



The Future We Made: Birmingham and West Midlands Future Proofing Toolkit 2020-2060

Sustainability West Midlands

July 2015



UNIVERSITY OF
BIRMINGHAM



Report information

Title: The Future We Made: Birmingham and West Midlands Future Proofing Toolkit 2020-2060

This report is produced by Sustainability West Midlands, one of six local city projects co-funded by the Foresight Future of Cities project in the Government Office for Science. Each project is developing its own methods for visioning possible futures of its city. This report was produced in collaboration with input from advisors from Birmingham City Council, Forum for the Future, Business in the Community West Midlands, Aston University, Birmingham University, Climate UK, Innovate UK, and stakeholder participation from over 50 Sustainability West Midlands members.

Disclaimer: This report represents the independent advice commissioned by Sustainability West Midlands, and not necessarily that of the funders, advisors, or participants.

Version: Final 28th July 2015

Funders: Government Office for Science Foresight Programme and Sustainability West Midlands

Project Manager: Dr Simon Slater, SWM

Project Contributors: SWM Researcher Pamitta Mall, Alan Carr, SWM Sustainability Adviser, and Advisors from Birmingham, City Council, Forum for the Future, Business in the Community West Midlands, Aston University, Birmingham University, Climate UK, Innovate UK, and the input from over 100 Sustainability West Midlands members and other stakeholders.

Copyright: This report may be freely distributed and used for public benefit and non-commercial use. If information is used from this report it must reference the source which is "The Future We Made: Birmingham and West Midlands Future Proofing Toolkit 2020-2060" *Sustainability West Midlands, July 2015*".

About Sustainability West Midlands

We are the sustainability adviser for the leaders of the West Midlands. We are also the regional sustainability champion body for the West Midlands, designated by government. We are a not-for-profit company that works with our members in the business, public and voluntary sectors. Our Board is well led and has cross-sector representation; they are supported by our team of staff and associates.

Our vision is that by 2020 businesses and communities are thriving in a West Midlands that is environmentally sustainable and socially just.

Our role is to act as a catalyst for change through our advice to leaders, to develop practical solutions with our members and share success through our communications.

www.sustainabilitywestmidlands.org.uk

Registered company No.04390508

Contents

1. Introduction	3
2. Background to Futures Work	4
3. Developing the Toolkit	7
4. The Results.....	9
5. How to use the Results	16
Annex: Future Drivers Supporting Information	18

The Future We Made: Birmingham and West Midlands Future Proofing Toolkit 2020-2060

1. Introduction



Introducing West Midlands Future Proofing Toolkit

Funders





Advisors









Stakeholders - SWM members and others

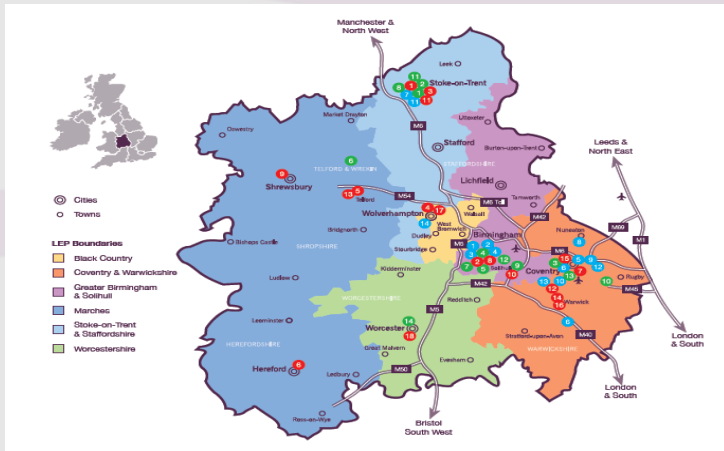


In 2014 Government Office for Science Foresight Future Cities Programme co-funded Sustainability West Midlands (SWM) to update previous work with stakeholders to:

- Develop a checklist of economic, social and environmental future drivers
- To cover Birmingham and wider West Midlands, and periods of 2020, 2040 and 2060
- Guide or slide pack that could be used by local decision makers at business planning away days



Is the West Midlands Future Proofing Toolkit for You?



Q1. Is the West Midlands area (see map) important to the future of your organisation in terms of its customers, staff, suppliers and operations?

Q2. Does your job cover any of the following: strategy, business planning, risk management, council scrutiny, investment decisions, new products, site development ?

Q3. Do you want some help to support your busy decision making?

The rest of this report provides you with:

- background on the toolkit and how it was developed
- the results
- more detail behind the 12 future drivers
- how to use these resources

There is also a separate slide pack which provides much of this information in a summary version with some suggestions on how to use it in practice. This can be found on our website on www.sustainabilitywestmidlands.org.uk

2. Background to Futures Work

sustainability west midlands **Introducing Futures work in the West Midlands**

West Midlands Futures
Drivers of change affecting the West Midlands
Forum for the Future
November 2006
Forum for the Future
9 Imperial Square
Cheltenham GL50 1QB
T: 01242 263400
info@forumforthefuture.org.uk
www.forumforthefuture.org.uk

forum for the future
a low-carbon vision for the West Midlands in 2020
by Forum for the Future
april 2009

Long history of research and studies

The challenge is practical application to leaders and managers within their organisations

How do they plan to shape and respond to future issues or 'drivers' when they are:

- too busy
- dealing with short-time scales
- no political consensus
- their organisation or team is perceived as too small to make a difference

Why are 'futures tools' important?

Our mission as sustainability advisors to the leaders of the West Midlands requires us to be able to set out a positive and realistic vision and the steps to get there.

The key benefits of futures tools are:

- They help inform future decisions and planning for a sustainable future in a broader and often more receptive context.
- They can be integrated into a range of existing and practical approaches such as strategic planning, board away days, policy, and development site appraisal.

The key challenges in using futures tools are:

- Future tools are resource intensive, and often the domain of large corporations and academic institutions with specialist knowledge.
- There is little support for practical everyday implementation by non-specialists.



Solutions used by Sustainability West Midlands members...

Build it into your systems

Criteria within appraisals for strategy, council scrutiny, business plans, risk registers, investment decisions, new products, site developments

Build it into your culture

Discuss as part of board or team away days on annual business planning

Use to drive innovation and identify new collaborators

Future generations champion

Our practical experience in the use of futures tools

Building it into your systems

Regional and sub-regional policy development, appraisal and monitoring

We have used scenarios in developing the low carbon economy evidence base to inform the draft policies in 'connecting to success' the UK's first regional low carbon economic strategy. These scenarios were used to set ranges for the cost-benefits of different carbon reduction policies based on current and potential future price rises.

Our experience of scenarios for testing wider policy is that they are useful as a training tool to help policy makers think about the future and to generate issues to consider. However they are very poor in being able to be used in day to day policy evaluation and development.

Therefore as part of the low carbon evidence base work we developed a checklist of future drivers of uncertainty. We worked with Forum for the Future to review the literature, conduct interviews and develop a list that could be used to assess regional policy.

For example this set of criteria was integrated into the first sustainability and resilience review of economic development policy during the development of 'connecting to success'. The review highlighted issues around demographic change, energy security, and extreme weather impacts that informed the design of future regional funding programmes.

However a set of policy criteria is good at quality control, but it is not enough to help set out policy direction. For this you need to develop and set out a vision that is building on existing evidence, and is positive and realistic on what the end outcomes could look like. To achieve this we worked with Forum for the Future to set a low carbon vision for the West Midlands in 2020 with a mixture of targets and descriptions of what it would look and feel like for different people, places, and businesses. Subsequently this vision document was used to 'sell' a desirable and realistic future in the West Midlands. Forum have used this practical West Midlands approach to subsequently inform the work of a number of international and national businesses and campaigning organisations.

We found out that a vision wasn't enough to influence policy, so after building a vision up from all our previous policy work and research, we had to break it down into a clear roadmap for our business, local authority and voluntary sector members to work together on.

As a result we produced a summary roadmap that set out the key outcomes by 2020 and the key areas where working together cross-sector and boundary at a regional or sub-regional level would accelerate change, be resilient to future drivers of uncertainty, and in most cases was the most cost-effective and easy to implement. We annually monitor and report progress on this roadmap to achieve the vision, the only UK region to do this, and report and share good practice at our annual conference.

Organisation strategy and monitoring

Through combining our knowledge from the future drivers and roadmap and vision work we have often carried out organisational sustainability and resilience reviews and annual monitoring. For example we worked with the Birmingham and Black Country City Region on key joint sustainability priorities linked to our roadmap. We worked with Coventry City Council and partners to develop a local version of our vision and roadmap for the city. We have carried out annual reviews and reports for SWM members, such as the Midcounties Cooperative and Centro. These have often identified gaps which have been addressed in the strategic approach adopted by organisations.

Strategic development site appraisal

We have worked on using our sustainability and resilience reviews on key development sites such as New Street Station and Longbridge. As a result opportunities for local energy generation and green infrastructure have been incorporated.

Building it into your culture

Business innovation

Previously we have worked with a foresight project for small and medium businesses in the West Midlands that provided workshops to set out a range of future issues to help stimulate new business ideas and models, together with a range of other help around new product design, access to finance etc. As a result of this programme several engineering companies diversified into energy products and components.

We have also run workshops with a range of SWM business members about how to use sustainability as a framework to understand future issues and how these can be used to drive innovation in future product and service design. The challenge we had was identifying people within our larger business members who had responsibility for innovation, as this was often the responsibility of the parent company outside the region, and often the UK.

Futures Champion

Our research had also identified good practice in Finland where the Parliament had a 'futures scrutiny' committee, who were made up of MPs who were trained on future issues, and then assessed current proposed legislation and policy. We experimented with a more local version, by helping develop and support the first Board member for future generations on a UK public organisation. This was a role on the Board of the regional development agency. This role helped to raise and champion the profile of wider longer term issues at Board level rather than be the environment champion. In practice the challenge was to define and support the scope of the role.

Recently the Welsh Assembly Government has built on this idea to create a Future Generations commissioner.

3. Developing the Toolkit



Introducing West Midlands Future Proofing Toolkit



Developed

Through update of literature, interviews, and stakeholder workshops within Birmingham and the West Midlands

Reduced 2006 study of 19 key drivers to 12

Tested

Part of updated sustainability and future proofing reviews with several SWM members

Used as part of Venturefest West Midlands for business start ups

In 2006, Forum for the Future working with Sustainability West Midlands (SWM), wrote the *West Midlands Futures: Drivers of change affecting the West Midlands* report. The report documented the nineteen drivers of change for the region, using literature, interviews and workshops to establish the nature of each driver, an overview and finally, some predicted impacts over the course of the next 20 years.

Subsequently SWM has used this work to inform a range of practical applications.

In 2014 there was a regional 'roundtable' in Birmingham, convened by Government Office for Science and local partners to explore the interest in being involved with a national foresight programme on the future of cities.

As a result Birmingham City Council and SWM participated and presented at a number of national foresight meetings along with 12 other UK cities. Different approaches were encouraged within each of the cities and surrounding areas. SWM was supported to run a project to help update our futures work with partners to help provide a practical toolkit for Birmingham and the wider region.

The scope was on Birmingham and the wider West Midlands because this provided a useful scale to review a range of interconnected drivers and how they impacted urban and rural areas, transport, different sectors and demographics. Also our business members felt the wider scale was important to build wider support and use of the toolkit.

This approach has worked as during the time of the research Birmingham has undergone a series of changes, including a number of Government reviews requiring it to prioritise particular operational areas. Also the emergence of the West Midlands Combined Authority has made the scale and scope of the research even more relevant.

Development

We tested the assumptions within the 2006 report to refine and develop a new set of future drivers for Birmingham and the West Midlands. To do this we:

- Interviewed over 10 national and local experts from our advisors drawn from Birmingham City Council, Forum from the Future, Innovate UK, Aston University, University of Birmingham, Business in the Community, and Climate UK
- Engaged with over 100 SWM members and local stakeholders from workshops in October and November, our annual state of the region survey, and a national workshop in London as part of the Future Agenda global foresight programme.
- Reviewed the literature provided through interviews and workshops. This involved over 100 documents, which in turn represented the analysis of over 1000 different pieces of research.

Testing

The resulting 12 economic, social and environmental drivers were then tested with a range of our members in early 2015. This included:

- Using them as criteria within our sustainability and resilience reviews for Midcounties Cooperative, Shropshire Housing Group, and University Birmingham Hospital.
- Incorporating them within a workshop to develop the sustainability appraisal criteria for the Greater Birmingham and Black County Local Enterprise Partnership Housing Growth Options.
- Supporting local business start-up ideas as part of a workshop for Venturefest West Midlands with Innovate UK.

Key findings

Through this process we found that:

- The majority of information and research is at a global scale with a UK focus, but very little at a regional or city level. Therefore interpretation is required about the impacts on urban, rural, and sectors within Birmingham and the West Midlands.
- Even since 2006 there had been some major changes in the importance of the drivers. For example with an increase in importance in areas such as population growth, devolution, technology, climate adaptation, and energy security, but a decrease in areas such as carbon reduction.
- Although there have been many useful local studies on particular topics, sectors or areas, there is no coherent futures capacity or coordination within Birmingham and the region as a result of changes in regional and local governance and public sector cuts.
- There is a tension between some stakeholders wanting to create the future through new visions and policy statements and others wanting to deliver previous agreed objectives, but in a more responsive way to deal with future drivers.
- The language used within futures work often needs to be simplified and used carefully. For example we found that by positioning the work as *'a way to start a useful conversation'* often helped manage expectations.
- During the testing process we found it easy to engage with our larger business members and innovation driven smaller businesses, however for our local authority members this was not currently a priority when they were trying to plan to the end of the year, let alone 5 years ahead.
- The emergence of the West Midlands Combined Authority provides a range of opportunities to continue to build cross-sector support and capacity to plan and respond to future drivers to build a better economic, social and environmental future.



What Next?

Further development with SWM members using this in their organisational systems and culture

Support for the new West Midlands Combined Authority

Building a network of future generations champions across research, practice, sectors and places in the wider West Midlands Showcase

Annual event to show case practical application and update toolkit

4. The Results

	12 Key Future Drivers for Birmingham and the West Midlands 2020-2060 (Society, Business, Environmental)
S1	Population Changes
S2	Changing workforce, skills and working practices on business
S3	Impact of lifestyles and environment on health
S4	Increased demand for more regional or local powers and governance
S5	Widening inequality and inclusion gap
B1	Knowledge economy and networked world
B2	Accelerated change from new technology opportunities for business
B3	Globalisation of markets and competition on business
B4	Increased stress on transport infrastructure for public services and business
E1	Pressure for climate change adaptation
E2	Emphasis on lower carbon energy supply, security and cost for public services, business, and communities
E3	Increased pressure on natural resources

See supporting slides and report on www.sustainabilitywestmidlands.org.uk

The results included:

- A reduction from 19 to 12 revised key future drivers for Birmingham and the West Midlands 2020-2060 (see above)
- A report with supporting detail on these drivers (see this report)

- A slide pack and process that can be used to incorporate the drivers into local organisational systems and culture (see www.sustainabilitywestmidlands.org.uk)
- Testing with a number of organisations prior to a wider roll-out and use locally.

These 12 drivers are expanded on below and in the annex.


Key Future Drivers for Birmingham and the West Midlands 2020-2060

S1: Population changes

2020-2060 - Higher population growth rates in cities/urbanised areas

2020-2040 - Higher strain on number, size and cost of houses

2020-2040 - Higher demand by elderly for services (bus services, doctor's surgeries), especially in rural areas

2020-2040 – Reduced employment opportunities


Key Future Drivers for Birmingham and the West Midlands 2020-2060

S2: Changing workforce, skills and working practices on business

2020-2040 - Higher employment rates

2020-2040 - Manufacturing industry will have to adjust in order to provide viable employment opportunities

2020 – More micro-scale businesses will be launched

S3: Impact of lifestyles and environment on health

2020-2040 - Physical and mental health will continue to decline, if current situation re lifestyle and access to services is sustained

2020-2040 - Respiratory problems and allergenic reactions aggravated due to changes in climate

2020-2040 - City centre areas at higher risk of extreme temperatures due to the Urban Heat Island effect, and may be at greater risk of disease due to greater population density

2020-2040 - Greater demand on public infrastructure and health services especially in all localities

S4: Increased demand for more regional or local powers and governance

2040 - Region may be able to capitalise on its diversity, especially if it is able to become a hub for low carbon technology, leading to an improved image and greater demand for devolution

S5: Widening inequality and inclusion gap

2020-2060 - Strong likelihood that the region will further experience inequality and inclusion gaps

2020-2050 – Worsening health inequalities especially unless social, economic and environmental outputs improve

B1: Knowledge economy and networked world

2020 - Rural areas could be left out of future development if access is a struggle

2020-2040 - Power and influence of people and communities in affecting services and industry will grow

2020-2040 – Opportunities for partnership and business development, especially with the green economy and the potential new industry in the West Midlands

B2: Accelerated change from new technology opportunities for business

2020 - Environmental benefits: reduced levels of carbon emitted as new technology will be installed and maintained

2020-2040 - Business benefits: attract industry, companies, experts, employees to the region

2060 - Social benefits: people value industry, people valued by industry, encourages education

B3: Globalisation of markets and competition on business

2020-2040 - If West Midlands continues to export at its current (and eventually improved) rate, then the benefits could be great

2020-2040 - Increase in 'ethical' consumers could increase competition amongst businesses and also put pressure on them to act more responsibly

2020-2040 - On-shoring could improve employment levels in the region, and promote relevant skill sets

B4: Increased stress on transport infrastructure for public services and business

2020-2060 - Health and social benefits from promoting cycling and walking will be felt across the region

2020-2060 – Potential for the West Midlands to become a hub for low carbon vehicles

2020-2060 – Opportunities for local authorities to lead by the use and purchase of electric and other low carbon vehicles and by requiring external contractors to use low carbon vehicles

E1: Pressure for climate change adaptation

2020-2040 - Rural areas across the region could struggle in response to the effects of climate change

2020 - Extreme weather events hit infrastructure including flooding, snow and heat waves causing significant transport disruption locally, as well as nationwide

2020-2060 - For agriculture across the region, growing season could potentially start earlier, yields may increase due to higher temperatures and opportunities could arise to expand growth to include non-food crops for energy and other materials

E2: Emphasis on lower carbon energy supply, security and cost for public services, business, and communities

2020-2040 - Opportunities for communities to campaign for, introduce and own renewable forms of energy

2020-2060 - West Midlands could thrive and become a hub for low carbon technology, creating research and employment opportunities

2050-2060 - Investment in low carbon public services or aid to those wanting to acquire low carbon technologies has the potential to create healthier communities, familiar with low carbon and renewable energy technologies

E3: Increased pressure on natural resources

2020 - Increased pressure on natural environment and biodiversity

2020-2040 - In mitigating against any increases in oil demand, opportunities exist for business and communities to engage with low carbon technology

2020-2040 - Opportunities for agriculture could arise to expand growth to include non-food crops for energy and other materials

2020 - The issue of waste, recycling as a venture will grow, feeding into the ever more popular 'circular economy' concept

5. How to use the results



Build it into your systems

12 Key Future Drivers for Birmingham and the West Midlands 2020-2060 (Society, Business, Environmental)	
S1	Population Changes
S2	Changing workforce, skills and working practices on business
S3	Impact of lifestyles and environment on health
S4	Increased demand for more regional or local powers and governance
S5	Widening inequality and inclusion gap
B1	Knowledge economy and networked world
B2	Accelerated change from new technology opportunities for business
B3	Globalisation of markets and competition on business
B4	Increased stress on transport infrastructure for public services and business
E1	Pressure for climate change adaptation
E2	Emphasis on lower carbon energy supply, security and cost for public services, business, and communities
E3	Increased pressure on natural resources

Step 1: Use this checklist annually (and if necessary the supporting slides and report) to check whether you think any of these drivers are relevant for your organisation or department

Step 2: If you find a relevant driver then check if it is built into the system you are responsible for e.g. a new criteria or question within your strategy appraisal system

Step 3: If you find a relevant driver that could impact a different system or part of the organisation – ask them if it is covered?



Build it into your culture



Most teams have an annual away day or meeting to look at the business plan for the year – why not conduct this 30 minute exercise...

Step 1: Split your team into smaller groups and provide them with a set of the 12 slides summarising the different key future drivers

Step 2: Ask them in their groups to put the 12 drivers into equal piles of 4 representing high, medium or low impact on the organisation.

Step 3: Then combine their overall results into one high, medium, low pile and then together discuss the ones they chose as 'high' and why.

Step 4: Then back into small groups they can select one of the 'high' drivers to work on in terms of a practical next step action to build into your business plan for this year or to ask another part of the organisation.

“For time and the world do not stand still. Change is the law of life. And those who look only to the past or the present are certain to miss the future”

John F Kennedy (1963)

“The best way to predict the future is to create it”

Peter Drucker (1973)

“The future is already here — it's just not very evenly distributed”

William Gibson (1993)

Check you are using the latest version of the toolkit (slides and report) by visiting our website

There are also useful links to other documents and websites within the supporting report

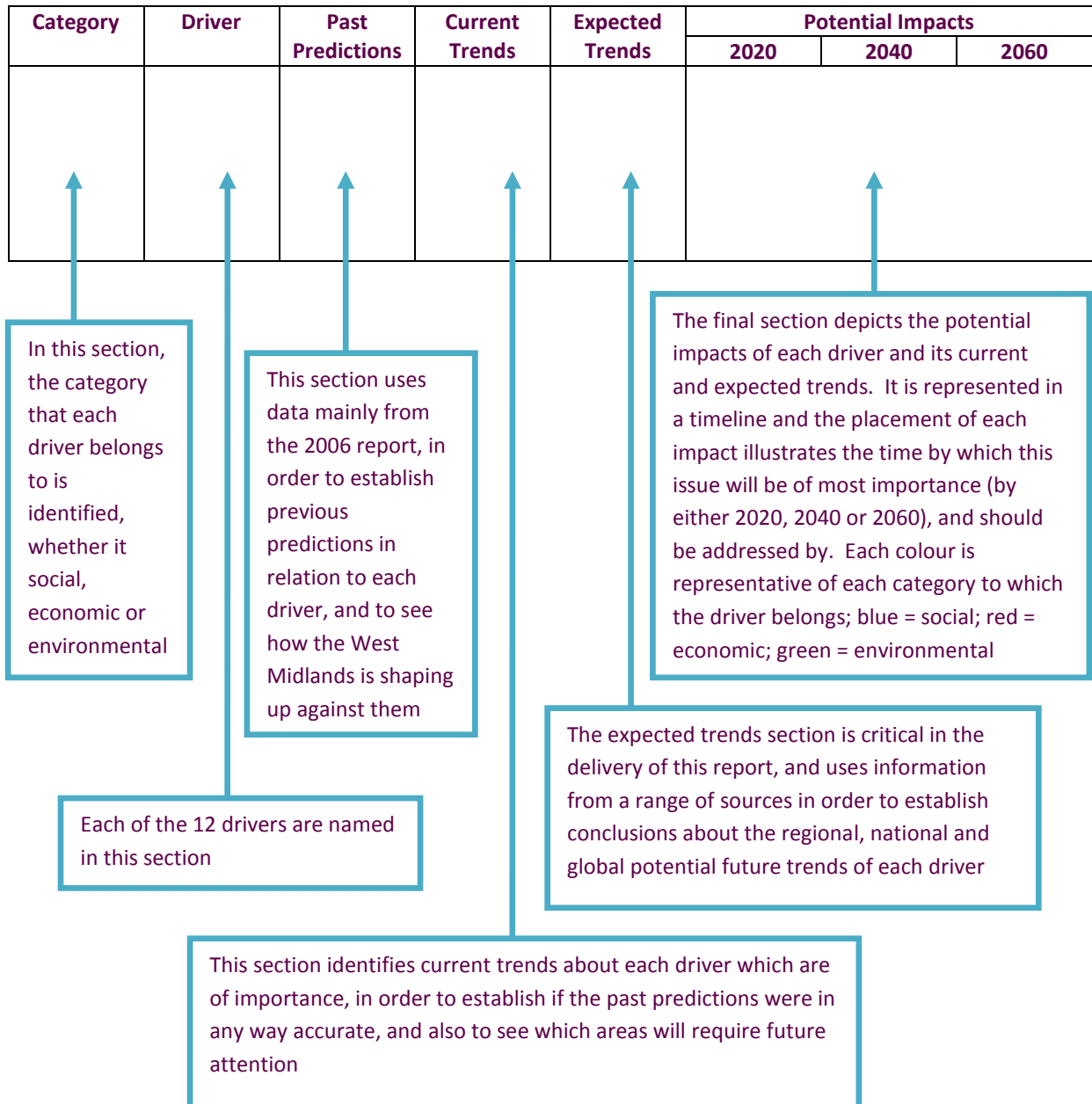
Contact us if you want support in using the toolkit to build future proofing into your systems and culture, or want to be part of our future generations champions network

enquiries@swm.org.uk

www.sustainabilitywestmidlands.org.uk

Annex: Future Drivers Supporting Information

The 12 future drivers affecting change across the West Midlands is represented in table format. The diagram below outlines the framework of the table, why each parameter was selected and what can be expected when using the table.



Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
Future Social Drivers of Change in the West Midlands	S1: Population changes (growth, migration, ageing) on housing, services and employment	- Continued growth presents both challenges and opportunities - A greater possible population to employ - Increase in the demand for housing and services, as well as specific types of accommodation (for the elderly for example) - Growing strain on infrastructure - An ageing population could result in an increase in working age, or more of the population will be economically inactive - With a demand for migrant labour continuing to grow, inward migration set to rise - Internal migration in the region from rural to urban areas will affect population size and age in rural and urban areas Whilst the changes themselves were all deemed predictable, the population was sure to age and grow, and migration would continue, uncertainties were identified. Whether the size of the population flows of migration would stabilise	- The world population, 7.2 billion in mid-2013, is expected to reach 8.1 billion by 2025, and 9.6 billion by 2050, of which 8.2 billion will be in developing countries²² - Britain will see its population swell from today's 62.2 million to 77 million, an increase of 24%³ - Today, the largest growing population group is people over 60 years old, growing at more than 1% annually in developed regions and at 3.7% annually in developing countries. They are predicted to outnumber under 15s by 2050, going from 841 million in 2013 to 2 billion in 2050²² - In both developed and developing nations, people aged 25 to 59 (working age) were at an all time high in 2012. However, this is expected to have peaked in developed nations in 2013, to decline after that²² - In 2013, almost every	- Increased pressure on food supply and resources - Increased demand for energy and resources - Urbanisation - Increased demand for jobs/employment - Workforce shortage and economic slowdown - By 2050, around 75% of the world population will be living in cities³ - The countryside stands to lose almost one billion inhabitants, having peaked around 2020³ - In Britain, from 2010 to 2050, the population of those aged 0-14 is predicted to fall from 30% to 20%. The population of those aged 15-65 will be constant. The percentage of 65+ will rise from 10% to 20%³ - Change in government policy and immigration could influence the impacts of population changes on housing, services and employment in an unpredictable way¹³ - If national growth was to remain constant from 2012 onwards, then the	Higher population growth rates in cities/urbanised areas; migration in search of employment		
					Ageing population will be especially prevalent in rural areas; elderly are more likely to reside in rural areas. Although this could mean that the demand for services (bus services, doctor's surgeries) could be high, the influx of people into cities alongside government cuts could in fact leave the elderly and others in rural areas cut off and isolated		
					Ageing population means that people are more likely to stay in employment for longer, reducing the number of employment possibilities for others		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		however, was deemed more difficult to predict.	country in the world was affected by migration. Asia has seen the largest increase (41%) in international migrants from 2000-2013²¹ • Internal migration is also increasing, with people moving due to inequitable distribution of resources, or escaping natural disasters or violence³⁰ • Migrants looking for better economic/social opportunities are the fastest growing group of migrants^{23,30}	expectation would be that the 64 cities in the UK would see their combined population grow by 5.2m by 2037 and by a further 4.1m by 2062, based on the UK's principal projection being for a 9.6m increase by 2037 and rising by a total of 16.2m by 2062. This represents a total increase of 9.3m for the 64 cities over the 50 years to 2062¹³	Higher strain on number, size and cost of houses, as well as stress on public services and infrastructure including transport, health, recreational and private resources such as energy and water access		
	S2: Changing workforce, skills and working practices on business	• Businesses are more accommodating to the changing workforce; more women in work means that flexible hours and working from home is much more common • ICT revolution enables home working to be much more common • Increasing importance of collaboration, team work, joint ventures and interpersonal skills • More self-employment, part time employment and home-	• Telework, working at home or on the move using networked computers, is on the increase in the UK. Over two million did it in 2002, twice the number in 1997. 60% of UK workers are interested in teleworking. It helps with work-life balance, especially for workers with young families, and improves quality of life³ • Whilst in the past, the UK has prevailed in the	• It can be deduced that if the nature of industry, or employment in mainly the primary industries changes and develops to incorporate managers, professional and technical occupations at a higher rate across the West Midlands, then the ICT revolution will make working from home a more viable option • Manufacturing firms will harness a wider skills base, with leaders and managers with commercial and	2020	2040	2060
					Flexible hours and the growing ability to work at home will enable higher employment rates, who otherwise were unable to e.g. those with disabilities, parents with young children etc		
					Manufacturing industry will have to adjust in order to provide viable employment opportunities		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		based work will increase • Greater demand for work/life balance • A growing need for remote working centres, local collection points for delivery and collection of goods • Workplace to become either more fulfilling or more stressful These changes and trends were identified in the last report as an accurate portrayal of the situation regarding the changing workforce. The extent of the change was, however deemed to be a little less predictable.	manufacturing industry, with the West Midlands typifying this, profitability of UK-based manufacturing companies was under 5% at the end of 2012, compared to 11% in 2007²⁸	technological acumen in science, technology, engineering and mathematics¹⁵	With easier access to the internet and people working from home, more micro-scale businesses will be launched		
	S3: Impact of lifestyles and environment on the health of our communities	• Obesity, stress management, increased rates of depression are all predicted with consideration of lifestyle and health • Pollution absorbing materials are available and used widely, leading to the improved health of communities • Increasing number of well-informed health conscious people • Desire to buy organic local products? • Movement away from end-of-pipe healthcare	• Around a fifth of the West Midlands population lives in areas ranked amongst the most deprived in England¹¹ • Life expectancy is increasing²⁸ leading to an increase in elderly communities • Hotter temperatures (climate change) are likely to cause an increase in food and water-borne diseases and respiratory diseases⁵ • The West Midlands	• If current trends continue, by 2050 about 60% of men, 50% of women and 25% of children in the UK will be clinically obese³ • Life expectancy continues to increase • Growing epidemic of long term conditions such as obesity, musculo-skeletal diseases, Type 2 Diabetes and the co-morbidity that often leads to general frailty¹⁴ • The implications of climate change are likely to affect	2020	2040	2060
					Physical and mental health of the West Midlands will continue to decline, if the current situation regarding lifestyle and access to services is sustained Respiratory problems and allergenic reactions may be aggravated due to changes in climate⁵		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		- Improved access to healthcare - Greater demand on infrastructure as more people enjoy outdoor activities in rural areas The predictability of the impact of lifestyles and environment on the health of communities was difficult to predict as so much of it relies on the perception of certain lifestyles and choices and their potential benefits and challenges.	Roadmap Monitoring Report indicates that health inequalities, an indicator of the influence of lifestyle and environment, are worsening and inequalities are increasing between LEPs within, and across the region as a whole ²⁰	the continuity of health and social care services, the resilience of local emergency services, and the most socially vulnerable ⁵	City centre areas will be at higher risk of extreme temperatures in hot weather due to the Urban Heat Island effect, and may be at greater risk of disease due to greater population density⁵ Increased incidences of flooding are likely to be associated with psychological stress for victims as a result of property damage and disruption, and may be associated with fatalities⁵ With growing numbers requiring help, greater demand will be put on public infrastructure and health services especially, in all localities to ensure the best care can reach those who require it		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
					In addition to this, an ageing population across the region will put further pressure on health and social services Adaptation strategies may be put in place and thus reduce some of the potential health impacts		
	S4: Increased demand for more regional or local powers and governance.	- Lack of regional identity and presence could hamper the attraction of the region - The region should market its rich diversity of urban and rural landscapes and culture The predictability of this driver faces uncertainty. It is currently unknown what the future may hold for the West Midlands and the influence of economic and political factors. It is possible that the region will, instead of becoming stronger, separate and parts will gravitate towards the south and north of the country instead.	- The West Midlands is second only to London in terms of the diversity of its people - Despite this, the region as a whole suffers from a poor image	Perhaps with recent election for Scottish independence and the need for devolution of power being recognised, this could become a more pressing issue, and one that people are willing to take seriously in the future	2020	2040	2060
					Region may be able to capitalise on its diversity, especially if it is able to become a hub for low carbon technology, leading to an improved image and greater demand for devolution		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
	S5: Widening inequality and inclusion gap	• Social and economic inequalities could be defined by knowledge of and access to information • With an ageing population, those living below the poverty line may increase • Social disparities may increase • May see a growth in fear and mistrust, and an increase in gated communities • Ensuring equal access for all to housing, services and education can help reduce the gap	• Despite growth in middle class, increases in inequality continue³ • In 2005 there were approximately 400 million 'middle class' people throughout the world (approx. 4% of global population), by 2030 there will be approximately 1.2 billion (approx. 14% of global population)³ • A fifth of the world's population earns just 2% of global income³ • Inequality is higher in the OECD nations than it was 20 years ago²⁹ • The West Midlands Roadmap Monitoring Report indicated that health inequalities are worsening and increasing between LEPs within, and across the region as a whole²⁰	• With an ageing and growing population alongside the continued inequitable distribution of wealth, the inequality and inclusion gap is likely to continue to widen unless action is taken to address social and economic disparities • This will be required from the government through the provision of (and access to) efficient and effective public resources and services. Businesses can too become involved in this process, through the development of corporate social responsibility strategies and the implementation of projects within communities	There is a strong likelihood that the region will further experience inequality and inclusion gaps, especially if some areas are given an economic boost (through advancement of the green economy etc) and others remain in their current state. In order to mitigate against this, access to services and infrastructure, as well as a deliberate development of skills across the region will be necessary to ensure the closing of gaps Health inequalities especially will continue to worsen across the region unless social, economic and environmental outputs improve		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
Future Economic Drivers of Change in the West Midlands	B1: Impact of the knowledge economy and networked world on public services and business	- Knowledge economy has allowed the automation of certain functions previously carried out by people, reducing the amount of people required for these functions - Allowed certain industries to relocate overseas, placing emphasis on people, their knowledge and skills - Knowledge will be needed more and more in the future - Knowledge based economy is where we are headed - With a more networked world, people have the opportunity to access information 24 hours a day - Greater connectivity offers opportunities in terms of productivity and efficiency - A more networked world will lead to outsourcing across the world, into and out from the region - Will the availability of access be detrimental to those in rural areas? The predictability of the impact of the knowledge economy is difficult. Whilst there will undoubtedly be a need for an increase in the knowledge	- Knowledge economy is growing, placing emphasis on intellectual capital in order to achieve economic productivity - Manufacturing in decline, with the profitability of UK-based manufacturing companies was under 5% at the end of 2012, compared to 11% in 2007²⁸ - Connectedness allows communities, business and consumers to influence traditional businesses, government and community structures - Two-way dialogue with client base has been created	- This will fuel future increases in data, allowing firms to understand customer preferences and personalise products¹⁵ - Although off-shoring continues, on-shoring of production back to the UK, and making use of the skills and knowledge here has become more a recent, and growing, phenomenon - Growth of employment in managerial, professional and technical occupations - Greater online connectivity means that small businesses find it easier to compete with larger counterparts	Rural areas <i>could</i> be left out of future development if access is a struggle The power and influence of people and communities in affecting services and industry will grow; they will shape these areas as and when they are needed The growth of connectedness, as well as the depth to which it infiltrates communities and society as a whole will continue to develop, offering with it opportunities for partnership and business development, especially with the green economy and the potential new industry in the West Midlands		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		economy in the West Midlands, the extent to which the region takes advantage of this and how well it performs is uncertain. The impacts of a more networked world seem to be more predictable, however. With trends indicating that this is increasing, there is no reason for it to slow down in the future.					
	B2: Accelerated change from new technology opportunities for business	- Accelerating change will require business to respond to the pace of economic and technological change - The capacity to generate new ideas and technology and exploit them rapidly becomes a key route to income generation - Adapting to change will include a greater awareness of sustainability and sustainable practices - Developments in nanotechnology, biotechnology and artificial intelligence will continue to impact society and business - Greater e-business take up - New technology will reduce cost as a result of more automation	- There are strong opportunities for growth in the UK economy if businesses can harness the scientific and industrial capabilities required to take advantage of the technologies and innovation¹² - In the UK a healthy clean technology sector is currently growing at an average 4.5% per annum, with higher rates of growth in wind, solar and alternative fuel technologies. Almost 1 million people are employed in the UK in this sector, and over 25,000 new jobs were created between 2010	- Successful manufacturing firms, capable of adapting their physical and intellectual infrastructures will exploit changes in technology, will become more responsive to global markets¹⁵ - Some of the value being created in 2050 will derive from wholly unanticipated breakthroughs but many of the technologies that will transform manufacturing, are already established or clearly emerging¹⁵ - Nanotechnology, biotechnology and artificial intelligence (amongst many others) have been cited as global megatrends shaping the future¹ - On-shoring of production	Opportunities and benefits would surpass simply businesses in the region; environmental and social benefits could also be accrued Environmental benefits: reduced levels of carbon emitted from the West Midlands, as new technology will be installed and maintained Social benefits: people value industry, people valued by industry, encourages education Business benefits: attract industry, companies, experts, employees to the region		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		The changing nature of the economy and its pace mean that the predictability of accelerating change faces uncertainty. We do however know that new technological opportunities will have a large impact on society. Their social, political and commercial impacts are not so easy to predict, however.	and 2011 ¹⁰ - At 4.7%, the UK's share of global technology manufacturing exports is relatively strong¹⁵ - Current productivity in the West Midlands is encouraging²⁵	back to the UK. This involves the repatriation of production from low cost locations in response to changing labour costs, higher transport costs, and a need to be closer to the market ¹⁵	If the region takes advantage of the potential investment and development opportunities which currently exist in regards to technology (specifically low carbon), then the impact could be great		
	B3: Globalisation of markets (including relationship with EU) and competition on business	- Global interconnection and interaction, and their importance, set to increase further in the future - Global interdependence is inevitable - Collaboration across regional and national boundaries likely to increase - The region should look to capitalise on this changing global context and heighten its international engagement - Will businesses increasingly seek to avoid restrictive legislation and locate factories outside Europe? - Opportunities for enterprise and growth in the region exist - Businesses may increasingly choose to invest money in overseas markets rather than in the region or UK	- The West Midlands experienced a 19.3% increase in exports between 2010 and 2013, the largest of any English region⁷ - Employment opportunities created through FDI in 2012 was greatest in the West Midlands at 35%, higher than London at 20%⁷ - The market for sustainably sourced, ethical and transparent goods and services (including ethical savings and investment) has seen growth at 14% year-on-year since 2000, from £8 billion to £33 billion today. Ethical savings and investment	- By 2050, the United States and Europe, long the traditional leaders of the global economy, will be joined in economic size by emerging markets in Asia and Latin America - China will become the world's largest economy in 2032, and grow to be 20% larger than the United States by 2050 - Over the next forty years, nearly 60% of G20 economic growth will come from Brazil, China, India, Russia, and Mexico alone³ - Successful manufacturing firms, will exploit changes in technology, will become more responsive to global markets¹⁵ - Although off-shoring	2020	2040	2060
					If West Midlands continues to export at its current (and eventually improved) rate, then the benefits could be great Opportunities for partnerships with companies in the West Midlands and international companies could grow and, if taken advantage of, could be highly beneficial		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		• Conflict between cheaper labour & greater profits VS consumer demand for ethical working practices and fair wages • Greater emphasis on social capital • Good links to overseas networks seen as essential for UK competitiveness • Stronger focus on training in the skills of collaboration and partnership • More flexible, super skilled workforce • Will global competition for business investment pressure localities to meet requirements of international companies? • Opportunity for the West Midlands to be a global centre of excellence for high skilled 'niche' markets With global trade steadily on the increase, it is predicted that outsourcing is likely to continue. This will mean that local industries will grow in some areas, but will decline in others.	make up two thirds of the market ⁶	remains a common phenomenon, on-shoring of production back to the UK, and making use of the skills and knowledge here has occurred	Potential growth in manufacturing industry and associated development/regeneration could attract people to the region Globalisation of markets alongside greater connectivity means that consumers are much more aware of the kinds of products they buy, where they buy them from and the conditions which produced them. The increase in 'ethical' consumers could increase competition amongst businesses and also put pressure on them to act more responsibly On-shoring could improve employment levels in the region, and promote relevant skill sets		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
					If West Midlands continues to export at its current (and eventually improved) rate, then the benefits could be great		
	B4: Increased stress on transport infrastructure for public services and business	• Growing demand for cars means congestion and lower air quality will continue to be a problem • Infrastructure currently at full capacity, thus the introduction of congestion charging in the region has potential • Increasing role of regional airports for business and leisure • New technological opportunities could impact both the economy and climate change • Transport contributes the largest proportion of CO₂ emissions – needs to be addressed by both public bodies and business • Advent of low carbon infrastructure • If transport becomes more	• Rising fuel prices, UK tax system for vehicles and EU standards for low emission vehicles are driving development and demand for low emission vehicles • Relatively low levels of walking and cycling by residents and high level of reliance on private cars in the West Midlands compared with other UK regions²⁶ • The West Midlands transport system needs to become more integrated²⁶ • Considerable expertise, leading companies and research institutes in low carbon vehicles and transport in the West Midlands • Low carbon and electric	• Opportunities for businesses to benefit from collaboration with low carbon vehicle research institutes based in the West Midlands • Economic benefits of promoting sustainable travel, including reduced congestion and enabling better physical access to jobs and amenities will grow • Cycling and walking will further be promoted across the region	2020	2040	2060
					Health and social benefits from promoting cycling and walking as an alternative mode to car travel will be felt across the region		
					Potential exists for the West Midlands to become a hub for low carbon vehicles, pairing manufacturing companies and research institutes in order to promote the newest in technology, as well as further employment opportunities		
					Opportunities exist for local authorities to lead by example, through the use and purchase of electric and other low carbon vehicles and by requiring external contractors to use low carbon vehicles		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		accessible, may mean that out-migration may be more widespread Will the escalating costs of travel and congestion cause businesses to change the way they operate? Transport stress in the region already exists and will hence continue and worsen unless properly managed and mitigated against. Drivers which may stop it happening include rising oil prices, as well as taking climate change seriously. Whether either of these will occur is unpredictable however; they are dependent on an array of factors.	vehicles centres e.g. MIRA, Birmingham University Fuel Cells Group etc exist in the region, encouraging development in the field of more efficient and less damaging vehicles¹				
Category	Driver	Past Predictions	Current Trends	Expected Trends	Potential Impacts		
Future Environmental Drivers of Change in the West Midlands	E1: Pressure for climate change adaptation for our housing, infrastructure, and business	- Changes in weather (flooding, drought) already prompting action and adaptation - Over 130,000 people at risk of flooding in the West Midlands - Cost of disruption to transport could be between £30 million to £80 million¹⁹ - Will the frequency of rare weather events like the tornado in Birmingham in 2005 become more	- A recent workshop in wake of the Forum For The Future Report¹⁶ indicated a notable shift from mitigation to adaptation in managing climate change and its effects¹⁶ - In 2007, business impacted by flooding in the region took an average of 26 weeks to return to normal operating capacity. This	- Frequency, intensity, and distribution of storms and droughts are likely to increase - There will be more and hotter heat waves - Ecosystems and biodiversity will be hit - Agriculture has seen more negative impacts than positive ones so far, and as temperatures and water	2020	2040	2060
					Encouraging businesses to consider and address longer term threats presented by climate change can benefit resilience to a variety of other impacts including saving business money in the long term and giving the business the best chance to operate and meet customer orders, regardless of the weather		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		commonplace? - Buildings will need to be more resilient to extreme weather events - Building Research Establishment (BRE) estimates that the effects of climate change on soils and subsidence could cost as much as £400 million - Flooding is also predicted to become more frequent and severe with millions of homes at risk. Construction continues to take place in high risk areas - The quality and sustainability of the built environment will need to be improved - Flash floods and high winds could severely disrupt the road and rail network - Cost to businesses will increase as risk of flooding continues to grow - Agriculture will have to adjust – flooding may become a regular, seasonal occurrence - Opportunities exist to grow newer crops more suited to the climate - Will businesses adapt and take on the challenges created by changes in recreational and	illustrates that climate change adaptation is necessary for business to continue effectively and efficiently⁴ - In a recent survey, 51% of 97 businesses believe they have considered the potential impacts and have taken some activity towards a business continuity plan²⁶ - All regions of the world have already been affected by climate change¹⁷ - The number of people affected by extreme weather has doubled over the last 30 years and is expected to reach 375 million a year by 2015²⁴ - Agriculture has seen more negative impacts than positive ones so far, and as temperatures and water availability affects yields and production this will likely continue¹⁷ - There are 1,700 sensitive infrastructure sites in flood risk zones including one hospital, over 300 power and gas stations, 43 care homes and 35	availability affects yields and production this will likely continue - Lack of action on adaptation could severely undermine and endanger progress made on development, agricultural productivity, poverty reduction and health. - As the understanding of links between climate change and its impacts becomes stronger, civil society pressure on governments and institutions to act could rise, along with accountability for failure to act - It has been predicted that by the 2050s the turnover lost by businesses due to water abstraction will have reached £200-£300 million⁵ - The urban heat island effect will be exacerbated in the region's urban areas, affecting physical infrastructure (with knock-on effects to social and economic services likely) - Low lying areas near the Severn estuaries will have	Climate change has the potential to cause problems in urban areas – especially in response to temperature increases and flooding. Both have the potential to affect buildings and transport systems		
					Rural areas across the region could also struggle in response to the effects of climate change. Potential disruption to transport and access to services is particularly important; it could leave rural communities feeling isolated		
					Potential for business in the West Midlands to not only adapt to climate change, but benefit from it; renewable energy and technology offers economic opportunities across the region⁵		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		tourist patterns, and domestic lifestyles? The predictability of this particular driver is challenging. Whilst climates and weather patterns can, and are, predicted to a certain extent, the frequency of more rare weather based events may grow and thus predictability is difficult. Similarly, whether adaptation is planned or reactive, and whether these measures will be effective are all critical and mean that the predictability of this parameter remains a challenge.	emergency response centres⁵ - Climate change currently presents threats and opportunities for the agricultural industry - In 2007, over 10,923 hectares of agricultural and farm land in the West Midlands (Rivers Severn and Avon affected) was flooded causing £15.5 million in damage and costing on average £96,596 per farm⁵ - In the West Midlands ERDF socio-economic framework published in 2013, promoting climate change adaptation was given a low priority status. Despite this, a climate adaptation partnership exists for the West Midlands where success, knowledge and projects across the public, private and voluntary sectors are run²⁶ - There are approximately 190,000 living in flood risk areas across the West Midlands³ - In the UK a healthy clean	an increased risk of flooding due to sea level rise and coastal surges - A recent study in the Vale of Evesham investigated climate change impacts on water for horticulture. The analysis suggests that climate change would increase 'dry' year water demand in the Vale of Evesham by around 13-20% by the 2020's, 25-50% by the 2050s and 38-84% by the 2080s⁵ - Business opportunities through the provision of new weather proofing technologies and products for buildings will become more common - Emergence of a circular economy, or closed loop system will be used to eliminate energy and water waste and to recycle physical waste¹⁵	The West Midlands is the hub of the existing national rail and road infrastructure network with the potential of new High Speed Rail. Extreme weather events have hit infrastructure including flooding, snow and heat waves causing significant disruption locally, as well as nationwide For agriculture across the region, growing season could potentially start earlier, yields may increase due to higher temperatures and opportunities could arise to expand growth to include non-food crops for energy and pharmaceuticals⁵		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
			technology sector is currently growing at an average 4.5% per annum, with higher rates of growth in wind, solar and alternative fuel technologies. Almost 1 million people are employed in the UK in this sector, and over 25,000 new jobs were created between 2010 and 2011 ¹⁰		All business, regardless of nature will be required to take action to protect against and adapt to the effects of climate change		
					Increases in precipitation are likely to increase the frequency and severity of river flooding events in the region with over 21,000 residential and commercial properties at significant risk. If damaged, this could cause chaos within the region		
					Urban drainage systems will be put under pressure as projected increases in winter precipitation, compounded by population growth and development within the region, may lead to surface water flooding, creating conditions which impact housing, infrastructure and business⁵		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
	E2: Emphasis on lower carbon energy supply, security, and cost for public services, business, and communities	• There is a growing demand to reduce fossil fuel dependence, and to move to cleaner alternative energy sources that do not adversely affect the environment • This problem is compounded by the relative insecurity of Britain's energy supply and its reliance on imported energy • Increase in low energy or decentralised energy generation • Increase in global collaboration. How effective will it be? • Increase in UK spend on renewables (household and commercial) • Need for increased government support for renewables industry e.g. investment in technologies, financial incentives to encourage micro generation and localised renewable energy production Uncertainty exists around whether the renewable industry will be able to develop and keep up with the UK's energy demands. As well as this, the volatility of prices also	• The West Midlands 2020 Roadmap Monitoring Report indicates that there has been a general drop in emissions approximately 43,000 tonnes of CO₂ in 2008, to 38,000 tonnes in 2012²⁰ • Renewables are the fastest growing class of energy • The West Midlands has considerable experience in improving the energy performance and energy efficiency of public buildings and housing • Good examples of low carbon, energy efficient public buildings exist in the West Midlands, including combined heat and power e.g. Oakmeadow Primary School in Wolverhampton was one of the first schools in the country to achieve Passivhaus certification in February 2012¹⁸ • Continued support for businesses and SMEs throughout the region in relation to enhance their	• Global energy consumption is expected to rise by 41% from 2012 to 2035 – compared to 55% over the last 23 years (52 per cent over the last twenty) and 30% over the last ten • Global energy demand continues to grow but <i>that</i> growth is slowing and is mainly driven by emerging economies • Renewables are expected to continue to be the fastest growing class of energy, gaining market share from a small base as they rise at an average of 6.4% a year to 2035² • Energy supply challenges will affect agricultural productivity	Should the West Midlands further expand its network and industry to be dominated by renewable energies and technologies then the potential impacts for public services, business and communities could be great, and it would make the region less reliant on other more volatile sources of energy (e.g. oil) Communities – opportunities for communities to campaign for, introduce and own renewable forms of energy such as wind turbines and solar panels (community energy schemes could take off if technology is readily available in the region) Business and the economy – expansion into the low carbon sector could attract technical experts and the region, with its industrial legacy, could thrive and become a hub for low carbon technology, creating research and employment opportunities		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		raises concern about certainty.	competitiveness through energy efficiency, carbon reduction, efficient resource management and environmental performance e.g. the BESST Network, Staffordshire Business Environment Network, MAS etc²⁶ • Many of the renewable energy and low carbon energy technologies being installed in the West Midlands is imported from overseas (e.g. Germany and Scandinavia) rather than being manufactured by businesses in the West Midlands²⁶ • Limited development so far of smart grids and smart metering in the West Midlands • Investment in green infrastructure has been earmarked as having a high priority in the WM ERDF socio-economic framework, published in 2013²⁶		Public services – investment in low carbon public services or aid to those wanting to acquire low carbon technologies has the potential to create healthier communities, familiar with low carbon and renewable energy technologies		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
	E3: Increased pressure on natural resources changing their use and value by business and communities	- Oil and gas demand is expected to double between 2002 and 2030²⁷ - Businesses will need to engage with huge opportunities offered by low carbon technology - Opportunities in waste market will need to be realised – using waste as a resource, rather than a by-product - Land will need to be divided between fuel crops and mainstream agriculture - Engaging the rural community in providing renewables e.g. wind, combined heat and power systems (CHP, biomass etc) - West Midlands is likely to run out of land fill sites in the future (higher demand for recycling is likely) - West Midlands has a limited capacity to store water along with some of the highest population densities in the UK⁸ - Low water availability It is fairly predictable that pressure on the supply and demand of natural resources will at least be sustained, and is	- With increases to the cost of water, West Midlands businesses have adopted more water efficient processes, thereby reducing industrial demand for water²⁶ - Changing weather patterns, high intensity rainfall etc leading to higher risk of flooding across the WM - Municipal waste arising in the WM is falling and the region is the best performing region nationally in terms of reducing municipal waste going to landfill and increasing rates of recycling, composting and reuse of materials²⁶ - Many of the renewable energy and low carbon energy technologies being installed in the West Midlands is imported from overseas (e.g. Germany and Scandinavia) rather than being manufactured by businesses in the West Midlands²⁶ - Limited available landfill	- Oil and gas demand is expected to double between 2002 and 2030²⁷ - Volatility of oil prices mean that demand and use can increase and decrease with little notice - Commodities such as raw materials will increasingly be limited - Projections indicate that we will need 50% more energy, 50% more food and 30% more water by 2030³ - If the decline in bees continues, there will be a major implication for the pollination of 90% of commercial crops³ - Greater interest and value in renewable technologies as traditional technologies and resources decline (potential for business and community projects to prevail) - Growing waste volumes will encourage recycling and improved management. Up-to-date technology will be necessary to best deal with the changing nature of waste composition - People, business and industry using water	In mitigating against any increases in oil demand, opportunities exist for business and communities to engage with low carbon technology For agriculture across the region, opportunities could arise to expand growth to include non-food crops for energy and pharmaceuticals⁵ Increased pressure on the natural environment and biodiversity because of the impact of drought, changing habitats and human intervention		

Future Drivers Table

Category	Driver	Past Predictions of this Driver ¹⁶	Current Trends	Expected Trends	Potential Impacts		
					2020	2040	2060
		likely to increase. Similarly, it is urged that alternatives to, and uses for waste are invested in, in addressing the changing state of landfills, and the requirement for low carbon technologies.	capacity across the West Midlands West Midlands is currently facing moderate levels of water stress³	resources more efficiently and sustainably ⁸	In dealing with the issue of waste, recycling, as a venture, will grow, feeding into the ever more popular 'circular economy' concept		

Future Drivers Table References

1. Aston Business School, 2014. Enhancing the Innovation Capacity of SMEs in the West Midlands
2. BP, 2014. Energy Outlook [online] Available from: <http://www.bp.com/en/global/corporate/about-bp/energy-economics/energy-outlook.html>
3. Business In The Community, 2012. Forces for Change: global mega trends [online] Available from: <http://www.bitc.org.uk/our-resources/report/forces-change-global-mega-trends>
[This document summarises key findings from over 100 publications]
- Business In The Community, 2015. Uk 2030 Trends – Manufacturing [online] Available from: <http://www.bitc.org.uk/our-resources/report/uk-2030-key-trends-manufacturing>
[This document summarises key findings from over 44 publications]
- Business In The Community, 2015. Uk 2030 Trends – Built Environment [online] Available from: http://www.bitc.org.uk/system/files/bitc_future_trends_document_-_final.pdf
4. Climate UK, 2011. Weathering the storm – saving and making money in a changing climate – a practical guide for the small business [online] Available from: www.yourclimate.org/system/files/.../Case_Studies_Combined_LR1.pdf
5. Climate UK, 2012. Climate Change Risks for the West Midlands [online] Available from: <http://www.climate-change-solutions.co.uk/wp-content/uploads/2014/04/Climate-Change-Risks-for-the-WM.pdf>
[This document summarises key findings from over 15 publications]
6. Co-operative Bank, 2012, Ethical Consumerism Report 2012 [online] Available from: <http://www.ethicalconsumer.org/portals/0/downloads/ethical-consumer-markets-report-2012.pdf>
7. Coventry University, 2014. Midlands LEPs Growth Strategies [online] Available from: <http://westmidlandseconomicforum.co.uk/index.php/pages/event/midlands-economy>
8. DEFRA, 2008. Future Water: The Government’s water strategy for England [online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69346/pb13562-future-water-080204.pdf
[This document summarises key findings from over 50 publications]
9. DEFRA, 2012. UK Climate Change Risk Assessment: Government Report [online] Available from: <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report>
[This document summarises key findings from over 60 publications]
10. Department for Business Innovation and Skills, 2012. Low Carbon and Environmental Goods and Services, Report for 2010/11 [online] Available from: <https://www.gov.uk/government/publications/low-carbon-and-environmental-goods-and-services-2010-11-report>

11. Department for Communities and Local Government, 2011. English Indices of Deprivation 2010 [online] Available from: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2010>
12. Foresight, 2012. Technology and Innovation Futures - UK Growth Opportunities for the 2020s [online] Available from: <https://www.gov.uk/government/publications/technology-and-innovation-futures-uk-growth-opportunities-for-the-2020s>
[This document summarises key findings from over 150 publications]
13. Foresight, 2014. People In Cities: The Numbers [online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/321814/14-802-people-in-cities-numbers.pdf
[This document summarises key findings from over 30 publications]
14. Foresight, 2014. Future of Ageing think piece: Addressing the principle drivers and causes of health inequalities in the north east [online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/370588/health-inequalities-north-east.pdf
[This document summarises key findings from over 15 publications]
15. Foresight, 2013. Future of Manufacturing: new era for the UK [online] Available from: <https://www.gov.uk/government/publications/future-of-manufacturing>
[This document summarises key findings from over 100 publications]
16. Forum for the Future, 2006. West Midlands Futures: Drivers of change affecting the West Midlands [online] Available from: <http://www.sustainabilitywestmidlands.org.uk/resources/west-midlands-futures-drivers-of-change-affecting-the-west-midlands/>
[This document summarises key findings from over 40 publications]
- Forum for the Future, 2015. Unpublished work reviewing changes in global and UK trends.
[This document summarises key findings from over 100 publications]
- Jonathon Porritt, 2013, The World We Made {This document uses much of Forums work and puts it into an easy to read look back from 2050}
17. IPCC, 2014. 5th Assessment, Working Group 2 Summary [online] Available from: <http://www.ipcc.ch/report/ar5/wg2/>
18. Passivhaus Trust, 2012. Oakmeadow Primary School [online] Available from: http://www.passivhaustrust.org.uk/UserFiles/File/Projects/Awards2012/Oakmeadow_Architype.pdf
19. Sustainability West Midlands, 2004. The potential impacts of climate change in the West Midlands, UK Climate Impacts Programme
[This document summarises key findings from over 130 publications]
20. Sustainability West Midlands, 2014. West Midlands 2020 Roadmap Monitoring Report (2014)

21. UN, 2013. International migration and development [online] Available from:
http://www.un.org/esa/population/migration/SG_Report_A_68_190.pdf
[This document summarises key findings from over 25 publications]
22. UN DESA, 2012. World Population Prospects – The 2012 revision [online] Available from:
<http://esa.un.org/wpp/>
23. UNHCR, 2012. Global Trends: Displacement: The New 21st Century Challenge [online] Available from:
http://unhcr.org/globaltrends/june2013/UNHCR%20GLOBAL%20TRENDS%202012_V08_web.pdf
[This document summarises key findings from over 50 publications]
24. Vidal, J., 2009. Climate change will overlap humanitarian system, warns Oxfam [online] Available from: <http://www.guardian.co.uk/environment/2009/apr/21/climate-change-natural-disasters>
25. West Midlands Economic Forum, 2014. Midlands Economy in a Global Context [online] Available from: <http://westmidlandseconomicforum.co.uk/index.php/pages/event/sustaining-competitiveness>
26. West Midlands European Service, 2013. West Midlands ERDF Socio-Economic Framework [online] Available from:
http://www.wmemployers.org.uk/media/upload/WMES/Latest%20News/7.%20May%202013/130515_West%20Midlands%20Socio-economic%20framework_V5.pdf

Websites

27. International Energy Agency: <http://www.iea.org/Textbase/subjectqueries/index.asp>
28. Office for National Statistics: <http://www.ons.gov.uk/ons/index.html>
29. Sustainable Development Commission: www.sd-commission.org.uk
30. United Nations Population Fund: <http://www.unfpa.org/migration>
31. Future Agenda – The world’s leading open source foresight programme:
<http://www.futureagenda.org/>
32. Forum for the Future Futures Centre: <http://www.thefuturescentre.org/>
33. Innovate UK Horizons Tool: <http://horizons.innovateuk.org/>
34. Brink – Global Business News on risk and resilience issues for large businesses
<http://www.brinknews.com/about/>