



GIG  
CYMRU  
NHS  
WALES

Iechyd Cyhoeddus  
Cymru  
Public Health  
Wales

# Circular Economies and Sustainable Health and Well-being

The public health impact of public bodies refocusing on waste reduction and reuse in Wales

Executive Summary



**Rachel Andrew, Mark Drane, Liz Green, Richard Lewis, and Angharad Wooldridge**  
(Alphabetical order).

With contributions from: Sumina Azam, Mark A Bellis, Tracy Evans, Laura Evans, Michael Fletcher, Angie Kirby, and Catrin Lyddon.

April 2022

## This report consists of:

- **Executive Summary (This report)**
- **Summary Report**
- **Supporting Information Report (including complete reference list)**

## Suggested citation:

Andrew, R., Drane, M., Green, L., Lewis, R., and Wooldridge, A. (2022). Circular Economies and Sustainable Health and Well-being. The public health impact of Welsh public bodies refocusing on waste reduction and reuse. Executive Summary. Cardiff, Public Health Wales NHS Trust.

## Acknowledgments:

The authors would like to thank all those who contributed to the Health Impact Assessment, participated in interviews, and provided feedback on the report.

Additional contributors:

- Sumina Azam
- Mark A Bellis
- Tracy Evans
- Laura Evans
- Michael Fletcher
- Ed Huckle
- Angie Kirby
- Catrin Lyddon
- Cathy Weatherup

Representatives of the following organisations attended the participatory workshop and small group discussions:

- Abertawe Bro Morgannwg University Health Board (Swansea Bay University Health Board)
- Betsi Cadwaladr University Health Board
- Bridgend County Borough Council
- Denbighshire County Council
- Mid and West Wales Fire and Rescue Service
- Monmouthshire County Council
- NHS Wales Shared Services Partnership (Specialist Estates Services)
- North Wales Police
- Powys Teaching Health Board
- Public Health England
- Public Health Wales
- South Wales Fire and Rescue Service
- Welsh Government
- Welsh Local Government Association
- Wrexham County Borough Council

## Author contributions:

Literature review and preliminary assessment (during 2019): Rachel Andrew, Liz Green, Richard Lewis, Angharad Wooldridge.

Final assessment and COVID-19 considerations (during 2021): Mark Drane, Liz Green, Richard Lewis.

ISBN 978-1-83766-028-5

© 2022 Public Health Wales NHS Trust.

Material contained in this document may be reproduced under the terms of the Open Government Licence (OGL)

[www.nationalarchives.gov.uk/doc/open-government-licence/version/3/](http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/)

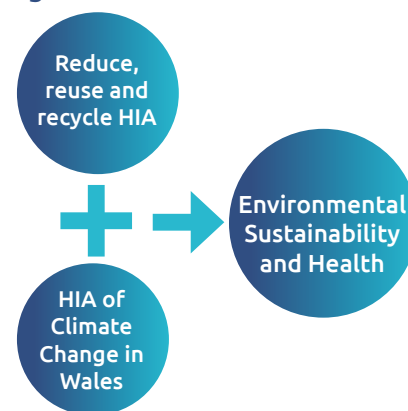
provided it is done so accurately and is not used in a misleading context.

Acknowledgement to Public Health Wales NHS Trust to be stated.

Copyright in the typographical arrangement, design and layout belongs to Public Health Wales NHS Trust.

**This HIA is part of a set of two related to the environment and environmental sustainability and health (see Figure 1).** The **first (this report)** assesses the potential and, where possible, observed positive health and well-being impacts as well as any negative impacts or unintended consequences derived from **waste reduction, reuse, and recycling approaches as part of enhancing circular economy approaches in Wales, particularly Public Bodies' role** within this. The **second is a comprehensive HIA that assesses the health impact of climate change on Wales** and those in the population who may be affected by it.

Figure 1



## Executive Summary

**The environmental, social and economic benefits of waste reduction as part of broader circular economy<sup>1</sup> approaches, including in Wales, are increasingly acknowledged and understood (Welsh Government, 2021a; WRAP, 2021). However, the impacts on the wider determinants of health and well-being in Wales, including access to services, macro-economic factors, health behaviours, and mental health are less well established.**



Health Impact Assessment (HIA) is a process that considers how the health and well-being of populations may be affected by a suggested action (Chadderton et al., 2012). HIA can be used as a key strategy to improve health and reduce inequalities throughout policy, programmes, plans, and projects within organisations.

This circular economy HIA identifies opportunities for the future and outlines a set of actions that can be implemented by a range of public bodies, wider organisations, communities, and individuals in Wales to maximise sustainable health and well-being. The HIA utilises peer reviewed research literature, grey literature, health intelligence, and draws on valuable evidence from key stakeholders. This HIA investigates the impacts resulting from waste reduction, reuse, and recycling approaches within the context of circular economy approaches, and the impact on public bodies in Wales in their role of applying circular economy approaches to waste reduction. It also makes a preliminary assessment of the impact of the COVID-19 pandemic on this topic (the initial assessment was undertaken before the pandemic). In addition to assessing impacts, this HIA aims to partially address the gap highlighted by the World Health Organization to integrate health issues into circular economy strategies (World Health Organization, 2019).

Welsh Government has over a sustained period set out policies with an aim for zero waste, including a national waste strategy and a recent strategy to enhance a circular economy in Wales and reach zero waste by 2050 (2021a). Further actions include the appointment of a Minister for Climate Change (Welsh Government, 2021b). Zero waste and circular economy approaches will be an important part of the response to Welsh Government's declaration of a Climate Emergency (2019a) and the Senedd's declaration of a Nature Emergency (2021).

1 The circular economy is systems-level approach aiming to build economic, natural and social capital underpinned by transition to renewable energy sources, and use of renewable materials.(Ellen MacArthur Foundation, n.d.)



# The public health impact of public bodies refocusing on waste reduction and reuse in Wales

“By 2050, Wales will be a country which instinctively thinks and plans to **use as few resources as possible**, **keeps those resources in use for as long as possible** and then **finds new uses for these resources** at the end of their first useful life.”<sup>1</sup>



## What is a Circular Economy?

The cycling of all resources, both biological (biodegradable) and technical (not biodegradable). Gives tools to tackle climate change and biodiversity loss, while addressing social needs. Gives us the power to grow prosperity, jobs, and resilience while cutting greenhouse gas emissions, waste, and pollution<sup>2</sup>.

## Who is most impacted by Circular Economy waste strategies?



## Which determinants of health & well-being are most affected by Circular Economy waste strategies?



Key  
 ✓ Positive impact  
 ✗ Negative impact  
 ✕ Mixed positive & negative impact

## What is waste?

“any substance or object which the holder discards or intends or is required to discard...”<sup>3</sup>

## Managing Waste in Wales

The total amount of local authority municipal waste generated in Wales **decreased by 2.5%** from 1,590 thousand tonnes to 1,550 thousand tonnes between 2016/17 and 2017/18<sup>4</sup>.

The total amount of municipal waste (kilogram per capita) created in Wales is higher than in England and Scotland<sup>5</sup>

Wales is a global leader in recycling rates of municipal waste (64%), second only to Germany (66%)<sup>5</sup>.

## How can we benefit from using Reduce, Reuse, Recycle/Circular Economy approach



<sup>1</sup>(Welsh Government, 2021a: p.11) <sup>2</sup>Ellen MacArthur Foundation, 2019b. <sup>3</sup>The Waste (England and Wales) Regulations 2011 (SI: 2011/988), 2011). <sup>4</sup>(Welsh Government, 2017b). <sup>5</sup>(Welsh Government, 2018a) <sup>5</sup>(Economia and European Environmental Bureau, 2017)

## Employment in the Waste Management Sector in Wales

Over **4,180 full time equivalent posts** in municipal and waste processing services<sup>3</sup>

**18.3%** employed in process plant, machinery operative, and elementary occupations<sup>7</sup>

The **water, sewerage and waste management sector** employs **13,000 people**<sup>7</sup>

Around **two thirds** of people employed in **repair activities** are **skilled workers** e.g. motor repairs<sup>8</sup>

Only **38.8%** of adults aged 16-64 years have a **qualification level of NVQ4 and above**<sup>9</sup>.

Key  Positive impact  Negative impact  
 Mixed positive & negative impact

## Impact of Covid 19 Pandemic on Circular Economy approaches

**Mental Health & Well-Being**  
 

**Waste Disposal & Recycling**  


**Specific Waste Streams**  


**Waste Management Sector**  
 

**Circular Economy**  


**Climate Change, Biodiversity & Planetary Health**  


**Reduce & Reuse Outlets including 3rd sector**  


**Waste Services**  
 

### Findings

1. A need to ensure **positive and negative impacts, unintended consequences, and opportunities are understood** including those arising during a projected period of transition to a Circular Economy.
2. Achieving zero waste requires an **evolution in thinking about how resources are used** - from a linear to a circular approach.
3. Negative impacts are assessed to be felt in the **short term but with lower intensity**, paving the way for **more intense long-term positive impacts**.
4. In contrast to reduce, reuse and recycle approaches generally, many of the impacts related to the COVID-19 pandemic were **immediate and impacted in the short-term**.

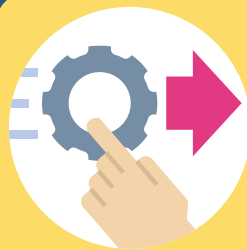
### Opportunities



Potential public health co-benefits to be gained from prioritising reduce and reuse policies:

- **To reduce long-standing inequalities** (for example create skilled jobs and fair work)
- **To deliver the goal of zero waste by 2050** and a Circular Economy in Wales
- **For change in the manufacturing sector** and for public bodies and industry to collaborate to influence change

### Potential Areas for Action



- **Use of Health impact Assessment** when developing Circular Economy policies and interventions
- **Supporting community action and initiatives** for reduction and reuse of resources
- **Prioritising waste reduction** towards zero waste
- **Reducing all energy** consumption
- **Reducing plastic** use and plastic waste
- **Reducing waste** through **sustainable procurement**
- **Reducing food waste**
- **Increasing levels of reuse**
- Continuing to **support recycling**
- **Collaborative action** across all sectors and public bodies to consider **the health and well-being impacts and any inequalities**
- **Public bodies leading by example** towards zero waste and a Circular Economy ('Be the Change')

## Key Findings

The HIA was initially scoped and carried out as a comprehensive and concurrent HIA of waste reduction, reuse, and recycling in Wales prior to the pandemic. Whilst keeping this central focus, this HIA report also considers the wider context of circular economy approaches. Additionally in response to COVID-19 a recent review of the impact of the global pandemic in relation to these topics has been included. A broad ranging literature search including both peer reviewed, and grey literature identified a small and emerging evidence base for the health and well-being impacts of reducing, reusing, and recycling waste materials.

### The key findings include:

- The evidence identified focuses on the positive impacts of reduce, reuse, and recycle policies as part of wider circular economy approaches. However, few of these impacts are conceptualised in the literature for their pathway to health and well-being impact. There is a need to ensure positive and negative impacts, unintended consequences, and opportunities are understood, including those arising during a projected period of transition to a circular economy (see Summary Report Section 3)
- Achieving zero waste requires an evolution in thinking about how resources are used - from a linear to a circular approach. Policy and action need to focus on resources within a cycle and the elimination, as far as possible, of waste. This matters for several reasons:
  - in the context of the climate and nature emergencies;
  - in the context of the seven well-being goals for Wales and the 17 Sustainable Development Goals;
  - to advocate for enhance circular economy approaches in Wales;
  - to ensure resources are maintained in use for as long as feasible to ensure maximum value is obtained from them before recovering and regenerating these products;
  - for public bodies and wider stakeholders to operationalise in practice the aim for Wales to reach zero waste by 2050.
- **'Reduce, reuse, recycle'** is the strapline for the waste hierarchy yet some evidence suggests policies for recycling can in fact conflict with those intended to reduce waste in the first place and keep resources at their highest level of value for as long as possible. It should not be assumed policies for reduce and reuse can therefore be simply added to existing policies without the risk of unintended consequences – a systemic approach is needed.
- A focus on reduce, reuse, and recycle policies would have major, probable, positive, long-term health benefits at a whole population level in Wales. Major probable impacts are identified for groups that have historically suffered health inequities: people in low and mid-level occupations; and separately people living in areas exhibiting poor economic indicators and disadvantaged areas. A possible major-moderate positive impact in the medium-term is identified for employees of public bodies (see Summary Report Section 3).



- Neither major nor major-moderate negative health impacts were identified for the general population. A key indirect positive impact is the role circular economy approaches play in mitigating general population risks associated with climate change. The scale of change however should not be underestimated and implies significant changes across the Welsh economy. If such a large change were not to be achieved, then those indirect risks are more likely to be manifest as negative health risks across several determinants of health including emotional and physical well-being, community resilience, and other environmental determinants (see Summary Report Section 3).
- A possible major-moderate negative impact is identified in the medium term for employees of public bodies who play an important role in setting and implementing policies that address these issues (see Summary Report Section 3).
- Negative impacts are assessed to be felt in the short-term but with lower intensity, paving the way for more intense long-term positive impacts. So, there is an important period of transition where public bodies and wider organisations play an important role in establishing policies and modifying behaviours to mitigate medium-term negative health impacts, whilst equally making big enough changes soon enough to achieve goals such as zero waste by 2050 (see Summary Report Section 3).
- In contrast to reduce, reuse and recycle approaches generally, many of the impacts related to the COVID-19 pandemic were immediate and impacted in the short-term (see Summary Report Section 3).
- Some policies for reduce, reuse, and recycle within wider circular economy approaches are at the early stage of implementation, so several impacts have been considered prospectively and are therefore potential: there is therefore a need to assess these concurrently too as they are implemented and track any impacts as they emerge.
- In Wales, interventions implemented in response to the COVID-19 pandemic in relation to waste have focused on the control of infection, managing healthcare waste, maintaining household and commercial waste collections, and avoiding disruption to existing food and other recycling waste management systems. There is an expectation that these actions would have positive health impacts, including: protection from COVID-19 infection; protecting workers from infected healthcare waste; and avoiding the loss of existing environmental health protections that household and commercial waste collections provide already.
- COVID-19 has led to an increased awareness of the value and importance of the work carried out by all critical key workers in Wales including those working in the waste management sector who, at the start of the pandemic, worked to ensure most waste streams were collected and processed safely (see Summary Report Section 3.2).
- During the COVID-19 pandemic, reuse facilities like charity shops and reuse hubs (including local authority provision) have been classed as 'non-essential retail' and therefore closed, and community ventures such as 'Freecycle' and 'Repair Cafes' stopped many activities for extended periods of time. This has impacted on both reducing waste, on volunteering, and income generation for those retailers and services. There are also potential demographic differences as to how these impacts have been distributed, including but not limited to gender, age, employment status and groups at higher risk of discrimination (see Summary Report Section 3.2).







The HIA identified **positive** impacts on health and well-being from reduce, reuse, and recycle actions within wider circular economy approaches. These include:

### Positive impacts identified:

- **Mental health and well-being:** A major-moderate possible positive impact through reduce, reuse, and wider circular economy approaches by providing people with an increased sense of control in their own lives including over action in response to the climate emergency (see Summary Report Section 3.2.1).
- **Living and environmental conditions:** Reduce, reuse, and recycle can contribute to reducing air pollution both through the wider climate emergency response and by reducing food waste systems and thus associated emissions (see Summary Report Section 3.2.2).
- **Economic conditions:** Reduce, reuse, recycle and circular approaches can lead to the creation of new and higher skilled employment; new enterprise opportunities in the reduce and reuse sector; opportunities to target economic investment in areas experiencing historic high levels of deprivation; opportunities through deposit return schemes and extended producer responsibilities (see Summary Report Section 3.2.3).
- **Macro-economic, environmental, and circular economy:** Indirect positive potential impacts on the climate emergency will reduce air pollution and greenhouse gas emissions. Possible macro-economic benefit of a shift in the economy and use of resources throughout their lifecycle leading to employment opportunities and the resultant positive health impact (see Summary Report Section 3.2.4).
- **COVID-19:** Although recycling centres were closed during lockdown, most waste streams continued to be collected in Wales during the pandemic with a positive health protection<sup>2</sup> impact (see Summary Report Section 3.2.5).
- **COVID-19:** Health protection measures such as the support for key workers and the closure of 'non-essential' premises to prevent the spread of infection had a positive health impact for example in supporting the continuation of household waste collection (see Summary Report Section 3.1.5).



<sup>2</sup> Health protection is actions taken to protect groups or populations from various sources of health hazard or risk including for example those arising from waste. Health protection is a core function of a complete public health system.





The HIA also identified **negative** impacts / unintended consequences from reduce, reuse, and recycle actions within wider circular economy approaches. These include:

### Negative impacts identified:

- **Economic conditions:** Potential loss of employment within areas such as recycling, incineration, and landfill sites. Notably, these may manifest sooner than positive impacts (see Summary Report Section 3.2.3).
- **Macro-economic:** Potential employment opportunity decline in the landfill management sector during the transition from the existing linear approach to a cyclical system focused on reduce and reuse (see Summary Report Section 3.2.4).
- **COVID-19:** Mental health and well-being of key workers during the pandemic, including those in waste management (see Summary Report Section 3.2.1).
- **COVID-19:** Living and environmental conditions were the negative impact from the potential for waste as a source of COVID-19 infection, changes in waste management regimes and potential health impacts from the use of alcohol sanitiser and biocides.
- **COVID-19:** Many reduce and reuse operations are in the third sector and were closed for extended periods during the pandemic, with an associated impact on volunteering opportunities and the related health benefits (see Summary Report Section 3.1.5 & 3.2.5).
- **COVID-19:** The immediate demands of the pandemic have resulted in actions that have reinforced existing linear waste management approaches, e.g., incineration, and impact on recycling processes. This presents a risk to progress on circular economy approaches and realising the associated health benefits (see Summary Report Section 3.2.4).
- **COVID-19:** Acute policies responding to the pandemic have the unintended consequence of setting back pre-pandemic responses to the climate emergency and single-use plastic pollution (see Summary Report Section 3.2.4).

Many reduce and reuse operations are in the third sector and were closed for extended periods during the pandemic



## Future actions

Future actions in this HIA have been developed based on the evidence gathered about the impact of reduce, reuse, and recycle approaches as well as wider circular economy goals. The recommendations are relevant to a range of organisations and people in Wales. These include Public Services Boards; public bodies; business and industry organisations; communities; and individual employees and citizens.

For health and well-being in Wales, the findings mean that many wider determinants of health can be addressed through a wide range of interventions involving a broad number of public bodies and wider stakeholders in Wales. Examples of these pathways include through skills and training; employment opportunities including in higher skilled occupations; volunteering opportunities and the role of the third sector; an increased individual and collective sense of control in responding positively to the zero-waste goal; and an improved environment with less pollution and better water quality. All of these can also help make a healthier, resilient, prosperous, and globally responsible Wales.



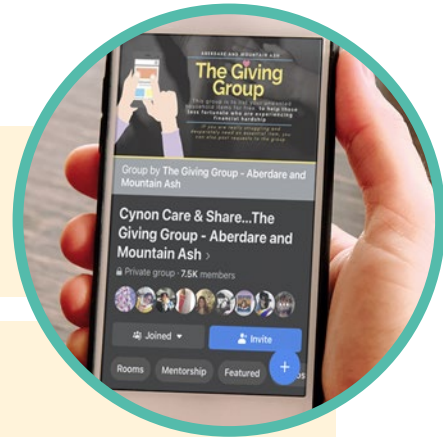
## Policy

- **Specific roles and duties of individual public bodies:** The scope of duties and roles in relation to waste will vary by type of public body so will need to be interrogated. Collaboration on common themes across Wales should be encouraged, for example through Public Services Boards and intrasectoral and intersectoral action.
- **Integrate health impact screening:** Public bodies should utilise HIA as a method of assessing reduce and reuse policies to promote positive actions to implement the circular economy strategy and mitigate for any unintended consequences / negative impacts.
- **Consumption of resources:** Public bodies should closely monitor, report, and evaluate their consumption of resources and their actions to reduce waste to zero by 2050 (Welsh Government, 2021a).
- **Procurement:** Public bodies should drive forward the actions identified in 'Prosperity for All: A Low Carbon Wales' regarding sustainable procurement (Welsh Government, 2019b).

- **Waste strategy:** Public bodies and agencies should consider the findings of this HIA when consulting on their updated or revised waste strategies.
- **Pandemic planning:** Waste management should be considered within emergency management planning. In particular, what actions would be required in a circular economy to respond to a future pandemic – waste from energy and incineration options have played a significant role in managing waste during the current pandemic – this should be considered further and how it is managed in a zero-waste future.

## Implementation

- **Community response:** Supporting public services boards and communities to develop locally relevant responses and actions: through funding and skills and knowledge development to enable health and well-being.
- **Scale up successful pilots to the mainstream:** Scaling up support for community examples of successful pilots where relevant and effective so that these become part of the mainstream.
- **Public body employees driving change:** Public bodies to harness the huge resource/opportunity with their employees to 'Be the Change' for Wales' well-being goals, whether based in workplace, home, or agile workspace.
- **Circular economy skills gaps and training:** Skills gaps identified both directly within reduce and reuse approaches and indirectly through circular economy approaches are important drivers to be considered by Regional Skills Partnerships and wider organisations. This will support working-age adults and learners to move into good work that is better paid and supports a transition to a circular economy with sustainable jobs distributed across Wales. All jobs have the potential to become green jobs and "every job of the future will be directly or indirectly shaped by the transition to net zero" (Green Jobs Task Force, 2021).



## Further areas of exploration

Various areas have been identified that affect health, well-being, and inequalities in diverse ways and these should be further explored. Future resources should be used to investigate effectiveness of circular economy approaches incorporating a response to the climate emergency, and the need to thoroughly evaluate the policies for a more resilient response to waste management during a global pandemic.



## Conclusion

**Reduce, reuse, and recycle approaches are essential to having a circular economy in Wales and reaching zero waste by 2050. A broad range of positive and negative health impacts are identified in this HIA and there is a role for public bodies, wider organisations, communities, and individuals in Wales to play, both now and in the long-term.**

**This HIA identifies that thinking about the concept of waste needs to evolve, such that within a circular economy resources should be kept useful for as long as possible and subsequently cycled back into use, minimising leakage from a circular system as waste (Ellen MacArthur Foundation, 2019). Wales needs to collectively focus on the circular and sustainable use of products and materials within synthetic, technical cycles (such as, mobile phones, steel, and vehicle tyres) and organic ones within biological cycles (such as food, cotton, and wood).**

Wales is a leading country globally in recycling (Eunomia and European Environmental Bureau, 2017). The next milestone for Wales can be to become a leader in the circular or resource economy ultimately making recycling the “loop of last resort” (Ellen MacArthur Foundation, n.d.). This is necessary to mitigate negative health impacts and maximise opportunities identified in this assessment.

If successful, a circular economy approach in Wales can have a profound, beneficial health impact at population level. Reduce and reuse approaches offer opportunities to address some of the most intractable health challenges Wales has historically faced. Green jobs and the skilled workers needed within the circular economy are a key part of this including how they might be distributed equitably across Wales.

The COVID-19 pandemic has created new challenges that could undo earlier progress on reduce and reuse. The response to COVID-19 has highlighted gaps in waste management policies and how this is an unsustainable action for future pandemics – for example, reduce and reuse operations have been negatively affected and forced to close during this pandemic. Any responses to future pandemics should take this into account.

This HIA assumes a successful response to the climate emergency with potential indirect positive health impacts resulting. However, the impact of COVID-19 on existing reduce, reuse, and recycle systems provides insight into the potential negative impacts of failing to successfully transition to a circular economy in Wales as part of the climate emergency response. The pandemic has highlighted the need to urgently embed action including to mitigate any unintended consequences/ negative impacts of policies and plans. This assessment can provide a greater understanding of the major impacts and can support public bodies, organisations, communities, and individuals to foster an approach that promotes health, well-being, and equity, complementing the positive delivery of a circular economy.



# Our Priorities 2018-2030

**Building and mobilising knowledge and skills** to improve health and well-being across Wales

**Influencing the wider determinants of health**

**Improving mental well-being and resilience**

Supporting the development of a sustainable **health and care system focused on prevention** and early intervention

*Working to Achieve a Healthier Future for Wales*

**Promoting healthy behaviours**

**Protecting the public** from infection and environmental threats to health

Securing a **healthy future** for the next generation

**Our Values:**

*Working together with trust and respect to make a difference*



GIG  
CYMRU  
NHS  
WALES

Iechyd Cyhoeddus  
Cymru  
Public Health  
Wales



World Health Organization  
Collaborating Centre on Investment  
for Health and Well-being



GIG  
CYMRU  
NHS  
WALES

Iechyd Cyhoeddus  
Cymru  
Public Health  
Wales

Public Health Wales  
Number 2 Capital Quarter  
Tyndall Street  
Cardiff CF10 4BZ  
Tel: +44 (0)29 2022 7744

Email: [generalenquiries@wales.nhs.uk](mailto:generalenquiries@wales.nhs.uk)



@PublicHealthW



/PublicHealthWales

[phw.nhs.wales](http://phw.nhs.wales)