control & systems integration**

We also provide a systematic method to assess the impact of any change on the laboratory's procedures, outputs and services. Next, we deliver seamless integration of all its systems.

10 **Sterility clean**

From controlling air pressure in order to reduce contamination to regular, monitored cleaning, we put systems in place to ensure ISO level sterility in your lab or controlled environment.

11 **Go live**

Great news, your lab or controlled environment is live! But even after launch, we're always around for support and guidance - if you ever need us.

Interested in having a chat? Get in touch.

area

Make **space**
for the **future**

www.area.co.uk