

18 DECEMBER 2020

**GATEWAY REVIEW – FINAL EVALUATION REPORT BY NATIONAL
EVALUATION PANEL LEADS, SQW**

REPORT OF CARDIFF CAPITAL REGION CITY DEAL DIRECTOR

AGENDA ITEM 5

Reason for this Report

1. The anticipated 'Final Report' report by National Evaluation Panel leads SQW has now been carried out, ahead of Gateway Review in March/April 2021. This report sets out the main findings of the final report and takes the opportunity to outline the timescale now attached to the Gateway review process, anticipated to begin in February/March 2021 – as recently confirmed by the Cities and Local Growth Unit at the Ministry of Housing Communities and Local Government (MHCLG)

Background

2. As set out in previous reports, SQW is leading the National Evaluation Panel, undertaking an independent evaluation of local growth interventions across the UK. These interventions are funded through investment funds devolved to 11 localities in cohort 2, including the Cardiff Capital Region City Deal Wider Investment Fund. Their ongoing assessments of progress will be submitted to inform the UK Government's first Gateway Review of the Wider Investment Fund, which is due to take place early 2021.
3. The scope of the evaluation relates to the City Deal signed in March 2016 across the ten CCR Councils, the Welsh and UK Governments for c£1.2bn. This comprises £734m for the SW Metro (outside of the SQW work but likely to be in scope for Gateway) and £495m for the Wider Investment Fund which is in direct scope and the focus of the Locality Framework.
4. Within the original heads of terms agreed in March 2016, a range of potential interventions were highlighted, including transport schemes, investment to unlock housing and employment sites, and the development of R&D facilities. The heads of terms also specifically stated that CCR "will prioritise interventions that support the development of an internationally competitive compound semiconductor cluster". No funds were 'designated' to specific projects within the City Deal itself.

5. One project had been fully approved and had spent WIF monies by 31st December 2019 (the cut-off date imposed by UK Government) and is therefore 'in scope' for the most recent evaluation. This is the Compound Semiconductor Foundry (CSC) project, which involves WIF investment of £38.5 million towards the Newport mega-Foundry (c£33m of which has been drawn down to date). In addition, given the progress made in the intervening period on schemes such as Metro Plus, Metro Central, CCR Graduate Scheme, Homes for all the Region and Plasma Technology – these all constitute reference points in the document.
6. The first baseline report was completed in May 2019 and a 'one year out' report was completed in April 2020 and reported to cabinet in May 2020. The Final Evaluation Report is the last document in the series and completes the National Evaluation Panel process for CCR in the period up until Gateway 1.

CCR Final Evaluation Report and Gateway 1 Timeframe

7. The final report has been carried out in line with the Locality Evaluation Plan/ Baseline Report presented to Cabinet in June 2019 and the One Year Out Report presented to Cabinet in May 2020. The underlying report/ assessment is an evolving document; focussed principally on the CSC Foundry project; and, sets out a clear logic model for assessment. In addition to this, the evolving document also provides commentary on findings in relation to wider partnership and capacity development; and, identified the broader impact of the Wider Investment Fund. The costs of all aspects of the work around the Compound Semiconductor project evaluation, baseline report, one year out report, final report and capacity and partnerships development have been previously reported at £217,524.
8. The full Final Evaluation Report is attached at Appendix 1a and a summary of report findings include:
 - The WIF investment in the CSC Foundry Project has delivered on objectives overall and is seen as a catalytic investment, looking forward to the CS Connected success of Strength in Places. Emphasis is placed on the importance of delivering on the Cluster proposal as a way of building the momentum and potential of the sector overall;
 - This 'positive overall' indication places weight on the need to now look forward with supply chain progression and skills development, under the umbrella of CS Connected;
 - Capacity building and partnership development is seen as strong and that CCR has taken time to take partners on the journey. Issues regarding business engagement are highlighted, but equally, the constructive action CCR has taken in reviewing the scope and purpose of the CCR Business Council;
 - The distinctiveness of the ROI 'evergreen' where possible principle, optimisation of leverage and co-investment are all highlighted as features;
 - There is reference to a slight hiatus in the programme in between the CS Foundry investment and subsequent investment – but that is explained and clarified as being a necessary inflection point in the programme to enable its evolution and adaptation into today's approach;

- Productivity growth in the region has been modest (and in the main, due to a growth in employment) – but it is recognised that the influences and factors are broad – Brexit and COVID-19. In addition, the approach to innovation-led growth and a long-term focus on productivity is preferable and in keeping with programme aims; and,
 - Supports the need for the City Deal-led approach to evolve into City Region-led development.
9. Following recent engagement with the Cities and Local Growth Unit at MHCLG, the timeframe and process for Gateway 1 is clearer. The process now required of CCR is as follows:
- SQW National Evaluation Panel Final Report to be presented to Cabinet in November 2020;
 - SQW National Evaluation Panel Report to be submitted to UK Government, along with the Complementary Reports by the end of November 2020;
 - the ‘Challenge session’ with MHCLG representatives and BEIS analysts and other attendees as required – will be held in London (or remotely in the circumstances) in January-February 2020;
 - Welsh Government will be invited as observers to the process;
 - the focus of the review will be on the WIF element of the City Deal; and,
 - the outcome of Gateway 1 will be received in or around March 2021
10. It should be noted that whilst the Complementary Report has been produced; further work is now underway to develop some of the narrative specifically on the CS Foundry Project. Both these document will be submitted to UK Government compliant with the above process.

Reasons for Recommendations

11. The reasons for recommendations relate to:
- the need for Cabinet to note and endorse the Final Evaluation Report;
 - the need for Cabinet to note the timeframe for Gateway review and the requirement to submit the Final Evaluation Report along with Complementary Reports; and,
 - the make-up of the remainder of the process and participation in the challenge-sessions.

Financial Implications

12. This report notes that costs associated with work leading towards the Gateway Review are significant and that it is important that Regional Cabinet understand what it is involved and the value added. It is also important to note that funding for 2021/22 and beyond is conditional on CCRCO successfully passing this Gateway Review, whilst any unspent funding up to this time may be subject to repayment if Gateway Review is not passed.
13. The total cost of SQW’s work over the period from 2018/19 to 2020/21 is £217,524, of which, £194,221 has been charged to date, with an outstanding

balance of £23,303 to be incurred in January 2021 following completion of the Final Report.

14. The Medium Term Financial Plan being drawn-up to support Regional Cabinet's annual and medium term budget planning process will include consideration of any further sums that may be required to be set aside to meet similar costs of future Gateway Reviews.

Legal Implications

15. In considering its endorsement of this report the Regional Cabinet must have regard to, amongst other matters:
 - (a) the obligations set out in the Welsh Language (Wales) Measure 2011 and the Welsh Language Standards;
 - (b) the public sector duties under the Equality Act 2010 (including specific Welsh public sector duties). Pursuant to these legal duties, when making decisions, public bodies must have due regard to the need to (1) eliminate unlawful discrimination, (2) advance equality of opportunity and (3) foster good relations on the basis of protected characteristics, which are set out in section 4 of the Equality Act 2010;
 - (c) the Well-being of Future Generations (Wales) Act 2015. The Well-being of Future Generations (Wales) Act 2015 ('the Act') is about improving the social, economic, environmental and cultural well-being of Wales. The Act places a 'well-being duty' on public bodies aimed at achieving 7 national well-being goals for Wales - a Wales that is prosperous, resilient, healthier, more equal, has cohesive communities, a vibrant culture and thriving Welsh language and is globally responsible. In discharging their respective duties under the Act, each public body listed in the Act (which includes the Councils comprising the CCRC) must set and published wellbeing objectives. These objectives will show how each public body will work to achieve the vision for Wales set out in the national wellbeing goals. When exercising its functions, the Regional Cabinet should consider how the proposed decision will contribute towards meeting the wellbeing objectives and in so doing achieve the national well-being goals.
16. The well-being duty also requires the CCRC to act in accordance with a 'sustainable development principle'. This principle requires CCRC to act in a way which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. Put simply, this means that Regional Cabinet must take account of the impact of their decisions on people living their lives in Wales in the future. In doing so, Regional Cabinet must:
 - look to the long term;
 - focus on prevention by understanding the root causes of problems;
 - deliver an integrated approach to achieving the 7 well-being goals;
 - work in collaboration with others to find shared sustainable solutions;

- involve people from all sections of the community in the decisions which affect them.

17. Regional Cabinet must be satisfied that the proposed decision accords with the principles above.

RECOMMENDATIONS

18. The Joint Overview and Scrutiny Committee is asked to:

Note the content and provide comment on the report and attached supporting documentation

Kellie Beirne
Director, Cardiff Capital Region City Deal
18 DECEMBER 2020

Appendices

| | |
|-------------|-----------------------------|
| Appendix 1a | SQW Final Evaluation Report |
| Appendix 2 | CCRCD Complementary Report |
| Appendix 2a | CSC Complementary Report |

Background Papers

- CCR Baseline Report and Locality Evaluation Plan - Report to Regional Cabinet 10 June 2019
<https://www.cardiffcapitalregion.wales/wp-content/uploads/2019/06/ccr-regional-cabinet-10-06-19-item-13-local-evaluation-plan.pdf>
- CCR One Year Out Report – Report to Regional Cabinet 18 May 2020
<https://www.cardiffcapitalregion.wales/wp-content/uploads/2020/04/item-6-gateway-review-1.pdf>

Independent Evaluation of Local Growth Interventions

Cardiff Capital Region Wider Investment Fund

Final Overview Report



Contents

| | |
|---|-----|
| 1. Introduction..... | 1 |
| 2. Policy and economic context..... | 5 |
| 3. Overview of the Wider Investment Fund | 13 |
| 4. Evaluation of the Compound Semiconductor Cluster project..... | 19 |
| 5. Wider contribution of the Investment Fund | 28 |
| | |
| Annex A: Gateway Review indicators..... | A-1 |
| Annex B: Peer Review comments | B-1 |
| Annex C: Economic forecasts and out-turns..... | C-1 |
| Annex D: Other interventions supported though the Wider Investment Fund | D-1 |

Contact:

Ross Gill

Tel: 020 7391 4104

email: rgill@sqw.co.uk

Approved by:

Jonathan Cook

Director

Date: 28/10/2020

Disclaimer

This report takes into account the particular instructions and requirements of our client. It is not intended for, and should not be relied upon by, any third party and no responsibility is undertaken to any third party.

Whilst SQW has used reasonable care and skill throughout, it is unable to warrant either the accuracy or completeness of information supplied by the client or third parties, and it does not accept responsibility for any legal, commercial or other consequences that arise from its use.

1. Introduction

Investment Funds and the Gateway Review process

- 1.1** A series of Growth and City Devolution Deals have empowered local partners across the UK to design and deliver programmes to develop their local economies. This encourages partners within functional economic areas to work more closely together and to develop new governance arrangements
- 1.2** As part of this approach to local economic growth, city regions and other areas across the UK (referred to as ‘localities’) including Cardiff Capital Region were awarded long-term investment funds. Spend of these funds is allocated to locally appraised projects, providing localities with greater control over directing priority investment decisions. These projects are appraised in line with assurance processes agreed with central government.
- 1.3** Key features of the approach agreed between UK Government, the Welsh Government and Cardiff Capital Region included:
- a long-term funding commitment, with agreed overall (maximum) envelope: in the case of Cardiff Capital Region this is a 20-year commitment with a £1.2 billion investment fund, which consists of £734m investment into the South Wales Metro and a **Wider Investment Fund (the subject of this evaluation) worth £495m.**
 - the first five years funding confirmed, paid in annual instalments
 - a Gateway Review after the first five years, and then every five years subsequently; for Cardiff Capital Region, with the investment fund agreed in March 2016, this involves a Gateway Review by March 2021
 - the understanding that future funding beyond the first five years will be subject to the outcome of Gateway Reviews and Ministerial decision-making
 - agreement that the Gateway Review is informed by a review of the impact of investments, undertaken by an independent National Evaluation Panel; in November 2016, an SQW-led consortium¹ was appointed to deliver the work of the National Evaluation Panel.

The National Evaluation Panel

- 1.4** The purpose of the National Evaluation Panel is to evaluate the impact of the locally-appraised interventions on economic growth in each locality to inform the Gateway Review and Ministerial decision-making on future funding. This is specifically focused on the Wider

¹ The consortium includes Cambridge Econometrics, Savills, Steer, and an Academic Group (Prof Martin Boddy, University of West of England; Prof Ron Martin, University of Cambridge; Prof Philip McCann, University of Sheffield; Prof Peter Tyler, University of Cambridge; and Prof Cecilia Wong, University of Manchester).

Investment Fund in Cardiff and does not cover the investment in the South Wales Metro nor the wider Cardiff Capital Region City Deal.

- 1.5** The focus is on the impact of activities supported by the Wider Investment Fund, or the progress in delivery where it is too early for impact to be established. The work of the National Evaluation Panel has not covered the processes of decision-making and delivery mechanisms, and the Panel has not advised on what projects should be supported.
- 1.6** The work of the National Evaluation Panel to inform the first Gateway Review has involved:
- the development of a National Evaluation Framework
 - the agreement of evaluation frameworks/plans for each locality, and subsequent delivery of the agreed evaluation research by the consortium, informed by monitoring data collected by the localities
 - evaluation reports on impact and progress of the investment funds.
- 1.7** The National Evaluation Framework was approved by the Steering Group² of the National Evaluation Panel in August 2017. It established three principal strands of work:
- **Impact Evaluation:** assessing the extent to which interventions supported by the investment funds have generated economic outcomes and impacts for their locality.
 - **Progress Evaluation:** where it is too early to evidence outcomes and impacts, even at an interim stage, an assessment of the progress that interventions have made in their delivery, for example, against anticipated expenditure, delivery milestones, and in generating outputs.
 - **Capacity Development and Partnership Evaluation:** to provide qualitative evidence on the effects of the investment funds on local capacity development and partnership working.

This report

- 1.8** This is the Final Report for the evaluation of the Wider Investment Fund, to inform the first Gateway Review. It is the third and final output from the evaluation, following a Baseline Report in May 2019 and a One Year Out Report in April 2020. This Final Report draws on, and is accompanied by, two Evidence Papers, which provide more detailed findings from the evaluation. These Papers are:
- a Progress and Impact Evaluation Evidence Paper, principally covering the Compound Semiconductor Cluster project, which is the major investment committed and delivered

² The Steering Group comprises representatives from the 11 participating Localities (Glasgow City Region; Greater Cambridge Greater Manchester; Leeds City Region; Liverpool City Region; Tees Valley; Cambridgeshire and Peterborough; Cardiff Capital Region; Sheffield City Region; West Midlands; West of England) and the Cities and Local Growth Unit (CLGU) on behalf of the Government.

over the period of the evaluation; the Paper also sets out the other spending commitments made

- a Capacity Building and Partnership Evaluation Evidence Paper, which provides evidence on how the Investment Fund has contributed to local economic development capacity and partnership working.

1.9 The Compound Semiconductor Cluster project was the only intervention formally in scope of the evaluation. This was the only intervention approved **and** where significant Fund expenditure had been incurred.

1.10 The draft Final Report was reviewed and commented on by the Cardiff Capital Region, and the National Evaluation Panel's Academic Group.

Evaluation approach

1.11 The remit of the National Evaluation Panel was to provide evidence on the progress and impact of the funds in delivering local growth outcomes. The approach to evaluation consisted of the following elements:

- **A progress and impact evaluation of the Compound Semiconductor Cluster project:** this investment had a mix of short- and longer-term objectives, with the intent ultimately for this intervention to catalyse the development of the compound semiconductor cluster in South Wales. Given the time that it takes for clusters to develop, an early impact evaluation was undertaken alongside an evaluation of the progress of the intervention.
- **Local economic development capacity:** an evaluation of how, at a strategic level, the Wider Investment Fund has had an effect on partnership working and capacity building.
- **Intervention case study on partnership working:** an in-depth review of the design, development and early delivery of one of the more-recently agreed interventions as part of Metro Plus, a new integrated transport hub for Porth. This case study has examined, at an intervention level, processes of capacity building and partnership working.

COVID-19

1.12 This evaluation covers the period from April 2016 to end-June 2020, which includes the main period of disruption over March-June 2020 caused by the COVID-19 pandemic. The effects of COVID-19 on delivery of the Wider Investment Fund over this period, and the potential implications for outcomes in the future have been considered in the evaluation.

1.13 Key findings related to COVID-19 are summarised in this report and are set out in more detail in the accompanying Progress and Impact Evaluation Evidence Paper.

Structure

1.14 The report is structured as follows:

- Section 2. Policy and economic context
- Section 3. Overview of the Investment Fund
- Section 4. Assessment of progress and economic impacts of the Compound Semiconductor Cluster project
- Section 5. Wider contribution of the Investment Fund.

1.15 Three supporting annexes are provided:

- Annex A: Mapping and commentary on the Gateway Review indicators that are covered by the Final Report of the evaluation and its accompanying Evidence Papers
- Annex B: Peer Review comments from the Panel's Academic Group, and responses to these
- Annex C: Economic forecasts and out-turns
- Annex D: Other interventions supported through the Wider Investment Fund.

2. Policy and economic context

Summary of key messages

- The Cardiff Capital Region City Deal agreed in 2016 consisted of a 20-year, £1.2 billion investment package. It aimed to deliver up to 25,000 new jobs by 2036, leveraging an additional £4 billion in private sector investment.
- Alongside investment in the Metro, the £495 million Wider Investment Fund was a key element of the Deal, supporting investment in connectivity, innovation, skills and employment, housing and regeneration.
- The strategy for the City Deal (and the use of the Wider Investment Fund) was set out in a five-year business plan and in an Industrial and Economic Plan, agreed in 2019. The approach to investment is based on ‘infrastructure, innovation and challenge’, with an emphasis on securing leverage and return on investment (including financial return where possible).
- In governance terms, the City Deal is overseen by a Regional Cabinet, constituted as a local authority joint committee and supported by advisory boards and a small executive team.
- The City Deal has been developed in the context of an economy which has faced substantial industrial restructuring in recent decades, which has historically performed relatively weakly on measures of productivity and output, and in within which there are significant intra-regional disparities. Analysis of economic performance over the past four years suggests modest growth, driven mainly by increased employment rather than productivity gain.
- However, the region contains significant economic assets, including in its technology capabilities and knowledge base.

The Cardiff Capital Region City Deal

The original City Deal

- 2.1** The Cardiff Capital Region City Deal was agreed between the UK Government, the Welsh Government and the ten local authorities that make up the region³ in 2016. At the core of the Deal was the creation of a 20-year, £1.2 billion investment package, co-financed by the UK and Welsh Governments, the local authorities and the European Regional Development Fund. The City Deal sought to deliver up to 25,000 new jobs by 2036, leveraging an additional £4 billion in private sector investment.
- 2.2** The City Deal set out a series of priorities:

³ Blaenau Gwent, Bridgend, Caerphilly, Cardiff, Merthyr Tydfil, Monmouthshire, Newport, Rhondda Cynon Taf, Torfaen and Vale of Glamorgan.

- **Delivery of the South Wales Metro:** The Metro is a transformational programme, involving improvements in the quality, frequency, and reliability of the 'Valley Lines' rail network, as part of a modern and integrated regional transport system. £734 million was 'pre-allocated' from the £1.2 billion investment package to support the delivery of the Metro.
- **Wider investment in connectivity,** complementing the Metro. As part of this, the City Deal committed to the establishment of a Regional Transport Authority to coordinate transport planning and investment, in conjunction with the Welsh Government.
- **Support for innovation.** As part of this, the UK Government committed to establishing the Compound Semiconductor Applications Catapult in the region, building on the region's significant capabilities in this sector. More broadly, the City Deal committed the region to prioritising investment in research and development and to supporting the growth of high value and innovative businesses.
- **Workforce skills and employment,** including measures to ensure that skills and employment provision is more responsive to business and community need, and including the establishment of an Employment and Skills Board (now the Regional Skills Partnership).
- **Housing development and regeneration,** including a partnership approach to strategic planning and support for the re-use of brownfield property and sites.
- **Support for enterprise and business growth,** including measures to ensure a stronger voice for business alongside that of the local authorities.

2.3 To support those priorities additional to the Metro, the City Deal allocated £495 million to a **Wider Investment Fund (WIF)**, which is the subject of this evaluation. The WIF is itself made up of £375 million from UK Government and £120 million in contributions from the local authorities.

City Deal governance

2.4 The City Deal committed local partners to developing "*stronger and more effective leadership across the CCR, enabling the ten local authority leaders to join up decision-making, pool resources and work more effectively with local businesses*".

2.5 Supporting this, the decision-making body for the City Deal is a Joint Committee consisting of the Leaders of the ten participating local authorities (referred to as the CCR **Regional Cabinet**). This is supported by a Regional Economic Growth Partnership (chaired by the private sector); three further advisory bodies, focused on transport, skills and business involvement⁴; and (since 2019) an Investment Panel established to advise on Wider

⁴ These are the CCR Regional Skills Partnership, the Regional Transport Authority and the CCR Business Council.

Investment Fund proposals. The Regional Cabinet and its advisory bodies is supported by an executive **Office of the City Deal**, including the CCR Director.

City Deal strategy

- 2.6** The Regional Cabinet adopted a five-year **Strategic Business Plan** in 2018. This set out a series of priorities, linked with the headings in the City Deal and including investment in the compound semiconductor sector (discussed further in Chapter 3) and in skills, housing infrastructure, strategic sites and the Metro Plus programme of complementary transport investments associated with the Metro.
- 2.7** In March 2019, the Cardiff Capital Region City Deal (CCR) approved an **Industrial and Economic Plan**, the development of which was led by the private sector Regional Economic Growth Partnership. The Plan aimed to “*make the CCR one of the most investable regions in the UK*”, containing a strong focus on raising productivity through innovation-led growth. Of relevance to the operation of the Wider Investment Fund, it set out three investment priorities, which sought to balance an **ambition for a recoverable, ‘evergreen’ fund alongside the need for infrastructure investment**.

Innovation, infrastructure and challenge: Key principles

Within the three investment priorities set out in the Industrial and Economic Plan, it is envisaged that:

- **Innovation** investments will “focus on opportunities where there is considerable competitive strength”, with the aim of establishing an evergreen investment fund and contributing to employment growth, investment leverage and GVA uplift
- **Infrastructure** investments will focus on infrastructure projects where the public sector creates the conditions for growth – with an indirect return on investment
- **Challenge** investments will focus on securing the solutions for challenges faced by the region, which may be commercial or within the ‘foundational economy’ (such as the health and care sector)

Source: CCR (2019), Industrial and Economic Plan

- 2.8** Following the *Industrial and Economic Plan*, an **Investment and Intervention Framework** was adopted in June 2019. This set out the basis through which proposals for CCR City Deal investment via the Wider Investment Fund would be sought and considered, outlining an approach based on leverage and return on investment, as well as a desire to invest at scale, with a limited number of strategic investments adding value to each other.

The wider policy context

The policy context informing the City Deal...

- 2.9** The City Deal is a central part of a broader emphasis on the role of city regions in economic growth, which has gained increasing traction over the past decade. The Welsh Government commissioned an **independent review of the case for a city-regional approach** to economic development in 2012⁵. This identified South East Wales (along with Swansea Bay) as areas with ‘city regional dynamics’ in terms of labour markets and knowledge sharing, which could be strengthened through a greater devolution and pooling of resources. This led to the establishment of a **Cardiff Capital Region Advisory Board** in 2013 and a series of studies setting out the economic case for a city-regional strategy focused on innovation, skills, connectivity and ‘identity’⁶.
- 2.10** In parallel, the case for the Metro as a core pillar of regional economic development was outlined in a concept study in 2011⁷ and the **Metro Impact Study** commissioned by the Welsh Government in 2013⁸. The latter highlighted opportunities to bring forward sites contingent on transport investment; scope for commercial and community regeneration around Metro stations; easier access to employment; and agglomeration impacts, setting the case for Metro as an integrated element of a wider investment strategy, as well as a transport strategy.

... and subsequent policy development

- 2.11** Since the City Deal was signed, the policy context has evolved further. **Prosperity for All**, the Welsh Government’s overarching national strategy, was adopted in September 2017. Following *Prosperity for All*, the **Economic Action Plan** set out a commitment to a regional approach to economic development, including a commitment to strategy co-production and joint working with the City Deal/ Growth Deal partnerships in Cardiff Capital Region, South West and Mid Wales, and North Wales. This approach is reinforced by the provisions within the Planning (Wales) Act 2015 to enable the development of regional **Strategic Development Plans** and the development of new powers to create Corporate Joint Committees, which could provide a more formal governance basis for the CCR Regional Cabinet. Recently, the OECD prepared a report for the Welsh Government on the future of regional development and public investment. The report recommended a more integrated approach to regional development, including the establishment of “effective, resourced and capacitated inter-municipal co-operative bodies” to drive larger scale regional interventions⁹.

⁵ Welsh Government (2012) Final Report of the City Regions Task and Finish Group

⁶ Cardiff Capital Region Advisory Board (2013), *Powering the Welsh Economy*; South East Wales Directors of Environment and Regeneration (2015), *Delivering a Future with Prosperity*, CCRC (2016), *Growth and Competitiveness Commission: Final Report and Recommendations*

⁷ Mark Barry (2011), *A Metro for Wales’ Capital City Region*, IWA/ Cardiff Business School

⁸ Mark Barry *et al* (2013), *A Cardiff Capital Region Metro: Impact Study – Report to the Minister for Economy, Science and Transport*

⁹ OECD (2020), *The Future of Regional Development and Public Investment in Wales*

2.12 Aside from the increasing importance of the regional dimension, four other policy considerations are relevant to Cardiff Capital Region and the development of the City Deal:

- **Future funding:** Historically, South Wales has been a major recipient of European regional funds (and ERDF is an important part of the City Deal funding mix, directed towards Metro). While the future scope and scale of the proposed Shared Prosperity Fund remains unclear, CCR's *Investment and Intervention Framework* consciously seeks to move away from a 'grant-based' system towards a more commercial approach based more clearly on the concept of return on investment (including financial return where possible). This could be an important influence on the direction of future funds.
- **Local policy and mutual benefit:** CCR is a diverse region, with significant disparities in economic outcomes. Nationally, the *Economic Action Plan* contains an objective of creating "better jobs, closer to home" and a strengthened emphasis on the role of the 'foundational economy' in supporting sustainable growth. A series of policy initiatives (most recently associated with the Valleys Task Force) have also sought to ensure that the benefits of growth are felt beyond the M4 Corridor. The concept of mutual benefit to the region as a whole is reflected in the *Industrial and Economic Plan* and the 'innovation, infrastructure and challenge' framework highlighted above.
- **The 'macro-regional' context:** Although the CCR is a geographically coherent region with a clear identity, there are strong links with neighbouring regions, especially in Swansea Bay and the West of England. The concept of the 'Western Gateway', extending from Swansea through to Swindon, seeks to recognise the benefits that could be gained from joint working across this wider geography. The CCR Regional Cabinet agreed in June 2020 that Cardiff Capital Region should become a partner in the Western Gateway initiative.
- **Wellbeing of Future Generations:** The Wellbeing of Future Generations Act 2015 places a duty on all public bodies in Wales to carry out sustainable development, listing seven wellbeing objectives. The City Deal is accountable for delivering against all of these, although of particular relevance, the objective of 'a prosperous Wales' aims to achieve "*an innovative, productive and low carbon society*". Impact assessments against the Wellbeing of Future Generations Act are carried out for all investments and policy measures undertaken by the CCR.

The economic context

2.13 Cardiff Capital Region has responded to significant economic restructuring over recent decades. Measures of productivity and output have historically lagged the UK as whole, while the region ranks relatively low (compared with other city regions and English local enterprise

partnership areas) on the UK Competitiveness Index¹⁰. Reversing the region's relatively weak economic performance is a long-standing policy objective and underpins much of the drive for a new approach to economic development. Around the time of the City Deal, Cardiff Capital Region's Growth and Competitiveness Commission noted that *"increasing the region's productivity performance relative to the rest of the UK is a priority to achieve economic growth"*¹¹.

- 2.14** Despite relative underperformance, the city region contains significant economic assets. These include established and advanced capabilities in semiconductors, especially around Newport (the subject of major investment from the Wider Investment Fund) and life sciences (especially medtech). There is a large creative and media sector, especially focused on Cardiff, and growing strengths in fintech and digital technology. More broadly, the region has a large manufacturing sector, which is widely dispersed, and which has recently seen some significant exits, as well as new investments¹². Alongside these sectoral strengths, Cardiff Capital Region has a strong higher education base, underpinned by three universities (Cardiff University, Cardiff Metropolitan University and the University of South Wales).
- 2.15** The region has a diverse economic geography: CCR's recent State of the Region Report notes that "variability in economic performance is a key theme... there is clear evidence that the CCR's goal of tackling inequalities is imperative". Cardiff has expanded rapidly in recent years, supported by its role as the region's main commercial, cultural and administrative centre, and there has also been recent growth at Newport (especially linked with technology investment) and along the M4 corridor. However, significant challenges remain across much of the region, especially in the upper Valleys, where the consequences of long-term economic restructuring have been most severe.

Economic forecasts and out-turns

Approach

- 2.16** To provide context for the impact and progress evaluations, the National Evaluation Framework recommended that economic forecasting was used to identify how the economy in the Cardiff Capital Region was expected to develop at the point that the Deal and WIF was agreed in 2015, and comparing this to actual out-turns at the point of the final evaluation.
- 2.17** This involved the use of a projection from Cambridge Econometrics' highly disaggregated database of employment and GVA by industry using the data available in 2015, tailored to reflect local circumstances where key additional developments were known about at the time. This projection sought to be as consistent as possible with policy makers' expectations of the wider macro environment around the time that the Deal and investment fund was agreed, and

¹⁰ CCRCD (2019), *State of the Region Part 2: Competitive*

¹¹ CCRCD (2016), *Growth and Competitiveness Commission: Final report and recommendations*

¹² For example, in the automotive sector, the loss of Ford at Bridgend, and new investment by Aston Martin at St Athan.

excluded economic and policy contexts/circumstances that were not known at the time (e.g. Brexit).

2.18 The projections have then been compared to the latest information available on actual out-turns, including data to 2019. Further details regarding the approach, technical considerations and limitations, and the detailed data from the initial projections and analysis of out-turns are set out in Annex C.

Key findings

2.19 The headline projections and out-turn data for employment, Gross Value Added (GVA), and productivity are set out in Table 2-1.

Table 2-1: Comparison of projected and actual headline economic performance in Cardiff Capital Region

| | 2015 projection | Actual out-turn |
|---------------------------------------|-----------------|-----------------|
| Change in employment 2013-19 (% pa) | 0.9 | 1.6 |
| Change in GVA 2013-19 (% pa) | 1.7 | 1.5 |
| Change in productivity 2013-19 (% pa) | 0.8 | -0.1 |

Source: Cambridge Econometrics

2.20 The following points are noted:

- The actual growth in employment has been notably higher than the forecast, growing by 1.6% pa on average over the 2013 to 2019 period, compared to a projection of 0.9% pa. This was equivalent to 37,100 more jobs than were expected in the area by 2019. The growth rate was slightly higher than that for Wales as a whole (1.4% pa), and slightly lower than the UK (1.7% pa).
- Stronger-than-expected growth in employment was largely driven by the following sectors: Information & communication, Accommodation & food services, Transport & storage and Finance & business services. The Distribution sector saw a decline in employment of over 2% pa.
- GVA growth in the Cardiff Capital Region was slightly lower than the projection, at 1.5% pa compared to the projection of 1.7% pa. This GVA growth was slightly higher than Wales as a whole, which grew by 1.3% pa over this period, but slightly lower than the UK as a whole, which grew at 1.9% pa.
- GVA growth in Transport & storage, and Accommodation & food services were notably below their projected rates. GVA in Construction grew quite rapidly over the period (and slightly above the projection) at 4.7% pa. Information & communication, Finance & business services, and Distribution all had GVA growth rates of over 2% pa.
- Productivity in the Cardiff Capital Region slightly declined in 2013-19 by -0.1% pa. This was very similar to Wales as a whole (-0.2% pa) and the UK (+0.2% pa). This follows on

from the trend of stronger than expected employment growth at a time of slightly slower than expected GVA growth.

- Transport & storage, Information & communication, Accommodation & food services, and Finance & business services all saw notable productivity declines in the Cardiff Capital Region over the period. Distribution and Other services grew in productivity by 4.4% pa and 2.1% pa respectively.

2.21 As noted earlier, the baseline projections and the actual out-turn data do not include any consideration of Brexit or COVID-19 as these contextual changes predate the data and analysis. To provide further economic context, we note the following points:

- Forecasts of the impacts of COVID-19 are highly uncertain. With this caveat in mind, CE's latest forecasts suggest that UK GDP will fall by around 9% in 2020. This will be driven by a sharp contraction in private spending, with both consumer spending and business investment expected to fall sharply in 2020.
- The fall in output in 2020 is expected to be accompanied by a fall in employment, though this is not expected to be as strong as the fall in GDP. This is partly as a result of government support, and the expectation that firms will make adjustments by reducing output on lower average hours rather than through reducing employment.
- The recovery in 2021 and 2022 is expected to be muted. The UK economy is expected to stay below 2019 levels as upswings in activity remain modest. The persistence of COVID-19 and EU-exit are expected to dissuade businesses from accelerating (or reinstating deferred) investment activity. A continued depression of investment is expected to moderate prospects of productivity uplift over the long-term.

2.22 The economic backdrop for the Cardiff Capital Region indicates an economy that has grown relatively modestly over the period, driven by employment growth rather than improvements in productivity. Given that only one intervention has been delivered over the period, itself more sensitive to global rather than local conditions, this local economic context is unlikely to have had a marked effect on the performance of the WIF. Nevertheless, more generally for the local economy over the period, the employment growth may have contributed to increasingly tight labour markets in some sectors. The disappointing performance on productivity has been a national trend over the period, and for the local economy it points to possible imperatives relating to skills development, retaining/creating/ attracting jobs of high value, and the role of areas such as infrastructure and innovation in productivity.

3. Overview of the Wider Investment Fund

Summary of key messages

- The Wider Investment Fund is a 20-year, £495 million fund, supported with £375 million from the UK Government and £120 million in contributions from the CCR local authorities.
- The Wider Investment Fund is allocated according to the approach set out in CCR's Investment and Intervention Framework. This aims to invest across the three themes of 'innovation, infrastructure and challenge' and to achieve, where possible, a financial return on investment to maximise the sustainability of the Fund.
- WIF investments to the value of £88.5 million have been committed to date. This includes one intervention of £38.5 million in a new compound semiconductor foundry, which was largely complete, and a further four projects relating to innovation, transport infrastructure, housing and skills. In addition, there are two projects with an investment value of £43.3 million that have been approved 'in principle'.
- Based on commitments so far, it is expected that the Fund will obtain receipts of £40.6 million from its investments which will be recycled into other interventions.

Wider Investment Fund scale and coverage

- 3.1** The £495 million Wider Investment Fund supports the City Deal's non-Metro investments, and is made up of UK Government and local authority contributions as follows:

Table 3-1: Wider Investment Fund contributions

| Source | Total funding contribution |
|-------------------------|----------------------------|
| HMT revenue | £50 million |
| HMT capital | £325 million |
| Local authority capital | £120 million |
| Total | £495 million |

- 3.2** It should be noted that while the Wider Investment Fund is entirely financed by local authority and UK Government contributions, Welsh Government and ERDF funding is used to contribute to the £734 million package for the South Wales Metro, which makes up the remainder of the City Deal.
- 3.3** The great majority of WIF approved project expenditure has been on the Compound Semiconductor Cluster project. By the end of June 2020, around £2.8 million had been spent

on other fully approved projects, principally a loan to Creo Medical, a life science business, and costs associated with the CCR Graduate Scheme. Details of other approved interventions are set out below.

- 3.4** Whilst the CSC project was approved early on, it has taken more time to develop and commit funding to other interventions. The reasons for this are described later in this section, and are principally related to the partnership making a strategic decision to review the approach to the City Deal and investment of funds, alongside the development of the regional Industrial and Economic Plan. This has now been completed and commitment and spend has recently accelerated accordingly.

Table 3-2: Coverage of the Wider Investment Fund

| Scope | |
|---|---|
| Maximum value of fund | £495 million |
| Length of fund | 20 years |
| Number of interventions in scope of the evaluation | 1 |
| Value of interventions in scope of the evaluation | £38.5 million WIF £413.5 million total ¹³ |
| Number of other interventions approved but not in scope of the evaluation | 4 |
| Value of other interventions approved but not in scope of the evaluation | £50.1 million WIF £90.1 million total ¹⁴ |
| Funding type | Mixed capital and revenue |
| Spend to date | |
| Spend to end June 2020 on interventions in scope | £33.6 million |
| Spend to end June 2020 on other approved interventions | £2.28 million |
| National Evaluation Framework Thematic coverage (all interventions approved to date) | |
| Transport | Yes |
| People | Yes |
| Infrastructure | Yes |
| Enterprise & Innovation | Yes |
| Other | No |

Wider Investment Fund approach

- 3.5** The City Deal set out the broad range of activities that the Wider Investment Fund would support, described in Chapter 2. These have remained consistent over time, although the City

¹³ Based on leverage of IQE funding.

¹⁴ Based on direct match funding.

Deal itself did not specify individual interventions or a detailed approach to the use of the Fund. The approach to the WIF has therefore evolved, as the wider CCR strategy has been sharpened and the partnership has learnt from the experience of its initial investment in the Compound Semiconductor Cluster (CSC) foundry.

- 3.6** The CSC proposal (described further below and in Chapter 4) came forward in the first year of the WIF. Although the CCR Assurance Framework and Joint Working Agreement had been adopted at this point, the first five-year business plan and assessment process had not been put in place. However, recognising the time constraints associated with the project, and its close alignment with the ambitions of the City Deal, the Regional Cabinet supported the proposal subject to the development of a Full Business Case.
- 3.7** Since then, the principles adopted in the development of the CSC intervention (focusing on a structured investment with a financial return to CCR) have informed the further development of the Wider Investment Fund. As outlined above, the framework for the WIF is set out in the Industrial and Economic Plan and the Investment and Intervention Framework, with the process involving an ‘open door’ to expressions of interest, the active management of a project pipeline linked with CCR’s strategic priorities and a ‘proportionate’ business case process to bring projects forward. This process is described in greater detail in Annex D.
- 3.8** To date, Wider Investment Fund monies have been awarded to four projects, relating to transport infrastructure, skills, innovation and housing and land development (in addition to two ‘in-principle’ approvals for transport and innovation schemes and a number of emerging ‘pipeline’ interventions). In all cases, consideration is given to the potential for funds to be recycled into the WIF, with co-funding and private sector leverage sought.
- 3.9** In addition, a revenue top-slice supports programme management costs, the activities of CCR’s advisory bodies and project and business case development work for interventions approved to SOC stage.

Intervention in scope for evaluation: the Compound Semiconductor Cluster project

- 3.10** The evaluation to inform the first Gateway Review is focused on interventions that had been approved formally within the first Gateway Review period, and where significant Fund expenditure has been incurred (potentially in full). In practice, this meant that interventions were in scope if they had started delivery and spend by the end of December 2019.
- 3.11** In Cardiff Capital Region, one intervention met these criteria. This is the **Compound Semiconductor Cluster** project, which involves **WIF investment of £38.5 million** (£37.9 million capital) towards the costs of a compound semiconductor foundry in Newport.

The Compound Semiconductor Cluster project

The CSC project involves an agreement between the CCR and IQE plc, a large commercial manufacturer of semiconductor wafers, which is headquartered in Cardiff.

The CCR Regional Cabinet agreed in 2017 to purchase a factory building at Imperial Park in Newport and invest, alongside IQE, in a new compound semiconductor foundry. This would involve the development of new cleanrooms, together with equipment and other fixtures and fittings. It was agreed that the building would be leased by IQE for 11 years, with an option to purchase at the end (although it was considered that IQE may exercise this right sooner than this).

To deliver the project, the Regional Cabinet established a special purpose vehicle (CSC Foundry Ltd) to acquire the building and to manage the lease.

The project aims to secure substantial commercial investment in manufacturing and development and to support the development of a wider 'cluster' of compound semiconductor activity in South Wales, linked with academic expertise at Cardiff University and a concentration of related firms.

Other interventions

- 3.12** The investment in the Compound Semiconductor Cluster is the only intervention in scope for evaluation at Gateway Review stage. However, **by the end of Quarter 1 of 2020/21, Wider Investment Fund allocations of £50.1 million had been approved to support four further interventions.** These are summarised in the table below and described in greater detail (alongside expenditure to the end of 2020/21 Q1) in Annex D:

Table 3-3: Other interventions supported by the Wider Investment Fund

| Intervention | Summary | WIF allocation |
|--|--|-----------------|
| Metro Plus | Programme of public transport investments across the CCR to improve connectivity and complement investment in the South Wales Metro. | £15 million |
| Graduate Scheme | Programme to create graduate internships with regional employers, retaining talent in the region and improving SMEs' access to skills. | £1.546 million |
| Housing Investment Fund (Viability Gap Scheme) | Gap funding scheme to enable housebuilding to proceed on sites where the upfront infrastructure costs currently make development unviable. | £31.498 million |

| Intervention | Summary | WIF allocation |
|--------------|---|----------------|
| CREO Medical | Loan to Creo Medical to support the development of cool plasma sterilisation and decontamination technology to kill bacteria and viruses. | £2.055 million |

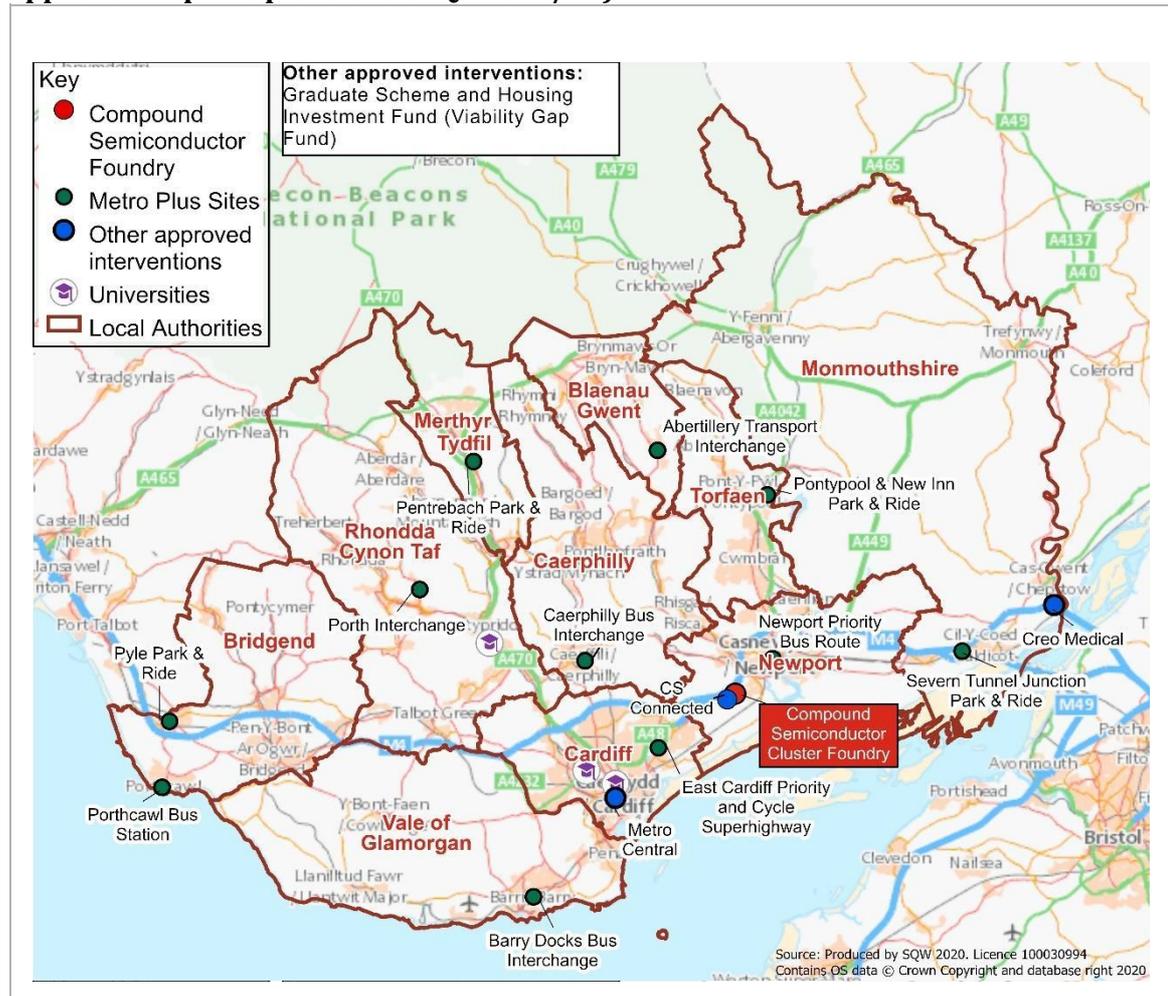
3.13 In addition:

- A Full Business Case was approved in October 2020 for £10 million WIF investment in a **CCR Challenge Fund for Rebuilding Local Wealth Post-Covid-19**. This is co-financed with European funding and seeks to drive innovative solutions to challenges related to decarbonisation, public services and community wellbeing.
- Two further interventions have also received ‘in-principle’ approval. These are:
 - **Metro Central:** redevelopment of Cardiff Central station to provide improved facilities, integration between the Metro and the intercity rail network and bus interchange (WIF commitment, subject to FBC: up to £40 million)
 - **CS Connected:** investment in a new ‘front of house’ facility for the compound semiconductor sector at the CSC Foundry in Newport, as part of an initiative backed by the UKRI Strength in Places Fund (WIF commitment, subject to FBC: £3.3 million).
- The wider investment pipeline also includes some 15 interventions currently at SOC or pre-SOC stage and include programme proposals (including the concept of a cluster support fund to invest directly in businesses, via an FCA-registered fund manager), infrastructure proposals and individual commercial propositions.

3.14 While the investment in the Compound Semiconductor Foundry was made at an early stage in the City Deal process (and spend proceeded quickly thereafter), spend on other approved interventions was relatively modest to the end of Quarter 1 of 2020/21. The reason for this was a strategic decision taken following the approval of the CSC Foundry investment to review the approach to the City Deal, in the context of a shared desire to focus on economic competitiveness and resilience and to move towards an investment (and, where possible, ‘evergreen’) approach. This informed the development of the Industrial and Economic Plan and the principles set out in the Investment and Intervention Framework, referenced above. Since the adoption of the Investment and Intervention Framework, commitment and spend have accelerated and there is a strong pipeline of interventions at varying points in the business case development process. Efforts have also been made on individual projects to utilise time-limited match funding first.

3.15 The location of the interventions that are approved in full or in principle is shown in Figure 3-1 (although note that the Graduate Scheme and the Housing Investment Fund (Viability Gap Fund) are programme allocations, covering the whole region).

Figure 3-1: Wider Investment Fund locations (projects fully approved and projects approved in-principle to end of Q1 2020/21)



Source: SQW

Reinvestment

- 3.16** CCR aims to ensure that where possible, a financial return on investment is secured, so that public funds are used most effectively, the sustainability of the Fund is maximised through reinvestment, and there is commercial discipline. This will not be possible in every case, and the Investment and Intervention Framework is flexible to accommodate a range of different funding types, depending on the nature of the project.
- 3.17** From the investments committed to date, it is anticipated that there will be a return to the Wider Investment Fund of £40.63 million (of which the majority - £38.5 million - will be through the Compound Semiconductor Cluster project).

4. Evaluation of the Compound Semiconductor Cluster project

Summary of key messages

- The Compound Semiconductor Cluster (CSC) project involves an agreement between the Cardiff Capital Region and IQE plc, a large commercial manufacturer of semiconductor wafers, which is headquartered in Cardiff. It involves WIF investment of £38.5 million towards the cost of a compound semiconductor foundry in Newport.
- Key aims of the project were to ensure that the operations of an existing high value business were retained in the region and to leverage further commercial investment in manufacturing and development at IQE.
- The project also aimed to act as an anchor to support the development of an emerging wider 'cluster' of compound semiconductor activity in South Wales, linked with expertise at Cardiff University and a concentration of related firms.
- Overall, progress in delivering the CSC project has been positive. The new foundry has been delivered largely to time and budget, and has started to deliver employment and wider benefits.
- A final tranche of WIF monies has not been drawn down, and some anticipated outputs (for jobs and leverage) have not yet been fully realised. This reflects market conditions; it is anticipated that these effects will be realised in time.
- WIF investment was important in securing IQE's investment in the region. There was a genuine likelihood that IQE may have located new production at an alternative site in the US were suitable premises not available in the UK.
- IQE reported that 70 additional jobs have been created at the Newport foundry and 156 jobs have been safeguarded at St Mellons. In addition, the foundry is a focus of IQE's photonics activities, which have seen year on year growth in the first half of 2020. The foundry is also important in attracting additional customers in the future.
- Wider effects have so far centred on the development of networks and linkages in the emerging cluster (including related to IQE and the presence of the CSA Catapult on the same site), stimulating further R&D and innovation activity, and profile-raising. In addition, there have been some further effects on inward investment, and jobs and skills.
- Within the context of a wider strategy to build a cluster, the new IQE facility at Imperial Park was described by consultees as a focal point for compound semiconductor activity in South Wales as well as a doorway to external parties. This had in turn contributed to the development of stronger networks and linkages within the emerging cluster and to outside.
- It is important to note that these effects are not necessarily directly attributable to the CSC project, though it was assessed to have played a key role alongside other factors, as part of a coordinated strategy to develop the cluster.

Coverage and approach

- 4.1** This section presents evidence on the progress and impact evaluation of the Compound Semiconductor Cluster (CSC) project. The CSC project involves an agreement between the Cardiff Capital Region and IQE plc, a large commercial manufacturer of semiconductor wafers, which is headquartered in Cardiff. It involves WIF investment of £37.9 million towards the cost of a compound semiconductor foundry in Newport. The CCR Regional Cabinet agreed in 2017 to purchase a factory building at Imperial Park in Newport and invest, alongside IQE, in the new foundry, including the development of new cleanrooms and purchase of new equipment. It was agreed that the building would be leased by IQE for 11 years, with an option for the company to purchase it at the end of the period. To deliver the project, the Regional Cabinet established a special purpose vehicle (CSC Foundry Ltd) to acquire the building and to manage the lease.
- 4.2** The key aims of the project were to ensure that the operations of an existing high value business were retained in the region, and leverage further commercial investment in manufacturing and development at IQE. The project also aimed to act as an anchor to support the development of a wider 'cluster' of compound semiconductor activity in South Wales, linked with academic expertise at Cardiff University and a concentration of related firms.
- 4.3** The evaluation has examined the progress of the project in meeting its milestones, and spend and output profiles, and how delivery has supported the achievement of objectives. This has drawn on monitoring data and interviews with the CCR team and IQE. The evaluation has also assessed the impact through the direct benefits associated with the foundry itself and the early effects of the project on cluster development. The overall approach was based on a theory-based evaluation, using mixed methods. The approach reflected inherent challenges in establishing a counterfactual for a single firm, IQE, and for assessing the early stages of cluster development. By collecting and synthesising quantitative and qualitative evidence from different interviewees, monitoring and secondary data, the evaluation has sought to build a 'narrative account' of cause and effect that takes account of the role of the WIF intervention and the roles of other factors.
- 4.4** It should also be noted that **the project complements a series of measures to support the growth of the compound semiconductor sector.** These include new academic institutions (such as the Institute for Compound Semiconductors and Compound Semiconductor Centre at Cardiff University), the creation of CS Connected as a sector-focused Research and Technology Organisation, and the decision to locate the Compound Semiconductor Applications Catapult in South Wales.

Overview of progress

| Expenditure | |
|--|------------------------|
| Anticipated expenditure by end-June 2020 | £38.5m Investment Fund |
| Actual expenditure by end-June 2020 | £33.6m Investment Fund |

Expenditure

| | |
|--|-----|
| Investment Fund expenditure as % anticipated | 87% |
|--|-----|

Status of intervention

Intervention largely complete, with £5 million of WIF to be drawn down to support fit out of final 10 (out of 20) cleanrooms.

- 4.5** A detailed assessment of progress is set out in the accompanying Evidence Paper on the Compound Semiconductor Cluster project. A summary is set out in the table below.

Number of interventions: 1

Was expenditure on budget? NO

- WIF expenditure was lower than originally anticipated by the time of the Gateway Review (by £5m or 13% of the anticipated expenditure). Market conditions impacted on IQE's need for the final tranche of WIF investment that was needed to support fitout of the final 10 cleanrooms.
- Prior to this, WIF expenditure had been on track.
- It is anticipated that the outstanding balance of WIF investment will be made by around spring 2021 as market outlook becomes more certain.

Were agreed delivery milestones met? NO

- Additional commercial floorspace was delivered, and done so more quickly than originally anticipated due to the introduction of a more efficient design involving the creation of a mezzanine floor above every cleanroom.
- The project built out 20 cleanrooms in line with expected milestones; and WIF investment had enabled 10 of these to be equipped, ready for the installation of specialist tools by IQE. However, 10 have not yet been equipped as had been planned as a result of market conditions (as per above).

Were anticipated outputs delivered as anticipated? PARTLY

- Land and construction outputs have been delivered as planned, including: 4.52 hectares of land assembled and acquired for development; 5,898 sq m of additional commercial floorspace; an estimated 291 (gross) construction years of employment; and 8 construction apprentices.
- Job outputs are behind target so far: 70 direct jobs created at the foundry (vs. target of 125 by this point); and 545 jobs safeguarded at IQE at St Mellons and Newport Wafer Fab (vs. target of 700 by this point).

Were intermediate outcomes delivered as anticipated? YES

- Key intermediate outcomes have been achieved as planned, notably: retention/expansion of IQE's production capabilities in the region; leveraged investment from IQE; investment from the Compound Semiconductor Applications (CSA) Catapult; and indirect effects on the wider cluster through R&D and innovation activities, networks and jobs and skills.

Do interventions remain on course to deliver against their original objectives? YES

- The intervention aims to support the longer-term development of the compound semiconductor sector in the Cardiff Capital Region. This will rely on additional, complementary initiatives (and this has always been recognised), but there is evidence that the CSC foundry will support this, through the development and expansion of IQE itself and additional capacity to support collaboration and supply chain development (see below for more details).
- The intervention should make a financial return to the WIF of £38.5 million over 11 years. CCR is confident that this will be achieved.

Number of interventions: 1

Has COVID-19 influenced progress and/or will it influence expected outcomes? NO

- The physical delivery of the new foundry was complete before the pandemic. The pandemic has also not directly impacted operations at the foundry
- However, a Covid-related global recession and uncertainty may impact future investment decisions (and therefore the timing of the drawdown of the final tranche of WIF investment, additional private sector leverage and job creation).

Discussion

4.6 Overall, progress in delivering the Compound Semiconductor Cluster project has been positive. The new foundry has been delivered largely to time and within budget, has started to deliver employment benefits and is contributing to the development of the cluster more broadly. However, the final tranche of WIF investment remains to be drawn down, and some anticipated outputs (related to jobs and leverage) have not yet been fully realised. This reflects market conditions, though it is anticipated that these effects will be realised in time.

4.7 Consultations with the CCR team and wider consultees highlighted several factors that were important in enabling the delivery of the project:

- **Prior investment in the site and the strategic retention of an economic asset:** The Imperial Park site was originally built for a semiconductor manufacturer (LG) by the former Welsh Development Agency in the 1990s. The Welsh Government held it vacant as a strategic asset for over a decade before its sale to CSC Foundry Ltd. Long-term retention meant that refurbishment of a suitable building – at much lower cost than a new-build facility – was a viable option.
- **The structuring of the investment:** To enable WIF monies to be invested in compliance with state aid legislation, CCR established a special purpose vehicle (CSC Foundry Ltd, owned by the ten CCR local authorities) to acquire and refurbish the facility and enter into a lease arrangement with IQE. This was the first investment made through the City Deal and involved a complex and bespoke arrangement. The nature of the WIF investment is a ‘commercial’ deal, rather than a grant or soft-loan agreement, and this was seen as important to ensure the future success of the project. The agreement was structured so that public investment was matched with private, hence the decision to withhold the final tranche of WIF investment until market conditions are such that IQE will be able to co-invest.
- **IQE’s direct role in the management of the construction and delivery phase:** IQE was responsible for procurement and management, with CSC Foundry Ltd and the CCR maintaining an oversight role to safeguard the public investment. This was highlighted as being important given the highly specialised nature of the foundry and helped to lead to a more efficient design of the space than was originally envisaged.

- 4.8** The Board of CSC Foundry Ltd (and CCR more broadly) has taken a direct interest in the WIF investment and its repayment through IQE's purchase or continued lease of the foundry: this has included commissioning market analysis of the compound semiconductor sector to provide an independent view, and maintaining regular dialogue with IQE (including a quarterly meeting to review IQE's market performance and the impacts on future investment and repayments).

Overview of impact to date

Logic model

- 4.9** A logic model was developed to inform the impact evaluation as part of the Locality Evaluation Framework. Drawing on this logic model, a summary of the evidence from the impact evaluation, setting out what has been achieved at this stage in terms of inputs, activities, outputs and outcomes, and the evidence on 'additionality' is set out below.

| What the intervention has achieved ... | | | |
|--|---|--|--|
| Inputs | Activities | Outputs | Outcomes |
| <ul style="list-style-type: none"> £33.6m of WIF expenditure has been made (£32.9m capital). Additional investment from IQE of £67m to date (with more to be leveraged over the next 8 years or so). | <ul style="list-style-type: none"> 5,898 sqm of commercial floorspace has been delivered, including 20 cleanrooms. 10 of the 20 cleanrooms have been fit out through WIF and IQE investment. The project also involved digital and road connectivity improvements. | <ul style="list-style-type: none"> 70 jobs created at IQE at the foundry facility (against a target so far of 125 and ultimate target of 501). 545 jobs safeguarded at IQE in St Mellons and Newport Wafer Fab (against a target of 700). 291 construction years of employment estimated. | <ul style="list-style-type: none"> Retention and expansion of IQE's research and production operations in the region. Improvement in IQE's trading position, including growth in photonics, centred in Newport. Enhancement of linkages and networks within a potential compound semiconductor cluster, and major funding attracted from Strength in Places Fund. Increase in R&D and innovation activity, in particular linked to universities, CSA Catapult and Collaborative R&D. Individual examples of investment in the area from outside, including location of teams from |

What the intervention has achieved ...

global compound semiconductor firms.

... and how additional this is i.e. what would not have occurred without the intervention?

Direct effects on IQE/its retention and expansion in the region:

- Whilst the Cardiff Capital Region may have been favoured by IQE as a location, IQE's expansion would likely have taken place overseas instead without WIF intervention. The firm had already internationalised production and there was a highly credible and viable alternative elsewhere.
- Even if IQE would have invested in Cardiff anyway, there has been a cautious approach to co-investment, reflecting high costs, suggesting that delivery would have proceeded more slowly without intervention.
- Therefore, the WIF investment is likely to have contributed to IQE's decision to invest and expand in the region, and to do so more quickly.

Wider effects on developing an emerging cluster:

- Assessing the contribution of the CSC project to the wider outcomes associated with cluster development is complicated. It is also important to note that the cluster was at a very embryonic stage at the time of evaluation. The CSC project is part of a wider mix of activities, including other industry actors and their investments, Cardiff and Swansea Universities and their commitments to research, and other funding into research and innovation.
- The CSC project has particularly contributed in terms of scale of capacity for manufacturing compound semiconductors in south Wales. This is a distinctive feature of the investment.
- The project has also provided confidence to others to invest more, supported co-location and networking activity, and helped to raise the profile of the area to external parties within the UK and internationally.
- On most of these aspects, the CSC project has made a difference to outcomes alongside the actions and interventions of others. The CSC project is a critical part of a jigsaw of activity supporting the development of a potential cluster in South Wales.

Source: SQW

4.10 The key findings underpinning this summary logic model are discussed below.

Key findings

Direct effects on IQE, and its retention/expansion in the region

4.11 WIF investment in the foundry helped to secure IQE's investment in the region. IQE could have located new production at one of its other sites in the United States: since this site had spare capacity, this could have been achieved at relatively low cost, and this was demonstrated during the due diligence process ahead of WIF investment. While IQE had been based in Cardiff since its establishment and was strongly rooted in the local academic and industrial ecosystem, the presence of a viable alternative and the gap between the costs of developing at Imperial Park and at the alternative site in the US was substantial. We therefore consider that the additionality of the WIF is likely to be high in retaining a major high-value employer. Subsequently, IQE has also sought to consolidate its international production facilities, recently announcing the closure of its Pennsylvania site in the light of capital investment at Newport and two other sites in Massachusetts and Taiwan.

- 4.12** In principle, it is possible that IQE could have acquired the Imperial Park site without WIF support. However, even if the additional costs over the US alternative could have been justified commercially, IQE would have found it challenging to raise the additional funds commercially: consultees highlighted the very high capital costs associated with the compound semiconductor sector, the cyclical nature of the industry and the lengthy timescales in building new customer relationships.
- 4.13** It is difficult to quantify the role of the investment on IQE's development. Nevertheless, photonics, which is centred around Newport and makes up around one-half of the company's revenues, grew by over 20% between the first half of 2019 and the first half of 2020. Clearly, markets are key here, but the facility has also helped to enable this. Consultees also considered that the new foundry is likely to be important in attracting additional customers for IQE by building confidence in the scale and quality of production and R&D capacity. This is important in the industry given the need for customer 'qualification' (i.e. approval) of production facilities in advance. Furthermore, IQE reported that 70 additional jobs have been created at the Newport foundry and 156 jobs have been safeguarded at St Mellons. IQE reported that the majority of post-holders have a local connection (especially linked with Cardiff University).

Wider effects on the development of a potential cluster

- 4.14** Wider effects have so far centred on the development of networks and linkages, stimulating R&D and innovation activity, and profile-raising. In addition, there have been some further effects on inward investment, and jobs and skills.
- 4.15 Networks and linkages:** Consultees noted that the Cardiff Capital Region has had strengths in the compound semiconductor sector for many years, but that interaction between businesses had been limited. Within the context of a wider strategy to build a cluster, the new IQE facility at Imperial Park was described by consultees as a focal point in South Wales as well as a doorway to external parties. This had in turn contributed to the development of stronger networks and linkages both in the region and to outside. Four aspects underpinned this, specifically the scale of the facility itself; the potential for further development at Imperial Park; co-location with the Compound Semiconductor Applications Catapult; and increased dialogue between businesses in the region.
- 4.16 R&D and innovation activity:** This has been enhanced since the CSC project commenced. It is important to note that these effects are not necessarily directly attributable to the CSC project, though it has played a role alongside other factors in bringing together the research base, industry and government (including the CCR City Deal) that has helped to expand activity. The scale of development marks a significant step change, notably for the universities, the CSA Catapult and CS Connected (as set out in the accompanying Compound Semiconductor Cluster Evaluation Evidence Paper).
- 4.17 Profile and inward investment:** The WIF investment was expected to support additional inward investment into the region. Examples were cited of interest from new investors at

Imperial Park and more widely, although these have yet to come to fruition. There have been two notable initial developments with international players, Rockley Photonics and Microlink both locating teams in Newport to benefit from links in the area, including IQE.

4.18 Jobs: There have been some modest additional employment effects (beyond IQE) that were linked in some way with the CSC project, including jobs safeguarded at Newport Wafer Fab, the location of company teams to the area (as above), and the recruitment of research and technical staff in the research base and companies (e.g. at the CSA Catapult). These were expected to increase in scale in the future.

4.19 Assessing the contribution of the CSC project to the wider outcomes associated with helping to development an emerging cluster is complicated. The project was always seen as one element of a wider strategy to support the development of the compound semiconductor sector. Consistent with this, **the balance of evidence indicates that the CSC project has made a key contribution alongside other activities and actors in South Wales**, including investments made by companies themselves, previous and ongoing commitments to research by Cardiff and Swansea Universities, and other funding into research and innovation. In considering the contribution of the CSC project to the wider outcomes of developing the sector and emerging cluster, consultees made the following observations:

- The CSC project has provided significant scale and capacity to the potential for compound semiconductors in the region. It was noted as an internationally significant facility.
- The investment had given confidence to others in the region to commit to R&D and innovation, including industry and the research base.
- The CSA Catapult would not be located at Imperial Park and co-located at IQE without the investment in the site through the CSC project.
- The development of the facility at IQE, together with other factors, were noted as being important in the attraction of over £40m Strength in Places Funding.

4.20 In considering the role of the CSC project, it was noted that there have been three phases of development of activity around compound semiconductors so far. The CSC project was viewed as having been important in scaling up, leading to the new phase signalled by the significant Strength in Places Fund project and the potential to develop supply chains:

- Prior to 2016: initial development of capability and ideas, especially through research activities in the universities, collaborative work between industry and the research base, and a range of pre-existing skills, capabilities and assets held by industry.
- 2016-20: scaling up in terms of capacity, networks, and attraction of more substantial investment, including through the CSC project, acquisition and investment in Newport Wafer Fab, establishment of the CSA Catapult, and building of a portfolio of CR&D projects involving industry and the research base.

- 2020 onwards: embedding and formalising networks, and developing the skills base and supply chains, marked by the substantial investment through CS Connected and the Strength in Places Fund project.

4.21 In addition, consultees noted that there are likely to be wider benefits to the UK as a whole resulting from increased compound semiconductor production capabilities in South Wales. Specifically, given the level of customer-producer interaction and the need for customer validation of production facilities, access to domestic production capacity was seen as presenting a competitive advantage to UK manufacturing and technology firms.

5. Wider contribution of the Investment Fund

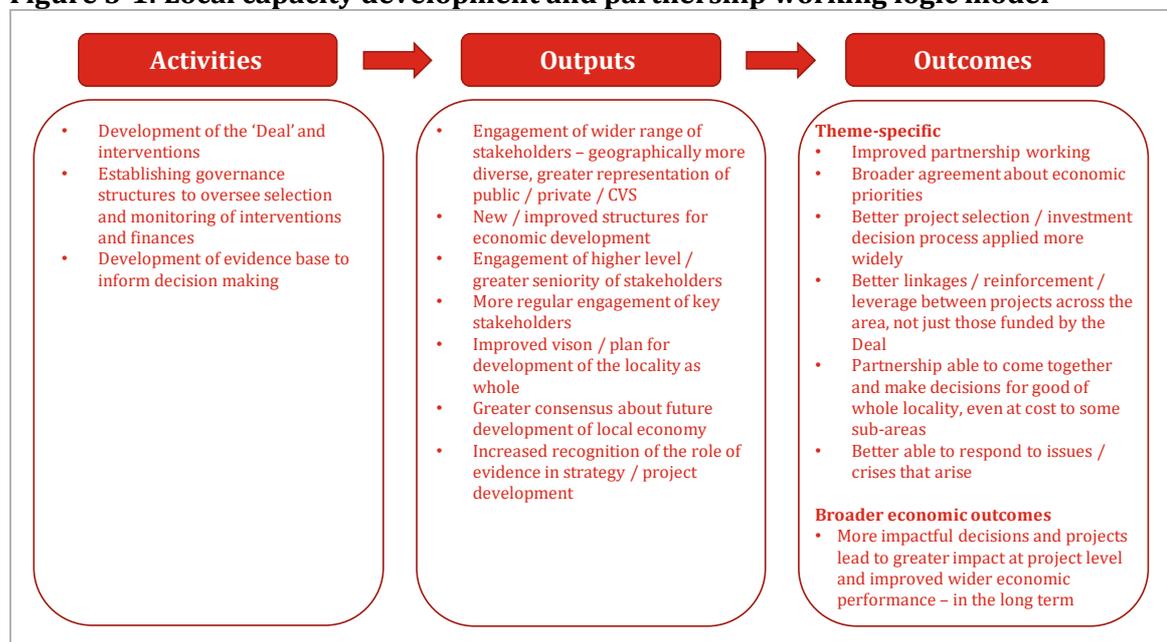
Summary of key messages

- Good progress has been made on most fronts in relation to local capacity development and partnership working.
- There was buy-in to the strategic approach, consensus on priorities and recognition that decision-making processes were sound. Underpinning this has been strong governance, the role of evidence and the development of an 'Investment and Intervention Framework'. The Framework was seen to be key to developing a balanced portfolio of investments through the WIF.
- The role of evidence has been increased and has been important at strategic and intervention levels. Regional data and a series of analyses were important to the strategic prioritisation process, and in setting an agenda that acknowledged the need for an holistic approach to address challenges and opportunities across the region. At intervention level evidence is a key element for business cases and bids to complementary funding.
- The engagement between the 10 local authority partners, and with some external partners has been strong. This has contributed to improvements in the effectiveness of partnership working.
- Consultees from public and private sectors recognised significant progress and the consolidation of the 10 CCR local authorities to work as a single group. The partnership arrangements were now seen to be more progressive and organised, with a regional mindset.
- Governance structures have been important in creating this ethos. There is equality of decision-making power on the Regional Cabinet (in which all leaders have a single vote, regardless of the size of the authority and its financial contribution). The Economic Growth Partnership (REGP) has enabled, and has been important to, collaboration with the private sector.
- The improvement in partnership working has contributed to a range of positive effects, including: sharing expertise and networks; and synergies with other interventions in areas such as transport and innovation.
- The City Deal as a whole has been important in contributing to these effects. In addition, consultees and survey respondents highlighted the influence of the WIF itself. In particular, the scale and nature of the long-term funding had focused minds, provided an opportunity to develop a new approach to investment, and helped to bring partners such as the private sector to the table.
- There were some areas for improvement. The engagement with the business base, wider public sector and the community were identified as areas that could be enhanced. There was a desire for clearer information on how decisions had been taken and what funding might be available. It was also commented that progress in agreeing and implementing interventions could be quicker and more ambitious, and a related point that such progress may require enhancing the capacity of the City Deal Office.

Introduction to evaluating the wider contribution

- 5.1** The National Evaluation Framework recommended evaluations to inform the first Gateway Review included an assessment of the effects of each fund on local capacity development and partnership working. This was expected to be particularly important for the first Gateway Review, where quantitative benefits may not yet have been fully realised, and where activity was ongoing, but where the design, development and delivery of the fund may have strengthened local partnership arrangements and boosted local capacity, leading to increased confidence about future delivery.
- 5.2** The type of activities, and the nature of the expected benefits – outputs and outcomes – for this assessment of the wider contribution of the fund is set out in Figure 5-1.

Figure 5-1: Local capacity development and partnership working logic model



Source: SQW

- 5.3** Evidence has been collected from two perspectives:
- at a **strategic level**, considering the contribution that the Wider Investment Fund as a whole has made to changes in the behaviours, perspectives, and decisions of actors across the economic development landscape, via an online survey and consultations with senior economic development stakeholders across Cardiff Capital Region
 - at a **project-up level**, considering how the development and delivery of individual interventions (or groups of linked interventions) has led to changes in the behaviours, perspectives and decisions of actors across the economic development landscape, via consultations with managers of interventions, and in-depth case studies on specific interventions.

- 5.4** The detailed findings from the research is set out in the accompanying Capacity Development and Partnership Evidence Paper, including the results from two waves of the online survey, findings from the stakeholder consultations, and the case study write-up on Porth Interchange.

Evidence from the online survey

- 5.5** Online stakeholder surveys were carried out in 2018 and 2020. The findings presented here are based on 28 respondents: 14 stakeholders completed both surveys (group 1); and a second group of 14 stakeholders responded to the 2020 survey only (group 2). A range of organisations were represented by the respondents, including local authorities, universities, and business/industry representatives. Across the 28 respondents, views represent a senior and well-informed group, including Managing Directors, Chief Executives, Councillors, Service Directors, and senior university representatives. This gives us some reassurance of the credibility of views. That said, the relatively low number of responses means that the data should be treated with caution, as it does not necessarily reflect the views of all stakeholders in the region.
- 5.6** The survey responses indicated progress in capacity development and partnership working in the Cardiff Capital Region. **On all 10 aspects of capacity and partnership working tested there had been improvements based on the perspectives of survey respondents** (see Table 5-1). There are notable improvements on decision-making processes, governance and management structures, synergy and inter-relationships, consensus on thematic priorities, the evidence base, and partnership working.

“The partnership ethos created by the CCR has brought together people in the economic development field across the region to work together in a much more cohesive way, seeing their own local plans and priorities in a wider, regional, national and global context.”

- 5.7** Whilst there has been progress in engagement between 2016 and 2020, the areas for most improvement (relative to other factors) were in ‘engagement with the wider public sector’ and ‘engagement of the voluntary and community sector’.
- 5.8** Overall, respondents reported that the Cardiff Capital Region City Deal as a whole was the most influential factor on these changes in capacity development and partnership working. The Wider Investment Fund is part of this Deal and it was also notable from survey responses that the Fund specifically was also found to be influential.
- 5.9** The survey respondents also reported that the Wider Investment Fund had a ‘positive’ or ‘very positive’ effect on capacity development in the region. The three elements that scored most positively in terms of the effect of the Wider Investment Fund were: ‘strategic-level decision making and planning’, ‘operational decision making (i.e. project development/selection)’, and ‘overall local economic development capacity and partnership working’ (see Table 5-1).

“It has changed the mindset of local political leadership. The recognition that Local Authorities are not competing against each other but through co-operation, give and take, benefits for the wider region can be made.”

“The additional CCR funding towards infrastructure has strengthened the role of the CCRTA as a partner with Welsh Government and Transport for Wales and has enabled the CCRTA to influence development of wider transport programmes, strategy and policy development.”

“The CCRWIF is in its early stages but it is encouraging a range of businesses to consider investing or expanding their operations in south Wales, and is becoming a catalyst to encourage economic growth.”

5.10 In open responses, respondents highlighted several areas for development. These included:

- Ensuring transparency in decision-making
- A need to consider carefully how to tackle inequalities to a greater extent – in particular the spatial inequalities in the region and those brought about or exemplified by covid-19
- An appetite for faster progress given the relatively small number of interventions approved so far
- A desire to see wider actors involved to a greater extent – which links in part to the room for improvement on engagement.

5.11 Summary data from the online surveys are set out in the table below. More detail is provided in the Capacity Development Evidence Paper.

Table 5-1: Summary of online survey evidence

| | Median score in 2020: where 0 is very poor, and 10 is excellent ¹⁵ | Change in median score baseline (2016) to 2020 ¹⁶ |
|---|---|--|
| Effectiveness of partnership working in the delivery of economic development strategy and activity | 8 | +2 |
| Effectiveness of governance and management structures in the delivery of economic development strategy and activity | 8 | +3 |
| Effectiveness of the decision-making process for economic development interventions | 8 | +3 |
| Level of consensus on the key spatial priorities for economic development strategy and activity | 7 | +2 |

¹⁵ n=28

¹⁶ n = 28 for baseline and n=28 for 2020

| | | |
|---|---|----|
| Level of consensus on the key thematic priorities for economic development | 8 | +3 |
| Quality of the evidence base underpinning economic development | 8 | +3 |
| Level of synergy and inter-relationships between key economic development projects | 8 | +3 |
| Level of engagement of the private sector in economic development strategy and activity | 7 | +2 |
| Level of engagement of the voluntary and community sector in economic development strategy and activity | 6 | +1 |
| Level of engagement of the wider public sector, in economic development strategy and activity | 6 | +1 |

Contribution of the Investment Fund

- The City Deal as a whole was the most influential factor on these improvements in local economic development capacity over the whole period from 2016-20, and in particular in the first couple of years.
- The Wider Investment Fund was also noted as a key influential factor on the improvements reported.
- It was commented in open responses that the City Deal as a whole had been key in getting partners to think with a collective and cooperative mindset. The funding itself had been important in supporting potentially significant projects that could have a catalytic effect, and in giving the Cardiff Capital Region more profile and influence with industry and wider government partners.

| | 'Net' positive effect of the development and delivery of the Fund since 2016 ¹⁷ |
|--|--|
| Strategic-level decision making and planning | 96% |
| Operational decision making (i.e. project development/selection) | 92% |
| Local confidence to develop and deliver economic growth interventions | 73% |
| Local commitment to develop and deliver economic growth interventions | 84% |
| Understanding on what works in developing and delivering economic growth interventions | 75% |
| Engagement of high level / senior stakeholders in economic growth interventions | 88% |
| Overall local economic development capacity and partnership working | 92% |

¹⁷ n=26 (no response from two partial respondents)

Evidence from the consultations and case studies

5.12 The evidence from the in-depth consultations with stakeholders highlighted a series of key points that complement the findings from the online survey. These are set out as follows.

Strategic prioritisation and consensus

5.13 **There was buy-in to the strategic approach, and consensus on priorities and on how the WIF was to be allocated through the 'Investment and Intervention Framework'.** The approach recognises the need for balance. The CCR must build on areas of genuine strength and comparative advantage, and this is reflected in the decision to invest in the CSC project, as well as other activities around areas such as medical. There is also recognition of the need for inclusive growth and to consider the distribution of benefits.

5.14 **Key to achieving balance is the investment approach.** The 'Investment and Intervention Framework' was adopted in June 2019. This set out the process through which investment proposals would be sought, sifted, appraised and approved. It gave a broad indication of how the WIF would be used, with the aim of achieving a mix of projects that will yield a financial return (and so recycling monies back through the Investment and Intervention Framework) and those that will use grant funding to deliver social and economic benefit.

5.15 **The role of evidence has been important at a strategic level.** Early on, the CCR commissioned regional data for the first time from the ONS and a series of analyses from Cardiff University. This has been key to the strategic prioritisation process, and in setting an agenda that acknowledges the need for an holistic approach to address challenges and opportunities across the region. Evidence has also been important at intervention level, as part of the basis for business cases and for bids to complementary funding. For the Local Authority Leaders and CEOs, the evidence-based decision-making is key to obtaining and keeping buy-in when they go back to their local areas to explain and justify decisions. There is also evidence that the CCR has influenced consideration of economic development factors in partners' business case processes.

5.16 It was acknowledged that there would be debates going forward around strategic priorities and decisions. This reflected challenges in the region, notably around inequalities, which may be emphasised further as a result of Covid-19.

Engagement and partnership working

5.17 The engagement between the 10 local authority partners, and with some external partners had been strong. This has contributed to improvements in the effectiveness of partnership working.

5.18 **The CCR marked the start of a new partnership and there has been, and continues to be, effective engagement between the 10 partner authorities.** This was acknowledged by all local authority consultees and many business consultees. Businesses recognised

significant progress and the consolidation of the 10 CCR local authorities to work as a single group compared to previous working arrangements that were disparate and locally-focused (see quote below). The partnership arrangements were now seen to be more progressive and organised, and working from the perspective of a regional mindset. The WIF had been key to this, because the scale and nature of the long-term funding had focused minds.

“A big achievement is that we have got ten local authorities that have been working as a single group. This is a major development in a country that still has high numbers of local authorities... A game changer has been those relationships and trust being established through the local authority senior leadership teams”.

- 5.19 Governance structures have been important in creating this ethos.** There is equality of decision-making power on the Regional Cabinet (in which all leaders have a single vote, regardless of the size of the authority and its financial contribution). Individual leaders also have thematic portfolios on the Regional Cabinet, which has helped to build a shared ‘regional view’ and sense of shared ownership.
- 5.20 The Regional Economic Growth Partnership (REGP) has enabled, and has been important to, collaboration with the private sector.** The Chair of the REGP is from a private sector background, and other representatives are also from the private sector. The REGP has worked closely with the Regional Cabinet, and is responsible for reviewing the region’s economic strategy, making recommendations on the City Deal’s implementation, and providing advice on investment decisions. This improved engagement with senior private sector individuals was unlikely to have been possible without the WIF.
- 5.21** There were some gaps or areas for improvement on engagement. These were particularly noted with respect to parts of the business community. The CCR Business Council was developed to represent and articulate the needs of business, particularly in the appraisal of relevant project applications. However, to date, consultees reported that the Business Council has had limited engagement with the REGP or the WIF. At the time of reporting, the CCR was reviewing the role of the Business Council, and there is also evidence of direct engagement with business through cluster development initiatives (including in relation to compound semiconductors and through subsequent work relating (for example) to medtech).
- 5.22** Feedback from consultees suggested that wider engagement with businesses had been limited outside of some individual exceptions. It was reported that the communication of the WIF to the wider business population could be improved to better promote the opportunities and benefits of the WIF for the CCR. In terms of the funding directly available to businesses, representatives of business membership organisations reported limited awareness of the funds and how businesses could access funding. In part, this reflects the nature of the WIF: it is not intended to be a general business finance scheme, and there is a balance to be struck between openness to new proposals and ensuring a manageable and appropriate pipeline. The City Deal Office recognises this challenge and is developing proposals for a ‘cluster fund’

that could support small to medium sized proposals from business, where they meet the objectives of the Investment and Intervention Framework.

5.23 Whilst the CCR Team has delivered various regional engagement events for businesses in collaboration with the FSB and CBI, consultees noted various opportunities and ways in which the engagement of the private sector could be improved. This included engaging and utilising business membership organisations more effectively and drawing on private sector expertise to inform the design of suitable interventions.

Examples of the effects of partnership working

5.24 The improvement in partnership working has contributed to a range of positive effects. Some key examples described by consultees are as follows:

- **Sharing of expertise and networks:** Monmouthshire County Council provided expertise that enabled the development and implementation of the CSC project. Shared networks have also enabled reach into different parts of government, including UK government ministers and Welsh Government.
- **Synergies with other interventions:** the CCR has participated actively in networking and meetings to help drive forward the compound semiconductor cluster agenda, including with businesses, universities and other government partners. This has been linked to the WIF investment and has helped foster relationships with other interventions, something which is now becoming formalised through CSconnected. Relatedly, the development of the Compound Semiconductor Educational Group aims to identify and coordinate educational expertise in the region, and to work with industry to deliver the skills provision that is required, including through activities outside of the WIF.
- **Creating more joined-up approaches to funding:** in co-financing the Metro Plus programme, the CCR has influenced the use of the Welsh Government's Regional Transport Fund, and through the development of a Common Assessment Framework has enabled greater consideration of economic objectives in the project appraisal process. The approach to Metro Plus has also given a strengthened role to the Regional Transport Authority.
- **Regional mindset for local projects:** the principles that are being used to consider local projects are increasingly cognisant of regional priorities. For example, Torfaen's development of a medipark has sought to consider links to the wider medical technologies priority at CCR level. At the time of reporting, partners were considering a regional approach to strategic development planning.
- **Responding to crises:** Rhondda Cynon Taf was badly affected from Storm Dennis in 2020. Capacity from neighbouring authorities was more easily drawn upon than had been the case previously because of stronger relationships between the partners. The CCR also

responded quickly to the COVID-19 crisis in preparing an addendum to the Investment and Intervention Framework and investing in firms with innovative responses to the pandemic.

People and capacity

- 5.25 The role and character of the key people involved have been instrumental to partnership working.** A number of key individuals were identified as having helped to drive forward the partnership, including amongst Leaders, CEOs, the City Deal Office and externally. The consistent involvement of key individuals has meant that new people have been brought in easily when personnel or politics have changed. The CCR has been able to draw on external partners, notably from the private sector (through the REGP), to bring in new expertise. Consultees also referred to the group dynamic and the combination of different perspectives and political allegiances. These differences were ultimately seen as helpful, and have meant that different points of view could be considered as well as a varying set of networks.
- 5.26** It is also worth noting that when the Wider Investment Fund was established, there was no existing project pipeline, although a number of interventions were identified at strategic level in the City Deal and the initial business plan. On balance, this was seen as positive: while it has meant that commitment and spend has taken time to flow through, it has also provided space for the City Deal partnership to develop an investment framework and secure business and political buy-in. It has also helped with the development of the governance process, since project decisions have been considered by Regional Cabinet at every stage.
- 5.27** The City Deal Office has necessarily increased in size since the early days, the breadth of expertise and capabilities has been enhanced and the credentials and capability of the team are highly regarded. However, it is a lean team, which has to date been seen as commensurate with the scale of the investment pipeline. This has benefits in terms of flexibility and efficiency. However, some noted the need for additional capacity for engagement, bringing forward and managing the large-scale projects that the region needs, and managing an investment programme at scale. This challenge is recognised by the Office of the City Deal, and work is underway to increase capacity.
- 5.28 Looking to the future, there is an opportunity to develop a broader regional partnership, building on the success of the City Deal so far.** There are signs that this is already happening, and this is likely to be enhanced through the development of initiatives such as a regional Strategic Development Plan.
- 5.29** Shifting from a 'city deal' to a 'city region' might also mean some enhancements to governance arrangements. There is a high degree of confidence in current governance and oversight arrangements. However, a structure based on multiple accountable bodies for different functions and transactions can be challenging, especially as investments scale up. There is the prospect of a Corporate Joint Committee, which could help to address this.

Key messages from the assessment of wider contribution

5.30 At the final evaluation stage, the key findings related to the wider contribution of the fund in terms of capacity development and partnership working are as follows:

- Good progress has been made on most fronts in relation to local capacity development and partnership working – in line with the logic model.
- Engagement amongst the ten partner authorities and with other key actors in the region, such as senior private sector representatives, the knowledge base, skills and transport, has been enhanced.
- The role of evidence at a regional level (rather than local level) has been recognised and instrumental at strategic and intervention levels.
- Governance structures, in particular through the Regional Cabinet and Economic Growth Partnership, have been well-regarded, and there has been recognition that decision-making processes have been improved.
- These important underpinnings have resulted in significant progress in partnership working, which was acknowledged across consultees. It was noted that the 10 CCR local authorities were working as a single group and that partnership arrangements were now more progressive and operating with a regional mindset.
- Partnership working has contributed to a range of positive effects, including: consensus on priorities and strategic development; sharing expertise and networks; and synergies and alignment with other interventions in areas such as transport, strategic development planning and innovation.
- The WIF itself has been important in contributing to these effects. The scale and nature of the long-term funding of the WIF had focused minds, provided an opportunity to develop a new approach to investment, and helped to bring partners such as the private sector to the table.
- There were some areas for improvement. The engagement with the business base, wider public sector and the community could be improved further. For example, there was a desire for more engagement through business representative organisations so that businesses could understand how they might benefit and what funding might be available.
- Progress has been made in accelerating commitment and spend, following agreement to the Investment and Intervention Framework. There should be opportunities to accelerate progress further and extend the scope of activity beyond the City Deal itself to a wider city regional policy agenda. This may require enhancing the capacity of the City Deal Office.

Annex A: Gateway Review Indicators

A.1 The purpose of this Annex is to map the Gateway Review Evaluation Indicators developed by CLGU against the coverage of the final evaluation reports provided by the National Evaluation Panel. A RAG assessment has been applied, where:

- Red means that the indicator is not covered in the final evaluation reports (as it falls outside the scope of the work of the National Evaluation Panel)
- Amber means that some evidence in relation to the indicator is covered in the final evaluation reports, but further information may be required from the Locality to respond fully (there are notes below to explain this partial coverage)
- Green means that the indicator is covered fully in the final evaluation reports.

A: Evidence of Investment Fund intervention progress (relevant for all projects assessed)

| Indicator | Rating | Location of evidence in National Evaluation Panel (NEP) reports |
|---|--------|---|
| 1. Explanation of the approval process you followed for the intervention including: | | |
| a) How the intervention was agreed by the CA, City Board or Cabinet, including a description of how challenge or disagreement being handled effectively, where applicable | Red | |
| b) How the views of stakeholders were considered during intervention development | Red | |
| c) How the intervention aligns with pre-existing investment programmes in the area | Red | |
| d) How the business case process was appraised (N.B. Robust appraisal should demonstrate value for money and potential for positive | Amber | There are references in the reports to the processes for developing and considering projects (see Overview Report Annex D and |

| | | |
|---|-------|--|
| economic impact, developed in line with the HM Treasury Green Book) | | commentary on the approval of the CSC project (see Impact Evidence Paper). Business cases were reviewed as part of the research. However, no assessment has been made of the quality or robustness of individual business cases or the process followed. |
| e) How the intervention fits with pre-existing stakeholder frameworks, strategies and plans | Red | This is out of scope, but is considered in the Impact and Capacity and Partnership Development Evidence Papers. |
| 2. Explanation of the delivery process to date, including: | | |
| a) Intervention milestones agreed at Board level that are likely to result in successful delivery of the intervention | Red | |
| b) Delivery of the intervention against agreed intervention milestones with evidence of adjusting project/programme plans to mitigate the impact and to ensure value for money and successful delivery | Green | This is explained in the Impact Evidence Paper, along with an assessment of the delivery effectiveness of the projet. |
| c) An agreed spending profile for the intervention | Green | This is set out in the Impact Evidence Paper |
| d) Evidence of keeping to the spending profile and mitigating overspend or delays including evidence of adjusting spending and project/programme plans to mitigate the impact and to ensure value for money and successful delivery | Green | This is discussed in the Impact Evidence Paper. In practice, there were no significant issues in the physical delivery of the CSC foundry project. |
| e) Outputs generated to date by intervention activities | Green | This is reported in the Impact Evidence Paper. |
| 3. Local evaluation plans and commitment to Investment Funds evaluation activities including the Independent Panel evaluation beyond the first gateway review in line with agreed milestones | Amber | The concluding section of the Impact Evidence Paper notes suggestions for how evaluation may be undertaken in the future, for example by aligning with evaluation processes for the Strength in Places Fund bid. There is however no specific discussion of future evaluation plans for partnership and capacity development. |

Source: SQW

B: Evidence of intervention impact (relevant where projects have been delivered)

| Indicator | Rating | Notes |
|---|--------|---|
| 1. Evidence that all evaluation activities set out in the evaluation plan developed by SQW has been completed. Evaluation plans developed sets out a range of activities, such as surveys, and before and after data comparisons that would inform reporting against logic models | Green | The process followed is set out in the Overview Report and in greater detail in the Evidence Papers |
| 2. Evidence of delivery of the outcomes specified in the agreed logic model for each intervention | Green | This is set out in the Impact Evidence Paper |
| 3. Where possible, evidence showing a reasonable expectation that interventions will have long-term positive economic benefits | Amber | There is evidence that the CSC intervention will have long-term positive benefits, and this is set out in the Impact Evidence Paper |
| 4. Where possible, a description of outcomes that are expected to be delivered in the future | Green | This is specifically discussed in the Impact Evidence Paper |
| 5. Delivery of information and data to SQW to evidence the outcomes of specific interventions | Green | This is referred to in the narrative in the Impact Evidence Paper |

Source: SQW

C: Evidence of capacity development and partnership working

| Indicator | Rating | Notes |
|--|--------|--|
| 1. Description of leadership roles and responsibilities assigned within the locality | Red | This is not required, but is referred to in the Capacity & Partnerships Evidence Paper |
| 2. A description of engagement between local authorities within the locality on development and decision-making, both in relation to specific interventions (where appropriate) and the Investment Fund as a whole | Amber | This is specifically addressed in the Capacity & Partnerships Evidence Paper |
| 3. Evidence that the City, CA or Cabinet has engaged stakeholders of a wider range, greater seniority and, where relevant, greater | Amber | There is evidence to this effect, and this is specifically addressed in the Capacity & Partnerships Evidence Paper |

| | | |
|---|-------|--|
| regularity than under previous governance and funding arrangements | | |
| 4. Evidence that the City, CA or Cabinet considered stakeholders' views during decision-making | Amber | There is evidence to this effect, and this is specifically addressed in the Capacity & Partnerships Evidence Paper |
| 5. Evidence that stakeholders felt it was easier and more beneficial to engage with the City, CA or Cabinet than with previous governance arrangements | Amber | There is evidence to this effect, and this is specifically addressed in the Capacity & Partnerships Evidence Paper |
| 6. Description of how the new governance structures for economic development have affected decision-making across the locality | Green | There is evidence to this effect, and this is specifically addressed in the Capacity & Partnerships Evidence Paper |
| 7. Evidence of an improved plan for the development of the locality as a whole including evidence of consensus among stakeholders about the future development of the local economy compared to under previous governance and funding arrangements. | Green | There is evidence to this effect, and this is specifically addressed in the Capacity & Partnerships Evidence Paper |
| 8. Description of how evidence has been used in the development of strategies and projects | Amber | This is described in the Overview Report and the Capacity & Partnerships Evidence Paper |

Source: SQW

D: Contextual economic forecasting and comparison to out-turns

| Indicator | Rating | Notes |
|---|--------|------------------------------|
| 1. Forecast of economic growth in locality for GVA and employment to Year [5 or 10] | Green | Set out in Overview, Annex C |
| 2. Forecast of economic growth nationally for GVA and employment to Year [5 or 10] | Green | Set out in Overview, Annex C |

| | | |
|--|-------|------------------------------|
| 3. Out-turns of economic growth in locality for GVA and employment to Year [x] | Green | Set out in Overview, Annex C |
| 4. Out-turns of economic growth nationally for GVA and employment to Year [x] | Green | Set out in Overview, Annex C |

Source: SQW

Annex B: Peer Review comments

Context and purpose

- B.1** The Academic Group was sent the draft Overview Report and the two Evidence Papers at the same time that they were sent to the Cardiff Capital Region City Deal team. SQW hosted a virtual feedback session with all five members of the Academic Group on 20 October 2020; in addition, academics provided summary feedback via email. This annex provides a summary of the feedback received. This feedback has been incorporated into these final versions of the reports and a summary of the responses and actions taken by SQW to respond to the academic feedback is set out below.

Feedback from discussions

General feedback

- B.2** The reports are well written and informative, and the material is well presented. The evaluation approach is appropriate, given the stage that the projects and the partnership have reached. The impact and progress evaluation of the investment in the Compound Semiconductor Cluster foundry is especially interesting: most of the Academic Group's feedback related to this.

Impact and progress evaluation of the Compound Semiconductor Cluster

- B.3** The Academic Group discussed the investment in the CSC foundry, as a substantial investment associated with a specific firm as well as a contribution to the wider development of the compound semiconductor industry.
- B.4** **It would be useful to explain more about the history of the compound semiconductor sector in South Wales**, as context for the investment. In discussion, it was noted that the development of the industry had featured as an economic development priority before the allocation of Wider Investment Fund monies, and the WIF investment was one of several interventions to support sector growth. In addition, the investment in the foundry was coincidental with a number of other developments in the sector, such as the change of ownership of Newport Wafer Fab and a subsequent change in the firm's strategy.

SQW response: Additional background narrative is provided in Chapter 2 of the Impact and Progress Evaluation Evidence Paper.

- B.5** **The judgement on additionality could be more definitive:** The immediate case for investment was that IQE needed to expand its production capacity, but that it was unable to do so without suitable additional premises. There was a viable alternative in the United States, to which IQE could have established new production capacity had space at Imperial Park not

been secured. The proposition is therefore that the Wider Investment Fund secured this for the Cardiff Capital Region. The Academic Group noted the challenges in ‘proving’ this. However, it considered that the report could be more definitive in its judgement, based on the due diligence carried out at the time of the investment. The Academic Group also discussed whether a more definitive assessment could be made in relation to the effects on wider sector development.

SQW response: *Consultees reported that there was a strong prospect that IQE’s investment would have been lost overseas in the absence of intervention. This is self-reported, but evidence provided at the time of the investment decision demonstrated that IQE could have established production at its North Carolina facility “at marginal cost”, given that it had spare cleanroom capacity available. Given the appraisal of the proposition carried out by Cardiff Capital Region City Deal in 2017/18 and the gap between the additional cost of a new foundry at Imperial Park and the cost of expansion in the US, we consider the additionality to be relatively strong. We have therefore reflected this more explicitly in the Impact and Progress Evidence Paper and the Overview Report. Given the multiple factors at play in supporting the embryonic cluster we have not made the assessment of additionality in relation to sector development more definitive – it was clear that the CSC project was one of a number of factors contributing to this.*

- B.6 There was some discussion regarding the extent and definition of the compound semiconductor cluster.** In particular, this highlighted the need for some caution regarding the use of the term ‘cluster’, given the academic literature on the subject.

SQW response: *The cluster is at an early stage of development. This is described in the report and is acknowledged by partners – and the WIF investment should be seen as one of a series of measures designed to support its growth. The additional material added to Chapter 2 of the Impact and Progress Evidence Paper should help to reinforce this. We acknowledge the challenges associated with defining a ‘cluster’; however the programme of sector development aims to develop attributes associated with clustering (such as the development of linked R&D, innovation, anchor institutions and supply chain activity) and this is widely referred to as such by industry and by academic-led economic impact reports.*

- B.7 Perspectives on the compound semiconductor cluster from outside the region would be helpful,** to provide some comparison of its relative strength and concentration.

SQW response: *Our consultees were almost all regionally based. However, the decisions to award Strength in Places funding to the CS Connected consortium, and to locate the headquarters of the Compound Semiconductor Applications Catapult in Cardiff (prior to its subsequent relocation to Newport) provide external perspectives. We have also set out some additional references in the Impact and Progress Evidence Paper.*

- B.8** The Academic Group also discussed the risks that may be associated with investment linked with a specific firm. While this is beyond the scope of the evaluation, the reports outline the ways in which risks have been mitigated (for example, in the structuring of the special purpose vehicle to enable the investment, and in the regular industry monitoring reported to

the Board of CSC Foundry Ltd.). It should also be noted that while the specific WIF investment is directly associated with IQE, it forms part of a wider series of interventions that relate to the sector more broadly. Presuming that the cluster develops, the risks associated with any individual partners should be reduced.

Other comments

- B.9 Spend to date has been concentrated on the CSC Foundry project.** It may be helpful to describe more fully the wider approach to investment.

***SQW response:** Although the investment in the CSC foundry accounts for the dominant share of spend to date, it only accounts for around 8% of the Wider Investment Fund (and 3% of the whole £1.2 billion City Deal). There is now a strong pipeline of projects in place, and several recent commitments have been made: this is described in the Overview Report and the Capacity and Partnership Development Evidence Paper, and additional commentary has been incorporated.*

Annex C: Economic forecasts and out-turns

- C.1** This Annex provides further details regarding the economic forecasting workstream. This includes an overview of the approach, interpretation of the results including any limitations, and the detailed data from both the baseline forecasts and analysis of out-turns.

Approach

- C.2** As part of the Baseline Report, Cambridge Econometrics (CE) developed tailored baseline economic forecasts for Cardiff Capital Region (CCR) based on a version of CE's Local Economy Forecasting Model (LEFM) that was available back in 2015.
- C.3** Initial baseline forecasts were developed using economic projections from the LEFM, which were based on historical growth in the locality relative to the region or UK (depending on which area it has the strongest relationship with), on an industry-by-industry basis. It was assumed that those relationships would continue into the future, and no account was taken for any major interventions or activities that were known at the time, i.e. they were non-tailored.
- C.4** These non-tailored projections taken from the LEFM were revised to incorporate local information on major interventions, plans or events that were known at the time that the City Deal was agreed. This drew on desk-based research and a workshop with representatives from the Locality. The tailored baseline was developed within a version of LEFM calibrated to the local CCR economy, which incorporated GVA and employment adjustments to the non-tailored baseline as agreed by the local councils.¹⁸
- C.5** This annex compares the tailored short-term economic forecasts developed for the Baseline Report with the actual outcomes over 2013-2019¹⁹. The last year of historical data in the forecasts produced for the Baseline Report was 2013. The more recent actual outcomes data are taken from CE's updated historical database, which includes historical data to 2019. A sectoral comparison is also included, along with a comparison of the outturns at the levels of Wales and the UK.

Interpreting the results

- C.6** The forecasts set out in the Baseline Report and the more recent historical data to 2019 were both based on CE's historical employment and GVA databases, allowing a comparison to be made between the two datasets. While the method to process the data in the Baseline Report

¹⁸ Further details regarding the methodology and the effects of the tailoring are set out in the Baseline Report.

¹⁹ The local area employment data in 2019 are estimates based on actual regional data. While the local area GVA data in 2019 are projections and are not based on actual regional data, they have been included for comparisons.

and the actual outturn data were the same, it is important to note the following differences in the underlying raw data when interpreting the results:

- The last year of actual local area employment data in the most recent data was 2018. The local area employment data in 2019 were estimates based on actual regional data²⁰. Changes at the regional (Wales) level over 2018-19 were proportionately disaggregated across all local authorities in Wales. The local area 2019 employment figures are therefore estimates, allowing an additional year to be used in the analysis. It is important to bear in mind, however, that the actual 2019 local area figures could be higher or lower if changes at the regional level were concentrated in particular local areas in Wales. The local area GVA data used for 2019 were projections and not based on actual regional data. They are modelled results, based on CE's standard method to produce baseline economic projections²¹. They have been included for comparisons.
- The price base of the GVA data has changed from £2011 in the baseline forecasts to £2016 in the latest historical data. The absolute GVA levels, therefore, cannot be compared between the two datasets. In order for both datasets to be compared, an indexed series has been created for both datasets where the GVA data in 2013=100. This allows recent growth rates to be compared with forecast growth rates. A similar approach has been taken when analysing the employment and productivity data.
- ONS published new local authority, NUTS2 and NUTS3-level GVA estimates based on an improved (balanced approach) methodology in 2018²². This new data have been incorporated into CE's latest historical database. The raw GVA data used in the Baseline Report was based on the old (income approach) NUTS2 GVA data available at the time, as the NUTS3 GVA data was not considered to be as robust. Additionally, ONS have published the latest NUTS2 GVA data by more detailed sectors than were available when the LEFM used in the Baseline Report was updated. The incorporation of raw GVA data at lower spatial levels means that in some instances GVA has been redistributed between local areas and sectors within a NUTS2 area. This could lead to differences between the GVA data used in the Baseline Report and the latest GVA data. However, the effect on total GVA for a larger area, such as Cardiff Capital Region, and the effect on the growth rates by sector within the area will be limited, as this comparison focuses on broad sectors (not

²⁰ This is due to the ONS release schedule for data. While 2019 regional employment data has been published, the 2019 employment estimate for local authority districts will not be released until the end of September 2020.

²¹ Further details regarding the standard methodology for CE's baseline projections are set out in the Baseline Report.

²² Balanced approach data is created by combining income and production approach data – a summary of how these approaches differ at the aggregate level can be found here:

<https://www.ons.gov.uk/file?uri=/economy/regionalaccounts/grossdisposablehouseholdincome/methodologies/regionalaccounts/regionalrealgvatcm77262085.pdf>. A summary of how these two data sets are combined can be found here: https://consultations.ons.gov.uk/national-accounts/consultation-on-balanced-estimates-of-regional-gva/supporting_documents/Development%20of%20a%20balanced%20measure%20of%20regional%20gross%20value%20added.pdf

the detailed sector level in the new GVA data). A comparison between the forecasts is, therefore, still valid when analysing the indexed growth rate.

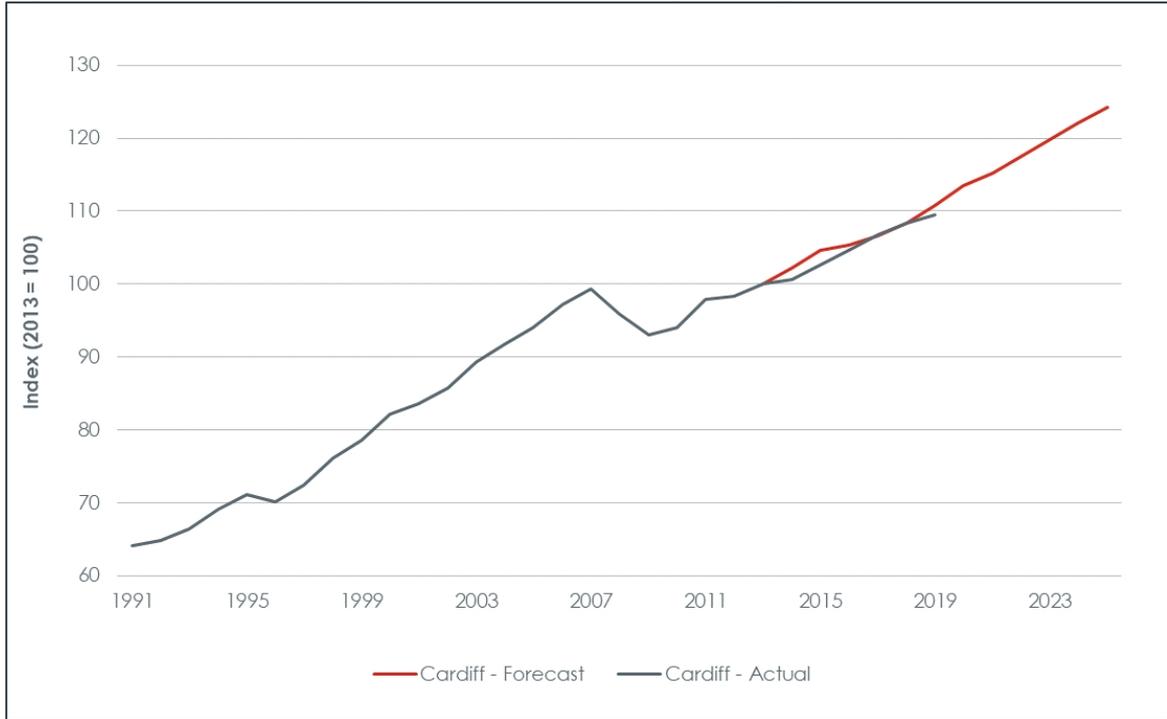
C.7 These changes in the raw GVA data mean that any differences seen when comparing the short-term GVA forecasts from the Baseline Report to the actual outturns data could be due to the change in the GVA price base, improvements in the measurement and reporting of the GVA data, and/or differences in what was expected back in 2015 versus what actually happened. There could be cases when variation between forecasts and actual data are explained more by methodological issues. However, the impact on growth rates at the CCR level are likely to be limited. It is difficult to estimate the relative scale of importance between the factors that have caused possible differences between forecasts and actuals, as they will affect each local area and sector differently. For this reason, it is better to focus more on comparing forecast and actual *growth rates* (rather than absolute levels).

Detailed data

GVA

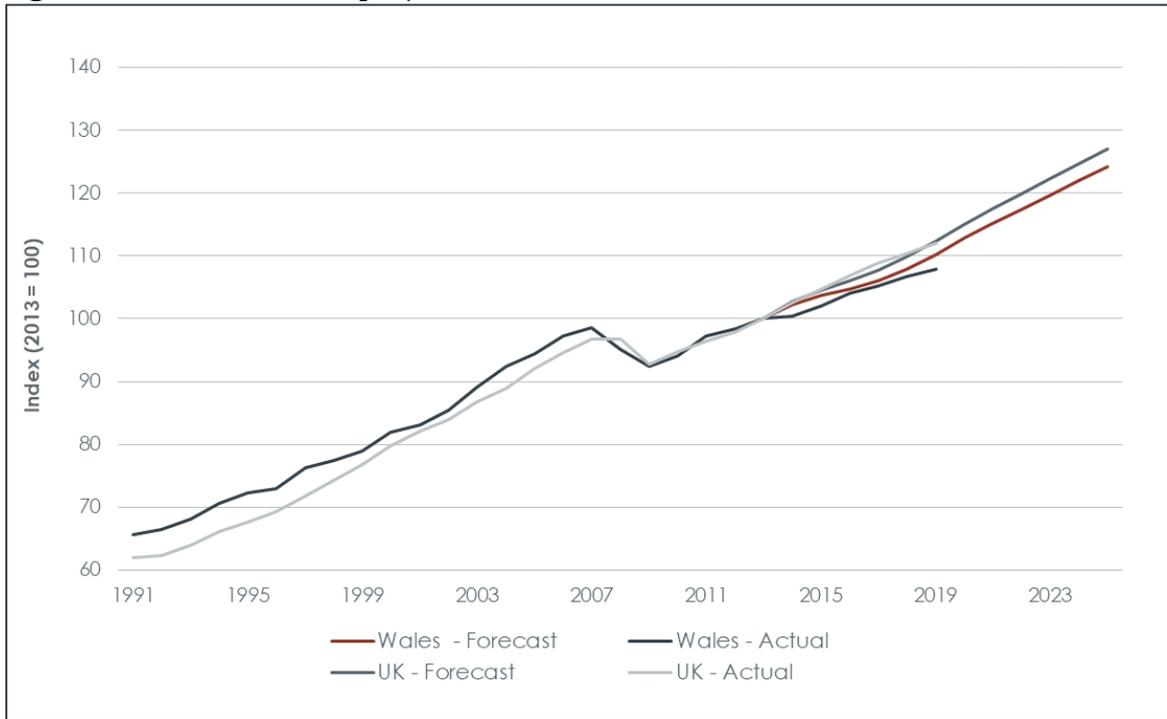
- C.8** Actual GVA growth in CCR and Wales over 2013-19 was slightly slower than was expected (see Figure C-1 and Figure C-2). GVA in CCR grew by 1.5% pa over 2013-19. This was slower than the UK (1.9% pa), which grew broadly in line with expectations. GVA growth in CCR slightly outperformed Wales as a whole, which grew by 1.3% pa over this period. GVA in CCR initially grew below expectations in 2014 and 2015, after which the difference between the forecast and actual growth rate narrowed.
- C.9** Actual GVA growth per annum in CCR over 2013-19 was 0.2 percentage points (pp) lower than was forecast in the Baseline Report (1.7% pa). This was in line with the trend for Wales, where GVA growth per annum underperformed the forecast by 0.3 pp. Overall UK GVA growth was broadly in line with expectations.
- C.10** As set out in Table C-1, negative GVA growth in Transport & storage and Government services, as well as lower than expected GVA growth in Accommodation & food services were the main drivers of the underperformance in CCR relative to the forecast in the Baseline Report. These sectors together accounted for 29% of total GVA in CCR in 2019. Electricity, gas & water and Information & communications, which accounted for 8% of total GVA in CCR, outperformed the forecast by 1.9 pp and 0.7 pp respectively. Mining & quarrying and Agriculture also outperformed their respective forecast by 7 pp and 11 pp respectively, though these are both small sectors. GVA growth in the rest of the sectors were broadly in line with the forecasts.

Figure C-1: GVA actuals vs projections – Cardiff Capital Region



Source: Cambridge Econometrics

Figure C-2: GVA actuals vs projections – Wales and UK



Source: Cambridge Econometrics

Table C-1: Cardiff Capital Region GVA growth by sector, 2013-2019

| | Forecast growth (pa %) | Actual growth (pa %) | Percentage point difference (actual minus forecast) |
|-------------------------------|---------------------------|-------------------------|---|
| Agriculture | 0.4 | 7.6 | 7.3 |
| Mining & quarrying | -0.5 | 10.1 | 10.6 |
| Manufacturing | 1.7 | 1.7 | 0.0 |
| Electricity, gas & water | 0.8 | 2.7 | 1.9 |
| Construction | 4.4 | 4.7 | 0.3 |
| Distribution | 2.2 | 2.2 | 0.0 |
| Transport & storage | 2.8 | -0.7 | -3.5 |
| Accommodation & food services | 2.6 | 1.5 | -1.1 |
| Information & communications | 1.6 | 2.3 | 0.7 |
| Finance & business services | 2.0 | 2.3 | 0.3 |
| Government services | 0.5 | -0.2 | -0.6 |
| Other services | 1.3 | 1.4 | 0.0 |

Source: Cambridge Econometrics

Employment

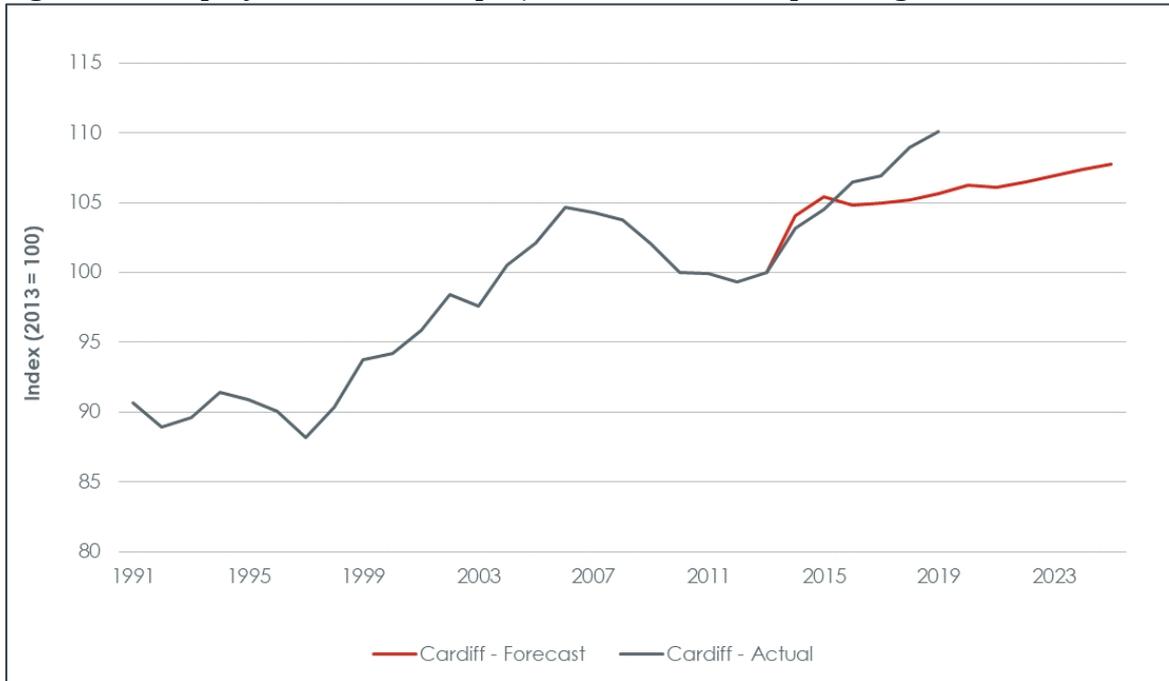
C.11 Employment grew above expectations in all areas over 2013-19 (see Figure C-3 and Figure C-4). Employment in CCR grew by 1.6% pa over 2013-19, compared to a forecast of 0.9% pa, meaning that there were 37,100 more jobs than expected in the area by 2019. In Wales as a whole, growth expectations were exceeded by 0.6 pp per annum (with employment growth of 1.4% pa achieved over 2013-19), meaning that there were 64,900 more jobs than expected in 2019. Hence, CCR accounted for over half of the additional jobs created in Wales over the period. Similarly, employment growth in the UK as a whole outperformed expectations by 0.7 pp per annum (with employment growth of 1.7% pa achieved over 2013-19).

C.12 Employment growth in CCR started to outperform expectations in 2016 and this gap continued to widen over the forecast period. Wales and the UK as a whole followed a similar trend as CCR, where the gap between forecast and actual employment growth widened over the forecast period.

Strong employment growth was driven by above forecast growth in Information & Communication, Accommodation & food services, Transport & storage and Financial & business services (see

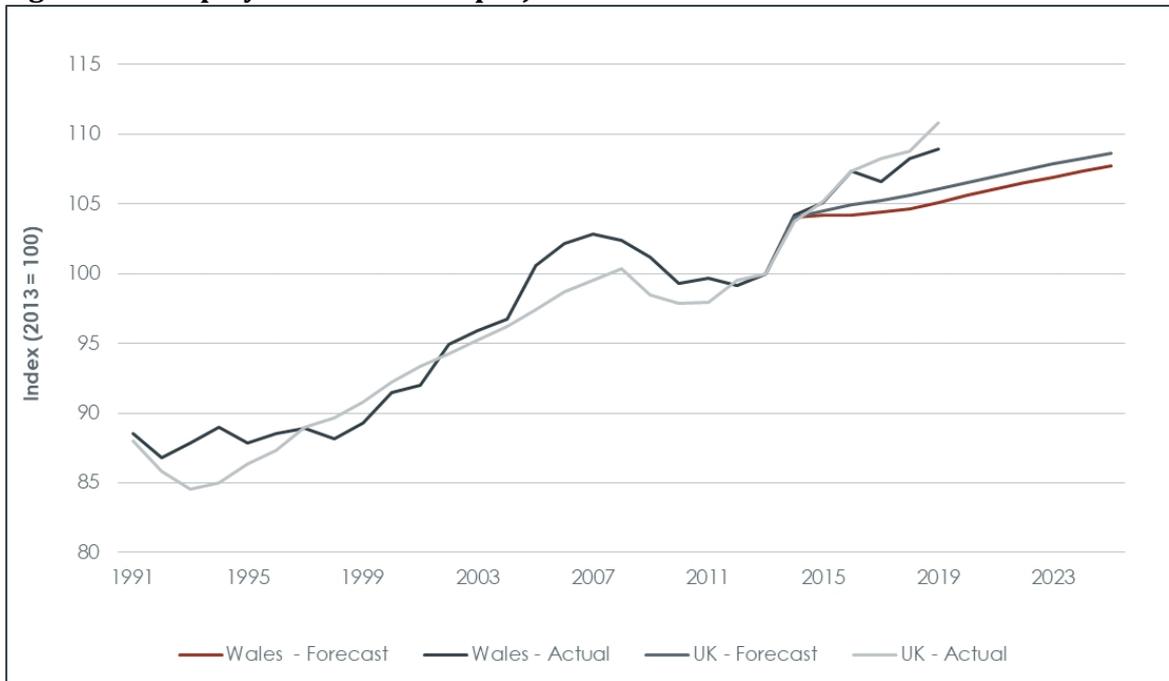
C.13 Table C-2). Mining & quarrying, Distribution and Other services experienced a decline in employment. These sectors were expected to decline or experience muted growth in the Baseline Report, but with Distribution accounting for over 10% of total employment in CCR, the decline in this sector resulted in a large number of job losses (over 10,000 jobs).

Figure C-3: Employment actuals vs projections – Cardiff Capital Region



Source: Cambridge Econometrics

Figure C-4: Employment actuals vs projections – Wales and UK



Source: Cambridge Econometrics

Table C-2: Cardiff Capital Region employment growth by sector, 2013-2019

| | Forecast growth (% pa) | Actual growth (% pa) | Percentage point difference (actual minus forecast) |
|-------------------------------|------------------------|----------------------|---|
| Agriculture | 4.6 | 8.4 | 3.8 |
| Mining & quarrying | -5.0 | -2.9 | 2.1 |
| Manufacturing | 0.6 | 0.8 | 0.2 |
| Electricity, gas & water | -0.6 | 2.4 | 3.0 |
| Construction | 5.3 | 3.6 | -1.7 |
| Distribution | 0.1 | -2.1 | -2.2 |
| Transport & storage | 2.7 | 5.4 | 2.7 |
| Accommodation & food services | 0.1 | 4.4 | 4.4 |
| Information & communications | 1.7 | 8.2 | 6.6 |
| Finance & business services | 2.3 | 4.4 | 2.1 |
| Government services | -0.2 | 0.2 | 0.3 |
| Other services | 0.0 | -0.7 | -0.7 |

Source: Cambridge Econometrics

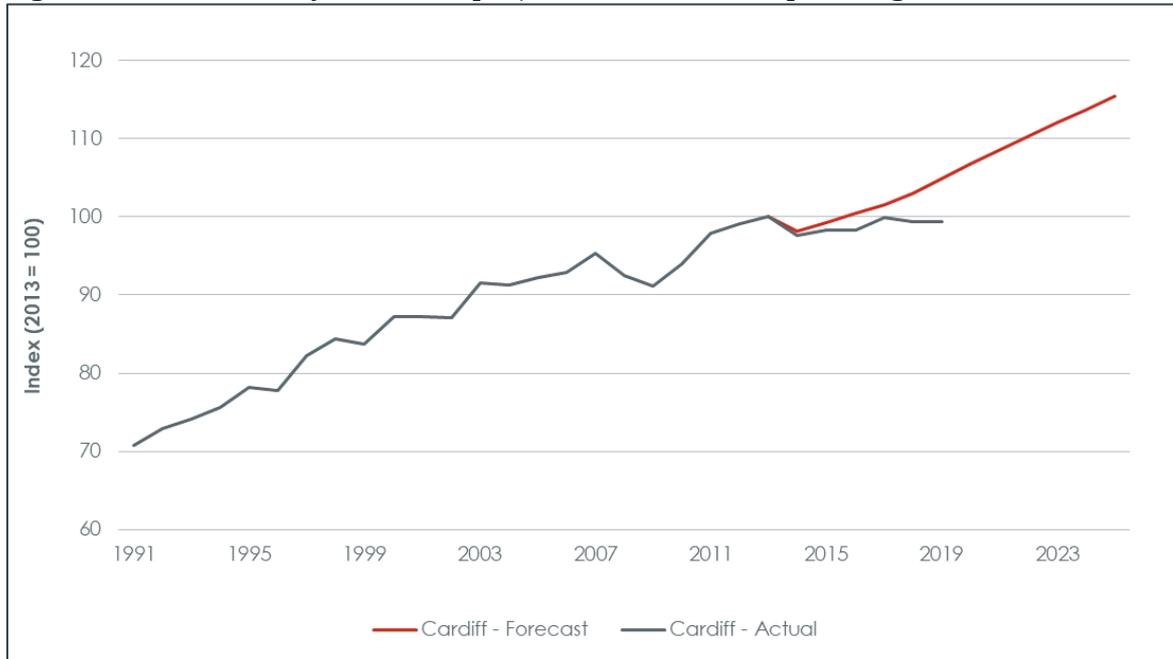
Productivity

C.14 Productivity growth in CCR was below expectations, which was a similar result to Wales and the UK (see Figure C-5 and Figure C-6). This follows on from the trend of stronger than expected employment growth at a time of slightly slower than expected GVA growth. The Baseline Report forecast productivity growth of 0.8% pa over 2013-19 in CCR, but actual growth was slightly negative (-0.1% pa). Similarly, productivity growth in Wales over 2013-19 was 1 pp per annum lower than forecast (-0.2% pa). Whilst the deviation between forecast and actual productivity growth generally increased for all areas over the forecast period, there was some fluctuation in annual growth rates, including a -2.4% decline in productivity in CCR in 2014, followed by a 1.7% increase in productivity in 2017.

Productivity growth underperformed expectations in more than half the sectors (see

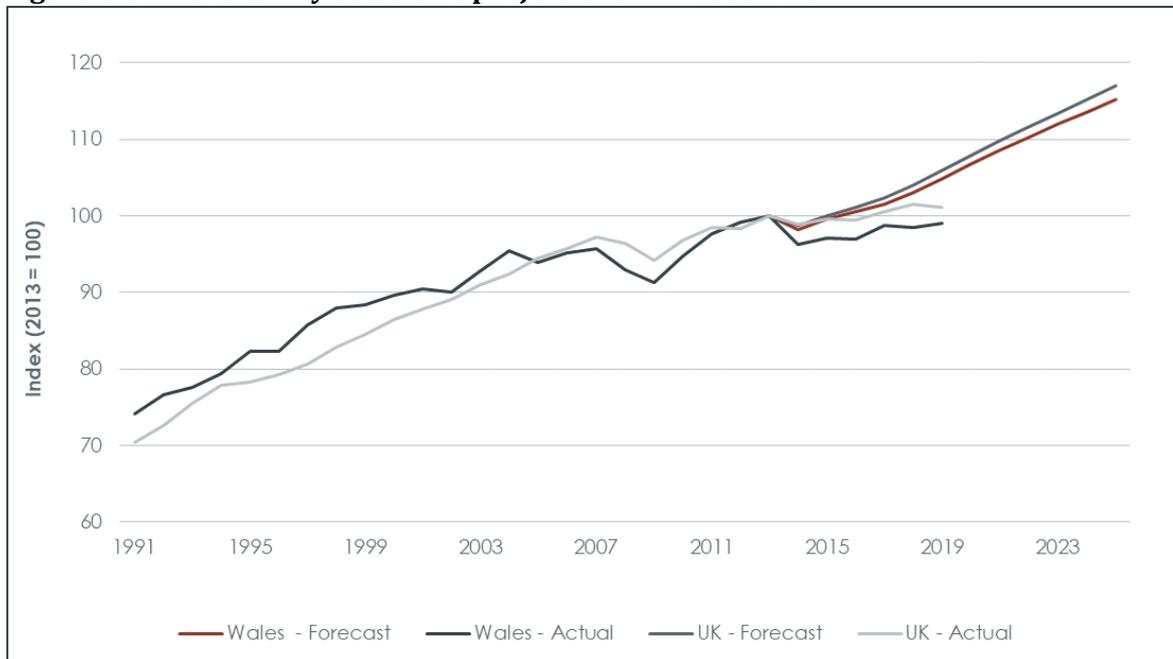
C.15 Table C-3). Transport & storage, Information & communications, and Accommodation & food services were the weakest performers relative to expectations. Productivity growth in Construction (1.1% pa over 2013-19) and Distribution (4.4% pa over 2013-19) were stronger than expected, outperforming expectations by 1.9 pp and 2.3 pp respectively.

Figure C-5: Productivity actuals vs projections - Cardiff Capital Region



Source: Cambridge Econometrics

Figure C-6: Productivity actuals vs projections - Wales and UK



Source: Cambridge Econometrics

Table C-3: Cardiff Capital Region productivity growth by sector, 2013-2019

| | Forecast growth (% pa) | Actual growth (% pa) | Percentage point difference (actual minus forecast) |
|-------------------------------|------------------------|----------------------|---|
| Agriculture | -4.0 | -0.7 | 3.3 |
| Mining & quarrying | 4.7 | 13.4 | 8.7 |
| Manufacturing | 1.1 | 0.9 | -0.2 |
| Electricity, gas & water | 1.4 | 0.3 | -1.1 |
| Construction | -0.8 | 1.1 | 1.9 |
| Distribution | 2.1 | 4.4 | 2.3 |
| Transport & storage | 0.1 | -5.8 | -5.9 |
| Accommodation & food services | 2.5 | -2.8 | -5.3 |
| Information & communications | -0.1 | -5.5 | -5.5 |
| Finance & business services | -0.3 | -2.1 | -1.7 |
| Government services | 0.6 | -0.3 | -1.0 |
| Other services | 1.4 | 2.1 | 0.7 |

Source: Cambridge Econometrics

Conclusion

- C.16** While employment grew stronger than expected, GVA growth in CCR over 2013-19 was slightly slower than forecast, though it outperformed Wales more widely. As a result of the trends in employment and GVA, there was slower-than-expected productivity growth (with a slight decline in productivity over the period). This underperformance in productivity was in line with the UK wide trend of flatlining productivity.
- C.17** Observed differences in expected GVA growth and actual GVA growth are likely to be largely due to deviation in actual growth from what was forecasted. It is difficult to estimate the extent to which improvements in the ONS GVA methodology caused possible differences between forecast and actual outturns, as each local area and sector will be affected differently. However, on the whole, the new ONS data are likely to have limited impacts on the deviation of actual GVA growth from what was expected in the Baseline Report at the CCR broad sector level.

Annex D: Other interventions supported through the Wider Investment Fund

Summary of key messages

- Although the Compound Semiconductor Cluster was the only intervention fully approved and incurring spend by the end of 2019, a further four interventions had been approved by the end of Quarter 1 of 2020/21, with a total WIF commitment of £50.1 million
- These comprise investments in Metro Plus (a series of local transport interventions to complement the South Wales Metro); the delivery of a four-year graduate placement scheme; the establishment of a Viability Gap Fund to bring forward housing on former industrial sites; and a direct business investment in a medtech firm linked with Covid-19 related innovation.
- In addition, in-principle commitments have been made to Metro Central (the redevelopment of Cardiff Central station and the surrounding area) and a 'front of house' facility for the compound semiconductor sector, as part of a Strength in Places Fund proposal. There is also a pipeline of emerging projects.
- While none of these interventions are subject to evaluation (or have been reviewed in detail), they suggest significant recent progress in bringing forward investment proposals, in line with the principles set out in the *Investment and Intervention Framework*.

Introduction

D.1 The Compound Semiconductor Cluster is the only intervention in scope for impact and progress evaluation at Gateway Review stage. However, by the end of Quarter 1 of 2020/21, Wider Investment Fund allocations of £50.1 million had been approved to support four further interventions, and 13 potential investments had been progressed to at least Strategic Outline Case stage. This annex sets out the process through which further projects have been approved, and summarises the approved and pipeline projects at the end of Q1 2020/21.

Investment approval process

5.31 The *Investment and Intervention Framework (IIF)* approved by Regional Cabinet in June 2019 sets out the process through which projects are considered and approved for investment from the Wider Investment Fund, in line with the strategic aim of securing a balance between the 'investment', 'innovation' and 'challenge' themes set out in the IIF. In summary, the process involves:

- An ‘open door’ to engagement on potential projects from the public or private sector, with interested parties asked to complete an **initial ‘sift’ questionnaire** to enter the pipeline. The sift questionnaire is essentially an expression of interest, which asks prospective applicants to set out the financial standing of the applicant; alignment with the objectives of the City Deal; an outline business plan; total investment to date and anticipated additional alternative sources; and the anticipated optimal structure for any funding from the Wider Investment Fund.
- Sift questionnaires are considered by an **Investment Panel** established in July 2019. The Investment Panel consists of members of the Regional Economic Growth Partnership and the (officer-level) Programme Board. The Investment Panel recommends to Regional Cabinet those proposals that should be taken to the next stage.
- This triggers a **business case development** process proportionate to the size and risk of the investment, with the Investment Panel and Regional Cabinet considering projects at the Strategic Outline Case and Outline Business Case stage, and investment decisions made by Regional Cabinet following the Full Business Case.

5.32 By the end of Quarter 1 2020/21, there were 20 projects in the pipeline (at various stages of development), in addition to the CSC Foundry and four other fully approved interventions.

Approved interventions

D.2 By the end of June 2020, Regional Cabinet had approved the following interventions (in addition to the CSC Foundry):

Table D-1: Additional approved interventions

| Intervention | WIF commitment | WIF expenditure (to end Q1 2020/21) |
|--|-----------------|-------------------------------------|
| Metro Plus | £15 million | - |
| Graduate Scheme | £1.545 million | £150k |
| Housing Investment Fund (Viability Gap Scheme) | £31.498 million | £60k |
| Creo Medical | £2.055 million | £2.055 million |

Source: CCR, Quarter 1 Performance Report, September 2020

5.33 In October, a further intervention was approved for a **Challenge Fund**, with a commitment of £10 million from the WIF.

Metro Plus

Background

D.3 The South Wales Metro is a major infrastructure programme, involving transformational investment in the quality, speed and frequency of services across the Core Valley Lines

network, and the delivery of additional stations. However, the Metro proposition has always involved a multi-modal transport system, including integrated connectivity with the bus network²³. The *Economic and Industrial Strategy* (2018) set a priority of “embracing the Metro as a backbone to connecting the CCR” and to improving transport links across the region, linked with the Metro. Delivery of Metro Plus was also specifically set out as a priority in the 2019 Joint Working Agreement Business Plan.

D.4 In February 2019, the Regional Cabinet agreed a **Strategic Outline Programme** for a first phase of local transport schemes that would be complementary to the Metro investment. This identified an indicative programme of ten schemes across the region, with a total estimated value of around £50 million. The Strategic Outline Programme proposed Wider Investment Fund investment of £15 million, matched with £15 million from the Welsh Government’s Local Transport Fund²⁴ and £20 million from local contributions.

D.5 At strategic level, the benefits envisaged within the SOP included:

- Improved accessibility to work, learning and leisure opportunities (including through the role of transport interchanges in facilitating connections to the Metro ‘spine’ from communities further afield)
- Increased retail, leisure and other economic opportunities through the development of a range of uses at interchanges beyond transport
- Environmental benefits, through the incorporation of measures to support the roll-out of electric vehicles (e.g. new charging points)²⁵ and increased modal shift
- Promotion of active travel and support for walking and cycling.
- Skills development and training, with the intention for a targeted recruitment and training programme to be incorporated as part of all works contracts
- Scope for income generation and a financial return on investment that could be recycled through the WIF (although it should be noted that no future receipts are factored into the Wider Investment Fund’s future financial profile at the scale of the Metro Plus programme as a whole).
- Opportunities for digital infrastructure development (e.g. the development of apps and digital tools to help customers make the best use of improved connectivity).

D.6 Following the Strategic Outline Programme, the Regional Cabinet gave ‘in principle’ commitment to the use of the Wider Investment Fund for Metro Plus, subject to the adoption

²³ Mark Barry (2011), *A Metro for Wales’ Capital City Region*, IWA/ Cardiff Business School (<https://www.iwa.wales/wp-content/media/2011/02/iwa-metroreport.pdf>)

²⁴ The LTF is an annual grant. The expectation is that £5 million LTF per year over three years will co-finance the Metro Plus schemes, with a single regional bid submitted to the Welsh Government on behalf of all ten local authorities.

²⁵ Alongside the SOP, CCRCO commissioned a supplementary report into the scope for greater use of electric vehicles and charging options.

of a **Common Assessment Framework (CAF)** for individual projects, designed to assess the contribution of each scheme to meeting the economic objectives of the City Deal, as well as the transport considerations included in the WelTAG business case process. The CAF was approved by the Regional Transport Authority in November 2019, with authority to approve individual Metro Plus investments delegated to the RTA, up to the £15 million allocation limit.

Metro Plus projects

D.7 Phase 1 of the Metro Plus programme consists of ten projects, each of which have been allocated £1.5 million from the Wider Investment Fund, matched with the same amount from the Local Transport Fund and supplemented with local contributions as appropriate. These are set out in the table below:

Table D-2: Metro Plus Phase 1 interventions

| Project | Summary description | Completion date |
|--|---|-----------------|
| Pentrebach Park & Ride | Park and ride at Pentrebach station (south of Merthyr Tydfil), to be delivered in time for the doubling of frequencies on the Merthyr rail line. The site is linked with a mixed-use residential and business development on a former factory site. | December 2022 |
| Pontypool & New Inn Park & Ride | Park and ride at Pontypool and New Inn station (on the Newport-Hereford line), accessible from the A4042 trunk road. The scheme includes improved station facilities and is intended to provide a rail interchange point for passengers in the Eastern Valleys not served by rail infrastructure (e.g. Blaenavon and Abersychan) and parts of Monmouthshire. It will also serve a new housing/ employment scheme at Mamhilad, north of Pontypool. | July 2021 |
| Abertillery Transport Interchange | Development of a new transport interchange in advance of, and to accommodate a proposed new rail link to Abertillery from the Ebbw Vale line. | TBC |
| Barry Docks Bus Interchange | Bus and rail interchange in Barry town centre, extending the existing park and ride site, expanding to meet rising demand and to serve Cardiff Wales Airport. | March 2022 |
| Caerphilly Bus Interchange | New transport interchange on the site of the current bus and rail stations, including improved facilities, electric vehicle charging and a larger park and ride facility. | 2023 |
| Newport Priority Bus Route | Priority bus route from east Newport into the city centre, linked with a new park and ride facility to support the Royal Gwent Hospital | March 2022 |
| Pyle Park & Ride and Porthcawl Bus Station | Park and ride within an integrated transport hub serving Pyle and surrounding area, with a bus interchange at Porthcawl as part of the same scheme. | March 2022 |
| Porth Interchange | Transport hub linked with Porth rail station (coinciding with improved frequencies as part of Metro), including | December 2021 |

| Project | Summary description | Completion date |
|--|--|-----------------|
| | improved station facilities and contributing to a regenerated Station Quarter. | |
| East Cardiff Bus Priority and Cycle Superhighway | Series of sustainable and active travel packages that will enable improved bus connections to Cardiff city centre and employment zones and deliver a 'Central Cycle Superhighway' connecting existing cycle routes to the city centre. | December 2021 |
| Severn Tunnel Junction Park & Ride | Expanded park and ride facility at Severn Tunnel Junction station, enabling an improved bus/ rail interchange and potentially improvements to the station itself. | December 2021 |

Source: CCR Regional Transport Authority, September 2020; CCR

D.8 Construction work has started on two of these schemes – Porth Interchange and Pontypool and New Inn Park and Ride (in January and March 2020 respectively). As work is advanced on the Porth scheme, it has been considered further as an 'intervention-up' case study. This case study is included within the Capacity Development and Partnership Working Evidence Paper, which accompanies this report.

Wider Investment Fund expenditure

D.9 No Wider Investment Fund monies had been spent on Metro Plus by the end of Q1 2020/21²⁶. However, it is anticipated that £5.185 million will have been spent by the end of the financial year.

Future plans

D.10 A further ten schemes have been identified for a Metro Plus Phase 2 programme, alongside four 'Metro Enhancement Framework'²⁷ projects. These are currently being developed via the Welsh Government Local Transport Fund: there is no commitment at present from the Wider Investment Fund, and any funding allocations will be dependent on an application and business case development process.

Graduate Scheme

Background

D.11 In December 2018, Regional Cabinet approved a **pilot Graduate Scheme**. This brokered internships and placements for graduates with SMEs in the region, in conjunction with

²⁶ Note that as the matching Local Transport Fund is an annual allocation, schemes are profiled to spend money from LTF first.

²⁷ The Metro Enhancement Framework (MEF) seeks to support improvements to those elements of the wider Metro strategy that are currently outside the Core Valley Lines Metro investment (e.g. on the Vale of Glamorgan and Maesteg lines).

regional universities. Following a review of the pilot, Regional Cabinet considered a full business case in March 2020, and agreed to support a full four-year programme from April.

- D.12** The rationale for the pilot scheme was to “reverse the ‘brain-drain’” associated with a net loss of graduates from the region, while improving the productivity and growth potential of businesses that historically would have had little engagement with the graduate jobs market. This built on the recommendations of CCR’s Growth and Competitiveness Commission (2016), which noted a need to focus on retaining graduate talent in the region, making efforts to match them with job and enterprise opportunities²⁸.
- D.13** A review of the pilot, based on 28 filled placements, found that the ratio of private leverage to WIF funds invested was around 5.8:1, based on actual graduate salaries and on-costs. It also found that the placements created were appropriate to graduate skills, that there was high business interest, and that of those completing placements, all had been offered permanent positions with the employer – although it was too early to identify any impacts on business growth or productivity. The review also set out several recommendations for future scheme design, including more innovative approaches to placement advertising and business engagement, better coordination of university involvement, and a more targeted approach to creating opportunities in specific sectors, in line with the *Industrial and Economic Plan*.
- D.14** Alongside the review, CCR commissioned Nesta to prepare a review of *The Future for Skills in Cardiff Capital Region*. This recommended (*inter alia*) the opportunity to align an expanded Graduate Scheme with Shared Apprenticeships within the priority growth sectors identified in the *Industrial and Economic Plan*, and the need to provide better coordinated labour market information and career pathways.
- D.15** Following this, CCR developed a ***Future Ready Skills Framework***, which was considered by Regional Cabinet in March 2020. This draws on the Nesta work and the Graduate Scheme review, and proposed (alongside seven other ‘pillars of activity’ a scaling up of the Graduate Scheme. This informed a Full Business Case for an expanded scheme.
- D.16** The expanded scheme will run for four years from April 2020, with the aim of supporting placements and internships for 500 graduates over that period. Key performance indicators include a 60% conversion rate from graduate placements into permanent roles and a target of £8.45 of private leverage for every £1 of CCR investment.

Expenditure

- D.17** Total WIF expenditure over the lifetime of the Scheme is expected to be £1.538 million, including £117k spent on the pilot scheme in 2018/19 and 2019/20, prior to the development and approval of the FBC.

²⁸ CCRC (2016), [Growth and Competitiveness Commission: Report and Recommendations](#)

Homes for All the Region (Viability Gap Fund)

Background

- D.18** Housing development was a key theme in the original City Deal, and there is a widespread recognition that there is a viability challenge in bringing forward stalled sites for housing development, especially on former industrial land. The JWA Business Plan noted that there could be a variety of mechanisms used to bring sites forward, and proposed the principle of a regional housing investment fund, the concept of which was discussed by Regional Cabinet in 2018.
- D.19** Developing the concept further, a business case for a housing investment fund was prepared, alongside a Housing Market Review. This led to a Full Business Case approved by Regional Cabinet in March 2020, which proposed a **Viability Gap Fund** and an **SME Finance Fund**.

Viability Gap Fund

- D.20** The Viability Gap Fund (VGF) is intended to provide ‘patient finance’ to support infrastructure development to bring schemes forward and to support land reclamation and remediation. Within the aims of the *Investment and Intervention Framework*, the return on investment is primarily seen in terms of ‘creating the conditions for private sector success and civic benefit’, rather than a direct financial return to the Wider Investment Fund, although profit will be shared between developers and the Wider Investment Fund based on an agreed overage arrangement at the start of each deal²⁹.
- D.21** The Viability Gap Fund will target ‘marginally unviable’ sites that have a ‘gap’ requirement of between £1 million and £8 million, anticipated to be mid-sized sites of 40-350 units. The intention is that this will complement other schemes, such as the Stalled Sites Fund proposed by the Welsh Government, which is focused on larger developments. Funding will be directed towards private and public sector-led schemes, although in all cases the funding will be channelled via the relevant local authority, in order to ensure strategic policy compliance.
- D.22** The VGF has total Wider Investment Fund investment of £30 million, made up of:
- £15 million ‘ring-fenced’ to Blaenau Gwent, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taf and Torfaen (the five ‘bottom-ranked’ authorities on the UK Competitiveness Index)
 - £15 million available on merit throughout the region.
- D.23** In addition, a further £5 million has been added to the scheme from the Welsh Government, subject to proposals meeting supplementary Welsh Government criteria in relation to space standards and affordable housing.

²⁹ For example, where actual sales are greater than the forecast values in the original viability assessment, the pre-agreed overage arrangement will commence, with caps on developer profits.

- D.24** The FBC for the scheme anticipates that the VGF will help to bring forward up to 2,800 homes, secure up to £490 million in private sector leverage and “have the potential to leverage an additional £870 million of additional economic output”.
- D.25** Since the FBC was approved, CBRE has been appointed to a technical advisory role. The window for applications to the VGF opened in September 2020 and expected to conclude in December, with contracting and due diligence taking place in 2021 and all funds drawn down and spent by March 2024.

SME Finance Fund

- D.26** Supplementing the VGF, an SME Finance Fund is to be established using £10 million Welsh Government Funding. This will be a fully-recoverable fund, intended to increase SME developers’ access to the market. Work is underway (in September 2020) to procure an FCA-registered fund manager, with a view to an FBC coming forward to Regional Cabinet in March 2021.

Creo Medical

- 5.34** In May 2020, Regional Cabinet approved a series of priorities for addressing the economic impact of Covid-19, supplemented by a Covid-19 ‘addendum’ to the *Investment and Intervention Framework*. This included focusing on measures to accelerate the development of the med-tech cluster.
- 5.35** Following consideration by the Investment Panel, Regional Cabinet approved WIF funding of £2.055 million in May 2020 to Creo Medical, a medical technologies business based in Chepstow. This took the form of a loan agreement to support Creo Medical in the development of cool plasma sterilisation and decontamination technology, to enable it to launch new anti-viral and anti-bacterial products on the market. The loan is expected to be repaid with interest within five years, and is anticipated to support 30 jobs by the end of 2020 and a further 70 jobs as production is rolled out. Wider benefits are expected to include increased expenditure on business R&D, increased turnover and private sector leverage.

CCR Challenge Fund – Re-building community wealth post Covid-19

- D.27** In October 2020, Regional Cabinet approved WIF investment of £10 million in a CCR Challenge Programme aimed at “rebuilding local wealth post Covid-19”. This investment leverages a potential £5.6 million through the ERDF-funded Innovative Future Services (InFuSe) programme (subject to approval) and will establish a challenge programme to demonstrate how innovation can be applied to major societal challenges to generate economic and social impact and potentially lead to commercial opportunities. The programme will focus on challenges associated with decarbonisation; community cohesion; and food and health and food security, with the potential addition of further challenge themes over time.

D.28 The Challenge Fund explicitly seeks to “drive a more experimental approach to economic growth” in responding to challenges where there are no ready solutions or products available. It proposes using the R&D business case development process used for the Small Business Research Initiative (SBRI) as a recognised alternative to the standard ‘five case’ business case process, in circumstances where a ready solution does not exist. It responds to the ‘challenge’ component of the CCR Investment and Intervention Framework and the ‘post-Covid priorities’ adopted by Regional Cabinet in May.

Interventions nearing approval

D.29 ‘In-principle’ allocations have been agreed for a further two projects:

Table D-3: ‘In-principle’ approvals

| Intervention | WIF commitment (in-principle) | WIF expenditure (to end Q1 2020/21) |
|---------------|-------------------------------|-------------------------------------|
| Metro Central | £40 million | £1.173 million |
| CS Connected | £3.3 million | £75k |

Metro Central

D.30 Metro Central is a major transport and regeneration scheme in Cardiff city centre, which involves redevelopment of Cardiff Central station and the surrounding area to improve connectivity between the Metro, other public transport and the intercity rail network and to bring forward additional sites for commercial development.

D.31 The Metro Central scheme has a total estimated cost of £185 million. In 2018, Regional Cabinet agreed to an ‘in-principle’ allocation of £40 million towards the scheme, as part of a total package, made up (indicatively) of:

Table D-4: Metro Central funding package

| Element | Funding source | Indicative investment |
|--|---------------------------|-----------------------|
| Bus interchange | Welsh Government | £30m |
| Central station: North concourse, weather protection, stairway remodelling | CCR Wider Investment Fund | £40m (max) |
| Central station: Platform 0, other rail infrastructure | DfT | £58.3m |
| Central station: North-south connectivity improvements and Metro integration | Welsh Government | £15m |
| Central station: Concourse buildings and car park | Private sector | £40m |

Source: CCR, Metro Central OBC report, March 2020

D.32 At this stage, costs are indicative, pending the development of a Full Business Case. Alongside its commitment to co-invest, CCR requested in 2018 that the scheme be supported by a

‘programme-level’ FBC, to take into account the wider activity associated with commercial development around Central Station, as well as the transport-related business cases for each element.

D.33 To progress the FBC, Regional Cabinet approved up to £4 million Wider Investment Fund contribution in March 2020. By the end of Q1 2020/21, £1.173 million WIF had been spent on Metro Central, including earlier spend in 2019/20.

CS Connected

D.34 In 2019, CS Connected submitted a full application to UKRI’s Strength in Places Fund for a £43.3 million project to support the development of the compound semiconductor cluster. This is complementary to the Wider Investment Fund’s existing investment in the compound semiconductor foundry at IQE, and is supported by the leading businesses in the sector (IQE, Microsemi, SPTS and Newport Wafer Fab), as well as by Cardiff and Swansea Universities and the Welsh Government. This application was approved earlier in 2020.

D.35 Within the application, CCR committed to a £3.3 million contribution towards capital investment in a new ‘front of house’ facility at the CSC Foundry, including a headquarters facility for CS Connected. This would comprise half the costs of conversion of the existing buildings to provide new offices and a marketing suite. Approval of this in-principle funding commitment will need to follow a business case proposal from the consortium lead (Cardiff University), in line with the *Investment and Intervention Framework* process.

The pipeline

D.36 Within the wider pipeline, some 18 interventions are at various stages in the business case development process. Those at OBC/ FBC stage include:

- A proposed **Life Sciences Innovation Park**, to be developed on the former GE Healthcare research and development facility in North Cardiff. This is complementary to the current Medical Devices and Diagnostics Strength in Places Fund currently in development (and the wider development of the medtech sector more broadly)
- A proposed **CCR Premises Fund**, to bring forward sites for commercial development, recognising the current shortage of good-quality sites in the region
- A **Local Full Fibre Network** project, supported by DCMS and linked with the delivery of Metro
- Proposed investment in **Pharmatelligence**, a healthcare data company based in Cardiff, supporting innovative product development in response to the Covid-19 pandemic.

D.37 Projects currently at SOC or pre-SOC stage include programme proposals (including the concept of a cluster support fund to invest directly in businesses, via an FCA-registered fund manager), infrastructure proposals and individual commercial propositions.

Bringing it together: Some conclusions on recent and pipeline investments

D.38 At the Gateway Review stage, only one investment has been fully approved and ‘delivered’, and this is subject to detailed analysis in the main body of this report and the supporting evidence papers. However, there is evidence that significant progress has been made in bringing forward additional investment proposals. Although these are outside the scope of this evaluation (and no consultation has taken place in relation to these potential interventions other than with the core CCR team), some observations are worth making:

- **The value of commitments approved in 2020 is significant**, at just over £50 million from the Wider Investment Fund. Some of this funding is still subject to further business case development (for example the Housing Viability Gap Fund is dependent on appropriate projects coming forward), although timescales for project development within the ‘programme allocations’ are clear.
- **There is a commitment to financial return on investment where possible**, although as outlined in the *Investment and Intervention Framework*, this takes different forms across projects.
- **There is a strong pipeline of potential investments**, with, in addition to those pipeline schemes recorded in the numbers cited above, several early stage proposals that have been considered and rejected by the Investment Panel at the early Sift questionnaire stage.
- **CCR is looking to alternative mechanisms of managing the pipeline**, recognising capacity constraints and the challenges in managing larger numbers of commercial investments. Proposals for a separate cluster support fund and premises fund reflects this, and potentially responds to some of the views raised by strategic consultees in the context of the capacity and partnership development elements of this evaluation.

SQW

Contact

For more information:

Jonathan Cook

Director, SQW

T: +44 (0)20 7391 4105

E: jcook@sqw.co.uk

2nd Floor

14-15 Mandela Street

London

NW1 0DU

www.sqw.co.uk

About us

SQW Group

SQW and Oxford Innovation are part of SQW Group.

www.sqwgroup.com

SQW

SQW is a leading provider of research, analysis and advice on sustainable economic and social development for public, private and voluntary sector organisations across the UK and internationally. Core services include appraisal, economic impact assessment, and evaluation; demand assessment, feasibility and business planning; economic, social and environmental research and analysis; organisation and partnership development; policy development, strategy, and action planning. In 2019, BBP Regeneration became part of SQW, bringing to the business a RICS-accredited land and property team.

www.sqw.co.uk

Oxford Innovation

Oxford Innovation is a leading operator of business and innovation centres that provide office and laboratory space to companies throughout the UK. The company also provides innovation services to entrepreneurs, including business planning advice, coaching and mentoring. Oxford Innovation also manages investment networks that link investors with entrepreneurs seeking funding from £20,000 to £2m.

www.oxin.co.uk



Complementary Report
CCR City Deal Self-Evaluation
September 2020



| | |
|--|-----------|
| Executive Summary | 3 |
| Part 01: Report Purpose & Structure | 4 |
| Part 02: Background & Operating Context | 5 |
| Part 03: 10 Areas of Focus | 8 |
| 1. Data, Evidence & Policy | 9 |
| 2. Regional Industrial & Economic Growth Plan | 10 |
| 3. Investment Framework & Delivery Pipeline | 12 |
| 4. Governance | 14 |
| 5. Influence & Leverage | 16 |
| 6. Create City Deal Office | 17 |
| 7. Enhance balance of local and industrial leadership | 18 |
| 8. Challenge focussed & mission driven | 20 |
| 9. Boosting our international credentials | 21 |
| 10. Building a more sustainable & resilient Cardiff Capital Region | 22 |
| Part 04: Conclusions | 23 |



This report gives a full and comprehensive summary of the history, context, activity, progress made to date and outlines the scale of opportunity that exists for evolution of the city deal into a more holistic city region approach.

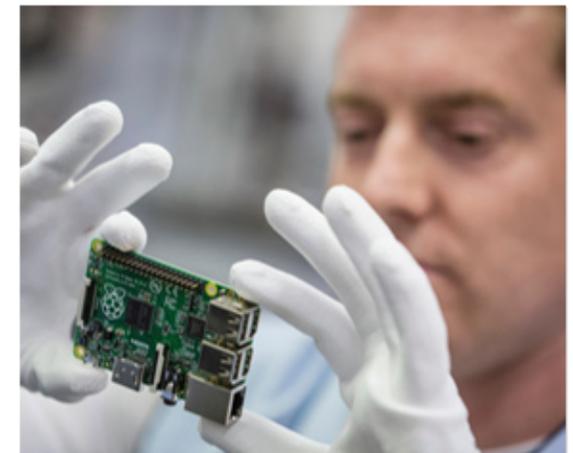
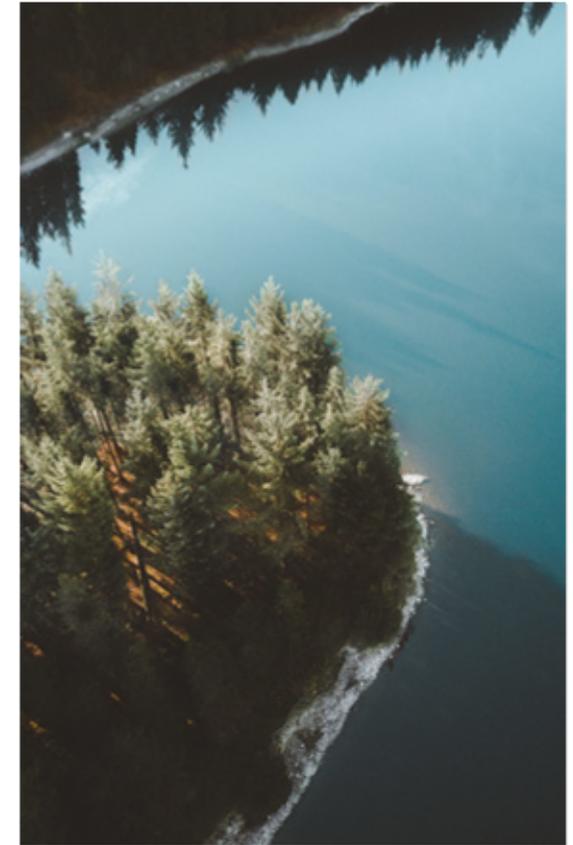
In summary, in line with our 10 point plan we have:

- Developed a rich seam of data and insight to facilitate quality assessments and decision making.
- Created an integrated, fact based regional industrial growth plan and robust leadership capability that has been evolved and adapted for Covid-19 impact.
- Created an investment assessment framework and a delivery pipeline based on agreed priorities.
- Approved projects worth approx. £101.5m (as of July 2020) with leverage of c£1.5BN and have a further £120m+ in the immediate pipeline with similar forecast levels of investment leverage.
- Created and implemented a solid, effective governance framework.
- Extended our voice, reach and influence beyond expectation and play a proactive integral role on all relevant business forums/panels/committees.
- Restructured the internal team building new capabilities, new contracts, and new collateral to assist the next stage of our journey.
- Implemented effective working partnerships with REGP and Investment panel both of which have transformed the ways of working and made a huge contribution to the big picture debates on matters of policy, economic and social reform.
- Embraced the concept of Challenge funding, developed a comprehensive partnership network and created a £10m challenge fund to stimulate local and foundational economies post Covid-19.
- Expanded our international reach via networking events, partnerships and participation in initiatives such as Western Gateway.
- Articulated the limitations of the existing structure and progressed the debate on the manifest opportunity of a City Region approach.

We have built firm foundations, we have solid plans for the next stage of our journey and we have effective local leadership but we do not underestimate the size of the challenges ahead.

A complex political landscape, the levelling up agenda, green revolution and post covid-19 economic imperatives combined with the structural limitations of our current modus operandi make for a complex and very challenging environment.

However, we are confident that we have the right leadership in place and the right plans in progress. We take confidence from our notable successes to date and are 100% committed to making a success of this programme.



Purpose of Report

The purpose of this report is to supplement information provided for the review with a full synopsis of the history, context, activity and progress made to date.

Context

In the period prior to September 2019, work was focused upon putting the foundations in place including setting up the following; JWA, JWA Business Plan, Accountable Body, Assurance Framework & partnerships/ governance all of which required operationalising. However, throughout the period many significant things were changing including; Brexit, establishment of UKRI and new policy approaches to regional development at both UK and Welsh Government levels.

Therefore, a key part of the job was to re-purpose and re-set the direction of CCR City Deal at the same time as implementing the operating protocols. This involved a re-empowering of existing partnerships, enhancing governance & relationships, production of an outward facing economic growth plan, the development of an Investment & Intervention Framework to give practical effect to the Assurance Framework and the creation of a 10 point plan to structure and focus the agenda.

Structure

The content of this report is aligned to that “10 point plan” introduced by the current Director, Kellie Beirne, in September 2019 as this represented a pivotal point in the evolution of City Deal. These 10 points, with their significant breadth and depth of focus provide a useful framework for assessment, fit well with an operating environment that has to continually adapt and flex to prevailing conditions to ensure continued relevance, and have been used previously for self evaluation and reflection.

Kellie Beirne
Director, Cardiff Capital Region City Deal



A strong sense of Purpose

What is the City Deal?

CCR City Deal is a 1.3bn fund provided by a combination of UK Gov, Welsh Gov and the 10 CCR Local Authorities.

3 Primary Goals:

- 25,000 jobs
- 5% uplift in GVA
- £4bn additional investment leverage

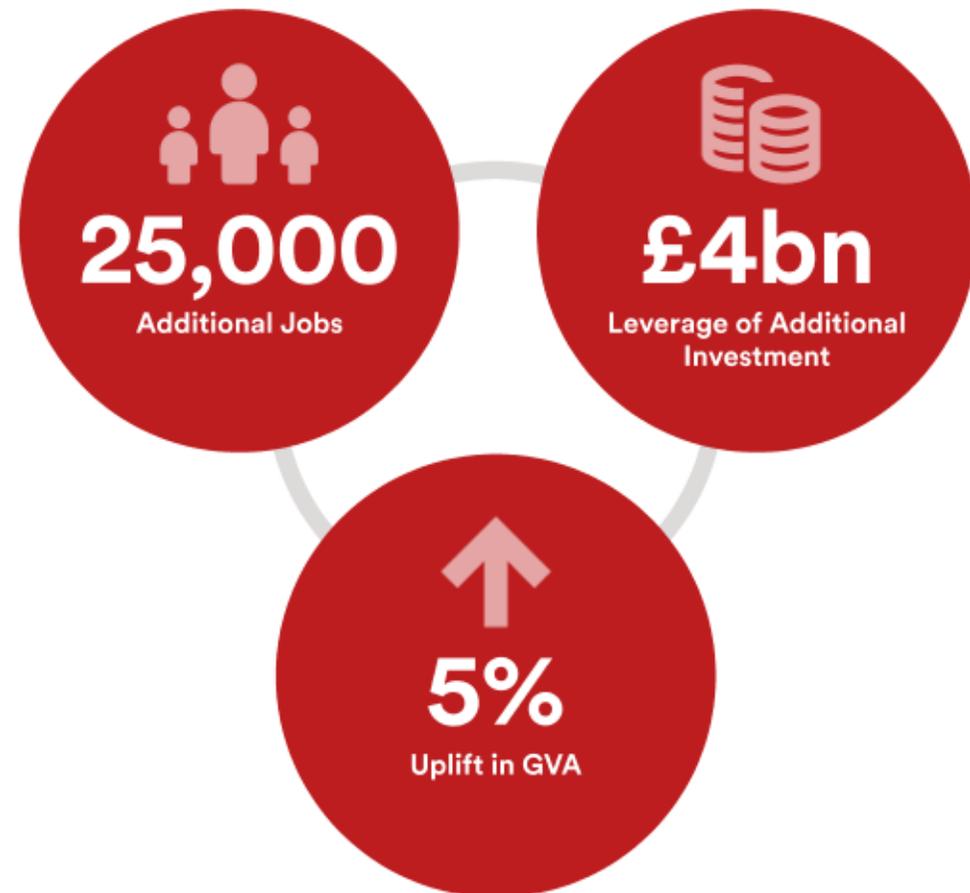
Inclusive Growth

It is important to note that our local political leaders are clear that they see little gain in hitting targets that miss “the point”. Growth strategies sometimes exacerbate inequality which is especially critical in a region in which the least and most competitive areas co-exist

What is “the point”? ultimately it is about;

- Creating general prosperity – where no one place gets left behind
- Fostering innovation in business, public services and local and foundational economies
- Ensuring that economic ambition is matched with progressive social policies

Core Objectives of the Cardiff Capital Region City Deal



Challenge & Opportunity

We live in Challenging times

Multiple macro factors at play; EU Exit, fiscal uncertainty and Covid-driven economic downturn.

We are strategically well positioned to be a catalyst for a new approach

We have clear opportunities to create a post covid-19 positive legacy and we are increasingly developing the confidence & maturity to not just compete in new world, but to play a key role in defining the new economy. This is frequently about doing the right things not the easy things and this means often, taking a longer-term perspective.

There is local political will to embrace a more progressive state role

This means moving beyond de-risking or just enabling to proactively convening around solutions to the big industrial and societal problems of the day. This will involve a real commitment to a different type and scale of interaction between public and private sectors but is a direction we are committed to moving toward.



From City Deal to City Region

New ends require new means

There is significant opportunity to use the platform created by the CCR City Deal to build out the future of the Region. Levelling-up, 'build back better', trade opportunities, green economy and wellbeing must all be part of the approach.

There is opportunity for a more collaborative and distinctive approach but this will require time to create the right conditions, build the right networks and to develop a more distributed leadership model.

The time is right to purposefully shift from a dependency culture to a focus on resilience and "living off the interest not spending down the capital" and to shift to a concept of regionalism that is more about collaboration and less about top down structures.

Integrated programmes

Whilst the City Deal came first and will always remain important, it needs to sit alongside other programmes and opportunities and the goal must be to align, co-ordinate and leverage the potential of common purpose, shared resources and integrated working.



1

Data, Evidence & Policy



2

Regional Economic Growth Plan



3

Investment Framework & Delivery Pipeline



4

Governance



5

Influence & Engagement



6

Create City Deal Office



7

Enhance balance of local and industrial leadership



8

Challenge focussed & mission driven



9

Boosting our international credentials



10

Building a more sustainable & resilient Cardiff Capital Region



1. Data, Evidence & Policy

Challenges

- Low-levels of data capability
 - insight & foresight
- A need to be able to determine where best to place our investments
- A need to improve our ability to assess the value of our interventions, decision-making and evaluation
- Being fully prepared for National Evaluation Framework & Gateway Review.

Achievements

- Conducted an Analysis of Priority Sectors
- Adopted National Evaluation Framework
- Developed a Local Evaluation Framework
- Delivered 1st Baseline Report
- Delivered a “One Year Out” report
- Secured 2 x KES PhD studentships in Data Science and Analysis
- Submitted Full Economic Impact Assessment for CS Connected to Strength in Places Fund
- Retained Cardiff Uni to work on economic intelligence database and dashboard- data observatory
- Placed 2 MSC Data Science Students within the team
- Utilised Nesta – Skills for Future research to inform Future Ready Skills Framework
- Deployed Savills to conduct Regional Housing Market Review
- Developed good relationships with ONS, WG, Universities
- Conducted 4 Renewable Energy studies for Metro Plus
- Appointed Kevin Gardiner, Rothschild economist to take the lead on a REGP Data and Research sub-group
- Achieved 1000+ responses to our Covid-19 Business Survey
- Produced 3 ‘State of the Region’ reports:



- Provided advisory support to other City and Growth Deals
- Submitted evidence to numerous UKRI research projects, submission of evidence to inquiries and most recently, inputted to BEIS Task Force on levelling up and skills
- Made a key contribution to OECD work - future regional economic governance in Wales
- Active contributors to and participants in UK2070 Commission on regional economic inequality.

Outcomes

- Good evidence & data key has enabled more robust decision making
- Introduction of logic model evaluation in place on all live projects ensures what gets measured gets done.
- Extending involvement beyond a project only focus and making an active contribution to higher-level policy goals (e.g. CS Connected)
- Increased confidence in our strategy & execution
- Developing a robust thought leadership & opinion forming role
- Introduction of more impactful Communications and Engagement:
 - [2019 Roundup Newsletter](#) »
 - [Summer 2020 Newsletter](#) »
 - [Latest Publications \(Q1 2020\)](#) »
 - [Latest Publications \(Q2 2020\)](#) »
- Key participants in debates on Corporate Joint Committees and future of Regional Investment post Brexit – SPF
- Contributed toward Devolution White Paper.

We have developed a rich seam of data and insight to facilitate quality assessments and decision making.

2. Regional Industrial & Economic Growth Plan

Challenges

- Medium term Planning gap - no 5 year business plan
- No succinct outward facing growth statement and plan
- A desire to be vision and values-led
- A need to address relatively low levels of influence (UKRI)
- A need to be clear about priorities and focus.

Achievements

- Co-produced with REGP a Regional Economic and Industrial Growth Plan—
Undertook a REGP leadership and local-UK-global launch to a wide-range of stakeholders
- Ensured alignment with WG Economic Action Plan & UK-wide Industrial Strategy—
Embedded sectoral analysis & wider evidence-base into plan
- Planning activity endorsed by Chambers, CBI, FSB, IoD
- Agreed priorities. Fewer but with a deeper focus
- Proven planning flexibility to respond to change and adapt priorities
- Evidence based Post **Covid-19 addendum** added with 10 updated priorities:

1. **Helping CCR businesses navigate the funding support packages available and identifying gaps in provision.** This includes communicating information, getting feedback, and raising awareness of arising issues.
2. **Building a strong evidence base to enable ongoing assessment of regional economic health.** This includes working with the School of Economic Geography at Cardiff University to create a regional data dashboard of Key Performance Indicators, and getting feedback from stakeholders to identify issues and opportunities.
3. **Reviewing current City Deal initiatives to make sure they align with CCR economic and social imperatives in a post-Covid 19 world.** This will include accelerating our Digital Infrastructure programmes on full fibre connectivity and 5G and considering the application of a broader reskilling/ HE/ FE support programme to mirror the changing sector dynamics.
4. **Ensuring entrepreneurs and start-ups get the support they need.** This includes facilitating access to mentoring programmes and network groups, unlocking routes to obtain seed capital and influencing the potential creation of a bespoke shared prosperity funding programme.
5. **Setting up a new Rebuilding Local Economies Challenge Programme, to capitalise on the business innovation and ingenuity seen during the crisis.** Two or three challenges such as healthy ageing, foundational economy renewal, future mobility or decarbonisation, will form the focus for the new challenge funds.
6. **Developing new, targeted funding interventions and new investment application support mechanisms.** This includes working with investment partners to create an SME Co-investment Fund to help scale up business in priority sectors.
7. **Supporting key businesses in the CCR priority clusters to increase their resilience and capacity for growth through increased flexibility on lending/investments.** This includes consideration of alternative funding mechanisms such as convertible equities, greater flexibility in ways of assessing debt capacity, and increased use of guarantees and asset-backed securities.
8. **Accelerating the development of our medtech cluster through encouraging and supporting investment opportunities in medtech innovation.** This will allow us to build upon the strategic opportunities for the sector and the region presented by the scale of businesses diversifying their manufacturing bases to accommodate the production of medical tools and equipment.
9. **Expediting the creation of resilient industrial clusters with thriving regional ecosystems.** This includes creating formal cluster bodies in priority sectors, and prioritising investment support to complement strategic cluster company inward investment activities.
10. **Increasing our overall competitiveness and wealth creation as a region by improving the financial performance of medium-sized businesses.** This will include focused interventions such as facilitating greater networking opportunities between CEOs, for the sharing of best practice advice and guidance.

Outcomes

- Proven CCR Industrial Plan not static – able to flex to remain up-to-date & relevant
- Covid revised plan proved to be able to convert to action quickly. Examples: Creo Plasma Technology Investment made in weeks & Challenge Fund launched for rebuilding local wealth post-Covid
- Review gave opportunity to review existing schemes and proposals and provide added assurance our current activities were fully aligned
- Achieved good stakeholder engagement. Partners fully bought into the revised Plan and which received widespread endorsement.
- Process and ensuing debate has begun to position the asks of ‘levelling up’
- The planning tasks have brought into focus some of the dilemmas around regional frameworks and investment. WG also moving to a regional investment approach with new Regional Investment Frameworks. Has raised key policy questions about ‘who’ or ‘what’ is the region, who leads and what ‘empowering regions’ means in Welsh context? This will be a critical dimension as plans for new regional Corporate Joint Committees develop.

We have created integrated, fact based, flexible regional industrial growth plans and robust leadership capability.



3. Investment Framework & Delivery Pipeline

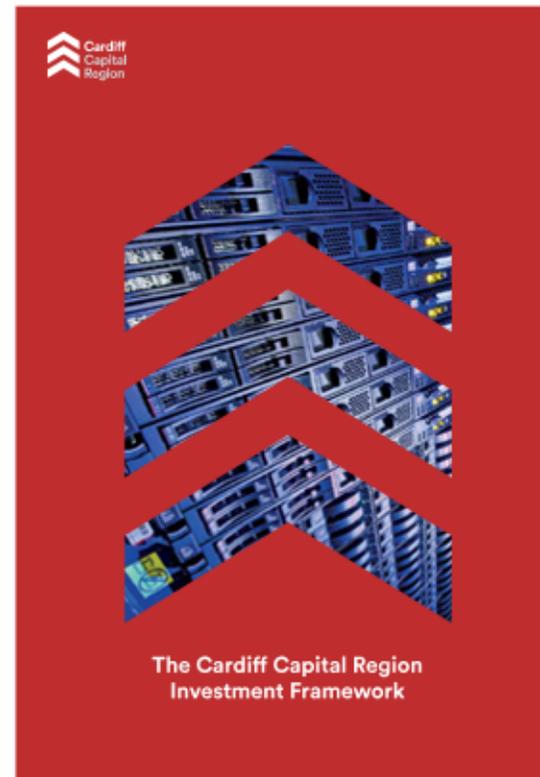
Challenges

- Medium term planning gap - no 5 year business plan
- No succinct outward facing growth statement and plan
- A desire to be vision and values-led
- A need to address relatively low levels of influence (UKRI)
- A need to be clear about priorities and focus.

Achievements

- Co-produced the Investment and Intervention Framework with REGP
 - Developed Three funding priorities – innovation, infrastructure & challenge
- Established evergreen, revolving, co-investment principles
- Introduction of Investment Panel as an advisory body to Regional Cabinet
- Good use of REGP leadership & experience
- Established a more formal process role for CEX Group (now Programme Board)
- Identified 5 priority sector Clusters
- Established a Common Assessment Framework for transport and infrastructure projects
- Commissioned local partnerships to work on Proportionate Business Case development – vital where innovation and challenge programmes don't always precisely fit the Green Book.

Investment & Intervention Framework



[Download The Cardiff Capital Region Investment Framework »](#)

Key Sectors of Interest



Achievements - Delivery Pipeline

March 2020 Cabinet Decisions:

- Full approval of Homes for all the Region (£45m) fund comprising:
 - Viability Gap Fund
 - SME Finance Fund
- Full approval of phase 1 Metro Central – design & business plan with DfT (first £4m of £40m scheme)
- Full approval of CCR Graduate Scheme (£1.5m)
- Early stage approvals on 5G Wales, Full Fibre to Premise Scheme for 330k properties and Coryton Life Sciences Park

July 2020 Cabinet Decisions:

- 8 proposals at SOC – e.g. med-tech, pharma, energy & £100m Clusters Fund
- 7 proposals at OBC/ FBC – e.g. £26m Coryton Life Sciences Park, £50m Strategic Premises Fund & £16m Local Wealth Building Challenge Fund
- 5 schemes at legal completion – £45m Housing Fund, £38m CSC Foundry, £2m Cool Plasma, £2m Graduate Scheme and £7m LFFN with Metro Central in design phase £4m and Metro Plus schemes in various stages of design and delivery £15m
- Under NDA on several significant transformational programmes

Achievements - CS Connected



- Confirmation from UKRI Strength in Places full funding award £25.6m leveraging a further £18m to total £44m for CS Connected – compound semi-conductor cluster
- One of only 7 UK regions to secure funds – partners include IQE, CSC, Catapult, HEIs, NWF, Microchip, SPTS & WG
- Includes – Front of House facility in Newport mega-Foundry (£3.5m CCR), Skills Programme, inward investment support, a Collaborative R&D programme and establishment of trade body CS Connected
- Full backing and support of CSC Foundry Ltd.

Outcomes

- Investment and Intervention Framework and Investment Panel has been operational for just 10 months
- Significant progress has been made in short space of time
- As at July 2020 projects in wider pipeline total £390m investment ask, leveraging c.£4.05bn with job creation potential in the order of c.33,500 – with more to come
- External government funds also secured – 5G Wales DCMS £5m, SIPP for CS Connected UKRI £44m and WEFO £4m InFuSe
- Hierarchy of advice to Regional Cabinet focussed around Investment Panel is working well
- Regional Cabinet has matured and bonded well, undertaking a steering role whilst placing trust in others to advise and coming together to make decisions via the WIF to benefit the region

- We have a mixed portfolio of projects – with ROI potential to support 'evergreen' principles
- Covid impact is being felt – more emphasis on need for quality delivery at pace, capable of building resilience
- October 2020 we undertake a review of 12 months of operating IIF. What has gone well, what hasn't? Does our investment strategy need to change or adapt? External Audit work will help inform this
- CCR now in full scale-up and delivery phase and this means evolving governance structures, greater emphasis on programme management and optimisation, monitoring and evaluation and assurance, audit and risk
- "Logic models" are now in place for all 'live' projects with delivery/ approvals status in IIF
- Important next step is our 'Levelling up' prospectus.

We have created an investment assessment framework and a delivery pipeline based on agreed priorities and have approved projects worth approx. £101.5m with a further £120m at an advanced stage with potential for combined leverage of >£3bn.



4. Governance

Challenges

- A need for a consolidated governance process
- Improvement needed to assurance process
- 'Application forms needed simplifying' and making more user friendly
- More effective alignment of skills
- Delegations
- Single agent v regionalism.

Achievements

- Investment & Intervention Framework in place with SIFT process implemented
- Regional Skills Partnership now hosted by Newport City Council
- Performance reporting improvements in line with Gateway Review
- CSC Foundry Ltd reporting and Logic Model aligned
- Cabinet maturity beyond City Deal – approach taken to skills, Strategic Development Plan and Valleys Regional Park
- WAO 2019/20 governance report rated good
- Informed OECD work on Economic Governance and were key contributors to Regional Investment Wales
- New chair, Cllr Anthony Hunt elected at AGM 2020.

- Vice chairs – Cllr Peter Fox (Innovation, Business & Research) & Cllr Huw Thomas (Business & Internationalisation)
- Full-scale independent review of Regional Business Council undertaken
- **New portfolio responsibilities agreed »**
- Refresher reviews of Economic Growth Partnership & RTA undertaken
- Core staffing team now in place on a permanent basis.
- Robust procedures in place across all 8 partnerships for Disclosure of Interest
- All back office process work well with all partnerships consulted on investment proposals post-Investment Panel and pre-Regional Cabinet
- Communications and engagement scaled-up considerably.



Achievements - Communications & Engagement: Q1 2020 Results

Produced, distributed and promoted:

- 8 podcasts
- 9 “Board” opinion/ thought leadership pieces
- 8 Industry specific features
- 7 News releases incl 3 all media releases
- 3 Brochures – Connected, Competitive, Resilient

Achieved a:

- 50% increase in overall website visitor traffic
- 130% increase in traffic to our news pages
- 167% increase in engagement with our twitter account
- 100% increase in Linked In followers
- 290% increase in engagement with our linked in account

Responded to covid-19 and our Business Impacts survey by:

- Launching a dedicated Covid-19 web section with FAQ’s, handy links, and guidance notes
- Posting key updates daily via social channels
- Switching media focus to ensure a Covid dimension to all thought leadership and industry features including a series profile corporate responses to Covid in our key sectors.

Achievements - Communications & Engagement: Q2 2020 Results

Produced, distributed and promoted:

- 17 “Board” thought leadership articles
- 18 industry features covering fintech, medtech, manufacturing and automotive
- 7 Press release
- 5 graduate profiling articles
- 5 podcasts including 3 Business Wales podcasts and 2 of the CCR “Lockdown to Delivery” series

Achieved a:

- 70% uplift in new web site visitors
- 147% uplift in news page consumption
- 140% uplift in twitter engagement and gained 90 new followers
- 76% uplift in Linked In followers
- 98 new Facebook followers

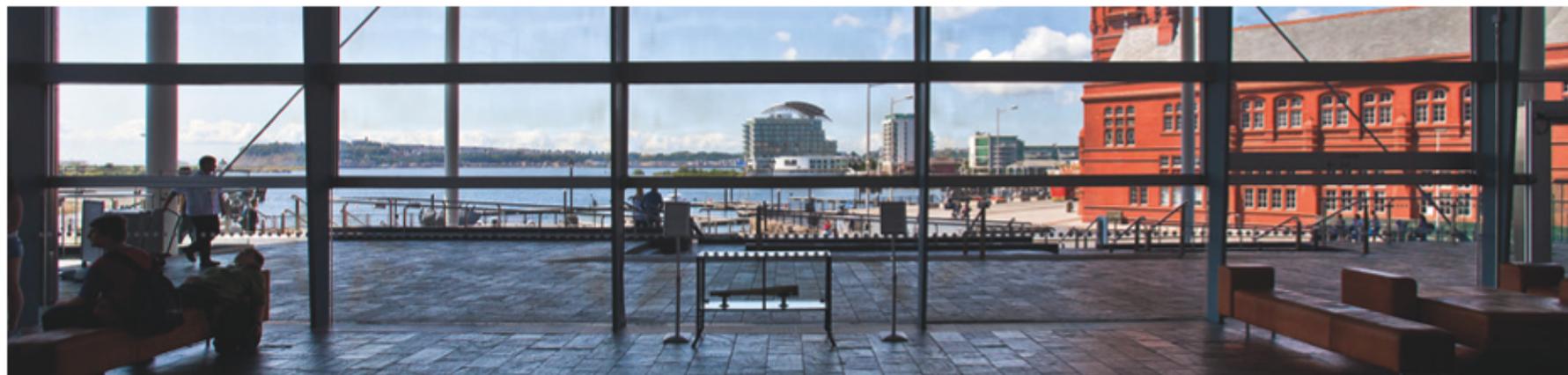
In addition we have:

- Produced a summer newsletter
- Created a bespoke graduate recruitment campaign with dedicated landing pages and bespoke collateral for each of the technology/manufacturing and Life sciences sector - launched in July.

Outcomes

- Governance rated as ‘good’ in 2019/20 Annual Governance Statement recognising growing maturity and shift to scale-up phase
- New arrangements for scrutiny have also been enacted – new leads RCT County Borough Council
- All partnerships subject to refresh reviews with major independent review of Regional Business Council undertaken
- Issues are however emerging around underlying structures. CCR is supported by a Joint Cabinet. No legislative base in Wales for Combined Authorities
- JVs, partnerships, loan agreements all have to sit on Council balance-sheets with back to back legal agreements which isn’t sustainable in long-term?
- Future shape of delivery entity needs consideration
- Played a key input role in CJC debate and future of regional investment in Wales
- In addition, it is acknowledged the structure is partnership-heavy. This must be reviewed to ensure CCR can maintain high-reach but reduce significant call on capacity.

We have created and implemented a solid, effective governance framework.



5. Influence & Leverage

Challenges

- Wider Investment Fund is only £495m
- Need to improve track record of bringing in new money (UKRI - £6.4bn annual budget) —
- Low influence and representation
- Wave 3 Industrial Strategy – poor show from Wales
- Under-developed competitiveness
- Need to develop and better mobilise networks.

Achievements

- UKRI Board relationships improved with meeting and events in the CCR
- CCRCD Director now formally appointed to the Board of Research England, UKRI
- Innovate UK engagement strengthened – senior officer now seconded to City Deal Office
- REGP pioneered formal partnership with Global Welsh:
 - Global city hubs (Dublin and USA)
 - MyMentoring scheme for businesses
 - SME performance Research Programme in collaboration Uni of Tokyo
- Supported Wales in London Week
- Made contributions to Shared Prosperity Fund consultations and Regional Investment Wales
- Agreed membership of the Western Gateway
- Established knowledge exchange network with Belfast, Glasgow, Oxford, Cambridge, Manchester & other Welsh regions
- Secured external funding from UKRI (SIPF), DCMS (LFFN & 5G RCC) and WEFO (INFUSE)
- SIPF Wave 2 successful at EOI stage on Clwstr (Creative Industries)

Became Members of:

- Research England Council, UKRI
- GW4
- Basque region network
- Science Advisory Council
- Innovation Advisory Council
- Cyber Wales
- Fintech Wales
- CS Connected
- SBRI Accelerator
- Ford Taskforce & sub-groups
- Regional Investment Board & sub-groups
- Valleys Taskforce
- Valleys Regional Park Forum
- Foundational Economy Advisory Board
- UK-French Mayors Project

Contributions made to:

- What works commission
- OECD work on economic governance in Wales
- UK2070 Commission
- National Evaluation Steering Panel
- Princes Trust
- Social Business Forum
- Social Mobility Foundation
- Built Environment
- CITB
- Scores of conferences, events and workshops
- CBI, FSB, IoD and Chambers
- Digital Tuesdays
- Royal Society, RSA, Research England, HeFCW and Learned Society.

Outcomes

- We are continuing to effectively develop our influencing role
- We have become central to big debates and research programmes informing opinion alongside influential organisations & institutions
- Strong network built enabling ability to mobilise resources of others and expand via a virtual 'CCR team'
- UKRI position is key in terms of impacting our long stated goal to get closer to hub of science, research/development and innovation
- Recognition and support from Cabinet Office – personal visit by Alex Aiken
- Ministerial support – roundtable with DCMS Minister on 5G and digital
- Participation in BEIS post-Covid recovery events and networks
- However, to build upon this good work, we must now develop a core function within CCR team that focuses on data, policy & influencing. This is a key connector into wider discussion about shifting from CCR City Deal to CCR.

We have extended our voice, reach and influence beyond expectation and play a proactive integral role on all relevant business forums/panels/committees.

6. Create a “City Deal Office”

Challenges

- ‘Programme Office’ nomenclature feels outdated and lacks meaning to investors
- No ‘front of house’ facility, branding and/or visibility
- Insufficient range and mix of skill-sets
- Needs a permanent staffing structure to mitigate risks around short-term resources to support long-term plan.

Achievements

- Created a new City Deal Office in heart of region – Tredomen, Caerphilly
- New structure created and approved by Regional Cabinet – with a focus on a blend of public sector, commercial, deal-making, data & community orientated skills
- Resourcing arrangements and delegations are in place with a permanent core team structure agreed as at June 2020
- Secured External secondment from Innovate UK, WG/SBRI and CS Connected
- Appointed a Comms and Marketing professional
- Updated and improved our Website with a new iteration to follow later this year
- KPMG and Pinsent Masons appointed advisors
- Accountable Body arrangements reviewed and working well.

Outcomes:

- Key risk has been mitigated by core structure of 7 key posts now having permanent status thus ensuring long-term aims met by long-term resource commitments.
- Reinforces pledge by Regional Cabinet & government partners to the need for a long-standing approach
- However, we will have to supplement and enhance this to ensure team is fit for purpose for the work in the second Gateway period. This will need to reflect the increased focus on delivery (investment focus), assurance, performance and programme management
- Branding is moving consistently towards CCR (as opposed to just CCR City Deal) which is symbolic of maturity & commitments
- Core issues to address include; revenue/capital optimisation, top-slice component to support revenue ‘running’ needs, maximising available resources and preparing for reinvestment of funds.



We have restructured the internal team building new capabilities, new contracts, and new collateral to assist the next stage of our journey.

7. Enhance balance of local/industrial leadership

Challenges

- More co-operation & co-production required
- SQW Baseline report highlights need for improved business engagement
- Leverage true value of REGP
- Risk taking and rewards
- Focus on key industrial scale clusters
- Empower business leadership.

Achievements

- REGP chair appointed to chair Investment Panel which has become a key and effective advisory board to the Regional Cabinet, changing the way we operate
- Appointed a cluster lead and work is underway on a cluster strategy and fund
- Put in place a continuous programme of Business events and workshops.
- Submitted EOIs through cluster engagement on SIPF programmes for Clwstr, Cyber, Fintech and Med-tech
- Awarded specific support via Investment Framework to Fintech Wales
- REGP fully delivered on its milestone plan:
 - Co-produced state of Region work Connected, Competitive and Resilient which has proved influential;
 - Economist, Kevin Gardiner taken an effective lead role on the research and data sub-group
 - Co-produced an Industrial and Economic Growth Plan
 - Co-developed an Investment and Intervention Framework
 - Fronted up publicity campaigns, evidence submissions and participation in committees, groups and partnerships
 - Secured our Global Welsh partnership
 - Provided advisory support to other City and Growth Deals
 - Has become a key point of contact with trade bodies and business groups

- Advised on our Post-Covid reform and reimagination work
 - Manufacturing ‘Made in Wales’ initiative underway – driven by REGP members
 - Conducted an Independent Review of the Regional Business Council
- Why we commissioned a review?**
- RBC needs to more purposefully enact remit set out in City Deal heads of terms
 - City Deal evolved significantly in last 2 years – but RBC operation pre-dated that and so gap opened up
 - Make-up of group has also changed
 - Always been a bit of tension between the independence agenda – which CDO has tried to respect – versus the ‘tell us what to do’ ask
 - Need to ensure we are solving the right problem rather than just assuming case for a Regional Business Council

Important Considerations:

- Narrow versus broad business engagement. CCRCD is a small programme with limited funds so engagement to drive deals will always be fairly limited. However CCR is a different proposition altogether and is about broader principle of business support and engagement on wider issues
- Capacity needs – already under resourced – but need to make a commitment as support is more than admin – more complex and nuanced. Any investment should therefore be seen as such – an investment not just in the RBC but the wider programme – driving deal flow and inv readiness
- Hub and spoke and the opportunity for REGP centrality – good consideration given the traction and grip REGP has as strategic body and if they could now align with business council with broader remit – helps spread the message, word and impact

- Independence v ‘tell us what to do’ needs clarity

Recommended way forward?

- Repurposing into a “hub and spoke” approach, anchored more to the REGP

Next steps

- Present findings to Cabinet in September 2020 along with implementation plan and specification for Chair recruitment.



Outcomes

- Learning - our operating context is forever changing and the scale/nature of public-private interaction must also be capable of continuous adaptation.
- Experience – the big debates of the day require a strong voice on issues such as Western Gateway, levelling up, post-Covid economic recovery & making R&D work for whole of UK
- Delivery - REGP has:
 - Delivered on its Ph.1 plan – hungry to do more
 - High-order pro-bono support
 - True goodwill and genuine shared purpose.
- RBC has:
 - Recognised need to refine scope
 - Reached to localities – but must do more
 - Worked closer with REGP to enact policy and strategic direction with business for business
- However, succession planning is an issue for both at a time when we need continuity around cluster implementation and funds .
- Team capacity to support must also be considered. Not ‘admin’ support – more nuanced and developmental
- Business engagement. Narrow but deep v. wide but shallow? Again, comes back to clarity of focus – single programme or regional engagement.

We have implemented effective working partnerships with REGP and Investment panel both of which have transformed the ways of working and made a huge contribution to the big picture debates on matters of policy, economic and social reform.



8. Challenge Focussed & Mission-led

Challenges

- Historic grant culture needs to change
- New way of securing £ is through problem framing & solving
- Competitive process brings new challenges
- Solely economic focus not enough
 - must focus on public value and solving societal problems.

Achievements

- Informed Wave 3 of Industrial Strategy Challenge Fund
- Developed a £16M challenge fund for local wealth building post-Covid. £6M of this WEFO-funded to run InFuSe – Innovative Future Services aimed at public service innovation and a £10M challenge fund to focus on how we stimulate local and foundational economies post-Covid
- Partnered with Cardiff University, Nesta and SBRI Challenge Prize Centre
- Partnered with SBRI Centre on the Wales Vaccinations Challenge
- Contributed to a £100k 'war-chest' to seed innovative thinking to mitigate worse of economic fallout post the Bridgend Ford closure
- Provided Support for various submissions to ISCF – advanced propulsion, future mobility & energy revolution.

Outcomes

- Developing role of public sector in framing the big industrial and societal challenges of the day
- Building up capacity for innovative future public services and increasing productivity of the state as contribution to CCR aims and CCRCD targets
- But challenge-driven approaches are different and don't typically tend to feature in City Deals. We are following a tried and tested SBRI format to ensure compliance with HMT Green Book but despite this it still exposes some of the Green Book shortcomings
- We have learned that for a City Deal that has developed in the way CCR has – standard infrastructure projects and appraisal processes do not fit. We have subsequently fed this and more into the HMT review of the Green book
- HMT interaction becoming increasingly key on both fiscal and economic policy fronts – for example – HMT review of PWLB and impact on City and Growth Deals...especially those like CCR with an investment and ROI-emphasis.



We have embraced the concept of Challenge funding, developed a comprehensive partnership network and created a £10m challenge fund to stimulate local and foundational economies post Covid.

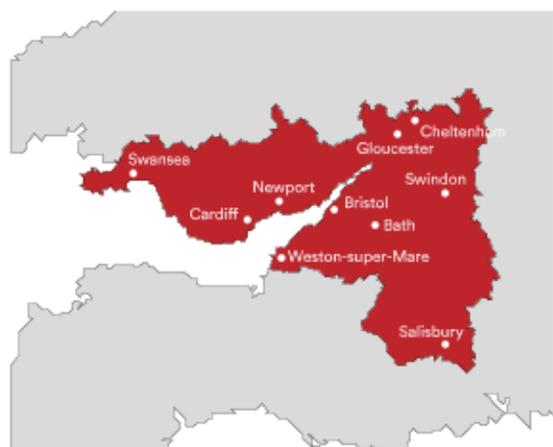
9. Boosting international credentials

Challenges

- Our City Deal has a domestic UK focus
- As yet, lacks investor readiness/ relations & clear investable offer
- It needs to grow its own network beyond UK
- Partnerships and networks need to be developed on global scale
- Key to which is the FDI offer and component.



**GLOBAL
WELSH**



Achievements

- Contributed to WG draft International Strategy
- Sponsored Wales Week London in both 2019 & 2020 Week and full participation with business partners
- Participated in MIPIM 2019 and MIPIM UK 2019 (MIPIM 2020 cancelled)
- Established a partnership with Global Welsh Partnership
- Undertook knowledge exchange and learning with the Basque region
- Co-developed and delivered CCR sessions with DIT
- Featured in DIT international prospectus
- Co-hosted Xiamen, Singaporean CS Cluster and Taiwanese Govt delegation
- Connected with CS Connected Minneapolis and British America Project
- Become leads for innovation and internationalisation on the Western Gateway programme
- Currently undertaking a strategic role in supporting FDI such as Britishvolt

Western Gateway

- CCR Cabinet 'signed up' as partners to emergent Western Gateway
- Potential to explore key cross-border challenges – connectivity, transport, R&D spend, business clusters & internationalisation
- Governance Review concluded
- Independent Economic Review – led by Prof Greg Clarke
- CCR leads on innovation and internationalisation
- Key role for FDI.

Outcomes

- We have a growing presence and visibility in areas where evidence-base shows we could be globally competitive. E.G. Compound semiconductors, insurtech and medical devices & diagnostics
- We have acknowledged the importance of growing global network/ diaspora and have partnered with Global Welsh
- Knowledge sharing – we have followed and learnt from the journeys of others – E.G. Basque region plus other City Deals and Regions in UK
- In post-Covid world with prospects of trade wars and post-Brexit trade deals, more needs to be done to link FCO/ DIT with City/ Growth Deals many of which are working with affected companies at local level
- Illustration – significance of the Enterprise Act & application to UK sovereign interests.

We have proactively expanded our international reach via networking events, partnerships and participation in initiatives such as Western Gateway.

10. Towards a more self-reliant & sustainable CCR

Challenges

- Focus on City Deal as single investment tool is limiting opportunities
- Had a City Deal before a City Region
- City Deal is significant – City Region is fundamental
- Better leveraging WFG
- Helping to build a more resilient economic future for the region is the key aim
- Developing an investment prospectus is critical to these aims.



Achievements

- Narrative now evolved to one of CCR
- Framework for future regional economic development taking shape
- Taking on more programmes of regional significance – skills, Valleys Regional Park and the Strategic Development Plan
- Planned legislation around Corporate Joint Committees is significant development – we continue to influence
- Global investment strategy produced for MIPIM 2020
- Contributed to OECD work on regional investment frameworks and members of the Regional Investment Wales Steering Group
- Early thinking developing around CCR-delivery entity that addresses some of the limitations of the current model
- Embedded principles of WFG through assessment process and work to develop complementary and supplementary measures to GVA
- Pipeline and strength of the Investment Framework demonstrates that there is more opportunity and potential than there is City Deal Funds.

Outcomes

- Growing maturity is evident
- Still more to do – but knowing what needs to come next is a key feature of progress
- Critical that early work is done to inform future role/ remit/ 'fit' of CCR and this could involve establishing development entity – especially in overcoming some of structural challenges
- The opportunity is great. The marketing, engagement and activity around the investment fund shows more potential than resources available
- This is beyond lists of 'shovel ready' projects... and more strategic approach needed to support region in post-Covid recovery
- Some tensions across focus on wellbeing/ sustainability and GVA-driven approach. Alternative measures being considered but needs support at all levels because there will be implications...
- Fiscal levers and wider incentives also need further exploration given flexibilities set out in CCR heads of terms.

We have articulated the limitations of the existing structure and progressed the debate on the manifest opportunity of a City Region approach.

1. We have a robust route map for the journey ahead

CCR City Deal has made it to Basecamp and we have a robust route-map for journey ascent. We have solid future plans, which revolve around optimising the potential of the region and recognise that City Deal has been instrumental in catalysing this effect. We have shown we can adapt, apply foresight and have trusted partners and networks that are all part of Team CCR. Five years in, we understand the future challenges and opportunities and are ready to take bold steps to address and exploit them.

2. Our Core purpose is strong and compelling

This remains strong and compelling. The economic imperatives around Covid are significant and effects likely to be sustained. We see this as an opportunity to build on what has been achieved and take opportunities to redefine what we mean by sustainable and resilient local economies. This poses some urgent challenges – such as transit & public transport, office-local-home work, future of our high streets & retail, food resilience and more of a rapid drive for decarbonisation. We are fortunate to work with and be supported by excellent public bodies who want to look at opportunities to relocate resources to town centres, reviving high streets and developing mechanisms through which to procure innovation to collaboratively solve problems.

We further understand that:

- Industrial clusters need more focussed support especially as localisation of supply chains is a priority to avoid disruption and global market volatility and hence proposals developed for Strategic Sites Fund and a Clusters Growth Fund
- We can take confidence from what we've achieved – SIPF, DCMS & UKRI external funds - but this external show of confidence is just the start and there is more to do

- The economic effects of Covid will disproportionately impact CCR as a region in which socio-economic disparities already exist, we need to focus more on economic inclusion if we're to improve societal as well as economic outcomes. There are already dots across the map of CCR, which is a strong sign
- To be successful in the long-term and in light of the policy changes through a new approach to regional investment in Wales, we need to now begin to build a different kind of institutional capability
- We must maintain self-awareness on the things requiring modification & improvement – examples such as the Business Council review, reinforced scrutiny arrangements and risk review all demonstrate this
- Mistakes are made and failure occurs. However, its how we move on and extract value from this that matters. The more we do and learn, the more there is to do and learn – but this is a signal of progress
- Gateway 1 is a significant milestone – with much to do the other side to inform next 5 years for CCR City Deal – in the context of the things that need to be done in the region over the next 20 years.

3. There are inherent risks and challenges ahead

These include consideration of:

- Managing regional economic disparities arising from and exacerbated by Covid
- The fact that Welsh and UK Govts context & direction on economy often differ. The Wellbeing of Future Generations Act is one such example. The push for 'wellbeing economy' & alternative GVA measures is something we support and see a growing body of support for at UK-level. However, it can sometimes be a cause of tension especially when CCR targets are wholly GVA, jobs and growth-led. This cannot be allowed to drive perverse outcomes

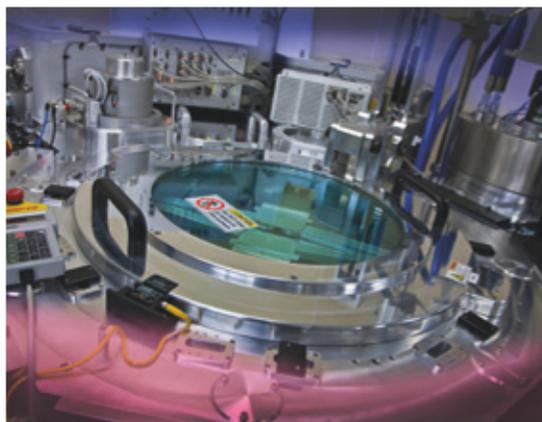
- There is currently no Combined Authority legislation in Wales which constrains delivery
- Regional Investment Wales changes are on the cards. This poses a whole set of complex questions about who the region is and is led by. CCR favours the term 'regionalism' to 'regionalisation' as it emphasises a spirit and culture of collaboration and shared endeavour
- This brings both challenges and opportunities around the creation of Corporate Joint Committees and who does what. This is especially acute around ensuring we have the right kind of institutional capability moving forward
- There are specific challenges to Wales and CCR around the Research and Innovation/ R&D deficits. These must be acted upon in light of ARPA, R&D Roadmap and levelling-up.

4. We must create greater capacity and capability

To create a new kind of "fit for future" capacity and capability, we must consider:

- The Metro aspect of CCRCD is delivered by WG company Transport for Wales with growing strategic and delivery planning remit
- At this time, there is no parallel or complementary agency to deliver & optimise the CCR economic, regeneration and land-use benefits through innovative JVs and PPPs
- There is a gap in CCR power to act as only a joint committee structure. Means we have to keep asking Councils to 'host' schemes, take risks on JVs, sit funds on balance sheets and enact back to back arrangements
- The economy is a market-facing function and CCRCD has a dedicated focus on this and investment processes to intervene
- Must ensure we continue to maintain strong local regeneration presence – but also take opportunity wherever possible to pool resources and expertise around scale proposals and regionally significant propositions.

- In terms of Transport itself – need to do more strategic-developmental work to get the best out of TfW & maximise economic benefits (top 20% schemes, station hubs, co-working spaces and community development)
- Time to think about how we prepare for and inform CJs by giving some initial consideration to creating a new kind of institutional capability – CCR Economic Development entity
- Arms-length but with clear democratic legitimacy - by the region, for the region WITH the region.



5. Our Partnership approach is delivering strong, mature leadership

- Our Regional Cabinet are demonstrating effective networking and distributed leadership. There is now a:
 - Strong sense of purpose & remain focussed on WHY CCRCD significant to long-term success of region
 - Focus is on steering ship and trusting others to bring expertise to table to inform decision-making
 - Bond is strong. Coming together to make decisions through WIF reinforces shared endeavour and sense of partnership
- The CCRCD is distinctive. It is not about trying to win same race as others or narrowly invest in public sector projects. It is genuinely about doing things that will have the absolute BEST impact for the region.
- However, the National Evaluation Framework formula for assessing progress not always conducive to this way of working...
- We also need more engagement in higher-level policy changes – PWLB proposals, NNDR review, Green Book review & optimisation of fiscal levers and incentives. For example, Crossrail funded through 1p on £1 of business rates.



6. We have made an extensive contribution to the Policy Agenda

City Deal has contributed extensively to the policy agenda and actions and interventions are underpinned by good data and evidence:

- The CCR investment programme not about good single projects – although this is important – rather, it is a means to meet higher level policy goals and move the whole region forwards e.g. clusters
- Our Complementary balance of local political and industrial leadership is key to thought leadership role and balance of views, perspectives & experiences
- We are working closely with private sector & HEIs reflects on maturing ‘convening’ power
- We need a strong and collective voice on the key challenges of our times especially; Western Gateway, levelling-up, making R&D work for the UK, green revolution and post-Covid economic recovery
- We are developing a growing reputation as opinion-formers reinforcing the importance of our policy and partnerships role.



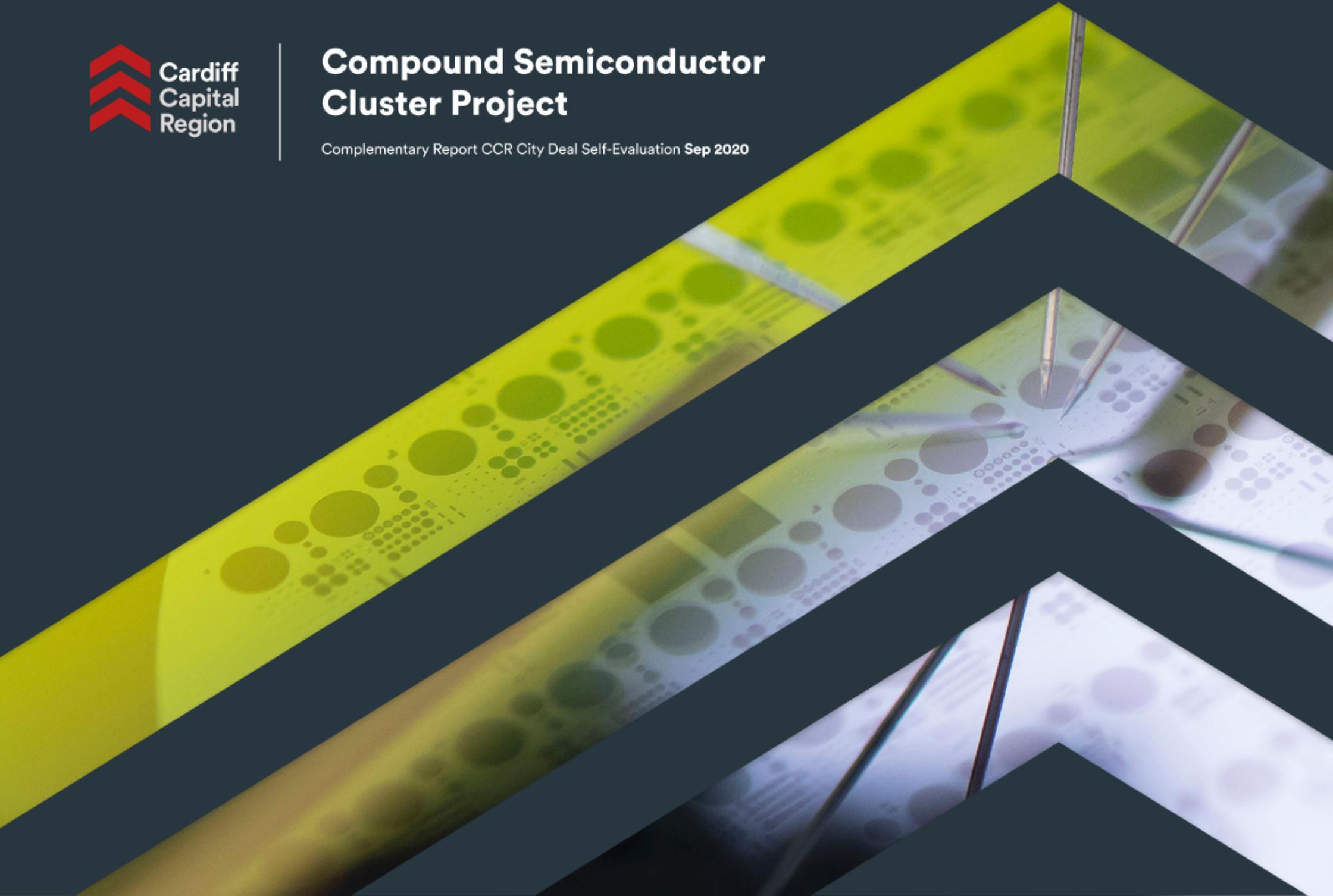
Web: www.cardiffcapitalregion.wales
Email: info@cardiffcapitalregion.wales

Contact Us



Compound Semiconductor Cluster Project

Complementary Report CCR City Deal Self-Evaluation **Sep 2020**



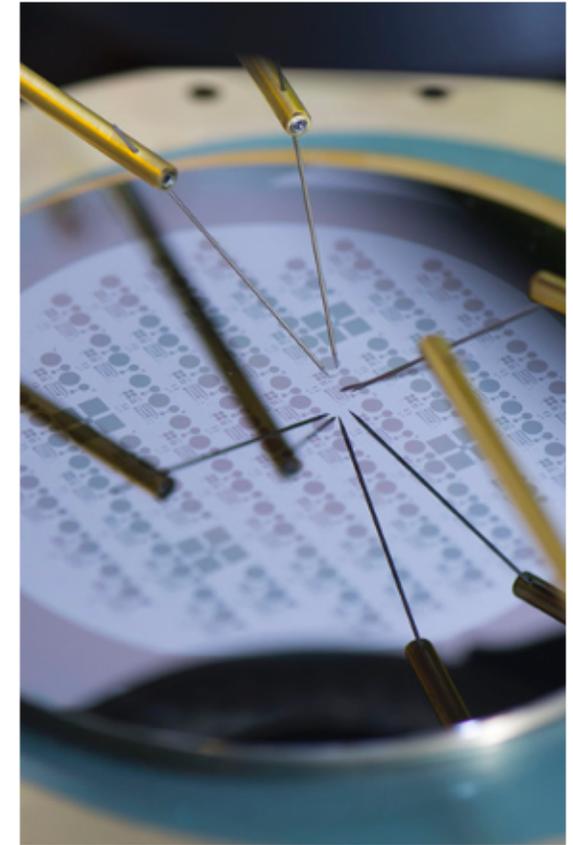
| | |
|---|-----------|
| Executive Summary | 3 |
| Part 01: Report Purpose | 4 |
| Part 02: Project Background | 5 |
| Part 03: Context of CCR Foundry Investment | 6 |
| Part 04: CCR Foundry Process: Tracing the journey steps... | 8 |
| Part 05: Project Delivery: Progress to Date | 12 |
| Part 06: CScnected Ltd | 16 |
| Part 07: CScnected (Strength in Places Fund) Programme | 20 |
| Part 08: Compound Semiconductors Applications (CSA) Catapult | 28 |
| Part 09: Future Opportunities | 29 |
| Part 10: Conclusion | 31 |
| Appendix 1 | 32 |



The CS Foundry Project – which has latterly developed into the CS Cluster Project, was the first investment made by the Joint Cabinet Committee (Regional Cabinet) of the CCR City Deal in May and July 2017 – just months after the ink dried on the City Deal Heads of Terms.

The investment of £38.5M in a state of the art mega-Foundry in Newport has been a totemic one. Next generation Compound Semiconductors are a technology-rich industry of the future. The City Deal Heads of Terms sets out a commitment to investing in and developing the sector as a key means of meeting the economic objectives and ambition-set for the Cardiff Capital Region.

The investment in the Foundry itself although important, was always viewed as a catalyst project, with the wider prospect to grow the CS Cluster into a globally significant phenomenon, capable of building sovereign technological capability in the region. The CS Cluster Project has been subject to SQW's 'deep dive' impact assessment – as a programme fully approved and drawing down WIF monies prior to the cut-off date of 31 December 2019. Whilst this project has fallen within the scope of the evaluation review in line with the National Evaluation Framework – there are other projects that have been approved in the same period – and are currently in varying phases of delivery. These are: Metro Plus, Homes for all the Region, CCR Graduate Scheme, Plasma Tech, Data Pharma and the CCR Challenge Fund. These schemes and their progress are covered in the main document "CCR Complementary Report". This short document details what has been achieved in respect of the journey to date and what CCR and consortium partners can reasonably see that the future holds.



The purpose of this report is to supplement information provided for the review with a full synopsis of the history, context, activity and progress made to date in connection with the Compound Semiconductor Foundry and wider cluster activity in the region.

An Overview of the Compound Semiconductor Foundry and Cluster Project

During the last half of the 20th century, silicon technologies ushered in the digital information age that revolutionised the way we live, work and spend our leisure time. In the 21st century, next-generation compound semiconductors are driving the move to a connected, intelligent and technology-rich world.

With a rich legacy in advanced semiconductor technologies, the UK and in particular, South East Wales, is uniquely positioned to become the global home of compound semiconductors.

CCR City Deal enacted the first £38.5m investment with IQE Plc in acquiring, developing and operationalising the Newport mega-Foundry for the high end production and manufacturing of VCSEL wafers to service the demands of a significant global OEM. The deal leverages around >£375M private investment and will create c550 jobs, safeguarding a further 450 jobs in the region and creating a ripple effect through the regional supply chain.

The CSC Cluster project involves an agreement between the Cardiff Capital Region and IQE plc, a large commercial manufacturer of semiconductor wafers, which is headquartered in Cardiff. It involves WIF investment of £37.9 million towards the cost of a compound semiconductor foundry in Newport. The CCR Regional Cabinet agreed in 2017 to purchase a factory building at Imperial Park in Newport from the Welsh Government and invest, alongside IQE, in the new foundry, including the development of new cleanrooms and purchase and installation of specialist equipment. It was agreed that the building would be leased by IQE for 11 years, with an option for the company to purchase it at the end of the period or prior to the end so long as certain conditions are fulfilled. To deliver the project, the Regional Cabinet established a special purpose vehicle Company Limited by Guarantee (CSC Foundry Ltd) to acquire the building and to manage the lease.

In the absence of public support, it was expected that the market would not have come forward with such a facility due to its scale, specialist nature and some of the risks involved in supporting a new venture vis-à-vis the existing scope of business and investor base. However, given the risks associated with potentially losing the company, investment and future cluster prospects to overseas locations, CCR acted in the long-term interests of the sector, cluster and developing sovereign UK capability. Therefore, key aims of the project were to ensure that the operations, value chains and spin-off benefits of retaining the business in the region were maintained and leveraging further commercial investment and opportunity for the company, cluster and Wales Plc. Given the announcement made by the then Chancellor of the Exchequer George Osborne in January 2016 regarding £50m of funding for the Compound Semiconductor Applications Catapult – there was a clear opportunity to develop the R&D capabilities of the sector.

The project builds upon a rich history of investment in the sector in the region – mainly through UKRI Research and Funding Councils, HEIs, Welsh Government and Industrial and Business Partners. Estimates show that capital investment to date is in the region of £500-550M (included in which is IQE's Foundry co-investment) which puts the cluster in the territory of £400-450M operating expenditure with further leverage from outside of the region from the operation of the Compound Semiconductor Centre, the CSA Catapult and the Hub/ CDT/ ESPRC partners outside of Wales. The future also looks bright. With £44M recently secured via the UKRI Strength in Places Fund (£25M grant from UKRI leveraging c£19M of additional investment) and, the developing prospects for global expansion of one of the largest members of the Cluster – projected to bolster private investment to date by a projected £150-200M.

The challenge for the Welsh economy and policy makers is to identify and develop industries that potentially have competitive advantage. It was considered that the Compound Semiconductor Cluster (CSC) represented a real source of such advantage, in an industry that is rapidly growing across the globe. Furthermore, the nature of the industry, especially skills requirements across the spectrum, means that the growth of the cluster would provide economic and social benefits to a broad range of individuals and communities across the region.

Connecting expertise, capacities and capability within both the private and public sector and academia has already led to the establishment of a critical mass of activity, which is now the largest concentration of compound semiconductor activity in the UK.

The development of the semiconductor industry has a long history in South Wales, and is supported by a number of academic and industrial assets, located along the M4 corridor east of Cardiff.

Key firms in the sector include the following:

- **Newport Wafer Fab (NWF)** - NWF is an integrated silicon and silicon on compound semiconductor foundry. NWF was originally established by Inmos in 1982 and subsequently owned by a series of multinational manufacturers, before being acquired by a consortium led by local investors in 2017.
- **IQE Plc** – IQE has directly benefited from the Wider Investment Fund investment in the new foundry. IQE was established as Epitaxial Products International (EPI) in Cardiff in 1988: it remains headquartered in Cardiff and is listed on the London stock market, with a substantial international manufacturing presence.
- **SPTS** – SPTS provides wafer processing for the semiconductor manufacturing industry. SPTS is owned by the US-based multinational KLA Group and is based just east of Newport.
- **Microchip** - Microchip (formerly Microsemi) is a developer of semiconductor systems and solutions, and was recently acquired by Microchip Technology Group. It has a manufacturing site at Caldicot.

In addition to these established firms, Rockley Photonics recently located a new facility alongside Newport Wafer Fab and has subsequently been joined by MicroLink Devices.

There are also substantial academic capabilities in the region. Cardiff University established an Institute for Compound Semiconductors in 2015 as part of the development of its innovation campus in 2015. This was followed by the Compound Semiconductor Centre, a joint venture between Cardiff University and IQE for the development and prototyping of compound semiconductor materials.

It is in this wider 'eco-system' context that the decision was made to invest, through the City Deal, in the new foundry at Imperial Park, Newport, providing IQE with substantially increased manufacturing capacity and the co-location with the £50M CSA Catapult.

Analysis by Cardiff University has considered the scale and growth potential of the compound semiconductor sector. It noted that around 100 companies in the UK were actively working with compound semiconductor devices, and found that the sector employed 1,500+ people in Cardiff Capital Region in 2019. Global prospects for sector growth were seen as strong and the region has significant strengths, as outlined above. The university's report noted the need for critical mass and infrastructure:

“South Wales has been active in the research and development of compound semiconductors for a significant amount of time. However, to develop an ecosystem, there is a need for a critical mass of key actors and infrastructure to progress from concept right through to commercial products, requiring substantial investment and impetus.”

The investment in the Foundry sits alongside a number of strategically significant CS investments and assets in the region, which include:

1980

SPTS

Established in Newport around 1980 as Electrotech (equipment manufacturer with HQ in Bristol). Became STS then SPTS. Acquired by Orbotech around 2015 then KLA Group in 2019.

1982

Newport Wafer Fab

Founded in Newport c. 1982 as INMOS, then Thorn EMI (1984) followed by SGS Thomson NV (1989), Management buyouts, QPL, NWF, International Rectifier, Infineon and back to Newport Wafer Fab 2019. Until around 2000-2010, there was a packaging division (Atlantic Technology) based near Blackwood and a Power Electronics Fab in Swansea.

1984

MicroChip

Established in Caldicot around 1984 as MITEL. Acquired by Zarlink, Microsemi then Microchip (2019).

1985

Cardiff University & Institute of Compound Semiconductors

Compound semiconductor activities (Dept. of Physics and Astronomy) and expertise in Radio Frequency Components since mid-1980s.

1988

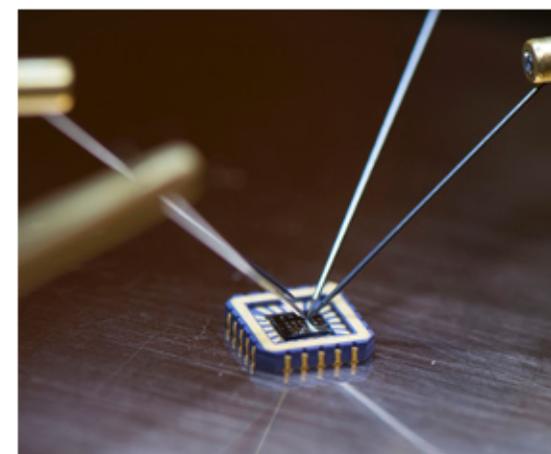
IQE Plc

Founded in Cardiff 1988 as Epitaxial Products International. Renamed IQE in 1999 following acquisition of US partner QED and ahead of IPO.

2013

A more coordinated approach...

Proposals for a more coordinated approach to cluster development were set out in 2013/14, linked with the proposition that South Wales had the ingredients to become "Europe's fifth semiconductor cluster" (and it's first focused on advanced compound semiconductors)



2015 **Compound Semiconductor Centre**

CSC formed 2015 as JV between Cardiff University & IQE. Cluster concept - "born" around 2015 with formation of CSC. First formal interactions between cluster partners. Prior to 2015, cluster partners generally acted independently but came together on projects such as skills around 1998 to address skills gaps and threats of major inward investor (LG).

2016 **Compound Semiconductor Applications Catapult**

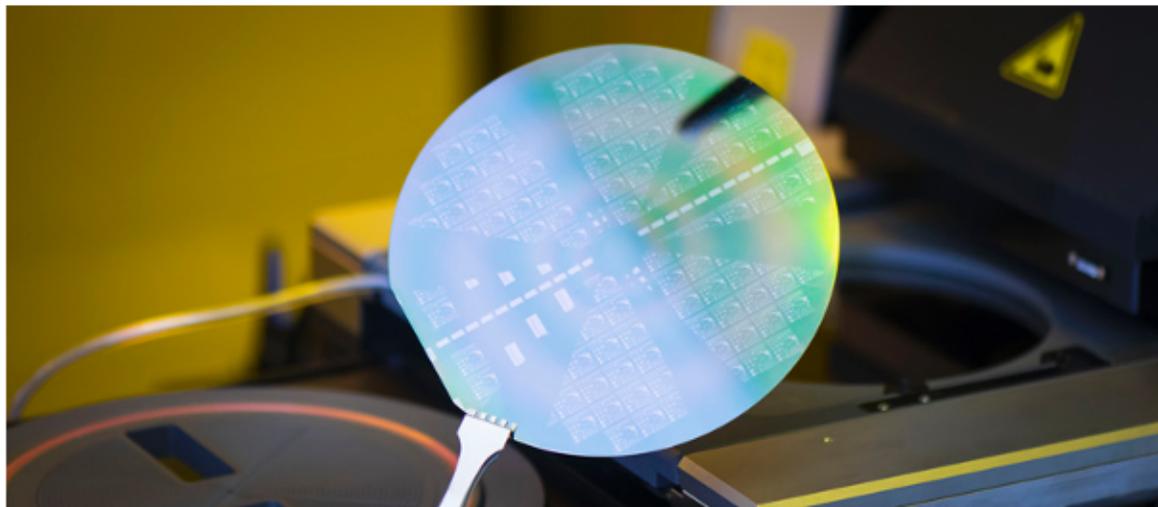
Innovate UK decided to locate the Compound Semiconductor Applications Catapult (CSA Catapult) in Cardiff in 2016. The £50m UK Government CS Catapult is also co-located within the building.

2017 **CSconnected Ltd**

CSconnected formed 2017 as "voluntary" consortium headed by IQE.

2019 **Centre for Integrative Semiconductor Materials (CISM)**

CISM was formally announced in July 2019 – a materials foundry at Swansea University with UKRPF funding from Research England.



2016 Cardiff Capital Region City Deal Document (Heads of Terms)

The CCRCD Heads of Terms included commitments to:

- “Transform the UK’s capability and help position Cardiff as the European leader in Compound Semiconductor applications, the UK Government will invest £50million to establish a new Catapult in Wales. This new Catapult will complement the work of other organisations in Wales who are already working in this important area, including the Compound Semiconductor Institute at Cardiff University and the Compound Semiconductor Centre, a joint venture between Cardiff University and IQE”
- “Recognising this opportunity, the Cardiff Capital Region will prioritise interventions that support the development of an internationally-competitive Compound Semiconductor cluster. Local partners believe that this will put the UK at the heart of an emerging global growth technology”
- “Accelerate the growth of innovation and facilitate investment in research and development, the Cardiff Capital Region will seek to prioritise:
 - Mechanisms to support high growth sectors;
 - The development of new facilities and employment sites;
 - Investment in intellectual property creation and commercialisation;
 - Adding value and complementing existing innovation support”

2016 The Cardiff Capital Region City Deal Business and Implementation Plan 2016-2020

The CCRCD Implementation Plan adopted by all 10 authorities as part of the Joint Working Agreement, committed to:

- Develop an Internationally Competitive Compound Semiconductor Cluster and accelerate growth of innovation by establishing an anchor space in the region for high end production and manufacturing in 2017/18.

The objective of these commitments was to create a complete compound semiconductor eco-system in South Wales to take advantage of the growing prominence of compound semiconductor technology. This required the development and integration of a compound semiconductor supply chain in South Wales, with the economic and social benefits that would bring.

The benefits of clusters was well understood, with Silicon Valley in the US being a prime example. Indeed, there are semiconductor clusters across Europe, namely Eindhoven, Dresden, Leuven and Grenoble. However, these are based on silicon technology, hence this was a unique opportunity for Wales to establish the world’s first compound semiconductor cluster and establish itself at the forefront of compound semiconductor technology globally.

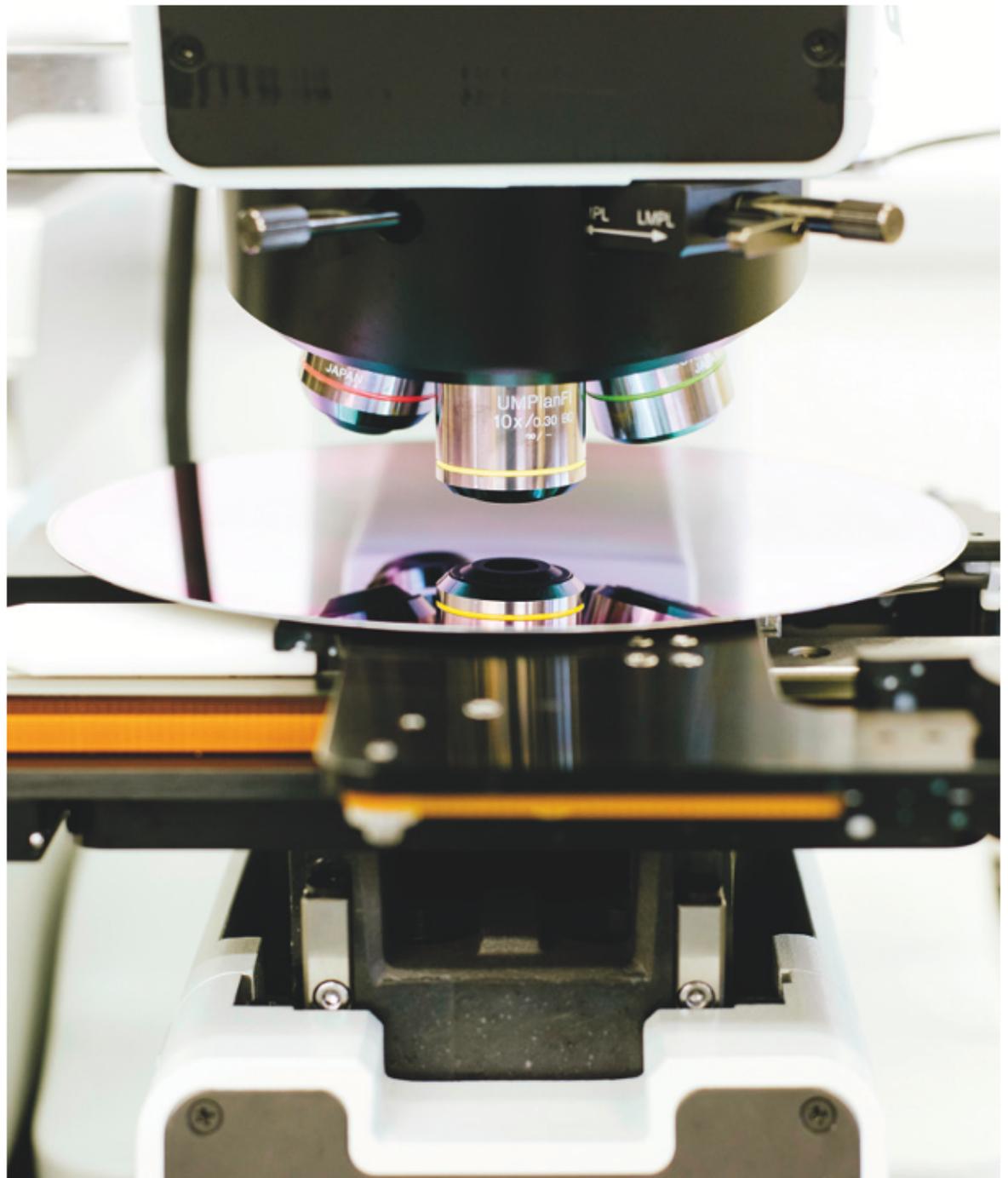
The cluster would build on existing investment into this technology by Cardiff University, IQE Plc, and Welsh Government. It would see a complete eco-system for the compound semiconductor market in South Wales, allowing full movement from research through to production and commercialisation. The establishment of a UK Government funded Catapult at the proposed site would further enhance the reputation of the cluster.



2017 IQE Proposal

A proposal was received from IQE seeking investment of £37.9m funding from the Wider Investment Fund to support the development of a Compound Semiconductor Industry Cluster in the region by establishing an anchor space for high end production and manufacturing. It was proposed that this investment would be repaid, over an agreed period of time, by means of leasing and resale of the property managed via the SPV – CSC Foundry Ltd

This proposal supported the Regional Cabinet's aspiration to support innovation and specifically helping to develop an internationally competitive compound semiconductor cluster. The Cardiff Capital Region Programme Board (CCRPB) appraised the proposal in full, the proposal going forward for full assessment and it was agreed that Monmouthshire and Rhondda Cynon Taf Councils would lead on the assessment and due diligence processes.



May 2017 CCR Regional Cabinet Approval

Following an extensive period of due diligence the CCR Regional Cabinet was presented with the IQE proposal to invest funding from the Wider Investment Fund to support the development of a Compound Semiconductor Industry Cluster in the region by establishing an anchor space in the region for high end production and manufacturing.

Due diligence comprised Legal Assessment and State Aid Assessment; Property Market Review; Property Feasibility Estimate; Procurement Advice, Commercial assessments and full financial appraisal. In addition, this further developed a full Economic Impact Assessment; technical advice on VAT; Corporation Tax; a Technical Assessment of IQE Silicon Compounds and brought together the services of advisors across KPMG, JLL, Pinsent Masons, and CMB & Atkins

Stakeholder views were thus captured comprehensively – for example, as part of the KPMG-led economic impact assessment, there was a full re-appraisal of the work by Cardiff University which involved meetings with all cluster members, government officials, industry experts and academic economic geographers. In relation to the examination of the proposal itself, Programme Board provided technical assessments and a full assessment was undertaken via the framework for the Wellbeing of Future Generations Act (2015) Wales. As part of the KPMG-led work which was shaped and informed by the project team, evidence, intelligence and insights were provided by semiconductor experts in Silicon Valley to reinforce the case and provide additional assurances. Legal and contractual documentation was accessed via the Special Customer and OEM. In respect of Procurement, a Counsel opinion was sought and followed – again to provide additional safeguards and assurances.



Value for money assessments were carried out as part of all the above processes. It must also be borne in mind that the project seeks to return its investment with interest – in line with EU reference rates, therefore it yields a full ROI. In relation to leverage; for £37.9M the project is forecast to leverage upwards of £375M from IQE plc's commensurate investment into the process. Job creation potential was also measured as part of this with c1000 direct and indirect jobs (supplier effect) to be created as a result of the investment.

There is a key mechanism in place to hold the project to value for money considerations, co-investment principles and benefits realisation which is the Development Agreement for Lease. This provides a framework within which to manage the commercial landlord relationship with IQE. Investment is broken down into clean-room installation tranches which sees CCR funds matched with agreed levels of IQE investment into provision of services and installation of reactor tools on which the technology is qualified and manufactured.

In relation to assessment of risk, risk logs have been kept from the commencement of the project. These continue to be held and updated and reported ongoing to the board of CSC Foundry Ltd.

Finally, it must be remembered that CCR City Deal Heads of Terms were signed in March 2017. Therefore this project was developing quickly and before many of the main partnerships and structures for City were established. The evidenced commercial imperatives surrounding the investment were such that time was of the essence given the need to provide assurances to OEM ahead of market launch – the date for which was fixed. There were risks involved in moving quickly and accelerating in this way. However the risks of not securing the project and potentially losing it and potentially, a key part of the Cluster were deemed too high.

Packaged together as part of the final report, on 2nd May 2017 the Regional Cabinet resolved that subject to legal agreements being reached and governance arrangements being finalised, they would support the development of a Compound Semiconductor Industry Cluster in the region by establishing an anchor space in the region for high end production and manufacturing. This gave confidence to the company and OEM and secured the deal for the region.

July 2017 CCR Regional Cabinet

This secondary meeting was necessary to agree the reserved matters outlined above. Therein CCR Regional Cabinet agreed to establish a Special Purpose Vehicle (SPV) to deliver the Compound Semiconductor Project. The SPV – CSC Foundry Limited, would enact the deal with IQE and enter into all legal agreements, arrangements and contracts. A Shareholders' Agreement was put in place to inform and regulate activity of the company in line with the provisions of the Joint Working Agreement (JWA).

The SPV acquired the building, managed the lease and supported the delivery of the CS Cluster project. The Board of Directors are responsible for ensuring the project complies with the legal framework created by the Shareholder Agreement and associated legal agreements.

This also established the CSC Foundry board to act as the driver to ensure the CS Cluster project delivers its planned outputs:

The regular duties of the board are to:

- Monitor the timely delivery of the CS Cluster project against agreed milestones
- Identify, monitor and support the resolution of risks and issues
- Sponsor and support Project assurance reviews, approving and/or ensuring improvement actions where required
- Authorise key documentation – annual business plans, annual budgets, update reports, finance reports and requests for funding drawdown.

July 2017 CS Foundry Annual Business Plan 2017-2018

In July 2017 the first company business plan was drafted solely related to the implementation of the CS Cluster project, i.e. the development of the Foundry and Cluster and any matters ancillary thereto.

The plan centred on setting up a globally significant and state of the art manufacturing foundry in Newport. This would see the installation of up to 100 specialist reactor tools that will contribute towards the servicing of a contract with a global technology OEM, creating, 1,000 jobs (direct and indirect) with the potential for c1400 further jobs being induced and safeguarded, thus, catalysing the creation of the world's first cluster for Compound Semiconductor technology in the Cardiff Capital Region.

The business plan covered more detailed arrangements of the transaction:

- Building acquisition from WG and relevant provisions such as deferred payments and Payment Guarantees
- Fit and kit out technical specifications
- Lead authority – Monmouthshire Council
- Option to Purchase
- Back-to-back agreements for the SPV
- Shareholder's Agreement
- Granting of the head-lease
- Granting of the sub-lease between IQE and the CSA Catapult
- Full provisions of the Development Agreement for Lease

Ongoing Monitoring & Evaluation

The work of CSC Foundry Project continues to be set out against annual iterations of the Business Plan, reporting of annual accounts and through executing provisions of the DAfL. All of which is reported to regular meetings of the CSC Foundry Board. In addition, the logic model and highlight reports are updated quarterly and submitted to Cabinet and UK and Wales Governments for monitoring and evaluation purposes.

Reports such as the Consolidated Statement of Accounts and the company Annual Business Plan are also reported to Regional Cabinet for final ratification since the CSC Foundry Board is a formal sub-committee of Regional Cabinet.

The investment into the new compound semiconductor foundry in Newport is 87% complete. The facility is now in production and out-performing our expectations in terms of both volume and quality. The UK Government backed Catapult Centre has moved in and is open for business. Advanced electronics will be one of the most important features of global economies going forward and as a result CSconnected is developing at pace.



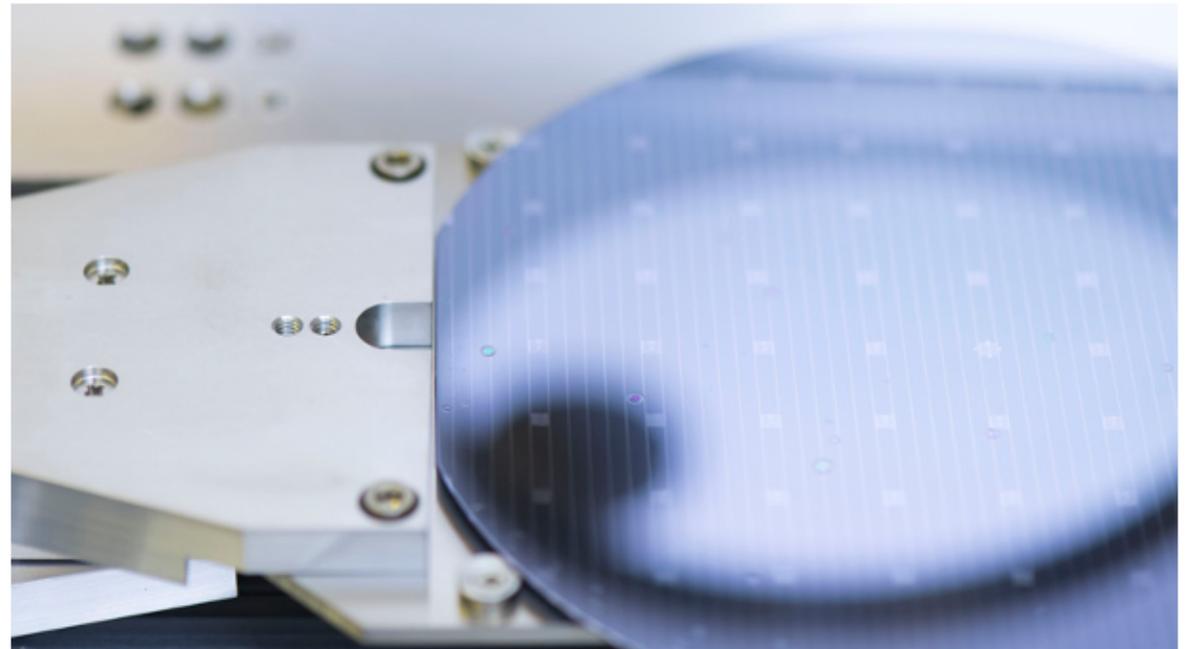
City Deal partners are invested in this sector for the long term. The commercial fundamentals of the sector are strong, albeit turbulence has been notable as a result of ongoing US-China trade wars which created a period of instability. Whilst the geo-political situation has stabilised slightly since – it is clear that this risk will remain on the horizon and is caught up in larger matters of global financial health and trade relationships. Whilst recognising there will always be global headwinds with which to contend with this type of investment, CCR has made a commitment for the long-term and confidence remains strong.

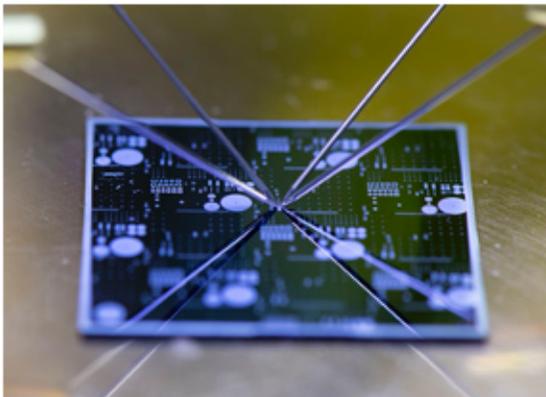
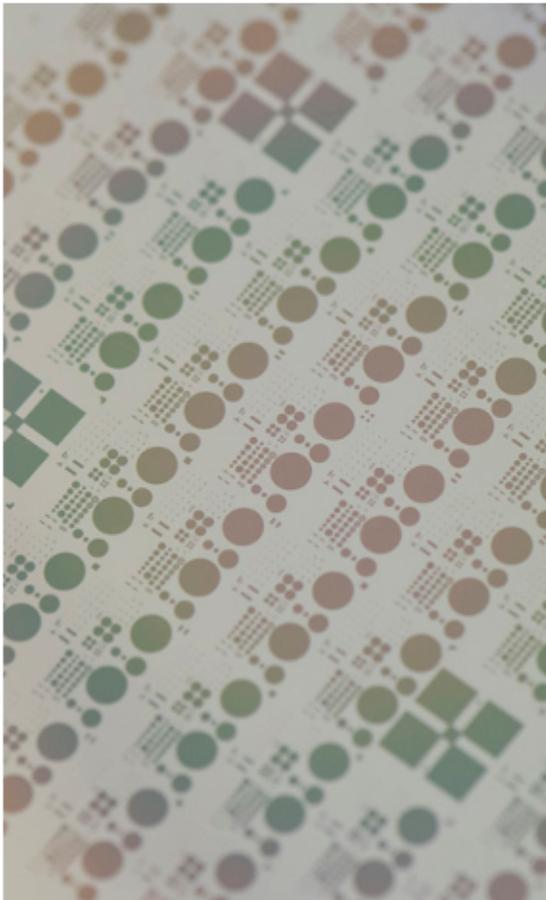
To date, of the full anticipated WIF contribution of £37.9M c£33M has been drawn down – much owing to over-inventory issues as a result of the above. This situation is now easing. However, it remains to be seen whether IQE will require the remainder of the investment as trading conditions improve. This would be a further positive sign for CCR since the investment is

repayable in any event and success can't be defined in such a unique investment by blunt levels of 'spend'.

By the end of 2019, all 20 cleanrooms had been built, ten of which had been fitted out with mechanical & electrical installations and tools. However, IQE's current order book does not warrant any additional capacity at this time and therefore no further IQE investment is justified. As doing so would be at unnecessary commercial risk to IQE.

It should also be noted that investment by CS Foundry Ltd is capped at £37.9M and any further investment required to deliver all 100 clean rooms in accordance with the DAfL is the responsibility of IQE. Over and above their co-investment of £61M, IQE has invested an additional £6M towards the costs of clean rooms installations as well as contribution to making good the part of the building now occupied by the Catapult.





IQE Results and Financial Forecast

In May 2020 it was reported to the CSC Foundry Board that IQE had experienced very challenging market conditions in 2019 and these were set to continue in the short term. This largely arose off the back of Brexit uncertainty, geo-political tensions and uncertainty over Covid-19 and medium term impact. However, we also reported medium to long term growth potential off the back of Yole market research analysis and our investor discussions with the Chief Financial Officer at IQE.

Indeed, the company remained well positioned to capitalise on an expanding future compound semiconductor market opportunity driven by the macro trends of 5G and connected devices, and as such, the long-term outlook is for growth targets to be met.

In early September IQE released their half yearly results for 20/21 and are showing a 35% year-on-year growth and a record first half revenue performance for the Group.

Dr Drew Nelson, Chief Executive Officer of IQE, said:

"I am very proud of the results that IQE has achieved in the first half of 2020, particularly given the uncertain external environment. Building on our investments in our products, our people and our infrastructure, we have demonstrated both financial and operational resilience and have delivered record H1 revenues.

However, our priority has been to ensure all our colleagues are safe during this unprecedented time, and I would like to take this opportunity to thank our dedicated staff who successfully maintained operations at all of our global sites despite the challenges posed by the global pandemic.

IQE remains focused on executing our technology roadmap, and we are confident this momentum will continue into H2. Our business remains well-placed to capitalise on opportunities in 5G mobile network infrastructure and handsets, 3D sensing in VCSEL-based products and a host of advanced sensing applications across a broad optical spectrum."

This is clearly encouraging signs for the completion of our CS Foundry investment and CCRC's collaboration with CSconnected and the wider cluster across the region.

For detailed results and the information shared with investors and the market, please click here:

DISCOVER MORE →

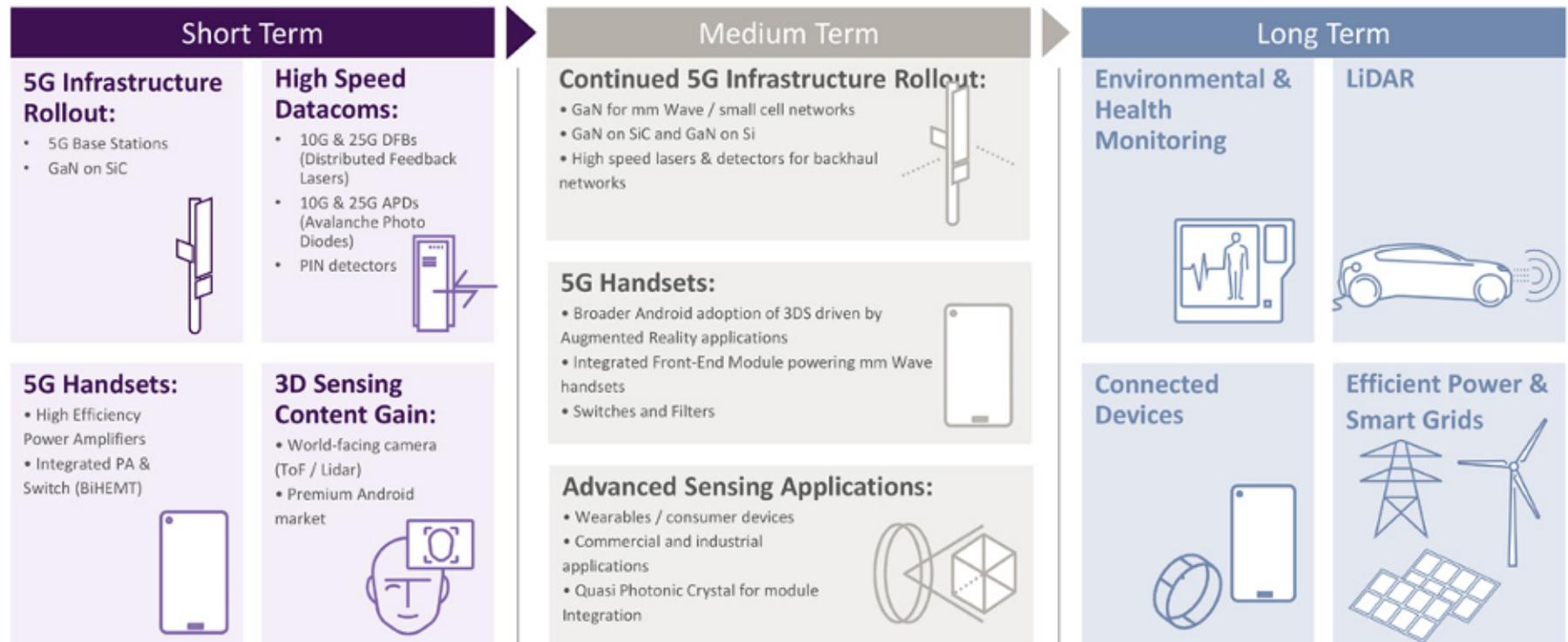
Financial Outlook

To date IQE has not provided full year guidance due to the uncertainty of the global pandemic and anticipated global recession. Despite this environment, performance to date has been strong and IQE's customers have recently reported positive trading updates and outlooks, underlining the resilience of the sector. In this context, IQE now provides full year FY20 revenue guidance of at least £165M equating to full year revenue growth of 18%.

Fig 1 below illustrates IQE's forward Technology Roadmap in respect of their forward business plan.

Summary of key financial and forward business plan

- Record revenue performance in H1 2020, despite an unprecedented and uncertain environment
- Return to profitability with strong cash generation and liquidity
- Continued progress in technology development
- Some risk of delay to 5G deployments due to global market factors
- Multi-year 5G mega replacement cycle may not be linear but it will transform the way we live and work
- IQE's technology will be at the heart of this transformation



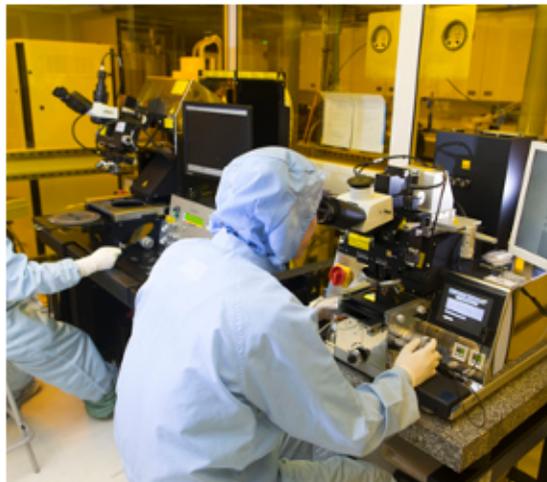
Outcomes

Leverage

IQE has invested to date, an additional c£67M on plant including the installation of 10 tools with this set to ramp further alongside increased and future customer demands, as the remainder of the CCR investment is drawn down and IQE's wider expansion plan is delivered. When considering that IQE are still to invest in 10 further tools to occupy the built out clean rooms, the IQE investment to date is proportionately significantly ahead of the original projection and which anticipated £77.4m of the £375m investment by IQE to be spent in having 20 tools installed.

GVA

As of December 2019 it is estimated that IQE supports direct and indirectly around £22m of Welsh GVA and with the majority of this supported in the Cardiff City Region. Over the same period the wider semiconductor cluster has estimated to support direct and indirectly around £158m of GVA.



Job Creation

By the end of December 2019, 110 additional jobs have been directly created at the site as a result of investment in the foundry. This compares with a long-term job creation target over 11 years of 501 (101 of which were originally expected to be created by the end of 2019). 95% of these jobs are for people living within the CCRCD region.

545 jobs have been safeguarded as a result of the investment. This compares with a target of 700 (all originally profiled to have been achieved in 2017/18), and consists of:

156 jobs safeguarded at IQE, within its existing operations at St Mellons in Cardiff. This is based on the case made within the original investment proposition that some activities were likely to have been lost to the UK had the firm been unable to increase its production capacity within Cardiff Capital Region (and compares with an original target of 150 jobs safeguarded by 2017/18).

389 jobs safeguarded at Newport Wafer Fab, a privately-owned silicon wafer fabrication plant located about a mile from the Imperial Park site. This is based on the case set out in the original proposition that some jobs at Newport Wafer Fab were reliant on technology developed at IQE. The number of jobs safeguarded at NWF compares with a target of 550 by 2017/18. It should be noted that the original target of 550 was prepared by KPMG as part of their Economic Impact assessment in 2017 and it has since been confirmed that 161 of these jobs were agency workers. Therefore all 389 jobs have been safeguarded at NWF

Within the business case for the CSC investment, CCRCD also estimated 1,088 indirect and induced jobs over the 11 years of the project. **Analysis by Cardiff University and CSconnected for CCRCD estimated that 956 indirect and induced jobs had been created by December 2019** within the Compound Semiconductor Applications Catapult (70 jobs),

Cardiff University, construction and the supply chain for IQE and the wider sector. These are gross figures, and not all will be attributable to the CS Cluster project. The indirect and induced job creation analysis will be undertaken on an annual basis by Cardiff University and CSconnected.

Other

Commercial Floor Space – Capital works to convert the factory building into a foundry suitable for occupation (including dilapidations works, cleanrooms and ancillary IT rooms, welfare/ communal areas and circulation areas) have resulted in the **delivery of 5,898 sq. m of additional commercial floor space.** This was delivered more quickly than anticipated, due to a more efficient design involving the creation of a mezzanine floor above every cleanroom.

As anticipated at the outset of the project, 4.52 hectares of land (the factory at Imperial Park and surrounding land) has been assembled and acquired for development.

Applying Government benchmark figures for the number of construction years of employment per £1 million of infrastructure spend, we are able to estimate that **the WIF investment resulted in 291 (gross) construction 'years of employment' to December 2019.** In addition, eight new apprenticeship opportunities had been created during the construction phase of the project.

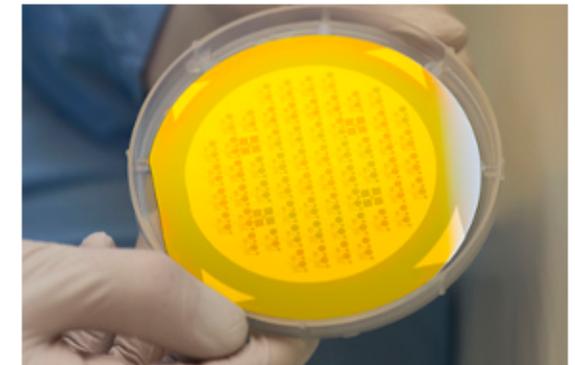
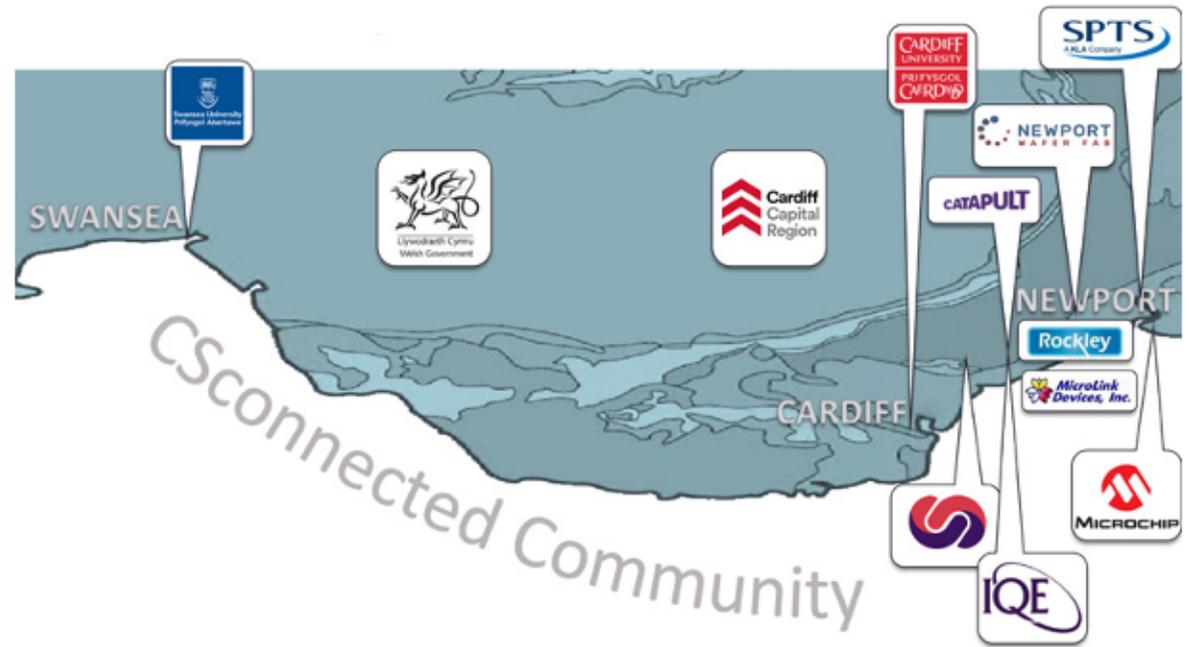
CCRCD has also reported that the redevelopment of the CSC foundry has resulted in improved fibre connectivity to the building and road improvements on Celtic Way.

CScconnected is the world's first cluster group or trade body for Compound Semiconductors. It is a not-for-profit organisation founded in 2016 and home to a unique eco-system of high technology capability leading the way in applied research, advanced applications, collaborative innovation putting Wales and the UK at the forefront of new and emerging material and device to market.



CScconnected Community

CScconnected is a grouping of academic institutions, government and industry striving to connect its members, providing thought leadership and expertise to foster and promote the importance of Compound Semiconductors as a key enabling technology.



CScconnected Ltd: Vision & Strategy

OUR VISION

To build on the regional strengths in WALES / UK in compound semiconductor capabilities to create and maintain the world's first comprehensive eco-system driven by enhancing and extending supply chain activities based on the manufacture of semiconductor enabled hardware

OUR STRATEGY

By coordinating key initiatives and activities across the compound semiconductor eco-system

By providing an entry point for academic, innovation and business engagements

By disseminating information and promoting cluster activities to relevant global audiences

By establishing a coordinated approach to education and skills across the eco-system

By informing, advising and signposting investment opportunities to grow the eco-system



Whilst the CSC Foundry project is in itself significant – and one of the only single sector priorities set out in the City Deal Heads of Terms (2016) – it was always seen as providing the building blocks for the growth, further development and reinforcement of the world's first Compound Semiconductor Cluster – CScconnected.

Since its informal launch at the CS-International conference in 2016, the South Wales centred compound semiconductor cluster, CScconnected, has gained traction across a number of key stakeholder groups despite existing only as a high-level concept and vision supported primarily by a “volunteer” grouping hosting a range of ad-hoc activities.

The core of the South Wales CScconnected cluster comprises 9 key entities. The cluster includes four industry “founding” partners; IQE, Newport Wafer Fab, SPTS and Microchip. Other Joint Ventures, academic institutions and government backed organisations include the Compound Semiconductor Centre (CSC), the Compound Semiconductor Applications (CSA) Catapult, and the Institute for Compound Semiconductors, The Compound Semiconductor Hub and the Centre for Integrative Semiconductor Manufacturing.

Each of the core entities that form the CScconnected cluster have actively and enthusiastically engaged in a range of promotional activities that support the combined strength of the region.

For a detailed appraisal of CScconnected activities and opportunities, [See Appendix 1](#)



Resourcing Arrangements

Initially CSconnected was resourced on an ad-hoc basis with scarce resources. Coordination and management of CSconnected activities consumed an estimated 300 hours per year of IQE senior management time in addition to direct costs of marketing collateral, venue hire and other project costs. Total time committed to CSconnected activities by management and other senior members of the cluster organisations runs to many thousands of hours.

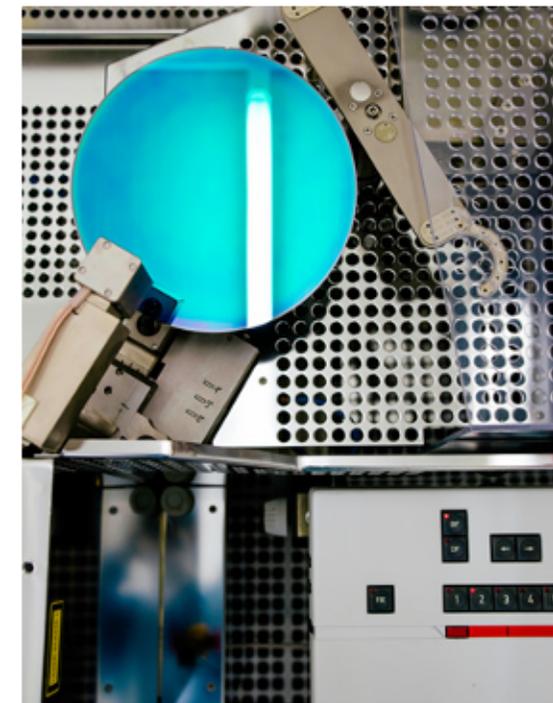
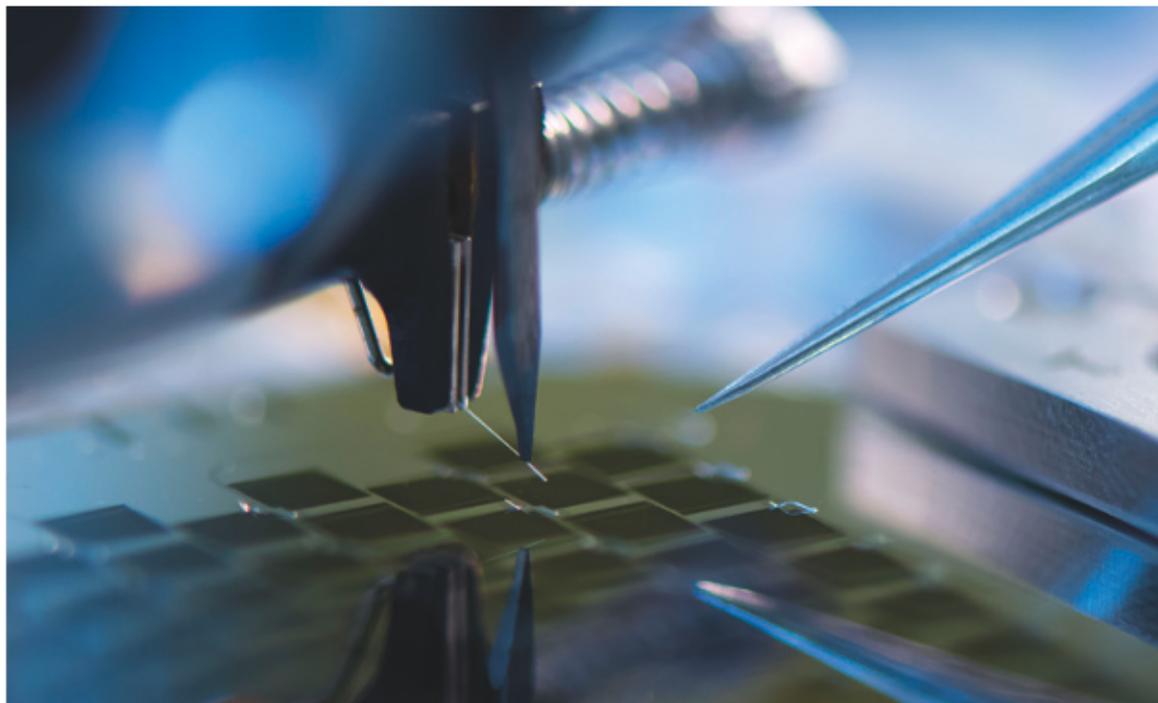
The informal cluster arrangements severely restricted the ability to impact the effectiveness of the cluster's evolution particularly in terms of its profile through PR, communications and marketing as well as its representation within the community and in addressing the skills agenda.

The Strength in Places Fund bid submitted in September 2019 focussed on growing the strength and perseverance of CSconnected. However, the availability of funding following a successful bid wasn't anticipated until October 2020. Therefore at the beginning of 2020, a proposal was submitted to CCRD and WG for the establishment of the "CSconnected" entity in readiness for a potentially successful outcome of a UKRI Strength in Places Fund (SIPF) bid to build on the South East Wales region's capabilities in compound semiconductor technologies.

The overall aim of the interim proposal was to establish the CSconnected brand and deliver a membership model to promote and market the regional capabilities in compound semiconductors and help address the skills needs for the industry sector to grow over the coming years with such growth being accelerated in the event of a successful outcome to the SIPF bid.

CSconnected Ltd: Activities





Alignment with CCRCD ‘Cluster’ Framework

The proposal further supports CCR, UK Govt, WG and industry’s own long-time investment in the development of the region as the world’s first CSC Cluster. Advanced compound semiconductors are an industry of the future and as a core enabling technology – are ubiquitous underpinning 5G, communications, LEV and EV and autonomous vehicles, med-tech, energy, agri-tech, LED technology and in general, power electronics.

The wider cluster priorities for CCR around med-tech (devices and diagnostics); cyber (defence); fintech (insuretech) and AI/data and creative industries also align well with Compound Semiconductors. In this way, the potential is to create a wider innovation-rich ecosystem. Indeed, there are synergies across the

emerging cluster frameworks – branding, skills, demonstration and inward investment – there is a clear pathway for building a more integrated cluster strategy for the future. Further, given relatively low growth-productivity historically in CCR developing a long-term strategy for FDI, local supply chain development, SME value chain growth and ensuring jobs growth and skills development opportunities – will contribute to embedding RESILIENCE and sustainability in our economy and communities. Done right, this has the potential to narrow the gap between low and high skills and make a contribution to economic inclusion and better EQUALITY – in particular, in relation to equality of access to jobs.

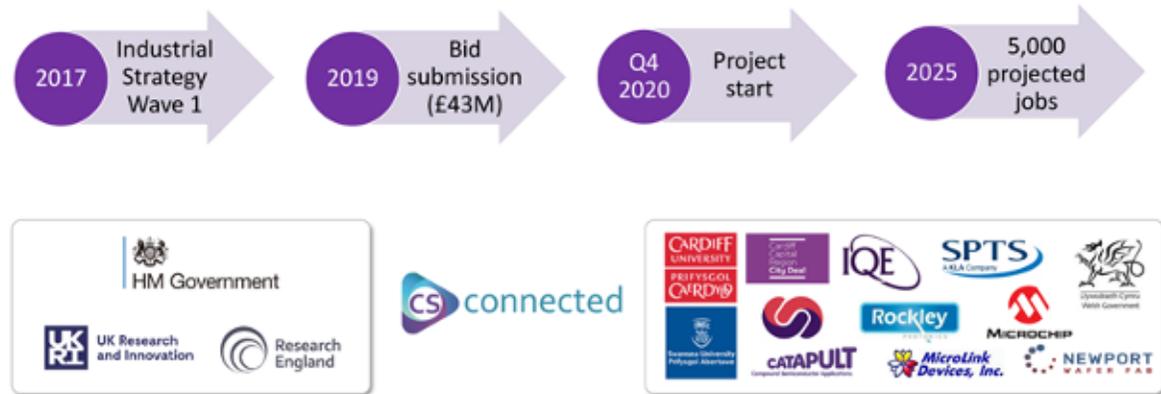
Further City Deal developments such as a Strategic Premises Fund (procurement of a fund manager is final stages) and an Innovation Investment Fund to promote cluster R&D intensity – are further key pieces of the picture.

In relation to communities, the prospects for local engagement, local jobs, multiplier effects in relation to supply networks and enhanced value chains – there are also strong prospects for community cohesion. This will be a difficult area to develop – but nonetheless critical. Community engagement in a high tech sector will not be easy or straightforward. However, there is an opportunity through the skills development piece to engage a future workforce and all points of the spectrum – ancillary work, related work in the foundational economy, entry level work, apprenticeships – right through to degree level, masters, PhDs and post-docs.

CSconnected (SIPF) is a major project within the Compound Semiconductor Cluster (CSC) in the Cardiff Capital Region and forms part of the regions strategic focus on compound semiconductors. CCR is part of a wider consortium – WG, SPTS, IQE, CSC, CSA Catapult, Newport Wafer Fab and Swansea and Cardiff Universities that has secured a total of £44M via the UKRI Strength in Places Fund Programme - £25M in the form of a direct grant from UKRI.

UKRI: Strength in Places

“The Strength in Places Fund (SIPF) will bring together research organisations, business and local leadership to drive significant economic impact, job creation and regional growth”



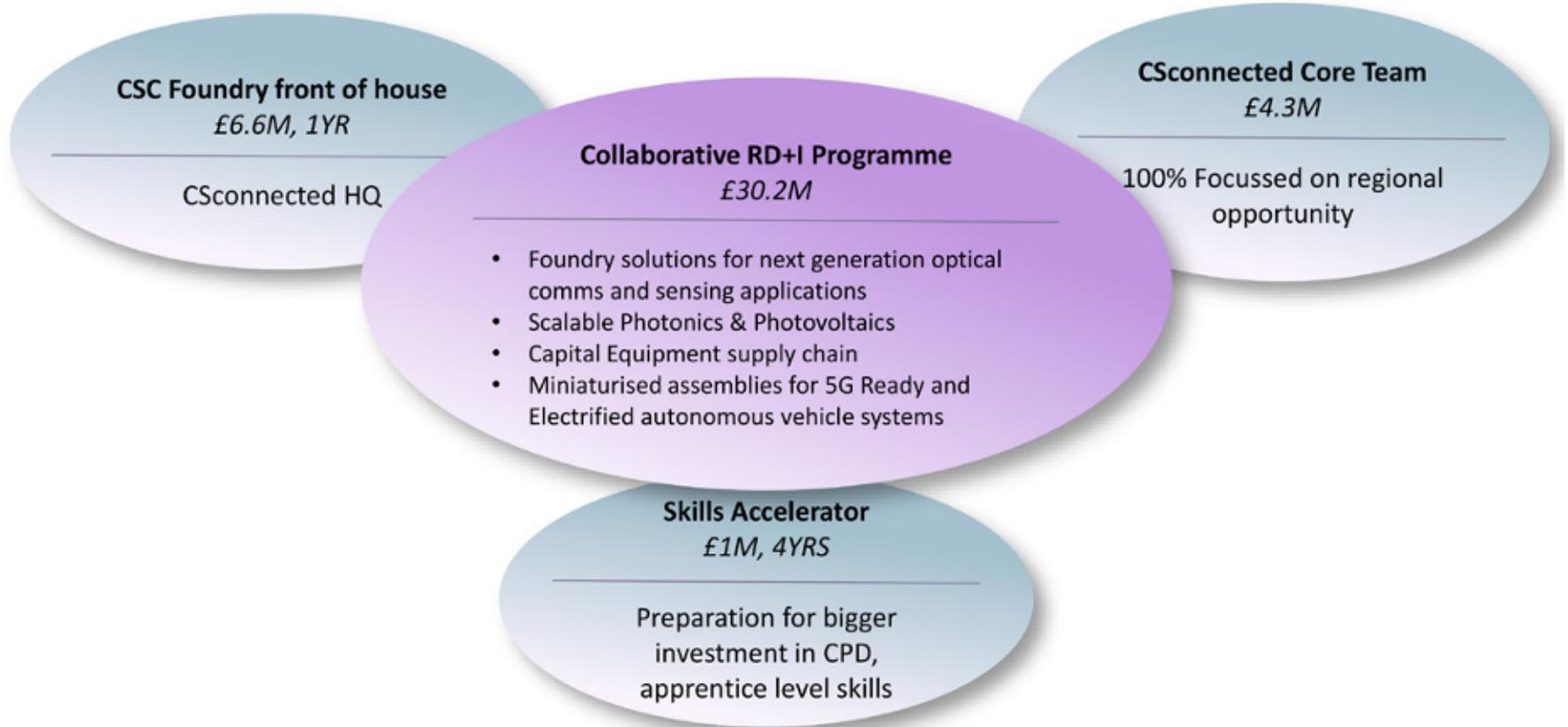
The CSconnected project is based around integrating research excellence from the region's universities with the region's unique supply chains in advanced semiconductor manufacturing.

Compound semiconductors are critical components across a wide range of new technologies, and the primary aim of the CSconnected project is to develop a competitive advantage in key enabling technologies, which will allow the UK to increase trade globally in critical sectors such as communications, 5G, autonomous and electric vehicles, and medical devices.

CSconnected will also provide further downstream supply chain growth, start-up and spinout activity, and a general upskilling of the Welsh manufacturing base.

Project Strands

The project is comprised of 4 interventions of activity and investment:





Collaborative R&D

The proposed R&D and Innovation packages are embedded within four related CRD (Collaborative R+D) projects which were carefully selected to address priority supply chain opportunities exploiting the expertise of the university R&D:

- Next generation optical communication
- Large scale compound semiconductor manufacturing
- Next generation compound semiconductor manufacturing tools
- Advanced process for 5G and miniaturised electric vehicle motor drives

Collaborative Research & Development Packages

| | | | |
|--|---|--|---|
| <p>3.1: Next generation optical comms and sensing</p> | <p>3.2: Large Scale GaAs-based wafer manufacturing</p> | <p>3.3: Novel and efficient CS Wafer Fabrication Tools</p> | <p>3.4: Advanced processes for 5G and EAV systems</p> |
| <p>Package includes high capacity data-centres and LIDAR sensing for autonomous vehicles.</p> | <p>Development scalable compound semiconductor solutions for photonic, wireless and flexible photovoltaic applications.</p> | <p>This activity will address the development of next generation processing equipment and associated processes required to scale up CS wafer and device fabrication.</p> | <p>Demonstration of an advanced volume assembly capability for high value CS based electronic modules for 5G components and miniaturised electric vehicle motor drives.</p> |
|  |  |  |  |
| <p>NWF, Cardiff Uni, Swansea Uni, CSC, IQE, SPTS, CSA Catapult, Microsemi, Rockley Photonics</p> | <p>IQE, NWF, Microsemi, Swansea, Microlink devices</p> | <p>SPTS, Cardiff Uni, CSC, IQE, NWF, CSA Catapult.</p> | <p>MicroChip, CSA Catapult, Cardiff Uni, Swansea Uni, SPTS, NWF, IQE, CSC</p> |



Skills Programme

The Skills Programme component is focussed upon wider and deeper CDP curriculum and initial development and testing of Degree Apprenticeships and potentially, Shared Apprenticeships.

This is consistent of the findings of the updated CSconnected skills survey and the input of the Regional Skills Partnerships, which will be a key collaborator in the delivery of this programme.

This also has the potential to link with previously stated ambitions for a Skills Academy on site at Imperial Park.



CScconnected Ltd

This element of the programme is aimed at establishing CScconnected as 'trade body' for the Cluster.

This will provide a key governance mechanism and focus on outreach delivery, events and thought leadership as well as provision of business support to cluster companies and partners.

This will mobilise global opportunities set out in the WG's International Strategy particularly concerning leveraging in of FDI and inward investment opportunities. CScconnected will work on a membership model basis and aims to become a self-sustaining entity post cessation of SIPP funds.



CScconnected HQ – Front of House at the Newport Foundry

The investment contribution required of CCR City Deal is in respect of the CSC Foundry 'front of house' works, which will form the base and headquarters for CScconnected, and is a cap-ex requirement of £3.3m. This amounts to a 50% contribution towards the full cost of conversion; marketing suite instalment, office space and the 'inward investment front door' within the Foundry.

The CScconnected HQ project will comprise the procurement, design, and construction and fit out of floor space at the Compound Semiconductor Cluster Foundry building in Newport. This will provide CScconnected with branded office facilities dedicated to development of the regional agenda around: FDI reception, CPD, SME incubation, dissemination, marketing and outreach and a thriving visitor centre. The project will act as a seed for further development of ambitions for a CS technology and business park at Imperial Park and facilitation of a recognized and expanding Cluster that is embedded, valued and visible in its community. It is hoped that this will result in a persistent collective spirit of co-operation and exploit future global opportunities in high productivity manufacturing.



Anticipated Benefits

There are significant benefits projected as associated with the Programme – not least those that recognise the commitment to high value manufacturing that exists within CCR, leadership on a key enabling industry of the future and the opportunity that exists to build sovereign technological capability in the region.

In terms of one of the most significant opportunities – high-value employment – the SIPF bid sets out the potential for:

- 1,161 new direct high value jobs to supplement the existing 1,483 in the cluster
- significant new employment (~595 jobs) in other parts of the Welsh economy;
- additional GVA of £140m pa by >2025
- increasing RD+I spend in the region by £55M
- a strong return on public investment of x30 over 5yrs

Skilled Workforce Requirements

CS Community forecast to reach 5,000 high value roles over the next five years

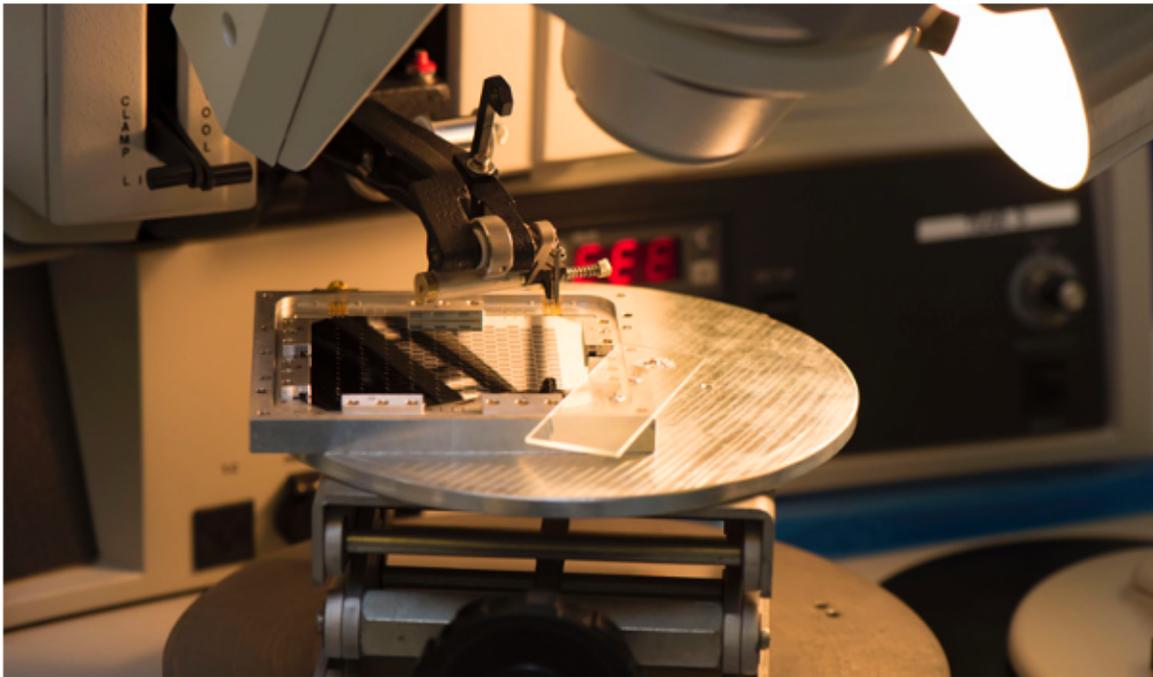
| Support | Engineering | Innovation | Manufacturing | Partners |
|--|---|---|--|--|
| <ul style="list-style-type: none"> • Supply Chain • Logistics • IT Technicians • Administration • Finance • HR & LD • Sales/Negotiation • Customer Service | <ul style="list-style-type: none"> • Process • Equipment • Mechanical • Electrical/Electronic • Facilities • Environmental • Health & Safety • Quality • Electronic & Assembly/Test • Manufacturing & Service | <ul style="list-style-type: none"> • Chemistry / Physics • Compound Silicon • Photonics • Project Managers • Research & Development • Software / Engineering - Developers | <ul style="list-style-type: none"> • Operators • Technicians <ul style="list-style-type: none"> • Process • Equipment • Facilities • Fabrication Equipment • Device/Test • Advanced Manufacturing • IT Programmers |  |

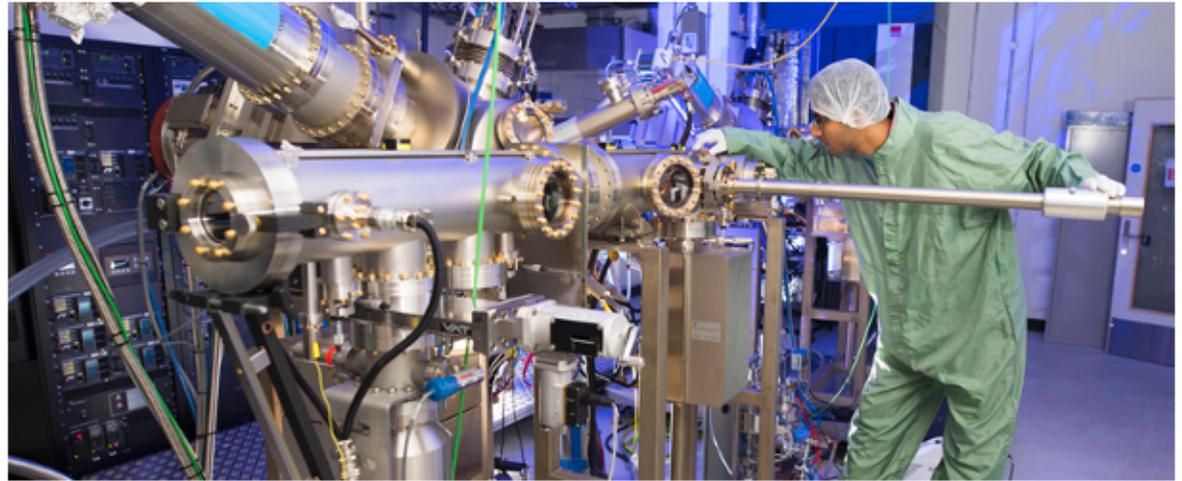
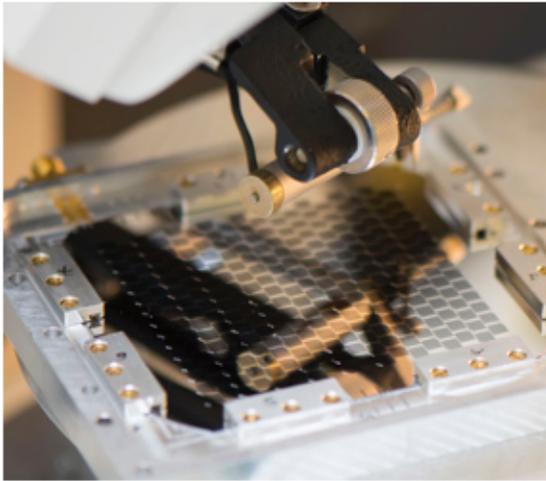
Wider Economic Impact

The key messages from the independent economic review undertaken to support the SIPP submission state:

1. The combined targeted GVA contribution of the Cluster over the life of the investment is independently assessed as being in the order of **£380m per annum, representing a £140m per annum GVA uplift** (c£700m over the five year period).
2. This represents **2518 direct and indirect jobs** enabled by the programme over the period. Salary levels are typically upward of £40-55k and so there is a significant multiplier when compared to average salaries in the region which currently sit at around £26k.
3. **CCR is uniquely placed to develop sovereign technological capability and embed it here in the CCR.** This capacity is described as a key part of the solution to other aspects of manufacturing that projections show, could be susceptible to decline
4. This is highly desirable because **it can grow and embed resilience in a post-Brexit environment with the potential to transform the fortunes of the wider region,** reducing dependency and reinforcing a sense of contributing to UK Plc whilst growing our international reach and presence.
5. The markets this sector trades with are almost exclusively beyond the EU and with the likelihood of deepening trade links with the US and Far East, spells **potential for greater inward investment and unlocking new and wider investment potential.**

6. Beyond core cluster anchors – **the deeper benefits are for the myriad SMEs and smaller supply chain companies in the region** as we do more to retain and embed the sector spend and supply chains within CCR – this is helping to show distributed growth – all areas seeing benefit and contributing to our polycentrism.
7. Compound semiconductors are a core enabling technology and is a priority sector for CCR. However beyond a single priority **it is central to optimising and heightening the relevance of other named CCR priority sectors - cyber, medtech, LEV/EV and 5G/ Communications.**





“This is an outstanding achievement against the backdrop of significant economic challenge – it is a symbol of hope in the opportunity that lies ahead. The CSconnected bid was one of 23 to be selected in the initial phase in March 2019. Following seed corn investment by Research England and Innovate UK, we submitted a business plan and now know we are one of seven successful bids across the UK.

It is a real testament to the Regional Cabinet for backing the industrial cluster approach, which is recognition of both key business sectors and the importance of place.

There will always be headwinds and cross currents in any commercial investment – we’ve had some and can expect more given the times we are in. But the Regional Cabinet has backed this, stood firm and not deviated. This sense of purpose and perseverance when it would be easy to be all things to all people is to be commended.”

Kellie Beirne, Director of Cardiff Capital Region City Deal



“We are building a world first here – a global mega cluster in the CS sector. This is an industry of the future and is significant in supporting growth in telecoms, 5G, communications, future energy systems, future automotive and med-tech.

We are also building sovereign technological capability here in our midst. In the wake of Covid-19 we have been discussing the importance of localised supply chains. This will see us re-localise this significant high value supply chain and keep the benefits in the region, Wales and the UK.

And crucially, this is significant for the whole of Cardiff Capital Region. While there may be a focus on Cardiff, Newport and Swansea as the centres of the cluster and home to the universities, the supply chains, high skilled workers and PhDs come from right across the region.”

Cllr Anthony Hunt, Chair of the Cardiff Capital Region
Regional Cabinet



“I am immensely proud that Newport is home to the next generation compound semiconductor cluster of cutting-edge technology companies who are leading the way in this important field.

I welcome this significant investment as a ringing endorsement of their innovative work. In the past, Newport’s economy was built on the industrial revolution, so it is fitting that its present and future is being forged by a technological revolution as we continue to develop the city as a digital hub.”

Councillor Jane Mudd, Leader of Newport City Council



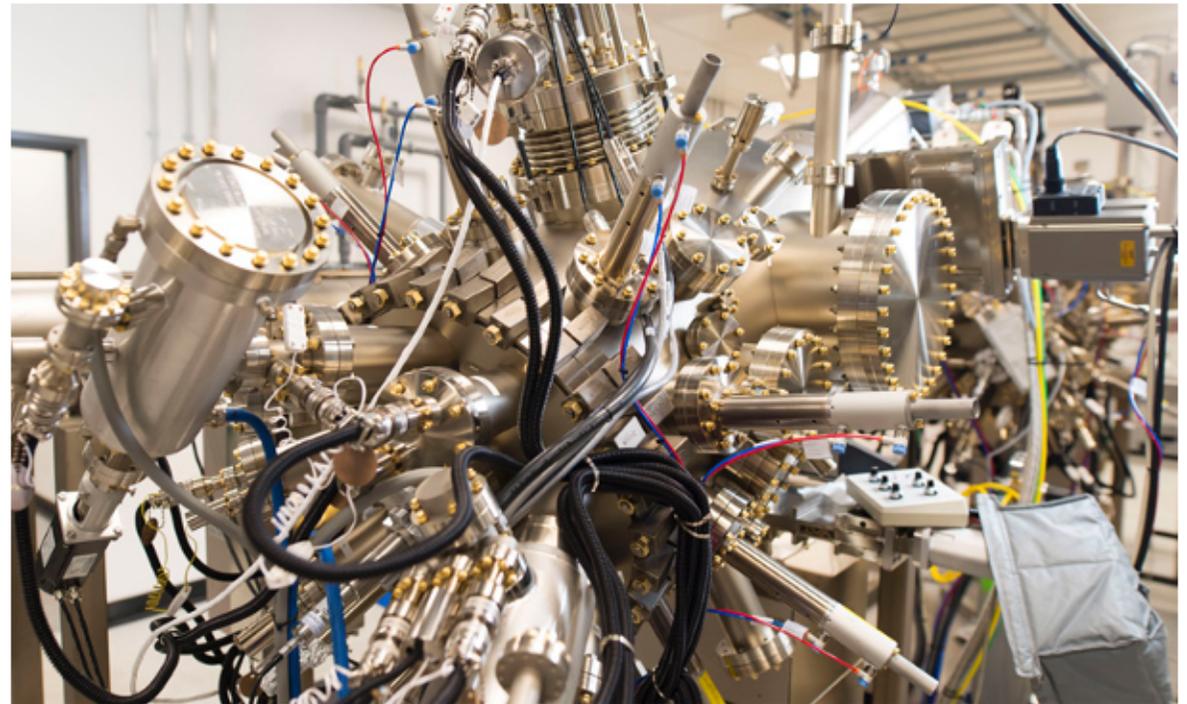
The Catapult Innovation Centre is now in full operation following a £8.1M remodelling of the accommodation within the Foundry.

The Catapult's Innovation Centre, at the heart of the compound semiconductor cluster in south Wales, will be a national asset, hosting critical capital and tools giving UK companies access to:

- a design studio where they can work alongside experts to create new products using compound semiconductor technologies
- the latest simulation and modelling tools to explore concepts for new technologies
- dedicated laboratories with engineering expertise and specialist equipment for packaging, **power electronics**, **radio frequency/microwave** and **photonics** to allow companies to demonstrate market-readiness of new products.

The strategy of the Catapult is to drive economic growth by helping UK companies to accelerate the use of compound semiconductors in their products. They will achieve this by:

- developing an innovation centre that offers capabilities and laboratory facilities required by industry to accelerate the development of new products.
- developing, offering and collaborating on evaluation modules for companies to rapidly explore new compound semiconductor technologies, enabling them to enhance their product range and target new markets.
- stimulating demand across the UK supply chain through challenge-led programmes, which will help a number of prioritised industry sectors apply compound semiconductor technologies in their roadmaps out to 2025 and beyond.



The CCR Regional Cabinet are planning further complementary investments to meet the aspirations of the 2021-26 Business Plan. The opportunities have been identified to deliver the social and economic potential of the Cardiff Capital Region.

Those opportunities align with the vision for the CS Cluster in the region and comprise:

Cluster Development

The CSconnected ecosystem has been a major catalyst of relationship building within the region and has successfully acted as a strong brand, however more work needs to be done to cement the CSconnected ecosystem to allow the cluster to grow more rapidly and sustainably to growth meet expectations. Growth needs to be more strategically managed with a strengthening of the value chain and relationships between companies. Continued work on supply chain development, supplier effects and growing the network of smaller companies will be key to this.

The nature of the Welsh business culture, especially close ties with communities have helped to aid a culture within the cluster that possesses the required agility and flexibility to react effectively to ever changing circumstances, opportunities and threats within the global economic environment and we will need to build on this.

Future areas for innovative products and solutions include:

- Semiconductors for healthcare
- Photonics and Sensor Technologies
- Power Electronics
- Next generation Semiconductors and Dielectrics
- Functional Coatings

Skills

To enable the CS Cluster to flourish in South Wales and capitalise on all opportunities presented we need to ensure that there is access to appropriate talent and skills. The area of skills and talent development and retention is recognised as one that will require particular attention if the potential of the cluster is to be fulfilled. If these issues aren't addressed, the growth of the cluster is likely to lead to acute skills shortage. Key areas that the cluster will need to address in the future regarding the skills agenda are:

- Nurturing a pipeline of talent suitable for the compound semiconductor sector
- Raise awareness in the primary and secondary education sector of the opportunities available in the compound semiconductor industry and more generally in new electronics industries
- Recruitment of new employees with experience and improved training to those already employed
- Greater take up of STEM related courses at schools and colleges
- Greater uptake of females in STEM subjects
- Develop more outreach, including educating parents of school pupils of the availability of well-paid employment opportunities
- Greater engagement with further and higher education sectors in South Wales to ensure the suitability of vocational and academic education. A significant number of the targeted new jobs in the cluster will require technical and vocational skills.

A recent skills survey of CSconnected stakeholders concluded that:

- There is a recognition that although the region is blessed with a skilled labour market, there are very few oven ready resources and a significant amount of training reskilling would be required
- There is concern over the level of recruitment currently in the sector and the number of skilled resources approaching retirement age
- There is a need to take a more strategic approach across the cluster, in order to create a 10-12 year pipeline of talent to address both skills shortages and skills gaps
- There is a need to offer a whole range of more flexible and modular based training courses in addition to traditional apprenticeships

The proposed Skills Academy for which a business case will be developed by the consortium through the SIPF programme will support cohorts of learners. It is anticipated that due to the nature of the learning, and in order to ensure a steady flow of qualified workers to industry, the courses will have a staggered intake, with students arriving throughout the year. In order to ensure that learners from across the region can take advantage, the site will be identified in the Regional Transport strategy to ensure that the transport solutions are joined up and allow for sustainable movement of HE/FE staff, learners and workers.



Insights and intelligence

CCRCO recently commissioned Yole Developments to analyse global technology trends and its impacts on the semiconductor industry. Yole, established in 1998 and headquartered in France, has emerged in recent years as the primary industry analyst covering markets across and beyond the compound semiconductor sector.

In conjunction with the CCRD, YOLE has engaged with the South East Wales cluster to provide market analysis and consultancy on the key market trends impacting the sector.

On 22nd November 2019, YOLE made an initial presentation to around 25 key stakeholders.

The presentation went into technical detail on a number of key market sectors of relevance to the cluster partners. Cluster partners comprised:

- Industry partners (looking for confirmation and direction for near-term high-value/volume markets)
- Academic partners (looking for areas of interest for research & development for longer-term opportunities)
- Government agencies (looking for economic data to show messaging on potential impact on regional economic growth opportunities)

3 "technology themes" of common interest emerged from the discussions:

- Connectivity / IoT
- Electric vehicles
- Healthcare technology

Further discussion with Yole will centre on:

1. An evaluation of the value of each of the technology themes at each stage in the supply chain (from OEM to materials) across each of the technology platforms (Is Photonics, PV, Power/RF and equipment). Discussion with Yole to prioritise themes.
2. A further piece of work would be case studies, including geographical expertise - an example being of how Taiwan had morphed from being associated with low-cost plastic/toy products to the world leading silicon semiconductor region (specific example being TSMC). To be discussed whether this fits with Yole's scope.

Whilst the CS Foundry Project is well underway and 87% complete over the 3 years of its life, it is but one strand of a wider emergent picture around CSconnected – or the Cluster. CSC Foundry has been an important catalytic project. CSconnected is a fundamental, long-term construct that is fundamental because it binds together partners, resources and operating models into a fit for future movement.

Currently, it is embryonic, but signals such as the SIPF success – demonstrate significant future potential. Therefore key conclusions at this stage and looking ahead are:

| | |
|--|--|
| <p>1. Foundations have been established through the catalytic CCR investment in the Newport mega-Foundry.</p> | <p>2. This complements a legacy of wider investments and resources brought by partners and stakeholders to date.</p> |
| <p>3. Focus must now be on the next stage of growth for the Cluster through the SIPF supported CSconnected programme.</p> | <p>4. The scope to enhance and accelerate CCR's wider strategy for Clusters and the work at the interfaces of Cyber, Med-tech, Data/AI and digital is clear to see.</p> |
| <p>5. This will bring an emphasis on deep-supply chain engagement and development, skills and supporting the expansion plans of key cluster members.</p> | <p>6. The potential for alignment with wider CCR initiatives is strong – Innovation Investment Fund, Premises Fund and Skills and Talent programmes.</p> |
| <p>7. The SIPF ambitions are high. The current and continuing economic context however is not favourable. Whilst confidence for the sector remains high, developing data and insights and understanding global trends and impacts to a closer degree will be key.</p> | <p>8. The core goal must remain to develop and embed sovereign technological capability in order to serve the interests of moves to a 2.4% of national spend target on R&D and place-ambitions through the R&D Roadmap and Place Strategy activity.</p> |

Appendix 1



Summary of CSconnected activities – 2020

The interim activities feed directly into the key objectives of the cluster Strength in Places (SIPF) application. A successful SIPF outcome is expected to kick in from June 2020 with an initial project duration of 55 months.

The initial interim project will lay the groundwork for the formal establishment of CSconnected Ltd and the skills program specified as part of the SIPF application.

Specific activities during the interim period included:

- Formalisation of CSconnected
- Delivery of events/workshops (incorporating Colnnovate as delivery platform)
- Definition of membership model
- Build on development of cluster story board and standard presentation materials
- Develop marketing collateral (presentations/website/exhibition booths)
- Develop and start delivery of international marketing plan
- Continue work with CCR RSP for development of skills group
- Establish groundwork for wider & deeper CPD curriculum
- Establish groundwork for CS Degree Apprenticeship program
- Establish groundwork for inclusion agenda in education/skills and recruitment

Development of Coinnovate Activities with CSconnected

As part of the process of promoting CS activities whilst laying the foundations for industry engagement through innovation programmes, it is proposed to bring the Colnnovate and ColnnovateCS activities under the CSconnected brand.

Both Colnnovate and ColnnovateCS undertake industry led workshops and plans are in place to

hold Colnnovate conference in Cardiff in March 2020 and ColnnovateCS in Tuscon, AZ., in May 2020. The alignment of Colnnovate with CSconnected will provide a key platform for industry based workshops, webinars and conference events aimed at supporting the key aims of the SIP programme whilst raising the profile of the cluster.

Revenue Streams

Priority will be given to establishing a membership model for CSconnected which will include revenue streams geared towards CSconnected becoming a self-sustaining business model during the period of the SIPF project.

- Revenue streams will be derived from:
- Membership fees
- Hosted events
- Conferences
- Presence at international trade-shows
- Industrial reports
- FDI/Start-up introductions
- Skills/training events

Overview of Activities

Overall, the key aims of the interim project have been completed or are advanced stages of completion despite a number of activities being impacted by a variety of external events, namely:

- **Funding arrangements:** The proposal was prepared on the basis that, on approval, funding would be available in advance to provide working capital for the interim project. This would facilitate the acquisition of services such as website development, hosting, business/accountancy/legal/IP advice. In practice, funding was in the form of a grant where expenses could only be claimed retrospectively. The CCRD grant commenced with effect from 06 Jan 2020. The WG grant was formally agreed in July 2020. Whilst the overall objectives remained

the same, the order and timing of activities was impacted and the proposal “recut” to meet the requirements of CCRD and WG grant awards.

- **COVID-19:** The proposal was based on activities around events scheduled to be held during 2020. Many events were impacted by COVID-19 although in most cases, alternative arrangements were made for online versions of the events. This provided the opportunity for the activities outlined in the proposal to go ahead albeit with different timescales and in a different format.
- **SIPF outcome:** In April 2020, informal notice was given that the CSconnected SIPF bid was successful, but any announcement was embargoed. This informal notice allowed a focus on preparation for the commencement of the 55 month programme expected to start from 01 June 2020. In the event, a formal press announcement was delayed until 26 June 2020 and a formal start date remains to be agreed, with an anticipated start date of 01 October 2020.

Additional Activities

The following activities were not included within the interim proposal but have been completed:

- Preparation for IUK Project calls (external to SIPF):
 - qFoundry (successful)
 - SOCRATES (pending)
- Establishment of Secretariat for cluster Meetings
- Registration of CSconnected Trademark
- Preparation for SIPF programme (preparation of risk register, Annex 3 finances, financial forecasts)
- Repositioning CSconnected as a Research & Technology Organisation (RTO)

Benefits

CSconnected has attracted Cluster related projects to the value of £124M with a further £56M of projects in the pipeline.

Key CSconnected opportunities comprise:

- Power Electronics for the Future of Transportation
- Renewable Energy Generation and Conversion
- Resilient High-Speed Data Communications for the 21st Century
- NEXPERIA process transfer for Gallium Nitride Power products. FYI- (CSC and NWF) have won funding from the Advanced Propulsion Centre to run a 6 month feasibility project (£350k)

CSconnected Project Portfolio – Driving and Powering the South Wales Semiconductor Industry

Synopsis: The South Wales region is the emerging centre of the UK's semiconductor manufacturing industry. The CSconnected Cluster is a self-organized collective of key semiconductor supply chain companies (such as IQE, SPTS Technologies, NWF, CSC and Microchip), RTOs and universities (Swansea University, Cardiff University and the CSA Catapult) and Government (Cardiff Capital Region City Deal and the Welsh Government) spanning the M4 corridor and extending east to the English border, west to Swansea and Neath Port Talbot, and north to Rhondda Cynon Taff. The ambition of CSconnected is to double the number of jobs in the semiconductor industry supply chain in South Wales by 2025 and create a complete R&I ecosystem to rival anything globally. Robust economic modelling indicates a resultant GVA uplift of £380M pa just in South Wales excluding any UK flow-on benefits in related supply chains such as automotive, aerospace, biomed, space technology, communications, etc. This document

summarizes current or pending initiatives of CSconnected that require additional public sector intervention to be either scaled, accelerated or indeed seek funding to move forward. The relevant market sectors are key growth areas for advanced semiconductor technology and include Power Electronics (for Transport Electrification), Renewable Energy Generation and Conversion (for Advanced Solar Cells and Control Electronics) and Resilient Data Communications (for High Speed Optoelectronic Components and 5G Distribution). All of these market opportunities are reliant upon the same material platforms and underpinning technologies – i.e. next generation compound semiconductor materials and associated manufacturing processes.

CSconnected Opportunity 1: Power Electronics for the Future of Transportation

Headline Summary: *Traditional Power Electronics based upon silicon components are being rapidly superseded by Wide Bandgap (WBG) compound semiconductors such as SiC and GaN which can operate at higher voltages and are more efficient and robust. South Wales is the only place in the UK with the scaled manufacturing capability to deliver a credible intervention. The global market to 2025 is estimated to be ~£7Bn (wafers and materials) just in automotive according to a recent APC report. A sovereign PE component capability is crucial not only to capture the market opportunities but also enable and ensure full manufacturing supply chains in multiple sectors (automotive, marine, aerospace and stationary energy conversion) robust to international predatory practices. The CSconnected Cluster partners have a range of supply chain and TRL spanning activities already in play (or in planning) and on 1 year to 10-year implementation horizons.*

Ambition & Strategy: Our ambition is to create a full manufacturing supply chain (epi to

packaged modules) for WBG Power Electronics components based upon SiC, GaN and longer term ultra-WBG systems such as Ga2O3. The Cluster has a costed 4-Phase strategy involving:

- *Phase 1* – A WBG Component Industrial Pilot Line (£4.5M request to the DER National Centres Equipment Call – result pending August 2020);
- *Phase 2* – Scaled Wafer-Level Manufacturing (£20M-£30M expansion [2021 forward] – feasibility study request to the APC August 2020; follow-on Open Call under the Automotive Transformation Fund EOI September 2020);
- *Phase 3* – Scaled Epitaxy of SiC and GaN (£30M-£40M expansion [2022 forward] of IQE to 10,000 wafers per month capacity at the Imperial Park site – feasibility study request to the APC August 2020; follow-on Open Call under the Automotive Transformation Fund EOI September 2020);
- *Phase 4* – Ultra-WBG Materials Development (£2.7M EPSRC Strategic Equipment award July 2020 [MOCVD Reactor] to Swansea University; EPSRC Centre-to-Centre bid (Bristol-Swansea) August 2020 planned; low TRL programmatic funding required 2021 forward ~£5M-7M).

GVA Impact and Jobs Growth: Recent bottom-up economic modelling by the Welsh Economy Research Unit (<http://www.csfusion.org>) of the impact of the South Wales semiconductor industry indicates the following potential opportunity just in PE components for automotive (base and upside):

GVA: ~£200M-£450M cumulative to 2025; £400M-£800M 2025 to 2030

Jobs Growth (direct and indirect just at IQE and NWF): 450-750 to 2025; 900-1500 2025 to 2030

Additional Supply Chain / R&I Activities: SPTS Technologies tool manufacturing expansion 2021-2022; Microchip WBG PE component packaging line expansion 2021-

2022; CSconnected Strength in Places Fund Wave 1 CRD Projects 3 & 4 (~£15M 2020-2024); new industrial R&I facilities (Centre for Integrative Semiconductor Materials at Swansea University completion 2022 - £29.92M UKRI; Institute of Compound Semiconductors at Cardiff University completion 2022 - £17M UKRI); Inward investment into South Wales by companies such as MaxPower, Macmic, Littelfuse, etc.

CSconnected Opportunity 2: Renewable Energy Generation and Conversion

Headline Summary: *Photovoltaic (PV) solar energy generation relies upon semiconductors to directly convert sunlight to DC electricity. This electricity is then converted to AC, stored or conditioned using power electronic semiconductors. Silicon technology dominates both of these facets of generation and conversion for stationary applications, but compound semiconductors are emerging as the go-to choice for important mobile applications where high power densities of order 2kW/kg are required (for example satellites and the unmanned aerial vehicles (UAV) predicted to play a substantial role in carrying 5G transmission – Opportunity 3). South Wales has the opportunity to be the global manufacturing centre for such solar technology, and indeed to provide the next generation of efficient and robust power electronics to optimize system efficiencies and operate in harsh environments (see Opportunity 1).*

Ambition & Strategy: Our ambition is to create a 4.5MW per annum end-to-end epi to module III-V photovoltaics manufacturing capacity at IQE and NWF supported by process development at SPTS, packaging innovation at Microchip and underpinning world-class PV research at Swansea. Our technology partner is Microlink Devices (MLD) – based currently in the USA but looking to transfer and scale their current manufacturing to South Wales. This is a relatively

short-term endeavor closely linked to the expansion of the UK satellite and UAV aerospace industries who are conveniently located in the South West. The Cluster has a 3-Phase strategy to exploit this immediate opportunity:

- *Phase 1 (years 1-2) – Pilot scale transfer of the MLD process on a 6” platform with additional process and device architecture innovation and product improvement (18 month £6.8M Aerospace Technology Institute application ‘HiDASP – High Density Aerospace Solar Power’ due October 2020 – MLD, IQE, NWF, Swansea University); total investment public and private required ~£23M to establish full pilot process capability*
- *Phase 2 (years 2-3) – Development of 8” wafer process – epitaxy and wafer (2021 forward £2M Strength in Places Fund CRD Project 2 – MLD, NWF, IQE, Swansea University); total investment public and private required ~£22M to establish full epi-to-wafer 8” capability*
- *Phase 3 (years 4-5) – Full 8” scaling to ~ 4.5MW globally leading capacity per annum; total investment public and private required ~£85M*

GVA Impact and Jobs Growth: The 4.5MW/annum target by the end of Phase 3 is based upon MLD’s analysis of their current customer base and order book. This capacity represents a £276M revenue opportunity just in the PV components and an associated job growth of 310 at IQE, NWF and MLD. A sectoral GVA analysis has not as yet been undertaken, but direct analogy with the Power Electronics opportunity would see a regional GVA uplift of £90-£100M per annum to 2025.

Additional Supply Chain / R&I Activities: EPSRC Program Grant ‘Application Targeted Integrated Photovoltaics’ - £5.9M 2020-2025 (Swansea University, Oxford University & Imperial College London); EPSRC IKC Phase 2 ‘SPECIFIC’ – 2016-2021 (Swansea University); EPSRC Strategic Equipment ‘Oxide and Chalcogenide MOCVD Reactor’ - £2.7M 2020-2022 (Swansea

University); Welsh European Funding Office ‘FLEXIS Extension’ - £0.4M (Cardiff University, University of South Wales & Swansea University); new industrial R&I facility (Centre for Integrative Semiconductor Materials at Swansea University completion 2022 - £29.92M UKRI).

CSconnected Opportunity 3: Resilient High-Speed Data Communications for the 21st Century

Headline Summary: *It is estimated that by 2025 10x more data will have been created and stored relative to 2016. Currently, Global IT infrastructure accounts for 10% of the world’s total energy usage – combining these two figures points to an obvious and inescapable conclusion: we either need to reduce our data production or find radically new, low energy ways of transmitting and storing data if we are to decarbonize our economies. Semiconductors are the underpinning technology of all modern ‘data components’. Compound semiconductor-based opto-electronic systems underpin ultra-fast (> Gbs-1) ‘optical transmission’, and the ZBytes of hard drive storage manufactured around the globe annually also rely on state-of-the-art compound semiconductor technology. With the UK being one of Europe’s leading customer of data centre hardware, and the digital sector employing ~1.75M people (£209Bn turnover in the sector – 2017) there is both a clear market opportunity for our semiconductor manufacturing industry and a pressing need for sovereign capability to protect our nation’s digital supply chains. The CSconnected Cluster has a range of ongoing and planned data communications projects to address these imperatives. Cluster partners work with global leaders such as Seagate in Northern Island, and component supply chain companies such as Rockley Photonics have relocated to South Wales to exploit the region’s comprehensive manufacturing and R&I ecosystem. We propose an ambitious new ‘Challenge-like’ initiative to co-ordinate*

and drive growth across the entire national data communications component sector – dramatically enhancing the UK's position in a \$200Bn global market and complementing the recent £1Bn government investment in next generation digital infrastructure.

Ambition & Strategy: Our objective is to make South Wales the epicentre of the UK's high-speed data component manufacturing sector, strongly interconnected with research capabilities across the four home nations (Southampton, Sheffield, Strathclyde, Glasgow, Queens, Manchester Swansea and Cardiff Universities), and existing component supply chains (e.g. Seagate Technology, Lumentum, Rockley, ICS, CST, Microchip, PureLifi, Bay Photonics, Highlight, Huawei, etc.). The opportunity to dramatically grow the UK's manufacturing capability in this space was recently highlighted by a case study in the UK Research and Development Roadmap 'Compound Semiconductor 'Valley' South Wales is home to a growing ecosystem cluster centered around compound semiconductor technology. The new generation of world economic growth drivers, such as connected autonomous vehicles, 5G communications and the Internet of Things, rely fundamentally on this key enabling technology ..' Responding to this clear opportunity, the CSconnected partners have begun assembling a national network and strategy with the specific aims of leveraging and growing existing regional critical mass and strengthening the UK sovereign supply chain in high speed data communications. These activities are relatively early stage, although already advanced in conceptualization and partnership maturity. The Cluster partners are involved in numerous Innovate UK CRD projects and UKRI funds a considerable portfolio (EPSRC included) of programmatic interventions in the space (see below). We propose a new ISCF 'Challenge' to co-ordinate and thus grow the entire UK data communications manufacturing supply chain and R&I ecosystem – universities, RTOs, SMEs and major multi-national manufacturers such as IQE, Microchip, Seagate and SPTS

Technologies (KLA Tencor). We estimate the Challenge requires a UKRI budget of £97.5M over 5 years with a minimum industry match funding of £70M, based on average state aid compliant intervention rates. Core partners have previously indicated a co-investment of £149.9M. We firmly believe there is further leverage to be gained from upward penetration in the supply chain and a very significant opportunity to broaden the endeavor to the pan-European supply chains through Important Projects of Common European Interest (IPCEI) akin to the recently announced Battery and Microelectronics initiatives.

GVA Impact and Jobs Growth: We estimate the consortium assembled represents in excess of ~4000 direct jobs, covering activities centered in Northern Ireland (~1400 at Seagate), South Wales ~(1500 @ CSconnected) and ~1000 across the rest of the UK (eg. Lumentum, II-VI, Broadex, CST, KNT, Highlight, Huawei, PureLifi etc). Using an average GVA per job of £76.4k for the UK photonics sector (Photonics Leadership Group 2019 <https://photonicsuk.org/regional-distribution-of-photonics-productivity>), this represents a direct GVA of ~£306M per annum for this sub-sector of the Photonics industry which is worth in excess of £13.5B to the UK economy. This intervention would target tripling the growth rate of this sub-sector compared to the 4.1% average of the whole of the Photonics sector from 2025 onwards. This would result in a headcount growth to >8000 and an excess GVA contribution of £640M over the 5yr period to 2029. This does not take into account:

- indirect supply chain and household spending effects which could potentially add another £300M+ to the return on investment calculation;
- supply chain leverage in the UK network equipment manufacturing supply chain, which would be analysed as part of the challenge.

Additional Supply Chain / R&I Activities: EPSRC Manufacturing Hub in Compound Semiconductors - £10M – 2017-2022 (Cardiff University lead, Manchester, Sheffield &

UCL, 23 industrial partners); EPSRC CDT in Photonic Integration and Advanced Data Storage – 2018-2028 (Queens University and Glasgow University with 12 industry partners including Seagate, IQE, Oxford Instruments, Oclaro, CST, II-VI and KNT); EPSRC CDT in CS Manufacturing (Cardiff University lead, Manchester, Sheffield & UCL, 27 industrial partners including e.g. IQE, Rockley, Lumentum, Airbus), CSconnected Strength in Places Fund Wave 1 CRD Projects 1 & 2 (~£15M 2020-2024); new industrial R&I facilities (Centre for Integrative Semiconductor Materials at Swansea University completion 2022 - £29.92M UKRI; Institute of Compound Semiconductors at Cardiff University completion 2022 - £17M UKRI); CSconnected – Digital Signal Processing Centre (Bangor) initiative; Project OCELOT (CSconnected, Cambridge University and BT) migration to non-silicon systems combining software and hardware security through innovative material platforms.

CSconnected Opportunity 4: National Foundry for Low Loss Electronics ('LossLess')

Headline Summary: *Global societies demand for digital technologies is rapidly accelerating due to evolution of established trends such as smartphone usage, the rise of social media, and digital entertainment on demand. In addition, such trends are overlaid with new revolutionary opportunities for digital advantage such as mass-market adoption of the Internet of Things, practical applications of Artificial Intelligence and Big Data analytics, emergence of autonomous vehicle technology, Industry4.0, and more recently a step change in the connectivity demands of remote working and online retailing.*

We are now in the rapidly ascending foothills of the next age of digital infrastructure upgrade that is required to deliver societies expectations: 5G roll-out, mega-scale datacentres, upgrade of

FTTH connectivity, serious planning for SMART city demonstrations, including the SMART Grid.

Such a ubiquitous uptick in digital technologies inevitably comes with an energy penalty, and the numbers are sobering.

There will be 3.6 networked devices per global capita by 2023, up from 2.4 networked devices per capita in 2018; ie 29.3 billion networked devices by 2023, up from 18.4 billion in 2018, with internet access penetration reaching 66% of global population.

Consequently internet (IP) traffic volumes have risen massively from 100 Exabytes per month in 2017 to a forecasted >330 per month in 2022 (Cisco), having tripled over the last 5 years. Mobile networks are increasing at a more dramatic rate than fixed-line traffic. Ericsson forecast a compound annual growth rate of 42% through to 2022 (an 8x increase compared to 2016); Cisco forecast a similar rate of 46% to 2021.

This has translated to a 'digital electricity consumption' growth of 7% per year, which is outstripping global electricity demand at 3% per year, with the rate of growth of consumption by data transmission networks highest of all contributions at 10.4%. Estimates suggest that, based on a compound rate of growth of 7% per year, the production and operation of ICT systems will demand >21% of global electricity consumption by 2030.

Reversing such trends cannot be achieved by optimization of existing networking hardware solutions alone. The UK needs to harness its extensive world class semiconductor materials research base to focus on developing solutions which take a holistic approach from novel material to electronic devices and components.

Ambition & Strategy: We propose an ambitious new impact-driven initiative to enable the UK material science research community to dramatically accelerate the commercialisation of their research and innovation. The core of the intervention is the UK's first 'grey-foundry'

semiconductor facility which will bridge the gap between research proof-of-concept and the demonstration of manufacturing viability. A comprehensive applied research programme will deliver a pipeline of commercially interesting low-TRL research, complimented by an applied CRD programme designed to accelerate industry adoption:

South Wales regional investments in green:

1. Materials for Power Electronics

- *Phase 1.1a:* Development of the Ga2O3 materials system as a next generation material system for power electronics, encompassing alternative growth technologies; doping; thermal management; measurement; testing; and, preparation for scale up, supported by device scale electrical and thermal modelling across the length scales (2021–2026 £5M-10M integrated national programme focused around the South Wales Semiconductor cluster)
- *Phase 1.1b:* Materials discovery programme associated with identifying 'next but one' generation materials for power electronics, including computer learning techniques for materials selection; modelling of devices and heat management strategies; development of substrate technologies and packaging; phonon manipulation; and, metamaterials (2021–2026, EPSRC, £10M distributed national programme)
- *Phase 1.2:* Development of growth, processing, fabrication and packaging capability for the wide bandgap materials identified in Phases 1.1b, with investments demonstrating a capability for scale up distributed between CISM, ICS, NWF and CSC (2025–2032: £20M Capital + £20M operational)

2. CMOS – Ferroelectric integration

- *Phase 2.1a:* Incorporation of ferroelectric deposition into a CMOS pilot line (aligning with capabilities of Newport Wafer Fab), providing capability for academic and

industrial co-development of negative capacitance devices, sensors, actuators, piezo-resistives, and memristors. This would provide sovereign capability for low-volume applications (for example, in Defence-related industries), and a UK capability to innovate in a high impact sector. (2021–2028, UKRI, £20M Capital + £20M operational)

- *Phase 2.1b:* Materials discovery programme associated with identifying materials and device technologies for integrated CMOS scale up, including device modelling, and the evaluation of economic impact and whole life-cycle analysis for proposed materials solutions. This would include rigorous processes for technology down-selection (2021–2026, EPSRC, £10M distributed national programme)
 - *Phase 2.2:* Expansion of pilot-line capabilities to incorporate materials identified in Phase 2.1b (2025–2032, UKRI, £20M Capital + £20M operational)
- ### 3. More than Moore – Spintronics and chargeless computation
- *Phase 3.1a:* Materials discovery programme associated with the development of antiferromagnet materials and new device concepts, including computer learning techniques for materials selection; the development of electronic, optical and magnetic control; device modelling; and, new approaches to characterisation, measurement and metrology (2021–2026, EPSRC, £10M distributed national programme)
 - *Phase 3.1b:* Development of devices for spintronics and chargeless computing, including exploration of the physics of spin-charge-photon-phonon-plasmonic interactions; spin amplification; metamaterials; and, strong confinement, including the modelling of materials and devices; optimisation and manipulation of interfaces; and new device concepts and architectures (2021–2026, EPSRC, £10-20M distributed national programme)

- *Phase 3.2a:* Exploration and development of TRL 2-3 opportunities arising from materials and device developments in Phases 3.1a and 3.1b, include establishing rigorous processes for technology down-selection, and the evaluation of economic impact and whole life-cycle analysis for proposed materials solutions (2025–2032, UKRI, £15M distributed national programme)
- *Phase 3.2b:* Expansion of pilot-line capabilities to incorporate materials identified in Phase 3.2a (2033–2040, UKRI, £20M Capital + £20M operational)

Summary of Potential Priority Investments (Currently Unfunded)

- *£3M-£5M:* An Advanced Compound Semiconductor Photovoltaic Industrial Pilot Facility
 - *~£15M:* A Complete Epi-to-Wafer Wide Band Gap Power Electronics Industrial Pilot Line
 - *~£30M:* Wafer-to-Package Volume Production of Wide Band Gap Power Electronic Components
 - *~£50M:* An Epi-to-Package Wide Band Gap Power Electronic Component Manufacturing Facility
 - *>£50M:* 5MW pa (Globally Leading) Compound Semiconductor Photovoltaic Manufacturing Capability
 - *~£100M:* ISCF Challenge or KET 'Resilient High-Speed Data Communications for the 21st Century'
 - *~50-150M:* National Foundry in Low Loss Electronics
-

Web: www.cardiffcapitalregion.wales
Email: info@cardiffcapitalregion.wales

Contact Us