

Frontier Sector Development Plans an Introduction:

Introduction

The Greater Manchester Combined Authority in conjunction with partners, stakeholders and industry has been working to develop 5 “Frontier Sector” Development Plans for the following sectors.

- Advanced Materials & Advanced Manufacturing
- Creative Industries
- Digital, Cyber & AI
- Health Innovation & Life Sciences
- Low Carbon

What are our Frontier Sectors

The GM ‘Independent Prosperity Review’¹ and GM and Cheshire East ‘Science and Innovation Audit’² identified key economic strengths and opportunities for GM’s economy in the four sectors:

- Advanced Manufacturing & Advanced Materials
- Health Innovation & Life Sciences
- Digital, Creative & Media
- Clean Growth and low carbon goods and services

The GM Local Industrial Strategy (2019)³ confirmed these as GM’s ‘frontier sectors’ – we define a frontier sector as 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

In line with the National Industrial Strategy⁴ we have now separated out our formally titled “Digital, Creative & Media” frontier sector into “Creative Industries” and “Digital Cyber & AI”, with each having their own frontier sector development plan.

¹ [GMCA, Greater Manchester Independent Prosperity Review \(2019\)](#)

² [GMCA, Cheshire East and Gm Science and Innovation Audit \(2016\)](#)

³ [GMCA, GM Local Industrial Strategy \(2019\)](#)

⁴ [UKGOV, The UK’s Modern Industrial Strategy](#)

The Purpose of These Plans

These plans 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. investment zone phase 2). Plans will be "living documents", that will have an iterative approach to how it is 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 are 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 that we are continuing to understand as best as possible.

Our Framework & Structure

Each of these plans follows a shared framework and structure that has been developed in response to a best practice review in sector development commissioned by the Greater Manchester Combined Authority in 2023. This framework is outlined below. Please note this framework includes some, but not all the sub-sections within each of the documents.

Strategic Context	Current State of the Sector	Ambitions For Growth	What We Need to do to Achieve Growth	How We Will Measure Success
Connections to other frontier sectors	Sector size and features and distribution	Vision for the sector in GM	Our approach to delivery	Measures
Alignment to other strategies (inc National Industrial Strategy)	Sub-sectors and comparative advantage	Strategic Priorities	Leavers for Growth	Impacts
Wider Context	Research and Innovation Assets		Delivery Plan	
	Flagship			

Growth Locations and Investment Plan Crossovers	programmes and infrastructure Swot Analysis			
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Delivery Plans and Actions

Categorising Actions

Each of these plans contains delivery plans with a series of actions to support sector development, focusing on with actions identified as to how they aligned to our different leavers for growth (outlined below), if this activity is ongoing or new activity proposed in this plan, lead organisations and timeframes for this activity (short term - 25/26 Financial Year and medium term activities – beyond this timeframe.)

We have categorised these actions into 3 categories

- “Distinctive” actions, that are only relevant to a specific sector development plan
- “Shared” actions that thread together our frontier sectors and their plans, and sit across all sector development plans
- “Strategic” actions that sit above sector development plans and support business activities across the economy, sitting across all sector development plans

Levers of Growth

To ensure uniformity of approach across all four Sector Development Plans, enabling the opportunities for cross cutting interventions and sharing of knowledge to be maximised, we have developed our approach around 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.

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](#)⁵ and the developing [Stockport Local Plan](#)⁶, GM has established a clear pipeline of future employment and housing

⁵ [GMCA, Places for Everyone \(2024\)](#)

⁶ [Stockport Council, Stockport Local Plan Information Page](#)

growth opportunities. 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. The [GM Innovation Plan](#)⁷ 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. As with Skills, local enterprise and business support has been an agenda the 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

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](#)⁸, 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](#),⁹ [Local Skills Improvement Plan](#)¹⁰ 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 challenges.

Definitions & Data

As part of the work to develop these plans we have conducted a review of our numerical definitions for each of these sectors in turn, ensuring we understand what data sources we are using in which contexts, be them based of SIC Codes, data scraping methodologies or bespoke research. This can be found as an annex to this document.

⁷ [GM Innovation Plan](#)

⁸ [GMCA & HM Treasury, Greater Manchester Agreement: devolution to the GMCA & transition to a directly elected mayor](#)

⁹ [Greater Manchester Baccalaureate](#),

¹⁰ [Local Skills Improvement Plan](#)

How We Will Work

There are some guiding approaches that will sit as overarching principals for how these plans will work.

- There are living documents, that will have an iterative approach to how there are written and implemented. As befits sectors that are so rooted in new developments and innovation, the plans cannot be set in stone, or it will rapidly become irrelevant.
- The plans, from vision, through to 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, these 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.

Sectoral Development Plans: Technical Annex

During the development of the five Greater Manchester Sector Development Plans (SDPs) significant work has been undertaken to examine existing definitions of the frontier sectors identified in the Local Industrial Strategy and update them with latest thinking and data.

This builds on the approach to defining the sectors used in the Greater Manchester Independent Prosperity Review (IPR) and described in [Annex 3 of the Audit of Productivity report](#)¹¹. This approach relied primarily on SIC code definitions of the sectors – these have been examined, refined and supplemented with new approaches to sector measurement during the SDP development process.

This document draws together the thinking on sector definitions into one place to act as a reference guide for future work. This document aims to provide:

- A description of the methods used to define each of the four frontier sectors (e.g. Standard Industrial Classification codes, sector studies, Government approaches).
- Technical content on the analytical process to allow for replication where possible.
- Commentary on the strengths and weaknesses of particular approaches where appropriate

This is undertaken for each of the frontier sectors in the remainder of this document. Unlike the previous approach for the IPR, this document does not provide a single definition for each sector. Instead, it provides details of all of the definitions that have been used. Future work that places reliance on these definitions should give consideration to the strengths and weaknesses of each approach and which is most appropriate for a given purpose.

A note on SIC Codes

For two of the sectors below (Advanced Materials & Advanced Manufacturing and Digital, Cyber & AI), SIC code definitions are provided. Typically, these would be used to measure the size of the sector in three ways:

- Measuring the number of employees in the sector using the Office for National Statistics' (ONS) Business Register and Employment Survey (BRES) typically accessed through [Nomis](#)¹².
- Measuring the number of business trading in the sector using the ONS UK Business Counts data also available on Nomis.
- Estimating the GVA of the sector using the [ONS Regional gross value added \(balanced\)](#)¹³ data.

Sometimes the data in the GVA release will not be sufficiently granular to align with definitions of the sectors used. The recommended approach for addressing this is to disaggregate larger sectors using employee numbers from BRES which are available to the most detailed (i.e. 5 digit) SIC level.

¹¹ [Greater Manchester Independent Prosperity Review, Audit of Productivity Technical Report \(2019\)](#)

¹² [Nomis - Official Census and Labour Market Statistics](#)

¹³ [ONS Regional gross value added \(balanced\)](#)

Advanced Materials & Advanced Manufacturing

The Advanced Materials and Advanced Manufacturing SDP makes use of three definitions of the sector:

- The SIC code definition of Advanced Manufacturing used in the Audit of Productivity
- The definition of Advanced Manufacturing from the UK Government’s Advanced Manufacturing Plan
- The definitions for Advanced Manufacturing and Advanced Materials used in Optimat’s 2021 study *Accelerating the Rate of Innovation Among Greater Manchester’s Advanced Materials & Manufacturing Base*

Each of these is described in some more detail below.

The Advanced Manufacturing SDP makes use of the **SIC code based definition** used in the Audit of Productivity as shown in the table below with Advanced Manufacturing shown as a sub-set of Manufacturing.

Manufacturing

SIC Code(s)	Description
All Manufacturing: The composite total of all four subsectors defined below.	
Advanced Manufacturing	
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment (electronics)
28	Manufacture of machinery and equipment not elsewhere classified (automotive)
29	Manufacture of motor vehicles, trailers and semi-trailers (automotive)
30	Manufacture of other transport equipment (aerospace etc.)
33	Repair and installation of machinery and equipment
325	Manufacture of medical and dental instruments and supplies
7112	Engineering activities and related technical consultancy
Food and Drink Manufacturing	
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
Textiles Manufacturing	
13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products
Other manufacturing	
16	Manufacture of wood and of products of wood except furniture
17	Manufacture of paper and paper products
19	Manufacture of coke and refined petroleum products
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
31	Manufacture of furniture
321	Manufacture of jewellery, bijouterie and related articles
322	Manufacture of musical instruments
323	Manufacture of sports goods
324	Manufacture of games and toys
329	Other manufacturing

The SIC code approach is used in the SDP as a means of measuring growth and change in the sector. This uses the wider definition of 'manufacturing' from the Audit of Productivity report rather than the sub-set of SIC codes for Advanced Manufacturing. This is to avoid contradictory numbers generated by this approach and the approach used in the Optimat report detailed below.

The SDP also makes reference to the definition of the [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.”¹⁴

This definition clearly focuses on the process of manufacture rather than the items manufactured and is therefore distinct from the SIC code approach. However, the approach is not straightforward to use in the measurement of the sector as it does not readily interface with datasets that provide details on size and volume of firms.

Finally, the SDP makes use of data gathered during the study undertaken by consultancy Optimat in 2021 for Greater Manchester’s Graphene, Advanced Materials and Manufacturing Alliance (GAMMA). The study developed for advanced materials and advanced manufacturing (including digital enablers) which are shown below.

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		

Figure 1: Advanced Materials Taxonomy

¹⁴ [UKGOV, UK Government’s Advanced Manufacturing Sector Plan \(2025\)](#)

		Manufacturing				Enablers	
Design	Engineering / Development	Material Pre/Post Processing	Material / Product Processing	Assembly	Testing, Inspection, Validation	Process Control & Optimisation	Digital Manufacturing Technologies
Computer Based Simulation	Rapid Prototyping	Precision Casting	Additive Manufacturing	Robotics & Automation	Metrology	System Integration	Industrial IoT (sensors, barcode, QR code, RFID, etc)
Computer Aided Design		Near Net Shape Forming	Computer Aided Manufacturing		Non-Destructive Testing	SCADA Systems	Augmented and Virtual Reality
		Formulation	Coatings				Big Data
		Dispersion	Joining				Data Analytics
			Precision cutting / machining				Digital Twinning
							Blockchain
							Artificial Intelligence / Machine Learning
							Data & Systems Integration
							Industrial Cyber Security

Figure 2: Advanced Manufacturing Taxonomy

A data-driven process was then employed using the DataCity platform to identify relevant GM companies operating within these sectors. This approach ensured a focused analysis of advanced sectors, excluding basic manufacturing and supply chain roles. One of the outputs of the study is a list of firms, trading in GM that are active in the sectors identified in the taxonomies.

This was a standalone, snapshot study which limits the immediate replicability of its analytical approach. Whilst it would need dedicated time and resource investment to replicate and update the analysis, this should be considered if appropriate for a particular project or policy intervention

Creative Industries

The plan adopts an overarching UK Government (DCMS) definition of the creative industries as “those industries which have their origin in individual creativity, skill, and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property.” This approach aligns with the sector as defined in the National Industrial Strategy sector (2025).

Using this definition, the plan uses Standard Industrial Classification (SIC) codes to quantify employment volumes in Greater Manchester through the Business Register and Employment Survey (BRES). By applying these nationally recognised classifications, the analysis provides a robust measure of employment across creative subsectors such as publishing, broadcasting, design, advertising, architecture, and cultural education. Alongside employment counts, location quotients are calculated to assess Greater Manchester’s relative specialisation compared with national averages, highlighting both areas of competitive strength and subsectors where the city-region is under-represented. This approach ensures the sector is framed consistently with national

definitions while also providing insight into Greater Manchester’s distinctive creative profile, its comparative advantages, and areas where targeted intervention may be required.

Analytical Approach

Further sources of analysis in the plan include:

- Quantitative analysis: Estimates of Gross Value Added (GVA), employment, and sector composition were derived from BRES via Nomis using National Industrial Sector classifications & DCMS Sector Economic Estimates, Create UK regional modelling, ONS datasets, and Greater Manchester local authority data.
- Qualitative evidence: Local strategies (e.g. Independent Prosperity Review, Local Industrial Strategy) and sector intelligence (e.g. GMCA programmes, case studies from MediaCityUK, Aviva Studios, Islington Mill) provided insight into opportunities, barriers, and ecosystem development.

Sources

- DCMS Creative Industries Sector Economic Estimates (2024)
- Creative UK, Creative Industries Outlook 2024/25
- PEC (Creative Industries Policy and Evidence Centre), State of the Nations: Skills and Initiatives Report
- British Business Bank, Backing Innovation: Creative Sector Investment Report (2024)
- Innovate UK, Creative Industries R&D Impact Report (2024)
- GM Independent Prosperity Review (2019)
- GM Local Industrial Strategy (2019)
- GMCA datasets and local authority returns (2025)
- Create Growth Programme (DCMS-funded) evaluations
- Local creative infrastructure strategies (Manchester, Trafford, Stockport)
- One Creative North documentation
- ONS Business Register and Employment Survey (2023)

Digital, Cyber and AI

The Digital, Cyber and AI SDP makes use of two definitions of the sector:

- The SIC code definition of Digital used in the Audit of Productivity
- Analysis of selected sub-sectors featured in the UK Innovation Clusters map

Each of these are described in some more detail below.

This SDP uses the SIC code definition is used in the [GM Independent Prosperity Review’s Audit or Productivity](#) to provide estimates of the sector’s size and recent growth. The SDP makes the clear distinction between the digital sector and the wider creative and media sector and therefore uses only the three SIC codes from the IPR specifically related to digital as shown below:

Digital	
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities

A particularly prominent issue for this sector is that SIC codes often struggle to capture the evolving nature of novel or emergent sectors. This limitation becomes particularly apparent with technologies such as e-commerce or AI, where businesses might be misclassified under other sectors (e.g., e-commerce under retail). Although the SIC code approach provides a useful benchmark, it can overlook newer, emerging sub-sectors. This should be considered in any future use of the SIC definition.

The second approach relies on the [UK Innovation Clusters Map](#) developed by the Department for Science, Innovation and Technology (DSIT). This tool uses the DataCity platform's Real-Time Industrial Classifications (RTICs), which employ machine learning to analyse firms' websites and identify sector-relevant keywords. Analysis for the SDP selected the RTICs listed below as relevant to the Digital, Cyber and AI sectors. The cluster map was overlaid with the Greater Manchester boundary and the proportion of the cluster based on land area assigned to GM. The percentage of overlap with GM was then applied to calculate the relevant economic statistics. This approach was experimental and should be treated as such in any future work.

Innovation Clusters Map 'Digital' RTICs
Agency Market
Artificial Intelligence
Cyber
Data Infrastructure
Digital Creative Industries
EdTech
FinTech
Gaming
Geospatial Economy
Immersive Technologies
Software Development
Software as a Service (SaaS)
Streaming Economy

Telecommunications

Health Innovation & Life Sciences

The Health Innovation and Life Sciences SDP makes use of two definitions of the sector:

- The UK Government’s statistics on the Bioscience and Health Technology sector
- Additional work on defining and measuring the sector undertaken as part of the Metrodynamics study *Health Innovation in Greater Manchester: Supercharging our Collective Strengths*

Each of these is described in more detail below.

The UK Government defines Life Sciences as the core activities and service and supply operations of businesses within the Biopharmaceutical and Medical Technology industries. They provide [official statistics](#) on the size and composition of the sector. These include a detailed dataset on life science sites in the UK which include information on the location, size and turnover of the UK’s life sciences companies as well as categorisation by sub-sectors. This dataset also shows the wide range of SIC codes that these businesses fall within. This dataset should be seen as the authoritative source for measuring the Life Sciences sector in GM rather than an SIC approach.

Beyond these definitions, Health Innovation can take on broader interpretations. It refers to any technology adopted or adapted for use in healthcare, including "Med Tech" like AI algorithms for health data, diagnostic devices, sensors, GP surgery software, wearables such as smartwatches monitoring heart rate, and drones for transporting organs and medical supplies. This wider definition complicates the measurement of the sector but allows for the recognition of cross-sector overlaps. For example, Greater Manchester’s strengths in AI, Data, Advanced Computing, and Advanced Materials intersect with capabilities in Genomics and Diagnostics, creating new opportunities that may extend beyond traditional boundaries.

One approach to defining this wider interpretation of the sector is explored in the Metrodynamics study *Health Innovation in Greater Manchester: Supercharging our Collective Strengths*. Here, the Health Innovation Ecosystem is defined as “research, industry and healthcare partners conducting health innovation activities in GM, and the structures and incentives which provide the enabling conditions for collective success.” The report includes analysis using the DataCity platform of the following sub-sectors to reflect the activities of businesses which operate at the interface between digital and health:

- Artificial Intelligence: Life Sciences
- Immersive Technologies: Healthcare
- Internet of Things: e-Health
- Sensors: Medical
- Software as a Service: Healthcare

- Wearables and Quantified Self: Medical

Low Carbon

There is no single agreed or widely adopted definition of the Low Carbon sector either at a national or international level. Firms in the sector are likely to be present across a range of industries and as such the SDP does not attempt to utilise an SIC definition of the sector. Instead, it makes use of two sources analysed in concert:

- kMatrix's data on Low Carbon and Environmental Goods and Services (LCEGS)
- Data City's Net Zero Real Time Industrial Classification (RTICs) data

These are described in more detail below.

kMatrix employs a bespoke method to measuring the sector, described more fully in [Green Economy's report on GM](#). kMatrix defines its approach to measuring the sector as using 'multiple sources of industrial-based evidence to quantify market values.'

Details of the sub-sectors included within the LCEGs definition are included in the table below:

LCEGS by Level 2 Sub-Sector
Carbon Capture & Storage
Additional Energy Sources
Building Technologies
Energy Management
Nuclear Power
Contaminated Land
Renewable Consultancy
Air Pollution
Hydro
Recovery and Recycling
Environmental Consultancy
Waste Management
Water Supply and Waste Water Treatment
Environmental Monitoring
Geothermal
Marine Pollution Control
Noise & Vibration Control
Biomass
Wave & Tidal
Photovoltaic
Wind
Alternative Fuel Vehicle
Carbon Finance
Alternative Fuels

The DataCity's explorer platform includes Real Time Industrial Classifications (as described in the Advanced Material and Advanced Manufacturing section of this paper). The SDP makes use of analysis of the Net Zero RTIC as defined by DataCity. Details of the individual sub-sectors included within the RTIC are provided below:

RTIC Net Zero sub-sector code
Net Zero: Low Carbon Consultancy, Advisory & Offsetting Services
Net Zero: Diversion of Biodegradable Waste from Landfill
Net Zero: Waste Management and Recycling
Net Zero: Building Technologies
Net Zero: Pollution Control and Mitigation
Net Zero: Low Emission Vehicles
Net Zero: Heating
Net Zero: Renewable Energy Planning Database
Net Zero: Grid
Net Zero: Energy Storage
Net Zero: Green Finance
Net Zero: Agritech
Net Zero: Renewables
Net Zero: Carbon Capture
Net Zero: Low Carbon Energy Generation
Net Zero: Energy Cooperatives