APPENDIX 2

Cardiff Council & Levett-Therivel

Integrated Sustainability Appraisal of the Cardiff Replacement Local Development Plan: Updated Scoping Report

August 2021

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1. The Replacement Local Development Plan (RLDP) and Integrated Sustainability Appraisal (ISA)

This updated scoping report is part of the Integrated Sustainability Appraisal (ISA) for Cardiff's emerging Replacement Local Development Plan (RLDP). This section first discusses the RLDP and then the ISA process.

1.1 Cardiff Replacement Local Development Plan (Task A1)

Cardiff is the capital of Wales and its largest city, with a population of about 367,000. It is the main commercial centre of Wales, the seat of the Welsh Government, home to many national cultural institutions, and a popular tourist destination. Figure 1.1 shows Cardiff Council, which is the area covered by the Cardiff RLDP.

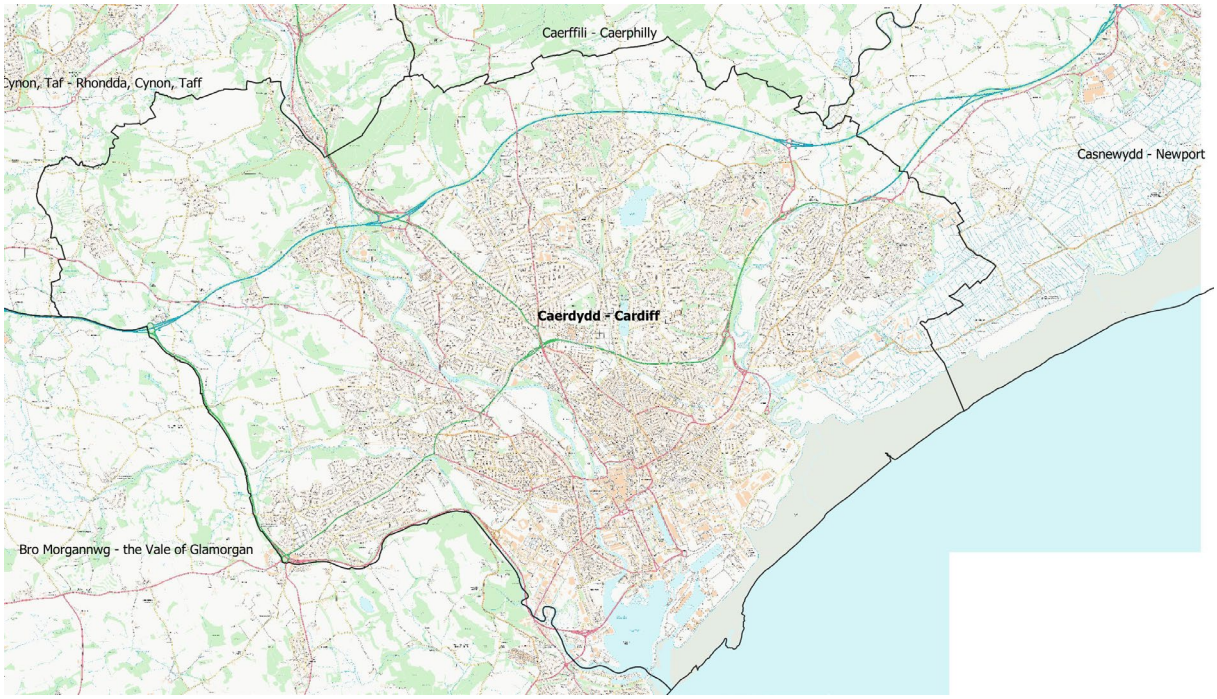


Figure 1.1 Cardiff and surrounding counties

The existing Cardiff LDP was adopted in 2016, and covers the time period 2006 - 2026. To ensure that LDPs are kept up-to-date, local planning authorities are required to start a full review of their plans at least once every four years following plan adoption. The following timescale is expected for the RLDP:

Launch of RLDP	May 2021
Preparation of Strategic Options	June – October 2021
Engagement on Strategic options	November 2021 – February 2022
Preparation of Preferred Strategy	March 2022 – August 2022
Consultation on Preferred Strategy	October – November 2022
Preparation of Deposit Plan	November 2022 – August 2023
Consultation on Deposit Plan	October – November 2023
Submission of RLDP for examination	March 2024

1.2 Integrated sustainability appraisal

The purpose of integrated sustainability appraisal (ISA) is to identify the likely significant economic, social, environmental and cultural effects of the emerging RLDP, and to suggest measures to minimise any negative effects and maximise the positive ones. ISA helps to foster a more inclusive and transparent process of producing a Local Development Plan, and to ensure that the plan is integrated with other policies.

Sections 2 - 5 of the Well-being of Future Generations Act 2015[1] place a duty on all public bodies to carry out sustainable development and work in accordance with the sustainable development principle. Section 39 of the Planning and Compulsory Purchase Act[2] requires that the body producing a LDP must contribute to achieving sustainable development; and Section 19(5) requires local planning authorities to appraise the sustainability of their plans.

This ISA covers:

- **Sustainability appraisal / strategic environmental assessment** (SA/SEA) as required under the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004[3] ('SEA regulations') and the Planning and Compulsory Purchase Act 2004 – Table 1.1 shows the reporting requirements for SA/SEA and how this report fulfils them;
- **Equalities assessment** as require by the Equalities Act;
- **Welsh language**. Bilingual Cardiff are undertaking a Welsh Language Impact Assessment of the RLDP, and this ISA will use key findings from that assessment; and
- **Health Impact Assessment**[4].

It also refers to the **Habitats Regulations Assessment** required under the Conservation of Habitats and Species Regulations 2017.

The stages of ISA are:

A. Scoping
B. Assessment of alternatives
C. Assessment of the Deposit Plan and preparation of the Sustainability Report
D. Consultation, examination and adoption of the plan
E. Monitoring.

In turn, the scoping stage (Stage A) – which this report covers - is divided into:

A1. Outline the contents and main objectives of the plan
A2. Identify and review other relevant plans, programmes and sustainability objectives that will inform the plan
A3. Collect baseline information on the current and likely future social, economic, cultural well-being and environmental conditions at the relevant spatial scale for the plan
A4. Identify sustainability issues and problems which are relevant to the plan
A5. Develop ISA framework against which the plan can be appraised
A6. Prepare and consult on the ISA scoping report[5].

[1] https://futuregenerations.wales/wp-content/uploads/2017/01/WFGAct-English.pdf
[2] www.legislation.gov.uk/ukpga/2004/5/contents
[3] http://www.legislation.gov.uk/wsi/2004/1656/contents/made. Also the Environmental Assessment of Plans and Programmes and the Environmental Impact Assessment (Miscellaneous Amendments) (Wales) (EU Exist) Regulations 2019, http://www.legislation.gov.uk/wsi/2019/245/regulation/2/made.
[4] This integrated approach to appraisal is consistent with advice in the Development Plans Manual Edition 3 consultation draft, https://gov.wales/draft-development-plans-manual-edition-3
[5] Ibid.

Table 1.1 Sustainability report requirements

Requirement under the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004	Where covered in this scoping report
1. An outline of the contents and main objectives of the plan or programme,	Chapter 1 discusses plan area and timescale. Contents and main objectives are not yet available.
and of its relationship (if any) with other relevant plans and programmes.	Chapter 2
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	Chapter 3
3. The environmental characteristics of areas likely to be significantly affected.	Areas likely to be significantly affected by the plan are not yet known
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.	Chapter 4
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme	Chapter 2
and the way those objectives and any environmental considerations have been taken into account during its preparation.	Chapter 5 proposes ISA objectives
6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects, on issues including (a) biodiversity; (b) population; (c) human health; (d) fauna; (e) flora; (f) soil; (g) water; (h) air; (i) climatic factors; (j) material assets; (k) cultural heritage, including architectural and archaeological heritage; (l) landscape; and (m) the inter-relationship between the issues referred to in sub-paragraphs (a) to (l).	Not yet available – will be covered by subsequent stages of the ISA.
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties encountered in compiling the required information.	
9. A description of the measures envisaged concerning monitoring in accordance with regulation 17.	
10. A non-technical summary of the information provided under paragraphs 1 to 9.	

Figure 1.2, from the Welsh Government's Development Plans Manual, shows how the ISA stages fit with the stages of plan-making.

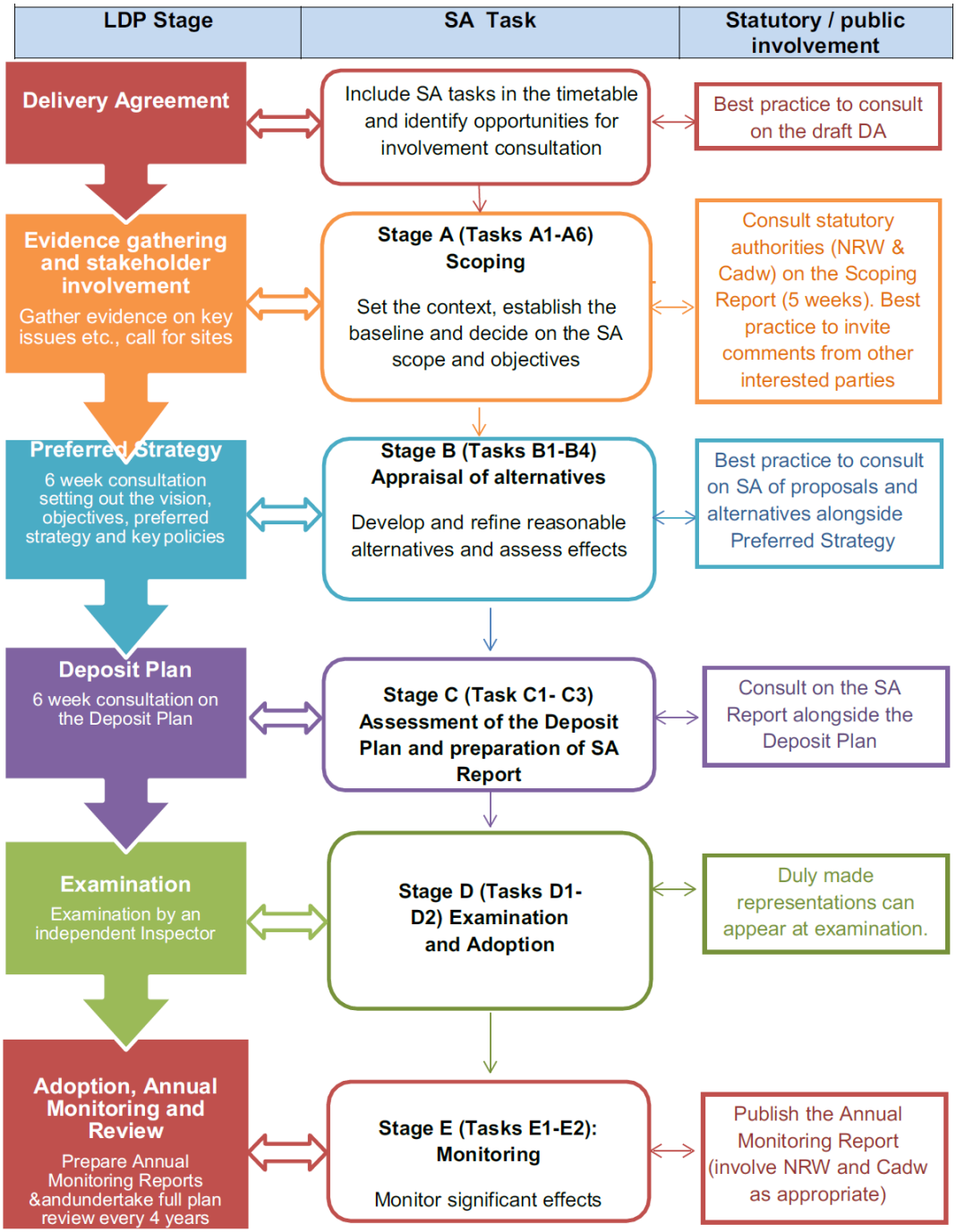


Figure 1.2 Links between RLDP stages and ISA stages[6]

Cardiff Council consulted on a first scoping report for eight weeks, from March 2021. Comments were received from both statutory consultees (NRW and CADW) and seven additional consultees. Table 1.2 summarises the consultees' main comments and how they have been integrated into this updated scoping report.

[6] https://gov.wales/sites/default/files/publications/2020-03/development-plans-manual-edition-3-march-2020.pdf

Table 2.1 Main consultation comments and changes made to scoping report in response.

Main comments	Responses to the comments
The two halves of Figure 2.4 are not aligned	Now aligned
Need to include 'COVID-19 Reconstruction' and the Welsh Government's declaration of a nature emergency in the policy context; also refer to the draft post-pandemic city recovery plan 'Greener, Fairer, Stronger'	Done
Sec. 3.2 should stress the links between air quality and 1. climate change, 2. health, and 3. ecosystems. Also other pollutants than NO_2 have negative impacts.	Reference made to the 2016 report 'Estimating the mortality burden of air pollution in Wales'; and to particulates.
Walking and cycling near roads could have negative health impacts	ISA framework (Table 5.1) changed to specify that active travel routes should avoid areas of poor air quality
Sec. 3.2 should refer to the Clean Air Plan for Wales	Sec. 3.2 now refers to the Clean Air Plan for Wales, Clean Air Zone Framework for Wales, and Cardiff outline bid for air quality improvement funding.
Sec. 3.3 There should be more information on biodiversity in Cardiff	Information on biodiversity will be included if/when it becomes available.
Sec. 3.3 should make more reference to NRW's Second State of Natural Resources Report	A page on the main findings of the SSNRR has been included at Sec. 3.3
In Figure 3.3.1, the sea should be shown as blue not green	It is shown in green to represent its status as a Special Area of Conservation
Air pollution is a threat to biodiversity	Noted at Sec. 3.3
Sec. 3.4 should explain what is meant by 'carbon neutrality'	Footnote added to explain this
Sec. 3.5 should not describe Victorian and Edwardian neighbourhoods as 'suburbs'	Renamed 'areas'
Sec. 3.5 should discuss non-designated historic assets listed in the Historic Environment Record	Done
Sec. 3.8 should clarify that many brownfield sites provide biodiversity and recreational amenity	Included in the opening paragraph to Sec. 3.8
Sec. 3.9 should clarify that the rivers in Cardiff are highly modified and as a result there are increased risks to flooding and reduced biodiversity.	Amended Sec. 3.9 to include.
Sec. 3.9 should clarify that the Gwent Levels are SSSI and Historic Landscape, important for biodiversity and ecosystem resilience.	Amended Sec. 3.9 to include.
Figure 3.9.2 implies incorrectly that all of the public space in the figure is publicly accessible.	Figure 3.9.2 shows all open space in Cardiff (*including space that is not publicly accessible*).
Sec. 3.10 should refer to the Welsh government's March 2021 'Beyond Recycling' and moratorium on large-scale energy from waste plants	Amended Sec. 3.10 to include.
Sec. 3.11 should discuss the wider implications of water quality, e.g. on amenity, wellbeing and the economy	Done in the introductory section of Sec. 3.11
The ISA framework should include reference to the regenerative economy	Already done at ISA objective 10
Need better links between baseline data and the ISA topics	ISA framework (Table 5.1) amended to include reference to the circular economy, carbon

Main comments	Responses to the comments
	neutrality, biodiversity net gain etc.
Reference should be made to NRW's South Central Wales Area Statement	Reference added in Sections 3.2 (air), 3.3 (biodiversity), and 3.7 (health/wellbeing)
Sec. 3.10 needs better data on waste from construction, demolition, industrial and commercial waste	Information on this will be included if/when it becomes available.
Sec. 3.11 should discuss Water Framework Directive status and reasons why water quality is bad to moderate	This was already discussed at Sec. 3.11.
At Table 4.1, water quality should be highlighted as blue	Done
The ISA framework (Table 5.1) should include green recovery; and should refer to remediation of unstable land as well as contaminated land	Done
Green spaces should be protected	One of the sub-objectives of ISA objective 7 has been reworded to "*Protect, and* improve access to, open space…"
There should be at least one indicator per sub-objective, and the positive direction of travel should be clarified	Data/indicators are not available for all sub-objectives (e.g. access to community facilities). Where data/indicators are not available, these have been highlighted in the introduction to Sec. 5. The wished-for direction of change has been added to the indicators in Table 5.1.
At Table 5.2, a proposed development site should be ++ for SAC/SPA/Ramsar sites only if it is >5km from the SAC/SPA/Ramsar site.	Table 5.2 has not been changed. A separate Habitat Regulations Assessment will assess impacts on SAC/SPA/Ramsar sites. The main role of the ISA framework is to flag up possible problems, and Table 5.2 does this.
Table 5.2 is based only on the location and characteristics of the site, not the mitigation offered by development on the site. This generally disadvantages larger sites.	Much of the impact of development relates to the site location and characteristics. Proposed developments can change significantly over time, making it difficult to be clear about what mitigation to include; and different amount of information will exist about proposed development at different sites. Statement added that Tables 5.1 and 5.2 will inform, but not make, decisions about what sites to take forward.
Table 5.2 should refer to provision of housing and employment land, on par with reference to community facilities	Done
Table 5.2 should be clearer about the reasons for the cut-offs between e.g. ++ and +, + and – etc. Cut-offs for walking should be different to those for cycling.	Table 5.2 is based on other similar ISAs, which in turn refer to e.g. the Chartered Institute of Highways and Transportation, distances used in Habitat Regulations Assessments etc. This is now mentioned in the introduction to the table. The site appraisal forms will include the actual distance, so that a more detailed analysis can be made of walking v. cycling accessibility.

Difficulties encountered

A first draft of this report was prepared in Spring 2020 but publication was held back due to the coronavirus pandemic. Many aspects of annual monitoring, for instance air quality, employment land take-up and life expectancy, have not been carried out during the pandemic. The pandemic has changed many aspects of life in the UK, including how we work, travel and educate our children: not all of this information was available by the time this updated scoping report was prepared. Brexit will also have many effects that are not yet understood.

Data are not available for many aspects of sustainability, for instance most aspects of biodiversity and waste management. This is discussed further at the end of Section 5.

2 Policy context (Task A2)

The SEA Directive requires a description of "[the plan's] relationship with other plans or programmes" and "The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation" (Annex Ia and e)

The emerging Replacement Local Development Plan is informed and shaped by many national and international plans and policies related to sustainability and environmental protection. This chapter discusses the key plans and policies affecting the RLDP.

Acronyms used below:

ISA	Integrated Sustainability Appraisal
RLDP	Replacement Local Development Plan
NDF	National Development Framework
NRW	Natural Resources Wales
SDP	Strategic Development Plan

2.1 National context

The **Well-being of Future Generations (Wales) Act 2015** aims to ensure that sustainable development is at the heart of government and public bodies. It has seven Well-being Goals and promotes five Ways of Working (Figure 2.1) It provides the legislative framework for the preparation of Local Well-being Plans which will replace Single Integrated Plans. Given that sustainable development is the core underlying principle of the Local Development Plans and Integrated Sustainability Appraisals, there are clear associations between the aspirations of both the RLDP and Act/Local Well-being Plans. This is discussed further at Chapter 5.

Figure 2.1 Well-being of Future Generations (Wales) Act 2015 Well-being Goals and Ways of Working[7]

The **Planning (Wales) Act 2015** aims to reform the planning system in Wales, to ensure that it is fair, resilient and enables development. The Act notes that LDPs must promote sustainable development in accordance with the Well-being of Future Generations (Wales) Act 2015, "for the purpose of ensuring that the development and use of land contribute to improving the economic, social, environmental and cultural wellbeing of Wales". The Act requires the development of a National Development Framework (NDF) and regional-level Strategic Development Plans (SDPs), and requires LDPs to be in general conformity with any NDF or SDP that

[7] https://futuregenerations.wales/about-us/future-generations-act/

includes the local authority area. In late 2020, consultation was carried out on the establishment of Corporate Joint Committees that can prepare SDPs[8], and on the preparation of SDPs[9].

The **National Development Framework** is a new 20 year national spatial strategy. The draft NDF of September 2020 sets out the Welsh Government's policies on development and land use in a spatial context, and will be known as 'Future Wales: the national plan 2040'. It supports decarbonisation and the delivery of renewable energy; provision of housing in the right places; healthier places; strengthened ecosystems and enhanced biodiversity; and an economy the delivers prosperity for all. It identifies Cardiff, Newport and the Valleys as a national growth area. Policy 33 of the draft NDF supports Cardiff's status as an internationally competitive city and a core city on the UK stage. It expects Cardiff to retain and extend its role as the primary national centre for culture, sport, leisure, media, the night time economy and finance. In Policy 34, the Welsh Government requires the Strategic Development Plan to identify a green belt to the north of Cardiff, Newport and the eastern part of the region[10]. The draft NDF has been laid at the Senedd for scrutiny, and its publication is expected in 2021. The Cardiff Capital Region's SDP is discussed further at Section 2.2.

In December 2018, the Welsh Government issued **Planning Policy Wales (Edition 10)**[11] which integrates the seven Well-being Goals and five Ways of Working of the Well-being of Future Generations Act 2015. It also puts the concept of placemaking into the heart of national planning policy. Figure 2.2 summarises the placemaking outcomes sought by Planning Policy Wales.

Figure 2.2 Planning Policy Wales national sustainable placemaking outcomes

The July 2021 guidance document "**Building Better Places**" sets out the Welsh Government's planning policy priorities to assist in taking action in the recovery period after the coronavirus pandemic. It identifies eight issues:

1. Staying local: enabling people to live in well-located and well-designed energy efficient homes, delivery of new affordable homes, local food production and supply chains, creation of accessible and attractive neighbourhoods

[8] https://gov.wales/regulations-establish-corporate-joint-committees
[9] https://gov.wales/establishing-town-and-country-planning-strategic-development-plan-wales-regulations-2021
[10] https://gov.wales/sites/default/files/publications/2020-11/working-draft-national-development-framework-document-september-2020.pdf
[11] https://gov.wales/planning-policy-wales

2. Active travel: reducing the need to travel, continued shift to sustainable and active travel modes
3. Revitalising our town centres: new flexible approaches to retail and commercial centres, reassessment of the role and function of established shopping areas, planning for the use of open spaces in town centres, consideration of a wider range of uses in town centres
4. Digital places: improvements to digital connectivity
5. Changing working practices: re-examination of economic forecasts and employment allocations, support for flexible workplaces
6. Reawakening Wales' tourism and cultural sectors, noting the need for social distancing and support for associated industries
7. Green infrastructure, health and well-being and ecological resilience: enabling and providing green infrastructure
8. Improving air quality and soundscapes for better health and well-being

In October 2020, the Welsh Government published "**COVID-19 Reconstruction: Challenges and Priorities**"[12]. This aims to plan ahead and support a green recovery, taking into account the collective response to the pandemic and the need to counter climate change and the economic damage caused by Brexit. Priorities include reducing unemployment; ensuring that young people do not lose out educationally or economically; increasing the construction of council and social housing; investing in town centres; pursuing a strong decarbonisation agenda; minimising the need to travel and improving public transport; building the resilience of the Welsh economy, and supporting the NHS.

The **Environment (Wales) Act 2016** helps to ensure that managing Wales' natural resources sustainably is a core consideration in decision-making. It requires Natural Resources Wales (NRW) to prepare a State of Natural Resources Report; the Welsh Government to produce a National Natural Resources Policy that sets out the priorities, risks and opportunities for managing Wales' natural resources sustainably; and NRW to produce Area Statements to help implement the National Natural Resources Policy.

The **National Natural Resources Policy 2017**[13] sets out three priorities:

- Delivering nature-based solutions, including development of resilient ecological networks, supporting climate change adaptation and mitigation, improving green infrastructure and water treatment systems, and improving land and water management;
- Increasing renewable energy and resource efficiency, including development of a circular economy;
- Taking a place-based approach: collaborative working to deliver better results at a local level.

The **Historic Environment (Wales) Act 2016** made important changes to the Ancient Monuments and Archaeological Areas Act 1979 and the Planning (Listed Buildings and Conservation Areas) Act 1990. The Act now gives more effective protection to listed buildings and scheduled ancient monuments; improves the sustainable management of the historic environment; and introduces greater transparency and accountability into decisions taken on the historic environment.

The **Public Health (Wales) Act 2017** aims to improve health and prevent avoidable harm to health. It requires the production of a national strategy on preventing and reducing obesity and for key decisions to be subject to Health Impact Assessment.

The Welsh Government declared a **climate emergency** in April 2019[14]. In May 2019 the UK government announced a 'net zero' target by 2050. Initially, the Committee on Climate Change had

[12] https://gov.wales/coronavirus-reconstruction-challenges-and-priorities
[13] www.hwa.uk.com/site/wp-content/uploads/2018/11/POL_22-Welsh-Government-2017-Natural-Resources-Policy.pdf
[14] https://gov.wales/welsh-government-makes-climate-emergency-declaration

suggested that Wales can only reach a 95% reduction because of the importance of agriculture to its rural communities[15], but in December 2020 it urged Wales to achieve net zero[16]. This should be achieved by taking up low-carbon solutions, expanding low-carbon energy supplies, reducing demand for high-carbon activities and transforming land from farmland to woodland and bioenergy production.

Prosperity for All: A Low Carbon Wales, published in March 2019, sets out the Welsh Government's commitments to climate change mitigation. These include different measures for different sectors: power (e.g. increased local ownership of energy generation), buildings (e.g. review of building standards), transport (e.g. increasing travel by walking, cycling and public transport) etc. However in December 2020 the National Assembly for Wales' Climate Change, Environment and Rural Affairs Committee noted that Wales is not currently on track for an 80% reduction in greenhouse gases, let alone net zero[17].

The climate change adaptation plan for Wales, **Prosperity for All: A Climate Conscious Wales** was published in November 2019. It sets out actions for 2020-2025 which include flood protection; protection of water supplies from drought and low flows; tackling land management practices that increase flood risk; and reducing risks to ecosystem and agriculture from climate change.

The Welsh Government also declared a **nature emergency** in June 2021[18]. This puts nature on par with climate change in terms of urgency and significance. Improving nature can help to tackle climate change and provide other benefits such as flood prevention, clean water and improved health and wellbeing.

2.2 Regional context

The Cardiff Capital Region (CCR) comprises ten local authorities including Cardiff. In 2016, the Cardiff Capital Region agreed a £1.2 billion **City Deal** with the UK Government and Welsh Government, which aims to deliver up to 25,000 new jobs and leverage an additional £4 billion of private sector investment. In particular, the region aims to support investment in areas that increase the region's economic output and reduce its worklessness, with a focus on connectivity, digital, innovation, and skills and worklessness[19]. In 2018, the CCR Cabinet agreed in principle to commit £40 million to support the proposed £180 million Metro Central Development, which would deliver a new central transport interchange in Cardiff's core employment zone[20].

The CCR is also in the process of preparing a **Strategic Development Plan** (SDP), which will address cross-boundary issues at a regional level such as housing, employment and waste and which must be in general conformity with the NDF. The SDP is expected to be operational by mid-2022; cover approximately 20 years; and cover larger-than-local issues such as housing numbers, strategic housing allocations, strategic employment sites, strategic green infrastructure routes and supporting transport infrastructure[21].

[15] https://gov.wales/wales-accepts-committee-climate-change-95-emissions-reduction-target
[16] www.theccc.org.uk/2020/12/17/net-zero-wales-by-2050-wales-faces-a-decisive-decade-to-get-on-track-to-an-emissions-free-future/
[17] https://www.theccc.org.uk/wp-content/uploads/2020/12/Progress-Report-Reducing-emissions-in-Wales.pdf
[18] https://www.wtwales.org/news/welsh-government-declare-nature-emergency
[19] www.gov.uk/government/uploads/system/uploads/attachment_data/file/508268/Cardiff_Capital_Region_City_Deal.pdf
[20] www.cardiffcapitalregion.wales/investment/
[21] https://gov.wales/establishing-town-and-country-planning-strategic-development-plan-wales-regulations-2021

Natural Resources Wales have prepared an **Area Statement for the South Central Wales Area**, which covers Cardiff as well as Merthyr Tydfil, Rhondda Cynon Taf, Bridgend, and Vale of Glamorgan – see Figure 2.3. Building resilient ecosystems and connecting people with nature represent the cornerstones of the area statement, underpinning NRW's approach to addressing the challenges of water, health and air quality.[22]

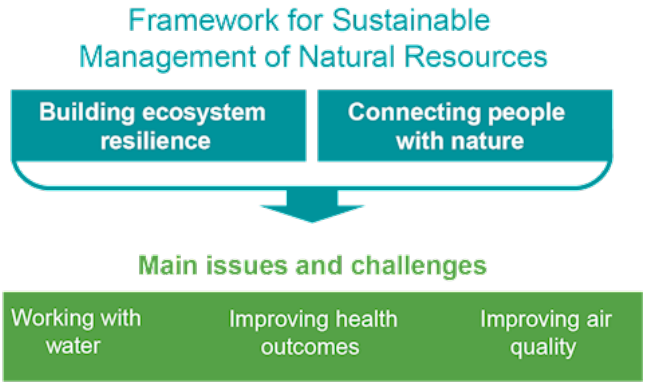


Figure 2.3 Natural Resources Wales Area Statement for the South Wales Central Area

2.3 Local context

The **Capital Ambition Report** of 2017 sets out the Council's five-year plan for the city. It outlines the Council's vision for Cardiff to become a leading city on the world stage. The plan focuses on four main areas:

- Working for Cardiff - Making sure everyone who lives and works here can contribute to, and benefit from, the city's success.
- Working for Wales - A successful Wales needs a successful capital city.
- Working for the future - Managing the city's growth in a sustainable way.
- Working for public services - Making sure public services are delivered efficiently, effectively and sustainably in the face of rising demands and reduced budgets.

Cardiff's **Transport White Paper: Transport Vision to 2030**[23] of January 2020 aims to tackle the climate emergency, reduce congestion and improve air quality. It proposes projects to significantly improve public transport in Cardiff and the region, including expanding current Metro plans to deliver more new tram/train routes and stations (Figure 2.4); introducing new bus rapid transit services and Park & Ride sites; lowering bus fares; delivering safer walking and cycling routes; and travel options designed to get people out of their cars.

Cardiff Council declared a **climate emergency** in March 2019. In October 2020, the council published a draft of One Planet Cardiff[24], a vision of how Cardiff can be a carbon-neutral city by 2030. This includes large-scale retrofits of buildings, development of low-cost efficient energy generation, support of ultra-low emission vehicles, increased tree coverage and low carbon food. Section 3.4 discusses this further.

Cardiff's May 2021 draft plan for post-pandemic city recovery and renewal strategy, **Greener, Fairer, Stronger**[25], reiterates the importance of responding to a change to more home-working and less in-person retail, and for Cardiff to remain healthy and uplifiting through public space and parks. It promotes six 'missions': reimagining the city centre, a city for everyone, a city of villages, culture and sport-led renewable, Tech City, and One Planet Recovery.

[22] https://naturalresources.wales/about-us/area-statements/south-central-wales-area-statement/introduction-to-south-central-area-statement/?lang=en

[23] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/transport-policies-plans/transport-white-paper/Documents/White%20Paper%20for%20Cardiff%20Transport%202019.pdf

[24] www.oneplanetcardiff.co.uk

[25] https://cardiff.moderngov.co.uk/documents/s48486/Cabinet%2020%20May%202021%20Recovery%20Greener%20Fairer%20Economy%20App%201.pdf

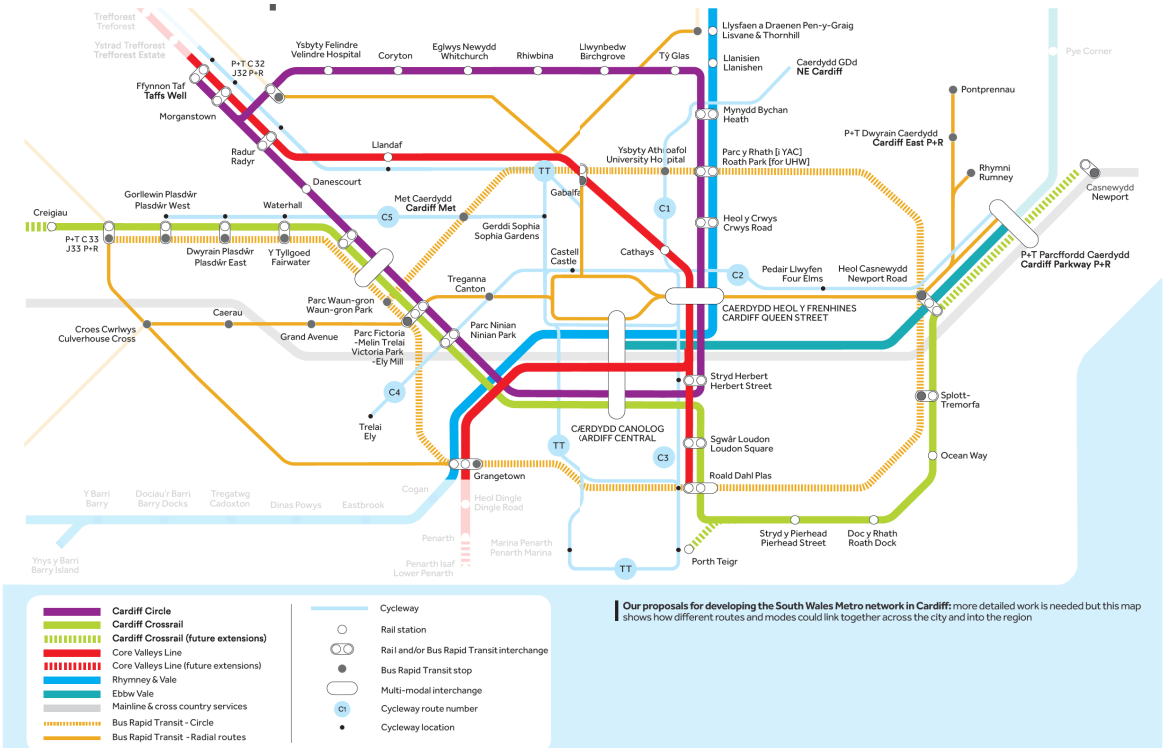


Figure 2.4 Cardiff Crossrail and Cardiff Circle proposals

3 Sustainability context (Task A3)

The SEA Directive requires a description of "the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme" (Annex Ib) and "the environmental characteristics of the areas likely to be affected" (Annex Ic).

This chapter sets out the main environmental, social, cultural and economic issues that affect, or are likely to affect, Cardiff over the life of the Replacement Local Development Plan:

3.1 Access, equality and population
3.2 Air quality
3.3 Biodiversity, flora and fauna
3.4 Climate change
3.5 Cultural heritage and the historic environment, including the Welsh language
3.6 Economy
3.7 Health and wellbeing
3.8 Land, soil and minerals
3.9 Landscape and open space
3.10 Waste
3.11 Water and flooding

In each case, the current status is first discussed, and then the likely future situation without the plan. Table 3.1 shows how these topics cover the requirements of strategic environmental assessment, equalities impact assessment, health impact assessment, and Welsh language impact assessment. Other ways of structuring the report were considered, notably Gibson's sustainability principles[26], the Stockholm Institute's resilience principles[27] and the Wales Well-being Goals (Figure 2.1). However they were generally less easy to understand and use, and did not fulfil the ISA requirements as clearly.

[26] Gibson, R.B. (2006) Sustainability assessment: basic components of a practical approach, Impact Assessment and Project Appraisal 24(3), 170-182.
[27] https://www.stockholmresilience.org/research/research-news/2015-02-19-applying-resilience-thinking.html

Assessment process requirement	ISA section
Strategic environmental assessment	
• Biodiversity	3.3
• Population	3.1
• Human health	3.7
• Fauna	3.3
• Flora	3.3
• Soil	3.8
• Water	3.11
• Air	3.2
• Climatic factors	3.4, 3.11
• Material assets	3.1, 3.6, 3.10
• Cultural heritage, including architectural and archaeological heritage	3.5, 3.12
• Landscape	3.9
• Inter-relation between the above issues	3.1, 3.2, 3.4, 3.6, 3.7, 3.8, 3.10, 3.11
Equalities impact assessment (health, housing, environment etc.)	3.1, 3.6, 3.7
Health impact assessment (health, air/water quality, access to green space etc.)	3.7, 3.1, 3.2, 3.6, 3.9, 3.11
Welsh language impact assessment	3.5

Table 3.1 ISA topics v. requirements of assessment processes

3.1 Access, equality and population

Introduction

Cardiff's population has grown rapidly over the last 30 years, and this rapid growth is expected to continue. Cardiff has also been experiencing strong economic growth and increasing levels of prosperity, but this prosperity has not been evenly distributed, affecting equality and wellbeing. There are considerable variations within and between localities, with people in some parts of Cardiff experiencing deprivation that is amongst the worst in Wales.

Population

In 2019, Cardiff's population was 366,900, up from 345,400 in 2011; 310,000 in 2001; and 297,000 in 1991 (Figure 3.1.1)[28]. This represents a growth rate of between 0.5% and 1% per year. Cardiff is one of the fastest-growing cities in the UK, and is growing faster than any other Welsh local authority[29]. Much of this growth has been through in-migration from other countries. In contrast, there has been less net out-migration of Cardiff residents to other parts of the UK.[30]

Cardiff's average household size has consistently decreased, from 2.5 person per household in 1991 to 2.29 persons in 2019[31]. Its current average household size is slightly higher than that for Wales (2.26) but lower than the UK average of 2.4. Household size is falling because of an increase in single households, including lone parents and single older persons. In 2011, 33% of Cardiff's households were one-person households, up from 31% in 2006.

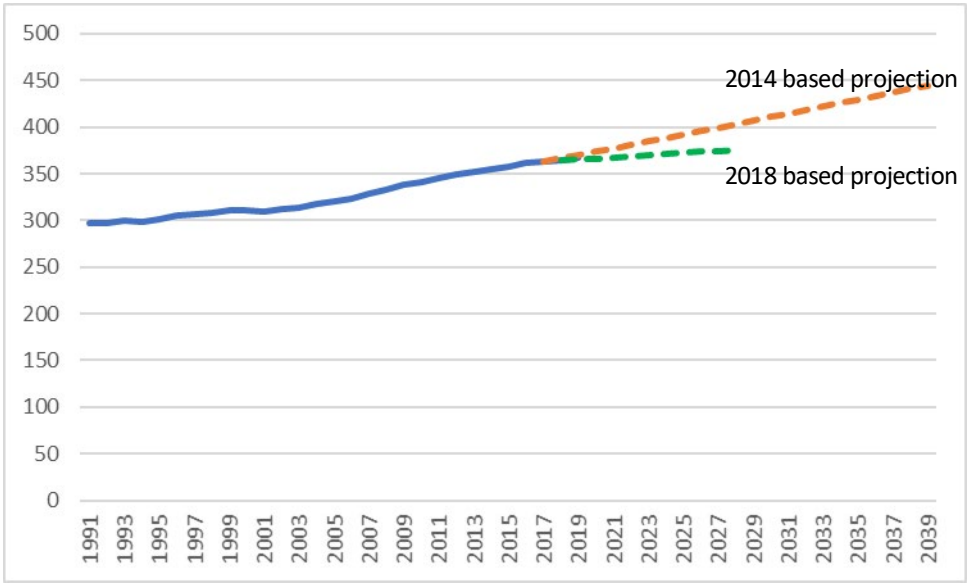


Figure 3.1.1 Cardiff's population 1991-2018, and population projections[32]

[28] https://statswales.gov.wales/Catalogue/Population-and-Migration/Population/Estimates/Local-Authority/populationestimates-by-localauthority-year
[29] https://www.cardiffpartnership.co.uk/well-being-assessment/cardiff-today/rapidly-growing-city/
[30] https://statswales.gov.wales/Catalogue/Population-and-Migration/Migration/International/migrationflowsofpeoplebetweenwalesandtherestoftheworldnon-uk-by-flow-year; https://statswales.gov.wales/Catalogue/Population-and-Migration/Migration/Internal/migrationbetweenwalesandrestofuk-by-localauthority-flow-periodofchange
[31] https://statswales.gov.wales/Catalogue/Housing/Households/Estimates/averagehouseholdsize-by-localauthority-year
[32] https://statswales.gov.wales/Catalogue/Population-and-Migration/Population/Projections/Local-Authority/2014-based/populationprojections-by-localauthority-year; https://gov.wales/sites/default/files/statistics-and-research/2020-08/subnational-population-projections-2018-based-280.pdf

Cardiff has a high proportion of young adults

Cardiff has a noticeably large proportion of young people compared to the England and Wales average: 21% of its population in 2018 was aged 18-27, compared to the England & Wales average of 13% (Figure 3.1.2)[33]. This is due in large part to its student population which currently comprises more than 13% of the city's residents, up from less than 10% in 2000[34].

Ethnic groups as a proportion of Cardiff's population are much higher than for Wales as a whole

18.5% of Cardiff's population is Black, Asian and minority ethnic (BAME). This is much higher than the Welsh average of 5.4%, and by far the highest of the Welsh local authorities. It is also higher than the average for England and Wales which is 14%. Census data indicates that a high percentage of those from BAME backgrounds live in the poorest inner-city areas – including Grangetown, Butetown, Riverside and Adamstown - although this is changing.[35]

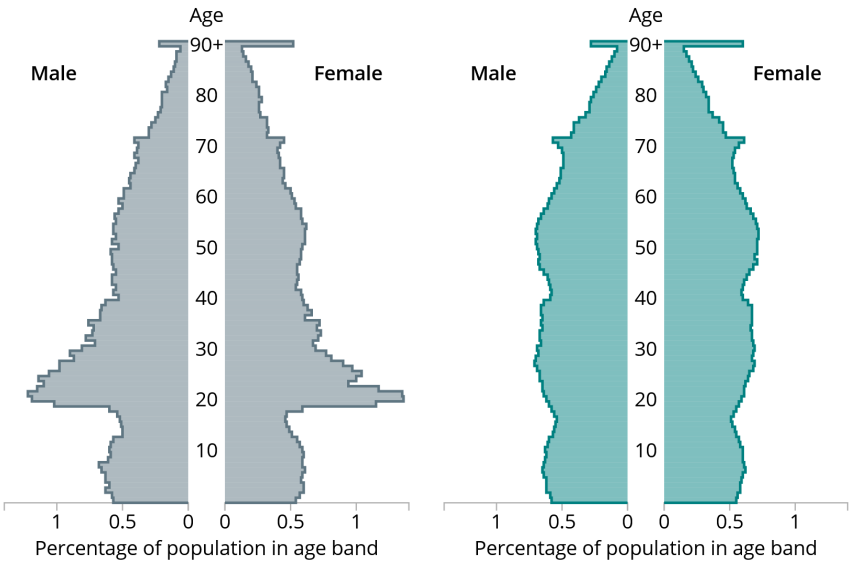


Figure 3.1.2 Age pyramid for Cardiff (grey) v England & Wales (green), 2018

Significant amounts of housing are required to house the increasing population

Table 3.1.1 shows the Local Plan targets for net general market dwellings, and the dwellings actually built. The number of dwellings built was initially significantly lower than the target: this was due to a 'delivery lag' following the adoption of the plan, and the rate of construction is expected to increase[36]. The rate of completions has accelerated in the past year, with all the large strategic plan sites starting to be built out.

Time period	Local Plan target	Dwellings built
2014 – 2016	2495	866
2016 – 2018	4096	1183
2018 – 2020	4153	1135 in 2018/19
2020 – 2022	4042	
2022 – 2024	4010	
2024 - 2026	3759	

Table 3.1.1 Housing targets and delivery

[33] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/ukpopulationpyramidinteractive/2020-01-08
[34] https://statswales.gov.wales/Catalogue/Education-and-Skills/Post-16-Education-and-Training/Higher-Education/Students/Enrolments-at-Welsh-HEIs/enrolmentsduringtheyear-by-institution-level-modeofstudy
[35] http://hummedia.manchester.ac.uk/institutes/code/briefings/localdynamicsofdiversity/geographies-of-diversity-in-cardiff.pdf
[36] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Documents/Cardiff%20LDP%203rd%20AMR%20English%20Version%20Final.pdf

Cardiff contains some of the most deprived areas in Wales - geographically there is a concentration of deprivation in the 'southern arc' although 'hotspots' exist elsewhere

The Welsh Index of Multiple Deprivation (WIMD) is a measure of the relative levels of deprivation in local areas. In the most recent WIMD 2019, 9% (or 18 out of 191) of the 10% most deprived areas in Wales were in Cardiff. This is lower than Newport (12.6%) and Merthyr Tydfil (11.5%) and on par with Rhondda Cynon Taff, but higher than all other Welsh local authorities[37]. It is significantly better than the situation in 2010, where Cardiff had 40 out of 190 of the 10% most deprived areas in Wales, but this reflects other areas of Wales getting worse: relative poverty within areas of Cardiff remains high.

Deprivation is concentrated mainly in the southern and eastern part of Cardiff (Figure 3.1.4), with the northern and western parts being generally the least deprived. The 'southern arc' also has a higher proportion of people receiving out-of-work benefits than other areas of Cardiff: in January 2020 the claimant rate in Adamstown, Ely and Splott stood at 6% or more, compared to less than 1% in Cyncoed, Lisvane and Rhiwbina[38].

The coronavirus pandemic has doubled the proportion of people receiving benefits in Cardiff, from 3.3% in February 2020 to 6.5% in November 2020 (Figure 3.1.3).[39]

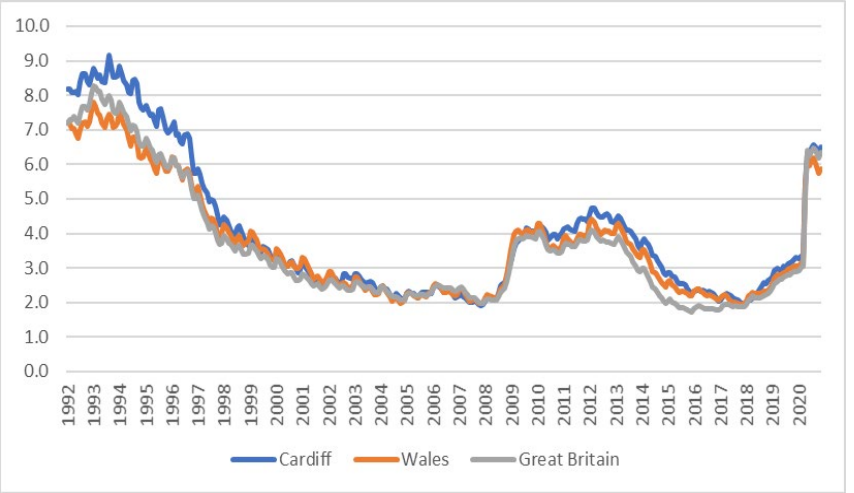


Figure 3.1.3 Out-of-work benefit claimants (%): doubling since the coronavirus pandemic

[37] https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/WIMD-2019/localauthorityanalysis
[38] www.nomisweb.co.uk
[39] Ibid.

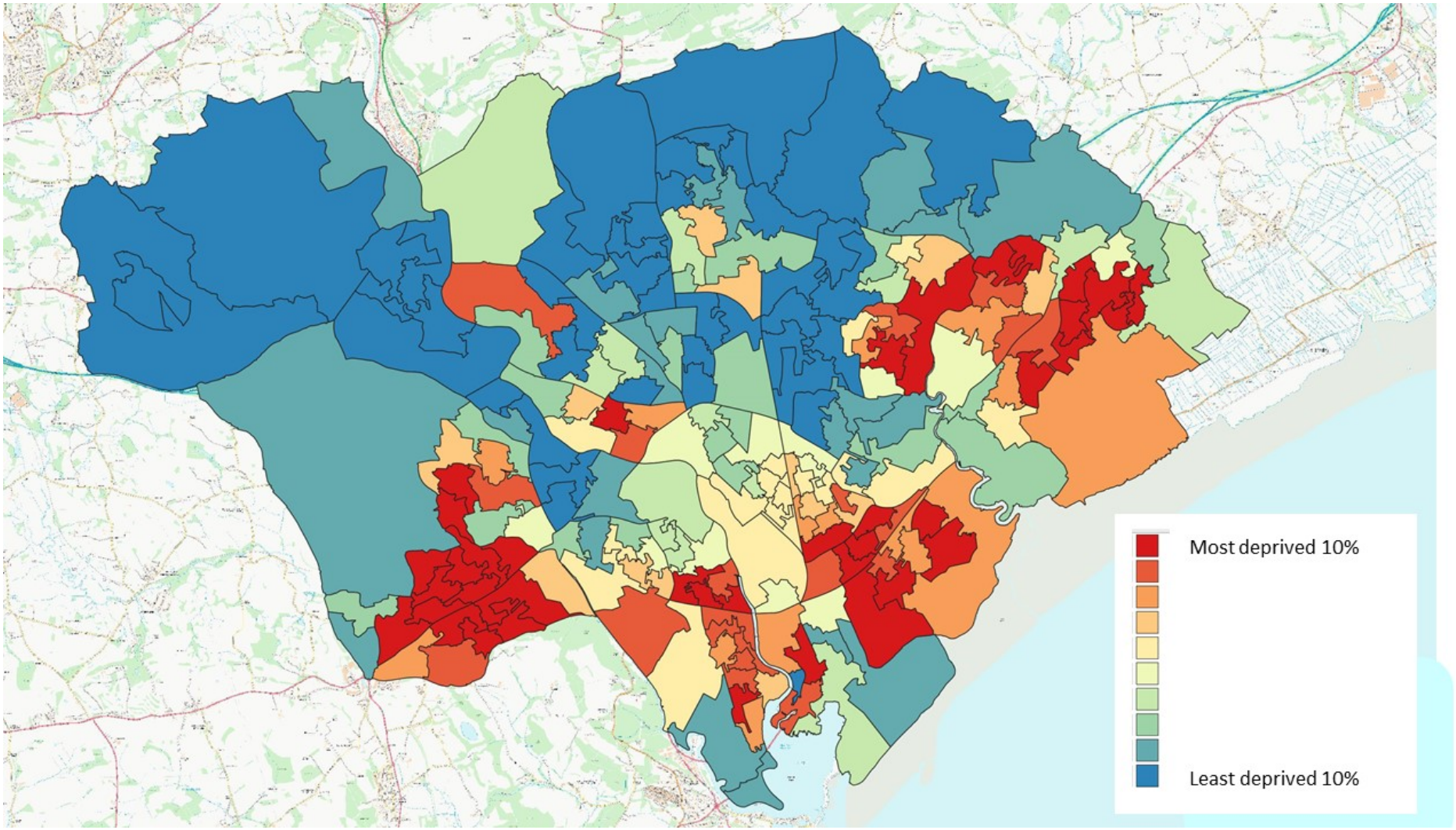


Figure 3.1.4 Index of Multiple Deprivation, overall 2019

Fewer children are living in low-income families, but more than the Wales average

23% of dependent children aged under 20 in Cardiff are living in low-income families, more than the Wales and UK averages. There has been a gradual reduction in this since 2009, when it was 27%. Children from low-income families are more likely to be unhealthy or have poorer educational outcomes. There are large discrepancies across Cardiff in terms of children in low-income families: nearly 45% in Ely, and less than 5% in Rhiwbina (Figure 3.1.5).

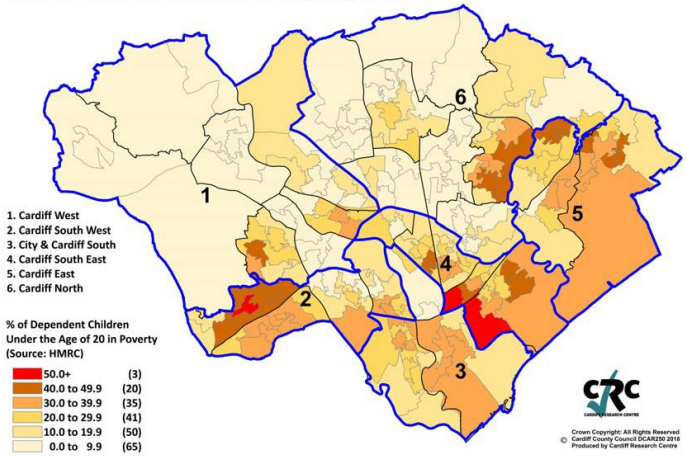
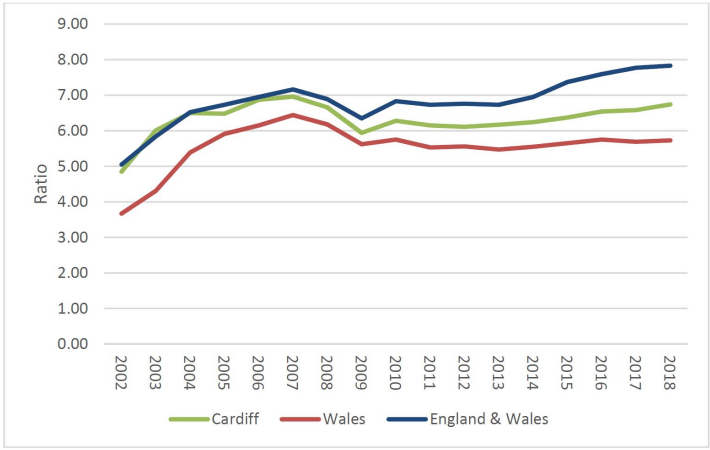


Figure 3.1.5 Children in low-income families, 2015[42]

Lack of affordable housing units - particularly family housing – is excluding those on low income from entering the housing market

In October 2020 (the most recent date available at the time of writing), the average price of a house for Cardiff was £217,804, an increase of 39% from £156,284 in October 2010[40]. The price of detached houses has grown particularly fast. The average annual salary in 2019 was £28,660, 9% higher than the Wales average but 6% lower than the UK average[41]. In 2019, the ratio of house price to annual salary was 7.6, up from just under 6 in 2012, and just under the UK average (Figure 3.1.6).



Source: ONS

Figure 3.1.6 Housing affordability (ratio of house prices to residence-based earnings, 2002-2018[43]

[40] https://landregistry.data.gov.uk/app/ukhpi/browse?from=2010-01-01&location=http%3A%2F%2Flandregistry.data.gov.uk%2Fid%2Fregion%2Fcardiff&to=2021-01-01&lang=en
[41] www.nomisweb.co.uk
[42] https://www.cardiffpartnership.co.uk/wp-content/uploads/Cardiff-in-2018-Final-English.pdf
[43] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf

Provision of enough affordable housing is an ongoing problem in Cardiff. In early 2021, there were approximately 8,000 applicants on the council housing register, compared to 10,491 in mid-2010. The Local Development Plan sets a target for the delivery of 6,646 affordable units to be provided between 2014 and 2026, with an interim target to provide 1,942 affordable dwellings by 2019. By 2019, 1,082 affordable units had been delivered, representing 25% of overall completions. This reflects the slower than anticipated progress in the strategic housing allocations being delivered (Table 1.1).

The quality of housing in Cardiff is variable, with housing in the south of the council being more likely to be overcrowded and without central heating than elsewhere in Cardiff (Figure 3.1.7).

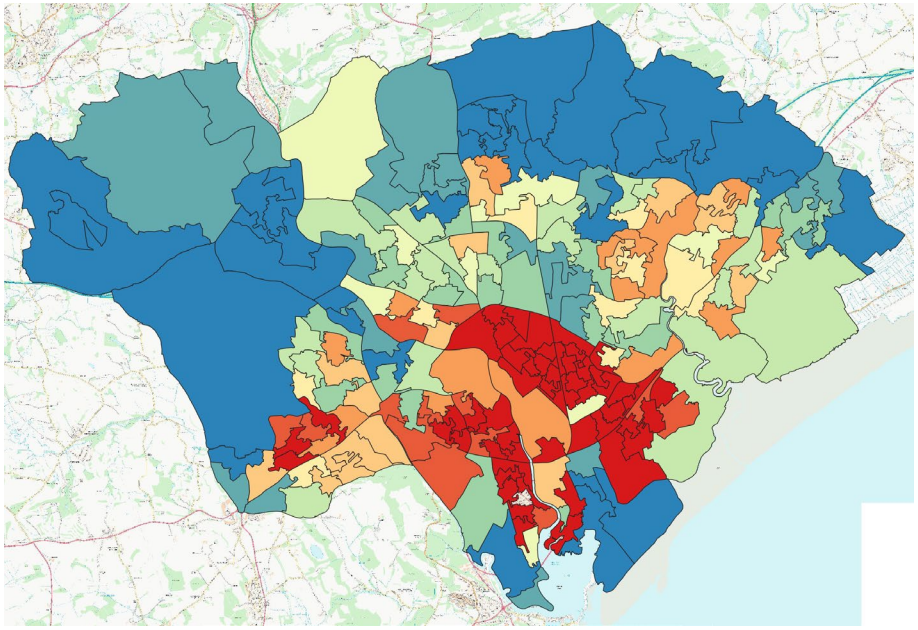


Figure 3.1.7 Index of Multiple Deprivation 2019 housing[44]

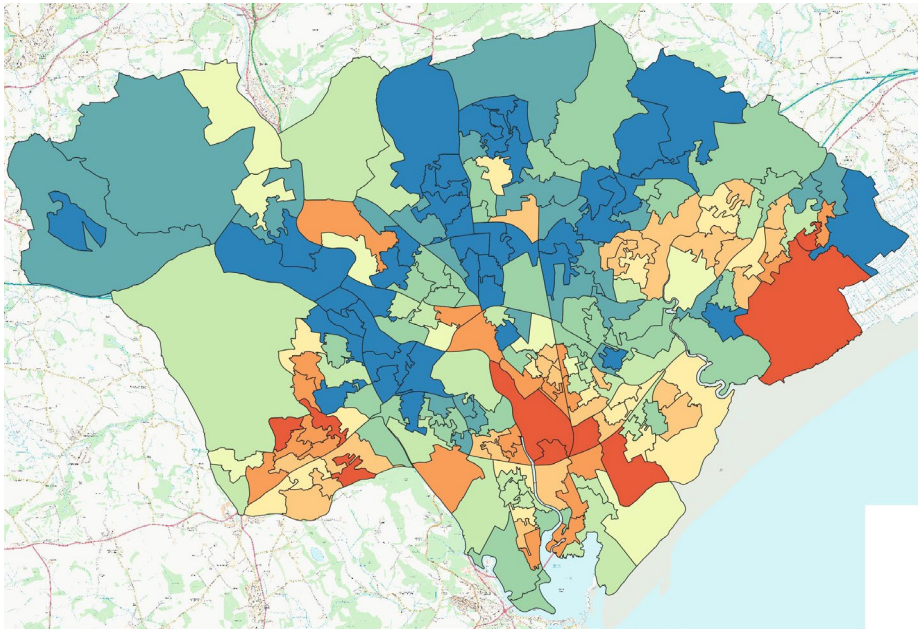


Figure 3.1.8 Index of Multiple Deprivation 2019 access to services[35]

[44] See Figure 3.1.3 for legend

Homelessness in Cardiff is rising

People experiencing homelessness are especially vulnerable and there are a significant number of them living in Cardiff. Hostels and lodging houses are concentrated around the city centre. Cardiff also attracts a high number of young people who have left home, absconded from care, or are vulnerable in other ways. During 2017/18, Cardiff Council received 3,987 enquiries from homeless people or those at risk of homelessness, up 67% from just two years earlier. The number of homeless people in Cardiff rose from 1,274 in 2015 to 1,976 in 2018. In response to the coronavirus pandemic, Cardiff Council has found accommodation for most of the city's rough sleepers, and the Welsh Government is spending £20 million to help ensure that people do not need to return to rough sleeping.[45]

Cardiff has good access to services although deficiencies still exist at a local level

As would be expected for a compact city, the Welsh Index of Multiple Deprivation indicates that Cardiff has good access to services[46]. Nowhere in Cardiff is in the worst 10% for Wales in terms of access (Figure 3.1.8).

Likely future without the plan

Figure 3.1.1 shows the 2014-based and 2018-based population projections for Cardiff. The 2014-based projections are for about 80,000 more people to live in Cardiff in 2039 compared to 2018. The 2018-based projections to 2039 are not yet available, but are significantly lower than the 2014-based projections. All of the projections were made prior to Brexit, and so may change significantly.

The proportion of Cardiff residents aged 65+ is expected to grow from 14.5% in 2019 to 17.7% in 2039. Of these, the proportion of residents aged 85+ is expected to grow from 2.2% to 3.5% of the population.[47] This has implications for the provision and design of those parts of the built environment that support older people's health and social connections, for instance warm homes, intergenerational spaces in homes, good transport links, green spaces and community centres.

The current Local Development Plan provides for a large amount of new housing, notably in six strategic development sites. Planning and, in some cases, construction is progressing on all of these sites. There has been a trend of decreasing deprivation in Cardiff, which could continue with increasing employment, housing and access to green spaces and walking/cycling routes.

[45] https://gov.wales/welsh-government-announce-new-20-million-fund-transform-homelessness-services

[46] The access to services index relates to the average time it would take to access 8 key services (food shop, GP surgery, primary school, post office, public library, leisure centre, NHS dentist, secondary school, and a transport node)

[47] https://cavuhb.nhs.wales/files/key-publications/dph-report-2020-pdf/

3.2 Air quality

Introduction

Air pollution is the largest environmental risk to health. It is linked to climate change and affects many plants and sensitive ecosystems. Public Health Wales estimates that nitrogen dioxide (NO_2) pollution leads to about 220 deaths per year in the Cardiff and Vale Health Board area, and particulates ($PM_{2.5}$) about 225 deaths[48]. Average air pollution concentrations are highest in the most deprived areas where levels of chronic ill health tend to be highest, so there is an equality component to air pollution[49]. Poor air quality also has negative effects on vegetation and ecosystems.

Cardiff Council periodically reviews and assesses air quality for compliance with objectives of the Air Quality (Wales) Regulations 2000. The 2019 Annual Air Quality Progress Report[50] concludes that there were no exceedances of legal limits for benzene, carbon monoxide or sulphur dioxide in 2018, but there were exceedances of nitrogen dioxide, ozone and particulates. There was no 2020 progress report; however the Welsh Government's Clean Air Advisory Panel found that, during the first coronavirus lockdown, NO_x levels in urban areas fell on average by 30-40%, whilst ozone levels increased and levels of particulates ($PM_{2.5}$) stayed roughly the same.[51]

Nitrogen dioxide is the main cause of air pollution 'hot spots' in Cardiff

Levels of nitrogen dioxide (NO_2) vary throughout the city, but are broadly highest in the city centre and lowest on the edges of Cardiff, notably in the Wentloog Levels (Figure 3.2.1). Vehicles and wood burning stoves area also the main generators of particulates ($PM_{2.5}$).

Cardiff has four Air Quality Management Areas (AQMAs), all designated because air quality in those areas exceeds the legal NO_2 threshold of 40µg/m^3. NO_2 is primarily caused by road traffic. Four AQMAs were originally declared: Newport Road, Philog and Cardiff West in 2000, and St Mary Street in 2002. The first two were revoked in 2007, and the area of the Cardiff West AQMA

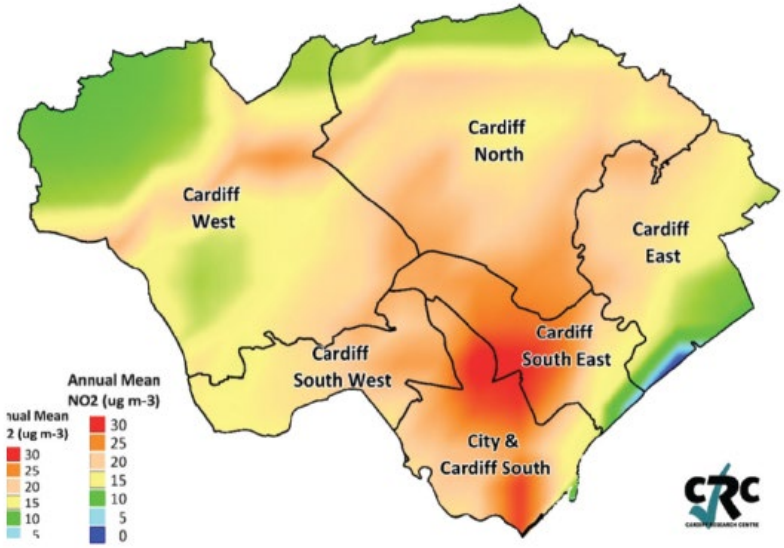
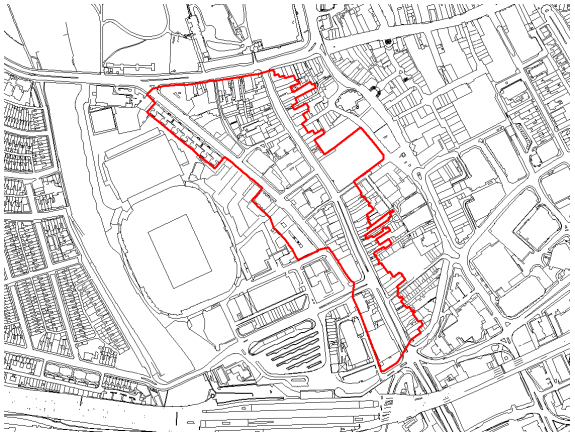


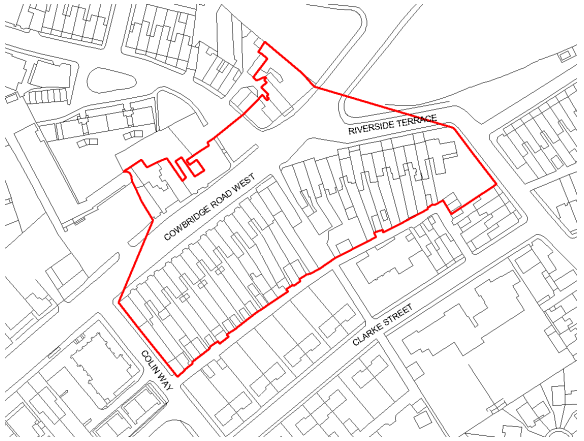
Figure 3.2.1 Annual mean NO_2 levels, 2014[52]

[48] http://www.wales.nhs.uk/sitesplus/888/opendoc/317890
[49] https://gov.wales/clean-air-plan-wales-healthy-air-healthy-wales
[50] https://cardiff.moderngov.co.uk/documents/s35876/Cabinet%2021%20November%202019%20Local%20Air%20Quality%20Progress%20Report%20App.pdf.
[51] https://airquality.gov.wales/sites/default/files/documents/2021-01/Clean_Air_Advisory_Panel_report-Impacts_of_the_Covid-19_pandemic_on_air_quality_in_Wales_English.pdf
[52] https://www.cardiffpartnership.co.uk/well-being-assessment/cardiff-clean-sustainable/air-quality/

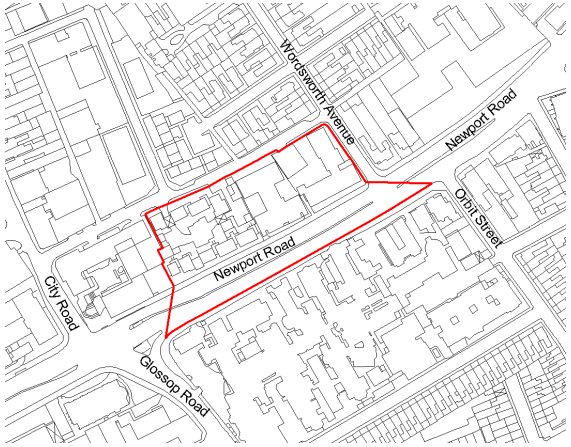
(renamed Ely Bridge) was reduced. In December 2010 the Stephenson Court AQMA was declared. Figure 3.2.2 shows the current AQMAs[53], and Table 3.2.1 shows air quality over time at the AQMAs.



Cardiff City Centre



Ely Bridge



Stephenson Court

Llandaff

Figure 3.2.2 Current AQMAs in Cardiff

[53] Ibid.

Table 3.2.1 shows that NO_2 levels have generally reduced over time. Air quality at the High Street improved significantly after pedestrianisation in 2010.

AQMA	Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cardiff City Centre	58. Westgate Street	39	50	52	55	50	52	51	48	45	45	46
	119. Havelock Street	31	34	38	40	34	33	32	28	30	33	38
	126. Westgate Street Flats	35	40	49	45	40	44	41	36	38	39	35
	160. High Street	69	50	36	33	31	30	28	27	32	28	27
	184. St. Mary Street									41	39	40
	186. Castle Street									48	48	46
	187. Angel Hotel									51	50	51
Ely Br.	117. Crowbridge Rd West		43	52	47	43	45	42	40	41	49	40
Ste. Ct.	81. Stephenson Court		41	46	41	41	37	36	35	38	36	35
Llandaff	33 Mitre Place		52	54	55	50	50	51	47	48	33	33
	99. Cardiff Rd Llandaff		42	49	40	35	39	40	30	35	31	32
	212. Bridge Road											47

Table 3.2.1 NO2 levels at Cardiff AQMAs over time (red cells show where the AQMA exceeds the annual threshold of 40µg/m^3)[54]

[54] https://cardiff.moderngov.co.uk/documents/s35876/Cabinet%2021%20November%202019%20Local%20Air%20Quality%20Progress%20Report%20App.pdf

The Transport and Clean Air Green Paper consultation of 2019[55] asked respondents to rate different measures for improving air quality in the city. The most preferred options were integrated ticketing, a zero carbon bus fleet, and digital user information for buses. Least preferred were measures that would require divers to change their behaviour: parking levies, a total city 20mpg zone, active travel targets, and clean air zones (Figure 3.2.3)

Likely future without the plan

Prior to the coronavirus pandemic, air quality in Cardiff was expected to continue to improve in response to tightening vehicle emission requirements, an increase in electric vehicles, and a greater uptake of non-car modes of transport. It is unclear whether changes in people' lifestyles due to the pandemic – more home-based working, less commuting, less travelling for retail and leisure – will continue post-pandemic. If they do, then air quality is likely to improve faster than initially predicted. It is also unclear whether Brexit will affect transport movements and air quality legislation in Wales. The impacts of poor air quality can be worsened by higher temperatures, so climate change could lead to more air quality related health problems.

The Clean Air Plan for Wales[56] aims to reduce air pollution over ten years. The 2018 Clean Air Zone Framework for Wales[57] identifies Cardiff as a location where a Clean Air Zone could be implemented. NRW's South Central Wales Area Statement[58] aims to reduce air pollution, taking the needs of the environment and ecosystems into consideration. Cardiff has put forward an outline bid for funding for improving air quality in the city centre[59].

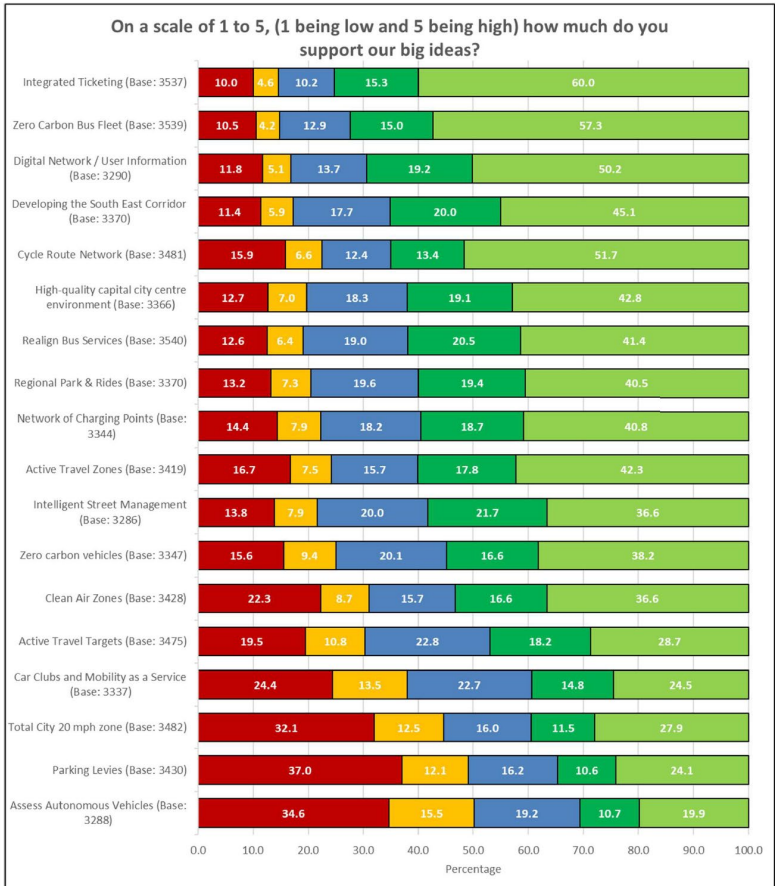


Figure 3.2.3 Public preferences for transport management measures in Cardiff[60]

[55] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Transport%20and%20Clean%20Air%20Green%20Paper%20Consultation%20Report.pdf
[56] https://gov.wales/clean-air-plan-wales-healthy-air-healthy-wales
[57] https://gov.wales/clean-air-zone-framework-wales
[58] https://naturalresources.wales/about-us/area-statements/south-central-wales-area-statement/?lang=en
[59] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/clean-air-cardiff/Pages/default.aspx
[60] Ibid.

3.3 Biodiversity, flora and fauna

Introduction

Cardiff has a wide range of biodiversity interests which extend from Flat Holm Island in the Severn Estuary to the hills forming the northern edge of the city, a thousand feet above sea level. Habitats and species have developed in response to local conditions and represent Cardiff's biodiversity resource.

Cardiff has a wide range of sites designated for biodiversity, including two European Designated Sites (the Severn Estuary and Cardiff Beech Woods)

Figure 3.3.1 shows the location of designated sites in Cardiff. The Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar Site consists of intertidal mudflats, sandflats, saltmarsh, shingle and rocky shoreline. These habitats support internationally important populations of waterfowl. The estuary is also important for the run of migratory fish, and it has an immense tidal range. The Cardiff Beech Woods SAC is one of the largest concentrations of beech forests in Wales, and represents the habitat close to western limit of its past native range in both the UK and Europe. Table 3.3.1 summarises the condition of, and threats and pressures on these internationally important sites for nature conservation. Key pressures are recreational disturbance, urbanisation, and other human-induced changes. NRW also identifies air pollution as being a threat to European Designated Sites. The condition of the birds using the Severn Estuary is particularly problematic.

Table 3.1.1 Condition of, and threats and pressures on, internationally important nature conservation sites in/near Cardiff[61]

Name of site	Why the site has been designated ('qualifying feature')	Threats and pressures
Cardiff Beech Woods SAC	• Asperulo-Fagetum beech forests • Tilio-Acerion forests of slopes, screes and ravines	• Interspecific floral relations • Invasive non-native species • Recreational activities
Severn Estuary SAC	• Estuaries • Mudflats and sandflats not covered by seawater • Atlantic salt meadows • Sandbanks which are slightly covered by sea water all the time • Reefs • Sea lamprey • River lamprey • Twaite shad	• Urbanisation, industrial etc. • Changes in abiotic conditions • Human induced changes • Recreational activities • Modification of cultivation practices
Severn Estuary SPA	• Bewick's swan* • Common shelduck* • Gadwall*	• Recreational activities • Other urbanisation, industrial etc. • Modification of cultivation practices

[61] http://sac.jncc.gov.uk

Name of site	Why the site has been designated ('qualifying feature')	Threats and pressures
	• Dunlin* • Common redshank* • Greater white-fronted goose* • Waterbird assemblages	• Changes in abiotic conditions • Human induced changes in hydraulic conditions
Severn Estuary Ramsar	• Immense tidal range • Unusual estuarine communities, reduced diversity and high productivity • Run of migratory fish between sea and river via estuary • Very diverse fish species • Waterbird assemblages of international improtance	• Dredging • Erosion • Recreational disturbance

Global condition of qualifying feature:

A	B	C	* There is no information on global status for these birds. The information is provided on isolation; population is consistently one 'grade' better

The 18 Special Scientific Interest (SSSIs) in Cardiff range from woodland, aquatic, marsh and grassland habitats to sites of geological interest[62], and from favourable to unfavourable status. The status of many – including the very large Gwent Levels and Severn Estuary SSSIs - is unknown (Table 3.1.2).

Table 3.1.2 Condition of Sites of Special Scientific Interest in/near Cardiff[63]

Argloddiau Cronfeydd Dwr Llanisien a Llys-Faen	Ely Valley	Lisvane Reservoir
Caeau Blaen-bielly	Fforestganol a Chwm Nofydd	Penylan Quarry
Castell Coch Woodlands and road section	Flat Holm	Rhymney River Section
Coed y Bedw	Garth wood	Rhymney Quarry
Cwarrau Ton Mawr a Ffynnon Taf	Glamorgan Canal / Long Wood	Severn Estuary
Cum Cydfin, Leckwith	Gwent Levels – Rumney and Peterstone	Ty Du Moor

Condition of SSSI:	unknown	favourable	favourable /unknown	unfavourable / unknown	unfavourable

[62] https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en
[63] Elizabeth Felton, Natural Resources Wales, pers. comm., March 2020.

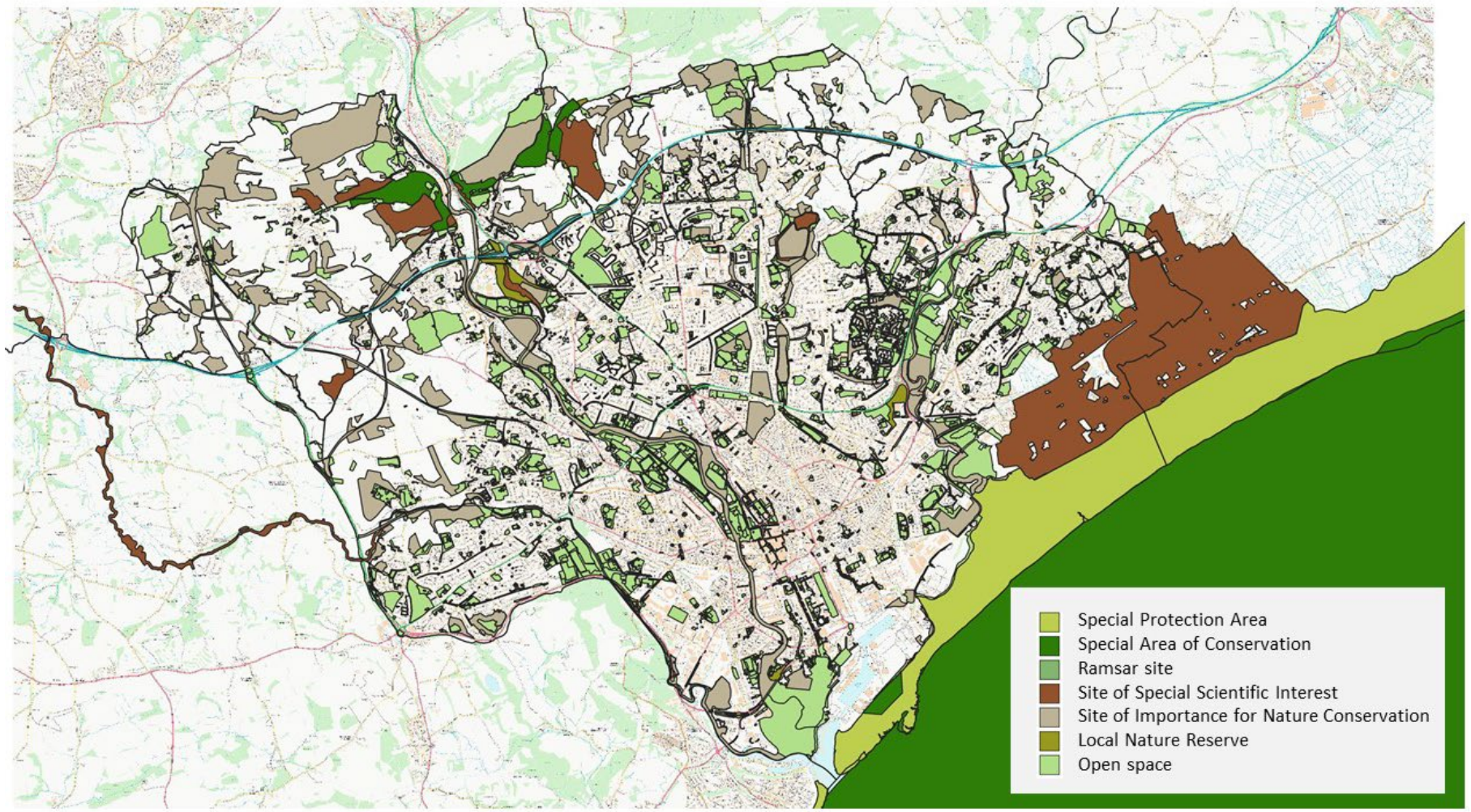


Figure 3.3.1 Designated nature conservation sites and open space in Cardiff

Six Local Nature Reserves covering 150ha provide good opportunities to access local wildlife and there are 181 additional Sites of Importance for Nature Conservation (SINCs) covering 1672ha.

European protected species occurring in Cardiff are the Great Crested Newt, Otter, Dormouse and Bats. Otters are now present on all three main rivers and have also extended to tributaries and other water bodies. Dormice require a woodland habitat and are known to primarily exist across the northern ridge and east of the city. All species of bats are protected and their distribution varies: some are widespread such as the Pipistrelle whilst others are localised.

Cardiff has many existing corridors and networks of mixed habitats providing good connectivity for species

The valleys of the rivers Taff, Ely and Rhymney form strategically important corridors of open space containing a wide variety of habitats that run through the city from the countryside to the Severn Estuary. These provide valuable wildlife corridors and connectivity between habitats that are important for many species. Feeder tributaries and streams generally run from higher ground to the north and feed into the main rivers, providing a similar function. Features such as woodlands, hedgerows, marshlands, alder carrs and disused rail lines are common in the countryside surrounding the urban area. This patchwork of varied habitats provides a good resource for biodiversity (Figure 3.3.2). However Cardiff's woodland cover is fragmented, with few areas larger than 5 hectares.

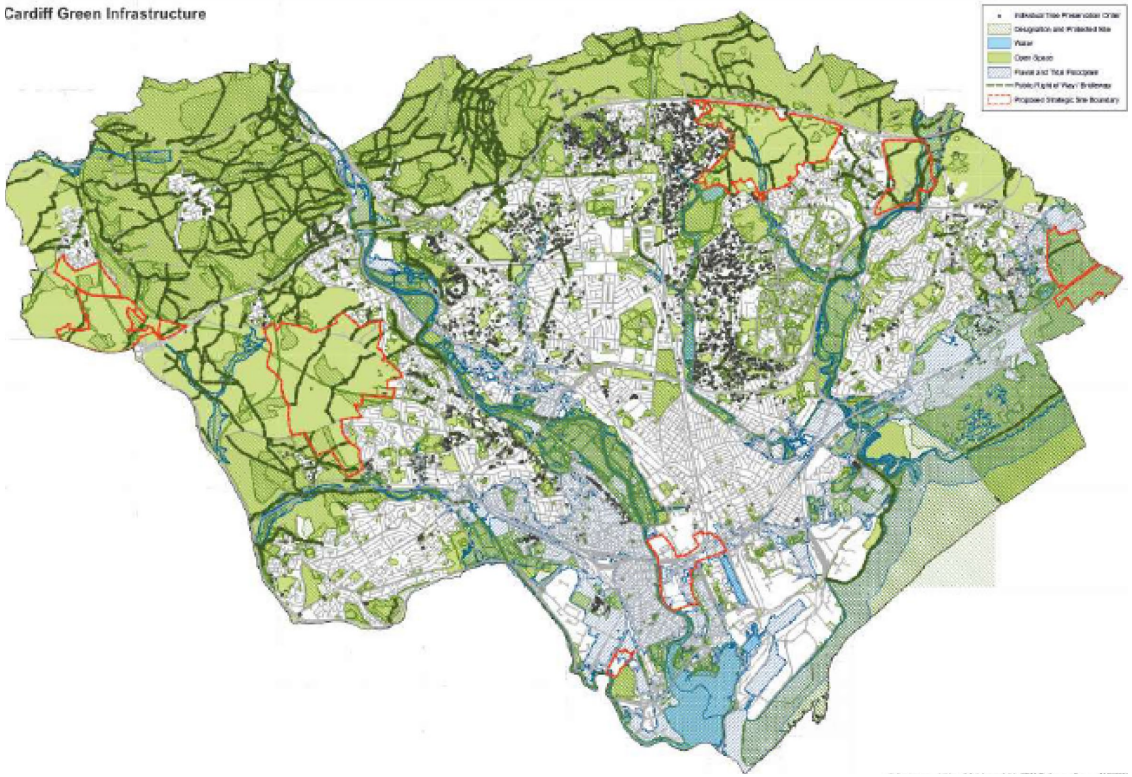


Figure 3.3.2 Green infrastructure in Cardiff[64]

[64] https://cardiff.moderngov.co.uk/documents/s34305/Cabinet%2026%20Sept%202019%20Biodiversity%20BRED%20App.pdf

Urban areas can support biodiversity through a wide range of measures

There is little information on biodiversity in Cardiff, notably the condition of SSSIs and the location and abundance of protected species. However, Natural Resources Wales has identified a wide range of actions that can be carried out in urban areas such as Cardiff to support biodiversity[65]:

- Promote sustainable transport
- Promote low carbon, energy efficient housing; increase the energy efficiency of the housing stock
- Deploy renewables
- Implement water efficiency measures such as off-line storage, rainwater harvesting and greywater recycling. Initiate behavioural change to a more conservative use of water.
- Increase the amount of highly water-efficient domestic appliances in new and existing homes
- Reduce non-supply leakage and waste through awareness-raising initiatives
- Promote SUDS in existing developments
- Protect large trees in urban areas and promote the planting of street trees
- Increase the rate of new woodland creation and plant more trees
- Monitor the change in selected mammal and invertebrate species in urban areas
- Manage green spaces
- Provide adequate garden space for homes likely to house children
- Increase biodiverse, accessible green space
- Manage road verges for biodiversity
- Convert lawns around public buildings to biodiverse meadows
- Use more timber in construction to help reduce emissions and support the timber industry

[65] Natural Resources Wales (2020) State of Natural Resources Report also recommends actions for coastal margins, farmland, marine and freshwater and woodlands which can also apply to Cardiff. In particular, this includes protection and restoration of coastal margin habitats including saltmarsh, and coastal adaptation through nature-based solutions. https://naturalresources.wales/evidence-and-data/research-and-reports/state-of-natural-resources-report-sonarr-for-wales-2020/sonarr2020-our-assessment/sonarr-2020-natural-resources-registers/?lang=en

Likely future without the plan

The lack of information on biodiversity in Cardiff makes it difficult to plan for and monitor its condition.

New developments within and outside the settlement boundary have the potential to harm Cardiff's biodiversity resource. Brownfield sites can contain significant biodiversity interest and it is important that these are recognised and protected where possible. Similarly, the river valleys and countryside are vulnerable to insensitive development and changing agricultural and land use practices. The coronavirus pandemic has shown just how important green spaces are for people's physical and mental wellbeing: there may be a conflict between making green spaces publicly accessible and protecting their biodiversity.

The Welsh government declared a nature emergency in June 2021. Planning Policy Wales[66] requires planning authorities to seek to maintain and enhance biodiversity, and protect the resilience of ecosystems. In particular it expects planning authorities to consider diversity between and within ecosystems; the connections between and within ecosystems; the scale of ecosystems; the condition of ecosystems including their structure and functioning; and the adaptability of ecosystems. NRW's South Central Wales Area Statement[67] aims to work towards building resilient ecosystems and connecting people with nature. Cardiff Council has prepared a Biodiversity and Resilience of Ecosystems Duty strategic plan[68], Green Infrastructure Supplementary Planning Guidance[69], and an Ecology & Biodiversity Technical Guidance Note. It has started to produce a Local Nature Recovery Action Plan.

[66] https://gov.wales/sites/default/files/publications/2019-02/planning-policy-wales-edition-10.pdf , sec. 6.4
[67] https://naturalresources.wales/about-us/area-statements/south-central-wales-area-statement/?lang=en
[68] https://cardiff.moderngov.co.uk/documents/s34304/Cabinet%2026%20Sept%202019%20Biodiversity%20BRED.pdf.
[69] https://www.cardiff.gov.uk/ENG/resident/Planning/Planning-Policy/Supplementary-Planning-Guidance/Documents/Consultation/Green%20Infrastructure%20SPG%20English%20June%202017.pdf

3.4 Climate change

Introduction

Human induced climate change is the greatest short- and long-term challenge facing the human race. Globally, greenhouse gas emissions have increased steadily since the industrial revolution. Greenhouse gas concentrations in the atmosphere now stand at 454ppm CO_2 equivalent, 37ppm more than just ten years ago[70], and compared with only 280ppm before the Industrial Revolution. The rising concentration is driven by increasing emissions from human activities, such as energy generation, traffic and land-use change.

Risks associated with climate change include:

- Increased risk of flooding and erosion (see Sec. 3.11)
- Increased pressure on drainage systems
- Drier soils and subsidence
- Significant habitat and species changes and loss
- Water quality issues in rivers and lakes
- Greater incidence of drought and problems with water supply
- Lower air quality
- Acidification of the sea
- Health issues in the summer, including the urban heat island effect
- Reduced energy demand in winter but increased demand in summer
- Increased prevalence of insect and water borne diseases
- Vulnerability of transport, waste and energy infrastructure
- Increase in demand for, and cost of, water
- Increased insurance costs and decreased property values
- Increased risk of forest and heathland fires
- Changes in the landscape
- Increased tourism due to warmer weather

The Cardiff area is likely to be subject to greater increases in temperature as a result of climate change than most of the rest of the UK (UKCIP 2009)

Cardiff Council declared a climate emergency in March 2019, and the Welsh Government declared one a month later. Cardiff Council is aiming to reach carbon neutrality[71] by 2030, and the Welsh Government aims for Wales to reach 'net zero' greenhouse gas emissions by 2050[72]. This section begins with causes of climate change – emissions of greenhouse gases - and continues with how Cardiff is dealing with climate change. Section 11 discusses flooding.

[70] https://www.eea.europa.eu/data-and-maps/indicators/atmospheric-greenhouse-gas-concentrations-6/assessment-1.

[71] "Carbon neutrality, or having a net-zero carbon footprint, is the balancing of carbon emissions against carbon removal, often through carbon off-setting, with the net result being zero." https://www.oneplanetcardiff.co.uk/

[72] https://www.itv.com/news/wales/2019-05-02/wales-warned-to-cut-greenhouse-emissions-by-95-before-2050/

Cardiff's CO_2 emissions per person are decreasing, particularly due to reductions in industrial and commercial emissions

Carbon dioxide (CO_2) accounts for most greenhouse gas emissions. Annual greenhouse gas emissions in Cardiff have been decreasing steadily, from 2679kt in 2005 to 1647kt in 2018, a 39% reduction (Figure 3.4.1). Emissions from industrial and commercial activities have fallen particularly quickly. Annual per person emissions have fallen even faster, given that Cardiff's population increased during this time: they dropped by 46%, from 8.3 tonnes/person to 4.5 tonnes/person. These decreases are partly attributable to more energy-efficient buildings and appliances, but also to the economic recession and subsequent austerity measures.

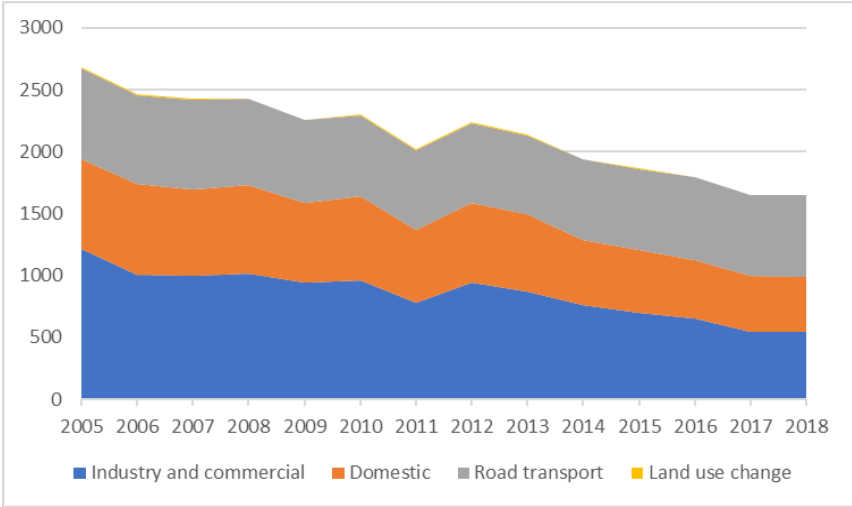


Figure 3.4.1 Greenhouse gas emissions (in kilotonnes, kt) for Cardiff[73]

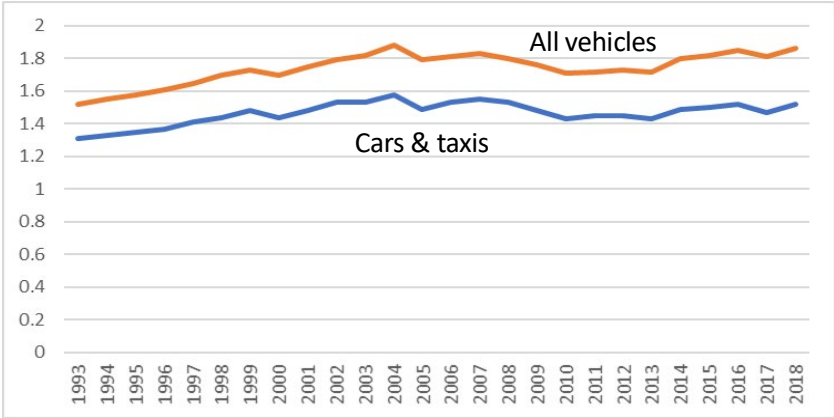


Figure 3.4.2 Annual traffic levels, billion vehicle-km, Cardiff[74]

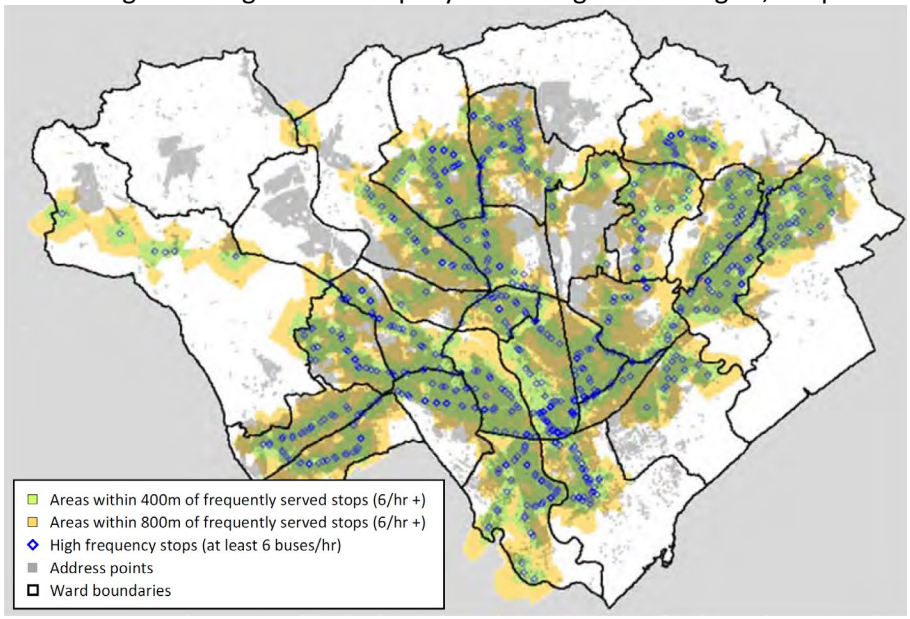
Domestic energy use is responsible for almost one-third of Cardiff's CO_2 emissions. Cardiff's per person domestic energy use is slightly lower than the Welsh and GB average, and decreased by 14% between 2008 and 2018.

Traffic accounts for another 30% of emissions, and was not going down before the coronavirus pandemic. After consistent traffic growth to 2004, traffic dropped by about 5% in the late 2000s as a result of the recession, but then rose again and was at almost its highest-ever level in 2018 (Figure 3.4.2). This was despite the fact that most areas of the city have good access to services generally (Figure 3.1.8) and to bus services specifically (Figure 3.4.3). This has changed, at least temporarily, as a result of the pandemic, but comparable figures had not yet been released by early 2021.

[73] http://www.infobasecymru.net/IAS/themes/environmentandsustainability/environment/tabular?viewId=518&geoId=1&subsetId=.
[74] https://roadtraffic.dft.gov.uk/local-authorities/19

A significant part of Cardiff's traffic comprises commuters from outside Cardiff.

Prior to the pandemic, almost 100,000 people commuted into Cardiff every day, of which about 80% travelled by car: this was a net inflow of 67,800 people[75] (Figure 3.4.4). Additionally, 190,000 commuter trips were made by Cardiff residents every day, of which about 30,000 were to work outside the city. Drivers were losing on average 143 hours per year to congestion[76]. Again, the pandemic has changed this, but the degree to which this is happening is not clear.



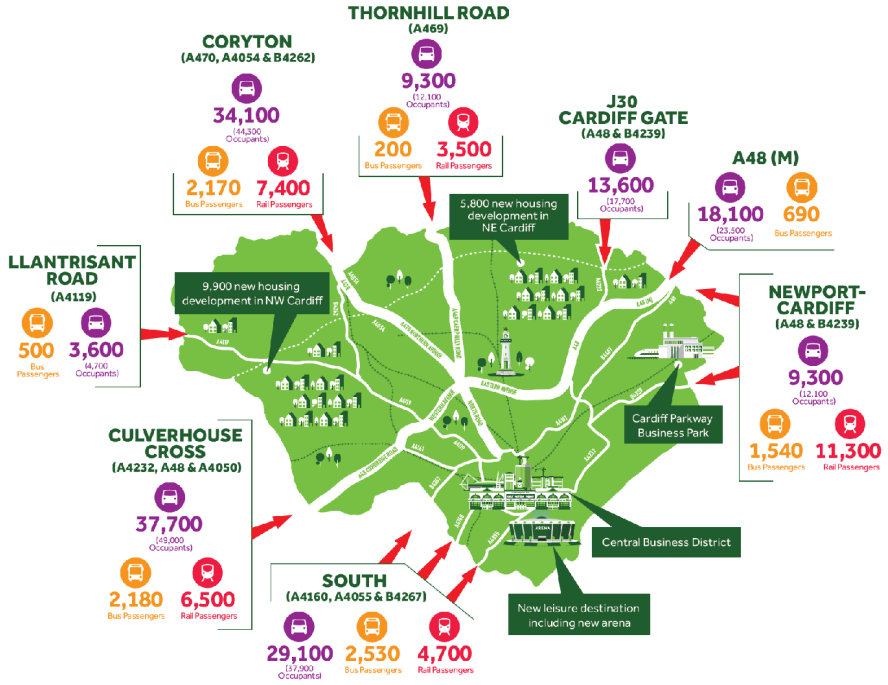
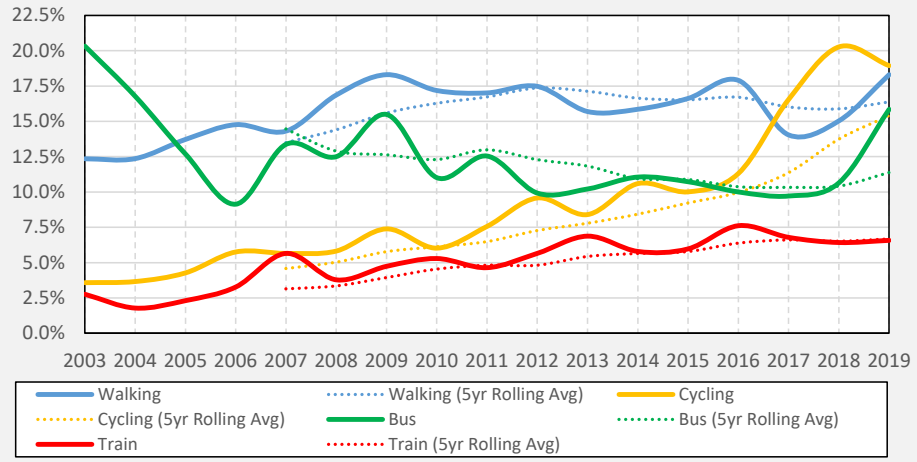


Figure 3.4.3 Bus accessibility in Cardiff [77]

[75] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf.
[76] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/transport-policies-plans/transport-white-paper/Documents/White%20Paper%20for%20Cardiff%20Transport%202019.pdf
[77] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Documents/Cardiff%20LDP%203rd%20AMR%20English%20Version%20Final.pdf
[78] Ibid.

About half of journeys to work and education have been by car, but this is slowly changing. The proportion of Cardiff residents commuting to work by bike rose rapidly between 2003 and 2018, and particularly since 2015 (Figure 3.4.6). The proportion of people travelling to education by bike has also risen significantly (Figure 3.4.7)[79]. This has coincided with the publication of the Cardiff Cycling Strategy 2016-2026[80]; and the 'Nextbike' rental system which started in March 2018. In the 2019 Transport Survey, 66% of respondents indicated that they commute to work at least once a week by car or van; and 31% stated that they travel to work at least once a week by bike.[81]



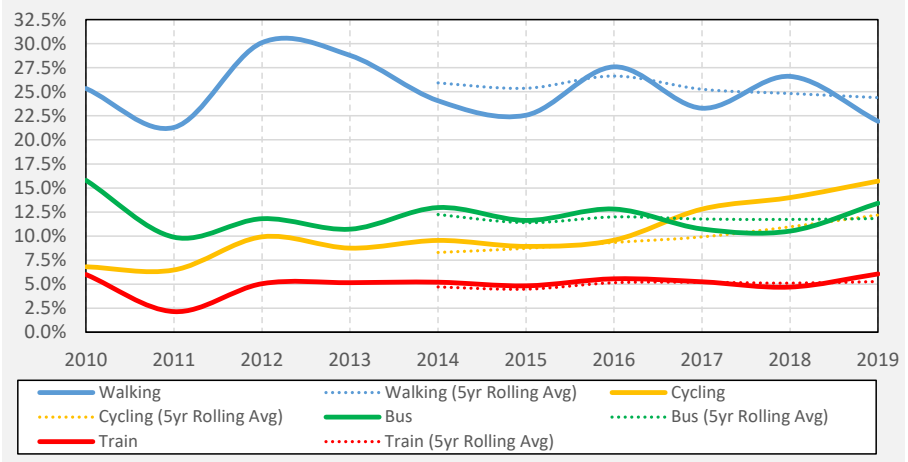


Figure 3.4.6 Non-car mode of travel to education[82]

[79] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Pages/Annual-Monitoring-Report.aspx
[80] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/Walking-and-cycling/Cycling-Strategy/Documents/Cardiff%20Cycling%20Strategy.pdf
[81] https://www.cardiffpartnership.co.uk/wp-content/uploads/Cardiff-in-2018-Final-English.pdf
[82] Ibid.

Cardiff is increasingly producing renewable energy.

Cardiff produces only small amounts of solar energy, and little energy from wind, biomass or hydropower (Figure 3.4.7). However Cardiff's Tremorfa food recycling plant, opened in 2017, provides 1.8MW of electricity per year. Cardiff also has the largest energy from waste facility in Wales: the 30MWe Trident Park energy recovery facility which was commissioned in 2015. The Cardiff East sewage gas plant generates 4MWe and 5 MWth, almost half of the Wales total of sewage gas electricity[83]. A 9MW solar farm has been built at the former Lamby Way landfill site: this is not yet reflected in Figure 3.4.7.

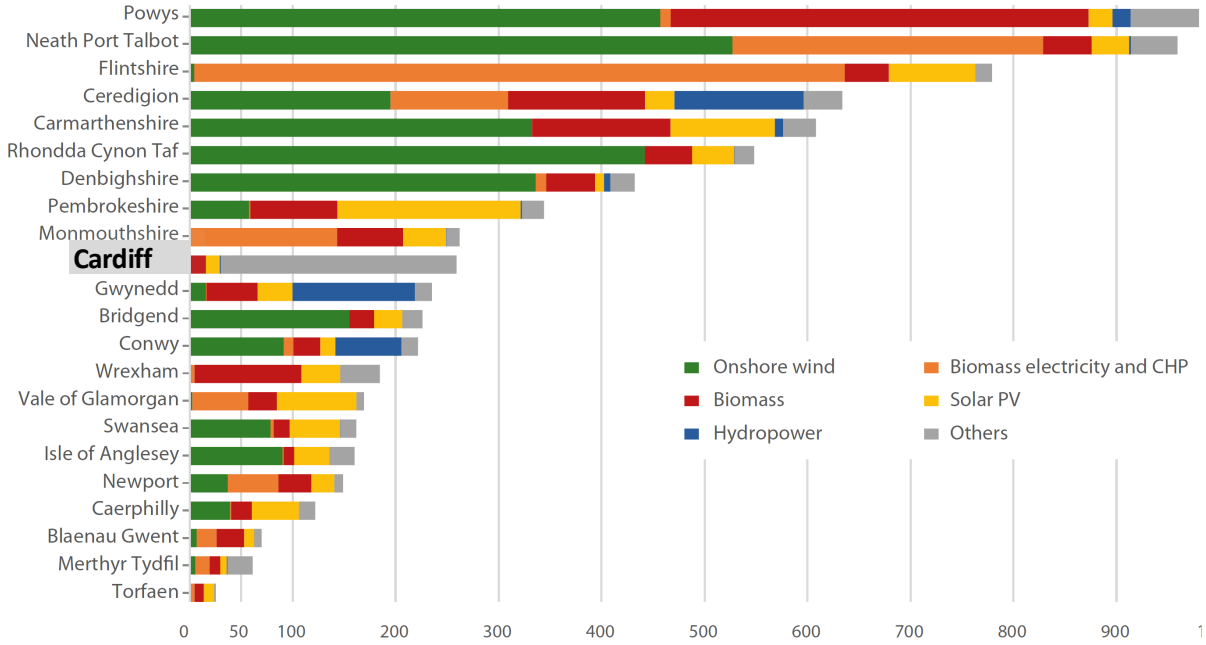


Figure 3.4.7 Renewables generation (GWh) in Wales 2019[84]

Likely future without the plan

The climate is already changing as a result of past greenhouse gas emissions, and this trend is expected to worsen over time.

Cardiff's additional future population will generate additional traffic, potentially worsening congestion and greenhouse gas emissions. This may be counter-balanced by lifestyle changes triggered by the coronavirus pandemic, including more people working from home, more use of local rather than distant services and facilities, and more walking and cycling. The more widespread use of electric vehicles would also reduce greenhouse gas emissions if the electricity mix is primarily from renewables.

In early 2020 Cardiff Council secured government funding to develop a city-wide heat network, using in part heat from the Viridor/Trident Park energy from waste plant.[85] The system is expected to supply heat to the Wales Millennium Centre, County Hall, Cardiff Central Square, St. David's shopping centre and the Cardiff Royal Infirmary[86].

[83] https://gov.wales/sites/default/files/publications/2020-11/energy-generation-in-wales-2019.pdf
[84] Ibid.
[85] www.oneplanetcardiff.co.uk
[86] www.walesonline.co.uk/news/local-news/cardiff-councils-26m-underground-network-17024200

One Planet Cardiff[87], published in 2020, sets out seven main actions to allow Cardiff to become a Carbon Neutral City and Council by 2030:

1. Large scale housing and development retrofit, to reduce fuel poverty and related health conditions
2. Resilient low energy and resource efficient development
3. Low cost efficient energy generation to bring job and climate benefits
4. Low energy active transport – support for ultra low emission vehicles, car clubs, charging infrastructure and active travel routes
5. Greening the city, including increased tree coverage and more biodiversity friendly land management
6. Low carbon affordable food
7. Procurement using circular economy models, and contracts that are more accountable for their climate consequences.

Cardiff Council is promoting a new Cardiff Crossrail and a new Cardiff Circle tram-train line (see Figure 2.4). These would link the new communities in the west of the city, and existing communities in the east which are currently poorly served by public transport, to the city centre and Cardiff Central. It is also aiming to reduce bus fares, improve bus services including bus priority at traffic lights; establish new Park & Ride facilities including at Junction 33 and Junction 32/A470; and improve cycling facilities in the city[88]. Cardiff's NextBike bike rental system allows access to bikes, including to people from deprived communities[89].

The Welsh Government are supporting the growth of Cardiff Airport which, prior to the pandemic, aimed to double its passenger numbers by the end of the RLDP period[90]: this would generate additional greenhouse gases.

[87] www.oneplanetcardiff.co.uk
[88] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/transport-policies-plans/transport-white-paper/Documents/White%20Paper%20for%20Cardiff%20Transport%202019.pdf
[89] https://gov.wales › default › files › publications › low-carbon-delivery-plan_1
[90] https://www.cardiff-airport.com/uploads/Masterplan%20Report%20FINAL%20JUNE19%20lower_compressed%20%281%29.pdf

3.5 Cultural heritage and the historic environment, including Welsh language

Introduction

Cardiff as seen and experienced today, and its place names, reflect a wealth of influences as it developed from a small community on the banks of the River Taff. Evidence still exists from Roman times and other key stages in the city's development. Most notably, the era of mining in the South Wales Valleys saw an unprecedented boom for Cardiff in terms of its economic and physical growth. Cardiff performed a vital role both as a port and commercial centre. The Victorian and Edwardian legacy in terms of street patterns and buildings is still clearly evident and provides a very distinctive character to large areas of the city. A range of formal designations have been used to help identify and protect the most important features of Cardiff's historic and architectural heritage. Whilst Cardiff continues to develop, it is important that its rich cultural, historic and architectural legacy is fully understood, protected and managed.

Cardiff contains a wide range of areas, buildings and monuments designated for historic value befitting of its Capital City status

Cardiff has 28 Scheduled Ancient Monuments. Archaeological remains provide important, often irreplaceable, information about the past. Their investigation and, where appropriate, preservation is important in its own right and can provide an invaluable educational and tourism resource. Four archaeologically sensitive areas have been identified in Cardiff: at City Centre, St Fagans/Michaelstone-super-Ely, the Wentloog Levels, and Llandaff. They represent the most likely areas where the effect of development on the archaeological resource may be an issue during the determination of a planning application. Cardiff Council published Supplementary Planning Guidance on these areas in July 2018[91].

Cadw has listed 855 buildings or structures in Cardiff as being of Special Architectural or Historic Interest. Cardiff also has 27 conservation areas (covering 811.7ha in total) designated for their special historic or architectural interest. They vary greatly in size and character, and range from the villages of St Fagans and old St Mellons, to the more recent Victorian and Edwardian areas which developed during Cardiff's 'boom years.' All have Conservation Area Strategies which identify priorities for the areas. Cardiff has 15 Historic Parks and Gardens that cover 468 hectares. They are widely spread and of contrasting character. Some of the larger historic parks reach from the city centre to the outer suburbs. Cardiff's Grade I gardens are Cardiff Castle and Bute Park, Roath Park and St. Fagan's Castle.

Cardiff's heritage extends well beyond those identified in statutory protections. The city's Historic Environment Record holds at least 1,724 datapoints and 1,608 NMR/RCAHMW datapoints. All of the city's historic built fabric helps define the character of the city and the diverse cultural backgrounds of its residents and visitors. Figure 3.5.1 shows the extent of designated sites, features, buildings and areas. In 2015 (the most recently available in early 2021), 27 of Cardiff's listed buildings were at risk, and 116 were vulnerable. 85% of historic buildings were not at risk, compared to 86% in 2011 and 83% in 2006[92].

[91] https://www.cardiff.gov.uk/ENG/resident/Planning/Planning-Policy/Supplementary-Planning-Guidance/Documents/Archaeologically%20Sensitive%20Areas%20SPG%20-%202018%20final.pdf

[92] https://www.cardiff.gov.uk/ENG/resident/Planning/Conservation/Documents/Cardiff%20Listed%20Buildings%20at%20Risk%20-%202015.pdf.

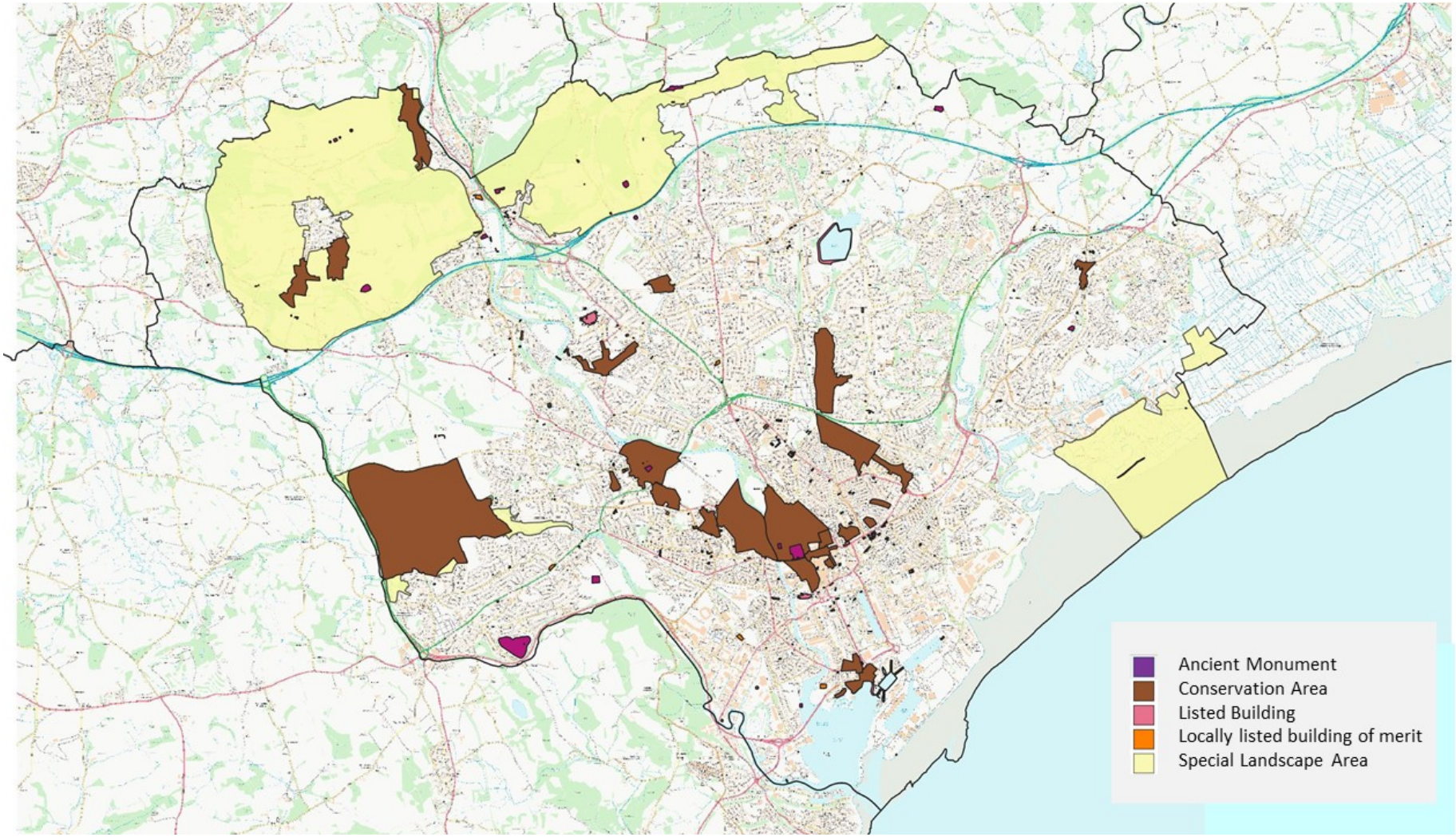


Figure 3.5.1 Sites, features, buildings and areas of conservation importance

The City's cultural and historic attractions perform an important national and regional role, attracting large numbers of visitors each year

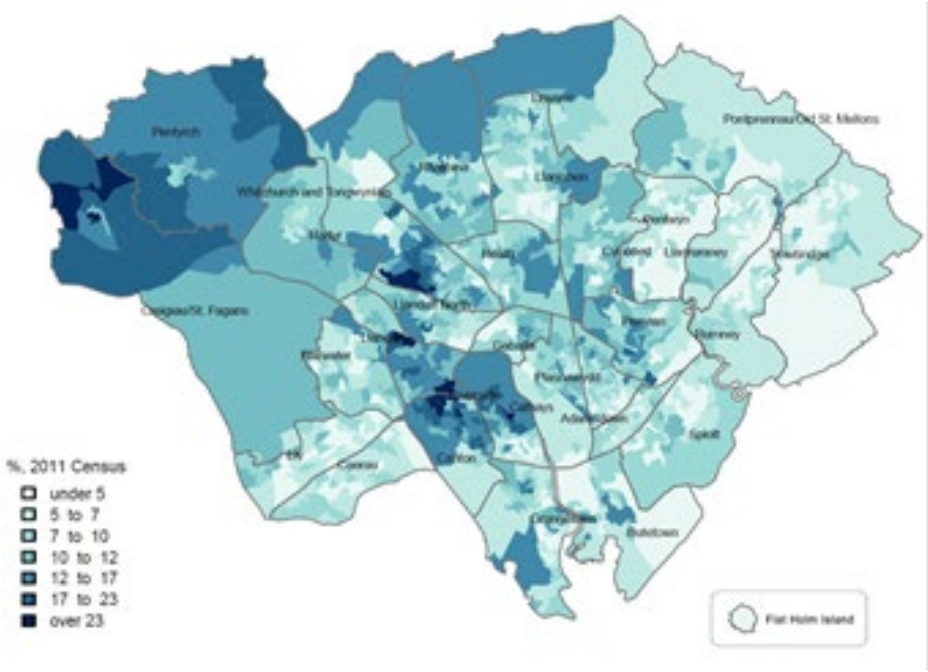
In 2017, more than 21 million people visited Cardiff, 5% more than the year before, bringing in £1.3 billion. Cardiff has recently hosted the UEFA Champions League Final, the Volvo Ocean Race, and that National Eisteddfod[93]. In December 2019, Cardiff because the UK's first music city, and its music strategy aims to place music at the heart of Cardiff's future[94]. That said, much of this has reduced or stopped during the coronavirus pandemic.

The Welsh language is increasingly spoken in Cardiff

Language is an invaluable tool in place-making and identity. The Welsh Language (Wales) Measure 2011 makes Welsh an official language in Wales, and it must be treated no less favourably than English.

The 2019 Welsh population survey found that 22% of Cardiff's residents said that they can speak Welsh (Figure 3.5.2), compared to a Welsh average of 29%[95]. Figure 3.12.1 shows the proportion of Cardiff residents who could speak, read and write Welsh in 2011: the highest proportion is in Creigiau/St Fagans, Riverside and Llandaff. The proportion of Welsh speakers has increased further since then[96], with much of the increase attributable to young children[97]. In terms of numbers as opposed to proportion, Cardiff has the third highest number of Welsh speakers in Wales.

Welsh education in Cardiff has moved from being 'demand led' to 'active promotion', and Cardiff now has three Welsh medium secondary schools, 15 primary schools, two dual stream primaries, and two Welsh medium Specialist Resource Bases.



[93] https://businessnewswales.com/cardiff-boasts-record-visitor-numbers-during-2017/
[94] https://www.creativecardiff.org.uk/creative-cardiff-news/cardiff-declared-music-city-music-strategy-development-launches
[95] https://statswales.gov.wales/Catalogue/Welsh-Language/Annual-Population-Survey-Welsh-Language/annualpopulationsurveyestimatesofpersonsaged3andoverwhosaytheycanspeakwelsh-by-localauthority-measure
[96] https://gov.wales/sites/default/filesL/statistics-and-research/2018-12/160622-workforce-welsh-language-support-primary-care-cardiff-vale-en.pdf
[97] Cardiff Council (2020) Draft Welsh Language ISA Assessment.
[98] Ibid.

Welsh place names, street naming and signage help to ensure the more active use of the Welsh language

As a result of the Welsh Language Regulation (No. 1) Standards 2015, local authorities must comply with Welsh language standards in relation to the signage and official notices displayed by public authorities, including directional signage, building signage, and wayfaring and general information signs. Cardiff's street naming policy of 2019 aims to give all new streets a Welsh language name grounded in the locality, history and heritage of the immediate area. A formal list of Welsh place names for dwellings is expected to be available in 2021. Bilingual Cardiff and a naming panel are actively engaged with developers to provide Welsh language names for new developments, bilingual site marketing information, and Welsh or bilingual signage for commercial developments. Cardiff published a draft Supplementary Planning Guidance in 2019 relating to shop fronts and signage, which includes recommendations regarding the use of bilingual signage[99].

Likely future without the plan

The Local Development Plan aims to protect and enhance the city's heritage. As part of its 'music city' offer, Cardiff's council cabinet has appointed Live Nation and Oak View Group to develop and operate a live music arena. The new arena will have space for 15,000 spectators, double the size of the city's current largest indoor venue, the Motorpoint. The arena is projected to cost £150 million to build, and to create 1,000 jobs when open, which is expected to be in early 2024[100].

The use of Welsh in Cardiff is likely to increase in the future in response to policies such as Cardiff's Bilingual Cardiff Strategy Action Plan 2019 - 2022[101], the Bilingual Cardiff Strategy 2017-2022[102], the Welsh in Education Strategic Plan 2017-2020[103], and the Street Naming Policy[104]. As a result, the Welsh language is expected to be introduced to new and emerging communities; Yr Hen Lyfrgell – Cardiff's Welsh Culture Centre will be supported; and there should be increasing opportunities for people to receive health and social care in Welsh. If current trends continue, Cardiff is likely to have the highest number of Welsh speakers in any Local Authority Area in Wales within a few years.

[99] https://www.caerdydd.gov.uk/ENG/resident/Planning/Planning-Policy/Supplementary-Planning-Guidance/Documents/Shopfront%20Design%20and%20Signage%20SPG%20(June%202019).pdf
[100] https://cardiff.moderngov.co.uk/documents/s42643/Cabinet%2026%20Nov%202020%20Indoor%20Arena.pdf?LLL=0
[101] https://www.cardiff.gov.uk/ENG/Your-Council/Strategies-plans-and-policies/Bilingual-Cardiff/Documents/Bilingual%20Cardiff%20Strategy%20Action%20Plan%202019-22.pdf
[102] https://www.cardiff.gov.uk/ENG/Your-Council/Strategies-plans-and-policies/Bilingual-Cardiff/Documents/Bilingual%20Cardiff%20Strategy.pdf
[103] https://www.cardiff.gov.uk/ENG/resident/Schools-and-learning/Schools/21st-Century-Schools/Keep-up-to-date-and-contact-us/Publications/Welsh-Education-Strategic-Plan/Pages/default.aspx
[104] https://www.cardiff.gov.uk/ENG/resident/Parking-roads-and-travel/transport-policies-plans/Street-naming/Documents/Street%20Naming%20Policy.pdf

3.6 Economy

Introduction

Cardiff has undergone major changes over the last century with the decline of the coal industry, the increasing dominance of the service sector, and devolution combining to shape the city into what it is today.

Cardiff is the key economic driver for south-east Wales

Cardiff is the main driver of the South Wales economy. The number of jobs provided in Cardiff has risen rapidly, from 189,000 in 2000 to 241,000 in 2018[105]. The economic recession led to job numbers remaining steady between 2004 and 2012, but job numbers have risen steeply since 2014[106] - see Figure 3.6.1.

Employment levels fell during the recession, from 71% in 2004 to 65% in 2012, but then rose again, and in September 2019 stood at 79.6%. This was higher than both the Welsh (76.8%) and GB (78.9%) averages[107]. No figures more recent than June 2020 are available, although employment levels are likely to have fallen during the coronavirus pandemic.

Average salaries in Cardiff in 2020 were £14.36/hr, down from £15.12 in 2019. They were below the GB average of £15.18/hr (they were higher than the GB average in 2019), but continued to be above the Wales average (£13.83 in 2020). Gross weekly pay for full-time workers was £544, with the same trends as hourly pay.

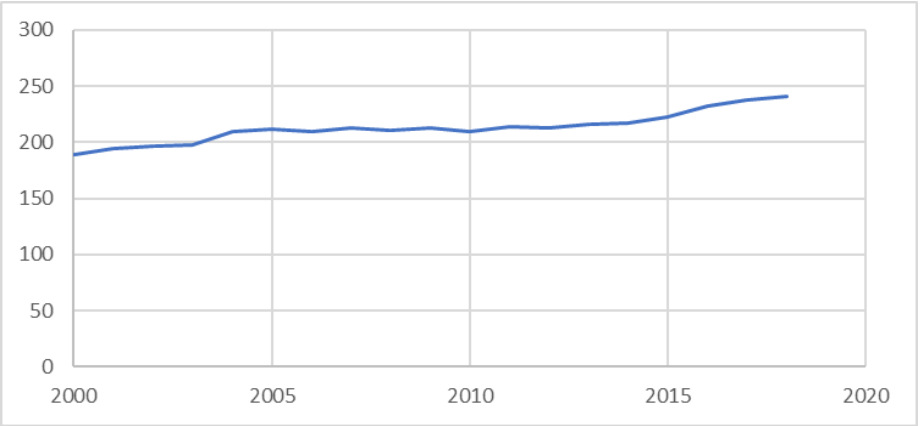


Figure 3.6.1 Number of jobs in Cardiff[108]

[105] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/report.aspx#tabjobs. The data from 2018 are the most recent available in early 2021.
[106] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/subreports/jd_time_series/report.aspx?
[107] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/report.aspx#tabrespop
[108] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/report.aspx#tabjobs

Figures 3.6.2 and 3.6.3 show areas of high and low employment and income in Cardiff in 2019. Again, low employment and income are generally concentrated in the 'southern arc', particularly Ely/Caerau, Butetown, Adamstown, Trowbridge and Llanrumney.

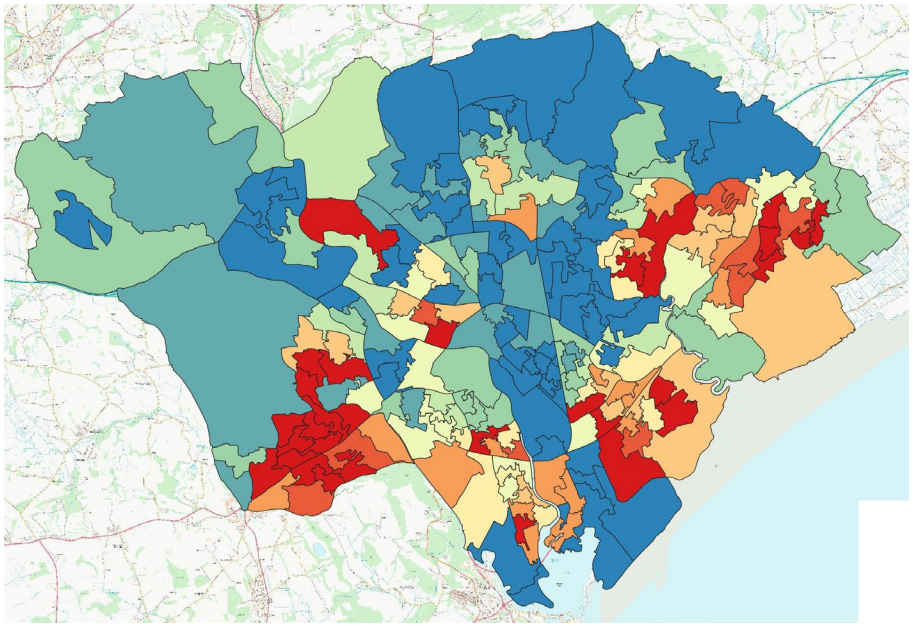


Figure 3.6.2 Index of Multiple Deprivation 2019 employment[109]

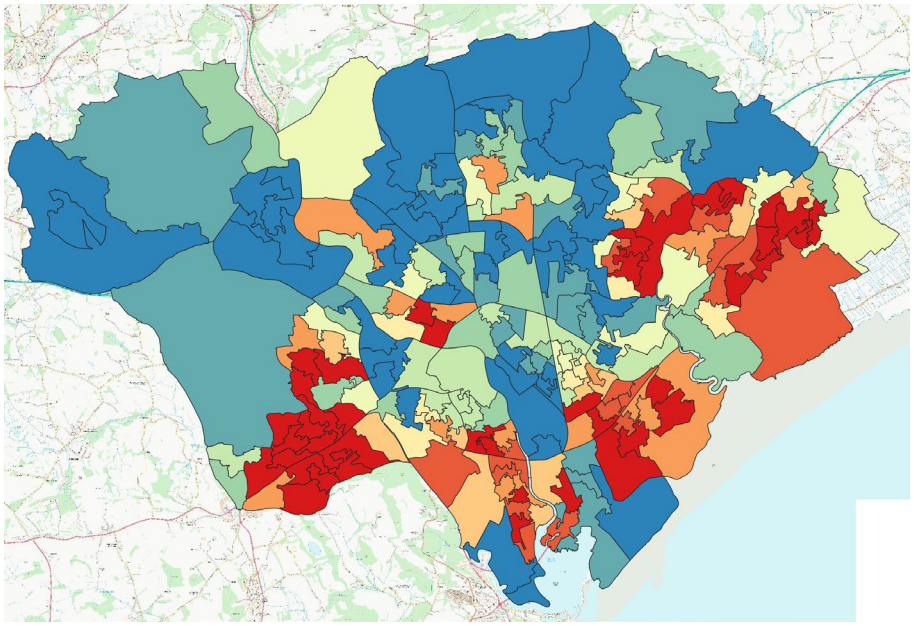


Figure 3.6.3 Index of Multiple Deprivation income[73]

In 2019, Cardiff was 16th (out of 379) in the UK competitiveness index, which considers ten economic factors such as economic activity rates, business start-ups and productivity[110]. Cardiff's Gross Value Added (GVA) per person – a key indicator of productivity - has consistently exceeded the UK average since 1998. Financial/insurance activities and human health/social work activities are the greatest contributors to Cardiff's GVA[111].

[109] See Figure 3.1.3 for legend

[110] https://www.researchgate.net/figure/01-CITY-UK-COMPETITIVENESS-INDEX-2019-UK100_tbl1_331980020

Cardiff's service sector industries are growing, and much of its employment is in Welsh Government priority sectors

Cardiff has less of a focus on manufacturing, construction, and wholesale/retail trade than the Welsh and GB average; and more focus on finance/insurance, education, and public administration[112]. Manufacturing jobs in Cardiff, as elsewhere, have declined rapidly over the past 30 years.

45% of people employed in Cardiff in early 2019 were in one of the Welsh Government's priority sectors (Table 3.6.1). Financial and professional services were by far the largest of these in the city, and Cardiff accounted for 30% of these jobs in Wales. Creative industries and ICT are also more prevalent in the city than across Wales as a whole, with Cardiff again accounting for about 30% of Wales's total employment in these sectors.

Jobs in the retail and hospitality, wider tourism and the creative sectors have particularly suffered as a result of the coronavirus pandemic, so these numbers will have changed since early 2019.

Priority sector	Cardiff		Wales	
	No. (1000s)	%	No. (1000s)	%
Advanced materials/manufacturing	4.5	2.0	81.5	6.0
Construction	14.5	6.4	109.4	8.1
Creative industries	18.0	7.9	58.0	4.3
Energy & environment	26.2	11.5	155.0	11.4
Food & farming	-	-	51.4	3.8
Financial & professional services	39.9	17.5	137.7	10.1
Information & communication (ICT)	8.5	3.7	31.0	2.3
Life sciences	2.0	0.9	13.5	1.0
Tourism	18.3	8.0	127.3	9.4
In a Priority Sector	102.9	45.3	600.2	44.2
Not in a Priority Sector	124.5	54.7	758.7	55.8
Total	227.4	100.0	1359.0	100.0

Table 3.6.1 Employment in Welsh Government priority sectors, 2018-19[113]

[111] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf.
[112] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/report.aspx#tabearn
[113] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf

The workforce is polarised between qualified graduates and low skilled workforce

Cardiff's population consistently outperforms the Wales and UK averages in terms of education and skills[114]. This is partly determined by demographics, with Cardiff's relatively young population and the existence of several universities. In 2010, 40% of Cardiff's working age population had 4+ NVQs, and by end 2019 this was 46.4%[115]. This compares favourably with 36.3% for Wales and 40.3% for the UK[116]. Cardiff has three higher education institutions, Cardiff University, Cardiff Metropolitan University and the Welsh College of Music and Drama, providing about 4,000 new graduates each year. The University of South Wales also has a campus in Cardiff.

In 2008, Cardiff had almost 20% of the 10% most deprived lower super output areas for Wales for education, but this was down to 7% in December 2018[117]. However Cardiff still has areas of low educational achievement, primarily in the south and east part of the city, including Ely, Caerau, Butetown, Splott, Trowbridge and Llanrumney, as shown by Figure 3.6.4.

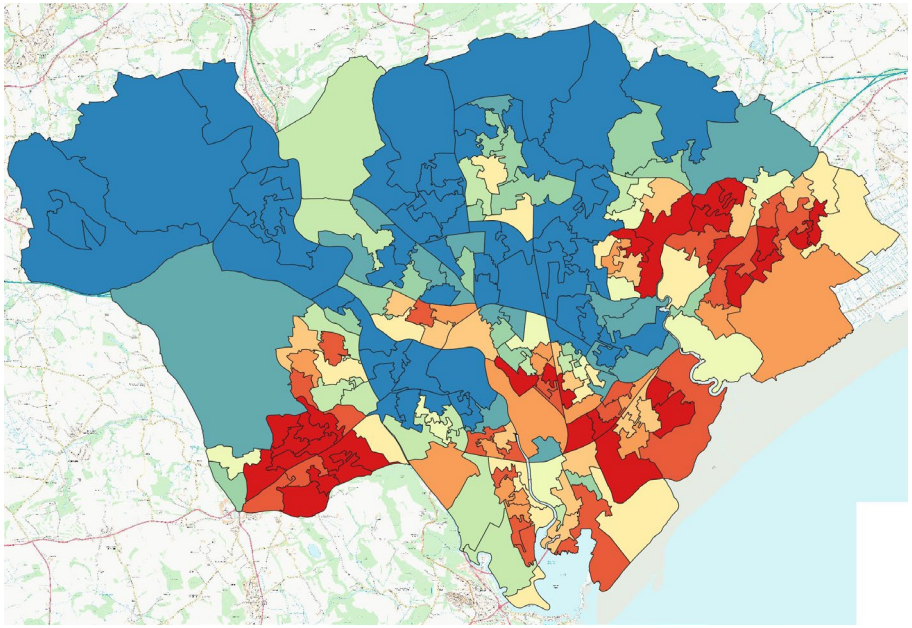


Figure 3.6.4 Index of Multiple Deprivation education[118]

Significant areas of employment land have changed to alternative uses (notably housing) although land for employment is still available

Changing market conditions (as described above) have resulted in a shift in demand away from manufacturing towards alternative uses such as housing. Examples of this include the Arjo Wiggins site at Ely Bridge, AWE site on Caerphilly Road, and Maes y Coed Road.

[114] https://www.nomisweb.co.uk/reports/lmp/la/1946157397/report.aspx?town=Cardiff#tabquals
[115] Ibid.
[116] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf
[117] https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/WIMD-2019/localauthorityanalysis
[118] See Figure 3.1.3 for legend

The Local Development Plan 2016 allocated 132ha of employment land on allocated sites. Employment land permitted to date has been:

- 2016/17: 11.6ha
- 2017/18: 2.12ha
- 2018/19: 3.16ha

These permissions have been for high density, high rise offices. No loss of employment land occurred on protected sites.

Employment land take-up has been:

- 2016/17: 12.3ha
- 2017/18: 0.5ha
- 2018/19: 1.6ha

Again this has mostly been for offices[119].

Likely future without the plan

Prior to the coronavirus pandemic, employment was expected to continue to increase in Cardiff for the foreseeable future: this is currently less clear. At the pandemic peak in summer 2020, 50,000 workers in Cardiff were furloughed; 9,000 were reliant on the Self-Employment Income Support Scheme, and unemployment doubled[120]. Employment land also continues to be lost to residential uses. Post-pandemic, the proportion of people working from home is likely to fall, but not to pre-pandemic levels. This is leading to consideration of how the city centre and local/district shopping centres should work in the future.

The current LDP has allocated a large new employment site at Wentloog. A planning application for the site and a new mainline train station, 'Cardiff Parkway', was submitted in January 2021 (Figure 3.6.5).

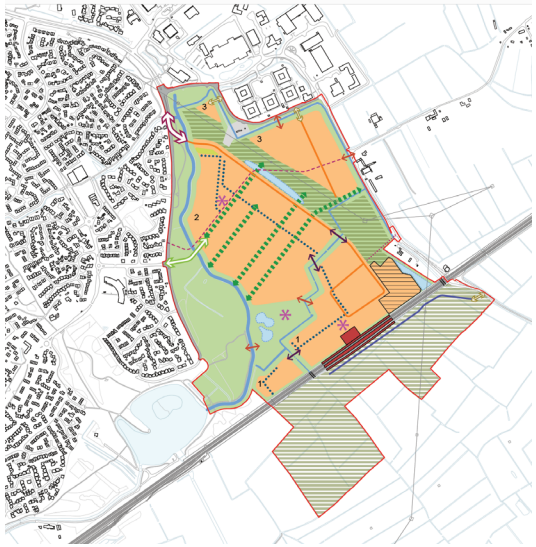


Figure 3.6.5 Planned 'Cardiff Parkway' employment site showing the proposed new mainline rail line[121]

[119] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Pages/Annual-Monitoring-Report.aspx. The 2018/19 Annual Monitoring Review was the most up-to-date in early 2021.

[120] https://cardiff.moderngov.co.uk/documents/s48486/Cabinet%2020%20May%202021%20Recovery%20Greener%20Fairer%20Economy%20App%201.pdf

3.7 Health and wellbeing

Introduction

Cardiff generally has average or slightly better health and social conditions compared to the rest of Wales, and in 2009 Cardiff was awarded Healthy City Status by the World Health Organisation, which demonstrates a commitment to improve the health and well-being of local people.

A range of factors can influence life expectancy, including lifestyle, income, employment, access to services and the wider environment. Life expectancy at birth for Cardiff's residents in 2012 was 78.2 years for men and 82.7 for women, very similar to the Welsh average[122]. Cardiff residents' perceptions of their health is also very similar to the Wales average. 45% of Cardiff adults have a longstanding illness; 32% have a limiting longstanding illness; and 16% have a very limiting longstanding illness. This is slightly better than the Wales average[123].

However these average figures belie large health discrepancies within Cardiff. In 2010-14, the most disadvantaged men in Cardiff had 11 years less life expectancy than the most advantaged[124], and 24.4 years less healthy life expectancy; for women this was respectively 9 years and 22 years. These inequalities are amongst the highest in Wales[125]. The difference in men's healthy life expectancy has worsened significantly since 2005-09 when it was 20.6 years; the other differences have not changed significantly[126]. In particular, residents of Ely, Butetown, Splott, Trowbridge and Llanrumney have worse than average health (Figure 3.7.1).

Interestingly, the rate of coronavirus infections to end January 2021 did not clearly mirror these health discrepancies. Trowbridge, Cathays, Grangetown and South Riverside had the highest rate of infections (Figure 3.7.2).

Cardiff's residents have healthier lifestyles than the Wales average: they eat more fruit/vegetables, do more physical activity, and are less likely to smoke[127]. However, more than half of Cardiff's population is overweight, obese or underweight; and almost one-quarter do less than 30 minutes of physical activity per week. Lifestyle significantly contributes to the likelihood of living with chronic conditions later in life[128].

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[121] https://planningonline.cardiff.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=_CARDIFF_DCAPR_133156
[122] https://statswales.gov.wales/Catalogue/Health-and-Social-Care/Life-Expectancy/LifeExpectancy-by-LocalAuthority-Gender. This is the most recent data available in early 2021.
[123] https://statswales.gov.wales/Catalogue/National-Survey-for-Wales/Population-Health/Adult-general-health-and-illness/genhealthillness-by-localauthorityhealthboard
[124] According to the Slope index of inequality
[125] https://statswales.gov.wales/Catalogue/Health-and-Social-Care/Life-Expectancy/inequalitygapinlifeexpectancyandhealthylifeexpectancyatbirthslopeindexofinequalityinyears-by-localhealthboard-localauthority. This is from 2012-14, the most recent data available in early 2021.
[126] https://www.cardiffpartnership.co.uk/wp-content/uploads/Cardiff-in-2018-Final-English.pdf
[127] https://www.cardiffpartnership.co.uk/wp-content/uploads/Cardiff-in-2018-Final-English.pdf
[128] https://www.cardiffpartnership.co.uk/well-being-assessment/people-cardiff-healthy/

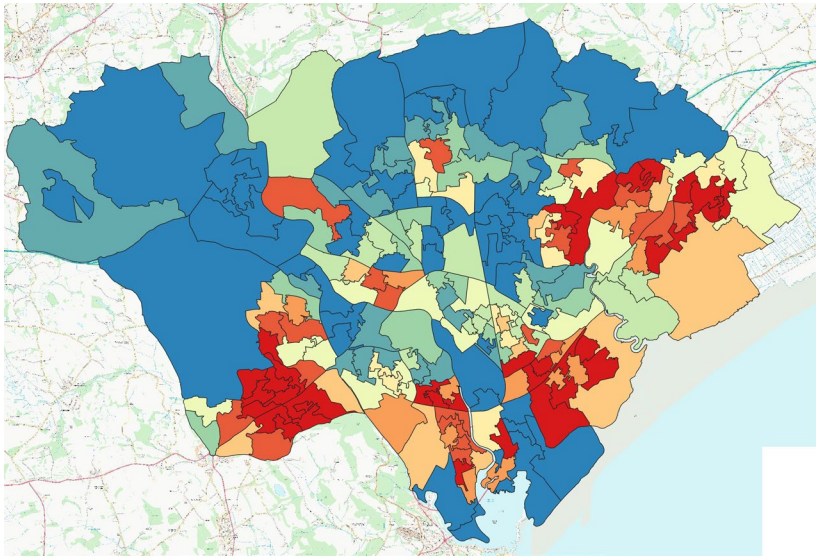

Figure 3.7.1 Index of Multiple Deprivation health[129]

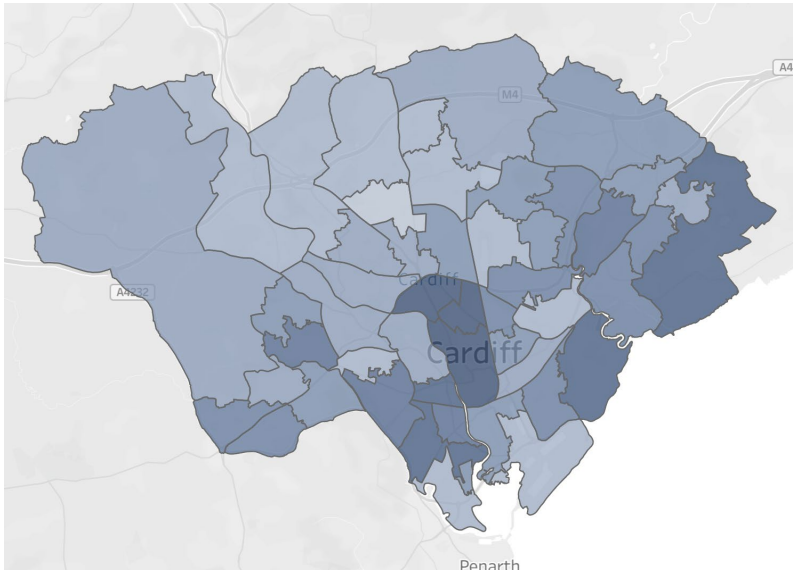

Figure 3.7.2 Cases of coronavirus in Cardiff, to 9 Feb 2021 (darkest shading is highest rate)[130]

Crime levels have also broadly improved or remained steady

There were more than 48,000 notifiable offences in Cardiff in 2019, with the highest proportion being violence and sexual offences (25%), anti-social behaviour (19%) and shoplifting (9%)[131]. Overall recorded crime levels in Cardiff have dropped significantly over the last 15 years, driven by a sharp drop in vehicle offences, criminal damage and arson, and other theft offences. The south and east of the city is subject to higher levels of crime than elsewhere.

However, there has not been an equivalent fall in fear of crime. In 2018, less than half of survey respondents felt that Cardiff is safe, compared with more than 70% in 2016. Main reasons for feeling unsafe are anti-social or drunken behaviour; gangs, youths and beggars; and (for cyclists) dangerous drivers and lack of dedicated infrastructure. People with a disability or health conditions, and people living in the Southern Arc are particularly likely to feel unsafe[132].

[129] See Figure 3.1.3 for legend
[130] https://public.tableau.com/profile/public.health.wales.health.protection#!/vizhome/RapidCOVID-19virology-Public/Headlinesummary
[131] https://www.cardiffpartnership.co.uk/well-being-assessment/people-cardiff-healthy/

Cardiff's environmental quality – a determinant of health – is overall poor

The Welsh Index of Multiple Deprivation brings together information about air quality, flood risk and green spaces into a physical environment index. Cardiff has the second-worst physical environment of the Welsh authorities after Newport: it has 22.5% of the most deprived 10% LSOAs in Wales, and 10% of Wales's most deprived 50% LSOAs[133]. Only Pentyrch and Radyr are in the least deprived 50%. Figure 3.7.3 shows that, under this index, Splott, Butetown, Grangetown and Lisvane fare particularly badly. This is because of poor air quality, which is discussed at Section 3.2; a lack of green spaces, which is discussed at Section 3.9; and likelihood of flooding which is discussed at Section 3.11.

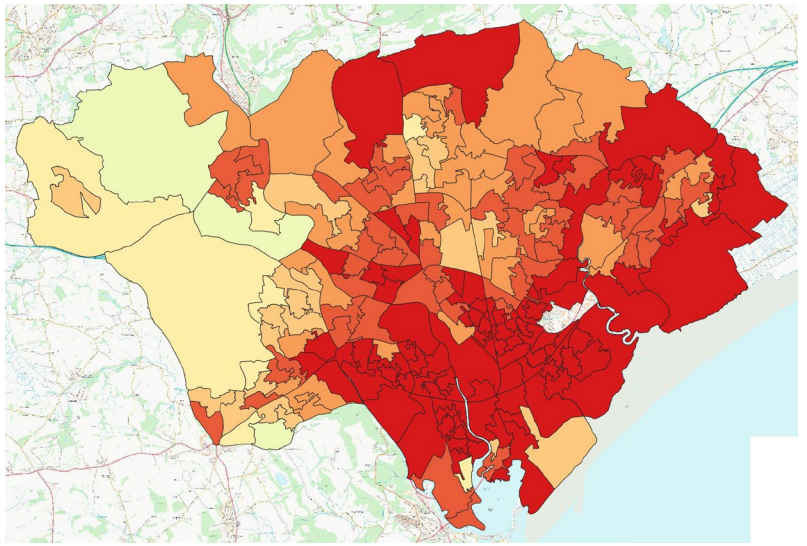

Figure 3.7.3 Index of Multiple Deprivation environment

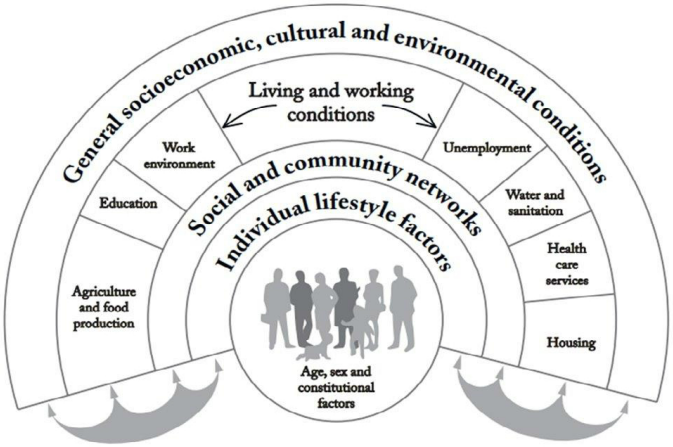

Figure 3.7.4 Determinants of health[134]

Health is also affected by education, employment, access to services, housing quality, which are discussed at Sections 3.1 and 3.6 – see Figure 3.7.4.

[132] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf, https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Ask%20Cardiff%202019%20Report.pdf

[133] LSOA (Lower Layer Super Output Area) is the area used to analyse deprivation. It represents a population of 1000 – 1500. https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/WIMD-2019/localauthorityanalysis

[134] https://www.gov.uk/government/publications/health-profile-for-england-2018/chapter-6-wider-determinants-of-health

Road safety has generally improved

Figure 3.7.5 shows that there has been a sharp downward trend in the number of slight injuries as a result of road accidents, rising again in 2019. However the number of people seriously injured or killed has reduced much more slowly. The number of young people killed or injured has significantly reduced over time.[135] A 2018 survey found that 70% of respondents support the introduction of 20 mile per hour speed limits in residential and other suitable streets in Cardiff. [136]

Likely future without the plan

Without more active intervention, the gap between the economic outcomes of different communities seems unlikely to reduce. Given the close correlation between economic and health outcomes, the gap in life expectancy and healthy life expectancy of the people who live in the richest and poorest part of the city seems likely to increase. NRW's South Central Wales Area Statement[137] aims to improve people's health through better access to nature and green infrastructure.

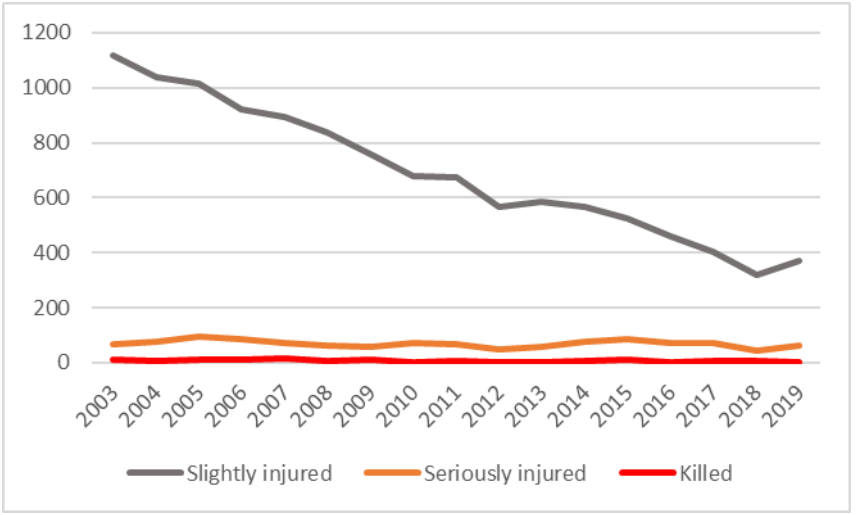

Figure 3.7.5 Road accident trends for Cardiff[138]

[135] https://gov.wales/sites/default/files/statistics-and-research/2019-09/police-recorded-road-accidents-2018-990.pdf
[136] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/The%20Cardiff%20Economy%20and%20Labour%20Market_Apr%2018_Mar%2019.pdf
[137] https://naturalresources.wales/about-us/area-statements/south-central-wales-area-statement/?lang=en
[138] https://statswales.gov.wales/Catalogue/Transport/Roads/Road-Accidents/accidents/roadaccidents-by-severity-area

3.8 Land, soil and minerals

Introduction

Land is an essential requirement for development, and the basis for agriculture, open spaces and biodiversity interests. Agricultural land and allotments help to provide local food, as well as improving residents' physical and mental health. Brownfield land offers opportunities for development, although remediation may be required on sites that are contaminated from previous industrial activities, and many brownfield sites are biodiverse and used for recreation.

The Welsh Government's 2009 scheme for sustainable development, *One Wales: One Planet*[139], includes Wales' ecological footprint as one of its five headline indicators (representing sustainable resource use). An ecological footprint is the total area of productive land and water ecosystems required to produce the resources that the population consumes and to assimilate the subsequent wastes[140]: it measures whether we are living within the bounds of the Earth's resources. In 2012, the Earth's total biocapacity was about 1.7 'global hectares' per person: with an increasing global population, this will reduce.

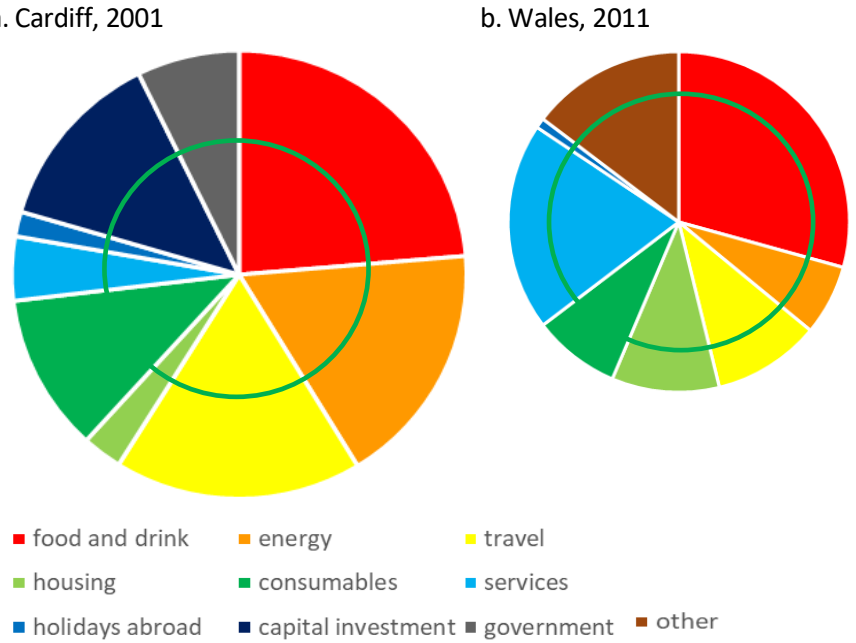

Figure 3.8.1 Ecological footprints. The green circles represent the Earth's 'one planet' fair share. a. and b. are not comparable

An ecological footprint analysis for Cardiff was carried out using 2001 data. This showed that Cardiff residents were using approximately 5.3 global hectares per person, or more than three times the global 'one planet' fair share[141]. A subsequent analysis for Wales as a whole, using 2011 data and using a different methodology, showed the ecological footprint getting smaller but still being 1.2 – 1.8 times the global average[142]. Cardiff's footprint at the time was slightly better than the Welsh average, in part because it had a lower carbon

[139] https://www.bridgend.gov.uk/media/1505/wd32.pdf
[140] Rees, E. (2000) Eco-footprint analysis: merits and brickbats. Ecological Economics 32(3), 371-4.
[141] Collins, A. and Fairchild, R. (2007) Sustainable food consumption at a sub-national level: An ecological footprint, nutritional and economic analysis. Journal of Environmental Policy and Planning 9(1), 5-30.
[142] Stockholm Environmental Institute and GHD (2015) Ecological and carbon footprints of Wales, update to 2011, https://gov.wales/sites/default/files/publications/2019-04/ecological-and-carbon-footprint-of-wales-report.pdf.

footprint than the Welsh average, at 3.11gha compared to 3.28ha. Figure 3.8.1 shows that food production/transport, housing and transport are significant contributors to the Welsh and Cardiff ecological footprint.

The proportion of housing completions on previously developed (brownfield) land is falling

At present, approximately two-thirds of the land in Cardiff is built up, and one-third is countryside or open space. About 10 years ago, new housing in Cardiff was almost solely on brownfield sites. Many of these were redeveloped as apartments, particularly in the Cardiff Bay and central areas of the city. Whilst this reduced the demand on greenfield sites, it also affected the range and choice of housing on supply, with implications for the provision of affordable housing, family housing and affordability in general.

The proportion of development on previously developed land has fallen since then, to 84% in 2016/17, 59% in 2017/18 and 58% in 2018/19[143]. The current Local Development Plan allocates seven strategic development sites, of which five are on greenfield land (Figure 3.8.1).

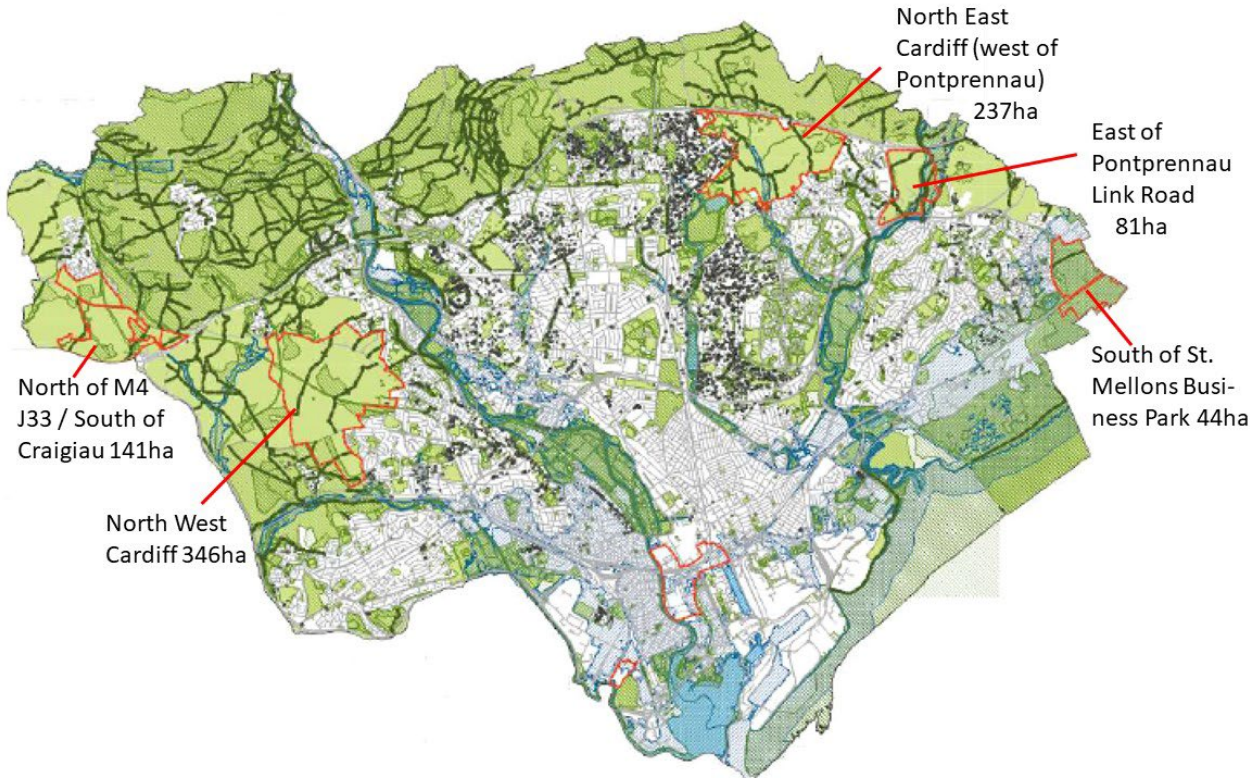

Figure 3.8.1 Strategic land allocations on greenfield land

[143] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Pages/Annual-Monitoring-Report.aspx

Cardiff has good quality agricultural land in its valleys

Agricultural land is classified into five grades. Grades 1, 2 and 3a are the 'best and most versatile land': this is the land that is most flexible, productive and efficient in response to inputs. The Welsh Government published a map in 2017 which predicts agricultural land quality based on soil type, climate, wetness, drought, gradient, soil depth, stoniness and texture. The map suggests that Cardiff's river valleys are of Grade 1 and 2 quality, and the undeveloped land in the city is mostly Grade 3a and 3b. The ridge to the north of the city is generally not the best and most versatile land (Figure 3.8.2).

Agricultural land values in Wales rose sharply before the recession, driven in part by a sharp reduction in the land available for sale, and the higher values that non-farmers were willing to pay (Savills Agricultural Land Market Survey 2009). However they fell again prior to 2020, in part due to falling commodity prices and uncertainty around Brexit[144]. The impact of the coronavirus pandemic on land values is unclear.

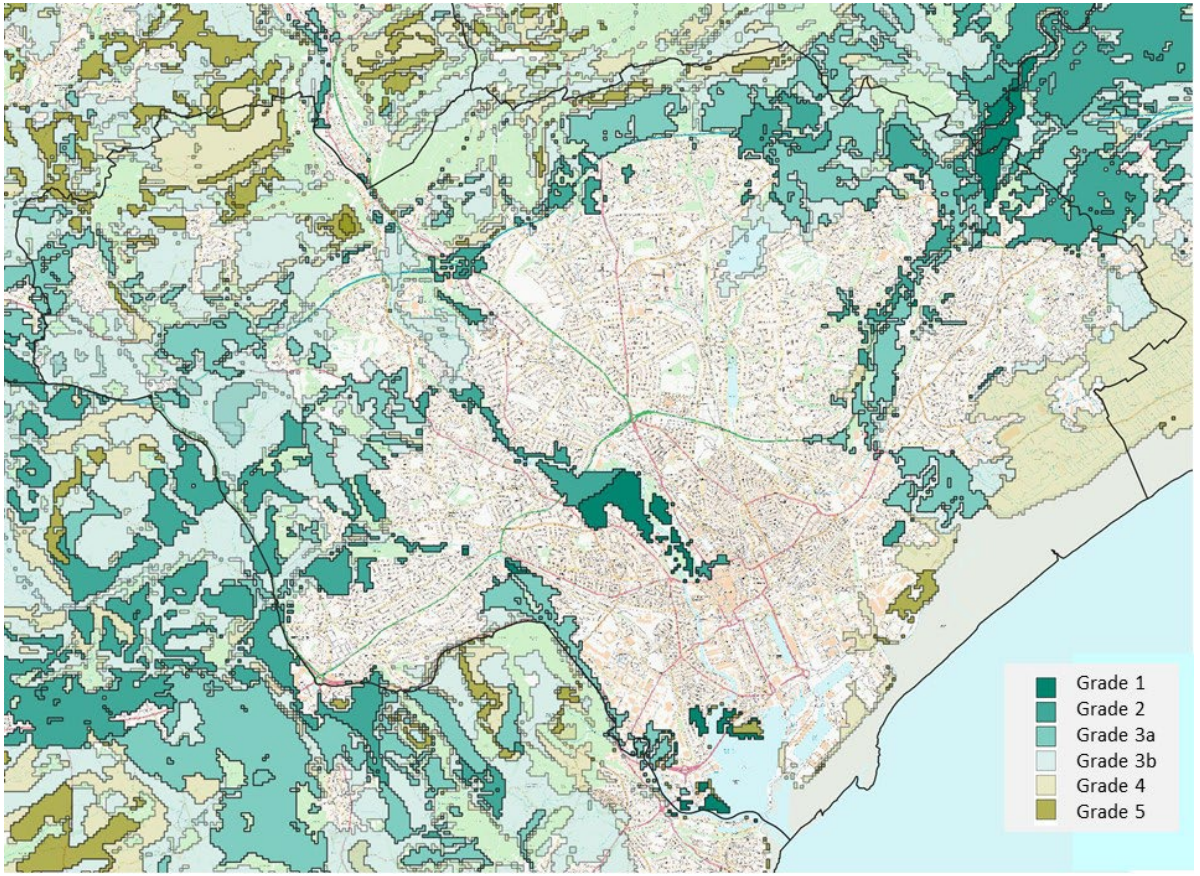

Figure 3.8.2 Agricultural land classification for Cardiff[145]

[144] https://www.dailypost.co.uk/news/local-news/farmland-values-plunge-wales-farmers-17222717
[145] https://onlinelibrary.wiley.com/doi/full/10.1111/sum.12380

Cardiff's allotments are important for people's health and food security, but they are oversubscribed

Allotments play an important part in improving people's health. Not only do they offer the opportunity to grow food but they also provide an excellent form of outdoor activity, exercise, relaxation, and a place where people can meet each other. Cardiff's former allotments strategy suggested that a minimum of 15 plots should be provided per 1000 households[146]. The current provision of 2500 allotments is 5% more than this, although there are still waiting lists for most of the allotment sites[147].

As a result of Cardiff's industrial past, many sites could potentially be contaminated

Past industrial activities have contaminated land in various ways over many years. Cardiff Council is aware of about 1410 hectares of potentially contaminated land, including industrial, mining and quarrying, dockland and former waste disposal sites. Some contaminated land sites only come to the Council's attention when developers undertake site investigations on land being considered for future development, so this number could increase in the future.

Development of contaminated land has the advantage of cleaning up land and securing regeneration although this incurs additional costs. When brownfield sites are redeveloped, they are usually done so on a 'suitable for use' basis, and as such the remediation undertaken on the sites depends on the proposed end use[148]. Most remediation involves engineering practices, for instance capping over the existing contaminated land with imported clean soils, thus encapsulating the contamination. Whilst this is an effective remediation methodology in that it breaks the pathways and exposure to the contamination, it does not reduce/ breakdown or remove the contamination from the site.

The Council has published a Contaminated Land Inspection Strategy (Cardiff Council 2010) that provides a framework to identify, inspect and remediate contaminated land.

Cardiff has sufficient mineral reserves to last about 20 years

Mineral resources are a valuable but finite resource. They provide the essential raw materials for buildings, infrastructure and their maintenance. An adequate and steady supply of minerals is essential to the national, regional and local economy and their exploitation makes a significant contribution to economic prosperity and quality of life.

[146] This is equivalent to the 1993 average for England (Cardiff allotments strategy 2005).
[147] https://www.cardiff.gov.uk/ENG/resident/Leisure-parks-and-culture/Allotments/Pages/default.aspx
[148] For instance, the remediation undertaken on a site for commercial/industrial development would not be suitable to accommodate residential purposes, so if such a site was considered for residential development in the future, some form of additional remedial works would probably be required.

Cardiff is one of the largest producers and consumers of minerals in the region. Natural minerals in Cardiff include quarried hard rock (carboniferous limestone and dolomite) and dredged sand landed in Cardiff Docks. In 2018, crushed rock production in Cardiff was just over a million tonnes (mt) per year[149]. Most of this natural mineral production is used in the construction industry as aggregates. Secondary materials, including steelworks slag, also substitute for natural aggregates, and a significant quantity of construction and demolition waste is recycled as aggregate.

Cardiff's permitted reserves of hard rock minerals in 2020 represented about 20 years of supply[150]. The land bank will continue to decrease as the reserves are quarried, highlighting the need to protect them from inappropriate development. The adopted LDP includes a Preferred Area for mineral working and this can be rolled forward into the RLDP to meet this requirement.

Likely future without the plan

The Welsh and Cardiff ecological footprint seems to be reducing[151] although, as for other Global North countries, it is still significantly above the one planet 'fare share'. Improvements in energy efficiency and production of renewable energy will support this positive trend, as will reductions in the need to travel. The role of Brexit is uncertain, but it may lead to more food being grown more locally than before.

The amount of greenfield land in Cardiff will shrink as development proceeds on the five greenfield strategic sites. Unless more allotment sites are made available, as Cardiff's population rises, the amount of allotment land per capita will go down and allotment targets may no longer be reached. Although existing permitted reserves of minerals still represent a significant land bank, in order to ensure there continues to be a 10 year crushed rock landbank, further resources are likely to need to be allocated in the RLDP.

[149] https://www.swansea.gov.uk/media/37671/Regional-Technical-Statements-for-the-North-Wales-and-South-Wales-Regional-Aggregate-Working-Parties---2nd-Review---Main-Document/pdf/Regional_Technical_Statements_for_the_North_Wales_and_South_Wales_Regional_Aggregate_Working_Parties.pdf
[150] Ibid.
[151] See introduction to this section

3.9 Landscape and open space

Introduction

Cardiff has a unique landscape setting comprising an island, coastline, three major river valleys and a countryside backdrop of distinctive topography. The Garth Mountain, Caerphilly Mountain and Graig Llanishen provide a strong and imposing backdrop along the northern edge to the city. The ridge rises to a thousand feet above sea level on the summit of Garth Mountain and has a pronounced escarpment together with lower slopes leading down to the M4 and northern edge of the urban area. The ridge, forming the southern rim of the South Wales coalfields, is dramatically broken where the River Taff breaks through, forming the Taff Gorge at Tongwnlias. Much of the west of the urban area is enclosed by the Leckwith Escarpment, which forms a strong physical and visual backdrop. In contrast to the strong topography to the north and west, the eastern edge of the city, adjacent to the Severn Estuary, is flat. It forms part of a much larger historic landscape unit, the Gwent Levels, which extends alongside the River Severn beyond Newport.

Three major river valleys run through the city

Three major river valleys run through Cardiff. The valleys contain large areas of open space and are a significant determinant of the urban form of the city. They also provide a valued resource for recreation, amenity (connection with nature in a city), biodiversity, historic and cultural interests, although the fact that they are highly modified reduces their biodiversity and increases their flooding risk.

The River Taff valley has strong historic links as it provided an important corridor for the movement of goods between Cardiff Docks and the South Wales Valleys. It is well accessed by local communities along its whole length and a National Cycleway, the Taff Trail, follows its length in Cardiff and beyond to the Brecon Beacons. It forms a significant and well-known feature, passing through Llandaff, the City Centre and Cardiff Bay.

The River Ely merges with the Taff in Cardiff Bay and forms the administrative boundary with the Vale of Glamorgan for its lower length. Its western section in the vicinity of St Fagans is of particularly high landscape, biodiversity and historic value.

To the east of the city, the River Rhymney forms a well-defined valley and contains the only tidal estuary in the city (as the Taff and Ely run into Cardiff Bay that is held within a barrage to the Severn Estuary). Visually, the valley is very prominent as the A48, a main route into the city, follows the western edge of the valley into the city.

Tributaries to the rivers also add to Cardiff's range of landscape features. Most are small streams with catchments from within the city. However, some have become important corridors in their own right such as the Nant Fawr which contains a range of well-used open spaces including Roath Park, a major attraction of Green Flag status. Action plans have been prepared for all three river valleys detailed above.

The coastline presents complex issues and opportunities

Cardiff has a coastline on the River Severn Estuary with its huge tidal range, but its characteristics and accessibility are very mixed. The Cardiff Bay Barrage provides public access to the coast in the west but the shoreline to the east along the operational dock area and to the south of the steel works/ sewerage station is not currently accessible. To the east of the Rhymney estuary lies the Lamby Way landfill site, and part of a much longer stretch of undeveloped coastline running to Newport.

The undeveloped coast contains mudflats and rapidly eroding saltings below the high water mark. A sea wall then runs along the whole length of coast to Newport. The flat land behind forms part of the Gwent Levels, an area of land reclaimed from the sea in Roman times that is drained by a complex of ditches known as reens. This land is below high water level, hence the need for a sea wall. The Gwent Levels are a Site of Special Scientific Interest and a Historic Landscape, important for biodiversity and ecosystem resilience.

Cardiff has six Special Landscape Areas

Special Landscape Areas (SLAs) indicate parts of Cardiff's landscape that are considered to be of quality meriting local designation: development that causes unacceptable harm to the character and quality of the landscape in SLAs is not permitted. Cardiff has six SLAs (Figure 3.5.1): St Fagans Lowlands and the Ely Valley, Wentloog Levels, Flat Holm, Garth Hill and Pentyrch Ridges, and Fforest Fawr and Caerphilly Ridge. The last two of these are key areas for woodland ecosystem resilience.

Cardiff has eleven main landscape character areas

A 2007 landscape character area review[152] identified eleven landscape character areas (Figure 3.9.1):

1. Garth Hill Uplands: A prominent, distinctive backdrop to the wider Cardiff area.
2. Pentyrch Ridges and Valleys: Area of 'ridge and valley' landscape which contrasts to the steep uplands of Garth Hill to the north and the more gently undulating lowlands to the south.
3. Western Lowlands: An undulating lowland landscape. Despite being dissected by roads such as the M4 motorway, it forms a largely homogenous agricultural landscape.
4. St. Fagans Lowlands and Ely Valley: Lowland area with a river valley and 'estate' parkland character.
5. River Taff Corridor: Valley landscape comprising the flat alluvial plain of the River Taff.

[152] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/EvidenceBaseDocs/A%20review%20of%20Landscape%20Character%20Areas.pdf

6. Fforest Fawr & Caerphilly Ridge: Steep limestone and sandstorm ridges and scarp that form a prominent backdrop for the city.
7. Caerphilly Ridge Foothills: Broad tract of gently undulating countryside between the foot of the Caerphilly ridge and the M4 corridor.
8. Eastern Lowlands: Rolling lowland countryside on the eastern edge of Cardiff, characterised by agricultural land use and hedgerows.
9. River Rhymney Corridor: Key green corridor of somewhat disparate land uses.
10. Wentloog Levels: Part of the low-lying landscape of reclaimed coastal marshes known as the Gwent Levels. Characterised by a network of field draws – reens – the area has been subject to development pressures.
11. Flat Holm: A low, almost circular island situated in the Bristol Channel about 5 miles south-east of Cardiff.

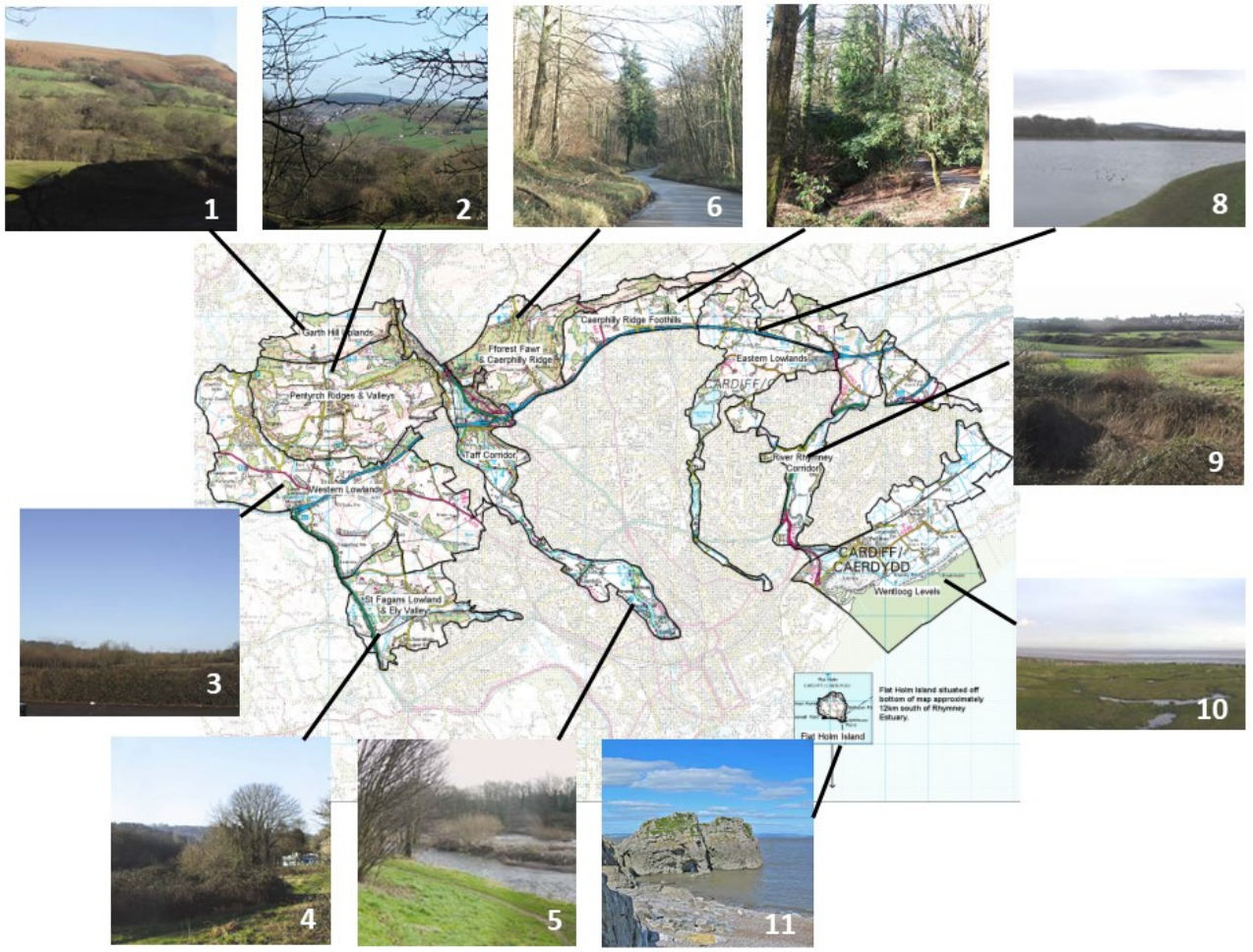

Figure 3.9.1 Landscape character areas

Cardiff is generally well served by open spaces within the urban area, but some areas are under-provided

Green/open spaces are important because they improve people's mental and physical health, encourage physical activity, are attractive, support biodiversity, act as a carbon sink, and can help to adapt to climate change. This has been particularly shown during the coronavirus pandemic, which has limited people's ability undertake other forms of recreation. Figure 3.9.2 shows all open space in Cardiff (including space that is not publicly accessible).

The Welsh Government recommends that 2.43 hectares (6 acres) of open space should be provided per 1000 population, divided into formal, informal and children's play areas. The latest survey of open space shows that there are 1.17ha of functional open space[153] per 1000 population in Cardiff, compared to an equivalent figure of 1.18ha two years earlier[154]. If educational playing fields are included, this figure increases to 1.88ha; and if all types of open space are included, the figure is 8.03ha of open space per 1,000 population, well in excess of the indicator target and a rise of 8% when compared to 2016/17. Significant additional functional open space will be provided in conjunction with the large strategic housing sites which are at the very early stages of development or are yet to commence.

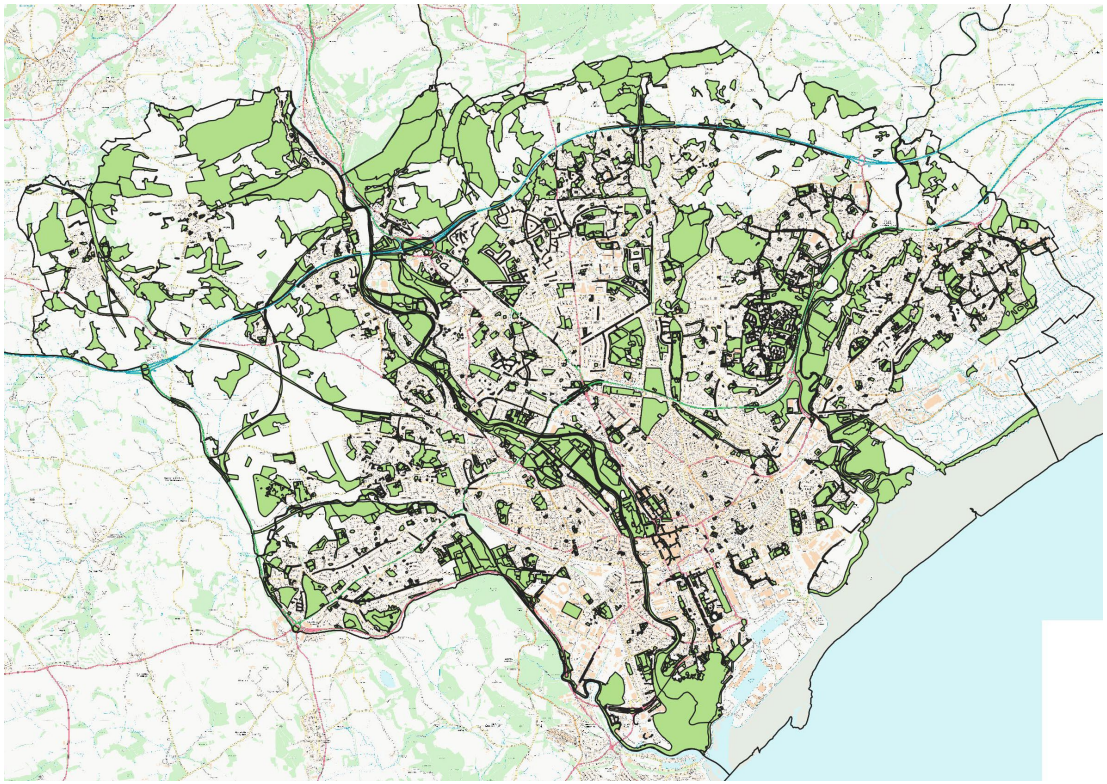

Figure 3.9.2 All open space in Cardiff

[153] Functional open space is open space that is capable of defined recreational use or multiple uses. These uses will include formal and informal sport and recreation, children's play and provision for teenagers although the balance of defined uses may change with time according to local demand. *Open space is all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport, recreation and tourism, and can also act as a visual amenity, and may have conservation and biodiversity importance.*

[154] https://www.cardiff.gov.uk/ENG/resident/Planning/Local-Development-Plan/Annual-Monitoring-Report/Documents/Cardiff%20LDP%203rd%20AMR%20English%20Version%20Final.pdf

However, Figure 3.9.2 shows that some areas of Cardiff are particularly deficient in open space. These include Cathays/Plasnewydd/Adamstown, Splott/Butetown, and Canton/Riverside. The areas with the least access to greenspaces coincide with some of the areas which have the poorer health (Figure 3.7.1) and environmental quality (Figure 3.7.3).

According to the Ask Cardiff 2019 survey, 87% of Cardiff's residents had visited a local park in the month before the survey; three-quarters had visited another outside space; and two-thirds had visited a river, lake or canal; and the beach/sea/coast (Figure 3.9.3).[155] This is likely to have increased during the coronavirus pandemic.

Cardiff was awarded a record 10 green flags for its parks in 2016. 78.5% of respondents to the 2019 Ask Cardiff survey were satisfied with Cardiff's parks and open spaces[156].

A study on the value (in terms of increased house prices) of good access to green spaces found that the average value in Cardiff of being located near green space was about £4200 in 2019, or about 2% of house price[157]. Again, this is likely to have increased as a result of the pandemic.

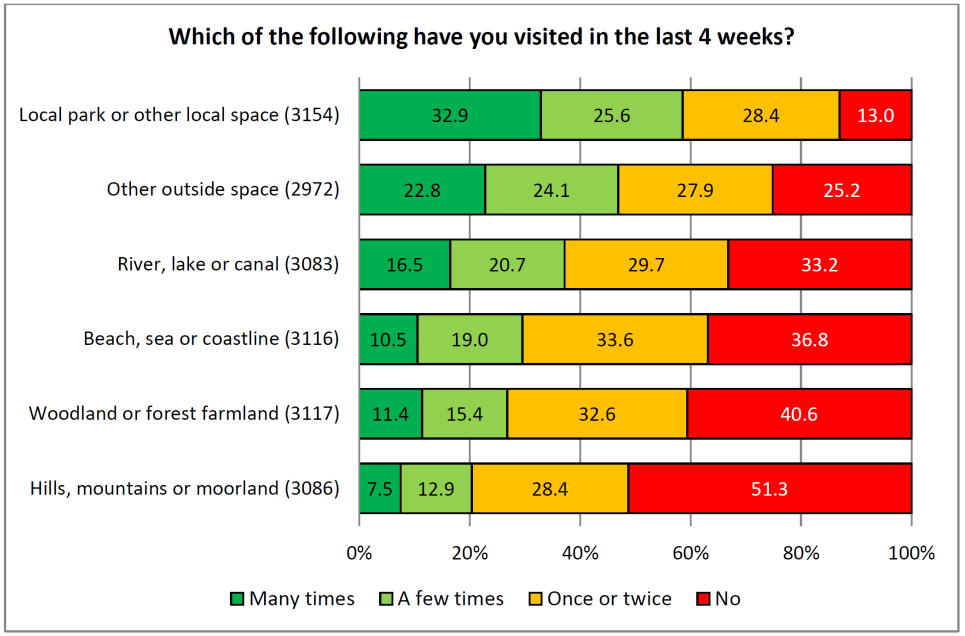

Figure 3.9.3 Cardiff resident visits to green spaces[158]

Likely future without the plan

Cardiff is becoming more urbanised, with higher density buildings, and more development on greenfield sites. These changes will be particularly notable at the strategic development sites in the current Local Development Plan.

Any deficits in green spaces are likely to be exacerbated as Cardiff's population increases, works more from home, and understands the value of green spaces.

Climate change is likely to increase the need for green spaces to reduce the urban heat island effect; but also increase the likelihood and severity of flooding, with associated impacts on land and landscape.

[155] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Ask%20Cardiff%202019%20Report.pdf
[156] Ibid.
[157] https://www.ons.gov.uk/economy/environmentalaccounts/articles/valuinggreenspacesinurbanareas/ahedonicpriceapproachusingmachinelearningtechniques

3.10 Waste

Introduction

The Welsh Government has set challenging targets for recycling and composting which are driving change towards more sustainable waste management practice: Welsh local authorities must recycle at least 64% of municipal recyclable waste by April 2020, and at least 70% by 2024/25.

Little is known about construction and demolition waste, and industrial and commercial waste, which account for most of the waste in South East Wales

Construction and demolition waste has historically been the biggest component of waste in South East Wales, accounting for more than half of all waste produced (55% in 2005/06) – see Figure 3.10.1. Data about construction and demolition waste are collected only sporadically and in non-comparable manners, so the current situation is unknown. Data on industrial and commercial waste, which accounted for 25% of all waste in South East Wales in 2005/06, are also collected only sporadically. Waste prevention targets are for a 1.4% annual reduction for industrial waste, and 1.2% annual reduction for commercial waste.

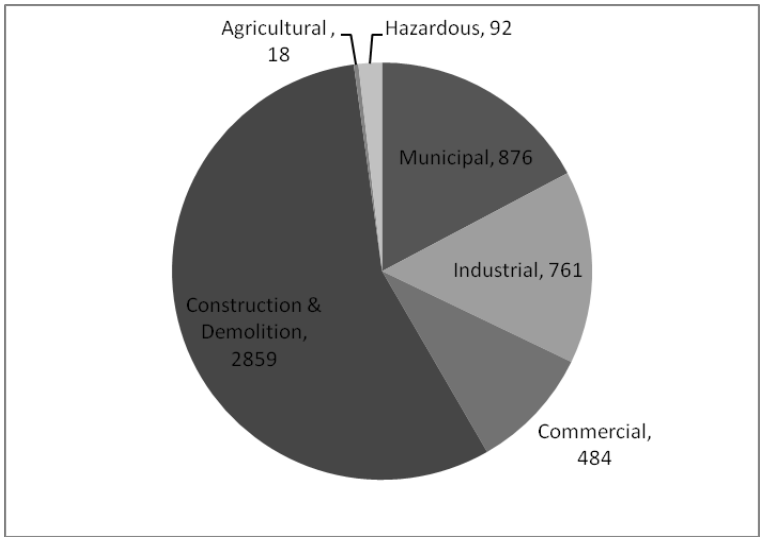

Figure 3.10.1 Amount (in 000 tonnes) of waste arisings in South East Wales, 2005/06 (South East Wales Regional Waste Group, 2008)

Recycling rates are improving rapidly following the completion of a new recycling facility and rolling out a recycling scheme

Cardiff's recycling and composting rates for municipal waste were historically significantly below the Welsh average: only 10% of the municipal waste stream was recycled in 2004/05 compared to a Welsh recycling rate of 22%. However this improved rapidly with the roll-out of an integrated kerbside recycling scheme. By 2019, Cardiff was recycling about 60% of its waste[159]. In 2018, the council further expanded the provision of wheeled bins, and trialled a separate glass collection.

[158] https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Ask%20Cardiff%202019%20Report.pdf
[159] https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Waste-Management/Local-Authority-Municipal-Waste/municipalwastearisings-by-localauthority-quarter

Per person waste has declined significantly

Because of the rapid increase in Cardiff's population, the total municipal waste produced in Cardiff has not been decreasing significantly. However, residual waste per person (waste that cannot be recycled or reused and is sent to energy recovery or disposal) has been declining steadily (Figure 3.10.2), from more than 500kg/yr in 2012/13 to 378kg/yr in 2018/19.

Cardiff's landfills have shut and energy recovery facilities have opened

The amount of waste going to landfill has also declined rapidly, from 118,368 tonnes in 2008/09 to 55,610 tonnes in 2014/15. The last remaining landfill site in Cardiff, at Lamby Way, was closed in 2017 and capped in 2018. Since 2015, most of Cardiff's non-recyclable waste has been going to the Cardiff Energy Recovery Facility at Trident Park: this handles 350,000 tonnes of waste per year and generates 30MW of energy. Cardiff's food waste goes to an anaerobic digestion plant at Tide Fields Road, Splott.

Figure 3.10.2 Total municipal waste collected and residual waste per person[160]

Likely future without the plan

There is considerable uncertainty regarding the future amount and type of waste generated by Cardiff residents. Factors affecting waste growth include population changes; consumer behaviour; the effectiveness of waste minimisation strategies (including any changes to such strategies post-Brexit); and the economic prosperity of the region.

The Welsh Government has set a target to local authorities of recycling at least 70% of their recyclables by 2024/25. Its March 2021 'Beyond Recycling' strategy supports a 'circular economy', better resource efficiency, waste reduction, high rates of recycling, and procurement of goods made from remanufactured, refurbished and recycled materials[161]. Because of its success in recycling, and thus reducing the need to burn waste, in March 2021, the Welsh Government instituted a moratorium on large-scale (>10MW) energy from waste plants. Smaller energy from waste plants will only be permitted if there is a local need for such facilities[162].

[160] https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Waste-Management/Local-Authority-Municipal-Waste/municipalwastearisings-by-localauthority-quarter; https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Waste-Management/Local-Authority-Municipal-Waste/annualresidualhouseholdwasteproducedperperson-by-localauthority

[161] https://gov.wales/sites/default/files/publications/2021-03/beyond-recycling-strategy-document.pdf

[162] https://gov.wales/wales-takes-action-circular-economy-funding-upcoming-reforms-plastic-and-moratorium-large-scale

3.11 Water and flooding

Water quality supports biodiversity and health; and healthy rivers, lakes, streams and other blue spaces are an important recreational amenity, improving wellbeing and boosting the economy. Water resources and flooding are becoming an increasingly important issue in the light of climate change.

The water quality of the rivers Taff, Ely and Rhymney is 'bad to moderate'

The water quality of Cardiff's major rivers has historically been degraded due to mining activities, urban run-off and extensive physical modifications[163]. Water quality has improved over time as improvements were made to drainage systems and mining-related activities ceased upstream. However the River Ely and its catchment are still in bad condition, and the Taff and Rhymney rivers and catchments are only in moderate condition (Figure 3.11.1). Groundwater quality in the area is good[164].

The major issues for Cardiff's rivers relate to physical modifications: barriers to fish migration from weirs and impoundments, flood defence structures, urban modifications and land drainage on the Wentloog levels. In the heavily populated areas of Cardiff, there is also pressure from urban diffuse pollution, sewage and misconnections. Minewaters also continue to affect river quality[165].

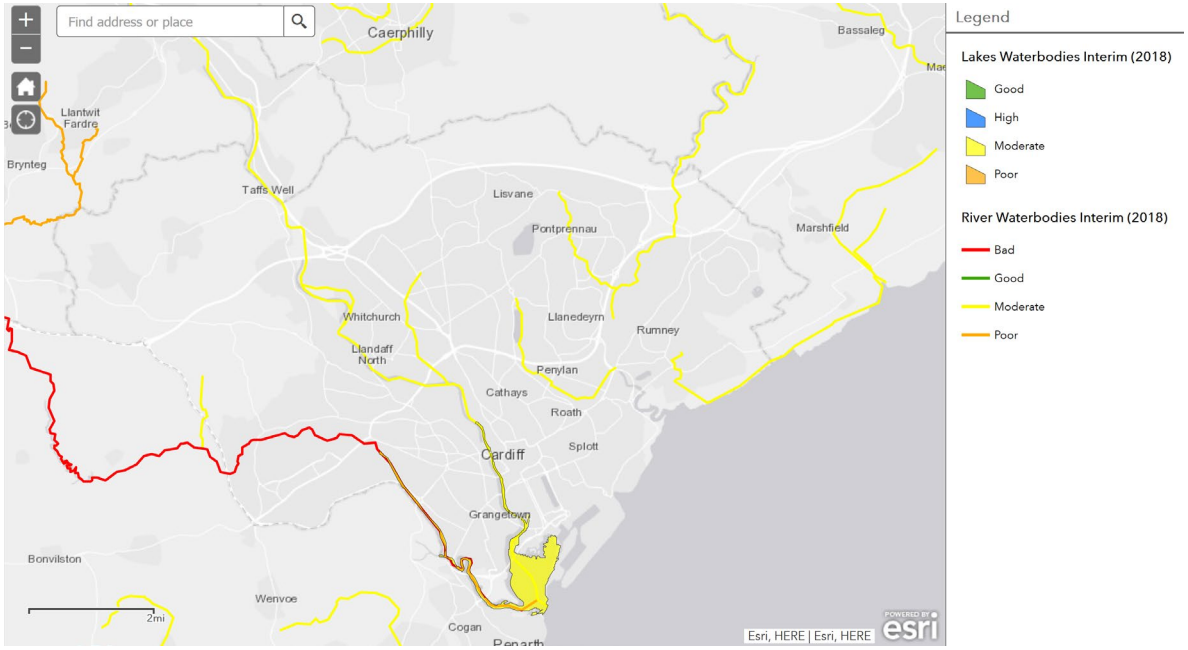

Figure 3.11.1 Water quality in Cardiff's rivers and waterbodies[166]

[163] https://naturalresources.wales/media/3217/south-east-valleys-management-catchment.pdf
[164] https://waterwatchwales.naturalresourceswales.gov.uk/en/
[165] https://naturalresources.wales/media/679387/2016_updated-south-east_valleys_catchment_summary_nrw.pdf
[166] https://waterwatchwales.naturalresourceswales.gov.uk/en/

Water supplies for Cardiff are secure to 2039/40

Cardiff is part of the SEWCUS[167] Water Resource Zone supplied by Dŵr Cymru. Water for the SEWCUS zone comes from over 40 sources, but mostly from five major reservoirs: Usky, Talybont, Llandegfedd, Taff Fawr (Llwynon, Cantref and Beacons reservoirs), and Pontsticill. The water company has determined that there will be (just) enough water for the SEWCUS zone to 2039/40 under a range of assumptions about future population, per person water use, leakage reductions and climate change (Figure 3.11.2). If, instead, population in the zone grows faster than expected, there would be a deficit in water supply[168].

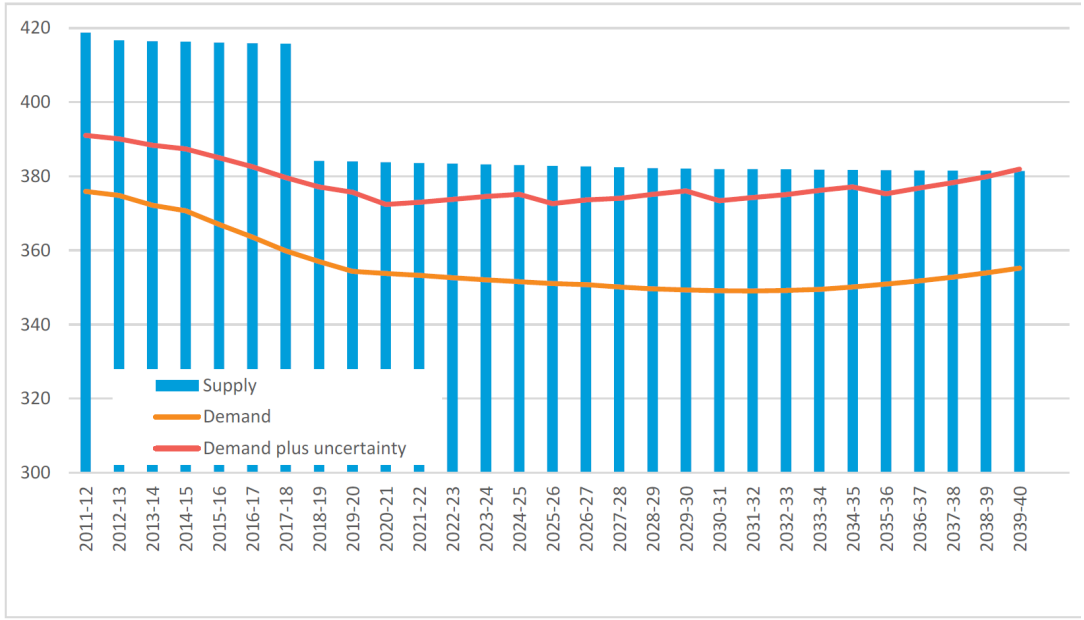

Figure 3.11.2 Water supply v. demand in the SEWCUS Water Resource Zone

Flooding poses a particular threat to Cardiff due to its coastal location, low lying areas and rivers

Because Cardiff is so low-lying, flood risk is potentially the most serious problem associated with climate change. The Environment Agency's 2018 preliminary flood risk assessment for the Severn[169] identifies Cardiff - and particularly the communities of St. Mellons, Roath, Grangetown, Riverside and Canton – of being at significant risk of flooding. Figure 3.11.3 shows areas of Cardiff at risk of flooding.

In 2013, about 22,000 people in Cardiff were at low risk of flooding, 2,800 were at medium risk, and almost 1,000 were at high risk of flooding. This will have increased as Cardiff's population has increased. Effects of flooding include subsidence, spreading of contaminants, increased insurance premiums and damage to the image of Cardiff. Economic activities and infrastructure are also affected, as can be seen at Table 3.11.1.

The natural environment can also be affected, for instance through flooding of sites for environmental permitting regulations (industrial emissions) and licensed abstractions (use of water for industrial purposes). This is particularly a problem in the south-east of Cardiff[170].

[167] South East Wales Conjunctive Use System
[168] https://www.dwrcymru.com/-/media/Files/My-Water/Water-Resources/DCWW-Final-WRMP19-Main-Technical-Report-Mar-19.pdf
[169] https://cdn.naturalresources.wales/media/687716/pfra-severn.pdf. (Dec. 2018)
[170] https://www.cardiff.gov.uk/ENG/resident/Community-safety/Flood-and-Coastal-Erosion-Risk-Management/Documents/Cardiff%20Flood%20Risk%20Management%20Plan.pdf

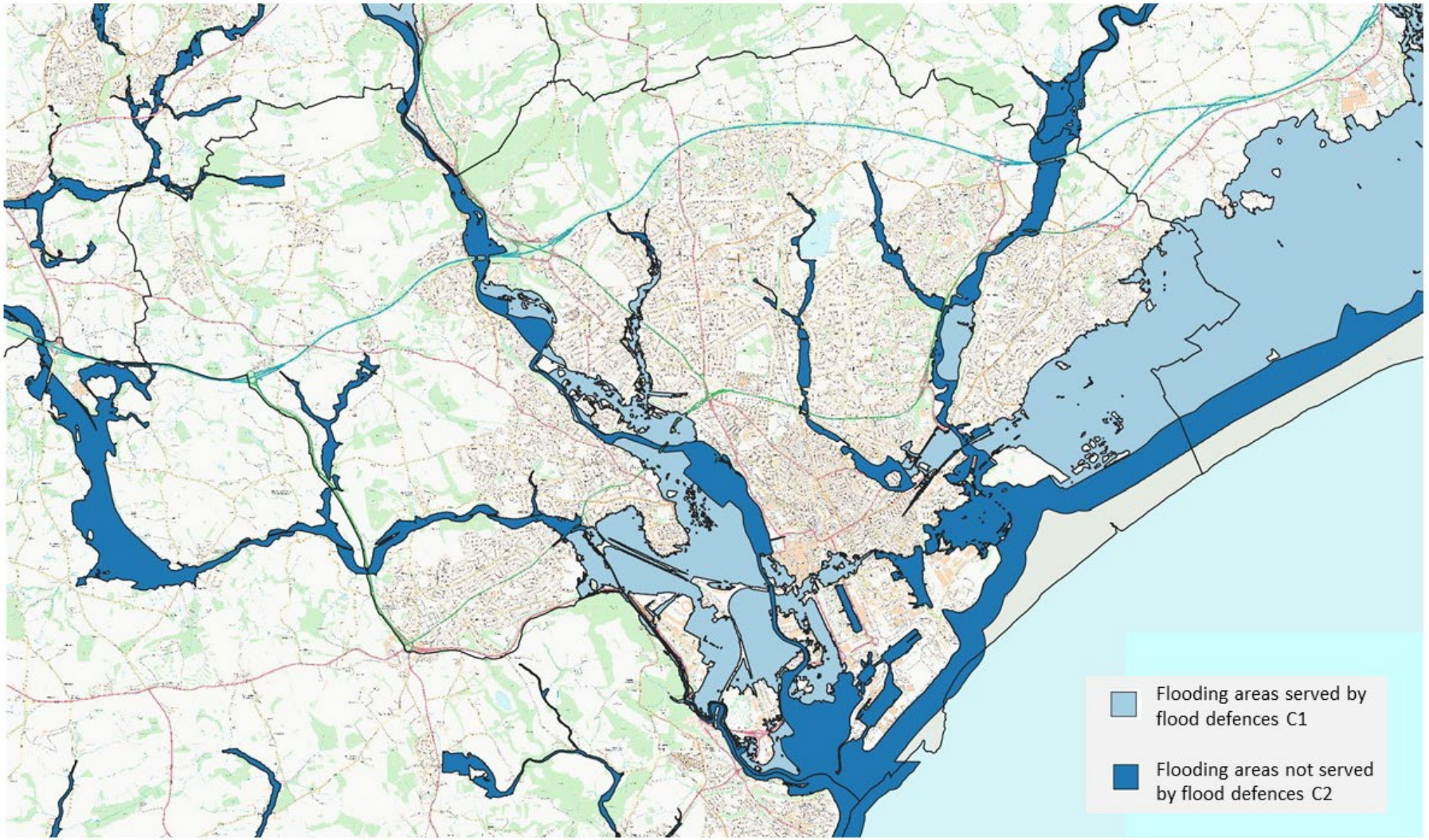

Figure 3.11.3 Areas at risk of flooding

The following factors affect flood risk in Cardiff:

- The completion of the Barrage enclosing Cardiff Bay has provided protection against tidal flooding for Cardiff Bay. During storm surges the sluices for regulating the water level within the Bay must be kept closed, creating a "tidal lock". During times of tidal lock the water level in the Bay will steadily increase as both the Rivers Taff and Ely disgorge into it. With sea levels predicted to increase as climate change occurs, the time the bay experiences tidal lock will grow, increasing the likelihood that the Taff and Ely will start to back up. This could have major implications for the Bay and development along the lower stretches of the Taff and Ely, particularly during times when the rivers are transporting large volumes of water as a result of heavy rainfall.

	Total in the study area	Low flood risk (between 1 in 100 and 1 in 1000 per year)	Medium flood risk (between 1 in 30 and 1 in 100 per year)	High flood risk (greater than 1 in 30 per year)
People	278,654	22,010	2,808	938
Services*	296	30	7	0
Non-residential properties	17,674	1,849	325	127
Roads (km)	49	11	5	3
Rail (km)	43	4	2	4
Agricultural land (ha)	1,464	81	25	18

* schools, hospitals, nursing/care/retirement homes, police stations, fire and ambulance stations, prisons, sewage treatment works and electricity installations

Table 3.11.1 People and property in Cardiff at risk of flooding[171]

- Wentloog is at risk of flooding due to its low-lying nature, predicted sea level rise, and some areas where coastal defences are at risk of overtopping. This will place the mud flats and sea wall under increasing pressure, particularly during storm surges due to the tidal nature of the Severn Estuary. Several sites in the Wentloog area have extant planning permissions.
- The lower reaches of the River Rymney are at particular risk of flooding during the storm surges when the level of the estuary can rise dramatically, combined with predicted sea level rises and the increased flow volumes of the Rumney.
- Surface water flooding is also an issue. 'Greener Grangetown' is an example of how this can be dealt with through a sustainable drainage project.

Likely future without the plan

Water quality is an ongoing concern, with Cardiff's rivers unlikely to reach 'good' condition by the European Water Framework Directive's deadline of 2027 (though the UK may choose to implement different water quality legislation). Dŵr Cymru's Water Resource Management Plan shows that water resources should be adequate to 2039. Flooding is already a significant issue in Cardiff, and is likely to become worse over time, with climate change and sea level rise.

[171] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/456967/LIT8969_FloodRiskMaps_Severn_SurfaceWater_v2.pdf

4 Existing sustainability problems and issues (Task A4)

The SEA Directive requires a description of "any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to [Special Protection Areas and Special Areas of Conservation]" (Annex Id).

Based on the information in Chapters 2 and 3, Table 4.1 lists key current sustainability problems and issues for Cardiff. The final column of Table 4.1 summarises the likely future conditions in Cardiff if the current Local Development Plan were to continue, without the RLDP being put in place. This will be important later in the assessment process, when the ISA considers the cumulative impacts of the RLDP plus other actions.

Table 4.1 Key sustainability issues and main problems for Cardiff

Key:

Topic:	Main sustainability problem			Not main problem		
Current status, likely future:	Good condition	Relatively good condition	Intermediate condition	Relatively poor condition	Poor condition	Unknown condition

Topic	Current status	Likely future without the RLDP
1. Access, equality and population		
• The population of Cardiff will increase by 2039, although forecasts differ about the scale of this increase. • The cost of housing - particularly family housing - is excluding those on low incomes from entering the housing market. Providing an appropriate range and choice of housing for this population growth (including services and infrastructure) is a key sustainability issue. • Cardiff has a much higher proportion of young adults and ethnic minorities than the Welsh average, and its population is ageing. • Cardiff contains some of the most deprived areas in Wales - geographically there is a concentration of deprivation in the 'southern arc' although hotspots exist elsewhere. • Unemployment benefits claims have doubled during the coronavirus pandemic. • Cardiff has a significant number of homeless people. Many of these have been housed during the coronavirus pandemic, but their longer-term future remains uncertain.		
2. Air quality		
• There are four air quality management areas in Cardiff based on NO_x levels. Although air quality in the city is generally improving in line with national		

Topic	Current status	Likely future without the RLDP
trends, and this may be helped by changes post-pandemic, the Cardiff City AQMA in particular still consistently has NO_2 levels above legal standards. • Levels of particulates (PM_{10}, $PM_{2.5}$) are a concern.		
3. Biodiversity, flora and fauna		
• The city's internationally important nature conservation sites – the Cardiff Beech Woods SAC and the Severn Estuary SAC/SPA/Ramsar – are broadly in good condition, but are affected by recreational pressures and urbanisation. • The Severn Estuary's wetland birds are particularly negatively affected by recreational pressures and habitat loss. • Little information exists about Cardiff's biodiversity more generally, which will limit the ability to predict the impacts of the RLDP.	?	?
4. Climate change		
• Cardiff aims to become carbon neutral by 2030. CO_2 emissions are already reducing, but much too slowly to achieve this target without immediate additional action. • Although walking, cycling and public transport use have gradually increased over time, before the coronavirus pandemic 50% of commuting journeys were still by car. Cardiff's growing population is likely to lead to more car journeys, with associated poor air quality, traffic accidents and poor health; although this may be partly offset by lifestyle changes post-pandemic. • Cardiff is a major attractor of in-commuters from other parts of South East Wales. • Energy use in buildings is responsible for about one-third of Cardiff's greenhouse gas emissions: new buildings need to be more energy efficient.		
5. Cultural heritage and the historic environment		
• Cardiff's cultural and historic attractions attract large numbers of visitors each year and perform an important national/regional role. • A live music arena is expected to open in 2024. • In 2015, 27 of Cardiff's listed buildings were at risk, and 116 were vulnerable. • An increasing number of Cardiff residents speak Welsh. The Bilingual Cardiff Strategy Action Plan 2019 - 2022 supports using the Welsh language as a unique selling point for Cardiff.		?
6. Economy		
• Maintaining Cardiff's performance is vital for the economic well-being of the region and Wales. Cardiff has been experienced strong jobs growth, and almost half of Cardiff's employees are in one of the Welsh Government's priority sectors. However the coronavirus pandemic has had devastating effects on the retail and hospitality sectors.		?

Topic	Current status	Likely future without the RLDP
• Cardiff's workforce is polarised between more highly-qualified and low or unskilled workers; there are significant concentrations of unemployment in parts of the city; and the education and skill base of Cardiff's population varies significantly. • Significant areas of employment land have been changing to other uses (notably housing) as a result of changing employment patterns and market conditions.		
7. Health and well-being		
• The health of Cardiff's population is generally slightly better than the Welsh average, but over half of Cardiff's adults are overweight or obese. • The 'southern arc' of the city ranks poorly on a wide range of criteria in the Welsh Index of Multiple Deprivation. Health inequalities in the city are particularly stark, with the most disadvantaged groups in Cardiff having a healthy life expectancy 20+ years less than the least disadvantaged groups. • The coronavirus pandemic has shown the importance of access to green spaces for mental and physical wellbeing. • Crime levels in Cardiff have slightly fallen over time, but fear of crime has increased.		
8. Land, soil and minerals		
• Cardiff's ecological footprint exceeds the global 'fare share' • Whereas almost all new housing was built on brownfield land ten years ago, most recently it has been 58-59%. The current LDP has allocated large new greenfield sites for development. • Cardiff's allotments are important for people's health and food security, but they are oversubscribed, and more will be needed. • Cardiff's grade 2 and 3 land is important for people's health a food security.		
9. Landscape		
• Cardiff has a distinctive landscape setting, and has six Special Landscape Areas where development may be restricted on landscape grounds. • Cardiff has 1.17ha of functional open space per 1000 population, compared to the Welsh Assembly Government's recommended 2.43ha. If all types of open space are included, the figure is 8.03ha of open space per 1,000 population.		
10. Waste		
• Construction/demolition waste is the largest contributor to the waste stream, followed by commercial/industrial and municipal (household) waste. Little is known about quantities produced or proportion recycled. • Total municipal waste production has stayed broadly the same over the past decade, but per-person waste production has dropped sharply.		

Topic	Current status	Likely future without the RLDP
• Recycling in Cardiff has increased sharply, from 10% in 2004 to about 60% currently.		
11. Water and flooding		
• Water quality in most of Cardiff's waterbodies is moderate (poor in River Ely) putting biodiversity and population health and wellbeing at risk. • Water supplies are expected to be adequate over the RLDP period, although water efficiency measures are needed. • Large areas of Cardiff are at flood risk due to the city's low-lying nature. The communities of St. Mellons, Roath, Grangetown, Riverside and Canton are at particular risk.		

5 ISA Framework (Task A5)

Two Integrated Sustainability Appraisal (ISA) frameworks will be used to assess the sustainability of the emerging RLDP. These have been amended slightly in response to consultation comments. A policy-level framework – shown at Table 5.1 - will be used to assess the plan vision, objectives, strategic alternatives, and policies. Many of the objectives and indicators in the framework relate to each other: for instance, minimising the need to travel is good for health, air quality, biodiversity and community. Criteria will be:

- -	Major negative compared to the current situation
-	Minor negative compared to the current situation
+/-	Both positive and negative
0	Neutral effect.
+	Minor positive compared to the current situation
++	Major positive compared to the current situation
?	Uncertain - Uncertain or unknown effect.

A site-level framework – Table 5.2 - will be used to assess candidate sites for development. This is because more detailed and quantitative information is needed to allow development sites to be assessed and compared. Additionally, some ISA criteria that are relevant at the strategic level are either not relevant at the site level (e.g. because the details of the potential future development are unknown or unclear) or would be similar for all sites (e.g. waste management). The distances in Table 5.2 are consistent with distances used by the Chartered Institute of Highways and Transportation for journeys on foot. Table 5.2 is based only on the location and characteristics of the site, not the characteristics of possible development on the site: this is because much of the impact of development relates to the site itself, and because proposed developments can change significantly from initial discussions with planners to final planning permission.

Tables 5.1 and 5.2 will inform, but not make, council decisions about what policies and sites to take forward. Where Tables 5.1 and 5.2 identify significant negative impacts (e.g. the site includes a Special Landscape Area), mitigation measures will be recommended (e.g. not building in the SLA part of the site).

Table 5.3 shows how the ISA frameworks fit with the Welsh Government's seven Well-Being Goals. The ISA process also supports the government's Well-Being Ways of Working:

- Long-term: The ISA identifies the likely future situation in the absence of the plan; predicts the emerging RLDP's impacts; and identifies long-term impacts and needs
- Integration: The ISA considers how the RLDP will impact on different sustainability objectives
- Involvement: Both the emerging RLDP and its ISA will be open to public involvement at various stages (see Sec. 1.1 and 6)
- Collaboration: The ISA has required, and will require, the collaboration of a range of players (e.g. planners, ecologists, transport planners) to identify significant impacts and propose mitigation for any significant negative impacts
- Prevention: The ISA by definition aims to prevent significant negative impacts of the emerging RLDP.

Table 5.1 ISA framework for the RLDP vision, objectives, strategic alternatives and policies

ISA objective	Sub Objectives: Will the vision/objective/alternative/policy…	Indicators and wished-for direction of change (↓ or ↑)
1. Help deliver equality of opportunity and access for all	• Meet the need of Cardiff's population for homes, jobs and community facilities • Address existing imbalances of inequality, deprivation and exclusion • Improve access to education, life-long learning and training opportunities • Improve access to affordable housing and employment opportunities, particularly for disadvantaged sections of society • Improve access to community facilities and services, particularly for young and elderly people • Support the regeneration of deprived areas	• Population size • No. households and average household size • Average house price compared to average annual salary ↓ • No. and % of Cardiff's lower super output areas in the most deprived 10% lower super output areas for Wales ↓ • % of residents on unemployment benefits ↓ • No. and % of domestic units that are provided for affordable housing per year ↑ • No. homelessness presentations received by Cardiff Council per 1000 households annually ↓
2. Maintain and improve air quality	• Reduce the need to travel through the location and design of new development, provision of public transport infrastructure and promotion of cycling and walking • Avoid locating new development, including active travel routes, where air quality could negatively impact upon peoples' health • Help to meet air quality standards for people and ecosystems	• No. air quality management areas ↓ • NO_x levels in AQMAs ↓
3. Protect and enhance biodiversity, flora and fauna	• Maintain and achieve favourable condition of international and national sites of nature conservation importance (SACs, SPAs and SSSIs) • Maintain extent and enhance the quality of locally designated sites (LNRs and SNCIs) and LBAP priority habitats • Protect and enhance protected species and LBAP priority species • Maintain and enhance connectivity of corridors of semi-natural habitats • Provide opportunities for people to experience wildlife and habitats • Help to provide a net benefit for biodiversity, consistent with Planning Policy Wales 10	• No. and extent (in hectares) of designated sites of importance (SACs, SPAs, SSSIs, LNRs and SNCIs) ↑ • % of features of internationally and nationally designated sites in favourable condition (SACs, SPAs, SSSIs) ↑ • Area (in hectares) of ancient woodland cover ↑ • Total extent (in hectares) of LBAP priority habitats ↑

ISA objective	Sub Objectives: Will the vision/objective/alternative/policy…	Indicators and wished-for direction of change (↓ or ↑)
4 Reduce emissions of greenhouse gases and adapt to the effects of climate change	• Support energy conservation and energy efficient design • Promote renewable energy generation • Promote efficient land use patterns that minimise the need to travel • Promote sustainable modes of transport and integrated transport systems • Reduce vulnerability of the built environment to the effects of climate change • Help Cardiff to achieve the One Planet Cardiff vision to become a carbon neutral city by 2030	• Emissions of greenhouse gases by end use and sector ↓ • Traffic volumes (million vehicle Km) ↓ • Mode of travel to the city centre for all purposes ↓ for cars/vans, ↑ for walking, cycling and public transport • Average household energy consumption (kWh) ↓
5. Protect and enhance historic and cultural heritage, including the Welsh Language	• Protect and enhance historic and cultural assets including scheduled ancient monuments, listed buildings, historic parks and gardens, historic landscapes and conservation areas • Encourage access to the historic and cultural heritage • Support local character and distinctiveness through good design • Support the use of the Welsh Language	• % of listed buildings 'at risk' ↓ • % of conservation areas with an appraisal undertaken in the last 10 years ↑ • % of Cardiff residents who speak Welsh ↑
6. Help deliver the growth of a sustainable and diversified economy	• Increase the number and range of employment opportunities • Support and enhance the role of Cardiff as a key economic driver of South East Wales city region • Promote and support city and local centres, local employment opportunities and mixed use development • Support a post-pandemic green recovery	• No. of jobs in Cardiff ↑ • Full time gross median pay (£/week) ↑ • % of residents working age population in employment ↑ • Amount of land (in hectares) available for employment ↑ for brownfield
7. Improve health and well-being	• Reduce health inequalities • Encourage and facilitate walking and cycling, particularly in green infrastructure • Protect, and improve access to, open space, the countryside and other opportunities for physical activity • Improve environmental quality by minimising adverse impacts on health and wellbeing from pollution, flooding and waste management disposal • Promote good design that minimises adverse impacts on health and wellbeing from crime and road traffic accidents	• Gap between wards with the highest and lowest life expectancy, and healthy life expectancy ↓ • % of adults who are overweight or obese ↓ • Adults who reported meeting physical activity guidelines in the past week ↑ • No. people killed or seriously injured in traffic accidents ↓ • Crime levels and fear of crime ↓

ISA objective	Sub Objectives: Will the vision/objective/alternative/policy…	Indicators and wished-for direction of change (↓ or ↑)
8. Use soils and minerals efficiently and safeguard their quality	• Re-use derelict and other previously developed land • Remediate contaminated and unstable land • Safeguard soil quality including the best and most versatile agricultural land, and protect and enhance allotments • Safeguard mineral resources and encourage their efficient and appropriate use	• % of housing on previously developed land ↑ • No. and area (in hectares) of potentially contaminated sites ↓ • Area (in hectares) of grades 1, 2 and 3a agricultural land ↑ • Area of allotments, number of plots ↑ • Landbank (in years) of mineral reserves ↑
9. Protect and enhance the landscape	• Protect and enhance the landscape including the countryside, areas of landscape value, river valleys, greenspaces and the undeveloped coastline • Protect and enhance Cardiff's Special Landscape Areas • Promote high quality design in keeping with its landscape context • Increase access to open space	• Area (in hectares) of landscape protected by local landscape designations (Special Landscape Area and conservation areas) ↑ • Achievement of recreational open space requirements ↑ • Area of Cardiff within 400m of accessible natural green space ↑
10. Minimise resource use and waste, increase re-use and recycling	• Reduce Cardiff's ecological footprint • Promote resource efficiency and the use of secondary and recycled materials • Promote waste reduction, re-use, recycling and recovery	• Ecological footprint ↓ • Commercial and industrial waste, construction/ demolition waste, and municipal waste arising per year ↓ • % of municipal waste composted or recycled ↑
11. Maintain and enhance water quality and resources, and manage flooding	• Conserve water resources and increase water efficiency • Improve the water quality of rivers, lakes, groundwaters and coastal areas • Ensure that a precautionary approach is applied, and that the location and design of new development manages the potential risks and consequences of flooding down to an acceptable level. • Ensure new developments have adequate sustainable drainage systems • Help to achieve water quality standards	• % of river lengths achieving good ecological and chemical status or potential ↑ • Average water use per household per year ↓ • Quality of Cardiff's rivers ↑ • No. of planning applications in flood risk areas granted against NRW advice ↓ • No. of properties at risk from river and coastal flooding ↓ • % of new development with sustainable urban drainage systems (SUDS) ↑

Table 5.2 ISA framework for candidate sites

ISA objective	The candidate site is…			
	++	+	-	- -
1. Help deliver equality of opportunity and access for all	In the lowest 10% LSOA for overall WIMD	In the lowest 20% LSOA for overall WIMD	In the lowest 50% LSOA for overall WIMD	In the top 50% LSOA for overall WIMD
	Would lead to a net gain/ improvement of a community facility			Would lead to a net loss / worsening of a community facility
	Would lead to a net gain/ improvement of housing			Would lead to a net loss of housing
2. Maintain and improve air quality	>200m from an AQMA		≤200m of an AQMA	In an AQMA
3. Protect and enhance biodiversity, flora and fauna	>2km from an SPA, SAC or Ramsar site	401m-2km of an SPA, SAC or Ramsar site	≤400m from an SPA, SAC or Ramsar site	In an SPA, SAC or Ramsar site
	>2km from an SSSI	401m-2km from SSSI	≤400m from SSSI	In SSSI
	>2km from an LNR	401m-2km from LNR	≤400m from LNR	In an LNR
	>2km from a SINC	401m-2km from SINC	≤400m from SINC	In a SINC
4. Reduce emissions of greenhouse gases that cause climate change and adapt to its effects	<400 m from a bus stop for buses that run once an hour or more	401-800m from a bus stop for buses that run once an hour or more	801-1500m from a bus stop for buses that run once an hour or more	>1500m from a bus stop for buses that run once an hour or more
	<400 m from a train station	401-800m from a train station	801-1500m from a train station	>1500m from a train station
	<400m from a city / district centre[172]	401-800m from a city/district centre	801-1500m from a city/district centre	>1500m from a city/district centre
5. Protect and enhance historic and cultural heritage, including the Welsh Language	>200m from a heritage asset		≤200m from a heritage asset	Includes a heritage asset
	>200m from a Conservation Area		≤200m from a Conservation Area	In a Conservation Area
	>200m from an Archaeologically Sensitive Area		≤200m from an Archaeologically Sensitive Area	In an Archaeologically Sensitive Area
6. Help deliver the growth of a sustainable and diversified economy	Would lead to a net gain/ improvement in employment			Would lead to a net loss / worsening of employment
7. Improve health and well-being	<400m from open space	401-800m from open space	801-1500m from open space	>1500m from open space
8. Use soils and minerals efficiently and safeguard their quality	Previously developed land			Greenfield land
		Grade 3b-5 agricultural land (if greenfield)	Grade 2 or 3a agricultural land (if greenfield)	Grade 1 agricultural land

[172]Or could, instead, be doctor's surgery and/or primary school

ISA objective	The candidate site is…			
	++	+	-	- -
9. Protect and enhance the landscape	>2km from a Special Landscape Area	200m – 2km from a Special Landscape Area	≤200m from a Special Landscape Area	In a Special Landscape Area
11. Maintain and enhance water quality and resources, and manage flooding	>50m from water body		<50m from water body	Includes water body
	Not in flood zone C1 or C2		In flood zone C1	In flood zone C2

Table 5.3 Links between the ISA objectives and the Welsh Government Well-being Goals

Well-being goal		ISA objectives
1	A prosperous Wales: An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.	4, 6, 8, 10, 11
2	A resilient Wales: A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).	2-4, 11
3	A healthier Wales: A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.	2, 7
4	A more equal Wales: A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances).	1
5	A Wales of cohesive communities: Attractive, viable, safe and well-connected communities.	1, 9
6	A Wales of vibrant culture and thriving Welsh Language: A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.	5
7	A globally responsible Wales: A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.	3-6, 8-11

If further information becomes available, Table 5.1 will be amended. In particular, more information is needed on

- access to community facilities and services / achievement of '15 minute neighbourhoods'
- air quality at sensitive European sites (notably Cardiff Beech Woods SAC and Blackmill Woodlands SAC)
- protected species
- damage to ancient woodlands

- net benefit for biodiversity
- no. or % of new dwellings that are zero carbon
- renewable energy generated
- good design
- no. or % of jobs in the 'green/circular economy' sector
- time spent commuting into Cardiff in private cars v. via active travel
- ecological footprint (up to date information)
- industrial/commercial waste generated
- waste reduction and reuse.

Table 5.2 may also still be fine-tuned, depending on the GIS layers available at Cardiff Council.

6 Next steps

This Scoping Report, further updated as appropriate, will provide the framework for assessing how the Council is delivering sustainable development throughout all future stages of the preparation of the RLDP. Objectives and indicators set out in the report will be used to appraise and monitor the development of the RLDP. Future reports prepared as part of the ISA process will evidence this assessment as different stages of the RLDP are completed, culminating in the preparation of a Sustainability Report that will be subject to consultation alongside the deposited copy of the RLDP. Both documents will be subject to full consultation and be duly considered at the Public Examination into the RLDP.