Greater Glasgow and Clyde
Joint Health Protection Plan 2023-2025

NHS Greater Glasgow and Clyde

East Dunbartonshire

East Renfrewshire

Glasgow

Inverclyde

Renfrewshire

West Dunbartonshire

1 Foreword

The Public Health etc. (Scotland) Act 2008 requires NHS Boards, in consultation with Local Authorities, to produce a Joint Health Protection Plan which provides an overview of health protection (communicable disease and environmental health) priorities, provision and preparedness for the NHS Board area. Guidance on the content of joint health protection plans has been published by the Scottish Government.

This plan covers the period from 1 April 2023 to 31 March 2025. Last published in 2018, the intention is update every two years, in line with government guidance, and was due to have been updated in Spring 2020.

No-one needs to be reminded of the far-reaching impacts of the Covid-19 pandemic. Though we weren't able to publish an update of the plan during the pandemic, the JHPP was an invaluable resource to enable, and advocate for, the joint working and mutual support that allowed our teams to deliver new, expanded and adapted services in the context of unprecedented demand, changing policy direction, and unparalleled restrictions on society.

We are now in a position to begin building back, and through our joint working progress a reinvigorated proactive work plan. Though this document concentrates on health protection activity, it should be seen in the context of our other strategic work, including "Turning the Tide" our 10 year public health strategy.

The plan is a public document and is available to members of the public on the NHS Greater Glasgow and Clyde website and on request. We hope that you will find this plan to be of interest, and of value, and that its production will contribute to protecting the health of the people who visit, work and live in Greater Glasgow and Clyde.

Dr Emilia Crighton

Interim Director of Public Health

NHS Greater Glasgow and Clyde

IN MEMORIAM

In 2022, the Public Health (Health Protection) Liaison Working Group lost two long standing and valuable members. Joe Harkin (East Dunbartonshire) and Martin Keely (West Dunbartonshire) both passed away unexpectedly. They exemplified the depth of experience, commitment, and camaraderie that makes the joint working in this plan possible.

2 Signatories

Authority	Authorised signatory	Position	Approving committee	Date
NHS Greater Glasgow and Clyde	Emilia Crighton	Interim Director of Public Health	Population Health & Wellbeing Committee	18th April 2023
East Dunbartonshire	Evonne Bauer	Executive Officer	Place Neighbourhood and Corporate Assets Committee	2nd June 2023
East Renfrewshire	Caitriona McAuley	Director of Environment	Cabinet	24th August 2023
Glasgow City	George Gillespie	Executive Director, Neighbourhoods, Regeneration & Sustainability	Environment and Liveable Neighbourhoods City Policy Committee	21st November 2023
Inverclyde	Martin McNab	Public Protection Manager	Environment & Regeneration	4th May 2023
Renfrewshire	Gordon McNeil	Director of Environment, Housing, and Infrastructure Services	Communities and housing policy board	16th May 2023
West Dunbartonshire	Alan Douglas	Chief Officer, Regulatory & Regeneration	Signed on delegated authority, and elected members briefed	12th December 2023

3 Purpose

This plan has been prepared following the requirements set out in the Public Health etc. (Scotland) Act 2008. The seven signatory organisations have prepared this plan in collaboration and consultation. This plan is herewith referred to as the Joint Health Protection Plan (JHPP).

The purposes of the plan are:-

i. To provide an overview of health protection priorities, provision and preparedness for NHS GGC and partner Local Authorities.

ii. To outline the joint arrangements which NHS GGC and partner Local Authorities have in place for the protection of public health.

iii. To improve the level of "preparedness" to respond effectively to a health protection incident and emergency.

iv. To clarify the priorities for the period of the plan 2023 – 2025.

v. To develop learning across the agencies.

vi. To provide a mechanism for reviewing and recording outcomes and achievements.

The plan will be reviewed annually by representatives from Environmental Health and Health Protection and any necessary changes made and reported to the JHPP signatories. The plan will only be formally changed and updated every 2 years in accordance with legislative requirements.

4 Introduction

4.1 Public Health

Public health, as defined by Acheson, and adopted by the Faculty of Public Health is "the science and art of promoting and protecting health and well-being, preventing ill-health and prolonging life through the organised efforts of society." [1]

Traditionally public health has been divided into three domains – health protection, health promotion and health services public health, supported by public health intelligence. Though the JHPP deals only with the first of the domains, the domains overlap, interact and provide mutual support in improving and protecting the public's health.

4.2 Health Protection

Health Protection is a term used to encompass a set of activities within the Public Health function. It involves:

- Ensuring the safety and quality of food, water, air and the general environment
- Preventing the transmission of communicable diseases
- Managing outbreaks and the other incidents which threaten the public health.

The profile of Health Protection has increased significantly in recent years with issues such as immunisation, food borne infections, pandemic flu, COVID-19, healthcare associated infection and other communicable diseases regularly being in the public eye. The quality of public protection from hazards demands a workforce, educated and trained to the highest standards[2].

4.3 Environmental Health

Environmental Health has been defined as: "... that area of Public Health activity which strives to improve, protect & maintain health & well being through action on the physical environment and on life circumstances." [3]

[1] Independent Inquiry into Inequalities in Health: Report; The Stationery Office; 1998

[2] NHS Education Scotland http://www.nes.scot.nhs.uk/education-and-training/by-theme-initiative/public-health/health-protection.aspx

[3] Old Report; 2006 (commissioned by Royal Environmental Health Institute of Scotland) https://www.rehis.com/about/whats-rehis

5 Overview of NHS Board and Local Authorities

Descriptions of the seven partner organisations are included below. Detailed population statistics including population trends, deprivation and life expectancy of the population for NHS GGC and by Local Authority, as well as key indicators of health and social determinants of health are contained in an appendix to this plan.

5.1 NHS Greater Glasgow and Clyde

NHS Greater Glasgow and Clyde Health Board is responsible for the health needs of the population living within the Board's remit. Its purpose is to:

"Deliver effective and high quality health services, to act to improve the health of our population and to do everything we can to address the wider social determinants of health which cause health inequalities."

The Health Board provides strategic leadership and performance management for the entire local NHS system in the Greater Glasgow and Clyde area and ensures that services are delivered effectively and efficiently. It is responsible for the provision and management of the whole range of health services in this area including hospitals, general practice, and public health. NHS GGC works alongside partnership organisations including Local Authorities and the voluntary sector. NHS GGC serves a population of 1.14 million and employs around 39,000 staff – it is the largest NHS organisation in Scotland and one of the largest in the UK.

5.2 East Dunbartonshire

East Dunbartonshire lies to the north of Glasgow City and is bounded by the Campsie Fells and Kilpatrick Hills. East Dunbartonshire's main settlements are Bearsden, Milngavie, Lenzie, Kirkintilloch and Bishopbriggs. It also has a number of small rural villages including Twechar, Milton of Campsie, Lennoxtown, Torrance and Balmore. It covers an area of 67 square miles and has a population of approximately 108,900.

The Forth and Clyde Canal as well as the River Kelvin flow through the area attracting recreational visitors as does Scotland's best known long distance footpath, the West Highland Way that begins in Milngavie before traversing through Mugdock Country Park and the Campsie Fells.

Although East Dunbartonshire, as a whole, is less deprived than other authorities in Scotland, there are a number of specific areas within East Dunbartonshire that fall below the Scottish average.

5.3 EastRenfrewshire

East Renfrewshire is situated to the south of the city of Glasgow and its significant town centres include Barrhead, Clarkston, Giffnock and Newton Mearns.

It is a relatively affluent area with approximately half of residents working in managerial, professional or technical professions. The majority of residents work in Glasgow and less than a fifth of residents live and work in East Renfrewshire. There is an increasing pattern of more people settling in East Renfrewshire than leaving which has an impact on the demographic profile of the area and the challenges that this brings.

The quality of East Renfrewshire's built and natural environment is high with low levels of air pollution and over three quarters of residential properties within 200m of greenspace.

The Council's strategy is to consolidate and regenerate the urban areas focussing upon delivering the 3 objectives of:

1. Creating Sustainable Places and Communities;
2. Promoting Sustainable and Inclusive Economic Growth; and
3. Promoting a Net Zero Carbon Place.

5.4 Glasgow City Council

Glasgow is a city with a great history built around the River Clyde and on the strength of its people and is the most ethnically diverse city in the country. It is a city of contrasts, with parts of the city still affected by poverty and inequality. There are significant long term health challenges which stop citizens from reaching their full potential. Glasgow's vision is to have a world class city with a thriving, inclusive, economy where everyone can flourish and benefit from the city's success. The priority of the Council is to reduce inequality by creating inclusive growth through jobs and investment, tackling poverty and poor health in the city and improving neighbourhoods.

5.5 Inverclyde

Inverclyde covers an area of 61 square miles stretching along the south bank of the estuary of the River Clyde. Inverclyde is one of the smaller local authorities in Scotland. The main towns of Greenock, Port Glasgow and Gourock sit on the Firth of Clyde. The towns provide a marked contrast to the coastal settlements of Inverkip and Wemyss Bay, which lie to the south west of the area, and the villages of Kilmacolm and Quarrier's Village which are located further inland.

The Council recognises that there are a number of challenges for the area, including population decline. Inverclyde has had the largest population decline of all Scottish council areas over the period 2001 to 2021. Fewer births than deaths is the major driver of population decline locally, however a more positive picture is emerging with regard to migration with the number of people moving into the area estimated to be higher than the number moving out between mid-2016 to mid-2017, mid-2018 to mid-2019 and most recently mid 2020-mid 2021. The age profile of Inverclyde's population is similar to that of Scotland, with an ageing population that is predicted to grow, particularly in the over 75 age group.

Similar to many areas in Scotland, particularly where there has been a decline in traditional industries, Inverclyde suffers from areas of deprivation and inequality.

5.6 Renfrewshire

Renfrewshire Council is situated to the west of Glasgow on the south bank of the River Clyde and covers around 103 square miles. Renfrewshire borders Inverclyde Council to the West, North Ayrshire Council to the south and East Renfrewshire is located to the south east. Renfrewshire has a population of over 179,000, making it the tenth largest council in Scotland in terms of its population.

Paisley has the largest population of around 77,000, and forms the commercial and transport hub for Renfrewshire. The town of Renfrew lies to the north of Paisley and Johnstone to the west. Glasgow International Airport is located to the north of Paisley and is easily accessed from the M8 Motorway and Paisley Town Centre. It is one of Scotland's busiest airports. It is a key part of the transportation infrastructure of Scotland and is a major contributor to Renfrewshire's economy.

Renfrewshire Council is committed to its role as a health improving organisation and recognises its responsibility in working with partners to improve the health of local communities. This focus is essential due to the significant health inequalities that exist in Renfrewshire, linked often, to levels of deprivation within communities.

5.7 West Dunbartonshire

West Dunbartonshire is a diverse area with a rich industrial heritage still evident in the local communities today. Across the three main areas of Clydebank, Dumbarton and the Vale of Leven we see diversity from the densely populated urban centre of Clydebank to the more rural setting of the Loch Lomond and Trossachs National Park, sitting in and beyond the northern edge of the Authority.

The Council's Strategic Plan 2022-2027 identifies a number of key priorities. A common theme, across all the priorities is stronger integration of strategies and interventions aimed at addressing key challenges and realising opportunities. This is particularly true in promoting health and wellbeing, where those factors, often described as key determinants, influence options, choices and patterns of behaviour, which in turn shape health and wellbeing outcomes. Building on the collaborative strength of the Council's Covid-19 response is recognised as a vital element between agencies, the third sector and within communities.

6 Health protection: planning infrastructure

Locally, the Public Health (Health Protection) Liaison Working Group (the "Med-Vet") provides an area wide forum for discussion of the surveillance and investigation of infectious diseases (including outbreaks) and environmental hazards affecting, or with the potential to affect the health of, the general population, and to ensure that appropriate procedures are carried out during this process.

The group's remit is:

- To provide an area wide multidisciplinary forum to monitor, report, discuss and recommend actions to protect the health of our population.
- Sharing of intelligence on infectious intestinal disease in humans and animals, and surveillance of environmental hazards in air, water and land which have the potential to impact or is already damaging to the health of our population
- To agree basic minimum standards for the investigation of infectious gastrointestinal disease in the human population, and ensure that appropriate follow up action takes place
- To monitor our performance against agreed standards
- To ensure outbreak control plans are fit for purpose
- To participate in exercises to ensure that all partners are familiar with appropriate responses
- To provide a forum for discussion of issues raised by the Scottish Government, Health Protection Scotland and other relevant bodies which will have a potential to impact on the above
- To monitor untoward events and outbreaks and ensure that our systems are modified appropriately

Membership is drawn from:

- Public Health Protection Unit (PHPU) Medical and Nursing Staff
- Local Authority Environmental Health departments
- Public Health Scotland
- Diagnostic, reference and public analyst laboratories
- Infection Prevention and Control
- Scottish Water
- Drinking Water Quality Regulator
- Scottish Environment Protection Agency
- Animal and Plant Health Agency
- Scotland's Rural College Veterinary Consulting Service

The JHPP is not a stand alone document and existing plans relevant to health should be considered incorporated into the JHPP, and are not reiterated here.

There are a series of health protection plans that are prepared by the Health Board, singly or in partnership with Local Authorities and other agencies detailed in Table 1. Additionally there are a further series of plans maintained by each Local Authority which follow in Table 2. These plans are in addition to documents produced at a national level which guide health protection response, including *Managing Public Health Incidents, Scottish Waterborne Hazards Plan,* and *Scottish Framework for Exotic Notifiable Animal Disease*.

Table 1: Summary of health protection plans

Plan	Owner	Last updated	Review date	Exercised
Incident Management Plan	Med-Vet Group	2022	2025	2021, Next exercise planned for 2023
Blue-green algae plan	Med-Vet Group	2017	2022 (Main plan) Annually (inland waters risk assessment)	N/A – as the plan is used regularly during the algal bloom season, exercising is not required.
Pandemic influenza	NHS GGC LRP	April 21 Nov 21	2023 or sooner if new guidance is available	Exercised 2020 used during COVID 19
Major incident	NHS GGC	Nov 2021	Oct 22	Elements of the plan were tested in 2021 as part of the exercising for COP26
Mass casualty	SG Health Resilience	2021	Ongoing (6 monthly reviews)	Elements of the plan were tested in 2021 as part of the exercising for COP26
Glasgow Airport Port Health Procedures	Glasgow Airport ltd	2022	2025	joint training session at Glasgow Airport in October 2018, implemented in June and October 2019
Port Health guideline	NHS GGC, Renfrewshire, Inverclyde	2017	2023	

Table 2: Summary of Local Authority plans applicable to health protection

	East Dunbartonshire	East Renfrewshire	Glasgow City	Inverclyde	Renfrewshire	West Dunbartonshire
1. Official Food Controls Service Plan	✓	✓	✓	✓	✓	✓
2. Private sector strategy	✓	✓	✓	✓	✓	✓
3. Pandemic influenza	✓	✓	✓	✓	✓	✓
4. Rabies	✓	✓	x	✓	✓	✓
5. Contaminated land strategy	Under development	✓	✓	✓	✓	✓
6. Health and safety enforcement service plan	✓	✓	x	x	✓	✓
7. Council emergency plan	✓	✓	✓	✓	✓	✓
8. River Clyde flood management strategy	✓	✓	✓	✓	✓	✓
9. Fuel poverty strategy	✓	✓	✓	✓	✓	✓
10. Local Outcome Improvement Plan (LOIP)	✓	✓	✓	✓	✓	✓
11. Locality/ Place Plans requirement under the LOIP for deprived areas	✓	Under development	✓	✓	✓	✓
12. Local Development Plan	✓	✓	✓	✓	✓	✓
13. Local Housing Strategy	✓	✓	✓	✓	✓	✓
14. Air Quality Strategy/ Progress Report/ Management Area Plans	✓	✓	✓	✓	✓	✓
15. Sustainability & Climate Change Framework / Action Plan Including as applicable: - Carbon management strategy - Sustainability strategy, - Green network Strategy	✓	Under development	✓	✓	✓	✓
16. Open Space Strategy	✓	✓	✓	x	✓	✓

6.1 Scottish Health Protection Network

The parties to the JHPP also participate through the Scottish Health Protection Network (SHPN). Since 2015, the SHPN obligate network has provided a national forum of professionals working in health protection from different backgrounds, working in different places (local and national), and having different responsibilities for public health.

The SHPN has recently undergone an independent review, that found whilst the network is highly valued, and has well regarded and used outputs, it could increase its impact and required further resource to do so. The headline conclusion of the independent review team was:

The Scottish Health Protection Network is unique. It must not be lost, diluted or allowed to disintegrate. Instead, it should be cherished, strengthened and widely publicised.

The signatories to the plan fully support these conclusions, and commit to continuing to support the network through the implementation of the reviews findings, recognising the SHPN as the lynchpin in the national health protection planning infrastructure. It is recognised that to do this requires staff resource to participate in relevant groups and supporting the development of health protection guidance.

7 Health protection activities

7.1 Local and national priorities

The Public Health Priorities for Scotland as published in 2018 highlight the continuing importance of protecting the health of the population from serious risks and infectious diseases through vaccination, infection control and incident response, and the ability to respond to emerging threats, but do not identify specific priority areas for health protection.[4] The Health Board and Partners are also cognisant of the priorities as stated from time to time by Scottish Government and chief professional officers.

Key priority areas include:

- Pandemic response
- Healthcare associated infections;
- Antimicrobial Resistance (AMR)
- Vaccine preventable diseases;
- Gastro-intestinal and zoonotic infections
- Blood borne viruses
- Tuberculosis (TB)
- Environmental exposures which have an adverse impact on health[5];
- Climate and sustainability
- Migration and health
- The ongoing consequences of UK withdrawal from the European Union
- Food safety

In addition, the following were considered to be important to improve the delivery of health protection services by both the NHS and Local Authorities:

- Capacity and resilience of health protection services in responding to actual or potential significant threats to public health
- Developing means to assure the quality of health protection services
- Continuing professional development especially with regard to strengthening evidence based good practice
- Improving communications with the public on risks to health and securing a greater degree of involvement in health protection services

Actions on the key priority areas, and other health protection responsibilities include:

7.1.1 Pandemic disease/Covid-19

A comprehensive suite of pandemic flu plans based on national and international guidance, frequent flu planning "exercises", are continually updated to ensure readiness for future pandemics. These plans support the West of Scotland multi-agency pandemic influenza planning process, which is led by the Local Resilience Partnerships, close working with key partners ensuring a consistent and collaborative approach to planning.

[4] The Scottish Government (2018) Public Health Priorities for Scotland. Edinburgh https://www.gov.scot/publications/scotlands-public-health-priorities/

[5] These are referred to as "non-communicable hazards" in the reminder of the JHPP

The last two and a half years have been dominated by the Covid-19 pandemic, the most significant health shock worldwide since the 1919 influenza pandemic. Covid has impacted on every aspect of our lives – individual and community health, delivery of services, education, and economic growth

The signatories to the plan have worked together, along with other partners, including police, fire, and other statutory and voluntary organisations, through resilience partnerships to respond to the Covid pandemic, by for example:

- delivering the Test and Protect (contact tracing) services
- providing information, advice and support to businesses, industry and communities on Covid mitigation measures
- Joint working through incident management process
- Visits to commercial, industrial and public sector buildings and workplaces, to asses, advise and enforce control measures
- Setting up of temporary mortuary facilities
- Supporting education departments and head teachers to manage Covid in schools
- Care for people for those shielding or isolating – including welfare checks, assistance with food / shopping arrangements, prescription deliveries, utilities issues, financial matters, welfare issues, library materials, and general household / property matters.
- Support for calls to most socially isolated.
- Administration of isolation support and business grants

Two areas of work deserve being highlighted further – work undertaken to deliver the largest mass vaccination drive in living memory, and the design, set up and running of community testing services. The latter included innovative models for delivery, including being among the first community asymptomatic testing pilots (Renfrewshire), combined asymptomatic and symptomatic testing sites (West Dunbartonshire) and mobile testing buses (East Renfrewshire).

This work was facilitated through an operational sub group of the GGC area pandemic resilience partnership.

7.1.2 Healthcare associated infection

Prevention and control of infection continues to have the highest priority within NHS GGC and the Board Infection Control Committee (BICC), in conjunction with clinical service providers and estates and facilities colleagues, develops an annual infection prevention and control programme and associated work plan to co-ordinate and monitor all the activity of the infection control teams and committees in preventing and controlling infection through effective communication, education, audit, surveillance, risk assessment, quality improvement and development of local guidance and procedures. The programme addresses the national and local priorities for infection prevention and control and extends throughout all three domains of public health: healthcare, health protection, and health promotion.

PHPU and environmental health departments work alongside and support the Infection Prevention and Control Teams (IPCT). The Board's progress against the programme of work is reported at each committee meeting. The most up to date version of the IPC annual report, and Standard Operating Procedures (SOPs) can be accessed on the Infection Prevention and Control section of the NHSGGC website

Good practice in Infection Prevention and Control does not rest solely within the remit of our IPCT. Every member of staff has a professional responsibility to prevent healthcare associated infection and is accountable for their actions in relation to this. This plan recognises that cases of infectious disease and outbreaks in healthcare settings and cases and outbreaks in the community may be linked, and require a cross-boundary response.

The Scottish Infection Prevention Workforce: Strategic Plan 2022 – 2024 was published December 2022. This strategy covers IPCT, Antimicrobial Stewardship, and IPC aspects of health protection teams. We will work together to support the strengthening of infection prevention and control through this framework.

7.1.3 Antimicrobial resistance

Antimicrobial resistance (AMR), the ability of microbes to develop resistance to antimicrobials, rendering infections more difficult and in some rare instances, impossible to treat, is recognised as a global public health threat, compounded by the current lack of new antibiotics being developed.[6] The scale of the AMR threat, and the need to contain and control it, is widely acknowledged by country governments, international agencies, researchers and private companies alike.

Tackling antimicrobial resistance 2019–2024 - The UK's five-year national action plan was published in January 2019.[7] It sets out the UK's 2019–2024 national action plan to tackle AMR within and beyond our own borders. The plan was designed to ensure progress towards the 20-year vision on AMR, in which resistance is effectively contained and controlled. It focuses on three key ways of tackling AMR:

- reducing need for, and unintentional exposure to, antimicrobials;
- optimising use of antimicrobials; and
- investing in innovation, supply and access.

These are underpinned by actions across different areas, ranging from reducing infection and strengthening antibiotic prescribing stewardship to improving surveillance and boosting research.

Specific initiatives that are being taken forward out with the acute setting in NHS GGC include:

- Following delivery of the Scottish Reducation in Antimicrobial Prescribing Programme (ScRAP) to all GP practices and a number of care homes in 2017/18, targeted audits and education continue as required.
- Guidelines are in use and available in various formats, and utilised in GP system prescribing support.
- Target prescribing indicators: a 10% reduction of antibiotic use in Primary Care (excluding dental) by 2022, using 2015/16 data as the baseline (items/1000/day).
- GP practices receive data reports from National Services Scotland on their antimicrobial prescribing three times a year, which supports discussion and review. This compliments other local and national data access.

[6] https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2647/documents/1_SONAAR-report-2017-revised-november-2019.pdf

[7] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/784894/UK_AMR_5_year_national_action_plan.pdf

7.1.4 Vaccine preventable diseases

Information on national immunisation programmes, including the timetable of routine childhood immunisations, can be found by visiting http://www.immunisationscotland.org.uk/when-to-immunise/immunisation-schedule.aspx

Uptake rates for routine childhood, HPV and teenage booster vaccines in the national programme are available from http://www.isdscotland.org/index.asp

The ongoing challenge is to encourage and maintain high uptake of vaccines, including covid and 'flu, in target groups across the Health Board area.

Immunisation programmes in NHS GGC are coordinated by the Health Protection team providing leadership, programme management, education and training and support to primary care, children and families teams and school immunisation teams who administer the vaccines.

Scottish Government announced a Vaccination Transformation Programme (VTP) in early 2017, with the aim of ensuring the health of the Scottish public through the modernisation of the delivery of vaccinations, empowering local decision making and supporting the transfer of vaccination from General Practice to alternative models of delivery, was completed in April 2022. The Scottish Vaccination & Immunisation Programme, will take the learning from the VTP and the coronavirus vaccination programme into a new operational and performance framework, led by Public Health Scotland.

7.1.5 Gastro-intestinal and zoonotic infections (GIZ)

There is close joint working between NHS GGC and Local Authority Environmental Health professionals on GIZ, including through an agreed enteric investigation protocol, the outbreak control plan, and training events and exercises. Gastro-intestinal infections are the largest single group of infectious diseases that benefit from the joint working between the signatories of this plan. The Health Board and Local Authority Environmental Health professionals work closely with colleagues from national agencies such as Food Standards Scotland, HPS, and animal health in responding to incidents and outbreaks, and the development of guidelines, including via the SHPN topic groups.

The West of Scotland Regional Resilience Partnership has reformed their animal health sub-group to aid in the co-ordination of resilience activities in relation to zoonotic disease. In addition, national plans are available e.g. rabies, which are regularly exercised, and which support local preparedness for zoonotic infections.

Escherichia coli O157 and other Shiga toxin-producing E. coli (STEC)

STEC (also known as verotoxic *E. coli*, VTEC) is the most serious enteric infection that is regularly notified to health protection services, with approximately 40 cases a year notified to PHPU. STEC require a rapid co-ordinated response to minimise risk of further transmission and to identify potential source. The final report on the Scottish VTEC Action Plan[8], and the revised Scottish STEC public health guidance were published at the end of 2018[9]. Parties to the JHPP were involved in the development of these documents, which aim to reduce the risk of STEC across Scotland and ensure the best evidence based response from all agencies.

[8] https://www.hps.scot.nhs.uk/web-resources-container/delivering-the-vtece-coli-o157-action-plan-for-scotland-final-report/

[9] https://www.hps.scot.nhs.uk/web-resources-container/guidance-for-the-public-health-management-of-escherichia-coli-o157-and-other-shiga-toxin-producing-stec-infections/

7.1.6 Bloodborne Viruses (BBV)

NHSGGC's approach to BBVs is guided by the Scottish Government Sexual Health and Bloodborne Virus Framework 2015-2020, which is currently being updated, following interruption due to the Covid-19 pandemic

Hepatitis C

New drug therapies have radically changed hepatitis C prognosis, and for the majority of people infected it can be cured with 12 weeks of treatment. Much of the Health Board's effort is focussed on finding and treating people so that they can be cured and to contribute to the Scottish elimination targets.

In 2019, the Minister for Public Health in Scotland announced new national annual Hepatitis C treatment targets (3000 people to be treated a year for the period 2020-2024) and a target date for elimination in Scotland (2024), six years ahead of WHO expectations. Prior to COVID-19, NHS GGC consistently exceeded its treatment targets, and efforts are underway to get that back on track. The Viral Hepatitis Managed Care Network co-ordinates and directs specific programmes around testing, treatment and care such as routine testing; case-finding of people who are lost to follow-up and developing appropriate models of care, including community outreach in Addictions settings. Prevention is focused on Injecting Equipment Provision to people who inject drugs and on treatment as prevention.

HIV

There is very effective treatment which means that people living with HIV can live long and healthy lives and those who achieve and maintain an undetectable viral load are unable to transmit the virus to others. This is known as 'treatment as prevention' and is a key component of our prevention strategy.

Prevention programmes are in place to raise awareness, encourage testing and prevent both initial and onward transmission. This includes a comprehensive Free Condom Service and a targeted clinical and health improvement programme aimed at men who have sex with men

In 2015, an outbreak of HIV was identified among people who inject drugs (PWID) in the Greater Glasgow and Clyde (GGC). Interventions to limit further transmission, include outreach treatment services, community prescribing of HIV medication and a sustained focus on testing those at risk.[2] PrEP (Pre-Exposure Prophylaxis) aimed at people who are HIV negative but at high risk of acquiring the infection is being piloted for people who inject drugs to prevent sexual transmission.

7.1.7 Tuberculosis (TB)

TB cases across Scotland have fallen over the last decade, with a 40% decrease in cases since the peak in 2010. NHS GGC has the highest rate of TB in Scotland, at 8 per 100,000 population in 2021, representing around half of all cases in Scotland. In NHS GGC, case numbers have levelled off over the last few years to around 100 cases per year. However, TB cases are becoming more complex, with about half of all cases requiring enhanced case management (ECM)

The current TB Framework (updated version V1.1 published in May 2018), builds on the Scottish Government TB Action Plan, published in 2011. The TB Framework sets out the SHPN's strategy in

[2] https://www.nhsggc.org.uk/your-health/public-health/public-health-protection-unit-phpu/bloodborne-virus/hiv/hiv-infections-in-people-who-inject-drugs-update-2019/

relation to tuberculosis control for the period 2017-2021. Specifically, the Framework supports this by:

- Encouraging engagement with those most at risk of tuberculosis to ensure that they are able to benefit from our NHS services
- Seeking to ensure that effective treatments, interventions, support and services are provided to people when they need them, while at all times working in partnership with our stakeholders to ensure that services provided are evidence based and appropriate
- Striving to ensure that people are able to maintain high levels of health, good relationships and positive wellbeing including adequate housing and nutrition.

The Framework can be found at
https://www.hps.scot.nhs.uk/web-resources-container/tb-framework-for-scotland/

7.1.8 Non-communicable hazards

Environmental Health is concerned with the effects on health of a wide range of chemical and physical risk factors. These may be present **either in the indoors or out of doors environment.** Increasingly, this area of public health protection is concerned with the wider health impacts of natural and built environment and on mitigating the impacts of climate change.

Exposures to chemical or physical agents differ in a number of other ways from exposures in association with lifestyle or occupation, as follows:

- Concern is usually with low-level exposures which are difficult to measure and difficult to link to disease;
- Exposures often occur to complex mixtures rather than just to a single agent;
- It may be difficult to estimate historical levels of exposure;
- Measurement of small effects associated with low-level exposures on common diseases may be difficult and may be beyond the capability of conventional epidemiology.
- Pathway of exposure may be uncertain or difficult to establish. Pathways include the inhalational, ingestion and dermal contact pathways.

Issues in non-communicable hazards in the area of NHS GGC include the following:

Air pollution is an example of an environmental exposure with a well-known epidemiology, particularly in relation to particulate matter (PM10 and PM 2.5). Other pollutants of concern include nitrogen oxides (NOx) and the “greenhouse gas”, carbon dioxide.

All Local Authorities have a duty to regularly review and assess air quality within their area and report the findings to the Scottish Government on an annual basis. Statutory air quality objective levels for specified pollutants are set out in the Air Quality (Scotland) Regulations 2000 and subsequent amendments. Where objective levels are not being achieved the area must be designated an Air Quality Management Area (AQMA) and an Air Quality Action Plan (AQAP) published, outlining action measures the Council are taking forward to improve air quality in those areas, leading to higher overall standards of air quality.

Glasgow City Council and the Scottish Government are partners in the introduction of the first Low Emissions Zone (LEZ) in Scotland, as part of a plan to introduce LEZs to Scotland’s four largest cities. The main aim of the LEZ in Glasgow will be to bring air quality into compliance with the national standards. The LEZ came into effect in Glasgow city centre on 31 December 2018. Glasgow's LEZ is being phased in and to start with, will only apply to local service buses. On 31 December 2022, on

full implementation, all vehicles that enter the zone will be required to meet specified exhaust emission standards.

Waste disposal: Landfill has historically been a common way of disposing of domestic, industrial and hazardous waste, although the use of landfill for this purpose will decrease dramatically in the near future. The Scottish Government Zero Waste Strategy, first published in 2010, includes targets for waste reduction and for70% of the remaining waste to be recycled, with a maximum of 5% going to landfill, by 2025.

The Glasgow Recycling & Renewable Energy Centre (GRREC) is a state-of-the-art residual waste treatment facility located at Polmadie in Glasgow, which became operational in 2019. The GRREC is a key component of the Council's response to the climate emergency and designed to help drive Glasgow towards becoming a more sustainable city.

Historically, all residual waste (waste that cannot be re-used or recycled) would have been landfilled. The environmental challenges associated with landfill are well-documented; in particular their impact on climate change through the release of greenhouse gases as biodegradable waste breaks down. As the Council moves away from landfill as the main way to manage residual waste, the GRREC provides a modern and sustainable treatment solution that is aligned to the Council's ambition of becoming a carbon neutral city.

Figures on domestic waste disposal are published by SEPA and are available at https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/household-waste-data/.

Environmental asbestos exposure: Asbestos is well established as an environmental risk factor with a widely accepted epidemiological framework for risk assessment. Asbestos has been widely used in the urban built environment and exposures may occur in a range of situations, including factory fires and demolition of blocks of flats. A study of the possible health effects of asbestos from the demolition of high rise flats in Glasgow has demonstrated that risks from such activities are extremely low, though precautionary environmental monitoring during works has been carried out.

Smoke free hospitals: Scotland has been a leader in removing smoking from public places, and this has been supported through the work of signatories to this plan. New legislation now makes it an offence to smoke outside hospital buildings, and the local partners are working together to promote and enforce this change. A sub-group of Med-Vet, with Local authority and NHS Health Improvement team representation is taking this work forward.

7.1.9 Climate and sustainability

The 26th session of the Conference of the Parties (COP 26) to the United Nations Framework Convention on Climate Change (UNFCCC) took place in November 2021, in Glasgow, UK. NHS GGC and the relevant Local Authority environmental health teams contributed to the health role in the multi-agency command centre, and other organisational “cells” to support the success of the largest diplomatic and civil society event ever held in the UK. The Glasgow Agreement provides an opportunity to build on the legacy of COP26, and to embed sustainability and climate adaptation and mitigation into all workstreams.

7.1.10 UK withdrawal from the European Union

The impact of the UK's withdrawal from the EU will directly affect the work of Environmental Health. Export Hubs have been set up to facilitate Scottish businesses exporting their trades and commodities. Both port and inland local authorities continue to monitor compliance of foodstuffs which are imported and exported. Proposals to increase checks on imported food from the EU were due to come into force in 2022 but have been delayed until late 2023 at the earliest. If these are fully brought in then they may yet require significant resource input from Environmental Health services with the development of additional Border Inspection Posts (BIPs).

The majority of legislation enforced by Environmental Health is derived from European legislation including food law, occupational health and safety, water quality, air quality, contaminated land etc. Most laws and regulations have now been amended for domestic purposes whilst maintaining previous standards however implementation of these have at times been delayed due to the conflict in Ukraine and the impact on consumer markets. There may further changes to the legislative landscape in the coming years.

7.1.11 Migrant health

There is a long history of migration into the West of Scotland, with communities developing over many decades and generations. This inward movement continues, and Greater Glasgow and Clyde includes some of the most ethnically diverse communities in Scotland, with an increase in the BME population from 3.6% in 2001 to 7.5% in 2011, well above the Scottish national average.

Some of the migrant groups and the communities they live in are more vulnerable than the general population, due to a number of factors including deprivation and living conditions, prior access to healthcare (including vaccination), barriers to accessing services (such as culture, language, stigma), limited social networks and isolation, and their own lived experiences. These vulnerable communities require additional support of public health services compared to more settled populations.

The war in Ukraine has increased the number of new migrants into the West ofScotland, supported by the Scottish Government's role as a visa "super sponsor". Local Authorities have led on the inspection and licensing of accommodation. Work streams across a whole range of services have been progressed rapidly with joint working between local government and health and social care partnerships, and will continue to require significant resource from partners during the period of this plan.

7.1.12 Food safety

Scottish Authorities Food Enforcement Rebuild (SAFER) has been launched by Food Standards Scotland (FSS) as a collaborative approach to modernise the national approach to managing the public health risk from food safety.

It has been recognised that there is significant risk of the capacity in local environmental health services failing to provide the resource to meet all aspects of the statutory requirements of the Food Law Code of Practice. To mitigate this risk FSS are seeking to work with LA's to redefine and develop a framework for Food Law that will deliver the following aims:

- Public health protection & assurance
- Sufficient , sustainable and dynamic resource
- Alternative qualification pathways
- A Food Law delivery model focused on risk and non-compliance
- Vital training and practical guidance.
- Technological and digital solutions.

This is essentially starting with a blank sheet of paper and is the biggest change to food law delivery since the Pennington Report. It will require significant resource to complete and FSS have asked LA's to:

- Release Environmental Health staffing resource to help design and deliver the SAFER programme
- Continue to deliver core functions whilst the programme is developed. FSS will provide relaxations during the process.
- Re-invest the resources saved through SAFER back into food law enforcement
- Protect existing resources for food law enforcement to ensure public health protection and assurance in the food industry

How this impacts the wider EH resource and capacity is unknown at present but should become apparent as the SAFER projects moves forward in 2023. A programme plan is being worked on which should give an indication of the pathways and timescales to completion.

7.2 Local Authority Environmental Health

Examples of local health protection priorities carried out within Local Authorities by Environmental Health Officers and other professional staff, are outlined below. Many are requirements of statute, in order to protect the health of individuals living and working in our communities. In addition to specific priorities listed below, Local Authorities work to prepare for and respond to emerging threats in collaboration with NHS GGC and HPS.

- Reducing harmful air pollutants, such as particulate matter and NO_2;
- Statutory Nuisance (including controlling environmental noise, , odours, drainage/sewage problems, waste water spillage, minor housing disrepair, etc);
- Communicable disease control;
- Investigation and control of contaminated land; including actively promoting contaminated land remediation using the Councils' planning and development processes;
- Housing standards (including private sector, housing conditions, building disrepair);
- Drinking water quality;
- Pest control;
- Protecting health and consumer interests in relation to food by working with partner organisations and local business, implementing nationally set standards and minimising the risk of food poisoning incidences and outbreaks through inspection, training and initiatives; these activities include tackling the problem of food fraud, and an increasing focus on improving diet and nutrition.
- Maintaining the health of the working population through regulation of workplace safety and through inspection, awareness raising, training etc., and minimising the risk of ill health caused by occupational health exposures including stress,;
- Minimising the risk of exposure to environmental incivilities such as dog fouling, litter, illicit tipping, graffiti – there being a growing body of evidence that links stress to aspects of mental health and wellbeing, but also to physical disease- psychosocial dimension;
- Minimising the risk of environmental exposure to tobacco smoke, including secondary exposure through inspection, enforcement (e.g. preventing sale of tobacco to under 18s with colleagues from Trading Standards), awareness raising of smoking in public places legislation;
- Activities concerning alcohol consumption regulation through licensing standards legislation – including enforcement, education and awareness raising work;
- Protecting the health, welfare and safety of the public through raising standards of premises licensed for the sale of alcohol together with premises licensed for other purposes, e.g. tattooists and skin piercers;
- Protecting the health, welfare and safety of the public through regulating standards at events licensed for public entertainment; Promoting community health and well-being by protecting public health through educational and advisory services.
- Working with Scottish Water to support delivery of the 2015-2027 improvement plan ("Quality and Standard 4") and with the Drinking Water Quality Regulator (DWQR) on standards of private water supplies.
- Activities related to animal health, including tick-borne diseases and the risk of rabies in imported animals, which remains very low due to existing control programmes

7.3 Unique health protection risks and challenges within NHS GGC

7.3.1 Contaminated land

The issue of contaminated land causes considerable public anxiety not only because of effects on health but because of possible effects on housing markets. Contaminated land may represent a risk factor for health in local populations although the nature and scale of the risk depend on the type of contamination. The contamination is usually the result of historical use of land for industrial purposes.

In Glasgow, parts of the south east of the city and in to South Lanarkshire are contaminated with chromium as a result of the operations of the former chromium industry in the area. Several epidemiological studies have been carried out in the affected areas, and to date no detrimental effects on health have been demonstrated. In 2019, Clyde Gateway carried out remediation works with the aim of reducing hexavalent chromium contamination in the West Burn and Polmadie Burn, linked to historic chemical works in the area. These works are part of a wider strategy to deal with historic contamination and bring about the development and regeneration of the area.

Similarly, West Dunbartonshire have addressed areas of contamination through local development plans, redeveloping sites along the Clyde waterfront, including the former John Brown's shipyard and adjoining sites, collectively identified as Queens Quay in Clydebank, the Carless site in Old Kilpatrick, the Exxon site in Bowling and Dumbarton waterfront. Inverclyde also continue to address contaminated land and brownfield sites.

7.3.2 Lead in drinking water within Schools and nurseries

Lead does not occur naturally in any significant quantities in water supplies. However higher than normal lead levels can occur when pipes in properties – particularly if built pre-1970 – come into contact with lead supply pipes.

Scottish Water provides the public water supply in Scotland and it has responsibility for the part of the service pipe and connection within the street. Where they encounter lead pipes within their ownership, they automatically replace those with modern materials.

All school and nursery premises constitute public buildings where members of the public may consume drinking water. There are established mechanisms, as required by the Public Water Supplies (Scotland) Regulations 2014, between Scottish Water and Environmental Health teams, to enforce remedial works.

A team of Scottish Water, NHS and local authority staff are checking water supplies are lead-free at more than 1500 independent nurseries, after school club and schools. Testing in public sector schools is carried out by relevant local authorities. As the global pandemic hit investigations had already been completed at 46% of the establishments identified, with samples taken from 2,820 taps and work ongoing to resolve any issues identified.

When the scheme has been completed, drinking water supplies at all independent schools and private nurseries in Scotland will meet the standard for lead, supporting the health and educational attainment of pupils.

7.3.3 Glasgow Region City Deal

The Glasgow City Region City Deal is an agreement between the UK Government, the Scottish Government and eight Local Authorities across the Glasgow City Region comprising: East Dunbartonshire; East Renfrewshire; Glasgow City; Inverclyde ; North Lanarkshire; Renfrewshire; South Lanarkshire; and West Dunbartonshire Councils. The Glasgow City Region City Deal will fund major infrastructure projects; create thousands of new jobs and assist thousands of unemployed people back to work; improve public transport and connectivity; drive business innovation and growth and generate billions of pounds of private sector investment.

The City Deal will provide:

- **Improved infrastructure** – £1.13 billion fund to support the delivery of improved transport and connectivity across Glasgow and the Clyde Valley and key development and regeneration sites.
- **Growth in life sciences** – establishment of world class research and development and commercialisation facilities.
- **Supporting business innovation** – providing additional business incubator and grow-on space for entrepreneurs across the Region enabling more small and medium enterprises to grow.
- **Tackling unemployment** – creation of thousands of new jobs and establishment of programmes to provide targeted support to 16-24 year olds and vulnerable residents, and testing new ways of boosting the incomes of people on low wages to make them more self-reliant.

7.3.4 Port health

Within the Board area there is a large international airport (Glasgow International airport) and a large seaport (Greenock), as well as smaller seaports. Glasgow Airport has direct flights to many international destinations including Europe, the Middle East and the Americas. Port of Greenock operates year round as a major freight terminal, and between April and October has increasing numbers of cruise ships. A new cruise berthing facility was opened in Greenock in 2021 with a new terminal building opening in time for the 2022 cruise season. Both of these developments were supported by the Glasgow City Deal. West Dunbartonshire provides for Port Health at its Clydebank port location at Rothesay Dock, receiving commercial shipping.

There are long established plans between NHS GGC and Renfrewshire Council for Glasgow Airport, and with NHS GGC and Inverclyde for dealing with incidents involving the Port of Greenock. These plans regularly reviewed and updated. Plans will be reviewed to ensure contingency and public health resilience for the Clydebank port.

There has been an expectation that aircraft and port regulations will be updated since the introduction of the Public Health etc (Scotland) Act 2008. The desire to develop these alongside updates in other UK jurisdictions, has delayed this review. Current plans and arrangements will be reviewed and updated if necessary as a result of any changes to the regulations.

7.3.5 Impact of Tourism & Cultural Events

There has been an increase in the number of visitors to Scotland generally but specifically to locations in the NHS GGC area. This is through an increase in cruise ships arriving through the Port of Greenock in Inverclyde as well as the increase in international flights at Glasgow airport in Renfrewshire. The number of hotels rooms in the area has increased. The influx is particularly apparent during the summer months when there are a number of music festivals in the Glasgow area.

This can present particular health protection challenges such as the importation of unfamiliar or non-endemic communicable diseases, opportunities for transmission during mass gatherings, and the potential for mass exposure to point source environmental hazards. It also requires maintenance of good relationships across health board boundaries, across the 4 Nations, and, via the International Health Regulations National Focal Point, further afield.

7.3.6 Private water supplies

Environmental Health teams are responsible for regulating private water supplies. Private water supplies are those which are not provided by Scottish Water. The source of the water may be from springs, wells, boreholes, rivers or lochs. These can supply residential properties or commercial premises which vary from food businesses to rented cottages. The supplies are sampled according to a risk assessment to test for chemical and microbiological contamination to ensure their safety for public use. Enforcement action is taken where necessary to secure improvements to failing supplies and follow up cases of waterborne disease or contamination in the supply

7.3.7 Control of Major Accident Hazards (COMAH) Sites

Within the NHS GGC boundary there are six upper tier COMAH sites. In accordance with COMAH legislation, each of these sites has a multi-agency off-site incident management plan. These plans are developed by resilience partners, which include the Health Board and relevant Local Authorities, as well as emergency services and other agencies. These plans are updated and tested on a regular basis in accordance with the relevant legislation.

The sites are

- Provan gasworks (Glasgow)
- NuStar-Clydebank terminal (West Dunbartonshire)
- Chivas Brothers Dumbuck (West Dunbartonshire)
- Chivas Brothers Dalmuir (West Dunbartonshire)
- Beam Suntory and John Dewar and Sons Ltd, Westthorn Site (Glasgow)
- Diageo, Blythwood (Renfrewshire)

Additionally, NHS GGC have a mutual aid agreement in place with NHS Highland to provide initial response and subsequent support for incidents relating to HMS Naval Base Clyde (Faslane/Coulport).

7.4 Significant incidents and outbreaks in recent years

Table 3: Significant incidents and outbreaks with joint health protection response from 2018 to 2022 (not otherwise covered in the plan).

Situation	Dates	Description
Glasgow 2018 European Championships	2018	Glasgow 2018 European Championships were held 1st – 12th August 2018. Six groups of events, involved 3025 athletes, and a total of 8500 participants, including officials and others. Eight venues across the NHS GGC area were used for three groups of sports (aquatics, cycling and gymnastics), with rowing and triathlon based in Lanarkshire, and golf in Ayrshire. NHS GGC and NHS Lanarkshire shared health role in the multi-agency command centre.
Port Health call outs	2018-2019	Renfrewshire Council EHD and NHS GGC PHPU jointly responded to a number of Port Health call outs to Glasgow International Airport. Each situation requires individual risk assessment, and advice given includes personal hygiene, environmental cleaning and other aspects of infection control. No wider threat to public health was identified in these incidents.
Clusters of gastrointestinal pathogens identified through Whole Genome Sequencing (WGS)	2018-2019	Following the introduction of routine whole genome sequencing (WGS) of gastrointestinal pathogens in Scotland, a number of case clusters were identified, (with isolates of identical/ near identical sequences indicating a common source), with cases spread across different Scottish NHS boards, and/ or across the UK. The investigation of several clusters involving GGC residents (for a range of pathogens including e-coli, salmonella and shigella), were supported jointly by the respective environmental health teams and NHS GGC PHPU, through case interviews (including trawling questionnaires to identify potential food sources), and inspection and environmental sampling at implicated food premises where indicated.
Non A-E Hepatitis	2022	A cluster of cases of hepatitis of unclear origin were identified by paediatricians at the Royal Hospital for Children in Glasgow. Research by the University of Glasgow identified preceding adenovirus infection as a possible trigger along with a possible genetic predisposition. Trawling questionnaires were conducted locally and extensive testing was conducted by laboratory colleagues to identify potential causative agents.

Situation	Dates	Description
Incidents in childcare, school and higher education settings	2018-2019	NHS GGC PHPU and environmental health and other Local Authority colleagues routinely collaborate to investigate incidents in childcare, school and higher education settings. Examples of such incidents in the last two years included: Hepatitis A diagnosis of a primary school pupil: Mass vaccination arranged for pupils and staff in school, and environmental health advice was provided to the school regarding hygiene measures. Schistosomiasis diagnosis of a secondary school pupil following a school trip to Malawi: Advice was provided to all other pupils and staff involved in the trip (common exposures) to get screened for Schistosomiasis in primary care Contacts of a measles case, who had attended a school event at a local University: contacts were identified and advice provided in collaboration between HPS, NHS GGC PHPU and the schools whose pupils had attended the event. Norovirus outbreaks in schools and nurseries: Support and infection control advice by environmental health and NHS GGC PHPU is routinely given to schools and nurseries experiencing norovirus outbreaks (with increases in norovirus activity in such community settings usually seen over the winter months).
Zoonotic incidents / incidents related to pet exposures	2018-2019	Over the last two years, a small number of cases of zoonotic infections in the GGC area for which domestic pets were identified as the most likely cause of infection were investigated jointly. This included cases of psittacosis (with pet birds as the likely source) and Seoul Hantavirus (with pet rats as the likely source). EHOs visited any affected household as appropriate to assess the circumstances, and advise in collaboration with PHPU on the appropriate control measures and infection control advice. Several staff of a veterinary practice received post-exposure prophylaxis for rabies after handling an aggressive dog, which originally stemmed from an eastern European country where rabies is endemic. The dog was euthanized and a post-mortem was conducted to exclude rabies. An imported Romanian dog with brucellosis required extensive contact tracing in collaboration with PHS and West Dumbartonshire EHOs. Several veterinary practices were contacted and referrals made to HPTs in Ayrshire and England
Polmadie and West Burn contamination	2019	Clyde Gateway, in collaboration with the Scottish Environment Protection Agency (SEPA) and Glasgow City Council have carried out remediation works to reduce hexavalent chromium contamination in the West Burn and Polmadie Burn, linked to historic chemical works in the area.

8 Health protection: resources and operational arrangements

8.1 Staffing and ICT resources

"Competent person" is a designation under the Public Health etc (Scotland) Act 2008 and subsequent regulations, and indicates an individual designated by the Health Board or Local Authority, who is empowered to use the relevant powers listed under the Act. In NHS GGC there are 16 individuals who are designated as competent persons, supported by a further nine staff members (including TB specialist nurses, epidemiology and analytics staff, civil contingencies planning unit and other senior staff).

Table 4 demonstrates the numbers of competent persons and other staff in each organisation as full time equivalents. Staffing resource may fluctuate during the period covered by the plan.

Table 4 Competent persons and other staff contributing to the public health protection function by Local Authority

	Competent persons designated under the Public Health etc (Scotland) Act 2008 (FTE)	Others who contribute to public health protection functions (FTE)
NHS GGC	15.2	15.4
Glasgow City	26	52.7
East Dunbartonshire	11	2
West Dunbartonshire	11	9
East Renfrewshire	6.3	3.2
Renfrewshire	11 + 1 vacant	11.5
Inverclyde	8	8

All partners have access to IT equipment relevant to their roles, including desktop and laptop computers, mobile telephones and email. In common with all other NHS territorial boards, PHPU uses the HPZone case and incident management system to manage workflow and to act as the formal record of PHPU response. Additional statistical and epidemiological software and tools are available in PHPU to assist in outbreak response.

8.2 Out of hours/on-call arrangements

8.2.1 NHS GGC

NHS GGC maintain a 24/7 public health service. During office hours (Mon-Fri 9am to 5pm) duty Health Protection Nurse Specialist (HPNS) or Consultant in Public Health Medicine (CPHM) can be contacted via the PHPU office. Outside office hours the on-call public health services can be accessed via the NHS GGC switchboard. There is a CPHM available at all times, and they are able to mobilise additional resource in accordance with incident management plans. It is anticipated that ongoing organisational change work will provide increased weekend daytime capacity.

8.2.2 East Dunbartonshire

During office hours (Monday to Friday 9am to 5pm) Environmental Health staff can be contacted on 0300 123 4510 and by email on environmental.health@eastdunbarton.co.uk. Out of hours a member of the management team can be contacted by telephoning the above number.

8.2.3 East Renfrewshire

The Council has no specific out-of-hours Environmental Health provision. However, the Council is part of the Civil Contingencies Service which has on-call officers and, within the Council's Emergency Plan, there are arrangements that enable the Council's 24-hour Contact Centre to contact key Environmental Health staff should there be an emergency.

8.2.4 Glasgow City

A call centre responds to calls 24/7 and during office hours (Mon-Fri, 9am-5pm) information will be forwarded to Environmental Health Officers. An Environmental Health Officer may be available at weekends (9am-5pm) and there may be one EHO available between 5pm and 3.00am every night (excluding public holidays). The call centre will forward information to the appropriate officers at weekends and after 5pm. Between 3.00am and 9am the call centre will direct all emergency calls to one of four Assistant Managers or the Group Manager.

8.2.5 Inverclyde

Office hours are 8:45 – 16:45 Monday to Thursday and 8:45-16:00 on Friday. Out of hours contact in the event of an outbreak or incident is by direct contact with the Public Protection Service Manager, the Health Protection Team Leader or the Public Health & Housing Team Leader. For emergencies and incidents which extend beyond a single service response the council's Civil Contingency Service provide a 24/7 response which would include the activation of a Council Incident Officer (CIO) to manage the council's response.

8.2.6 Renfrewshire

Renfrewshire Council Environment & Communities operates an emergency on call service. Outside of office hours a mobile telephone number is manned 24 hours for response to health protection emergencies. This is staffed by EHOs on a rotational basis and all officers are listed as Competent Persons. The on call service covers Port Health emergencies at Glasgow Airport which are responded to jointly by Renfrewshire Council EHOs and Consultants in Public Health Medicine from NHS GGC. Renfrewshire Council has an Emergency Contacts Directory which lists all appropriate persons in Renfrewshire Council for contact in an emergency

8.2.7 West Dunbartonshire

Contact with WDC Environmental Health during normal working hours is via phone or email (0141 951 7957 environmental.health@west-dunbarton.gov.uk). WDC has a system of emergency contact (phone and email) for Environmental Health in the event of public health incidents and emergencies arising out-of-hours through the Civil Contingencies Service. This system provides for contact of senior officers with capacity to initiate a service response. WDC Emergency Controller – Council Out of Hours Emergency Contact 0800 197 1004

8.3 Standard Operating Procedures

The PHPU within NHS Greater Glasgow and Clyde and the six Local Authorities have Standard Operating Procedures (or similar) which are subject to regular review. Many of these relate to health protection, food safety and food hygiene. SOPs are subject to regular audit. The Med-Vet Group has produced a joint protocol for the epidemiological investigation and surveillance of infectious intestinal diseases which is followed by both the Board and the Local Authorities. It describes how PHPU and colleagues in the Local Authorities deal with cases of infectious intestinal diseases such as salmonella and E coli O157.

8.4 Maintaining knowledge and skills

8.4.1 NHS GGC

All consultants and registrars who take part in duty rota are required to maintain their skills and record continuing professional development (CPD) activities with the Faculty of Public Health (FPH) or alternative Royal College. FPH carry out random audits of members' CPD returns. Maintenance of CPD records is also checked at yearly appraisals carried out in the Board. This is in keeping with current General Medical Council (GMC) requirements on revalidation and appraisal for doctors.

Similar arrangements are in place for HPNS, in accordance with the Agenda for Change Knowledge and Skills Framework process and nursing revalidation.

8.4.2 Local Authorities

Local Authority Environmental Health professionals generally have a Performance Development Review, or equivalent, on an annual basis. The majority of EHOs undergo ongoing training to maintain the necessary skills and competencies on a wide range of public health and environmental matters, including health protection. In addition, there are specific requirements in terms of ongoing CPD and experience required for food enforcement. Many environmental health professionals also take part in the Royal Environmental Health Institute of Scotland (REHIS) scheme of CPD, and can gain and maintain Chartered Status as an Environmental Health Officer.

Local Authority Environmental Health services participate in a number of liaison groups, e.g. West of Scotland Food Liaison Group, West of Scotland Health and Safety Liaison Group, Public Health and Housing Working Group and the Central and West of Scotland Pollution Control Group. At these liaison groups, new legislation, guidance, consultation documents, common issues of interest and difficulties that authorities are experiencing are discussed and common approaches determined. These groups also provide a network where Environmental Health Professionals can contact other group members outwith meetings for advice and information.

8.4.3 Joint training

The Med-Vet Group routinely shares details of relevant training opportunities and conferences, and arranges joint visits to appropriate site visits (ie water treatment works, waste management). Joint training sessions between GGC PHPU and Local Authority environmental health staff are also held.

9 Health protection services: capacity and resilience

In the GGC area there are a number of emergency plans that are reviewed, exercised and updated on a regular basis, which are detailed earlier in this plan.

PHPU works closely with the NHS GGC Civil Contingencies Planning Unit. All signatories to this plan are members of the multi-agency West of Scotland Regional Resilience Partnership and the appropriate Local Resilience Partnership(s).

Four Local Authorities are members of a Joint Civil Contingencies Service (CCS). This is based in Paisley and covers East Renfrewshire, Inverclyde, Renfrewshire and West Dunbartonshire Council areas. The CCS provided the secretariat and supported a number of working groups covering the whole NHS Board area during the pandemic.

A memorandum of understanding exists between the West of Scotland NHS Boards (NHS Ayrshire & Arran, NHS Dumfries & Galloway, NHS Greater Glasgow & Clyde, NHS Highland (for Argyle and Bute) and NHS Lanarkshire) to provide mutual aid in public health emergency situations.

In addition, NHS Ayrshire & Arran, NHS Dumfries & Galloway, NHS Greater Glasgow & Clyde and NHS Lanarkshire have agreed to work together to provide appropriate personnel to form a Scientific and Technical Advice Cell (STAC) to advise the West of Scotland Regional Resilience Partnership in emergency situations. A similar memorandum of understanding exists between the thirteen Local Authorities of the West of Scotland Regional Resilience Partnership. This enables councils to support each other during emergencies if required.

9.1 Public Health Workforce

It is recognised locally and nationally that there have been both historic and current challenges in recruiting and retaining specialist health protection workforce, across all partners and agencies. There has been some legacy benefit from the pandemic response, with Scottish Government providing support for there to be an improved resilience and capacity in health protection teams. Though most of the structures across Test, Trace, Isolate and Support programmes have now been stood down, there have been a small number of additional permanent staff, for example new nursing and data analyst roles in PHPU. However this needs to be seen in the context of historical under-resourcing of health protection teams, remaining gaps in consultant level staffing across Scotland, and the very tight financial position, which is affecting all public services.

Prior to the pandemic a number of short, medium and long term actions were proposed to increase the resilience of the Environmental Health Workforce which was suffering from an ageing staff demographic and a fall off of new entrants to the profession. Although there was support for a number of these at varying levels the impact of the pandemic together with the subsequent stresses on the Scottish Government budget has meant that there has not been as much progress in some areas as might have been hoped for.

One area where there has been significant progress is in the change in the Environmental Health degree, currently offered by the University of the West of Scotland. This has moved to encompass the practical training required by REHIS prior to professional qualification.
Previously graduates had to find training places after their degree often against a background of local government cuts. This resulted in a failure for some to enter the profession with a concomitant impact on the popularity of the Environmental Health course. It is hoped that the professional experience element will make it easier for graduates to enter the profession and have a knock on effect on the popularity of Environmental Health as a career option.

10 Health Protection: public involvement and feedback

There are a number of different ways that the Health Board and Local Authorities consult and engage regularly with the public. These include follow up telephone calls regarding public satisfaction with services; customer feedback questionnaires - such as pest control or environmental health premise inspections; Citizens' Panel surveys, online methods of feedback for patients (Care Opinion and NHS GGC Online Feedback), carer audits, patient interviews etc.

In line with the Patient Rights (Scotland) Act 2011, NHS GGC seeks patient feedback, comments, complaints and concerns on an ongoing basis and through a range of different methods, to improve patients experience of using health services, and to support people to become more involved in their health and health care. The range of different methods used to elicit feedback and the governance structure, as well as findings on common themes and actions taken in response are published annually.[10]

NHS GGC PHPU has been exploring means of improving patient and public involvement with a view to improving service delivery. It is anticipated that a more active approach to seeking feedback on the above activities will be taken. This is likely to include the use of survey software or phone call using translator services for those who do not speak English. Whilst many interactions with public health only comprise one phone call, certain situations do arise for which ongoing support for the affected individuals is necessary. As such, key points to assess are not only the clarity of the information provided, but also the usefulness of the support given and how this can be improved. This exercise is anticipated to be undertaken in 2023 with the support of NHS GGC Patient and Public Involvement (PPIT) Team. Key actions to undertake in the coming year include:

- Identification of acceptable means of communication to seek feedback in-keeping with staffing, IT and budget constraints.
- Agreement amongst PHPU staff regarding questions to be included in any feedback exercise.
- Maintaining an ongoing relationship with the PPIT.
- Establishment of governance processes to incorporate feedback into service quality improvement activities.

Below are some examples of public involvement and feedback exercises within the signatories to this plan.

- A sample of service users are contacted and their views on the level of satisfaction obtained. The Council's Facebook page is also used to provide information on Council services, including Environmental Health. Residents can then use this to raise local issues with the Council
- Environmental Health consults, engages and encourages participation in service improvement, and satisfaction levels are gauged through direct face to face contact, community engagement events, directed survey and open invite though web services and social media.
- Peer support and patient engagement programme for adults attending for HIV Treatment and Care. The HIV Prevention Treatment and Care group is planning to co-opt a patient representative onto its steering group. The Stigma Reporting process allows those living with HIV to feedback if they have experienced HIV related Stigma and Discrimination within the NHS.

[10] https://www.nhsggc.org.uk/media/254892/patient_feedback_annual_report_2018-2019.pdf

- Waverley Care is commissioned by NHS GGC to deliver HCV Patient Information and Support services and also the African Health Project. Both of these contracts include user engagement to help understand the needs of the population and target interventions/services effectively.
- Direct public involvement through lay representatives on formal bodies and working groups, for example infection control committees.
- To ensure effective and appropriate communication with the public on perceived and actual risks to health, the communication teams of the Health Board and the respective Local Authorities form an important part of problem assessment groups and incident management teams.
- As part of the Vaccine Transformation Programme, and to ensure that the public were involved from the outset in the discussions on service design for vaccine delivery, a national study was carried out in 2018 to explore the public views of vaccination delivery[11]. Eighteen extended focus groups were conducted across six NHS Health Board areas including NHS GGC.
- The NHS GGC PHPU team and the Local Authority environmental health teams, interview members of the public who are affected by notifiable infections to identify the likely source of infection, to organise any required prophylaxis and control measures, and to provide infection prevention and control advice to ensure that the infection is not passed on. Any questions and concerns by these individuals are addressed during these conversations, and individuals are encouraged to get back in contact through phone or email (details provided on pathogen information leaflets) if they have any follow up questions.
- In addition to responding to immunisation enquiries from healthcare professionals, the NHS GGC PHPU team routinely respond to enquiries from members of the public (via email as well as through telephone conversations), including recording and addressing any issues with access to immunisations.
- Governance sign off for the JHPP involves public representation by councillors as elected officials, through the relevant Local Authority committees (see p.2).
- The JHPP is a public facing document and the relevant webpage for the JHPP2018-20 on the NHS GGC website was viewed 181 times (to January 2020).

[11] http://www.healthscotland.scot/media/2492/exploring-public-views-of-vaccination-service-delivery.pdf

11 Outline work plan

In addition to the day-to-day strategic and reactive health protection work undertaken by the partner agencies, which have been outlined in this plan, an action plan of specific activities is developed and taken forward over the life of each plan by the partner agencies and the wider "Med-Vet" group.

Highlights of progress against the work plan for 2018-20 and 2020-22 (unpublished).

- The Outbreak Control Plan, its supporting documents and procedures have been reviewed and updated. It has been renamed "Incident Management Plan" and has received one major and two minor updates since the publication of the 2018 plan. It has also been adopted by the NHS GGC Infection Prevention and Control Team, so a single outbreak/incident management plan is used across the Board.
- Enteric protocols and generic enteric forms have been reviewed and updated to ensure that they are aligned to current practice, and regular audits of performance in management of enteric cases continue on an annual basis. Partners to this plan are also engaging with the SHPN work to harmonise data collection for enteric pathogens across Scotland.
- Plans, policies and SOPs have been updated in line with the updated E.coli public health guidance issued by the Scottish Health Protection Network in December 2018.
- The Med-Vet Group routinely shares details of relevant training opportunities and conferences, and arranges joint visits to appropriate site visits (e.g. water treatment works, waste management), and this will continue in 2020-22. A rolling programme of joint training sessions between GGC PHPU and Local Authority environmental health staff was progressed over the lifespan of the JHPP2018-20. Plans to continue this work, and to develop opportunities to complete part of EHO work based training at the GGC PHPU were paused due to the pandemic
- Efforts to strengthen and harmonise where possible mechanisms for patient and public involvement in health protection activity are ongoing (see section Health protection: public involvement and feedback)
- Work with Health and Social Care Partnerships over the last two years has ensured all parties are aware of the process for mobilising response to outbreaks and incidents, and this work will continue (e.g. through involvement in the exercise of the outbreak control plan).
- The public health reform process has been concluded, with the creation of PHS during the pandemic. We will continue work directly with PHS, and through SHPN as the new national public health agency develops and settles into tits position in the whole system health protection response.

An outline of key areas of work to be undertaken during the course of the 2023-25 plan are summarised below. The Public Health (Health Protection) Liaison Working Group (the Med-Vet Group) are commissioned by, and have delegated responsibility on behalf of, the Director of Public Health to develop detailed action plans for each of these areas of work:

- The Incident Management Plan will be tested in a full scale incident management exercise in 2023, followed by its review and revision in 2024;
- The enteric investigation protocol will be reviewed and revised in 2023 to align to current practice and outcomes of regular audits of performance in management of enteric cases;
- The blue-green algae (cyanobacteria) plan will be reviewed following the expected publication of updated national guidance later in 2023;
- The Port Health procedures, including procedures relating to animal health, will be reviewed, updated and subjected to exercise;
- Given the growing threat from avian flu to commercial flocks and wild birds, we will develop joint avian influenza response plans early 2023;
- We will monitor the implementation of the recent changes to the Scotland smoke-free hospitals legislation, especially in relation to the enforcement aspects of the legislation.
- In keeping with JHPP Scottish Government Guidance, we will carry out structured patient feedback with support of the NHS GGC PPIT.
- We will recommence joint health protection training sessions between partners and explore of training placement opportunities between partners.

Annex: NHS Greater Glasgow and Clyde summary population profile

01 October 2022

Contents

Key points

The population of NHS Greater Glasgow and Clyde (GGC) increased by nearly 7% over the last 15 years, though the most recent mid-year estimates saw a stagnation in growth. Demographic challenges for health services include an upward shift in age distribution over time and a high proportion of the GGC population living in deprived data zones. GGC is home to a substantial proportion of residents from ethnic minority groups. All population estimates are subject to change, pending the results of the 2022 census for Scotland.

Period life expectancy at birth decreased for the most recent period (2018-2020), driven by COVID-19, and for males also driven by drug deaths. Life expectancy is lower for residents of more deprived areas, i.e. lives are being cut short. Scottish burden of disease estimates for GGC residents illustrate the difference in health loss across age groups and the shift with age in conditions most influential for health losses.

There are significant differences in the population distribution by age, deprivation and ethnicity between and within the six partnership Local Authorities – this heterogeneity of the population needs to be taken into account to achieve equity in health service provision and access.

Current population projections show continued growth and ageing of the GGC population over the next 10-25 years for GGC. The reliability of projections decreases over time, and projections tend to be less reliable in periods of rapid change.

1 Population distribution

The latest available population data for Scotland is based on mid-year population estimates as released by National Records Scotland (NRS), which are subject to change, with revisions planned taking account of the additional information gained from the census results. Results from the Scotland 2022 census are expected to become available in 2023.

1.1 GGC trend in total population over time, by Local Authority

Data source: Population Estimates Time Series Data | National Records of Scotland (nrscotland.gov.uk)

NHS Greater Glasgow and Clyde (GGC) health board has a total population of 1,185,040 residents, according to the latest available NRS mid-year population estimates for 2021. Glasgow City accounts for more than half of the population of GGC (53.6%) and thus heavily influences all statistics for GGC overall (Table 1).

The population of GGC increased by 6.9% over the 15 year period from 2006 to 2021. Glasgow City and East Renfrewshire saw the largest relative increase in their respective population over this time (11.7% and 7.6% increase respectively), whereas the population of Inverclyde and West Dunbartonshire decreased (-6.8% and -4% respectively).

NRS has released an interactive dashboard[12], which shows the underlying components of population change (natural change, net migration and others) which drive these changes. Between 2011 and 2021, the increase in population for East Dunbartonshire and East Renfrewshire was mainly driven by positive net migration from within Scotland. The main driver of population increase for Glasgow City over that time period was international migration (net within Scotland migration was negative for Glasgow City over that period). The most influential driver for the population decrease in Inverclyde and West Dunbartonshire over this period was natural change (fewer births than deaths), and negative net migration within Scotland (the latter was a more influential contributor to population decrease in West Dunbartonshire than Inverclyde).

In 2021 (for the first time since 2006) Glasgow City saw a small decrease in population compared to the previous year (-0.1%), and the population for GGC overall also decreased marginally (-0.02%). All six partnership Local Authorities (LA) saw a negative natural change (more deaths than births recorded) from the 2020 to 2021 mid-year estimates. The overall increase in the population for East Dunbartonshire, East Renfrewshire and Renfrewshire for the 2021 compared to 2020 estimates was due to net inwards migration exceeding the negative natural change in these LAs (see Figure 8 in Mid 2021 Population Estimates, Scotland, Report (nrscotland.gov.uk)).

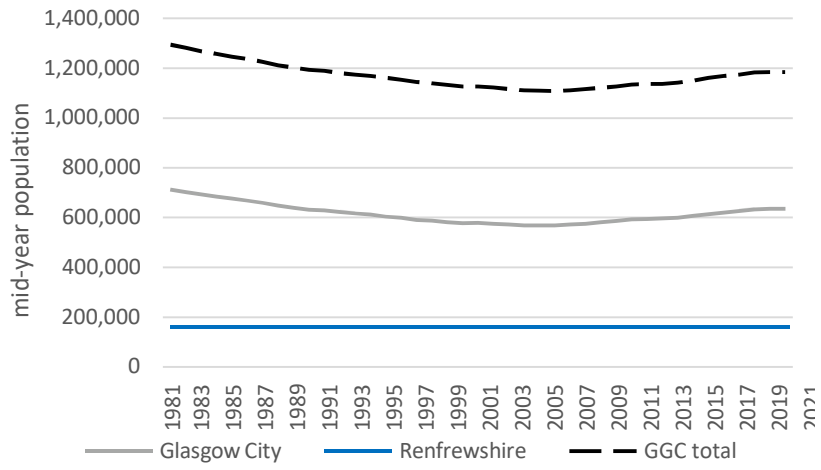
[12] Population Estimates of Scotland - National Records of Scotland (shinyapps.io)

Table 5: GGC mid-year population estimates 2021, and changes compared to 2006 and 2020 (source: NRS)

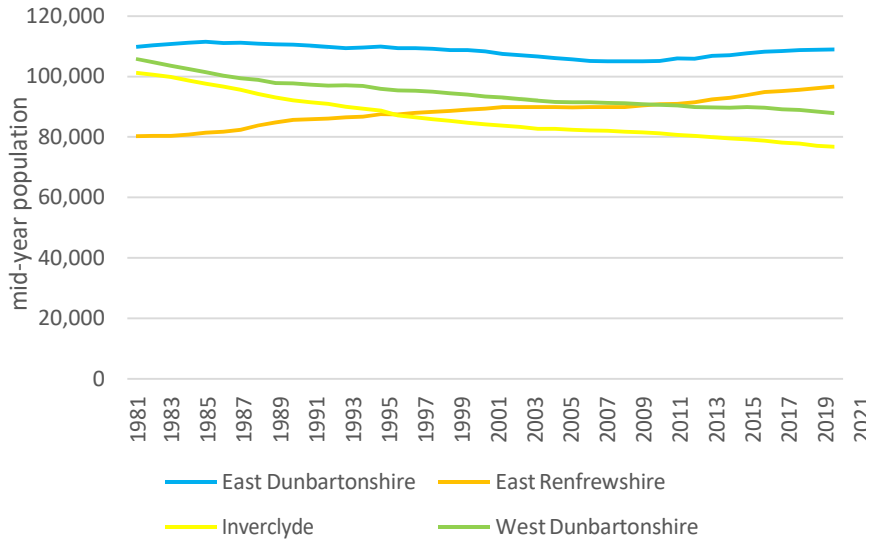
Local Authority	mid-year population estimate 2021 (% of GGC population)	percentage change in population over 15 years (2021 v 2006)	percentage change in population over last year (2021 v 2020)
East Dunbartonshire	108,900 (9.2%)	3.1%	0.1%
East Renfrewshire	96,580 (8.1%)	7.6%	0.5%
Glasgow City	635,130 (53.6%)	11.7%	-0.1%
Inverclyde	76,700 (6.5%)	-6.8%	-0.5%
Renfrewshire	179,940 (15.2%)	5.1%	0.3%
West Dunbartonshire	87,790 (7.4%)	-4.0%	-0.6%
GGC total	1,185,040 (100.0%)	6.9%	0.0%

Figure 1: GGC population mid-year estimates by Local Authority over time, 1981 to 2021 (source: NRS). Figure split to allow visualisation of trends through different y-axis scales 1a) GGC total, Glasgow City and Renfrewshire; 1b) East Dunbartonshire, East Renfrewshire, Inverclyde and West Dunbartonshire

1a)



1b)

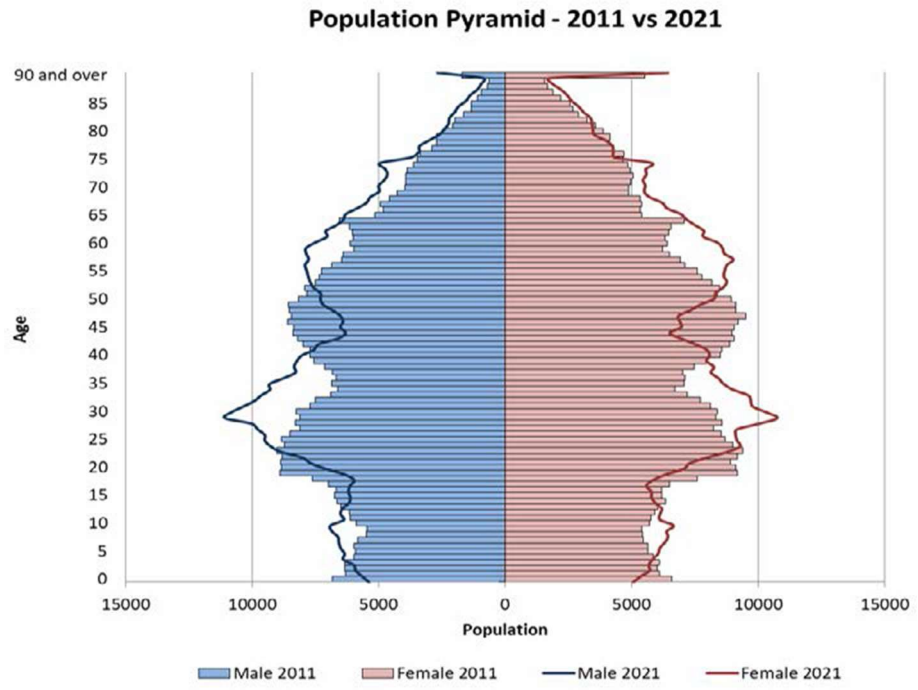


1.2 GGC population distribution by age

Data source: [Population Estimates Time Series Data | National Records of Scotland (nrscotland.gov.uk)]

1.2.1 Population by age over time, 2021 versus 2011

Figure 2 shows the population distribution of GGC by age group in 2021 compared to 2011. This shows that whilst the majority of the GGC population remained in the working age groups, there has been an upwards shift in age distribution. The 16-24 year old age group saw a decrease (13%, ~20,000 persons) between 2011 and 2021. The largest absolute increase (~38,800 persons, 12%) occurred in the 25 to 44 year olds. Whilst the number of people 85 years and over increased by only ~3,900 individuals over that time, this poses the largest relative increase by age group (18% increase). *Figure 3: GGC population pyramid by age and sex, 2021 compared to 2011 (source: NRS)*



1.2.2 Population distribution by age and Local Authority, 2021

Figure 4 shows the differences in population by age group between the partnership LAs, based on the 2021 mid-year estimates. East Dunbartonshire has the highest proportion of residents aged 65 years or older (23%), East Renfrewshire has the highest proportion of children 15 years or younger (20%), but also a relatively high proportion of residents aged 65 years and older (21%). Glasgow City has the highest proportion of those aged 16 to 64 years (71%), and the lowest proportion of those aged 65 or older (14%). shows a population pyramid by age and sex, which further illustrates this shift in age distribution over time.

Figure 2: GGC population distribution as a percentage by age group, mid-year estimates for 2021 compared to 2011 (source: NRS)

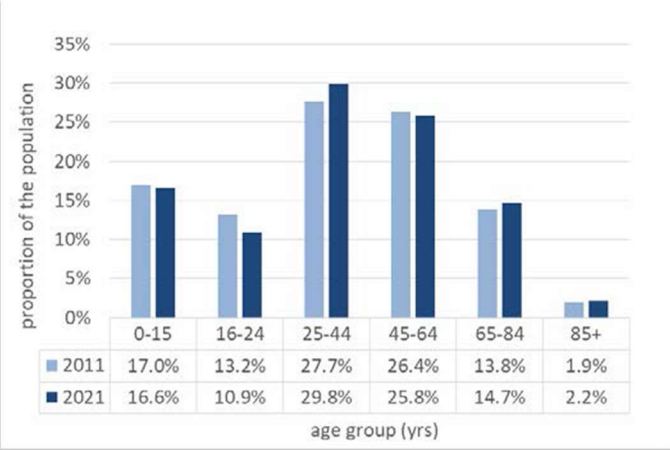
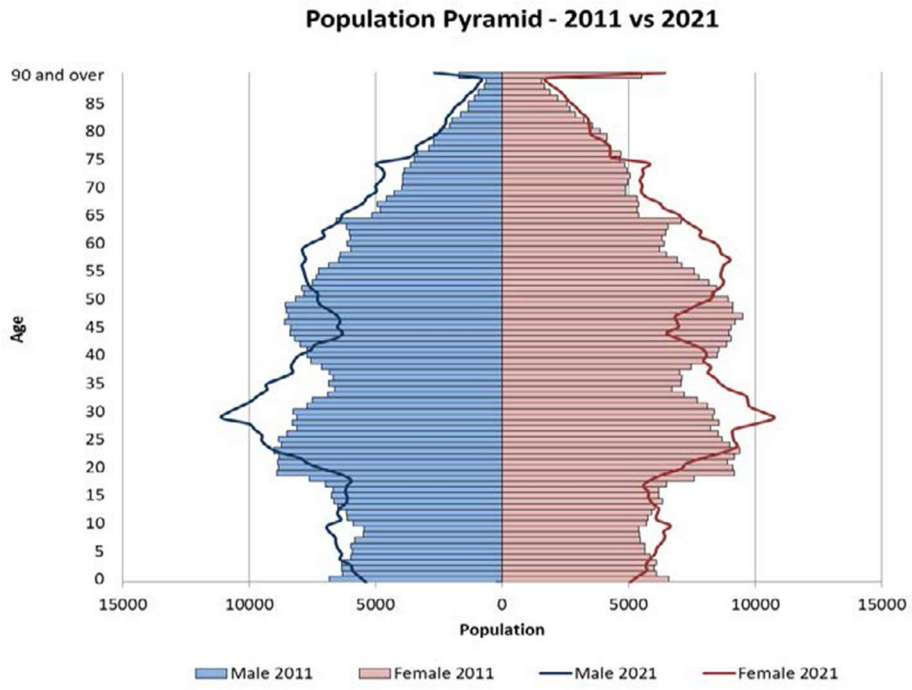


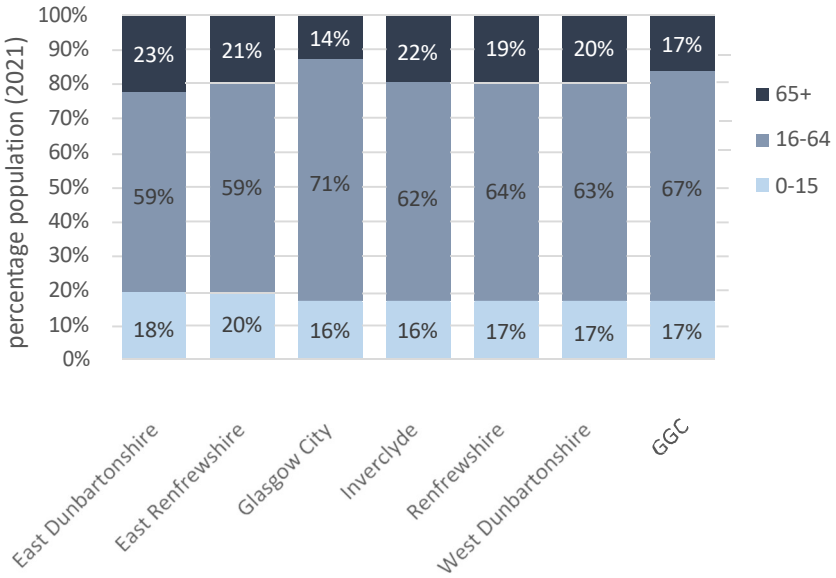
Figure 3: GGC population pyramid by age and sex, 2021 compared to 2011 (source: NRS)



1.2.3 Population distribution by age and Local Authority, 2021

Figure 4 shows the differences in population by age group between the partnership LAs, based on the 2021 mid-year estimates. East Dunbartonshire has the highest proportion of residents aged 65 years or older (23%), East Renfrewshire has the highest proportion of children 15 years or younger (20%), but also a relatively high proportion of residents aged 65 years and older (21%). Glasgow City has the highest proportion of those aged 16 to 64 years (71%), and the lowest proportion of those aged 65 or older (14%).

Figure 4: GGC population distribution in 2021, by age group and Local Authority (source: NRS)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65+
16-64
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East Dunbartonshire
East Renfrewshire
Glasgow City
Inverclyde
Renfrewshire
West Dunbartonshire
GGC

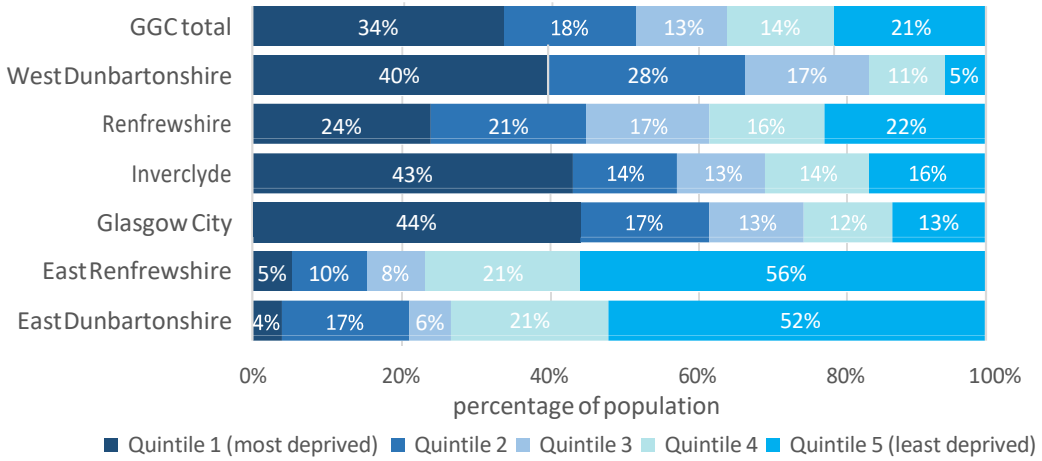
Population distribution by Scottish Index of Multiple Deprivation 2020

Data source: [Population Estimates by Scottish Index of Multiple Deprivation(SIMD) | National Records of Scotland (nrscotland.gov.uk)]

Deprivation in Scotland is measured using the Scottish Index of Multiple Deprivation (SIMD). The SIMD is a relative measure of deprivation across 6,976 small areas (called data zones). The ranking is updated at intervals, most recently in 2020 (SIMD 2020v2). If an area is identified as 'deprived', this can relate to people having a low income but it can also mean fewer resources or opportunities. SIMD looks at the extent to which an area is deprived across multiple (seven) domains: income, employment, education, health, access to services, crime and housing. Data zones are ranked from 1 (most deprived) to 6,976 (least deprived) according to the SIMD. Each SIMD quintile contains 20 per cent of Scotland's data zones, with Quintile 1 containing the 20% most deprived zones, and Quintile 5 the 20% least deprived zones. This section uses the 2020 annual mid-year population estimates for SIMD 2020v2 areas in Scotland (2011 Data Zone based). The 2021 mid-year population estimates by SIMD will be released later in August 2022.

Based on 2020 mid-year estimates, over a third (34%) of the population of NHS Greater Glasgow and Clyde are resident in the most deprived quintile of Scottish data zones (Quintile 1). *Figure 5* shows the differences in deprivation profile across the six partnership LAs. Glasgow City, followed by Inverclyde have the highest proportion of residents who live in the most deprived quintile of data zones (44% and 43% respectively). Glasgow City continues to have a higher proportion of residents in the most deprived quintile of data zones than other Scottish cities[13]. In East Renfrewshire and East Dunbartonshire more than half of residents live in the most affluent quintile of Scottish data zones (56% and 52% respectively), with only a small proportion (5% and 4% respectively), living in the most deprived quintile of data zones. *Figure 6* shows the heterogeneous distribution of deprivation across NHS Greater Glasgow and Clyde, as a map. Within Glasgow City, the North East Locality has the highest proportion of residents in the most deprived data zones [14]. Interactive maps are also available via the Scottish Government on https://simd.scot/#/simd2020/

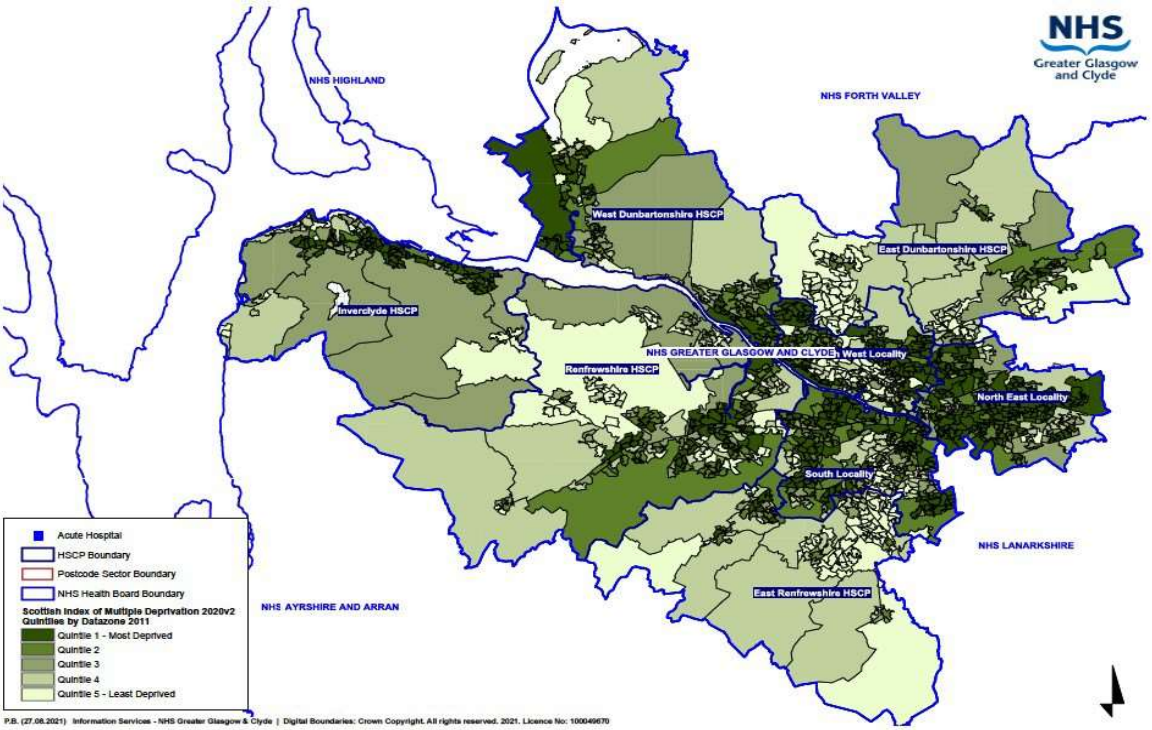
Figure 5: Mid-year 2020 population estimates by Local Authority and percentage distribution across SIMD2020 quintile (source: NRS)



[13] Health_in_a_changing_city_Glasgow_2021_-_report.pdf (gcph.co.uk)

[14] HSCP Demographics and Needs Profile June 2022

Figure 6: Map of SIMD quintiles 2020v2 attribution of data zones (data zone 2011) for NHS Greater Glasgow and Clyde

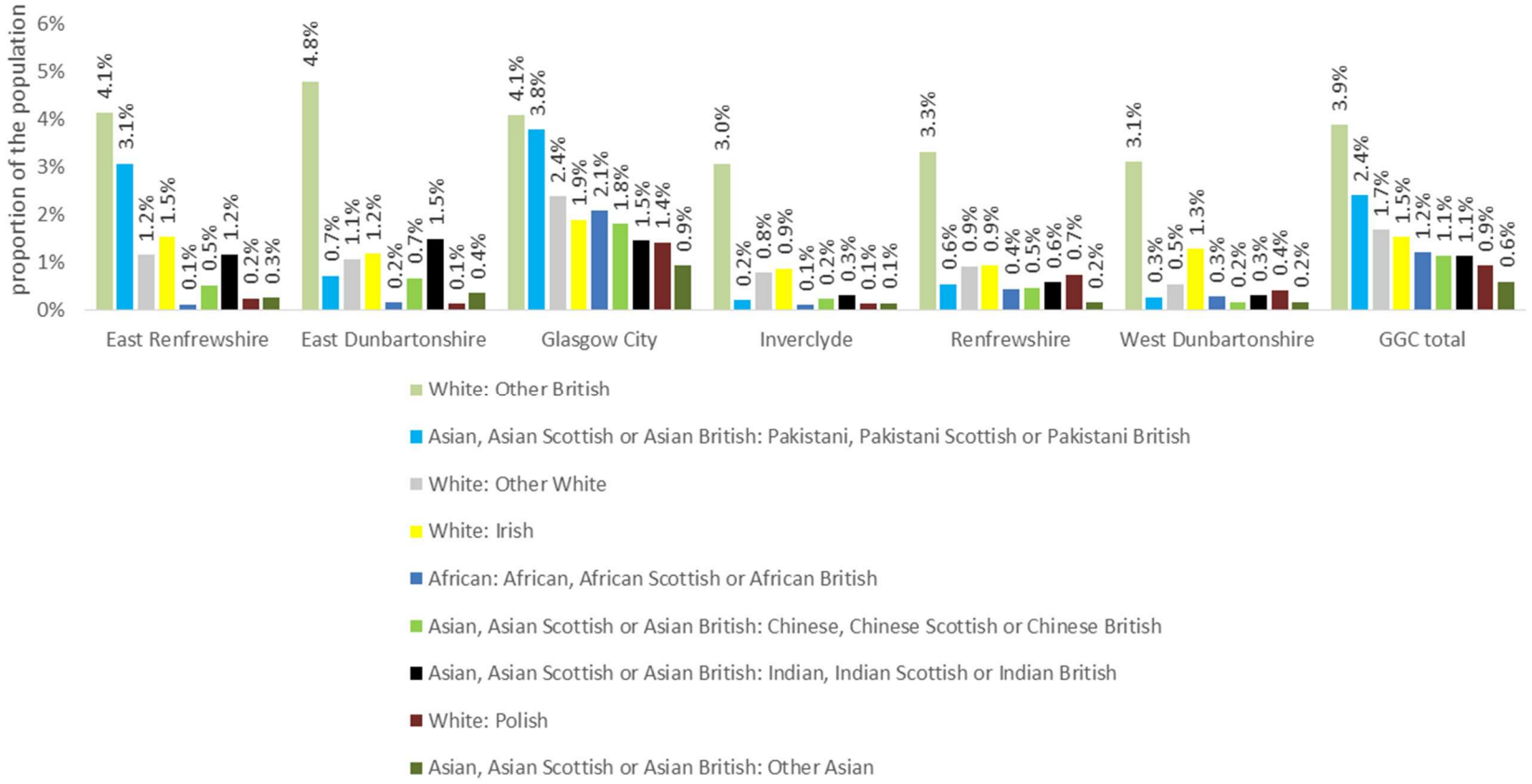


1.3 Population distribution by ethnicity

Data source: https://www.scotlandscensus.gov.uk/

According to the most recent published Scottish census estimates (2011), 84.4% of the GGC population identified as white Scottish, ranging from 78.6% in Glasgow City, to 93% in West Dunbartonshire. *Figure 7* shows the distribution by LA over ethnic groups which accounted for 0.5% or more of the GGC population (other than white Scottish). Due to the time elapsed since the last census, ethnicity estimates should be interpreted with caution. NRS mid-year population estimates show international migration as the main driver of population increase for Glasgow City between 2011 and 2021 (see section 1.1).

Figure 7: Proportion of the population by LA, for ethnic groups accounting for 0.5% or more of the GGC population (excluding white: Scottish), based on census 2011 results (source: NRS)



2 Period life expectancy

Data source: Life Expectancy in Scotland, 2019-2021 | National Records of Scotland (nrscotland.gov.uk)

Period life expectancy is often described as how long a baby born now could expect to live if they experienced today's mortality rates throughout their lifetime. This does not take into consideration future changes that may affect how long a person will live, e.g. developments in medicine or changes in legislation. Period life expectancy is thus not an accurate prediction of how long a person born today will actually live, but it is a useful measure of population health at a point in time and is most useful for comparing trends over time, between areas of a country and with other countries. This section uses data from the most recent available NRS estimates of life expectancy (2019-2021), the next annual update will be released in September 2023.

2.1 Period life expectancy over time and by Local Authority

Figure 9 shows the differences in period life expectancy at birth between the partnership LAs. Life expectancy at birth for East Dunbartonshire and East Renfrewshire was consistently higher over time, than in other partnership LAs, for both males and females. Life expectancy for males for these two LAs is comparable to the life expectancy in females in the other four LAs. Glasgow City has the lowest life expectancy for women and men respectively. The steepest decline in life expectancy for the most recent period (2019-2021) was seen for males in West Dunbartonshire. A decline in life expectancy in Inverclyde for both males and females started earlier, than the decline for the most recent period seen across most LAs. Life expectancy for females in Inverclyde recovered slightly for the most recent period (2019-2021) compared to previous estimates.

Figure 8 shows the period life expectancy at birth in GGC and Scotland by sex over time, from 1991-1993 up to 2019-2021 estimates. It shows that life expectancy for GGC residents was consistently lower than for Scotland overall, and life expectancy was higher for females than for males. Life expectancy increased over time and there was a gradual decrease in gap between females and males over this period. The graph also illustrates a plateauing of life expectancy from 2012-14 to 2017-2019, and a decrease in life expectancy at birth for 2018-20 and 2019-21 for both GGC residents, as well as Scotland overall. Scotland level data shows that the most important driver for the decrease in life expectancy for the most recent two periods (2018-2020, 2019-2021) were COVID-19 deaths. For males drug related deaths also contributed substantially to the decrease in period life expectancy for these latest estimate[15].

Figure 9 shows the differences in period life expectancy at birth between the partnership LAs. Life expectancy at birth for East Dunbartonshire and East Renfrewshire was consistently higher over time, than in other partnership LAs, for both males and females. Life expectancy for males for these two LAs is comparable to the life expectancy in females in the other four LAs. Glasgow City has the lowest life expectancy for women and men respectively. The steepest decline in life expectancy for the most recent period (2019-2021) was seen for males in West Dunbartonshire. A decline in life expectancy in Inverclyde for both males and females started earlier, than the decline for the most

[15] https://www.nrscotland.gov.uk/files//statistics/life-expectancy-in-scotland/19-21/life-expectancy-19-21-report.pdf

recent period seen across most LAs. Life expectancy for females in Inverclyde recovered slightly for the most recent period (2019-2021) compared to previous estimates.

Figure 8: Period life expectancy at birth in GGC and Scotland by sex over time (periods labelled: 2012-14, 2017-19, 2019-21; source: NRS)

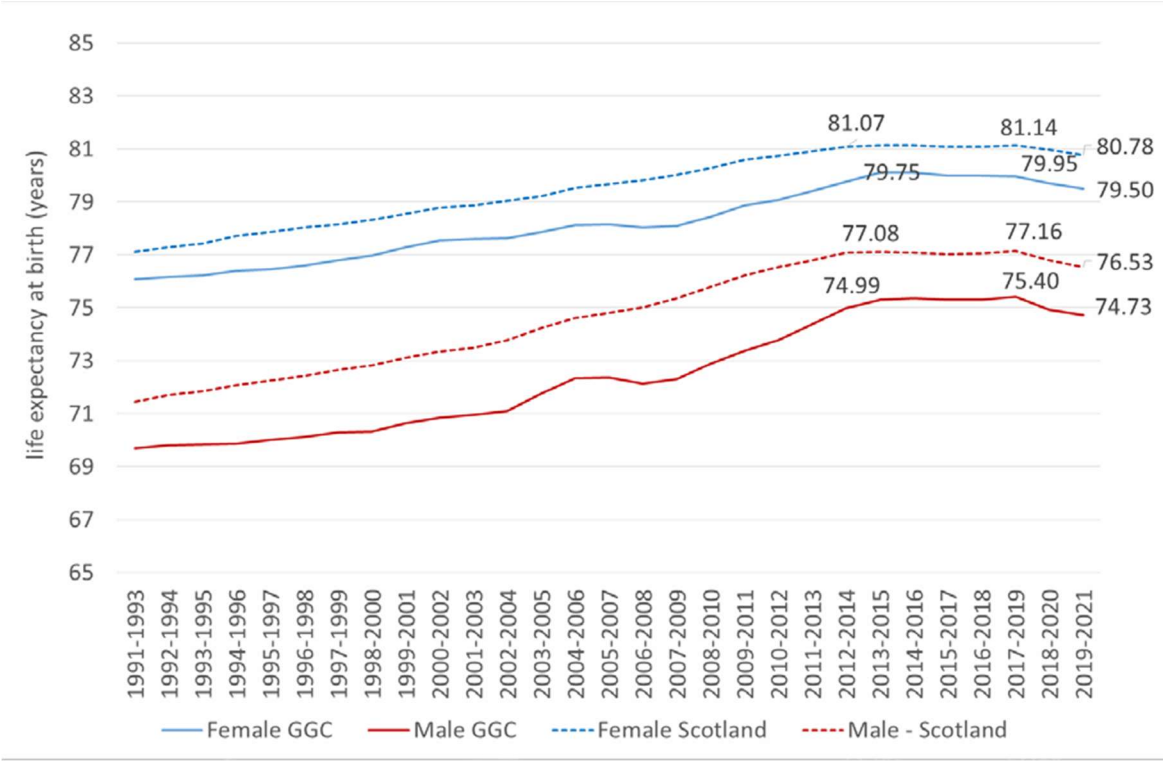
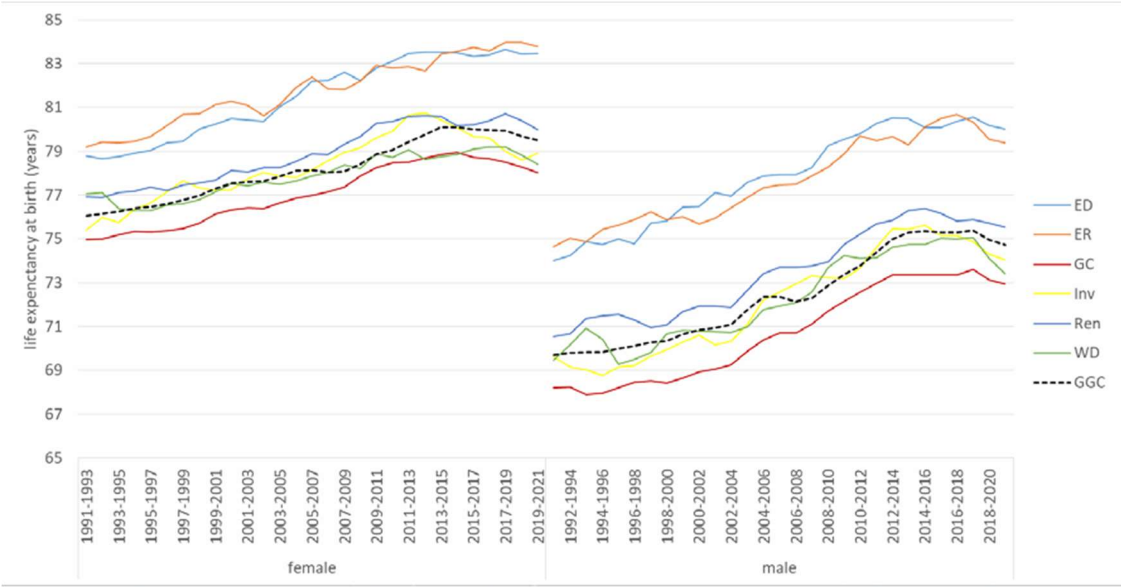


Figure 9: Period life expectancy at birth in GGC by sex and partnership Local Authority over time (source: NRS)

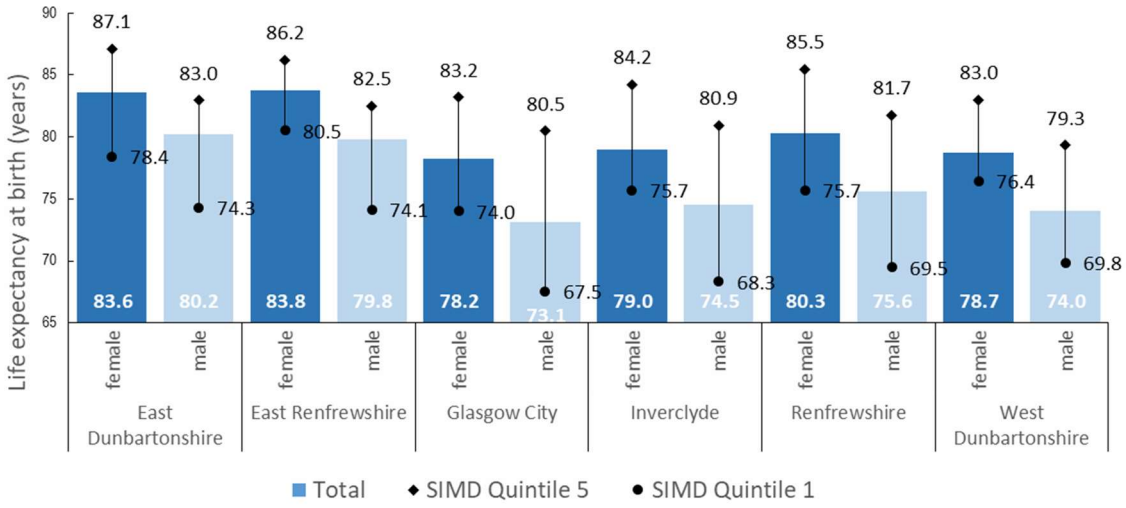


2.2 Period life expectancy (2017-2021) by Local Authority and SIMD quintile

Within each LA[16], period life expectancy decreases, meaning lives are being cut short, with increasing deprivation. *Figure 10* shows that for the most recent available data break down by partnership LA and SIMD quintile (2017-2021), the lowest life expectancy was consistently seen for residents of SIMD quintile 1 (most deprived), and the highest in SIMD quintile 5 (least deprived) in both males and females. The gap in life expectancy between most (Quintile 1) and least deprived quintile (Quintile 5) was generally bigger for males than females.

For males, life expectancy was over a decade shorter in the most compared to the least deprived quintile in Glasgow City, Inverclyde and Renfrewshire (shorter in most v least deprived quintile by 13.0 years, 12.6 years and 12.3 years respectively). For females, life expectancy was close to a decade shorter in the most compared to the least deprived quintile for Renfrewshire and Glasgow City (shorter in most v least deprived quintile by 9.8 years and 9.2 years respectively). The gap in life expectancy between most and least deprived quintile was smallest for females in East Renfrewshire and West Dunbartonshire (shorter in most v least deprived quintile by 5.7 years and 6.6 years respectively), and for males in East Dunbartonshire (shorter in most v least deprived quintile by 8.6 years).

Figure 10: Period life expectancy at birth (2017 to 2021) by sex and partnership Local Authority and most (Quintile 1) versus least (Quintile 5) deprived SIMD Quintile (source: NRS)



[16] Life expectancy estimates at the health board level by SIMD quintile are not included in the routine NRS outputs.

3 Burden of disease

Data source: Scottish burden of disease study: https://scotland.shinyapps.io/phs-local-trends-scottish-burden-diseases/

The Scottish Burden of Disease (SBoD) study monitors how diseases, injuries and risk factors prevent the Scottish population from living longer lives in better health. The Burden of disease (BOD) assessment standardises estimates of ill-health (years lived with disability - YLD) and early death (years of life lost - YLL) in a composite measure called Disability-Adjusted Life Years (DALYs), also referred to as health loss.

The BoD assessment thus provides a summary measure about which diseases and injuries have the greatest impact on population health and wellbeing, by combining data on deaths and ill health to estimate the total impact of health loss. This approach also allows comparison of the population level impact of very different diseases and conditions, and it is worth considering the contribution of incidence, duration and severity of a condition to the overall estimated burden. High estimates of DALY may for example arise from a small number of deaths, if they occur at a young age (more years of life lost compared to the best case scenario of life expectancy, than deaths occurring in older age groups). High estimates of DALY may also arise from conditions with a comparatively low severity for each individual affected, but with a very high incidence (and or a long duration), leading to a large overall estimate of health loss at the population level. There are a number of caveats to the burden of disease estimates, including that the methodology does not account for co-morbidities, and thus overall estimates of burden of disease need to be interpreted with caution. The latest published Scottish burden of disease estimates (2019) do not as yet account for the impact of COVID-19.

Figure 11 shows the leading causes of health loss for GGC in 2019, as an age adjusted rate per 100,000 population. This shows the increasing burden of disease with age, as well as the shift in the most important causes of health loss by age group, and how this differs by sex. For those aged 65 or older, Alzheimer's and dementia, ischaemic heart disease, cerebrovascular disease, lower respiratory tract infections, Chronic Obstructive Pulmonary Disease (COPD) and lung cancer are the leading causes of health loss for males and females. For the working age population (25-44 years and 45-64 years) drug use disorders, and depression are amongst the leading causes of health loss for males and females in both of these age groups. For females, lower back and neck pain, as well as anxiety disorders are also leading causes of health loss for 25-44 and 45-64year olds, and headache disorders and lung cancer in the 25-44 year old and the 45-64 year old age group respectively. For males, alcohol disuse disorders and cirrhosis and liver disease are amongst the leading causes of health loss for 25-44 year olds and 45-64 year olds respectively. Self-harm and interpersonal violence, and lower back and neck pain are also amongst the leading causes of health loss for the 25-44 year old males, with ischaemic heart disease and other cancers[17] contributing as leading causes of health loss for 45-64 year old males.

Figure 12 shows the leading causes of health loss in absolute number of DALYs, by age group and sex for GGC in 2019. It demonstrates that a high proportion of the absolute burden of disease is

[17] other cancers refers to cancers other than: Oesophageal cancer, Stomach cancer, Colorectal cancer, Liver cancer, Pancreatic cancer, Lung cancer, Breast cancer, Ovarian cancer, Prostate cancer, Kidney cancer, Bladder cancer, Non-Hodgkin's lymphoma, Multiple myeloma and Leukaemia

currently attributable to those in the working age groups and those 65 to 84 years of age. As the population ages, the high rate of burden of disease seen in the older age groups in Figure 10, combined with increasing numbers of individuals in an older age group, will increase the proportion of the burden of disease attributable to the older age groups, and is likely to increase the overall burden of disease. Table 2 shows the corresponding data to *Figure 11* and

Figure 12 on number and age adjusted rates of DALYs for the leading causes of health loss for GGC by age group and sex.

Figure 11: Leading causes of health loss as age adjusted rate of DALYs per 100,000 population, by age group and sex in GGC, 2019 (source: PHS)

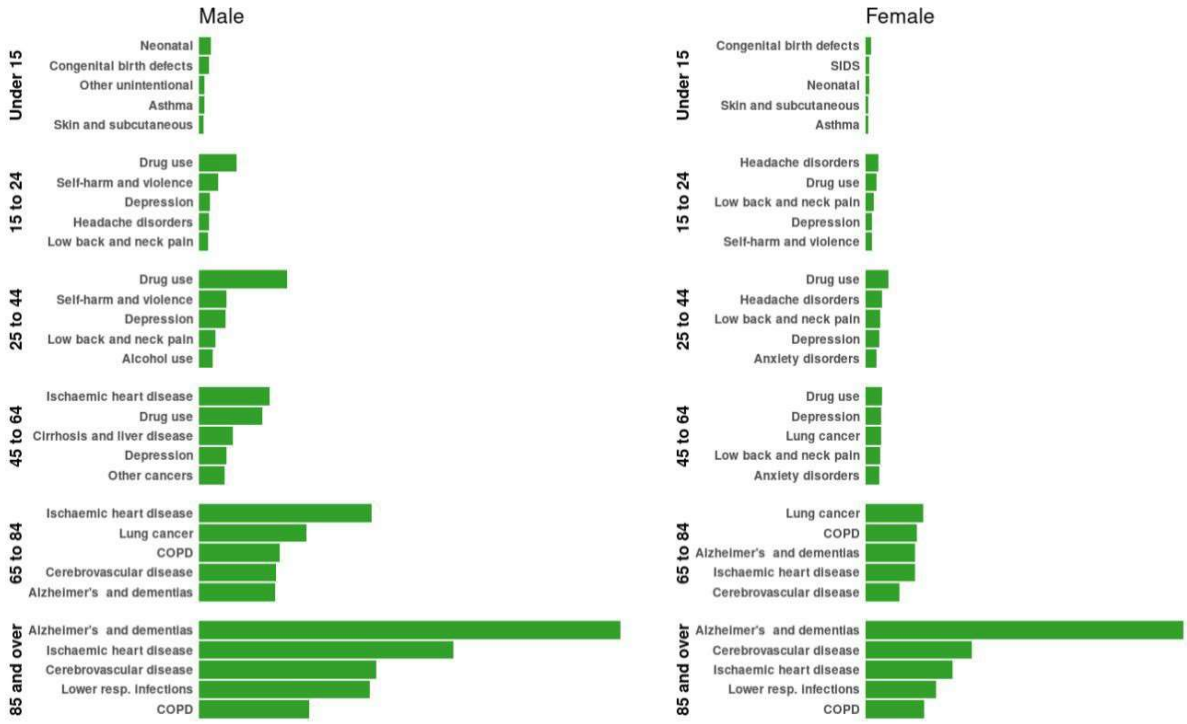
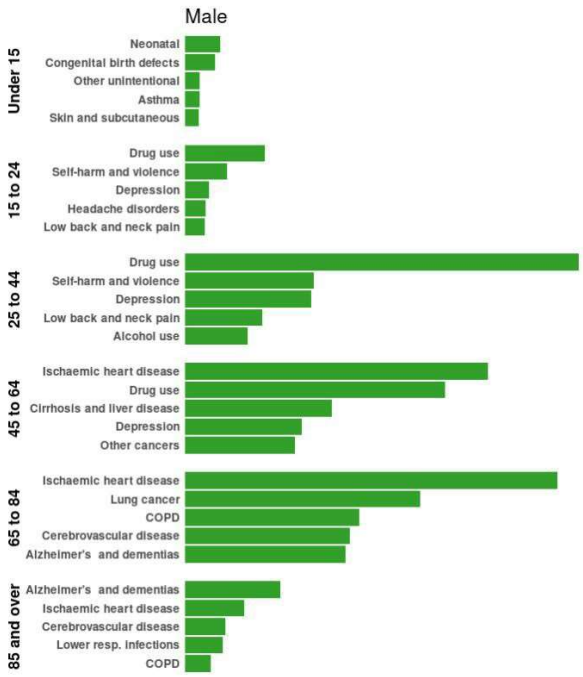


Figure 12: Leading causes of health loss as number of Disability adjusted life years (DALYs) by age group and sex in GGC 2019 (source: PHS)


Male
Under 15
Neonatal
Congenital birth defects
Other unintentional
Asthma
Skin and subcutaneous
15 to 24
Drug use
Self-harm and violence
Depression
Headache disorders
Low back and nek pain
25 to 44
Drug use
Self-harm and violence
Depression
Low back and neck pain
Alcohol use
45 to 64
Ischaemic heart disease
Drug use
Cirrhosis and liver disease
Depression
Other cancers
65 to 84
Ischaemic heart disease
Lung cancer
COPD
Cerebrovascular disease
Alzheimer's and dementias
85 and over
Alzheimer's and dementias
Ischaemic heart disease
Cerebrovascular disease
Lower resp. infections
COPD

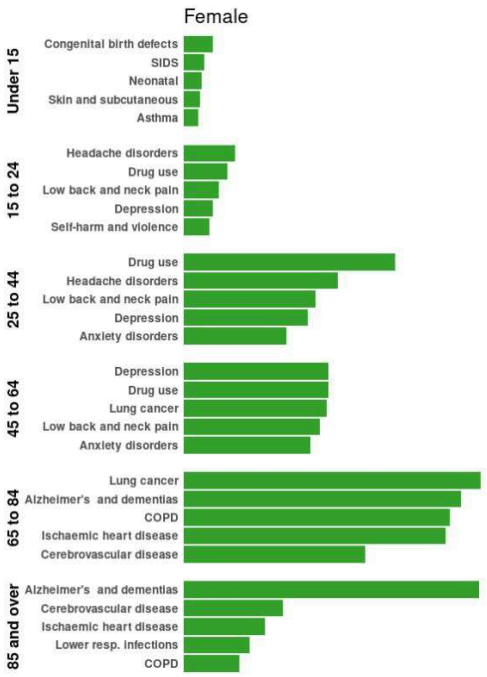

Female
Under 15
Congenital birth defects
SIDS
Neonatal
Skin and subcutaneous
Asthma
15 to 24
Headache disorders
Drug use
Low back and neck pain
Depression
Self-harm and violence
25 to 44
Drug use
Headache disorders
Low back and neck pain
Depression
Anxiety disorders
45 to 64
Depression
Drug use
Lung cancer
Low back and neck pain
Anxiety disorders
65 to 84
Lung cancer
Alzheimer's and dementias
COPD
Ischaemic heart disease
Cerebrovascular disease
85 and over
Alzheimer's and dementias
Cerebrovascular disease
Ischaemic heart disease
Lower resp. infections
COPD

Table 6: Leading causes of health loss as number of Disability adjusted life years (DALYs)and as age adjusted DALY rate per 100,000 population by age group and sex in GGC 2019 (source: PHS)

	males			females		
age group (years)	leading causes of health loss	age adjusted DALY rate per 100,000 population	number of DALYs	leading causes of health loss	age adjusted DALY rate per 100,000 population	number of DALYs
0-14	Neonatal disorders	923.8	918.8	Congenital birth defects	711.4	654.7
	Congenital birth defects	785.2	769.4	Sudden infant death syndrome	480	453.2
	Other unintentional injuries	400.7	372.8	Neonatal disorders	434.9	410.2
	Asthma	390.8	370.2	Skin and subcutaneous diseases	401.4	364.5
	Skin and subcutaneous diseases	363.1	348.6	Asthma	372.2	331.6
15-24	Drug use disorders	2751.5	2055.9	Headache disorders	1548.2	1137.9
	Self-harm and interpersonal violence	1429.5	1088.4	Drug use disorders	1381.1	977.1
	Depression	800	623	Low back and neck pain	1077.3	788.7
	Headache disorders	737.3	542.9	Depression	861.1	648.9
	Low back and neck pain	682.2	508.8	Self-harm and interpersonal violence	763.7	573
25-44	Drug use disorders	6511.7	10159.5	Drug use disorders	2883.2	4699.1
	Self-harm and interpersonal violence	2026.9	3314.3	Headache disorders	2022.2	3435.4
	Depression	1967.5	3267.1	Low back and neck pain	1776.6	2926.8
	Low back and neck pain	1214.9	1992.6	Depression	1686.2	2753.2
	Alcohol use disorders	1034.4	1628.5	Anxiety disorders	1402.7	2289.8
45-64	Ischaemic heart disease	5186.1	7817.8	Drug use disorders	2037.2	3218.6
	Drug use disorders	4682.3	6720.6	Depression	1978.7	3225.3
	Cirrhosis and other chronic liver diseases	2526.4	3780.5	Lung cancer	1927.7	3185.7
	Depression	2044.5	3014.5	Low back and neck pain	1865.4	3029.3
	Other cancers*	1903.8	2837.4	Anxiety disorders	1727	2818
65-84	Ischaemic heart disease	12682	9620.7	Lung cancer	7079	6599.8
	Lung cancer	7933.1	6064	Chronic obstructive pulmonary disease	6288.7	5911.4
	Chronic obstructive pulmonary disease	5986.6	4496.9	Alzheimer's disease and other dementias	6102.2	6168.6
	Cerebrovascular disease	5709.2	4253.2	Ischaemic heart disease	6095	5829.3

	Alzheimer's disease and other dementias	5616.3	4138.7	Cerebrovascular disease	4132.6	4029.3
85+	Alzheimer's disease and other dementias	31010.8	2460	Alzheimer's disease and other dementias	39004.8	6560.2
	Ischaemic heart disease	18718.7	1526.1	Cerebrovascular disease	13114.9	2209.8
	Cerebrovascular disease	13077.2	1050.5	Ischaemic heart disease	10686.8	1817.2
	Lower respiratory infections	12579.4	984.6	Lower respiratory infections	8692.9	1466.3
	Chronic obstructive pulmonary disease	8123.3	668.3	Chronic obstructive pulmonary disease	7163.7	1236.1

*"other cancers" refers to cancers other than Oesophageal cancer, Stomach cancer, Colorectal cancer, Liver cancer, Pancreatic cancer, Lung cancer, Breast cancer, Ovarian cancer, Prostate cancer, Kidney cancer, Bladder cancer, Non-Hodgkin's lymphoma, Multiple myeloma and Leukaemia

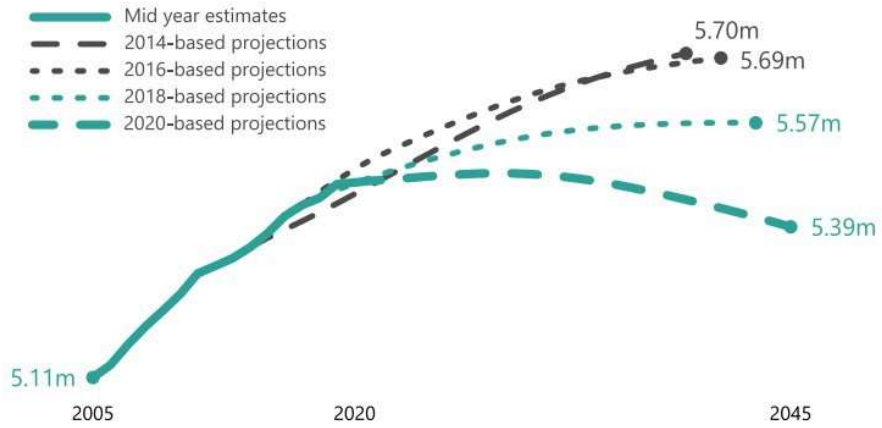
4 Population projections

Data source: [Population Projections | National Records of Scotland (nrscotland.gov.uk)]

NRS produces population projections at regular intervals to support planning and provision of public services as well as policy development. Population projections have limitations that need to be taken account of in their application. They are calculated based on a set of underlying assumptions, which build on current trends. The reliability of projections decreases over time, and projections tend to be less reliable in periods of rapid change. Projections for areas with small populations tend to be less reliable than those for areas with large populations. Projections of the number of adults (particularly elderly people) are usually more reliable than those for children because they are based on people who are already living in Scotland. Migration tends to fluctuate more than fertility or mortality, and it is harder to measure, so there tends to be more uncertainty around the migration figures.

Interim 2020-based national projections for each UK country were published in January 2022. They were classed as 'interim' to recognise the period of uncertainty in the mid-2020 base year and the uncertainties in setting long-term demographic assumptions following the onset of the coronavirus pandemic. No variant projections were produced, and they were not followed by sub-national population projections. Therefore, the latest set of sub-national population projections remain 2018-based, and form the basis of this section. It should be noted that the Scotland level projections from 2020 show a slower increase in population to 2028 (compared to the 2018 based projections), and project a decline in the Scottish population between 2028 and 2045. The 2018 projections, still show a continuing (albeit slow) increase in the Scottish population to 2043 (*Figure 13*). The next set of projections (2021 based) is planned for release in 2023.

Figure 13: Comparison of successive population projections for Scotland (source: NRS).



4.1 Population projections for NHS Greater Glasgow and Clyde to 2043

The 2018 based sub-national population projections showed a continuing growth in the population of GGC with the population increasing by ~2% over the 10 years to 2028 (1,200,718) and by ~4% over the 25 year projection time frame to 2043 (1,220,659). They showed a continuing upward shift in the age distribution over this time period (*Figure 14*). The proportion of the population aged 85 years or older was projected to increase to 3.3% by 2043, and 18% of the population was projected to be in the 65-84 year old age group by then. The proportion of the population aged 15 years or younger, and the proportion aged 16-24 yeas, was projected to progressively decrease to 15% and 10% respectively to 2043 (*Figure 14*).

Figure 14: Population pyramid showing 2018 based population projections for NHS Greater Glasgow and Clyde to 2028 and 2043 (source: NRS)

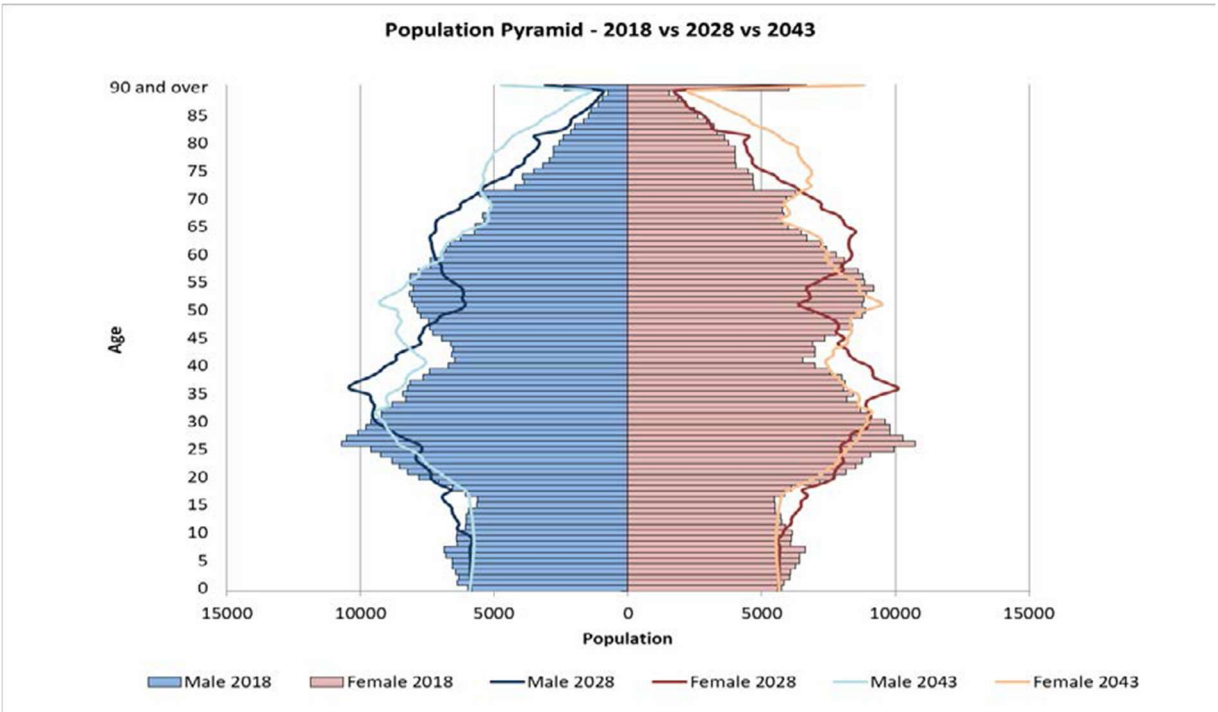
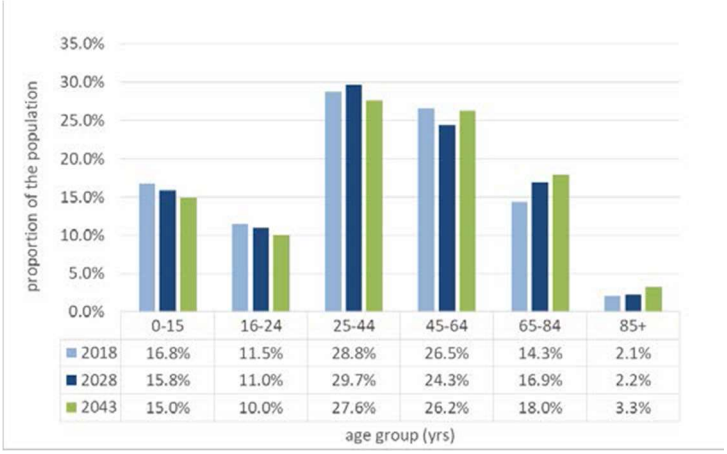


Figure 15: GGC population distribution for as a percentage by age group, 2018 mid-year estimates and projections to 2028 and 2043 (source: NRS)



The most recent estimates for the 2021 mid-year population overall (1,185,040) diverged only minimally from the population projections for 2021 (1,185,013) that were made as part of the longer term 2018 base year projections. The most recent estimates for the 2021 population show a slightly smaller proportion of the population of children aged 15 years or younger, and for adults age 45-64 years and 65-84 years, and a slightly higher proportion of adults aged 25-44 years old, compared to the 2018 based projections for 2021 (*Figure 16*). Based on this comparison, there was no reason to reject the use of the 2018 based projections.

Figure 16: GGC population distribution for as a percentage by age group, 2021 mid-year estimates versus 2018 based projections for 2021 (source: NRS)