GMCA Sector Development Plan: Advanced Materials & Advanced Manufacturing

How This Plan Will Work

The Purpose of This Plan

This plan, as well as corresponding plans for Greater Manchester's (GM) Other frontier sectors (Health Innovation & Life Sciences, Digital Cyber & AI, Creative& Media and Low Carbon serve several purposes outlined below:

- **To provide strategic direction for GMCA, local partners**, institutions and businesses to work towards the development of each of Greater Manchester's Frontier Sectors, including shaping thinking regarding future funding utilisation (e.g. Industrial Strategy Zone phase 2). Plans will be "living documents", that will have an iterative approach to how they are written and implemented.
- **To identify intervention priorities** which the evidence suggests will support the development of the sector including areas such as physical developments, skills, business support, research and innovation programmes, or non-financial sector development initiatives and partnership models.
- To **provide an updated understanding of the state of our frontier sectors** including current and planned activity that is taking place within them, which were last reviewed as part of the Local Industrial Strategy process.
- To support the development of the Local Growth Plan and the National Industrial Strategy and its "targeted Sector Plans"
- To map out key inter regional partnerships and supply chain dependencies and links to National and international initiatives.

We know that there is deep connections between our frontier sectors, be it in terms of supply chains, or technologically enabling one another, meaning these plans need to speak to one another.

In this regard these plans include actions that are shared across all of these plans, as well as activity which will inherently benefits the other sectors, which we need to ensure we are continuing to understand as best as possible.

Our Approach

One of GM's key strengths, underpinning its success in recent years in increasing productivity, driving growth and investment in its frontier sectors and making the clear case for the benefit of greater devolution to empower place led control is its partnership working across the public, private and academic sectors.

The ongoing development of devolution of powers and control of budgets has given GM greatly increased control of how it can deliver some of the changes needed to realise our vision and strategic priorities. However, in some areas this control remains limited so our ability to work collaboratively with partners to develop compelling cases for funding, more powers and control, and to develop collaborative, innovative ways of achieving our goals, will remain a primary element of how we deliver this plan.

There are therefore some guiding approaches that will sit as overarching principals for how this plan will work.

- This is a living document, that will have an iterative approach to how it is written and implemented. As befits a sector that is so rooted in new developments and innovation, the plan cannot be set in stone, or it will rapidly become irrelevant.
- The plan, from its vision, through its strategic priorities, to the interventions that deliver these, will be co-designed with the sector, and we will continue to strengthen our sectoral engagement as future iterations of these plans are developed
- Where possible, this will focus on impact and outcomes, over realistic timescales, rather than the delivery of blunt outcomes to arbitrary, short deadlines.
- Governance and oversight will be proportionate, flexible and responsive, rather than imposing rigidity, bureaucracy and excessive reporting requirements.

We will ensure that different parts of the ecosystem work together and that various interventions complement and support one another. To unlock new employment spaces for growth, we must make good use of existing assets, building key national relationships to continue to position the NW as a hub. In addition, we must ensure the availability of necessary skills, transport to get people there, leadership to communicate the vision and attract interest, and business support including specialist investment mechanisms to help businesses locate and thrive. These components complement each other, and we will work to break down silos and take a strategic approach to implementing, prioritizing, and sequencing interventions to create the most impact for the sector.

Resources (inc The Industrial Strategy Zone)

The Industrial Strategy Zone programme (formally Investment Zone Programme), launched at the Spring Budget 2023[1], gives GM a £160 million envelope over 10 years to catalyse local growth and investment across the Advanced Materials and Advanced Manufacturing sector. As well as being able to utilise grant funding for projects GM will retain the growth in business rates for 25 years across Sister and Atom Valley and can reinvest these into advanced materials and advanced manufacturing activity. GM has outlined its plans for the first 5 years of this programme[2], encompassing £80 million of grant funding. This sector development plan, and future iterations of this plan will help inform thinking regarding future Industrial Strategy Zone funding allocations, as well as other funding streams.

This plan will be supported by resources allocated via the integrated settlement and local budget setting, with an initial £1 million allocated over the next 2 years to support activity across all our frontier sectors. Other funding sources also support the activity outlined in this plan, including government funding supporting the GM Innovation Accelerator programme and the Local Innovation Partnership Fund. The National Industrial Strategy launched in June 2025 announced a set of national Sector Plans and funding for sector-led growth that included the Advanced Manufacturing sector, and GMCA will actively pursue routes to aligning these national resources with the priorities in this plan and private sector investment opportunities.

[1] UKGOV, Spring Budget 2023

[2] GMCA, Greater Manchester Investment Zone Prospectus (2024)

Plan on A Page

AM/M – Plan on a Page

Sector Definition
The integration of advanced science and technology within manufacturing throughout the production process, including advanced manufacturing techniques, utilisation of advanced materials and utilisation of enabling digital technologies.

Current State of the Sector
- Employees circa 15,000 people with 500+ businesses
- Part of wider Manufacturing sector employing 120,000 people with a GVA of £8.2bn
- Key subsectors include coating processes, forming, precision machining, cutting techniques, coating materials, metals, polymers and technical textiles.
- Geographical clustering in centre of Manchester and northeast of GM
- Significant volume of innovation assets, inc. renowned universities and spin outs

Strengths
- Large ecosystem
- High quality talent pool
- Good visibility/brand nationally
- Strong start up base

Threats
- Commercialisation in foreign markets
- Energy costs and future spikes
- Lack of scale up investment
- Long term talent retention

Opportunities
- Material utilisation for net -zero
- Commercialization of innovations
- Increasing FDI
- Health, digital & defence sectors

Weaknesses
- Complexity of ecosystem
- Short term funding programmes
- Lack of key supply chain companies
- Difficulty encouraging exports

Infrastructure and physical development
- Existing varied range of industrial and warehousing locations, inc. major with strong brands (Trafford Park), and smaller that drive local employment & business opportunities, but current supply constrained and unevenly distributed.
- Shift to robotics & automation, digitisation, customisation requires a diverse portfolio of sites, from larger floorplates to smaller accommodations for startups, and high quality digital infra, inc. dark fibre and 5G/6G connectivity.
- R&I assets clustered in regional centre – need wider spaces for translation-focused manufacturing institutions.

Vision for the sector
An advanced materials and manufacturing super-cluster in the North of England that drives a more productive, sustainable, highly skilled, and innovative industry, with the adoption of industrial digital technologies supporting advanced manufacturing's transition to net zero.

Strategic Priorities

1 - Grow the Advanced Materials and Advanced Manufacturing sector, both in terms of GVA and number of high-quality jobs

2 - Attract as much private sector investment across the conurbation as possible, including via foreign direct investment

3 - Improve productivity, including by supporting businesses with digital transformation to bring them into the advanced manufacturing sector

4 - Build a connected ecosystem, creating clear pathways for businesses to get the skill, talent, finance, investment, and wider support needed to grow and innovate

5 - Strengthen the world-leading capabilities of the city-region's research institutions and harness them to improve the translation/commercialisation of R&D into industry

6 - Develop world-class manufacturing sites and premises across the city-region, including Atom valley and Sister.

Key Actions

Deliver AMAM Industrial Stratergy Zone Program projects (inc Atom Valley & Sister)

Deliver new innovation assets like NERIC, CfAM, CEAMS & SMMC

Develop a better understanding of the Quantum of market demand for different spaces

Identify up to three strategic challenges for GM leadership and ecosystem mobilization

Explore how GM could lead a new approach/ for the verification of new materials

Better align FE college expertise with employers to shape curriculums & placements

Explore options to develop an advanced manufacturing Learning Factory in GM

Ensure future of Made Smarter Adoption and scope feeder and graduate programmes

Sector Definition

The Graphene, Advanced Materials & Manufacturing Alliance or GAMMA[3]

The Graphene, Advanced Materials & Manufacturing Alliance or GAMMA was established as a commitment in the GM Local Industrial Strategy[4]. The core purpose of the Alliance is to identify opportunities to combine Greater Manchester's advanced materials and advanced manufacturing assets to drive a step-change in the rate of commercialisation of advanced materials and advanced manufacturing techniques in the city-region. GAMMA is industry-led and includes representation from public sector agencies and academia. In summary:

- GAMMA is responsible for developing GM's advanced materials & manufacturing strategy & policy in GM and beyond
- The Board is directly connected into GM's key governance structures including executive and political portfolio leaders, and is accountable through this mechanism
- As the representative body for the sector, GAMMA is able to shape and respond to regional and national opportunities, as exemplified by the success of the Innovation Accelerator and Industrial Strategy Zone programmes
- GAMMA also has a key role in helping to shape and build on these programmes, as well as other investment opportunities that emerge over the coming years
- GAMMA will continue to oversee work for the Sector Development Plan and ensuring that the plan effectively feeds into GM Local Growth and Investment Plans

GAMMAs vision for "An advanced materials and manufacturing super-cluster in the North of England that drives a more productive, sustainable, highly skilled, and innovative industry, with the adoption of industrial digital technologies supporting advanced manufacturing's transition to net zero."

GM at the center of an advanced manufacturing super-cluster in the North of England driving a more productive, sustainable, highly skilled, and innovative industry with a secure future, utilizing

Our Definition of The Sector

"The integration of advanced science and technology within manufacturing throughout the production process, including advanced manufacturing techniques, utilisation of advanced materials and utilisation of enabling digital technologies"

Getting to a Definition

GAMMA commissioned research[5] highlighted that defining advanced manufacturing and advanced materials is somewhat subjective and based upon self-identification by companies or organisations as the term 'advanced' is not clearly specified. The definition of 'advanced 'overlaps significantly with the term 'high value', in the areas of manufacturing and materials.

The Institute for Manufacturing includes "unique production processes, high brand recognition, rapid delivery times, or highly customised services" in its definition. The Institute for Manufacturing define

[3] The Graphene, Advanced Materials & Manufacturing Alliance or GAMMA

[4] GMCA, GM Local Industrial Strategy (2019)

[5] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)

advanced manufacturing as: "the practice of using innovative technologies and methods to improve and enhance competitiveness within the manufacturing sector"[6].

The 2025 UK Advanced Manufacturing Sector Plan, published as part of the 2025 National industrial Strategy defines advanced manufacturing *"to be production processes that integrate advanced science and technology, including digital and automation, to manufacturing."*[7]

Developing a detailed Taxonomy

GAMMA has expanded on these definitions to define specific technology areas within the manufacturing sectors that represent advanced manufacturing throughout the production process. This includes utilisation of Advanced Machinery (high complexity precision mechatronic systems), Artificial intelligence and enabling digital technologies.[8]

We have also identified categories of materials which represent more advanced materials that are in commercial production. Detailed taxonomies have been used to define advanced materials and advanced manufacturing in three areas: advanced materials, advanced manufacturing, and digital enablers. The final category acknowledges Industry 4.0, the rapid digitisation of manufacturing and the impact that digital tools will have.

These detailed taxonomies can be found on the next page of this plan.

[6] TWI ,(2025)

[7] UKGOV, UK Government's Advanced Manufacturing Sector Plan (2025)

[8] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)

Detailed Taxonomies

Advanced Materials

Advanced Metals and Metallic Alloys	Polymers	Technical Ceramics and Glasses	Composites	Biomaterials	Technical Textiles	Functional Materials	Carbon Materials	Other / Emerging Materials
Pure Metals	Engineering Polymers	Technical Ceramics	Polymer Matrix Composites	Organic	No Further Segmentation	Optical	Graphene	Metal Organic Frameworks
Superalloys	Biopolymers	Advanced Glasses	Metal Matrix Composites	Inorganic		Electronic	Carbon NanoTubes	Nanoparticulates
Advanced Steels	Conductive Polymers		Ceramic Matrix Composites			Semiconductor	Carbon Fibre	Non-carbon 2D materials
			Bio-Composites			Compound Semiconductor	Fullerenes	
			Nano-composites			Superconductor		
						Magnetic		
						Photonic		
						Metamaterials		
						Quantum Dots		

Advanced Manufacturing

Design	Engineering / Development	Material Pre/Post Processing	Material / Product Processing	Assembly	Testing, Inspection, Validation
Computer Based Simulation	Rapid Prototyping	Precision Cutting	Additive Manufacturing	Robotics & Automation	Metrology
Computer Aided Design		Near Net Shape Forming	Computer Aided Manufacturing		Non-Destructive Testing
		Formulation	Coatings		
		Dispersion	Joining		
			Precision Cutting / Machining		

Digital Enablers

Process Control & Optimisation	Digital Manufacturing Technologies				
System Integration	Industrial ioT (sensors, barcode, QR code, RFID, etc)	Augmented and Virtual Reality	Big Data	Data Analytics	Digital Twinning
SCADA Systems	Blockchain	Artificial Intelligence / Machine Learning	Data & Stem Integration	Industrial Cyber Security	

Strategic Context

Why This is a Frontier Sector

By frontier sector we mean a sector that:

- Has nationally & internationally recognised R&D strengths and complementary industrial / commercial assets
- Is innovative, bringing about new ideas, methods, products, services, or solutions and creating the jobs of the future
- Is high productivity, as well as helping drive productivity across the economy through the adoption of their innovations

These sectors contain multiple clusters where technologies, assets and businesses combine in a place, creating potential for innovation and creation of new markets or knowledge that increases the value being created in the cluster and the competitiveness of the wider sector in the region.

GAMMAs vision for Advanced Materials & Advanced Manufacturing in GM is as follows: *"Advanced Materials and industrial digital technologies that supports advanced manufacturing to transition to net zero by the creation of an advanced manufacturing super-cluster in the North of England driving a more productive, sustainable, highly skilled, and innovative industry."*

GM's global assets in advanced materials, complementary research strengths and industrial base make it prime placed to lead the UK effort on advanced materials commercialisation. Sat within a wider northwest advanced manufacturing and advanced engineering cluster with specialisms in aerospace and energy and clear potential to absorb graphene and advanced materials. The city - region's wider manufacturing industry will drive this, whilst also benefiting from productivity improvements through the adoption of Made Smarter approaches.

The 2025 refresh of the GM and Innovation Audit has confirmed that Advanced Materials and Advanced Manfacturing Life Sciences is still an opportunity for innovation led growth, with Advanced Manfacturing s being identified as one of Greater Manchester's 7 Priority capabilities. This was assessed against the criteria that "there is outstanding knowledge capability in GM universities & a realistic prospect of this being translated into superior economic growth (new or additional) in GM's private sector, or that existing strong sectors and/or high growth sectors in GM have strong demand for the knowledge capability area in view, irrespective of GM's universities' comparative advantage

Alignment

The 2016 Cheshire East and GM Science and Innovation Audit[9] identified GM as having world class strengths in Advanced Materials, which was re-confirmed in the 2019 Independent Prosperity review[10]. Since then the GM Local Industrial Strategy[11] has been published. This outlines a set of long-term priorities to guide industrial development and provides a plan for good jobs and growth in GM. The Strategy was co-designed with business, the voluntary and social enterprise sector and citizens.

[9] GMCA, Cheshire East and Gm Science and Innovation Audit (2016)
[10] GMCA, Greater Manchester Independent Prosperity Review (2019)
[11] GMCA, GM Local Industrial Strategy (2019)

Since the Local industrial Strategy was launched much has changed in the economic and policy landscape and it is time for us to re-review our approach to our frontier sectors, the role the GMCA and its partners play in this, and update our evidence base and understanding of these sectors.

In 2021 the GM Strategy[12] was launched, which sets out a route over 10 years to deliver a city region where everyone can live a good life, growing up, getting on and growing old in a greener, fairer more prosperous city region. This provided the overarching vision and framework within which GM will operate, including this sector development plan.

In 2022 the GM Innovation Plan[13] was launched, led by Innovation GM - a trailblazing triple helix local-national innovation partnership. The plan focuses on how to stimulate the whole innovation ecosystem for the long term in GM, how the whole city region can benefit from this, and create a template for how better ways of working can be achieved between business, universities, and local government that can be refined, scaled and replicated across the UK.

There have also been several key policy developments with a specific focus on Advanced Materials and Advanced Manufacturing. In 2021 the GMCA received the final findings of a GAMMA sponsored report titled "Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base"[14]. This report has helped build the understanding of what the sector looks like in GM and what interventions are needed to enable it to grow and has been key to informing this plan.

Funded interventions have also been mobilised in the intervening time since the GM Local Industrial Strategy. These include the Made Smarter Adoption Programme [15] that supports SMEs in the manufacturing sector to develop and adopt digital and environmental technologies to boost productivity, revolutionise manufacturing processes and accelerate growth. The Advanced Machinery and Productivity Institute (AMPI)[16] Institute is another example, an industry led initiative to drive innovation to create the new machines, technology and people needed to manufacture tomorrow's products, providing R&D, research facilities and sector expertise. The Institute is being supported by £22.6 million in Strength in Places funding.

GM has also received a total of £43.3 million in funding from government via the Innovation Accelerator[17] Programme, supporting innovative projects in sectors where GM has existing research strengths, including advanced materials, testing novel approaches and fostering new collaborations to address skills gaps, remove barriers to investment, and broaden innovation networks.

In 2024 GM was successful in securing £80million of grant funding for the GM Industrial Strategy Zone[18] (formerly Investment Zone) from government, encompassing a package of interventions over

[12] GMCA, Greater Manchester Strategy (2021)
[13] GMCA, GM Innovation Plan (2022)
[14] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)
[15] Made Smarter Adoption Programme
[16] Advanced Machinery and Productivity Institute
[17] GMCA, Greater Manchester Innovation Accelerator (2023)
[18] GMCA, Greater Manchester Investment Zone Prospectus (2024)

the next 5 years to support the development of the Advanced Materials and Advanced Manufacturing sector. This plan details the interventions that have been agreed to make up this package of support and the rationale that underpins them, but it also looks to go further as it (as well as the future versions of this plan) will begin to lay the groundwork for the second round of Industrial Strategy Zone funding that has subsequently been announced for 2029-2034, totalling a further £80million of funding and the retained business rates that will flow from the development and activity funded through the zone.

The 2023 Trailblazer Devolution Deal[19] with Government has provided GM with the opportunity to take greater control over the levers of economic growth and prosperity. The "Local Growth & Place" functional pillar in the Settlement will include investment that can support the growth of our economy, including our Frontier Sectors.

In January 2025 Greater Manchester Set out its approach to Delivering our Growth Ambition [20] spearheaded by Greater Manchester's Growth Locations, as well as launching the integrated pipeline [21] which captures the projects and interventions needed to deliver the full scale of our ambitions through investment in physical infrastructure including our strategic employment and housing sites, town centres and city centre developments over the next 10 years bringing them together for the first time into a single platform.

In January 2025, the National Materials Innovation Strategy[22] was launched . This was led by the Henry Royce Institute with huge industrial engagement and wide-ranging government support through the Chief Scientist network; the Strategy was released during a major event in Parliament hosted by Lord Vallance (the Science Minister) and Baroness Brown (Chair of Select Committee on Science and Technology). The Strategy is ground-breaking in being top down and sets out a direction for materials innovation in the UK over the coming 10 years. By fostering collaboration between industry, academia, and government, the strategy aims to address critical challenges such as sustainable materials manufacturing and future healthcare; and to accelerate the path from research to commercialisation, grow productivity, enhance national resilience, and create highly skilled employment opportunities. GM is ideally placed to respond proactively to the recommendations in the strategy, and to lead the development of cutting edge materials and associated businesses that will strengthen the economy and secure a more sustainable future for the UK.

In June 2025 the UK's Industrial Strategy 2025[23] was launched, which sets out a 10-year plan to grow future industries, including Advanced Manufacturing, Clean Energy, and Digital Technologies. The Advanced Manufacturing Sector Plan [24] , published alongside the strategy, identifies Greater Manchester as a key location for investment and innovation. This Sector Development Plan shares significant alignment with national priorities and supports the work of the national sector plan, including activity to deliver on national sector plan interventions and priorities. This also included an announcement that the Industrial Strategy Council will be based in Greater Manchester. GM will

[19] UKGOV, Trailblazer Devolution Deal (2023)
[20] GMCA, Greater Manchester's Approach to Delivering our Growth Ambition (2025)
[21] GMCA, Greater Manchester Integrated Pipeline (2025)
[22] Henry Royce Institute, The National Materials Innovation Strategy
[23] UKGOV, The Uk's Modern Industrial Strategy
[24] UKGOV, UK Government's Advanced Manufacturing Sector Plan (2025)

continue to maximise opportunities for the city region that arise from the national industrial strategy and its corresponding sector plans.

In July 2025 a refresh of the Greater Manchester Strategy[25] was published. The Greater Manchester Strategy 2025–2035 sets out a bold 10-year vision for a "thriving city region where everyone can live a good life. The strategy is structured around seven mission-led workstreams, including inclusive economic growth, net zero, and innovation. This Sector Development Plan will also form a foundational component of Greater Manchester's emerging Local Growth Plan (due to be published Autumn 2025). The Growth Plan will consolidate strategic priorities across sectors and geographies, leveraging devolved powers to deliver inclusive, innovation-led growth.

Technology Families

In 2021 the government published the UK Innovation Strategy[26]. The strategy contained a focus on missions & technologies that will stimulate innovation to tackle major challenges faced by the UK and the world, and drive capability in key technologies where the UK is considered to have an 'industrial and R&D edge'. Seven technology families were identified in the strategy, of which three listed below were adopted in the GM Innovation Plan due to GM's research, development, and innovation strengths, and for their cut across our frontier sectors in terms of potential applications.

- **Sustainable Advanced Materials:** Within GM, Sustainable Advanced Materials form a pivotal segment of the £49 billion global Advanced Materials market, projected to double by 2026. These materials play a crucial role in advanced manufacturing, net zero initiatives, foundational industries and health innovation & life sciences with opportunities in industrial coatings, construction materials, textiles, acoustics, and the sustainable production of batteries. Moreover, they facilitate breakthroughs in health innovation, such as wearables and biosensors.
- **Artificial Intelligence, Digital and Advanced Computing:** The landscape of digital technology in GM is expansive and rapidly growing. Artificial Intelligence (AI), anticipated to revolutionize industries globally is set to reach a market value of $294 billion by 2026. The Immersive Tech Economy, forecasted at £130 billion by 2023, opens avenues in manufacturing, construction, defence and security, life sciences, education, and training.
- **Diagnostics & Genomics:** In GM, Diagnostics & Genomics present a burgeoning opportunity. With 31 Genomics companies employing over 2,000 people, there's clear potential for growth. The intersection of genomics, diagnostics, AI, advanced computing, and sustainable advanced materials offers spillover benefits, fostering innovations in analytics, medicine, and diagnostic devices. Advances in personalized healthcare not only reduce NHS waiting lists but also address health inequalities, improving health outcomes for the residents of GM. The region's focus on R&D and technology has garnered significant funding, as evidenced by the NIHR grant of £59.1 million to the Manchester Biomedical Research Centre. This investment enhances the GM's capacity to conduct cutting-edge clinical trials, contributing to advancements in healthcare.

Wider Context

Greater Manchester is already positioning itself as a nationally significant location when it comes to Advanced Materials and Advanced Manufacturing. Most notably GM's global assets in graphene and

[25] GMCA, Together We Are Greater Manchester (2025)
[26] UK Innovation Strategy (2021)

advanced materials, along with its complementary research strengths and industrial base, position it as a leader in the UK's efforts to commercialize advanced materials. With exceptional research and innovation capabilities, grounded in assets available via its universities as well as the Henry Royce institute Greater Manchester is at the forefront of the materials landscape.

We are an integral part of the "Northern Arc"[27] strategic growth corridor stretching from the Mersey to the Pennines, linking Greater Manchester with Liverpool City Region, Cheshire and Warrington, and extending into West and South Yorkshire. providing a counterbalance to the Oxford – Cambridge corridor as hub for innovation and the development of new innovative advanced materials and advanced manufacturing industries. Greater Manchester is also a founding member of The Great North[28], the UK's first mayoral-led pan-regional partnership aiming to unlock £118 billion in economic value by coordinating investment in variety of key economic priorities, enhancing Greater Manchester's ability to attract global investment, influence national policy, and deliver large-scale development aligned with the ambitions of this plan.

Gm also has an opportunity with Atom Valley and Northern Gateway to provide a once in a generation opportunity for Greater Manchester in the form of a nationally significant development capable of supporting the rebalancing of the national economy. Strategic located within an hour's drive of three major cities with international airports, two freight ports, and the West Coast Main Line, Atom Valley aims to attract UK and international firms investing in new distribution and manufacturing premises, and SMEs scaling-up into modern premises, supply chains providing resilience to drive economic growth and spinouts and start-ups ready to move from the lab to the factory to benefit from international standard R&D and skills facilities.

GM has also been a leader in the development and roll out of made smarter approaches, including the 'Made Smarter' adoption programme that supports SMEs in the manufacturing sector to develop and adopt technologies to boost productivity, and continues to be prime position to drive new initiatives and innovative programmes to improve productivity across our frontier sectors.

Growth Locations[29] & the Pipeline

GM has identified six "Growth Locations" as prime opportunities for driving transformative change, each with brownfield and greenfield land for housing, employment and industrial growth. This plan aims to support driving growth in these locations, by identifying the physical and wider requirements for the sector going for it to grow and providing a joined-up narrative of our ambitions and plan for supporting the sector going forward.

Through aligned strategy and planning policy, the growth locations will support clusters of innovation in all these areas, working with their existing business bases to maximise supply chain linkages, provide local grow-on space of the quality and type needed and establishing links into communities, schools and town centres to develop the spill-over for all the city regions residents. This approach focuses on

[27] Metro Dynamics, Northern Arc Working Paper (2025)
[28] The Great North
[29] GMCA, Growth Locations (2025)

providing digital connectivity, integrated transport infrastructure, innovation assets, and tailored support to foster innovative businesses.

To support this activity Greater Manchester has developed the Integrated Pipeline[30] which captures the projects and interventions needed to deliver the full scale of our ambitions through investment in physical infrastructure including our strategic employment and housing sites, town centres and city centre developments over the next 10 years, bringing them together for the first time into a single platform. The pipeline will enable residents and businesses to see the type, scale and timing of development that is coming forward and ultimately enable us collectively to make better informed investment decisions

The below sections summarise the vision for each of these as well as well as how the Advanced Materials and Advanced Manufacturing sector is aligned to the visions for these locations.

Central Growth Cluster

The economic heart of GM supporting growth in all four frontier sectors and accelerating growth across the city region. A globally recognised destination with landmark new neighbourhoods underpinned by growth in sport, culture, leisure and tourism that meets the needs of GM residents as well as an attractor for UK and international visitors. This is the leading area for the knowledge economy and R&D, bolstered by world-class universities and collaboration spaces. Key relevant initiatives taking place within this Growth Location include the development of Sister and the Oxford Road Corridor Strategic Regeneration programme including regeneration work on Upper Brook St, Willmott St, Former Elizabeth Gaskell Campus and John Dalton West.

Airport and Southern

The international gateway to the north. A proposition for growth built around digital innovation in the health sector, seeing the transformation of two hospitals (Wythenshawe health campus, and Stepping Hill hospital) accelerated by R&D at the enterprise zone at MIX Manchester (formally airport city)

Western Gateway

The UK's largest sustainable regeneration opportunity. A proposition around clean growth and digital innovation across the logistics sector, enhanced by a unique digital and sport offer, including the expansions of Port Salford ad development of Trafford Wharfside.

Eastern Growth Cluster

Ashton Innovation Corridor is at the forefront of advanced manufacturing and materials innovation. The vision for the Ashton Innovation Park aims to deliver 160,000 sqm of employment floorspace targeted at life sciences; health technologies, advanced manufacturing and materials science/fabrication. The redevelopment of St Petersfield in Ashton aims to deliver modern, tailored development that will stimulate growth of the Digital, Media, Creative and Tech sector, diversify the economy and foster synergies between manufacturing/engineering and DCT businesses for Industry 4.0 opportunities.

[30] GMCA, Greater Manchester Integrated Pipeline (2025)

Northeast Growth Corridor

Driving the future of advanced manufacturing and materials processes in the UK through a clustering approach at Atom Valley and partnership with the central cluster. Situated between Rochdale, Bury and Oldham Atom Valley is a vision to create a vast innovation mega-cluster with the potential 20,000 new jobs and 7,000 new homes through public-private partnership. The plan includes developing 1.2m sqm of logistics and advanced manufacturing space and government has identified this area as a 'High Potential Opportunity' for scaling up production of lightweight and specialist materials for the transport sector. The delivery of the ambitions of atom valley is a collaboration between the GMCA, Rochdale, Bury and Oldham councils, academia and the private sector.

The South Heywood development also provides opportunities for the Advanced Materials and Advanced Manufacturing sector, and will delivery 175k sqm of logistics and advanced manufacturing space.

Northfold

Northfold is at the forefront of future health, with health innovation and food technology driving growth alongside a refreshed sport and cultural offer, and new homes supported by transport infrastructure. The vision includes a concepts for a food innovation centre in Northfold.

Connections & Applications in Other Sectors

Advanced materials and advanced manufacturing have the potential to address key strategic challenges facing both the city-region and the UK. By enabling the development of new technologies and the design of innovative products and services—such as energy storage solutions that support carbon neutrality, or medical devices that help older people remain independent in their homes—these sectors can play a vital role in driving progress and improving quality of life.

Advanced materials can address industry challenges, enable new products, and offer applications throughout the economy that we do not yet fully understand. Materials innovation businesses contribute an estimated £45 billion each year to the UK economy[31]. Materials underpin the UK's manufacturing industry, which contributes £220 billion every year to GVA and supports 2.6 million jobs[32]. It also drives investment; in the last 3-year period, materials innovation businesses secured an average of £8 billion each year in external private and public funding for innovation activities within the UK[33].

Advanced Machinery led advanced manufacturing prevails in sectors when high accuracy is necessary. Functional components of most high value products, whether they be cars, aero planes, trains, white goods, power stations, heating systems, electrical goods, etc are produced using advanced automated machinery.

Health Innovation and Life Sciences

Advanced Materials has applications in the Life Sciences sector in GM as part of the UK's largest med-tech cluster. GM has strengths in in diagnostic and therapeutic medical device development, as well

[31] Henry Royce Institute, The National Materials Innovation Strategy
[32] UKGOV, UK Government's Advanced Manufacturing Sector Plan (2025)
[33] Henry Royce Institute, The National Materials Innovation Strategy

as wearables and biosensors, breakthroughs in which have been facilitated via the development of sustainable advanced materials. Key assets include the Christabel Pankhurst Institute, and The Henry Royce Institute – which together aims to build on the University of Manchester's research strengths in digital technologies, biomedical materials, AI and other materials to develop transformative solutions to health and care challenges. Strong partnerships with Cambridge, Leeds and Sheffield support this.

Health Innovation Manchester[34] also provides a well-established and highly effective network for the sector bringing opportunities to life, which includes industry partners such as Waters, Agilent and Thermo Fisher Scientific, Qiagen, Hologic, Scapa, and Abbott Rapid Diagnostics.

In GM, Diagnostics & Genomics present a burgeoning opportunity, positioning the region to become a leading cluster for personalized healthcare. The intersection of genomics, diagnostics, AI, advanced computing, and sustainable advanced materials offers spillover benefits, fostering innovations in analytics, medicine, and diagnostic devices.

In particular precision manufacturing of diagnostics and medtech; wearables, biosensors, bioelectronics, diagnostic and biocompatible medical devices has major potential. Biological engineering capabilities also provides opportunities for industrial biotech/bio-pharmaceutical industries to develop.

Green Industries

GM's Advanced Materials & Manufacturing sector significantly overlaps with Green Industries, and numerous enterprises in GM develop products enabling Green Industries, like lightweighting and graphene. Sustainable advanced materials serve as crucial supply chain components within Green Industries, presenting opportunities for collaborative growth. Opportunities arise in industrial coatings, construction materials, textiles, acoustics, and the sustainable production of batteries.

New modes of energy generation, storage and use – from hydrogen to fusion power and energy efficient devices will continue to rely on advanced materials and advanced manufacturing techniques. Developing cleaner, sustainable manufacturing via advanced manufacturing techniques also present crossover opportunities for a variety of industries, as well as presenting opportunities to develop cradle to cradle manufacturing processes and circular economy approaches.

Digital, Cyber & AI

Digitalization and specialized processes in the production and application of Advanced Materials offer promising commercialization prospects within the Digital sector, including digital twinning and industrial digital technologies and additive manufacturing, all of which have fast-growing applications for Advanced Materials, as shown by programmes such as Made Smarter. The landscape of digital technology in GM is expansive and rapidly growing. Artificial Intelligence (AI), anticipated to revolutionize industries globally, is set to reach a market value of $294 billion by 2026[35]. The

[34] Home - Health Innovation Manchester
[35] Fortune Business Insights (2025)

Immersive Tech Economy also opens avenues in VR entertainment, eSports, manufacturing, construction, defence and security, life sciences, education, and training.

The application of advanced materials also offers the opportunity for artificial intelligence training systems to become more efficient, with additional applications in the cyber security sector. Advanced materials and advanced manufacturing techniques also present opportunities for innovation in areas such as low emery data storage, sensors and quantum computing. There are also major applications in power electronics, including semi-conductors as well as applications in communications systems such as 5G, IR< RADAR etc.

Creative Industries

The synergy between creative industries and advanced manufacturing lies in design-led innovation and materials development. Creative professionals often work at the intersection of aesthetics and functionality, which can enhance product design and user experience in manufacturing. The GM Innovation plan [36]promotes sustainable advanced materials and manufacturing, which can benefit from creative input in prototyping, branding, and market engagement.

Aerospace & Defence

The aerospace & defence industry has long been both a driver, and a recipient of the benefits of the development of Advanced Materials, both in terms of finding new efficiencies and unlocking new innovative designs. Certain composites can be shaped into intricate forms that are challenging or impossible to create with metal, allowing for more aerodynamic designs that enhance fuel efficiency and performance. The application of carbon nanotubes and graphene for example present major opportunities to increase structurally superior and functionally diverse composites that can be utilised in aircraft construction. Aerospace companies across the northwest have opportunities to apply light-weighting across civilian and military aerospace and automotive engineering.

Foundation Industries

There are major potential applications and benefits of advanced materials in foundation industries. Increased durability of advanced materials utilisation in construction can create both more cost efficient, and sustainable solutions as well as create new possibilities for the built environment. Innovations in high performance concrete for example, with increased strength and durability significantly beyond those obtained by normal means presents a huge market, as well as finding ways to decarbonise cement and concrete. This includes Concretene, a revolutionary additive for concrete that uses graphene to enhance strength, durability and corrosion resistance of concrete developed by engineers at The University of Manchester's Graphene Engineering Innovation Centre [37].

There are also major opportunities to develop more sustainable composites designed and optimised for multiple applications, longer lifecycles, recycling and re-use as well as developing high-volume metallic materials that are strong, durable, and compatible with circular economy principles, as well as enhanced performance and tailored properties for the application of new and emerging

[36] GMCA, GM Innovation Plan (2022)
[37] Concretene - Graphene Engineering Innovation Centre - The University of Manchester

technologies.

Current State of the Sector

Key Information

Manufacturing is one of the largest employment sectors in the city-region with a GVA of £8.2bn (2022) and providing employment for just under 120,000 people (circa) 8.6% of GM's workforce (based of Sic Code data) [38]. Between 2015 and 2022 the Manufacturing sector has seen employment increase by 10% and GVA 22%[39]. This all-forms part of a wider picture.

Bespoke research commissioned by GAMMA provides us a more detailed understanding of the Advanced Manufacturing and Advanced materials business base in GM. We know that this includes circa 500 companies in total, with circa 150 working with Advanced Materials, and employs circa 15,000 people across a spread of high value sub-sectors including coatings, polymers, textiles, metals and composites[40].

It should be noted that SIC code definitions of advanced manufacturing provide significantly larger employment counts for Advanced Manufacturing in GM, for example sic code data comprised of the subsector codes 20,21,26,27,28,29,30,33,325 and 7112 (often grouped together as "Advanced Manufacturing") produced an employment figure of 52,950 in 2022 for Greater Manchester[41]. We however believe are figures provided via our GAMMA sponsored research provide a more accurate, granular view of economic activity that constitutes advanced manufacturing.

The following sections in part summarise the aforementioned research that was commissioned by GAMMA to investigate the business base, employment, geography, productivity & growth trends in the sector, as well as highlighting other sources. As opposed to SIC codes this research utilised the Data City Data Explorer platform that applies web-based data mining technology and machine learning to generate lists of relevant companies, as well as companies house data, followed by manual coding of these by researchers against specifically developed taxonomy subsectors that encompass Advanced Manufacturing and Advanced Materials. This research did not provide GVA figures and is based on one moment in time, hence we are utilising SIC code data for the wider manufacturing sector to give an indication of GVA and Employment Growth.

It is important to note that within the "sector" there are a wide variety of activities, including the production of products via production lines and factories, back-office functions, final assembly as well as distribution of goods from elsewhere as part of supply chains. Continuing to understand how these different types of activity are concentrated in GM will be important going forward and where within supply and value chains GM's manufacturing companies are concentrated.

[38] Office For National Statistics, Regional Gross Value Added (Balanced) by Industry(2025)
[39] Office For National Statistics, Regional Gross Value Added (Balanced) by Industry(2025)
[40] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)
[41] Office For National Statistics, Regional Gross Value Added (Balanced) by Industry(2025)

Sub-sectors and comparative advantage

Research commissioned by GAMMA[42] showed that in GM the largest sub-sectors by number of companies were primarily in the advanced manufacturing categories with companies identifying with coating processes, forming, or precision machining and cutting techniques being the largest sub-sectors.

Within the digital enablers (which acknowledges Industry 4.0, the rapid digitisation of manufacturing and the impact that digital tools will have) data analytics was the largest sub-sector but, in general, numbers of companies across the digital sub-sectors were broadly consistent. Among the advanced material categories, coating materials, metals, polymers and technical textiles represented the largest sub-sectors in terms of numbers of companies in the GMCA area.

Advanced materials also included some of the smallest sub-sectors which were focused on the most innovative materials (e.g. biomaterials and emerging materials). The figure below shows the largest sub-sectors by number of companies across advanced manufacturing, materials, and digital enablers.

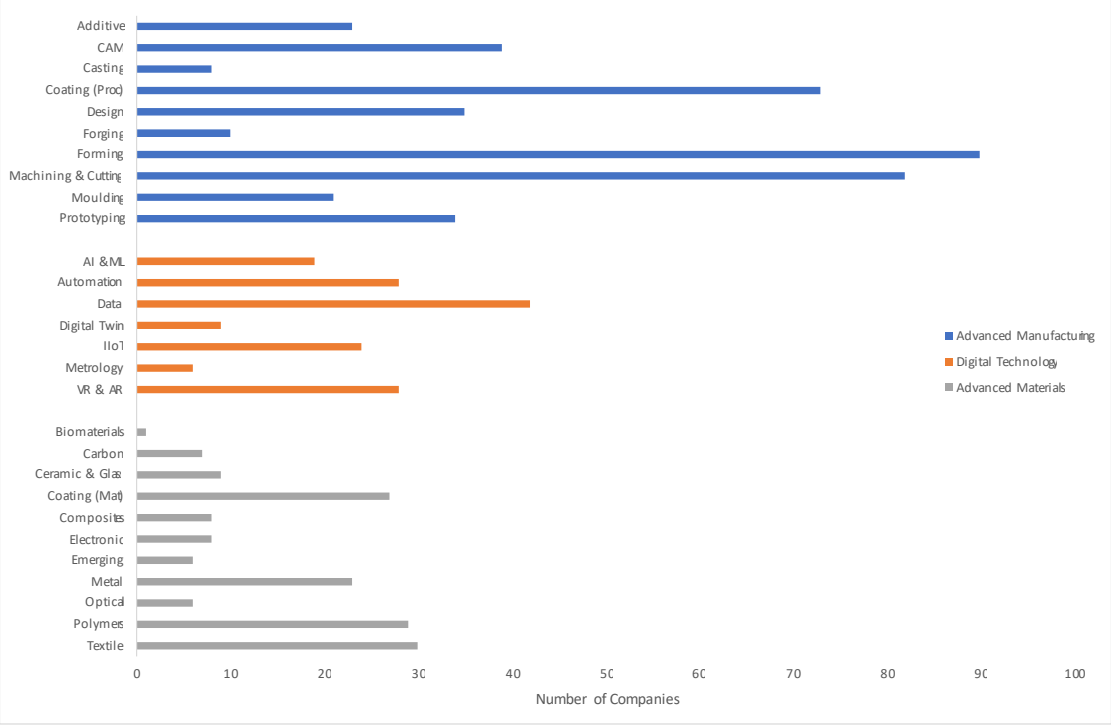

FIGURE 1 - NUMBER OF COMPANIES BY SUBSECTOR GMCA, ACCELERATING THE RATE OF INNOVATION AMONG GREATER MANCHESTER'S ADVANCED MATERIALS & MANUFACTURING BASE (2021)

At the time the research was carried out (2021) there were 505 companies with at least one site in one of the 10 GM Local Authority areas that fitted within at least one of the defined categories above. These have been identified using detailed taxonomies already outlined. Based on turnover per

[42] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)

employee we know that most of the sub-sectors identified in GM are above the average turnover per employee for manufacturing companies in the Northwest region. This is a useful indicator for levels of innovation and productivity, either due to the manufacturing methods used or high value products produced.

Recent national research shows Greater Manchester SMEs are ahead of the curve in 3D printing adoption, with 17.1% using the technology compared to 11% nationally [43]. This reinforces GM's leadership in additive manufacturing and presents a platform for scaling adoption and deepening impact.

Greater Manchester is also recognised on the Department for Science, Innovation & Technology Innovation clusters map[44] which provide a comprehensive picture to date of firm-level innovation activity across the UK. This identifies both a number of clusters within Greater Manchester, and wider geographical clusters of which Greater Manchester is a part in the following sub-sectoral definitions relevant to this plan.

- Chemicals and Materials
- Engineering
- Machinery
- Advanced Manufacturing
- Advanced Materials
- Electronics Manufacturing
- Autonomy and Robotics
- Agritec
- Design and modelling technologies
- Modular Construction

Geographical Distributions

GAMMA commissioned research[45] also included the geographic mapping of the advanced materials and advanced manufacturing companies in GM. This work highlighted a clustering of companies in some sub-sectors and has shown the spread of companies across GM in others. Whilst in some cases the data can indicate a possible reason for the clustering it is not possible to be certain that the co-location of companies indicates that they interact with each other, or to definitively state the cause for any clustering. This type of primary information would need to be confirmed by direct engagement with the companies. Due to company reporting of registered addresses, there is also the possibility that some of the clusters may be artificial, if a significant number of the sites are registered offices at company accountants, which may be expected be in centrally located offices.

- The strongest cluster of high density of *carbon, electronic, emerging and optical materials* is near to the centre of Manchester. It's plausible they are located to capitalise on support from the

[43] Factors affecting adoption of 3D Printing by SMEs: The case of Greater Manchester - GOV.UK
[44] Department for Science, Innovation & Technology Innovation clusters map
[45] GMCA, Accelerating the Rate of Innovation Among Greater Manchester's Advanced Materials & Manufacturing Base (2021)

University of Manchester or Manchester Metropolitan University, or that they are university spinouts.

- There is a concentration of *data analytics and data services* companies in the centre of Manchester. It is unclear why these should be centrally located but it may be that, as highly skilled, professional services providers, a central, city-centre location may be desirable. A number of the other digital technology companies (*AI and IIoT*) were located in the same area.
- There appears to be a small cluster of *automation and measurement* companies in Rochdale, while other companies in this sub-sector are dispersed across GM.
- Clustering is also noted for coatings materials and composites in the east and north of GM.
- Metals, polymers, and technical textiles are distributed across the region, particularly technical textiles in the north and west (Wigan, Bolton, Bury, and Rochdale)

Research and Innovation Assets

GM hosts renowned universities, contributing significantly to the advanced materials and advanced manufacturing landscape, through specialist R&D capability, equipment and working with businesses. Reflecting these strengths, GM significantly overperforms on attracting research funding. This includes attracting 22.5% of Materials Engineering funding and 10.4% of Chemistry [46] .

A summary of key assets and the activity they lead on can be found below.

University of Manchester

The University of Manchester (UoM) is internationally recognised as the leading knowledge base in graphene and 2D materials. It hosts two key centres in graphene and 2D materials:

- **The National Graphene Institute (NGI)**[47] - a 7,800 square metre facility that houses state-of-the art equipment, acting as a research hub and providing access to two Nobel laurates and over 300 dedicated materials researchers.
- **The Graphene Engineering Innovation Centre (GEIC)**[48] - which provides access to facilities and support for industry to experiment with and explore production methods to support the commercialisation of graphene and 2D materials.

Other centres of innovation support for business within the university related to advanced materials and advanced manufacturing, include

- **The Northwest Composites Centre (NWCC)**[49] - which acts as a regional centre of expertise in supporting, evaluating, and introducing innovation in manufacture, design and testing of advanced composites. Based at the University of Manchester, the centre brings together research expertise from the universities of Liverpool, Lancaster, Bolton and Glyndwr.
- **International Centre for Advanced Materials (BP-ICAM)**[50] - is a partnership between BP, the University of Manchester, the University of Cambridge, Imperial College London and the University of Illinois to provide capabilities in structural materials, corrosion, separations, surfaces, deposits, imaging, modelling and self-healing materials.

[46] GMCA, Greater Manchester Science & Innovation Audit Refresh (2025)
[47] The National Graphene Institute (NGI)
[48] The Graphene Engineering Innovation Centre (GEIC)
[49] The Northwest Composites Centre (NWCC)
[50] International Centre for Advanced Materials (BP-ICAM)

There is also capability in advanced manufacturing, in particular where this supports materials development, such as the material processing capability at the GEIC and composite production capability at the North West Composites Centre.

The University also has strong capability in more application specific domains, for example:

- **The Dalton Nuclear Institute**[51] **-** is a provider of nuclear research and development, covering areas such as plant life extension, new nuclear build, decommissioning and radioactive waste management. The institute has facilities both in Manchester and Cumbria.
- **The Future Biomanufacturing Research Hub**[52] - aims to develop new underpinning technologies based on industrial biotechnology in four sectors: pharmaceuticals, value-added chemicals, engineering materials and advanced synthetic fuels.
- **The Centre of Robotics and AI**[53] situated at the university leads on developing, integrating and applying novel Human-Centred AI approaches in the design of robots and autonomous systems for real world applications, working with industry users in various sectors including nuclear, healthcare, infrastructure and space. Activity includes the development of robotics platform, development of novel AI and learning-based methods, human-robot integration as well as work to address the barriers with verification and regulation of robotics.

Manchester Metropolitan University

There are two current 'centres' at the Manchester Metropolitan University (MMU) that provide applied research support to industry either directly related to advanced materials and advanced manufacturing or in support of developments in these domains. These are:

- **The Advanced Materials and Digitalisation Innovation Centre** [54] at Manchester Metropolitan University builds on the legacy of the Advanced Materials and Surface Engineering Centre. It is a flagship research hub and part of The Welding Institute Innovation Network. The centre generates new understanding of materials and processes and applies this knowledge to develop innovative applications, components, and devices with novel or enhanced properties. Areas of expertise include surface engineering, nanotechnology, advanced manufacturing (including additive manufacturing and circular economy applications), low carbon fuels, catalysis, hydrogen technologies (fuel cells, electrolysers, electrocatalysis), electrochemistry, biosensors, microbiology at interfaces, wearable technologies, smart infrastructure, digital twins, artificial intelligence, cyber security, and sports engineering. The centre is led by Professor Peter Kelly. Historically, the centre has driven over 60 funded innovation and knowledge exchange projects, contributing approximately £9.5 million in R&D funding, though current figures may vary.
- **The Centre for Advanced Computational Science (CfACS)** [55] - which provides theoretical and applied research in computer science, distributed across four themes: machine intelligence, data

[51] The Dalton Nuclear Institute
[52] The Future Biomanufacturing Research Hub
[53] The Centre of Robotics and AI
[54] The Advanced Materials and Digitalisation Innovation Centre
[55] The Centre for Advanced Computational Science (CfACS)

science, smart infrastructure, and human-centred Computing. Examples of relevant expertise would include smart manufacturing (Industry 4.0), cyber security and the Internet of Things.

Other key initiatives at MMU include

- **PrintCity**[56] - A 3D additive and digital manufacturing centre. Working with a variety of businesses and individuals, ranging from students and researchers to small businesses and staff looking to upskill, they offer strong on-site support and industry connections within and beyond the University, including a large and varied range of 3D printers for manufacturing plastic and metal parts and associated technologies such as including scanning, laser welding and laser cutting.
- **The Advanced Materials and Manufacturing Innovation Centre (AMMIC)** [57] will be established (with Industrial Strategy Zone funding) to transfer additive manufacturing and advanced materials Innovations to businesses in GM. This will run out of the Advanced Materials and Digitalisation Research Centre and Print City. AMMIC will broaden opportunity for manufacturing businesses to test, prototype and drive forward new innovations, support collaborative research and development projects, develop technical and soft skills, and build leadership and change management abilities.

The University of Salford

With a long history of collaborating with partners to develop cutting-edge solutions, the University of Salford has a reputation of delivering real-world innovations around automation, robotics and engineering. The University is home to a diverse range of world-class facilities, supported by centres of excellence such as the North of England Robotics Innovation Centre (NERIC)[58] which is a beacon for the university's robotics and automation specialisms. With a purpose-built facility that serves as a hub for small to medium-sized enterprises looking to design, test and validate innovation in a rapidly growing area, NERIC adds important value to the University and GM's technical infrastructure.

More broadly, the University's decades-long history of working with businesses to find solutions to their most pressing challenges is exemplified by the Acoustics Innovation Institute[59], who have been translating their world-leading fundamental research into real world applications for over 60 years. For example, the Institute's vibro-acoustics research lies at the interface of acoustics and structural dynamics and has long been instrumental in driving innovation across a wide range of applications, from automotive and rolling-stock, to marine, aerospace, domestic products and building acoustics.

These centres of excellence are underpinned by the University's academic expertise found within the Centres for Future Engineering[60] and Informatics. These groups bring together researchers across a diverse range of disciplines, including physics, materials, robotics, engineering, AI, data science,

[56] PrintCity
[57] The Advanced Materials and Manufacturing Innovation Centre (AMMIC)
[58] North of England Robotics Innovation Centre (NERIC)
[59] Acoustics Innovation Institute
[60] Centres for Future Engineering

cybersecurity, nanotechnology, and spray and petroleum technology, fostering a collaborative environment for cutting-edge research and innovation.

NERIC and the Acoustics Innovation Institute are key features of the Industrial Strategy Zone programme. NERIC will deliver a programme of collaborative ventures with businesses, focussing on research, upskilling initiatives, and a comprehensive workshop with advanced robotic devices and facilities.

Alongside this, a new acoustics building will provide further world-class facilities dedicated to exploring the interplay between new advanced materials and acoustics – an area crucial for driving innovation in advanced manufacturing within a competitive marketplace.

The University of Greater Manchester

The University of Greater Manchester focusses on providing applied engineering skills and is known for its vocationally focused and industry-relevant taught degree programmes. In terms of expertise in advanced materials & advanced manufacturing this includes:

- **Institute for Materials Research and Innovation (IMRI)**[61] specialises in the development of novel smart and multifunctional composite materials (fibres, fabrics, films, foams and particles) at nano/micro levels, as well as associated processing technologies.
- **Centre for Advanced Manufacturing Skills Academy (CfAM)**[62] a programme designed to overcome entry barriers to advanced manufacturing through several skills based initiatives.
- Leading expertise around fire retardant materials and fire prevention.

Henry Royce Institute for Advanced Materials[63]

The Henry Royce Institute ('Royce') is the UK's National Institute for Advanced Materials and as such, supports world-recognised excellence in UK materials research, accelerating commercial exploitation of innovations and delivering positive economic and societal impact for the UK. Operating with its Hub at UoM, 'Royce' is a Partnership of nine leading institutions – the universities of Cambridge, Imperial College London, Liverpool, Leeds, Oxford, Sheffield, the National Nuclear Laboratory, and UKAEA (UK Atomic Energy Authority).

In addition to enabling national materials research, collaboration, fore-sighting and strategy, one of the other Royce's key mission pillars is to catalysing industrial collaboration and accelerating translation. For this purpose, Royce has developed key flagship programmes that include:

- **Tata Steel ltd./Royce Centre for Innovation (CFI)**[64] in Advanced Materials (£10m over 4 years) that aims to link up Advanced Materials Innovation with the broader UK innovation eco-system involving multiple universities, catapult centres and focusses on 2D Materials, and second-life materials with an emphasis on reuse and recycling

[61] Institute for Materials Research and Innovation (IMRI)
[62] Centre for Advanced Manufacturing | University of Greater Manchester
[63] The Henry Royce Institute ('Royce')
[64] Tata Steel ltd./Royce Centre for Innovation (CFI)

- Amongst other initiatives the institute lead on the **Defence Materials Centre of Excellence (DMEx)** [65] **)** (£43.5m over 5years funded by DSTL) which brings together world-leading researchers from Dstl, industry, research technology organisations and academia to develop the next generation of advanced materials systems for the Defence of the UK

- F**oundation Industry Sustainability Consortium (FISC)** [66] : a new consortium that brings together CPI, Glass Futures, Lucideon, Materials Processing Institute and the Henry Royce Institute to deliver global innovation in low carbon resource efficient sustainable solutions that will help to transform the Foundation Industries; FISC's first project is known as EconoMISER (£20m capital investment from Innovate UK) that builds on the existing innovation capability of the partners.

- **Industrial Collaboration Programme (ICP):**[67] Royce has invested over £10m in the past 3 years in sprint projects (up to £130,000 per project) to help businesses across the UK to adopt new materials based technologies and create economic impact

- **MatCelerate Zero**[68]: is a partnership between world-leading materials research universities (i.e. the Universities of Bristol, Cambridge, Manchester, Oxford, UCL and Imperial College London) and global companies focused on development and use of new materials to achieve carbon net-zero and enable the energy transition; MatCelerate Zero aims to develop a pipeline of commercial opportunities delivering competitive advantage and climate resilience; Companies that have already joined the partnership include: Johnson Matthey, Coca Cola EuroPartners, Rolls Royce, Air Products, Evonik, Saint Gobain, Cambridge Display Technologies – a Sumitomo Chemical Company, PA Consulting, EGAT, Ørsted, Materials Processing Institute (MPI) and the Centre for Process Innovation (CPI)

- **Royce Hydrogen Accelerator**[69]: has been designed to tackle materials challenges which are constraining the hydrogen supply chain; it will directly unlock £150-200m of funding by highlighting R&D opportunities in the hydrogen supply chain and presenting these as a compelling, de-risked prospectus to domestic and overseas investors.

Innovation Delivery Partnership

In 2024, a formal Innovation Delivery Partnership was created, bringing together The University of Manchester, National Physical Laboratory, Centre for Process Industries, National Composites Centre and The Henry Royce Institute. The first focus for the partnership is to collaborate to build and deliver a nationally significant materials innovation programme. This will be achieved through working in collaboration with Innovate UK, Greater Manchester Combined Authority (GMCA), Graphene and Advanced Materials in Manufacturing Alliance (GAMMA), Sustainable Materials and Manufacturing Centre (SMMC), and other relevant organisations.

[65] Defence Materials Centre of Excellence (DMEx]
[66] Foundation Industry Sustainability Consortium (FISC):
[67] Royce Industrial Collaboration Programme (ICP)
[68] MatCelerate Zero
[69] **Royce Hydrogen Accelerator**

Catapults

The following are national initiatives accessible directly or via 'spokes' within regional universities.

- **The High Value Manufacturing Catapult**[70] - operating through seven centres, offering technology innovation and scale-up capabilities. Its technology focus ranges from chemical processing, formulation, healthtech, industrial biotechnology and engineering biology, composites, design, automation, digital manufacture, high temperature processing and metrology. The HVMC has deployed resources within region and has been actively working within Greater Manchester for several years. Greater Manchester is a priority region for HVMC – particularly for innovation partnership and advanced materials and Advanced manufacturing technologies.
- **The Compound Semiconductor Applications Catapult (CSA)**[71] **-** aims to support the development and commercialisation of new applications for compound semiconductors. The CSA focuses on four areas: power electronics, RF & microwave, photonics and advanced packaging.

National Physical Laboratory

The National Physical Laboratory (NPL)[72] is the UK's National Metrology Institute, developing and maintaining the national primary measurement standards, as well as collaborating with other National Metrology Institute s to maintain the international system of measurement. As a public sector research establishment, they deliver impact by providing the measurement capability that underpins the UK's prosperity and quality of life. NPL has been developing collaborations across Greater Manchester region for several years, which includes leading the Strength in Places Advanced Machinery and Productivity Institute (AMPI), and locating employees in the GEIC and Royce.

Made Smarter[73]

GM has worked with Government to pilot and roll-out the national the 'Made Smarter' adoption programme that supports SMEs in the manufacturing sector to develop and adopt technologies to boost productivity, revolutionise manufacturing processes and accelerate commercial growth. The Northwest programme has thus far provided £6.4m of funding, and seen £22.4m of investment by manufacturers, grow GVA by a forecast £242m, support the creation of 1,550 jobs and upskilling a further a 2,700[74].

Through the Industrial Strategy Zone Programme Greater Manchester will be building on the successes of the programme and launching a graduate program for made smarter that will support grant recipients with additional grants and support.

Sustainable Materials and Manufacturing Centre

The Sustainable Materials and Manufacturing Centre (SMMC) will operate from a purpose-built technology centre within the Kingsway Business Park in Rochdale, the SMMC building. The activity delivered there will provide a visible entry point for Atom Valley businesses to Greater Manchester's materials and manufacturing innovation ecosystem, ensuring businesses have joined up access to the expertise, facilities, and resources they need to thrive. It builds on and will co-ordinate with a strong foundation of existing activities in Greater Manchester Universities alongside programs funded in GM

[70] The High Value Manufacturing Catapult
[71] The Compound Semiconductor Applications Catapult (CSA)
[72] The National Physical Laboratory (NPL)
[73] Made Smarter Adoption Programme
[74] The impact of Made Smarter | Made Smarter

through the Innovation Accelerator and Industrial Strategy Zone and those already existing nationally (e.g. The Royce Institute, Graphene Engineering Innovation Centre, HVMC Catapult Centres, and National Physical Laboratory).

GM is providing industrial strategy Zone funding to complete the development of the Centre and fit it out with advanced sustainable technologies and will establish an expert team of practitioners who will support firms to engage with the centre, innovate, and become more productive. Knitting together projects and programmes across GM, the SMMC team will focus on the transfer of useful technologies to businesses' operations, whatever their manufacturing focus, strengthening the GM innovation ecosystem from the ground up.

Sister[75]

Sister, adjacent to UoM and MMU in the city center is being designed to expand the cluster of R&D facilities that can link with translational research and business facilities in Atom Valley. Set over 4m sq ft, Sister will be one of the world's leading applied innovation districts. A Joint Venture between UoM and Bruntwood SciTech it will provide resilient, sustainable growth for the area, creating over 10,000 jobs and delivering over 2m sq ft of office and innovation space to house spin-outs, start-ups, scaling SMEs and global businesses new to the region. Alongside this, over 1,500 new homes, retail and leisure spaces, a civic square and a variety of nature-led public spaces will be developed.

A 15-to-20-year project, Sister will be delivered in phases, with the first building, the Renold Building, being reactivated in 2024. Renold will become an innovation hub, hosting the next wave of science and technology innovators, and providing a range of coworking, office and meeting facilities to accommodate and support collaboration between researchers, entrepreneurs, businesses, and partner organisations. £15m has been allocated to the Sister Joint Venture to accelerate the redevelopment of the site as part of the GM Industrial Strategy Zone Program, and £5m to the University of Manchester to support early-stage deep tech companies to grow and accelerate towards manufacturing scale-up. Run by Unit M.

Atom Valley[76]

Atom valley is a vision to create a vast manufacturing, and machinery innovation mega-cluster, covering sites across Bury, Oldham and Rochdale, with three key development locations (Northen Gateway, Stakehill and Kingsway), closely tied both to central Manchester and West Yorkshire. Atom Valley has the potential to provide 20,000 new jobs and 7,000 new homes through public-private partnership and at the heart of the ambitions for the Northeast Growth Corridor Growth Location. It is a designated Mayoral Development Zone – one of the first of its kind in the UK- uniting local stakeholders to unlock funding and drive forward progress. A vast innovation cluster, covering 17m sq ft of flexible employment space primed for development, its size and scale makes it the ideal base for bold, ambitious and globally minded businesses.

[75] Sister
[76] Atom valley

Advanced Machinery and Productivity Institute

The development of the Advanced Machinery and Productivity Institute[77] aims to stimulate growth of the UK's machinery manufacturing sector by driving innovation to enable machinery manufacturers to overcome the challenges of developing new technologies. Currently funded by £22.6 million in Strength in Places funding, it includes key programmes such as I4M, which gives SME businesses in West Yorkshire (WY) and Greater Manchester (GM) access to the National Physical Laboratory (NPL) and universities in WY and GM, providing support at no charge to accelerate the development of the next generation of machinery and create new jobs and growth in this sector.

Innovation Accelerator Programmes

Supported by £43.3 million of government funding and aligned with the UK Innovation Strategy, the GM Innovation Accelerator Pilot[78] aims to capitalize on identified strengths within the seven key technology families outlined buy UKGov. Three priority areas for GM have been identified based on exceptional research capabilities, connecting with local business strengths, inward investment trends, and global market alignment:

- Sustainable advanced materials,
- AI, data and advanced computing,
- Diagnostics and genomics

Through asset development and comprehensive support activities, the innovation accelerator is advancing translational research, developing products and services, and driving the commercialization of these technologies. It is testing novel approaches and fostering new collaborations to address skills gaps, remove barriers to investment, and broaden innovation networks. Projects particularly connected to the Advanced materials and Advanced Manufacturing sector are:

- **Centre of Expertise in Advanced materials Sustainability (CEAMS):**[79] building on the world-class advanced materials research in GM, CEEAMS is a collaboration between key partners to help and support business to commercialise sustainable materials and / or develop an innovate idea to make the materials they use sustainable. They help businesses access world class expertise and accelerate innovation, as well as access to a community of similar businesses.
- **AR EdTech For Hydrogen Skills[80]: an education technology platform** providing hydrogen skills training content for the manufacturing, construction, transport and energy sectors.
- **Immersive Technologies Innovation Hub[81]**: exploring applications for immersive technologies in the entertainment, education, health, built environment, and manufacturing sectors, helping businesses to design, develop and test new solutions for the metaverse

Real Estate Premisses and Requirements

There is already a variety of industrial and warehousing locations, ranging from major areas with strong brand recognition like Trafford Park to smaller areas that are an important source of local employment and business opportunities. However, our long-term economic success relies on

[77] Advanced Machinery and Productivity Institute
[78] GMCA, Greater Manchester Innovation Accelerator (2023)
[79] Centre of Expertise in Advanced materials Sustainability (CEAMS):
[80] AR EdTech For Hydrogen Skills:
[81] Immersive Technologies Innovation Hub

continually renewing and enhancing these premises and infrastructure. The shift towards automation, digitization, and customizations necessitates a diverse portfolio of sites, from larger floorplates to smaller accommodations for startups. In summary, GM requires the following:

- Lab space for university spin outs and startups conducting R&D
- Lab & research facilities for translational research institutions
- Medium size industrial premises for scale up businesses trying to commercialise products
- Large sheds and floorplates for larger manufacturing businesses including FDI attraction

Supporting Infrastructure

High quality physical and digital infrastructure, including access to renewable energy at industrial sites, good grid connectivity, dark fibre and 5G/6G connectivity is also going to be crucial for site viability going forwards. All of this points to the need for a diverse portfolio of sites and premises, both retaining existing premises and providing new ones of varying size and location.

Geographical Distribution

Whilst GM has significant Research and Innovation assets within the region, this is largely clustered within the city centre along the Oxford Road corridor, creating potential constraints for spin-out and start-up growth. Atom Valley (a vision to create a vast innovation mega-cluster situated between Rochdale, Bury and Oldham Atom Valley) and Sister (focused on expanding the cluster of R&D facilities) are a response to this, both of which have received Industrial Strategy Zone funding.

New industrial and warehousing development also have an important role to play in addressing the economic disparities across GM, and to boost the competitiveness of northern areas. Consequently as outlined in Places For Everyone[82] the planed release of Green Belt for employment use is focused primarily in the northern parts of GM, with a string of high quality opportunities of varying sizes focused particularly around the key motorway corridors. Overall, this will result in around two-thirds of the supply being in the districts of Wigan, Bolton, Bury, Rochdale, Oldham and Tameside.

Sector Talent Pool

The advanced materials and advanced manufacturing sector in GM faces impediments to its development due to a significant skills deficit and challenges in attracting talent. There are 49,000 current vacancies in manufacturing and the sector nationally has the third-highest skill-shortage vacancy (SSV) density, with 42% of all manufacturing vacancies being classed as SSVs in 2022[83].

Key challenges include:

- **STEM Graduates:** Despite the increase in STEM undergraduates in recent years and the higher average salaries of STEM roles, the relatively low number of graduates entering STEM occupations is a serious cause for concern among employers. In 2022 the DfE found that over 40% of vacancies in the manufacturing, information and communications, and construction sectors remained unfilled due to skills shortages.[84]

[82] GMCA, Places for Everyone (2024)
[83] Skills England, Sector skills needs assessments Advance Manufacturing (2025)
[84] Uk Gov, UK STEM Skills pipeline (2025)

- **Leadership and Innovation Skills:** Many businesses lack leadership and management capabilities for innovation, hindering growth. Identifying suitable courses to upskill employees in technical areas is a prevalent struggle. Our universities will continue to play a crucial role in delivering appropriate courses to support these businesses to innovate and support the diffusion of innovation technologies into businesses.
- **Career Ambitions Mismatch:** An emerging mismatch exists between workforce career ambitions and the evolving skills requirements of the future job market.
- **Diversity and Access Barriers:** The talent pool in GM lacks diversity. Addressing barriers is crucial for broader resident engagement.
- **Apprenticeship Utilization**: While apprenticeships are respected, there's a slow adoption of newer Apprenticeship Standards, affecting entry routes for young people into manufacturing.
- **Digital Skills Demand**: Due to the modernisation of manufacturing processes businesses increasingly require expertise in automation, digital twins, AI, data analytics, and circular economy practices. These capabilities are essential to the transition to Industry 4.0 and Materials 4.0. While initiatives like Made Smarter provide a strong foundation, long-term impact depends on businesses having the internal capacity to embed and scale these practices.
- **Persistent Skill Shortages:** Longstanding shortages of essential skills, such as welders and metalworkers, contribute to structural challenges. High turnover in production teams and a continuing demand for sales and marketing skills further add to the complexity.
- **Technical Skills Gaps:** There are notable gaps in composite manufacturing, lightweight alloys and coatings, technical textiles, smart materials, robotics, automation, and additive manufacturing. Addressing these gaps will require reform across the skills landscape.
- **Education System:** FE curriculum often lags behind innovation, particularly in areas like Materials 4.0. Uptake of advanced manufacturing courses at Level 3+ remains low, and employer engagement in curriculum design is inconsistent
- **Impact of Pandemic:** Face-to-face business development, crucial for manufacturing, halted during the pandemic, exposing a lack of e-commerce and online presence.
- **Small "Lifestyle Businesses":** The prevalence of small businesses with no growth intentions limits incentives for investment in skills development.

Despite the increase in STEM undergraduates in recent years and the higher average salaries of STEM roles, the relatively low number of graduates entering STEM occupations is a serious cause for concern among employers. This challenge is exacerbated by the increase in people retiring from STEM roles leading to even more vacancies.

Added to the broader STEM skills challenge, the materials sector suffers from a low awareness of materials applications and materials-related jobs.

Further Education Colleges[85]

Greater Manchester is served by 9 further education colleges, working to ensure students are equipped with the technical skills and real-world experience needed to excel driving the skills pipeline needed for the sector. These colleagues have in recent years made several investments in cutting-edge facilities with funding provided via the Local Skills improvement Fund. These includes

- 9X "Caves" A CAVE (Cave Automatic Virtual Environment) is an immersive VR system that projects 3D images onto the walls, floor, and ceiling of a room-sized cube. It allows users to explore and interact with virtual environments in a life-sized, collaborative setting.

[85] Greater Manchester Colleges

- 39 new teaching facilities created or enhanced across Greater Manchester (e.g. workshops / classrooms refurbished / fitted out with new industry standard equipment).

Through the Innovate UK Further Education Innovation Programme [86], GM Colleges have also introduced Business Innovation Advisers and developed an Innovation Literacy Course for apprentices, but further work is needed to ensure provision reflects future skills needs.

GM Institute of Technology[87]

The Greater Manchester Institute of Technology (GMIoT) is a regional network of education providers and industry employers delivering world-class STEM education and training. They address the 'missing middle' in technical education, providing skilled level 4/5 employees for Greater Manchester's digital and technical businesses. As of January 2025, over 1200 students are enrolled at five education partners, meeting first-year targets. Employer support continues to grow, with contributions in guest speaking, trips, curriculum scrutiny, and teaching support. The University of Salford, the lead body, collaborates closely with college partners, offering students opportunities to visit leading research facilities on campus.

GM Growth Company[88]

The Growth Company (GC) is a key strategic partner in Greater Manchester's economic development ecosystem. Operating as a social enterprise, GC delivers a range of services that support inclusive growth, employment, and innovation across the city-region. Its activities are closely aligned with GMCA's priorities and contribute directly to the delivery of this Sector Development Plan.

GC's business support functions are delivered primarily through the GM Business Growth Hub[89], which provides tailored advice and guidance to businesses across the advanced materials and advanced manufacturing sector. This includes support for innovation adoption, workforce development, access to finance, and sustainability. The Hub's publicly funded model ensures that services are accessible to businesses of all sizes and stages, helping to unlock productivity and growth across the sector.

MIDAS[90], Greater Manchester's inward investment agency, also sits within GC and plays a critical role in attracting and supporting businesses seeking to invest in the city-region. Through market intelligence, property search support, and stakeholder engagement, MIDAS helps businesses navigate the local landscape and connect with relevant networks and assets.

The Growth Company's wider priorities that will contribute to the sector plans are listed below.

1. **GM Global Promotion & Propositions:** Take the growth ambition, including Investment Pipeline, new innovation and experience assets to audiences through activation of our global networks, international missions to key markets and city to city partnerships that profile GM as a superlative place to visit, invest, study, live and do business.

2. **Upgrade our Global Investment Outcomes:** create new, and leverage existing international networks, with segmented market strategy to attract transformative high value investment in priority sectors and markets, maximising knowledge base/university linkages, workforce/employment opportunities and local business benefits.

[86] Further Education Innovation Programme
[87] GM institute of Technology
[88] The Growth Company | Economic Growth & Employment Support
[89] GM Business Growth Hub
[90] MIDAS

3. **Increase impact of Business Support and simplify customer access** building on opportunities to be presented by the SME Review, devolution (also national government Business Growth Service), with more Local Authority and local partner integration. Extend provision in key theme of innovation, export and scale-ups whilst maximising use of business relationships across GC as key mechanisms for GMCA business engagement.

4. **Step Change Sector Development**: including frontier sectors, foundational and visitor economy (where they have unique leadership role via Marketing Manchester), particularly centred on strategic and research insight, market opportunities, supply side and workforce development. Leverage as a key mechanism for business engagement to maximise buy-in and support for the GM Vision.

5. **Enable Sustainable Growth, making GM the easiest place to be a net zero business**. Also grow Low Carbon sectors by transforming the climate challenge into economic opportunities, through innovation, inward investment, local business and upskilling residents.

6. **Realise Workforce Opportunities and Better Connect Residents to Good Work:** through Business Workforce Development activities create more and more inclusive opportunities including promotion of technical education pathways (T levels and apprenticeships) and increase the ability of residents to access these through upskilling and personal support (Education & Skills and Employment) assisting the key GM objective of having 80% of residents economically active.

The Growth Company will contribute to this sector development plan by delivering:

- Sector productivity development and support through the GM Business Growth Hub Manufacturing advisory activity.
- Tech adoption support through Made Smarter.
- Targeted inward investment promotion and attraction through MIDAS.
- Enhanced support will be developed through the introduction of a new BGH sector lead to drive the sector plan forward in GM BGH, building on previous successes and enhancing the evolving needs of the sector, bringing together key assets in GM across the ecosystem to stimulate growth.
- New GM Industrial Strategy Zone activity delivered through GM BGH focussing supply chains, MIDAS through in-market resource in key target markets and Made Smarter through building on tech adoption with follow-on support to amplify tech adoption.
- Continued delivery of the innovation ecosystem navigation service - which connects businesses to commercialisation-focused resources, university expertise and research to take their innovations forward, making the existing ecosystem much more integrated and accessible. The service has supported over 370 businesses with tailored advice and awarded 120 grants to 108 companies thus far, totalling nearly £1.5m in defrayed funding.

Intellectual Property

Intellectual property (IP) is a critical enabler of innovation-led growth across Greater Manchester's frontier sectors, where businesses are often IP-rich but may not be able to fully realise the commercial value of their intangible assets. SMEs in these sectors may lack the knowledge and

understanding to fully realise the benefits of IP protection, which can act as a barrier to scaling and investment.

Greater Manchester benefits from a strong local offer through the Business & Intellectual Property Centre (BIPC) Greater Manchester,[91] part of a national network supported by the British Library and the Intellectual Property Office (IPO)[92]. The BIPC provides free access to expert guidance, market intelligence, and IP databases across a network of libraries, including Manchester Central Library and key locations in Bury, Stockport, and Tameside. This offer is complemented by regular workshop sand events, often delivered in partnership with the IPO, to build IP literacy and support businesses to protect and exploit their innovations. The region also benefits from a strong partnership between the GM Business Growth Hub and the IPO with both organisations working together to ensure that SMEs within the region receive IP support and guidance at the right time in their journey in order that they can make informed decisions in respect of their IP assets.

International Trade

The GM Business Survey 2020 notes that 20% of manufacturing businesses actively engage in exports, with sectors like Miscellaneous Manufactured Goods and Machinery and Transport Equipment leading exports, contributing significantly to the £6.6bn total value of exported goods annually from GM[93]. Advanced Materials and Advanced Manufacturing was also identified in the 2022-2025 GM Export Plan[94] as two of the city-region's seven Primary Industry Export Sectors, due to their significant export growth in recent years and high potential to contribute to GM's total exports over the next three years. Recognizing this strength, Advanced Materials and Advanced Manufacturing are showcasing notable export growth and expected significant contributions to total exports in the coming years, including to our top exporting markets for goods Germany, The Irish Republic, The USA, France and the Netherlands[95].

Investment

According to the most recent Department for Business and Trade inward investment data for 2022 to 2023[96] inward investment in Greater Manchester created more than 3,800 jobs and 76 projects were closed in Greater Manchester, as it continues to be a first-choice destination for investment. Advanced Manufacturing is one of MIDAS, Manchester's inward direct investment agency[97] priority sectors, and the sector is support by GC Angel[98] a publicly backed service supporting SME's to raise early-stage, scale-up and growth risk capital ranging from £25k - £2m, bringing together innovative entrepreneurs together with sector-specific syndicates of Angel investors, as well as provide access to wider networks, and invest directly to share risk.

GM also has a cross sectoral focus on attracting high value manufacturing of Health Innovation and Life Sciences medicines and devices to the City region. To this end, a joint approach will be adopted

[91] Business & Intellectual Property Centre (BIPC) Greater Manchester,
[92] Intellectual Property Office (IPO)
[93] GM Growth Company, Gm Business Survey (2020)
[94] GMCA, 2022-2025 GM Export Plan (2021)
[95] GMCA, Greater Manchester International Strategy (2022)
[96] UKGov, Department for Business and Trade inward investment data for 2022 to 2023 (2024)
[97] MIDAS, Manchester's inward direct investment agency
[98] GC Angel

across our frontier sectors, growth location planning and inward investment activity in engaging with the £520m Life Sciences Innovative Manufacturing Fund[99], and £600m Strategic Sites Accelerator fund,[100] to investigate if we can secure support to attract a significant, strategic international investment to the region.

GM Advance[101]

The GMCA is also leading on the delivery of GM Advance a £10m revolving investment fund to unlock innovation by providing 'gateway' funding for innovation and product development for businesses ranging from new start-ups to small and medium sized enterprises based in, or with tangible plans to be based in Greater Manchester. The fund has already made a number of investments in companies including H2Origin, Skill360, Sustainable Ventures and Wull Technologies. The GMCA is also currently undertaking research to understand what additional public investment tools could be developed to address key investment gaps for our frontier sectors, building upon the success of the GM Advance programme.

Greater Manchester is also working closely with national investment institutions to ensure alignment with the UK's evolving industrial strategy and to unlock long-term, mission-aligned capital for the city-region. The British Business Bank (BBB)[102] and the National Wealth Fund (NWF)[103] have both been given a strengthened remit to support the growth of the eight priority sectors identified in the UK's Industrial Strategy (IS-8), including Advanced Manufacturing.

National Investment Institutions

The British Business Bank (BBB) is prioritising regional investment and scale-up finance through initiatives such as the British Growth Fund and Strategic Equity Programme. These are designed to address structural gaps in access to capital for high-potential businesses and to support innovation, commercialisation, and productivity improvements in key sectors. Greater Manchester will continue to work with BBB to ensure that local businesses in the advanced manufacturing ecosystem can access these opportunities, particularly those with strong growth potential or operating in strategic supply chain

National Wealth Fund (NWF), launched in 2025, is focused on crowding in private investment to support the UK's clean growth and industrial transformation missions. Its priorities include supporting the development of strategic infrastructure, accelerating the commercialisation of innovation, and enabling the scale-up of technologies aligned with net zero and digitalisation. GMCA is engaging with the NWF to explore how its capital can be deployed to support the delivery of a number of key areas including the Industrial Strategy Zone, the Integrated Pipeline, and the ambitions of this Sector Development Plan.

[99] UkGov, Life Sciences Innovative Manufacturing Fund (LSIMF): Expression of Interest - GOV.UK
[100] UkGov, Industrial Stratergy Zones Action Plan, (2025)
[101] GM Advance
[102] The British Business Bank (BBB)
[103] National Wealth Fund (NWF)

SWOT Analysis

This section identifies the key Strengths, Weaknesses, opportunities and Threats the sector faces to Growth Going forward

Strengths

- GM has a large ecosystem of institutions, research assets and businesses focussed on advanced materials R&D and commercialisation, particularly in the centre of conurbation
- High quality talent pool – including high levels of student attraction and retention
- Strong base of skills providers providing skilled graduates / apprentices with links into universities
- Good visibility of GM at a national level in this space, including "graphene/materials" brand
- Strong start up base in region and entrepreneurial culture
  Higher-than-average rate of SME adoption of 3D printing (17.1%), indicating a strong foundation for digital manufacturing uptake[104]

Weaknesses

- Complexity of the "Ecosystem" (including grant funding) can be challenging for companies
- Short term funding programmes the norm
- Lack of scale up taking place / policy / support for excellent innovation
- Difficulty encouraging exports and lack interventions of scale necessary to attract major FDI
- Lack of companies in key materials supply chains
- Narrative around purpose of advanced materials not strong enough
- Shortages in key manufacturing skills
- Alignment of graduates / apprentices with opportunities could be improved

Opportunities

- Utilization of materials in supply chains to address Net Zero and recycling/circular supply chains for materials such as composites, batteries
- Utilization of materials in low carbon goods and services (e.g. hydrogen fuel cells)
- Commercialization of already existing innovation in GM
- Increased FDI with increased ambition and action, with particular opportunities in Semiconductor, Batteries, Solar, Life Sciences and advanced machinery value chains
- Increase links with the FE sector to understand the needs of industry and skills gapes better
- Manchester baccalaureate and expansion of T-Level uptake
- To improve advanced material verification (including setting up structures) to make this happen faster so can be used by industry
- Development of grand visions to bring industry together around shared challenges
- To find new ways to connect businesses better to one another and increase cross sector communication

Threats

- Other regions with chemical infrastructure have advantage in developing materials supply chains / over reliance on imports for key materials

[104] Factors affecting adoption of 3D Printing by SMEs: The case of Greater Manchester - GOV.UK

- Loss of progress in some innovation due to lack of scale up Investment
- Loss of potential commercialisation opportunities to foreign markets
- Difficulties encouraging traditional medium size family businesses to innovate
- Long term talent retention & ageing workforce
- Lack of financial incentives for firms to locate here
- Energy costs and future energy spikes

Ambitions for growth

The vision for the sector in GM:

GAMMA's Vision for GM's Advanced Materials and Advanced Manufacturing is as follows:

Advanced Materials and industrial digital technologies that supports advanced manufacturing to transition to net zero by the creation of an advanced manufacturing super-cluster in the North of England driving a more productive, sustainable, highly skilled, and innovative industry.

The Advanced Materials & Manufacturing Industrial Strategy Zone agreed with UkGov in 2024 sets out a two-pronged approach to growing GM's Advanced Materials and Advanced Manufacturing cluster investing in:

- Our established strengths, to drive growth in the short-term and grow the resources available to the sector (e.g., through future Business Rates revenues).
- Our longer-term ambitions to be able to scale up and deploy innovations in our growth businesses, for example through Atom Valley.

Strategic priorities:

We have worked with partners, stakeholders and industry to develop a series of strategic priorities for the development of the sector, as well as a comprehensive action plan outlined later in this document.

1 - Grow the Advanced Materials and Advanced Manufacturing sector, both in terms of GVA and number of high-quality jobs

We know from the independent Prosperity Review[105] that the benefits of agglomeration are greater for higher skill activities, and agglomeration effects are stronger in city regions with higher skill levels. We want to grow and increase the GVA of the advanced manufacturing sector by at least 5% compared to business as usual by 2030 in line with the GM Innovation plan[106] and will do this through productivity improvements and attracting investment into the region, including supporting the adoption of digital manufacturing approaches by traditional manufacturing businesses.
We know increasing productivity (including via skilled labour) is a key driver of wage growth, and separately real wage increases will be further realised through active support of residents into high-paying jobs in the sector by a robust education and skills system.

There are also benefit of the spatial focus of sites in the Industrial Strategy Zone, where the immediate opportunities provided by potential interventions focused on the Northern Gateway site in Atom Valley (Rochdale being the 15th most deprived borough in England) having potential a wider knock-on effect in driving up wider opportunities for local people.

2 - Attract as much private sector investment across the conurbation as possible, including via foreign direct investment

We will work towards GM being in receipt of as much public and private investment as possible, and growing the human, physical and financial capital that supports this. By having a specific focus on

[105] GMCA, Greater Manchester Independent Prosperity Review (2019)
[106] GMCA, GM Innovation Plan (2022)

advanced materials within the broader sector of advanced manufacturing we can also help to deliver agglomeration benefits, further strengthening GMCA's reputation as the UK's location for advanced materials R&D, innovation and businesses with the knock-on benefits in productivity. There is also an opportunity to use the Industrial Strategy Zone to create spaces for potential FDI manufacturers in spaces outside of the city region's urban centre while doubling down on the existing world class assets in and around university assets in the city region core.

3 - Improve productivity, including by supporting businesses with digital transformation to bring them into the advanced manufacturing sector

We want to support GM's manufacturing base to further increase its productivity by adopting Made Smarter-style approaches to accelerating the development, design, adoption and creative application of digital technologies, artificial Intelligence, additive manufacturing, environmental technologies and graphene and 2D materials. For the whole of GM's manufacturing base, digitalisation of production, including the use of artificial intelligence and automation, presents significant opportunities to increase competitiveness and efficiency. Whilst manufacturing is still one of GM's most productive industries, we know that from the UK Technology Adoption Review[107] Only 7% of UK manufacturers surveyed in 2024 were regarded as being very knowledgeable about AI applications, and only 8% of the total had successfully introduced AI and machine learning into their businesses. The UK also lags other G7 nations in robotics adoption, with 74% of UK SMEs in the sector operating without robots.

4 - Build a connected ecosystem, creating clear pathways for businesses to get the skill, talent, finance, investment, and wider support needed to grow and innovate

We want to build a connected innovation ecosystem, creating clear pathways for businesses to get the skills, talent, finance (particularly early-stage finance) investment, and wider support they need to innovate and grow. The in development Sustainable Materials and Manufacturing Centre (SMMC) based in Atom Valley will lead on this, and will provide a visible entry point for Atom Valley businesses to Greater Manchester's materials and manufacturing innovation ecosystem, ensuring businesses have joined up access to the expertise, facilities, and resources they need to thrive. Connecting with Sister, R&D facilities and our universities this will be be crucial in creating a connected pathway for ideas to develop from primary research, to applied research and to commercialization.

5 - Strengthen the world-leading capabilities of the city-region's research institutions and harness them to improve the translation/commercialisation of R&D into industry

As outlined in the GM Innovation Plan[108] we want to mobilise investment into existing and new innovation assets and programmes to bridge gaps in the commercialisation journey, coordinating with national activities where appropriate to ensure local impact and national significance. GM already has a number of live and developing Research and Innovation assets focused on translational research and commercialisation of advanced materials and we want to further strengthen the world-leading capabilities of the city-region's research institutions and harness them to improve the translation/commercialisation of R&D in industry. We want to forge productive R&D collaborations where there are mutually beneficial opportunities with cities and regions across the North, UK and world, so that GM's assets and ecosystem play a leading role in driving UK-wide economic growth,

[107] UK Technology Adoption Review
[108] GMCA, GM Innovation Plan (2022)

building upon the local, regional and national networks that connect into GM. We want to raise the global reputation of GM as a significant R&D location, reimagining GM as a Science and Innovation Superpower.

6 - Develop world-class manufacturing sites and premises across the city-region, including Atom valley and Sister.

GM needs to develop world-class manufacturing sites and premises across the city-region, including establishing world class innovation hubs in the regional centre, and state of the art manufacturing sites for scaling up production of new materials and products, adopting industrial digital technologies, and moving to low carbon production methods. We want to ensure we can provide the industrial capacity to commercialise the new materials and pioneer the adoption of digital technologies, artificial intelligence and efficiency improvements.

Whilst GM has significant Research and Innovation assets within the region, this is largely clustered within the city centre along the Oxford Road corridor, creating potential constraints for spin-out and start-up growth. Atom Valley (a vision to create a vast innovation mega-cluster situated between Rochdale, Bury and Oldham Atom Valley) and Atom Valley, are a response to this both of which have been supported by Industrial Strategy Zone funding.

What we need to do to achieve growth

Our Approach to Delivery

The current GM sector support picture has developed over years, shaped by short-lived strategies, rapidly changing senior ministers, and short-term funding from various sources, often competitive and driven by the output-based approach of EU funding programmes. Sector leadership bodies like GAMMA or Health Innovation Manchester[109], and business support schemes like Made Smarter, have developed in no small part due to GM's efforts to influence National policy, and often budgeted for in response to funding being provided on a year-to-year basis.

The development of examples such as Places for Everyone[110], the GM Good Employment Charter[111], GM Innovation Plan [112], Innovation Accelerator Pilot Programme, Further Education Innovation Programme[113], and the UKSPF Funded Innovation Ecosystem Navigation Service [114] show that, despite short-term strategic and funding limitations, a place-led approach to shaping interventions for our frontier sectors can deliver better outcomes.

With the new government taking a new approach to National Industrial Strategy [115] and local growth plans and suggesting longer-term funding settlements will now be the norm, and the powers and funding control coming to the city region, we are now able to review what is in place and begin to plan and deliver on a longer-term basis.

We will ensure that different parts of the ecosystem work together and that various interventions complement and support one another. To unlock new employment spaces for growth, we must ensure the availability of necessary skills, transport to get people there, leadership to communicate the vision and attract interest, and business support to help businesses locate and thrive. These components complement each other, and we will work to break down silos and take a strategic approach to implementing, prioritizing, and sequencing interventions to create the most impact for the sector. Our approach will build on existing capacity, create new interventions as needed, learn from successful examples elsewhere, and innovate where necessary in GM.

This section below outlines how Greater Manchester is and will continue to support the sector with the resources and leavers at our disposal, including via collaboration with delivery partners, government and industry. Whilst some of the actions outlined in this plan are currently funded, or already in delivery, others represent early-stage exploration or proposition development intended to lay the groundwork for future investment.

How our Action Plan Is Structured: Levers for Growth

Realising our vision and strategic priorities requires a coherent, interconnected action plan based on collaboration and co-design with the sector, avoiding siloes. To ensure uniformity of approach across

[109] Health Innovation Manchester
[110] GMCA, Places for Everyone (2024)
[111] GM Good Employment Charter
[112] GM Innovation Plan
[113] Further Education Innovation Programme
[114] UKSPF Funded Innovation Ecosystem Navigation Service
[115] UKGOV, The Uk's Modern Industrial Strategy

all five Sector Development Plans, enabling the opportunities for cross cutting interventions and sharing of knowledge to be maximises, we will develop our approach under 5 key "Levers of Growth".

Sector Leadership

Strong local leadership is central to the economic prosperity of an area and to be successful requires partnership across the political, business and institutional spectrum. Local leaders know the needs and opportunities of their areas best and can build coalitions with entrepreneurial leaders from business, research institutions and other local stakeholders to forge a clear vision for their areas.

The GM Graphene, Advanced Materials, and Manufacturing Alliance (GAMMA) for example unites academia, public, and private sectors to bridge gaps in commercialization and diffusion ecosystems. This is support by GM's Business Board[116], the Innovation GM Partnership Board[117] and the democratic oversight of the GMCA.

Development Planning and Infrastructure

Increases in commercial property space, spaces for innovation, collaboration and sharing of ideas, enabled through the planning system, has been found to positively impact employment and turnover in local areas. Through the adoption of Places for Everyone [118]and the developing Stockport Local Plan[119], GM has established a clear pipeline of future employment and housing growth opportunities, including action to support the development of Atom Valley to become a vast, well-connected innovation cluster with a focus on advanced manufacturing. However, our long-term economic success relies on continually renewing and enhancing these premises and infrastructure.

Innovation and Research

Evidence demonstrates that R&D grants, loans, and subsidies have a positive impact on R&D expenditure and increase the rate of innovative activity. Innovation is a key to raising long term productivity and economic growth, with higher levels of R&D spend associated with higher growth, GM is reflecting this as a priority through support for initiatives such as the Deep Tech Innovation Programme at Sitser and the SMMC facility which will be focused on commercialisation of IP and translational activity respectively.

The GM Innovation Plan[120] outlines a Cluster Led approach for developing the Innovation Ecosystem, aiming to enhance translational capacity and build networks that support our frontier sectors in developing and commercialising innovations based on key technology strengths.

Enterprise and Business Support

Studies indicate that collaboration with business, Universities, and research institutions like Catapults plays a vital role in regional and national growth. SMEs significantly impact local economic performance but often lack knowledge of applicable University support to improve performance.

[116] GM's Business Board
[117] Innovation GM Partnership Board
[118] GMCA, Places for Everyone (2024)
[119] Stockport Council, Stockport Local Plan Information Page
[120] GM Innovation Plan

Business support services can also be crucial in unlocking early stage financing and enabling commercialization as demonstrated by programmed like GM Advance and CEAMS.

As with Skills, local enterprise and business support has been an agenda GM has been working towards greater local control of for some time, working to the principle that a place-based approach, with local knowledge and understanding, coupled with a strong evidence base will achieve better outcomes. Success stories such as Made Smarter, which was developed in GM, initially delivered across the Northwest, show how we have been able to develop impactful interventions in the face of uncertain budgets and strategy. The sounder footing that the next phase of devolution will bring will allow for more such focused and targeted interventions to be developed across our frontier sectors.

Skills and Labour Supply

Industry and business often raise the challenge of available skills and expertise as a barrier to investing and expanding. Lack of necessary training and skills can also shut existing communities out of new innovative opportunities in their local area.

Since the 2014 City Deal[121], GM has been lobbying for greater local control of skills funding and policy, on the principal that we better understand the needs of our employers, residents and the capacity of our providers. Under the latest devolution deal we will have increased control of post 16 skills provision and the Adult Education Budget for the city region, Work already done on the Greater Manchester Baccalaureate, [122] Local Skills Improvement Plan[123] and improvements from the Local Skills Improvement Fund has better prepared us to be able to look at short courses, apprenticeships and other interventions to address broad skills, enabling targeted interventions such as the Centre for Advanced Manufacturing Skills Academy and the hydrogen skills training platform, both of which are designed to address specific labour supply challenges identified by industry.

[121] GMCA & HM Treasury, Greater Manchester Agreement: devolution to the GMCA & transition to a directly elected mayor

[122] Greater Manchester Baccalaureate,

[123] Local Skills Improvement Plan

Action Plan

The below plan provides a series of actions that we believe GM needs to take to support the sector going forwards.

The table below outlines how these actions are aligned to our different leavers for growth, if this activity is ongoing or new activity proposed in this plan, lead organisations and timeframes for this activity (short term – 25/26 FY or medium term - beyond this timeframe).

We also categorise actions in 3 different ways

- "Distinctive" actions, that are only relevant to this sector development plan
- "Shared" actions that thread together our frontier sectors and there plans
- "Strategic" actions that sit above sector development plans and support business activities across the economy

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Development, Planning and Infrastructure	Deliver key transport infrastructure improvements to unlock development at Atom Valley (£10m funded).	Atom Valley Board	Ongoing Activity	6	Medium	ISZ	Distinctive
Development, Planning and Infrastructure	Continue to communicate timescales regarding key developments in atom valley, including when businesses can expect to be able to locate at key sites.	GMCA	Ongoing Activity	6	Short		Distinctive
Development, Planning and Infrastructure	Lead the successful development of the Ashton Moss and St Petersfield sites in Tameside for advanced materials and advanced manufacturing.	GMCA / Tameside LA	Ongoing Activity	6	Medium	IP	Distinctive
Development, Planning and Infrastructure	Ensure progress from £15m investment in the early development of the Sister Site.	UOM	Ongoing Activity	4,6	Medium	ISZ	Distinctive
Development, Planning and Infrastructure	Develop a better understanding of the Quantum of market demand for physical infrastructure, including modular lab space, scale up space, larger sites for larger businesses including via FDI as well as GPU compute, and digital connectivity infrastructure requirements.	GMCA	New Activity	6	Short		Shared
Development, Planning and Infrastructure	Ensure the Investment Plan embeds provision for digital-first infrastructure (including AI Growth Zones, dark fibre, and 5G/6G) and clean energy systems required by the sectors at key locations to ensure sustainable development.	GMCA	Ongoing Activity	3 6	Medium	IP	Shared
Development, Planning and Infrastructure	Launch and utilise £2m Planning & Development fund for Districts can draw from to plan andfz prepare for the development of strategic sites.	GMCA	Ongoing Activity	6	Short/Medium	ISZ	Shared
Development, Planning and Infrastructure	Explore interim commercial space solutions for start-ups and scale-ups guided by the Integrated Pipeline and Regional Economic Spatial Plans (RESPs). This includes identifying opportunities to accelerate delivery through the Strategic Sites Accelerator and Mayoral Recyclable Growth Fund.	GMCA & Partners	Ongoing Activity	6	Medium		Shared
Development, Planning and Infrastructure	Support the development of cross-sector creative hubs for collaboration and innovation.	GMCA / Local Authorities	New	4	Medium		Shared
Development, Planning and Infrastructure	Ensure we are maximising opportunities to unlock key strategic sites via the UKGovs Strategic Site Accelerator, Mayoral Recyclable Growth Fund and Connections Accelerator Service.	GMCA, UKGov	New Activity	6	Medium	NIS	Strategic
Enterprise and Business Support	Continued delivery of the innovation ecosystem navigation service - which connects businesses to commercialisation-focused resources, university expertise and research to take their innovations forward, making the existing ecosystem much more integrated and accessible.	Growth Company GMCA	New Activity	4	Short		Distinctive

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Enterprise and Business Support	Continued delivery of GM Advance, a £10m revolving investment fund to unlock innovation by providing 'gateway' funding for innovation and product development for businesses ranging from new start-ups to small and medium sized enterprises based in, or with tangible plans to be based in Greater Manchester.	GMCA	Ongoing Activity	1, 2, 4	Short	ISZ	Distinctive
Enterprise and Business Support	Deliver the made smarter graduate programme - Open to clients engaged with the existing Made Smarter programme, which offers match funded grants and technical advice to adopt new technologies, the Growth Company will support the firms to engage with more advanced digital manufacturing processes, building on the projects they lead in the first instance.	Growth Company GMCA	New Activity	1, 2, 3, 4	Short	ISZ	Distinctive
Enterprise and Business Support	Delivery of a programme to support the creation of advanced materials and advanced manufacturing supply chains in Greater Manchester.	Growth Company Trafford Council Oldham Council	New Activity	4	Short	ISZ	Distinctive
Enterprise and Business Support	Delivery of a pilot for new Foreign Direct In-Market presence in the United States for advanced manufacturing and materials.	MIDAS GMCA	New Activity	4	Short	ISZ	Distinctive
Enterprise and Business Support	Continued delivery of the Advanced Materials & Productivity Institute and establishing its new programme of activity (AMPI).	Consortium of Partners	Ongoing Activity	3, 4	Short		Distinctive
Enterprise and Business Support	Continued delivery of the Centre of Expertise in Advanced Materials Sustainability (CEAMS), a collaboration between key partners to help and support business to Commercialise a sustainable material(s) and / or develop an innovate idea to make the materials they use sustainable.	Consortium of Partners	Ongoing Activity	3, 4	Short		Distinctive
Enterprise and Business Support	Explore options to deploy the "bridging the gap" model which has successfully supported SME translational research and commercialisation in Graphene and 2D materials to a wider range of advanced materials and advanced manufacturing sub-sectors.	GMCA GEIC	New Activity	1,4	Medium		Distinctive
Enterprise and Business Support	Work with partners to strengthen the regional investment narrative around Advacned Materials and Advanced Manufacturing.	GMCA MIDAS Partners	Ongoing Activity	2	Short		Distinctive
Enterprise and Business Support	Ensure the future of the Made Smarter Adoption programme with the new Government and in the coming spending reviews, and continue successful delivery.	GMCA & Partners	Ongoing Activity	2, 3, 4	Medium		Distinctive
Enterprise and Business Support	Ensure we are maximising opportunities for Greater Manchester arising from UKGovs Robotics Adoptions Hubs programme.	GMCA, UKGov	New Activty	1,3,4	Medium	NIS	Distinctive
Enterprise and Business Support	Explore options for how additional business incentives (e.g. match funding) to attract businesses to the region could be structured if resources are made available.	GMCA & MIDAS	New Activity	1,2	Medium		Shared
Enterprise and Business Support	Complete research to understand what additional public investment tools could be developed to address key investment gaps for our frontier sectors.	GMCA	New Activity	1,2	Short		Shared
Enterprise and Business Support	Explore how we can enhance resources available to proactively engage major, global innovative firms and develop sophisticated inward investment plans to attract them, including via lunching key campaigns working with MIDAS.	MIDAS GMCA	Ongoing Activity	2	Medium		Shared

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Enterprise and Business Support	Continue to develop closer working with DBT teams in post in target markets to strengthen FDI relating to cluster focus areas.	MIDAS GMCA	Ongoing Activity	2	Short		Shared
Enterprise and Business Support	Explore the introduction of a GM programme that provides an easily navigable platform for all frontier sector organisations to understand the current ecosystem of organisations and access opportunities for investment and grants, with regularly updated data, as well as options for creating "innovation" champions to support business with accessing grant support and other opportunities in the ecosystem.	GMCA	New Activity	4	Medium		Shared
Enterprise and Business Support	Expand existing programmes, such as Made Smarter, into other frontier sectors and other sub-sectors within frontier sectors.	GMCA & Growth Company	Ongoing Activity	1,2,3	Medium		Shared
Enterprise and Business Support	Work to develop a framework for higher quality output metrics for support programmes that focus on capturing progress towards commercialisation and quality of programme benefits for businesses.	GMCA	New Activity	4	Medium		Strategic
Enterprise and Business Support	Support the continued operation of Growth Company networks, and ensure we are maximising the reach of current initiatives to support businesses to access programmes and funding, such as Made Smarter Programme, innovation ecosystem navigation service and BeeNetZero programme.	GMCA & Growth Company	Ongoing Activity	3, 4	Medium		Strategic
Enterprise and Business Support	Support the GM Business Board with the implementation of the review Business Support offer in GM, to identify gaps and/or the need for specialisation of support for the sectors.	GMCA & Growth Company	Ongoing Activity	4	Medium		Strategic
Enterprise and Business Support	Strengthen and tailor Greater Manchester's intellectual property (IP) support offer across all frontier sectors by working with the Business & Intellectual Property Centre (BIPC) Greater Manchester and the Intellectual Property Office (IPO), maximising our support to IP-rich SMEs most in need of support, and ensuring that IP is embedded into wider business support and innovation programmes across GM.	GMCA Intellectual Property Office	New Activity	1	Medium		Strategic
Enterprise and Business Support	Undertake a cross-sector mapping exercise to identify key international markets and trade relationships for each of Greater Manchester's frontier sectors. This will include analysis of sub-sector strengths, export potential, and alignment with global demand, and will inform the development of targeted international engagement and trade propositions.	GMCA & MIDAS	Ongoing Activity	2, 4	Medium		Strategic
Enterprise and Business Support	Support UKGovs Supply Chain Centre and Digital Supply Chain Hub with the data and collaboration activities as required.	GMCA, UKGov	New Activity	1,4	Medium	NIS	Strategic
Enterprise and Business Support	Ensure we are maximising opportunities for GM businesses to access funding via the British Business Bank, including the Industrial Strategy Growth Capital, Strategic Equity, IP-Backed Lending and Nations and Regions Investment programmes.	GMCA, UKGov	New Activty	1	Medium	NIS	Strategic
Enterprise and Business Support	Support the role out of UKGovs cluster champions programme and their North West Deployment, and maximise opportunities presented via the innovation cluster programme.	GMCA, UKGov	New Activty	1	Short	NIS	Strategic
Enterprise and Business Support	Ensure we are maximising opportunities for GM businesses to access funding via the enhanced remit of the National Wealth Fund announced as part of UKGovs National Industrial Strategy.	GMCA & Growth Company	Ongoing Activity	1	Medium	NIS	Strategic
Enterprise and Business Support	Complete a review of our current business engagement forums and processes across our frontier sectors and strengthen businesses voice in the development of our strategies and plans, including further iterations of sector development plans.	GMCA & Growth Company	Ongoing Activity	4	Short		Strategic

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Innovation and Research	Establish the University of Manchester Deep Tech Innovation Programme which will support early-stage companies to commercialise Intellectual Property (£5m funded).	UOM	Ongoing Activity	4,5	Medium	ISZ	Distinctive
Innovation and Research	Complete the set up of the SMMC organisation and facility in Kingsway Business Park in Rochdale (£5.2m funded via ISZ).	GMCA / SMMC	Ongoing Activity	1, 3, 4, 5, 6	Medium	ISZ	Distinctive
Innovation and Research	Explore how GM could lead a new approach/mechanism for the verification and categorization of advanced materials to speed up uptake in industry.	GMCA & Partners	New Activity	1,5	Medium		Distinctive
Innovation and Research	Explore ways to showcase GM developed advanced materials innovation and their applications to the world, including domestic applications of graphene and wearable technologies.	GMCA & Partners	New Activity	2	Medium		Distinctive
Innovation and Research	Establish University of Salford's Acoustics Innovation Institute.	UOS	Ongoing Activity	4,5	Short	ISZ	Distinctive
Innovation and Research	Ensure Greater Manchester is maximising opportunities arising from UKGovs Drive35 Programme.	GMCA, UKGov	New Activity	4	Medium	NIS	Distinctive
Innovation and Research	Ensure Greater Manchester is maximising opportunities arising from UKGovs CAM Pathfinder programme and supporting programmes.	GMCA, UKGov	New Activity	4	Medium	NIS	Distinctive
Innovation and Research	Ensure Greater Manchester is maximising opportunities arising from UKGovs National Material s Innovation Programme (NMIP), Materials 4.0 & Verification Services – and Strategic Materials Piolets.	GMCA, UKGov	New Activity	4	Medium	NIS	Distinctive
Innovation and Research	Deliver the University of Salford's North of England Robotics Innovation Centre collaborative ventures programme (NERIC) - NERIC supports businesses in Greater Manchester to adopt robotics and automate their processes, guiding businesses to implement robotics for intelligent infrastructure, digital automation, and supply chain improvement.	UOS	Ongoing Activity	4, 5,	Medium	ISZ	Distinctive
Innovation and Research	Maximise the impact of the Extended Innovation Accelerator Pilot and centre frontier sector needs in the development of Greater Manchester's response to the Local Innovation Partnership Fund	GMCA	Ongoing Activity	2, 4, 5,	Short		Shared
Innovation and Research	Increase our understanding of industry and academia R&D partnerships in the city region relevant to the frontier sectors, to drive for GM to be a testbed for investment in innovation with commercial application.	GMCA & Partners	New Activity	5	Short		Shared
Innovation and Research	Explore the creation of a localised GM fund which reinvests the value from innovation into social value projects, e.g. data assets for health.	GMCA	New Activity	3, 5	Medium		Shared
Innovation and Research	Explore the creation of a seed fund for high risk/reward pilots that industry cannot absorb but tackle key socio-economic challenges including net zero.	GMCA	New Activity	3, 5	Medium		Shared

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Innovation and Research	Support and input into the Science and Innovation Audit on behalf of all frontier sectors.	GMCA	Ongoing Activity	5	Short		Shared
Innovation and Research	Explore potential opportunities for a Joint Technology Transfer office to sit across all universities and maximise technology transfer opportunities across GM.	University Partners Innovation GM	New Activity	3,4,5	Medium		Strategic
Sector Leadership	Identify strategic themes/challenges (x3) that are scalable, which GM can take a leadership role on – and find ways to bring ecosystem together (including universities) around these themes/challenges - including propositions for larger scale funding.	GAMMA & GMCA	New Activity	All	Medium		Distinctive
Sector Leadership	Ensure we are capturing and embedding key learning from UKRI's "Feasibility study to assess the need and provision of Materials innovation diffusion & commercialisation infrastructure and support facilities for businesses and innovators in nationally and in Greater Manchester.	URKI GMCA	Ongoing Activity	4	Short		Distinctive
Sector Leadership	Continue work of GAMMA via GAMMA Board working closely with Innovation GM to provide strategic direction, shape new initiatives, support current programmes, increase the visibility of the sector including in GM, including identifying innovation active companies and respond to emerging opportunities.	GAMMA & GMCA	Ongoing Activity	1,4	Medium		Distinctive
Sector Leadership	Continue to work with government closely on the Industrial Strategy Zone programme to deliver key projects, as well as work to inform future policy and collaborative opportunities.	GMCA	Ongoing Activity	All	Medium	ISZ	Distinctive
Sector Leadership	Communicate the narrative of GM's cross cutting sectoral strengths to internal and external stakeholders, including industry and government, to inform national policy & strategy for the sector and ensure they are aware of GM's strengths and opportunities, initiatives locally, and gaps in our ability to develop the sector locally.	GMCA & Partners	Ongoing Activity	1, 2	Short		Shared
Sector Leadership	Develop a mechanism for ongoing review of the evidence base regarding GM's frontier sectors, sub-sector strengths, and their development needs, responding to emerging capabilities.	GMCA	New Activity	4,5	Medium		Shared
Sector Leadership	Undertake research to map the gap between where sectors are now and where they need to be to deliver the 5YEP's targets, considering what sectors are currently delivering, what they are capable of, and focused activity required to plug the biggest gaps.	GMCA & Partners	Ongoing Activity	3	Medium		Shared
Sector Leadership	Explore options to develop a mechanism to facilitate cross sector communication between frontier sectors and increase engagement in decision making processes.	GMCA	New Activity	4	Medium		Shared
Sector Leadership	Explore options to increase our understanding of the supply chains that both services, and our businesses in the sector service, including the businesses in GM that make up these, and what is driving key decisions around supply chain management for OEMs and key opportunities for GM.	GMCA	New Activity	4	Medium		Shared
Sector Leadership	Ensure Greater Manchester is represented on relevant national industry groups supporting the delivery of the national industrial strategy .	GMCA, UKGov	New Activity	4	Medium	NIS	Strategic

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Skills and Labour Supply	Explore options to develop an advanced manufacturing Learning Factory in GM (facilities with aspects of authentic production environment to be used primarily for the purpose of learning.	GMCA & FE Partners	New Activity	4	Medium		Distinctive
Skills and Labour Supply	Delivery of AR EdTech For Hydrogen Skills: an education technology platform providing hydrogen skills training content for the manufacturing, construction, transport and energy sectors.	Blair Project	Ongoing Activity	4	Short	IA	Distinctive
Skills and Labour Supply	A package of skills and training opportunities led from the GMCA Work and Skills Directorate working with local authorities to support residents of all ages to access careers in the advanced materials and advanced manufacturing sector. The funding will provide training opportunities and courses matched to local business needs.	GMCA	Ongoing Activity	1, 3	Medium	ISZ	Distinctive
Skills and Labour Supply	Establish the Centre for Advanced Manufacturing Skills Academy (CfAM) at the University of Greater Manchester, which is designed to overcome entry barriers to advanced manufacturing through several initiatives.	University of Greater Manchester	Ongoing Activity	4	Medium	ISZ	Distinctive
Skills and Labour Supply	Work with industry to maximising employer engagement from the sector with the GM Institute of Technology.	GMCA £ Partners	Ongoing Activity	4	Medium		Distinctive
Skills and Labour Supply	Work with GM colleges, industry and education partners to develop a programme to engage, inspire and teach young people in schools about carers in key advance materials and advanced manufacturing professions , including a specific focus on attracting demographics not typically represented in these sectors	GM Colleges, Partners	New Activity		Medium		Distinctive
Skills and Labour Supply	Work with partners to increase the impact of employer engagement in shaping the curriculum within colleges by working with existing advisory boards within colleges and facilitating events/conferences at a GM level where they add value.	GMCA & FE Colleagues	New Activity	1, 3, 4	Medium		Shared
Skills and Labour Supply	Review the opportunities for frontier sector relevant short courses, bootcamps etc. opened up by the new Devolution Deal on skills funding.	GMCA	New Activity	1,3	Short		Shared
Skills and Labour Supply	Ensure that we are aligning sector priorities with MBacc, and that young people have a clear line of sight to jobs in the sectors.	GMCA	Ongoing Activity	4	Medium		Strategic
Skills and Labour Supply	Align Skills and Employment Support interventions with Greater Manchester's Local Skills Improvement Plan (LSIP), led by the GM Chamber of Commerce and utilise new devolved powers from the Integrated Settlement and existing programmes (e.g., Adult Education Budget, Skills Bootcamps) to address priority skills gaps. Support young people and adults in developing academic and technical skills identified through sector skills analysis, informed by business needs and feedback on the Skills System.	GMCA	Ongoing Activity	4	Medium		Strategic
Skills and Labour Supply	Work to ensure that employers and learners are more aware of existing provision and access points into it. This will include a concerted effort to link employers with providers to ensure that awareness of current provision is up to date taking in established options such as Apprenticeships and 'newer' options such as T-Levels and a range of shorter course options around HTQs.	GMCA & Partners	Ongoing Activity	4	Medium		Strategic
Skills and Labour Supply	Explore opportunities for new paid internships placing university students in SMEs to provide innovation support.	GMCA & Universitates	New Activity	3, 4, 5	Medium		Strategic

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared / Distinctive Action
Skills and Labour Supply	Increase our understanding of specific graduate needs for frontier sectors and developing our approach to increasing retention in GM.	GMCA & Universities	Ongoing Activity	1, 5	Medium		Strategic
Skills and Labour Supply	Foster greater collaboration between all parts of the skills systems (HE institutions, FE colleges, ITPs), facilitate shared learning by exemplar institutions on effective programmes, and join up existing assets within GM, using this as a platform to better engage industry and connect their future skills needs to available	GMCA, Fe Colleges, Higher Education Institutions and Partners	Ongoing Activity	5	Medium		Strategic

How we will measure success

These metrics (alongside delivery of actions outlined in this plan) will be used for the process of monitoring and evaluation. As outlined, this is a living document, that will have an iterative approach to how it is written and implemented, and as such these metrics may change in response to this. We will continue to evaluate our approach and the success of the delivery of these plans on a regular basis and adapt them as required in response to changing circumstances. These will also change in line with emerging information regarding National Industrial Strategy implementation (and corresponding national sector plans) as well as single settlement governance.

Measures:

- Number of jobs created
- Amount of private sector investment leveraged towards the sector
- Number of people trained in key skills suitable for jobs in the sector
- Number of businesses supported via schemes to grow in the sector
- Number of businesses able to commercialise due to interventions
- Amount of floor space unlocked for the sector

Impacts:

- Increase in productivity and growth in the sector
- Increased earnings of businesses in sector
- Increased proportion of businesses signed up to the good employment charter
- Increased investment in R&D (public and private)
- Reductions in Carbon emissions from business in the sector