



Department
for Business
Innovation & Skills

**UNIVERSITY ENTERPRISE ZONES
PILOT EVALUATION**

Outline Evaluation Plan and
Baseline

Produced for BIS by SQW and
Cambridge Econometrics

PUBLISHED MARCH 2015

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Summary evaluation plan



This chapter summarises the overall plan, each of the elements and relates them to the evaluation objectives. The aim is to provide a framework for gathering monitoring data that can help assess progress, for process evaluation (to assess the effectiveness of the delivery) and impact evaluation (to assess the performance of the Pilots). The objectives of the impact evaluation are to assess:

- Has there been an increase in university-business engagement
- Has there been an increase in cooperation between universities and LEPs
- Has this led to better business performance?

There are three phases to the plan:

- Development of method, baseline and process to date in Autumn 2014
- Annual monitoring in October each year from 2015 to 2023 which produces an annual report for each UEZ
- An interim evaluation in 2017 and a full evaluation in 2023 which should be commissioned independently.

Development of method and baseline

This report presents the methodology, baseline and process. It sets out a logic chain that describes the way in which the policy is expected to have an impact. This provides the basis for a set of indicators and these are described in the report. In order to minimise the burden on universities, they will use the existing HE-BCI data alongside their own estimates relating to the UEZ activity.

In developing the approach the report considers the challenges of adopting experimental methods that could be used as part of the impact evaluation. While experimental or quasi experimental methods provide the strongest basis for impact evaluation, they can only produce statistically robust results where there are a large number of cases, identifiable

comparator groups and access to appropriate matched organisations with quantitative indicators. Cambridge Econometrics considered the potential for adopting statistical approaches (see Annex A) both for the engagement of universities and among UEZ tenants, and concluded that the qualitative nature of the impacts, the small sample size and the mix of different types of tenants within the UEZs means that an experimental approach would not be feasible.

Instead the impact evaluation will use data from the universities and tenants themselves to assess the difference that the UEZ has made. The evaluation must recognise that working with self-reported data, as will be the case here, has advantages and disadvantages relative to the use of experimental methods. The method describes how these indicators are collected and used as part of the monitoring process and for the evaluations. The Annex to the report contains the baseline values and qualitative commentary for each of the UEZs.

Monitoring

Monitoring of the Pilots will take place each year and will be carried out by the lead university. In October each year a short report will be produced under three headings:

- Progress measures (from 2015)
- HE-BCI measures (from 2015)
- Tenant survey (from first tenants).

A set of core questions that can be used by each of the UEZs as part of their own tenant survey are provided in the report alongside the other main indicators that will be monitored.

Process evaluation

This will take place in June 2017 and also June 2023 alongside the impact evaluation. This report provides **a set of questions that should be used with each of the partners**. The process evaluation will gather the responses and provide a set of findings that describe how the policy has been implemented and delivered, and identify factors that have helped or hindered its effectiveness. This report and the case studies provide an overview of some of the issues, although this is still at a very early stage.

This evaluation should be commissioned and undertaken by independent consultants in parallel with the impact evaluation.

Impact evaluation

The impact evaluation will be the main source of results for answering the three impact questions.

Has there been an increase in university-business engagement?

The limitations and issues around the robustness of a quantitative approach from such a small sample, mean that the evaluation measures for engagement must be mostly qualitative, although the HE-BCI survey provides some metrics that can be used. The main indicators of success will come from three sources:

Indicator areas	Counterfactual
The HE-BCI data on key questions, related to UEZ, with associated commentary	Evaluation will consider the change in the HE-BCI data and consider specifically the contribution of the UEZ and what would have happened without it
Information from tenants about the level/strength of engagement with the university, from the tenant survey	The tenant survey will ask specific questions about level and type of engagement, and what the tenant considers would have been the case without the UEZ.
Information from the universities themselves on their relationships with SMEs and specifically on the influence that the UEZ has had on this	Commentary from the university will reflect how relationships with SMEs has changed and the contribution that the UEZ has made to this.

Has there been an increase in cooperation between universities and LEPs?

The same limits to the robustness of a quantitative approach mean that assessing progress towards this objective will depend mainly on interpretation of qualitative information from the universities and its partners. There are two sources for information:

Indicator areas	Counterfactual
HE-BCI question about partnership arrangements with local and regional bodies	Evaluation will consider the change in the HE-BCI data and specifically the contribution of the UEZ to the change and what would have happened without it
Interviews with the university/ies and partners to understand how co-operation has changed as a result of the UEZ.	Questions to the UEZ partners to understand the contribution of the UEZ to the change and what would have happened without it

Has this led to better business performance?

The approach relies on understanding the operations of the tenants and their performance as measured in terms of the net additional employment and GVA created in the regional

economy. The mix of tenant types and the small sample makes the use of “non-treatment” comparator group difficult and unlikely to be robust.

The starting point is to collect information on the “gross” values, for turnover, employment and expenditure on R&D, for all the tenant organisations. This can be gathered through the tenant survey and used to construct an estimate for all the UEZ activity.

The second stage would be to ask each tenant a series of questions to understand “additionality”, the difference that the support has made. This would specifically cover ‘leakage’, ‘deadweight’, ‘displacement’ and ‘substitution’ effects as explained in the HM Treasury Green Book. The types of questions can be found in in BIS paper “Survey Questions for Impact Evaluations which rely on beneficiaries self-assessment: evidence and guidance”¹ 2011. A set of suggested questions for addressing deadweight is contained in Annex C.

The survey would also include ex-tenants that have moved on, tracked through the UEZ database.

For each tenant, the evaluation would record its “gross” performance (employment, turnover and R&D expenditure) and adjust this using estimates of ‘leakage’, ‘deadweight’, ‘displacement’ and ‘substitution’ effects based on their responses to questions in the tenants’ survey.

Indicator areas	Counterfactual
Tenant/business performance (turnover, employment and R&D expenditure)	Gross figures will be adjusted to take account of estimates of ‘leakage’, ‘deadweight’, ‘displacement’ and ‘substitution’ effects based on their responses to questions in the tenants’ survey
Net GVA	Net additional turnover and employment will be converted into GVA estimates using sector ratios
Number of net new innovative businesses	The gross number of innovative businesses supported through the UEZ will be adjusted to reflect the self-reported levels of additionality (what scale/timing/location would the business have taken without the UEZ)

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32112/11-979-survey-questions-for-impact-evaluations-beneficiaries-self-assessment.pdf

Actions and next steps for BIS

1. **Develop of monitoring forms and agree timescales using the indicators and questions included in the report.** This can be done as an online form.
2. **Promote the use of the tenants' survey by providing a simple online version** of the core questions with the scope for UEZs to also add their own. The UEZ will be responsible for analysing and reporting the results within the monitoring forms.
3. **Encourage the UEZs to secure tenants' commitment to participate** in future monitoring and evaluation, through their contracts.
4. **Agree process for reviewing monitoring data and how it will be used.** It will provide useful information for the evaluation, but also offers a more up to date measure of progress that can be used to assess potential roll out.
5. **Review the early issues raised in this report** in relation to potential increase in the number of UEZs
6. **BIS should ensure that the UEZ's maintain a database of tenants** that also includes contact details of those that move off-site, change names or become part of other businesses. This will provide a trail for future evaluators to assess the wider impact of the Pilots.

Introduction

The University Enterprise Zones are specific geographical areas that will increase interaction between universities and businesses. The Pilot scheme provides a £15 million capital fund between 2014 to 2017 for 4 pilot UEZs to encourage universities to strengthen their roles as strategic partners in local growth and stimulate development of incubator and/or grow on space for small businesses. This report presents the evaluation plan and baseline for the UEZs.

University Enterprise Zones

Universities and Local Enterprise Partnerships come together to create a University Enterprise Zone. The UEZ itself is a partnership between actors in a specific territory. It is accompanied by: (i) funding to build office space to house start-up businesses (incubator space); and (ii) support from UKTI to create an investment proposition.

In the context of the Witty Review of universities and growth, the purpose of the policy is to get universities more involved in economic growth. A logic model is presented in the next Chapter. The universities and LEPs have to work together in delivering this UEZ. This is meant to encourage universities to get more involved with the LEP and economic growth.

The aims of the policy are: (i) increased university-business engagement; and (ii) increased cooperation between universities and LEPs.

The precise role of Government in this context is to provide capital funding for incubator/grow-on space and provide support for the investment proposition (through UK Trade and Investment). The universities/LEPs cooperate to deliver an 'offer to business' – support measures – and raise further capital funding for incubator/grow-on space: there is a requirement that, compared to the amount of funding received from central Government, at least twice as much private investment is leveraged.

While related to Enterprise Zones (geographical areas within which incentives for businesses to start up and grow arise), University Enterprise Zones are distinct in two crucial ways:

- The universities are key partners and the focus is on innovative, high-tech businesses relating to the universities' strengths
- UEZs do not automatically have the same range of instruments (e.g. tax relief) as Enterprise Zones.

A competitive bidding process was undertaken to determine the pilot zones. Only core city LEPs were eligible to apply and only one UEZ bid was allowed per LEP. Seven of the eight core city LEPs applied and they were assessed according to a range of criteria.

The final pilot scheme consisted of four UEZs as announced by the Chancellor of the Exchequer on Thursday 3rd July 2014. These are:

- Bradford/Leeds (with University of Bradford)
- Bristol (with University of Bristol and University of West of England)
- Liverpool (with University of Liverpool and Liverpool John Moores University)
- Nottingham (with Nottingham University)

The pilot has a £15 million central Government capital budget.

Evaluation Plan

This Plan has been produced to set out the design, data and approach that will be required to evaluate the UEZ Programme. The evaluation aims to understand (i) whether the policy is delivered as planned (process evaluation); and (ii) whether the intervention has an impact (impact evaluation)

This approach is based around a logic model. The model sets out the assumptions, processes, impacts and outcomes that are anticipated and the evidence required to answer the evaluation questions.

The Plan sets out the sources that will be required and how the information should be gathered and assessed. In effect it should ‘test’ the assumptions behind the logic model. The Plan describes the approach to be adopted in both the Process and Impact evaluation assessments and in gathering the baseline data and setting up the monitoring of the UEZs.

- Chapter 2 sets out the logic model for the intervention
- Chapter 3 describes the indicators to be used, their definition and sources
- Chapter 4 provides a set of the baseline indicators that have been captured and are appended to this plan
- Chapter 5 sets out the information that is required as part of the monitoring process
- Chapter 6 describes the approach to the process evaluation and the questions that will be used
- Chapter 7 describes the approach to the impact evaluation and summarises the theory behind it drawing on the CE paper in Annex A
- Chapter 8 Summarises the evaluation plan

- Chapter 9 provides an overview of the four pilot case studies which are used to develop the approach and also provide learning from the process so far.

Logic Model

Introduction

In appraising or evaluating a publicly-funded intervention, it is good practice to develop a ‘logic model’ which explicitly articulates the context and rationale for the initiative, and describes the relationship between the inputs, activities, outputs, outcomes, and impacts.

- **Inputs** are the resources used by the intervention.
- **Activities** are those tasks undertaken by the intervention (e.g. construction of incubator space, business support).
- **Outputs** are the readily measurable results of those activities (e.g. number of businesses supported).
- **Outcomes** are the benefits attributable to the intervention for its direct beneficiaries (e.g. accelerated growth of beneficiary companies).
- **Impacts** are the wider benefits to the economy/society attributable to the intervention (e.g. enhanced growth of Gross Value Added and employment).

Such logic models are helpful in ensuring that the intervention’s objectives are clear and agreed, and in ensuring that the activities put in place are genuinely aligned with the problems/opportunities which the intervention is supposed to be addressing.

The following page sets out the logic model for the UEZs. The model is intended to be applicable to the four cases that are being supported and to other future UEZs. It is possible that further iterations may require the model to be disaggregated into separate themes (property, business engagement and collaboration for example) but our aim here is to consider the intervention as a package rather than, at this stage divide it up.

This can then be used as the basis for identifying an agreed set of SMART metrics by which the UEZs’ progress will be measured.

Explaining the Logic Model

In simple terms the UEZs have been funded in response to findings in the Witty Review that universities could play a bigger role in enhancing economic growth. This encompasses several issues. UK performance in terms of the proportion of SMEs that are “innovative” is relatively weak and many SMEs lack resources for external engagement.

The policy response has been to consider a mechanism that will enhance the role of universities in engaging with SME’s and provide better access to their research and facilities. Secondly, the initiative aims to strengthen links with other economic development partners, specifically the LEPs, but also UKTI and other local agencies.

The rationale for intervention is that without the UEZ investment the UK economy (and local economies) will miss out on opportunities to develop new, innovative SMEs and strengthen existing ones. Improving the way in which universities work with SMEs and with LEPs will result in better businesses and better business performance. The UEZs create an incentive and focus for universities and partners to work together to create this environment.

Following a successful application, the lead universities and partners are committed to undertaking a number of activities, as set out in their individual proposals. These includes the creation of some form of small business “incubator” space and a structure for a range of business and innovation support, enabled by a partnership of the universities and other local economic development agencies; also, the development of an inward investment proposition for the UEZ.

The result or outputs of these activities will be businesses locating within the UEZ, and more engagement between innovative SMEs and the universities. These businesses could be spin-outs from the university, graduates or from larger multinational companies. They could be new starts or existing businesses that would benefit from closer working with the university – or from the wider range of support that the incubator will offer. Delivering the UEZs, will increase the collaboration with the LEP and other partners, which may result in other informal or formal projects.

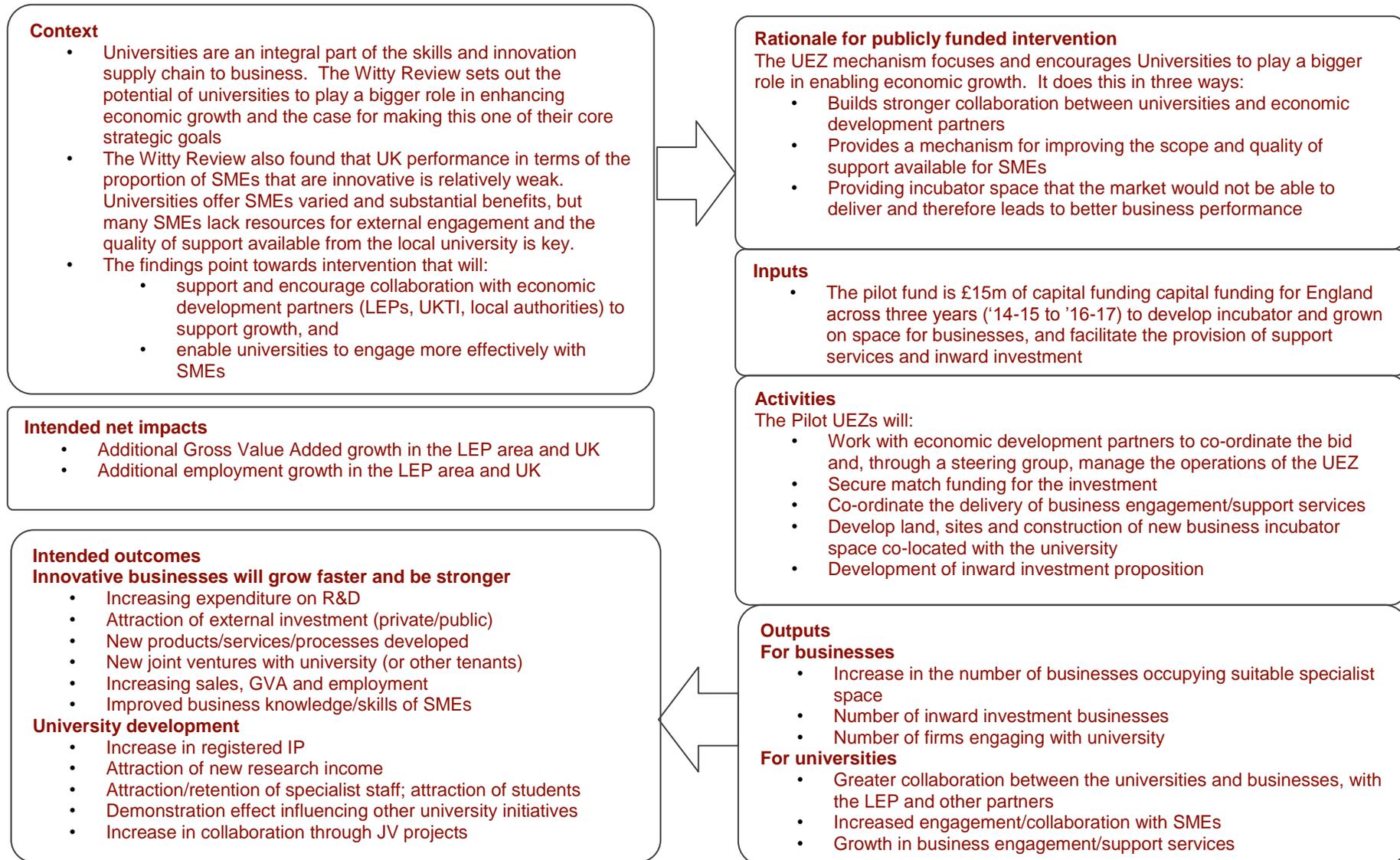
The outcomes fall into three categories, the additional business activity that is supported among innovative companies, the wider strengthening of the universities’ engagement with SMEs and the wider co-operation between the universities and their partners. These outcomes would be demonstrated by increases in expenditure on R&D, the number of joint projects, new patents, new products and processes, increased sales, GVA and employment. The university would be expected to demonstrate that the UEZ contributes to more spin-out activity, more collaborative research and contracts, increased engagement with SMEs and potentially a wider demonstration effect on other university projects. It would also be expected to create evidence of a closer relationship with LEPs, for example in terms of the alignment of objectives and strategies, an increase in formal joint projects and informal co-operation in projects and improvements in communication and information sharing.

Ultimately the UEZs should lead to longer term growth of the local and UK economy. More, stronger innovative businesses would be expected to increase economic output, and reflected in Gross Value Added and employment. This should also be supported by more engaged universities and better aligned objectives among supporting agencies.

This theory is described more succinctly in Figure 1 which shows the links between each of these stages. This model then forms the basis for developing a set of indicators that can be used to assess progress and the performance of the intervention. The two research questions described in the Introduction represent two different aspects of the model.

The process evaluation considers whether and how effectively the initiative is being implemented and how closely its effects are matching those anticipated in the Logic Model. The impact evaluation is concerned less with how it is delivered and more with the scale of the effects.

Figure 1: Logic Model



Developing the indicators

The metrics are driven by the logic model. They should be a largely quantitative representation of the story described. This section interprets the logic model and sets out a series of indicators that can be used to monitor progress and, later on, to evaluate performance and value for money.

In setting quantified metrics, it is important to focus on 'what matters'. Universities in particular already gather considerable amounts of data in relation to all areas of activity and it would be counter-productive to suggest a long list of additional indicators unless we can demonstrate that they are essential.

Using the HE-BCI survey

For the large part, the HE-BCI survey already collects university and commercial engagement measures (and an indicator of wider engagement in the regional economy) and these should be used as far as possible for consistency and to minimise the monitoring burden. However these are reported for the whole university. We suggest that as part of the baseline, monitoring, and evaluation, we seek to get this data broken down for the departments that are involved in the UEZ. We understand that at least some of the universities assemble the data by department anyway, so this would not create any additional work.

Tenant/business surveys

The second important source will be the businesses or other organisations that locate on the UEZ. Their views are critical in providing an independent view of the role that the university and UEZ has played in their performance. However, this would be new data and would require a new survey. We have proposed a simple annual survey to collect some of the more basic information, but a more detailed survey would be required as part of an interim evaluation and full evaluation to provide more robust assessments of the counterfactual.

Partner consultations

The third source would be consultations with the universities and partners. These will be used to provide qualitative information on some of the softer aspects of the initiative, specifically around changes in the relationships between the partners. The consultations will also allow the universities to provide commentary around the HE-BCI data and interpret the results in the context of the UEZ.

Metrics

The following Table sets out all the indicators to be used as part of the baseline, monitoring and evaluation.

Activities

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Value of BIS investment	£s spent by BIS on UEZ and any related development	Lead university and UEZ management	Yes	Yes	Yes	Baseline can set out investment detail and monitor spending subsequently in annual monitoring reports
Value of leveraged investment	£s spent by others on UEZ and any related development	Lead university and UEZ management	Yes	Yes	Yes	Baseline can set out investment detail and monitor spending subsequently in annual monitoring reports
Engagement with partners	List of partners engaged and description of roles	Consultation with University and Partners	Yes	Yes	Yes	Baseline can set out partnership activity to date and monitoring will update the picture annually. The evaluation will consider engagement from the perspective of all the partners

Outputs

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Sq ft of business space created	As defined as being within the UEZ and monitoring will set out changes	Lead university and UEZ management	Yes	Yes	Yes	This should include all space that has been occupied or is available for occupation

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Occupancy rate	The % of space (sq ft) occupied by tenants	Lead university and UEZ management	No	Yes	Yes	This is a simple indicator that the UEZ should be able to produce as part of its management
Total number of “innovative active” firms ² businesses on UEZ site	This should be the number of businesses and other organisations	Lead university and UEZ management	No	Yes	Yes	Monitoring of gross numbers by the university and use of business survey to assess net effect
Number of new start innovative businesses	This should be the number of new innovative businesses located in the UEZ	Lead university and UEZ management	No	Yes	Yes	Monitoring of gross numbers by the university and use of business survey to assess net effect
Number of innovative businesses from outside the LEP area	This should be the number of private businesses and other institutions that have moved from outside the LEP area	Lead university and UEZ management	No	Yes	Yes	Monitoring of gross numbers by the university and use of business survey to assess net effect
Number of spin out businesses in UEZ	This can be reported from the HE-BCI data and use definitions	Lead university and HE-BCI data interpreted	Yes	Yes	Yes	The HE-BCI figures are for the whole university and therefore need judgement to assess the ongoing role of UEZ in any changes

² Notes: Innovation Active firms are defined by BIS as – if during the 3 year period 2008 - 2010 if it engaged in any of the following

1. Introduction of a new or significantly improved product (good or service) or process
2. Engagement in innovation projects not yet complete or abandoned
3. New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
How many members of staff at your HEI (full-time equivalent) are employed in engaging with commercial partners	Definition is set out in HE-BCI – if possible use relevant departments	Lead university and HE-BCI data interpreted	Yes	Yes	Yes	These figures are for the whole university. The analysis should where possible look at the relevant depts. and then assess the ongoing role of UEZ in any changes

Outcomes

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Expenditure on R&D by UEZ occupants	Annual R&D capital and operating expenditure	Annual business survey	No	Yes	Yes	Include in short business survey – figures to include all sources of funding
Number of joint ventures (with university, partners or other UEZ businesses)	Number and description of JVs	Annual business survey	No	Yes	Yes	Although these can be counted, it is likely that quality and scale will be as important and should be captured in the evaluation
Sales by UEZ businesses	Annual turnover figure for the most recent completed year	Annual business survey	No	Yes	Yes	Include in short business survey – figures to include all sources of funding
Number of employees in these businesses	The total number of FTE positions in the occupants of the UEZ	Annual business survey	No	Yes	Yes	Include in short business survey – figures to include all sources of funding
UEZ businesses working with university/partners	The number of businesses that report working with the university, or partners	Annual business survey	No	Yes	Yes	Business survey would be needed to capture business perceptions

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
UEZ businesses collaborating with other UEZ businesses	The number of businesses that report working with other UEZ businesses	Annual business survey	No	Yes	Yes	Business survey would be needed to capture business perceptions
University reported working with UEZ businesses	The number of businesses that university reports working with	Consultations with universities	Yes	Yes	Yes	Should be included in monitoring data from Lead university
Value of contract research by HE institution from all SMEs						
Value of income from licences to SMEs						
Value of income from facilities and equipment related services to SMEs	Definition from HE-BCI reported for relevant departments	Lead university and HE-BCI data interpreted	Yes	Yes	Yes	These figures are for the whole university. The analysis should where possible look at the relevant depts. and then assess the ongoing role of UEZ in any changes
Value of consultancy contracts with SMEs						
Number of university spin out businesses (graduate and non-graduate)						
Which of the following statements best describes your partnership arrangements with local and regional bodies?	Definition from HE-BCI reported for relevant departments	Lead university and HE-BCI data interpreted	Yes	Yes	Yes	These figures are for the whole university. The analysis should where possible look at the relevant depts. and then assess the ongoing role of UEZ in any changes
Alignment of objectives and strategies	Defined by examples from interviewees	Consultations with partners	Yes	No	Yes	These are descriptive, but should identify examples of where there have been changes

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Number of formal joint projects and informal co-operation in projects						
Level of communication and information sharing						

Impacts

Indicator	Definition	Source	Baseline	Monitoring	Evaluation	Comment
Net change in the number and value of businesses in the key sectors as a result of UEZ investment	This will depend on whether the LEP has data on the sectors that are being supported	Responses from the businesses and analysis	No	No	Yes	Baseline will be current totals where these are available.
Net change in GVA as a result of UEZ investment	GVA is defined as total output minus intermediate inputs. This will require questions in the business survey to identify sales, wages, profit and goods and services	Responses from the business and analysis	No	No	Yes	The evaluation will require responses on counterfactual. <i>It will require an estimate of where sales, employment and GVA are genuinely additional to the LEP</i> these should be aggregated to produce a net impact figure
Net change in employment as a result of UEZ investment	Number of additional FTE jobs created or retained	Responses from the business and analysis	No	No	Yes	

Developing the baseline

The baseline is the set of data collected before the policy is implemented and can have an effect. It is possible in some cases that this can be used as the “counterfactual” or will contribute to the counterfactual.

In this case the baseline provides a picture of the current performance of the universities and relationship with partners and businesses. However, it would not be appropriate to assume that without the UEZ things would have remained the same. In all four pilot cases there are other initiatives and investments that will directly impact on some of the baseline measures.

The metrics for the baseline are as far as possible the same as those used for monitoring and for the evaluation. They are a combination of quantitative and qualitative measures that can be assembled prior to the intervention.

A number of the core indicators will be taken from the HE-BCI survey. This reduces the burden of gathering additional data and avoids duplicating the monitoring the universities are already doing. For the relevant HE-BCI indicators, we suggest reporting the overall results for each of the universities engaged, then where it is possible setting out the results for the departments that are most closely involved in the UEZ, and finally commenting on the effect that the UEZ has had on these indicators.

Table 2: Baseline indicators

Indicators	Baseline
Value of BIS investment	As per application
Value of leveraged investment	As per application
Current engagement with partners	Each partner and role, gather from lead university and partners involved. What is the baseline for relationship <ul style="list-style-type: none">Identify the figure for each of the universities engaged
How many members of staff at your HEI (full-time equivalent) are employed in engaging with commercial partners	<ul style="list-style-type: none"><i>For future monitoring</i> also present the figures related to the UEZCommentary on the numbers
Value of contract research by HE institution from all SMEs	<ul style="list-style-type: none">From HE-BCITotal figure for each of the universities engaged<i>For future monitoring</i> also present the figures related to the UEZ
Value of income from licences to SMEs	<ul style="list-style-type: none"><i>For future monitoring</i> also present the figures related to the UEZ
Value of income from facilities and equipment related services to SMEs	<ul style="list-style-type: none">Commentary on UEZ role in these

Indicators	Baseline
Value of consultancy contracts with SMEs	
Number of university spin out businesses (graduate and non-graduate)	
Universities working with UEZ businesses	Commentary on activities that the university is working on with UEZ businesses
From HE-BCI scores:	These scores are available for each of the universities engaged. Can this be disaggregated for the relevant departments and some commentary added?
Which of the following statements best describes your partnership arrangements with local and regional bodies?	Where possible show the scores for relevant departments?
Partnership indicator: Alignment of objectives and strategies	Comment on baseline position with evidence/examples. This will be reassessed as part of the evaluation
Partnership indicator: Number of formal joint projects and informal co-operation in projects	
Partnership indicator: Level of communication and information sharing	
GVA in LEP area	Data from LEP
Employment in LEP area	Data from LEP

This Table of indicators has been completed for each of the Pilot UEZs and the results are presented in Annex B.

Implementing monitoring

Monitoring is the ongoing collection of data that can be used to inform decisions about the initiative as it progresses. These are usually relatively simple measures that can be easily collected but provide an up to date picture of progress and highlight aspects that require action. For example, property occupancy rates are important in financial terms for the management of an incubator, but also whether it is meeting its objectives in attracting the anticipated number of businesses.

The intensity of monitoring depends on the scale and importance of initiative. It can take time to resources to gather some types of data. For business incubators the most obvious source of monitoring (and evaluation) data will be surveys of tenants. This can be costly and may be unpopular with the businesses on-site. A balance has to be struck, to gather what is necessary without causing an undue burden on the businesses and the universities.

The monitoring plan suggested here aims to do this by combining a simple annual survey of tenants in the UEZ, the core information about the university's role in supporting innovation (from the HE-BCI survey), some qualitative assessment of the UEZ role and qualitative feedback on developing relationships with partners.

This will contribute to an annual report that will monitor progress. These can also contribute to the interim and final evaluations that will take place in 2017 and 2023.

A form will be designed for each of the University leads to complete to monitor progress. This will have three sections:

- **Basic data on progress** towards the development and occupancy of the UEZ
- **Report based on HE-BCI data** and the lead universities' specific information related to the UEZ. We understand that all the lead universities are prepared to provide this along with a commentary on the values.
- **Results of a short survey of tenants** (to commence once the UEZ has occupants) to assess engagement with the university

The monitoring data is necessarily "gross" in that it does not take account of what might have happened anyway, or whether this could have displaced other activity elsewhere in the LEP area. This would be addressed in the evaluation stages.

Monitoring data

Annual monitoring

Core progress data		
Source	Indicators	Comment
Lead university	Value of <i>BIS</i> investment	Report on planned and actual expenditure
	Value of <i>leveraged</i> investment	Report on planned and actual expenditure
	Engagement with partners	List partners <i>and</i> description of roles (update from the baseline)
	Sq ft of business space created	Number of sq ft created
	Occupancy rate	% of sq ft occupied
	Number of tenants on-site	Includes all businesses, pre-start teams and other organisations on site
	Number of new start businesses	Number of tenants that are new starts
	Number of businesses from outside the LEP area	Number of businesses from outside the LEP area and number from outside UK
HE-BCI data analysis		
HE-BCI data for universities	Which of the following statements best describes your partnership arrangements with local and regional bodies?	Report the number from HE-BCI and comment on any change in relationship with partners resulting from UEZ activity
	How many members of staff at your HEI (full-time equivalent) are employed in engaging with commercial partners	
	Value of contract research by HE institution from all SMEs	
	Value of income from licences to SMEs	Report the numbers from HE-BCI <i>and</i> the number that are related to the UEZ
	Value of income from facilities and equipment related services to SMEs	Comment on figures
	Value of consultancy contracts with SMEs	
	Number of university spin out businesses (graduate and non-graduate)	

Annual tenant survey

Tenant survey data

Source	Indicator
Business survey from UEZ management	Sales by UEZ businesses
	Expenditure on R&D
	Number of employees in these businesses
	UEZ businesses working with university/partners
	UEZ businesses collaborating with other UEZ businesses
Counterfactual check – could be included in survey or left to the evaluation	
If the UEZ had not been available:	
	<ul style="list-style-type: none"> • Would you have been able to find other suitable property within the LEP area? • Would this have been better/worse? • Would you have known about facilities offered by the university and partners? • Would you have had more or less access to these, and to support from the university and partners? • Would you have undertaken the same/more or less R&D if you had not been part of the UEZ?

For the Basic Progress monitoring, the data should be readily available for the lead university to report in a simple form.

The HE-BCI data will lag by at least a year and therefore the year that the data relates to should be made clear. This part of the monitoring form should set out the institution values for the specified indicators, the year and also the estimates for the UEZ related figures for each. These are a subset of the institution values.

The tenants' survey will require more effort but has the potential to provide valuable information for the UEZ management. We suggest that there is a set of core questions that cover the main indicators here; on sales, employment R&D expenditure, engagement with the university and partners and with other UEZ tenants.

Core questions for Annual Tenant Survey

1. What is the main activity of your operations in the UEZ?
2. What has been the value of the sales generated by your activities on the UEZ over the past 12 months (or last financial year)?
3. How many people do you currently employ on-site, in the UEZ?
4. How much have you invested in R&D over the past 12 months (or last financial year)?
5. Have you received any external funding (such as grants or equity investment) over the past year? (If so describe)?
6. Are you engaged in any collaborative projects with this or other universities (if so describe)?
7. Have you made use of any university research facilities or other university research in the past 12 months (if so describe)?
8. In the past 12 months have you received university support/advice for the work that you are undertaking in the UEZ? (if so describe)?
9. Have you worked with any other tenants on the UEZ in the past 12 months (if so describe)?
10. Has being located within the UEZ impacted on your engagement with the university and use of university research and facilities? (Respond with significant impact, some impact or no impact and also describe).

Implementing Process Evaluation

After two years, BIS and the Universities should undertake a Process evaluation, combined with an interim impact evaluation. This section describes the process evaluation and the data to collect and the questions to be asked.

The aim of the Process evaluation is to understand the process of how the policy has been implemented and delivered, and identify factors that have helped or hindered its effectiveness. **This should be done in three years (2017)** by which time construction should be complete and the incubators will have had sufficient time to attract businesses, **and as part of the final evaluation in 2023.**

We have suggested a set of core questions that should be used in the Process evaluation. Where appropriate these have also been used as part of the baseline. This will allow some direct comparison between 2014 and 2017, particularly in relation to collaboration with partners.

The questions can be used with both the university lead and the LEP representatives and other partners. The aim is to provide a balanced overview for each question, noting any differences in the partners' analyses.

Baseline and process questions	Support and delivery partners		
	Universities	LEP	Others
How has the UEZ been delivered (describe progress and mechanisms for delivery)			
What have been the roles of partners			
Key local factors that <i>have or will</i>			
make a positive difference to the delivery of the UEZ			
Make a negative difference to the delivery of the UEZ			
How would you describe the level of engagement with partners engaged in economic development? (name each and describe)			
Are there aspects of the set up and process of delivering the UEZ that worked well? (describe)			
And aspects that worked less well?(describe)			
Are these likely to be barriers to the programme working successfully in other contexts?			
Has the UEZ delivered the progress expected to date, explain and use indicator targets as a base?			

	Support and delivery partners		
Baseline and process questions	Universities	LEP	Others
Has the UEZ followed the Logic Model as anticipated and how has it deviated?			
Has the timescale been appropriate?			
Have the conditions associated with the funding been realistic?			
Has the UEZ remained on budget or has it required additional resources?			
In hindsight are there elements of the UEZ that you would refine or improve?			

The Process Evaluation will involve interviews with representatives from each of the main partners on the UEZ Steering Group. It will ask each of these questions and the results will be analysed and synthesised in the Process Evaluation report to present a summary of the findings. This would represent a chapter within the overall interim and final evaluation documents.

Implementing the impact evaluation

An interim evaluation will take place in 2017 and a full evaluation in 2023. The impact evaluation is concerned with what difference the intervention has had specifically in relation to three measures:

- Has there been an increase university-business engagement?
- Has there been an increase cooperation between universities and LEPs?
- Has this led to better business performance?

And through this, has the intervention provided support for innovative businesses, resulting in better business performance and better economic performance within the LEP and UK.

The target population is the universities engaged and the businesses that are supported. The universities are those that receive the funding, although there may be wider impacts on partner universities and other research institutions. The business population that will benefit will be those that set-up or relocate within the UEZs. In some cases these will be spin-outs, or new starts, in other cases they will be part of larger businesses. They will be in the key sectors that the universities identified in their applications for funding.

The Logic model has set out the mechanism for the policy. The provision of capital funding provides the resources for a partnership, led by the university, to build incubator space for small, innovative companies and to provide access to a range of business and research support through its network of partners. It provides the basis for universities to work more closely with innovative SMEs while working together with the LEP, UKTI and BIS Local will strengthen co-operation. There is some flexibility in how this is used, but the mechanisms in each case are broadly the same.

The impact evaluation is the most complex of the evaluation plan elements. It requires measurement of performance against the objectives and assessment of the counterfactual in order to attribute impact to the initiative.

A further issue in relation to the first two objectives is that the formal measure for this in the HE-BCI survey is based on questions that allow universities to self-report a score from 1 to 5. In practice the Pilot universities have all reported scores of either 4 or 5. This leaves little scope for using this measure as guide to changes (improvements) in engagement and co-operation. This would not provide an adequate base for an empirical approach. Instead we recommend that more emphasis is placed on the qualitative assessments for these two objectives, identifying specific examples and evidence of change through interviews with the universities, UEZ managers, businesses and LEPs.

Empirical methods

The best methods for measuring impact are by using experimental or quasi experimental methods. These allow the “treated” group, or those engaged in the intervention, with those

that are not. Broadly, comparing these groups will provide evidence of impact. This is more effective where there are a larger number of cases and results are therefore more likely to be statistically robust. These methods are stronger when there are quantitative measures to work with rather than qualitative ones.

As part of the development of this plan, Cambridge Econometrics (CE) provided a review of potential empirical approaches. The analysis is presented in Annex A. It concludes that while there are statistical methods that could produce results, the key issue, is the small number of observations available for universities that are participating in the pilot: just six universities (in four UEZs). The risk is that the variation in experience among these participating universities, even after controlling for observable drivers, will lead to a large standard error for the estimate for the impact of participation, so the estimated size of impact would be imprecise. The underlying impact would have to be very large to support a finding that the estimated impact was statistically significant.

CE considered three approaches to

- (1) Did universities that participated in the pilot demonstrate a more marked improvement in outcomes than universities that did not participate?
- (2) Did universities that participated in a pilot demonstrate a more marked improvement in outcomes than universities that did not participate, controlling for observable drivers of outcomes?
- (3) Did universities that participated in a pilot demonstrate a more marked improvement in outcomes than the same universities would have done if they had not participated?

The risk is that the variation in experience among these participating universities, even after controlling for observable drivers, will lead to a large standard error for the estimate for the impact of participation, so the estimated size of impact would be imprecise. The underlying impact would then have to be that much larger to support a finding that the estimated impact was statistically significant (different from zero).

This issue arises for any statistical approach to the evaluation of impact, not just the difference-in-differences approach.

The CE conclusion is that since the quantitative method proposed is not difficult to apply, the method described in the Annex A could be tested, however, the small number of observations makes it very likely that the statistical finding will be inconclusive. On this basis we would not recommend relying on this type of an empirical approach.

Further, given the nature of the types of outcomes that are sought and the number of pilots, a more robust approach will be to use the monitoring information for each of the indicators through the business survey, and test it against views on what would have happened otherwise. This will provide a more rounded picture of where and how the UEZ has made a difference, than would be achieved using a purely statistical approach.

Approach

The impact evaluation will follow the logic model and build on the baseline and monitoring data, but must address the issues around the counterfactual.

Has there been an increase university-business engagement?

The limitations and issues around the robustness of a quantitative approach from such a small sample, mean that the evaluation measures for engagement are mostly qualitative, although the HE-BCI survey provides some metrics that can be used.

The main indicators of success will come from three sources:

- The HE-BCI data on key questions, by department, with associated commentary
- Information from tenants about the level/strength of engagement with the university, from the tenant survey
- Information from the universities themselves on their relationships with SMEs and specifically on the influence that the UEZ has had on this

Indicator	Data	Counterfactual for impact evaluation
HE-BCI data on key questions, by department, with associated commentary		
How many members of staff at your HEI (full-time equivalent) are employed in a dedicated Business and Community (third stream) function – engaging with commercial partners	Total from HE-BCI for institution Number related to UEZ	Commentary on the net number of additional FTEs engaged that can be attributed to the UEZ
Contract research (excluding any already returned in collaborative research involving public funding) total value with SMEs (£ thousands)	Total from HE-BCI for institution Amount related to UEZ	Commentary on the net additional value of contract research that can be attributed to the UEZ
Intellectual property (IP) for the institution – all income from SMEs (£ thousands)	Total from HE-BCI for institution Amount related to UEZ	
Number of university spin-outs (on UEZ only)	Number of spin outs	Commentary on how many would have happened anyway, without UEZ

Indicator	Data	Counterfactual for impact evaluation
Information from tenants survey about the level/strength of engagement with the university		
As a result of your connection with the UEZ, have you: <ul style="list-style-type: none"> Made use of the university facilities Accessed other forms of university research or expertise Collaborated with UEZ university/ies on any activities Collaborated with other businesses/tenants related to the UEZ 	Survey results based on sample	Questions in survey where respondent indicates an effect: Without the UEZ would this have happened anyway, on a smaller scale, poorer quality or at a later time
Information from the universities on their relationships with SMEs and the influence of the UEZ		
Commentary on University engagement with SMEs generally and effect of UEZ	Qualitative description of scale and type of engagement related to UEZ activity	Commentary on how much of this would have happened anyway, without UEZ, and any impact on wider engagement with SMEs

Has there been an increase cooperation between universities and LEPs?

The same limits to the robustness of a quantitative approach mean that assessing progress towards this objective will depend mainly on interpretation of qualitative information from the universities and its partners. There are two sources for information:

- HE-BCI question about partnership arrangements with local and regional bodies
- Interviews with the university/ies and partners to understand how co-operation has changed as a result of the UEZ. This is organised under three headings shown in the following table. As for all the impact evaluation elements, understanding the counterfactual is required in order to assess the difference that the UEZ has made.

Indicator	Data	Counterfactual for impact evaluation
HE-BCI data on key questions, by department, with associated commentary		
Q28: Which of the following statements best describes your partnership arrangements with local and regional bodies? (Select one only)	Report the score for Institution and commentary on role of the UEZ in it	Commentary on what would have happened without UEZ investment

Indicator	Data	Counterfactual for impact evaluation
Interviews with the universities and partners		
Use specific questions with each of the UEZ partners to assess change.		
<ul style="list-style-type: none"> Description of your partnership arrangements with local and regional bodies 	Qualitative responses from each partner	Analysis will require synthesising these results to produce an overview for each of the questions and highlighting the main areas of change.
<ul style="list-style-type: none"> Alignment of objectives and strategies 		
<ul style="list-style-type: none"> Formal joint projects and informal co-operation in projects 		
<ul style="list-style-type: none"> Communication and information sharing 		

Has the UEZ led to better performance among tenants/businesses?

Feasibility of using econometric experimental methods

This objective lends itself more readily to quantitative assessment than the others, and it may be expected that econometric experimental methods could be used to compare the performance of tenants of UEZs with comparator businesses. Details of their review are presented in Annex A.

The nature of the UEZs introduces challenges to adopting this approach to the extent that there would be a significant risk that the results would not be reliable:

Many of the tenants or beneficiaries of the UEZs will not be registered businesses that have financial and other data available from business surveys and databases. For example, there may be pre-start operations, collaborations with students and academics or research activities of large businesses.

Feasibility of using econometric experimental methods

Econometric methods that seek to assess the impact of a policy on individual firms rely on having

- a sufficient number of firms that have been subject to the policy (the ‘treated’ firms)
- a sufficient number of firms that have not been subject to the policy, with characteristics that make them suitable to provide the information required to construct the counterfactual (what would have happened to the treated firms if they had not been treated)
- for each firm, a sufficient number of observable characteristics to act as controls for other influences on performance

One of the possible variants of the ‘difference-in differences’ approach appears to be suitable: comparing the change in some measure of business performance over the period of implementation of the programme for treated and untreated firms. The question is whether such an approach is feasible in practice and likely to be able to detect the scale of impact that the programme might plausibly have.

The number of firms in each case has to be ‘sufficient’ to achieve a sufficiently low standard error for the parameter estimates to detect (as statistically significant) the scale of impact on performance that might be plausible in the context of the programme. If the performance of the firms in the sample (and the wider population) varies greatly from one firm to another in a way that cannot be well explained by observable drivers (such as age of firm, size, sector of operation), which seems likely (particularly in the context of start-ups), the residual error in any econometric analysis will be quite large, leading to a high standard error for the parameter estimates. Unless the scale of impact of the programme is particularly large (so that it is clearly different from zero, even allowing for a wide confidence interval), this kind of case calls for a large number of firms to be included. How large is ‘large’ enough cannot be determined without carrying out the analysis, but we would expect that at least 50-100 firms in each category (treated and untreated) would be needed.

The number of characteristics observed for each firm

The more influences on performance that can be controlled for, the greater the precision of the parameter estimate and hence the greater the likelihood of being able to detect an impact from the programme on performance. Unless data are gathered directly (by a survey) for identified firms, these characteristics are likely to be limited to the kind of information available from a database of company details, which typically leave out factors that are likely to have been an influence on performance. In the present context, the small firms in question are likely to be difficult to characterise with regard to their sector of activity: the definition of ‘sector’ will be broad. While there are some similarities among bio-tech firms, for example, a key driver of performance is likely to be the particular application and market that a firm is operating in. Furthermore, the firms in question may not yet be registered companies and so present in databases based on company accounts. Equally, others could be research arms of larger businesses and so not report turnover or profitability separately from those businesses.

The selection of untreated firms

In order to provide the information required to construct a reasonable counterfactual, the untreated firms need to be a reasonably close approximation in characteristics to the treated firms. If they are not, parameter estimates that seek to control for these characteristics will be very imprecise; in more general terms, a method that relies on comparing the relative performance of treated and untreated firms requires that any differences can reasonably be attributed to participation (or not) in the programme, rather than other differences.

This is likely to be the key weakness in any attempt to apply an econometric method in the assessment. The untreated firms need, say, to be at a similar stage of development to the treated firms, operate in the same field, have access to the same scale of funding, and be located in areas with similar levels of cluster benefits. In the case of firms specialising in innovation, many of the firms in the same market segment are likely to be located in places

with distinct cluster advantages (say, the golden triangle London - Oxford - Cambridge); if these were ruled out as not comparable, it would greatly reduce the pool of possible comparators. More generally, it is not clear how such firms could be identified, and whether a reasonable match could be found even if information about these characteristics were readily available.

Recommended impact approach

The approach recommended relies on understanding the operations of the tenants and their performance as measured in terms of the net additional employment and GVA created in the regional economy. It relies on self-reported information from the various tenants and uses their own assessment of “what would have happened” in the absence of the UEZ (the counterfactual). Evaluators using this method must be aware of the challenges that this brings.

The starting point is to collect information on the “gross” values, for turnover, employment and expenditure on R&D, for all the tenant organisations. This can be gathered through the tenant survey. This can be used to construct an estimate for all the UEZ activity.

The second stage is to ask each tenant a series of questions to understand the difference that the support has made, “additionality”. Additionality must be calculated with consideration for ‘leakage’, ‘deadweight’, ‘displacement’ and ‘substitution’ effects. These are explained in the HM Treasury Green Book as:

- **‘Leakage’** effects benefit those outside of the spatial area or group which the intervention is intended to benefit. For example, some of the growth of a supported businesses may be lost if it moves or supports economic activity outside the LEP area or even UK
- **‘Deadweight’** refers to outcomes which would have occurred without intervention. Would the universities have worked with the same businesses (or partners) in the same way in any case, without the UEZ intervention, or would the innovative businesses have undertaken the same research
- **‘Displacement’** and ‘substitution’ impacts are closely related. They measure the extent to which the benefits of a project are offset by reductions of output or employment elsewhere. In this case it is possible that the UEZ leads businesses and/or universities to invest in one type of research, but this is at the expense of other projects.

The survey of tenants will ask questions that help identify the difference that the UEZ has made. For example, would they have worked with the university in the same way without the UEZ, would they have found alternative accommodation, would they have made as much progress with research projects? The questions must identify the additional turnover, employment and R&D spend attributed to the UEZ.

The survey should also ask about whether the activity at the UEZ has substituted for other projects that the tenant would have undertaken. A second set of questions can also be

used to assess the wider impact. To what extent has the additional activity of the tenant affected businesses elsewhere in the region, for example by taking sales or staff from competitors? This may require further judgement based on the type of activity and their customers. For innovative projects displacement tends to be a lot lower than for other types of business support.

A set of suggested questions for use in the interim and final evaluation is set out in Annex C. These focus on deadweight which is likely to be a key part of assessing impact.

More guidance on the specific questions that can be used for this type of evaluation survey are available in BIS paper “Survey Questions for Impact Evaluations which rely on beneficiaries self-assessment: evidence and guidance”³ 2011.

For each tenant, the evaluation would record its “gross” performance (employment, turnover and R&D expenditure) and adjust this using estimates of ‘leakage’, ‘deadweight’, ‘displacement’ and ‘substitution’ effects based on the responses to questions in the tenants’ survey.

Estimating GVA

For many tenants it may be difficult to get confidential data on profits, employee costs, depreciation etc. Instead GVA can be estimated using a company’s employment or turnover. ONS produce data for gross turnover, employment and gross value add estimates for a range of sectors. The relationship between these can be used to derive values for GVA for the relevant sector.

Indicator	Data	Counterfactual for impact evaluation
Information from tenants survey about the level/strength of engagement with the university		
Additional innovative businesses attributable to the UEZ	Gross number of innovative businesses supported by the UEZ currently and those that have moved on	Would the business have operated/existed in the region without the UEZ? If so, in what form and scale What would employment have been without the UEZ?
Additional employment attributable to the UEZ activity	Gross employment supported by tenants on the UEZ or ex tenants that have moved on	Was a proportion of this growth at the expense of other activity elsewhere in the region? Did this activity displace other projects that the tenant would have undertaken without the UEZ?

³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32112/11-979-survey-questions-for-impact-evaluations-beneficiaries-self-assessment.pdf

Indicator	Data	Counterfactual for impact evaluation
Additional GVA attributable to the UEZ activity	Gross GVA supported by tenants on the UEZ or ex tenants that have moved on	<p>What would GVA have been without the UEZ?</p> <p>Was a proportion of this growth at the expense of other activity elsewhere in the region?</p> <p>Did this activity displace other projects that the tenant would have undertaken without the UEZ?</p>
Additional R&D expenditure attributable to the UEZ activity	Gross R&D expenditure made by tenants on the UEZ or ex tenants that have moved on	<p>What would R&D expenditure have been without the UEZ?</p> <p>Was a proportion of this was at the expense of other activity elsewhere in the region?</p> <p>Did this displace other projects that the tenant would have undertaken without the UEZ?</p>

Tenants that were previously on UEZs but have moved on

The UEZ may have an impact on tenants that subsequently move into other premises or set up new businesses elsewhere following preliminary research. This means that the impact of the UEZ will not be restricted to those that are on-site at the time of the evaluation.

The impact evaluation survey should include all organisations that have participated in the UEZ in some form. One way to tackle this would be to use Companies House ID/numbers and contact details in the annual business survey. It may then be possible to track the firm's progress with respect to turnover, GVA and employment through the IDBR.

This would largely depend on tenants having already been registered businesses when they moved to the UEZ and having completed the relevant business surveys for IDBR. This would cover some but not all the activities.

Instead, we recommend that UEZ managers keep a database of tenants (past and present) which can be used for the impact evaluation. It is in their interests to retain records and contacts for all tenants and where they move on to.

It is important to emphasise that including the economic impact will require the UEZ to monitor past tenants, in order to demonstrate their progress.

The impact evaluation would use a complete list of all UEZ tenants up to the date of the interim and final evaluations. They would be contacted by the evaluators and asked to participate in the impact evaluation survey. The impact evaluation survey questions will be designed to allow for the tenants that have moved on. Suggested questions are included in Annex C.

Summary objectives, indicators and counterfactual

Research question	Key indicators (summary)	Counterfactual evidence	Net impacts to report
<p>Objective 1:</p> <p>Was there a significant impact on university-business engagement?</p>	<p>From businesses:</p> <ul style="list-style-type: none"> Number of joint ventures (with university, partners or other UEZ businesses) Number of UEZ businesses working with university/partners <p>From universities:</p> <ul style="list-style-type: none"> The number of innovative businesses the university is working with in the UEZ <p>From HE-BCI data for the departments where possible</p> <ul style="list-style-type: none"> Value of SME use of facilities (UEZ) Value of collaborative contracts with SMEs (UEZ) Value of IP income from SMEs (UEZ) How many members of staff at your HEI are employed engaging with commercial partners (UEZ) 	<p>What would these indicators have been without the UEZ?</p> <p>Did this activity displace other projects that would have taken place without the UEZ?</p>	<p>How much more net engagement is there as a result of the UEZ (number of innovative SMEs engaged and reported change in quality of engagement)</p> <p>From universities and interpretation of HE-BCI data: How much more collaborative funding, IP and patents can be attributed to the UEZ</p>
<p>Objective 2:</p> <p>Did the UEZ pilot lead to sustained cooperation and engagement between the universities and LEPs</p>	<p>From universities and partners</p> <ul style="list-style-type: none"> Description of your partnership arrangements with local and regional bodies Alignment of objectives and strategies Formal joint projects and informal co-operation in projects Communication and information sharing 	<p>Without the UEZ, how much of this progress would have been made?</p>	<p>A description of the change in co-operation between partners compare the baseline and evaluation period</p> <p>Provide examples including alignment of objectives and strategies, joint projects and information sharing</p>
<p>Objective 3:</p> <p>What is the contribution to economic growth</p>	<p>From businesses</p> <ul style="list-style-type: none"> Number and type of businesses that have taken space on UEZ site Expenditure on R&D by UEZ occupants Sales by UEZ businesses Performance of businesses supported (GVA and employment) 	<p>What would these indicators have been without the UEZ?</p> <p>Did this activity displace other projects that would have taken place without the UEZ?</p>	<p>How much more R&D is being carried out</p> <p>How much additional GVA and employment has been created as a result of the UEZ</p>

Other relevant research questions

Did the funding of incubator/grow-on space successfully overcome the market failure?

As part of the interim and full evaluations the consultations with the universities, partners and businesses should include an assessment of whether there has been too little incubation space available and the extent to which the UEZ has addressed this. The response to this question in both interim and full evaluations will be qualitative feedback, but could include examples of the amount of new space that has been developed. This could include possible demonstration effects, where as a result of the UEZ, other operators develop further incubator and/or grow on space.

How do the eligibility criteria affect the process and impact?

These would be addressed as part of the process and impact evaluations. At the baseline stage, the analysis will indicate whether the Pilot cases had stronger or weaker performance than average, as measured by the HE-BCI survey. The process evaluation questions also investigate the aspects of the current environment that partners think will help or hinder the development of the UEZ. This will provide some largely qualitative evidence on the issues that will be important in considering expanding UEZs into other cities/locations. While this can be done in relation to the process, there will be no clear evidence on impact until 2017 at the earliest.

The evaluations would look back over the first few years of the UEZ to identify the aspects of development that they consider to have been important in the success or otherwise of the intervention.

Case Study Summary

The development of the evaluation framework, set out in the earlier sections of this report, was informed by case studies of the four pilot areas. Key features of these case studies, including common characteristics of the successful bids, some differences between them, learning to date and implications for the UEZ process and impact evaluations are summarised below. Baseline data is appended.

The four areas and the participating universities

The key characteristics of the four city-regions and the universities hosting the pilot UEZs are summarised in the table below.

	Economic city-region/ LEP	Headline features of the University/Universities
Bradford	<ul style="list-style-type: none"> Leeds City Region, of which Bradford is part, has three million people residents, 1.4m workers and a £55bn economy with 106,000 businesses Leeds CR has a large, multi-faceted health sector, growing digital industries and the largest concentration of manufacturing in the UK, outside London: all these sectors are themes for further development in the Strategic Economic Plan Leeds' productivity ranks in the middle of England's city regions (90% of the average for England), but knowledge intensity of businesses is below average, and LCR ranks last for knowledge intensity of workers Business start-up rates, high growth firms, and levels of innovation activity are also all below average 	<ul style="list-style-type: none"> In early stages of implementing strategy to reposition as a technological university, focusing on professional vocational teaching and research Plan for growth is backed by healthy balance sheet; already committed to re-development programme Advanced health care had already been identified as one of three thematic areas (alongside innovative engineering and people in society) In 2012/13, collaborative research with public funding valued at £2.7m; 53 active research projects with SMEs, valued at £312k; 14 graduate start-ups
Bristol	<ul style="list-style-type: none"> The West of England has a strong tradition of innovation in sectors including engineering, aerospace, composites, robotics and green technology, with Rolls Royce, BAE Systems and Airbus are located in the area. Its four universities host 21 world-leading academic departments that attract 73,295 students and £227m of External Research Funds The city region is ranked as the 9th most productive LEP (measured by GVA per 	<ul style="list-style-type: none"> Bristol is a research-intensive university, ranked 74th on the Times HE World University ranking, and with a vision to be "an international powerhouse of learning, discovery and enterprise, whose excellence is acknowledged locally, nationally and globally" The University of the West of England (UWE Bristol) has a vision focused on advancing knowledge, inspiring people and transforming futures

	<p>hour worked) and the most productive of all the 8 Core City LEPs. It has a high percentage of employees in the knowledge economy – 24% compared to 19% for England.</p> <ul style="list-style-type: none"> • But its productivity ranking has fallen in the last decade; the increase from 2004 to 2011 ranked it only 16th amongst 39 LEPs • Innovation assets include the established collaborations between HEIs, evident in the Bristol and Bath Science Park, the Bristol Robotics Laboratory and the SETSquared partnership whose business incubation activities are rated world-class. 	<ul style="list-style-type: none"> • In 2012/13, collaborative research with public funding valued at £5.5m (Bristol), £4.4m UWE); 18 and 4 active research projects with SMEs, value £260k and £10k, respectively; 14 active spin-offs with some HEI involvement (Bristol); 11 staff, 29 graduate start-ups (UWE)
Liverpool	<ul style="list-style-type: none"> • Liverpool CR has a population of 1.5m, 574,000 jobs and 37,000 businesses; the local economy is valued at £23.1bn; sectoral strengths include advanced manufacture, life sciences and low carbon industries • Liverpool Knowledge Quarter in the centre of the city accommodates one of the major concentrations of research and innovation in the UK, with four universities, many well-regarded research centres and a strong NHS presence; however, these do not form a cohesive and effective innovation eco-system • Across Liverpool CR, productivity and business density are both low relative to other CRs; there is also a low rate of business start-ups, high dependence on public sector employment and what has been described as a weak entrepreneurial culture 	<ul style="list-style-type: none"> • Liverpool University is a member of the Russell Group of leading UK research universities, ranks as one of the top 100 universities worldwide, and claims to be the original 'redbrick university' • Liverpool John Moores University (LJMU) was granted university status in 1992 and describes itself as a modern civic university; it has 3,000 staff and 25,000 students studying a wide range of courses • In 2012/13, collaborative research with public funding valued at £34.4m (Liverpool), £3.7m (LJMU); 86 and 6 active research projects with SMEs, valued at £1.77m and £200k, respectively; 12 and 5 active spin-offs with some HEI involvement; 27 graduate start-ups (LJMU)
Nottingham	<ul style="list-style-type: none"> • The city of Nottingham, together with Derby and their respective counties, form one of the largest LEPs in England (D2N2), with 2m people, almost 900,000 jobs and a GVA of £37bn • The area has a strong and growing business base, with the presence of major multi-nationals, a good record in attracting inward investment and almost 20% of the workforce in export-oriented industries • Weaknesses include below average (and declining) business density and GVA/full time employee below the average for 	<ul style="list-style-type: none"> • In 2012/13, collaborative research with public funding valued at £40.9m; 90 active research projects with SMEs, valued at £1.22m; 21 active spin-outs with some HEI involvement; 12 graduate start-ups

	<p>England</p> <ul style="list-style-type: none"> The Strategic Economic Plan emphasises the role of innovation, and the creation of an effective innovation ecosystem, maximising the activity and value of existing assets and filling emerging gaps, in order to increase private sector employment. 	
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Overview of the four pilots

Bradford

The Bradford UEZ ‘Digital Health Zone’, aims to establish Leeds City Region (LCR) as the best place in the UK to innovate and grow businesses in communications-enabled healthcare and, as the challenges facing healthcare are similar here to those in many other countries, to build global impact. The underpinning premise for the UEZ is that nationally, the demands on health services are growing faster than available public funding, and that

“Telehealth offers the potential to increase productivity while enhancing the quality of care”⁴

The University of Bradford (UoB) is the UEZ lead, working with City of Bradford Metropolitan District Council (CBC), BT, the NHS, and supported by the LCR Local Enterprise Partnership (LEP).

The Zone will offer two bespoke facilities: a Digital Exchange in the city centre, to support technology development and enterprise (1400m²), and a ‘Living Clinical Laboratory’, the Health and Wellbeing Centre (HWC), a 2,000m² facility to pilot new products and processes in healthcare. This will also include space for specialist start-ups and businesses, alongside a substantial (£5.3m) investment in scanners to help develop new clinical pathways, which was committed prior to the UEZ.

The total project cost is approximately £12m to April 2017, including an investment of c.£5.1m from the University, and cash funding and in-kind contributions from partners. Capital investment over the three-year period will account for just over £9m of the total, including £3.8m from BIS (£1m for the fit-out of the Digital Exchange, £2.8m towards the HWC), and £1.1m from CBC in the form of the premises for the Digital Exchange.

⁴ Bradford UEZ Application Form, January 2014 (submitted to Department for Business, Innovation and Skills)

The UEZ is expected to host 140 innovators from the digital and healthcare sectors, alongside 50 practitioners, carers, students and researchers delivering healthcare to the community; the associated GVA is forecast to reach £30m by 2019.

Bristol

The West of England University Enterprise Zone is a partnership between the University of the West of England and the University of Bristol. Located on the University of the West of England's Frenchay Campus, it will provide 33,000 sq ft of incubation and grow-on space, within a large former Hewlett Packard R&D and fabrication facility, now owned by UWE.

The UEZ will focus on Robotics and Autonomous Systems (RAS), Biosciences, Health Science and related sectors. It will bring together businesses, academic expertise and networks in the two universities and the wider city-region, promoting university/business interaction and providing access to advanced technical facilities and support from the two universities. It will accommodate shared laboratory facilities; lettable office/workshop space for up to 56 businesses; shared 'Start-up Studio' space; networking and meeting spaces, including a café and hot-desking. It will offer undergraduate and postgraduate placements, projects and graduate recruitment opportunities for businesses in the Zone, business support from dedicated business development managers, Bristol Business School, the LEP, UKTI and a network of regional support services.

The total cost for the project is £16.5 million of which £10 million is building costs. This will be funded through:

- BIS (£4 million) £4.0 million from the West of England LEP (ring-fenced allocation from EU SIF, £4.0 million of incubator client fees over 5 years
- £2.0m from UWE to cover the shortfall in funding for the building works
- £2.0m from UWE foregone rent
- £0.5 million of KE Business Development consultant time.

The development will promote innovation and growth by enabling business/university collaboration with Bristol Robotics Laboratory (BRL) (a partnership with the University of Bristol); biosciences research laboratories at UWE's Frenchay Campus, the Faculties of Engineering, Medical & Veterinary Sciences and Medicine & Dentistry at the University of Bristol and other technology-related facilities in the two universities.

Liverpool

The partnership between the University of Liverpool (UoL), Liverpool John Moores University (LJMU), the Liverpool City Region Local Enterprise Partnership (LCR LEP) and Liverpool City Council (LCC) aims to create a national and global presence in sensor technologies, drawing on expertise from different disciplines and with applications ranging across different sectors.

“Sensor City UEZ has a clear technology focus to develop and implement novel sensor systems that integrate sensors, firmware programming and advanced algorithms. Sensor systems and measurement technologies are integral to the science-based economy; they underpin innovation across sectors ranging from manufacturing to healthcare and capitalise on the comparative advantages of the LCR.”⁵

The UEZ will draw together expertise in sensors from 86 academic groups across 16 academic departments. The key exemplar activities in sensor systems are expected to be:

- wearable sensors, a non-invasive wireless and batteryless technology, chosen as the UK's 2,500, 000th patent, and which can be woven into garments to allow monitoring of a patient's vital signs, such as heart rate, blood oxygen level and temperature
- mini mass spectrometers, expected to have applications with potential £bn value, in security and forensics, process monitoring, environmental and biomedical sensing.

The UK sensor industry already has an estimated value of £13bn, with £6bn exports and 73,000 jobs. It also has major and growing effects involving other business sectors, with wide-ranging opportunities characterised as *‘the internet of things’*. The project is in line with TSB's focus on high value manufacturing. The North West and Liverpool City Region are already well-represented in sensors: Sensor City was identified as a priority project in the LEP's Growth and Strategic Economic Plan, under the 'Making It' theme, and was shadowed in the LCR Innovation Plan.

The UEZ will operate from and through 2,500m² of new-built floorspace, on a site in central Liverpool, close to both Universities and Liverpool Science Park. The offer to businesses will include: co-working space for small businesses and start-ups; a Technology Development Zone, with access to equipment and services; an Open Innovation Lab to help find routes to market; entrepreneurship coaching and business mentoring; access to funding, including creating specialist funds, such as proof of concept, building investor networks and drawing on £2m committed from LCC's Mayoral Investment Fund.

The £5m investment from Government will be drawn down over the three-year design and construction period to April 2017, and form part of a £14m total capital investment. Operating costs are expected to rise from £100k in 2014/15 to £750k in the first full year of operation, 2017/18; they will then run at approximately £1m per year.

Over a ten-year period, and taking into account an envisaged further investment, the Liverpool is expected to deliver 300 new businesses, over 1000 new jobs, and an economic benefit (GVA) of £157.5m.

⁵ Liverpool UEZ Application Form, January 2014 (submitted to Department for Business, Innovation and Skills)

Nottingham

The University of Nottingham's Enterprise Zone is centred on the creation of a new Technology Entrepreneurship Centre, an incubation facility for technology entrepreneurs to engage with the University's expertise in big data and digital (including satellite applications), advanced manufacturing and aerospace, and energy. UEZ tenants will be supported with a programme of intensive incubation from the Nottingham University Business School.

The overall aim behind the UEZ is to increase the University's contribution to driving local economic growth with specific targets of creating 50 new businesses by 2019, generating 350 new jobs and delivering £25m in combined turnover by 2012. Contributing to local and national growth is a key element of the university's mission.

The UEZ will be located on the Jubilee campus, where the University of Nottingham Innovation Park is already situated. UNIP hosts 38 SMEs employing over 300 people and provides a front-of-house service for 20 SMEs located elsewhere around the university. In the first instance UNIP would manage the UEZ but with a view to redesignating all enterprise activities with the UEZ brand. Incubation support will be provided by the Business School's existing student enterprise support team

The UEZ Technology Entrepreneurship Centre will be a 2,000msq incubation facility for up to 50 technology-based start-ups and early stage SMEs. The office-based accommodation will be designed to facilitate interaction between occupants.

The cost of the UEZ is £8m, comprising £2.6m BIS funding, £2.6m of UoN reserves, a £1.65m endowment from the Haydn Green Charitable Trust, £0.5m in terms of the value of the land and the UoN will also meet £0.65m of staff and building operational costs.

The UEZ will benefit from its proximity to existing nodes of high quality research including the Horizon Digital Economy Research Institute, the GRACE Technology Centre (focusing on satellite navigation and part of the Satellite Applications Catapult Centre of Excellence), the Aerospace Technology Institute, the Institute of Advanced Manufacturing (also now part of the High Value Manufacturing Catapult), the Centre for Nanotechnology and Advanced Materials, the EPSRC Centre for Innovative Manufacturing in Composites and the Energy Technologies Building. It will have access to a ready supply of postgraduates and draw on the University's substantial experience of business engagement, including one-to-one advice on start-up issues and finance, facilitation of networks, advice on accessing national programmes including GrowthAccelerator, Manufacturing Advisory Service and TSB and UKTI support; also, its role as a founding member of BioCity Nottingham, a leading bioscience incubator and home to 70 businesses.

Findings: the UEZs progress to date

In summary:

- The successful pilot bids had several common features

- a specific idea for technology-based outreach to business, that was already in gestation, and has potential economic significance beyond the local area
- an embryonic partnership, even if this had lacked focus and content to date
- a site or building that would enable the project to be carried through
- an evident commitment to active planning, problem solving and expediting delivery, based on confidence and experience with earlier initiatives
- All were in line with the aims and aspirations in their University strategies, and are seen as pilots/demonstration projects within and across their institutions
 - Liverpool and Nottingham as ‘enterprise universities’
 - Bradford as a technological and vocational university
 - Bristol on exploiting the potential synergies in technology and business engagement across the two HEIs
- All were quickly approved by their LEPs, as being in line with, and helping to deliver, local Strategic Economic Plans
 - the LEP was able to be more involved in developing the initial proposition where a single lead bid quickly emerged (eg Liverpool) than where it had to choose from several emerging bids (four in the case of Leeds)
- The role of the local authority/ies, has also varied in scale and substance
 - Bradford Council contributed one of the two properties; Nottingham is considering extending rate relief (in line with original EZ model); Liverpool is expecting to contribute through the Mayoral Fund
 - anticipated EU funding allocations (through the LEP) are particularly significant in Liverpool and Bristol
- All are now in the process of taking the concept through to implementation planning
 - detailed physical design and costings will be prepared over the coming months
 - formal governance structures will be put in place (in Liverpool the joint venture has been agreed), with managers in the course of appointment and/or management arrangements put in place
 - all recognise the issue of creating and sustaining momentum, given the lead-in time before building projects are completed: in Liverpool, temporary accommodation will be made available in the Science Park; Bristol expects to undertake a business demand study early in the process

- All have still to fully develop the wider partnerships and networking which will be important to their eventual impact, notably with respect to the LEPs and UKTI on inward investment, and, in some cases, through liaising with TSB on pilots
 - the geometry of partnership in Bradford is complicated by the anticipated involvement of different parts of the NHS.

Implications for the UEZ evaluation framework

The responses to the process we have undertaken in designing the evaluation framework and baseline has also been positive across all the institutions. All the Universities have been supportive of the process, and are aware that this is a requirement of the funding. Importantly, they have also been keen to be involved in the detail, recognising that the potential value of the evaluation framework in measuring progress and demonstrating their achievements. Key findings, and our interpretation of the implications for the evaluation framework, are summarised below.

- Building a fit with the HE-BCI data already collected and reported by each institution will be critical. Developing a subset for the UEZ has been agreed in principle in all cases, but issues of attribution will arise and need to be sorted as the UEZs plans are detailed and they move into delivery
 - HE-BCI is on the basis of self-reporting: although the activities are defined in some detail, interpretations are recognised as varying across institutions, and over time
 - Issues of attribution include the need to avoid double-counting where some academic staff are engaged from time to time in UEZ activities
- A business survey, probably annually, is seen as an important part of monitoring progress and an initiative that can be delivered
 - A question requiring further consideration is how the further growth of those businesses moving beyond the incubator might be captured: this will be potentially significant in assessing the overall economic impact of the initiative. It could involve follow-up at evaluation stage of network records maintained by the HEI, and/or logging through BRES records
- The UEZs each have a content specific to their theme, specific strengths and partnerships, and this content will emerge and be modified over time. These differences will need to be taken into account in assessing the attributable effects of the intervention, pointing to the need for some customisation alongside the standard indicators
 - For example, the digital health UEZ in Bradford will expect to measure outputs relating to patient care and satisfaction alongside those for research-business interaction and business activity

- Finally, in terms of overall funding, the UEZs are on a relatively small scale, and all the Universities and LEPs emphasised the need to capture the qualitative story alongside reporting on the quantitative measures more readily captured in performance indicators
 - this partly reflects timescale: most PIs will show results from this type of intervention only over several years
 - also, partners' strong emphasis on the UEZs' potential wider role and significance leads to a concern that focusing on a single set of measures may miss important wider impacts and demonstration effects – changing behaviours and opening up new opportunities within each University and in its external relationships, working with business and other organisations.

Other issues raised

Additionality – timing/scale

The interviews with each of the Pilots provided a chance to discuss issues around the additionality of the support. Each stressed how important it had been for their project to be “shovel ready” in order to meet the timescale for the application and to have partners on board. It would have been difficult to achieve this from scratch within the timeframe. Rolling out UEZs to universities and areas that are less prepared will require longer lead times.

Equally, in order to get the Pilots up and running quickly the area must already have good relationships among economic development partners. Those with strong existing relationships are able to put together better bids more quickly. Areas with weaker links may find this harder. Given that strengthening relationships is part of the rationale, it is important that we understand what the Pilots add to these partnerships. Rather than helping to widen contact, the expectation is that the Pilots will “deepen” existing partnerships. The Pilots provide the university in particular with a tangible project and these relationships will enable it to exert greater leverage within the economic development arena. From this perspective although the partnerships are already described as strong, the Pilot enables universities to play a more direct role in economic development.

Core city versus others/ support for those less developed

In discussing the current set of Pilots it is also useful to consider the potential for rolling out UEZs beyond core cities. The view of several of the Pilots was that the existing networks within the core cities around economic development had been almost essential in moving them forward quickly and that non-core cities that may not have such strong networks would take longer to develop projects.

This should not be the case, as all have been through the strategic economic planning and growth deal process over the last year. And in some cases, the density of networks is less, and the number of potential partners to consider and potentially involve, may be rather fewer. However, we would still recommend that any announcement on future UEZs is

made as early as possible. This would maximise the chances of developing “additional” projects that would provide a platform for strengthening relationships.

At this stage it would be impossible to say whether UEZs in core cities are likely to perform better than elsewhere. The roles may be different. In some areas the scope for the university to become more engaged is greater than others. However, the Pilots also stressed the importance of demand for UEZ space and in this respect the core cities are likely to have higher levels of new business and research demand.

Plans for retaining brand value of the UEZs and attracting investment

Another issue raised in these discussions was the wider plan for the UEZ brand. It was seen by at least one Pilot as being an important attractor for further investment. Hosting an UEZ is considered to have some cache that could be lost if there are too many awards or if the quality of facilities and service is not high. The UEZ brand could be an important part of the region’s inward investment proposition, but must be sufficiently distinctive to provide an advantage. The Pilots’ interest was in how they can use the brand and how BIS plans to take it forward.

Annex A: Discussion of Methodology for Quantitative Impact Assessment

Theory

We represent the process that determines a given outcome measure for university i in year t as:

$$y_{it} = f(X_{it}, D_i, \eta_i, u_{it})$$

where

y_{it}	an outcome of interest (eg income from commercial transactions with business)
X_{it}	a $1 \times K_1$ vector of observable drivers of y_{it}
D_i	a binary indicator (0 or 1) showing whether the university is (selected to be) part of a UEZ pilot
η_i	an unobservable individual effect on outcomes (for example, the extent of entrepreneurial skills and interests among academics at a university, or, if it is not measured in X_{it} , the existence of social connections between academics and businesses), which is assumed to be constant over time
u_{it}	a (scalar) residual representing the combined effect of unobservable drivers of y_{it}

In order to consider the appropriate methodology, it is helpful to consider the following questions that could be asked in an evaluation.

- (1) Did universities that participated in the pilot demonstrate a more marked improvement in outcomes than universities that did not participate?

If we focus on the difference between the mean experience across the universities in each group, this is represented by:

$$\frac{1}{n_1} \sum_{i=1}^{n_1} (y_{it} - y_{i0}) - \frac{1}{n_2} \sum_{i=1}^{n_2} (y_{it} - y_{i0})$$

Since there will be variation across individual universities in each group we want to test whether this difference in means is large enough for us to be confident that it was *systematic* (that the result would be found repeatedly for different realisations of the drivers of y_{it} and was not simply due to random variation in outcomes) This could be tested by using the estimated standard deviations for each group and constructing the conventional test statistic for a difference in sample means, or, equivalently, by estimating the following equation using least squares regression:

$$\Delta y_{i,t-0} = \alpha + \beta D_i + \varepsilon_i \tag{1}$$

where $\Delta y_{i,t-0}$ is $y_{it} - y_{i0}$; the estimated coefficient β represents the impact of participating.

Differencing over time is used to eliminate the bias that would be introduced if we simply compared the levels of performance in the evaluation year. We assume that the (unobservable) quality factors of the university, η_i , have an additive impact on outcomes that is constant over time; in that case, although the outcome in any given year of the pilot may be higher for participating universities than non-participating universities simply because of this ‘quality’ effect, that effect drops out when we examine the *difference* compared with the outcome in year 0 (because the effect is the same, for any given university, in year 0 and in later years).

What this simple difference-in-differences procedure would be testing is whether the expectation conditional on participation in the pilot yields a different (larger) result for the expected improvement in outcomes from the expectation conditional on non-participation:

$$E[(y_{it} - y_{i0})|D = 1] - E[(y_{it} - y_{i0})|D = 0] > 0 \tag{2}$$

This is straightforward to implement and requires no knowledge of the drivers of performance or selection, but it is a more demanding test of success than policy-makers intend and is unlikely to yield a statistically significant result: a positive result requires that the impact of participation in the pilot outweighs the effect of all other drivers (whether observed or unobserved) on the outcome, because the method does not control for any of these. In the language of policy-makers, this test requires that universities in the pilot see a better improvement in outcomes than those outside the pilot *regardless of the path taken by other drivers* (including those we can observe).

- (2) Did universities that participated in a pilot demonstrate a more marked improvement in outcomes than universities that did not participate, controlling for observable drivers of outcomes?

Since we can observe X_{it} , and if we assume linearity, we can estimate

$$\Delta y_{i,t-0} = \alpha + \beta D_i + \Delta X_{i,t-0} \tilde{\gamma} + \varepsilon_i \tag{3}$$

where $\Delta X_{i,t-0}$ is the $1 \times K_1$ vector $X_{it} - X_{i0}$, and $\tilde{\gamma}$ is the $K_1 \times 1$ vector of associated parameters. The analysis in this case requires us to estimate the impact of the observable drivers so that we can control for them, and we assume that their impact is linear.

The intention here is to test whether the expectation conditional on participation in the pilot and on the observable drivers yields a different (larger) result for the expected improvement in outcomes from the expectation conditional on non-participation and on the observable drivers:

$$E[(y_{it} - y_{i0})|X_{it}, X_{i0}, D = 1] - E[(y_{it} - y_{i0})|X_{it}, X_{i0}, D = 0] > 0 \quad (4)$$

- (3) Did universities that participated in a pilot demonstrate a more marked improvement in outcomes than the same universities would have done if they had not participated?

This is an evaluation question of much greater interest than (1) and (2): it takes a step beyond (2) to identify the evidence needed to allow us to construct the counterfactual of how the participating universities would have performed if they had not participated.

Because participation in the pilot was determined in a non-randomized way, to explore this question we need to consider explicitly the selection process. In our theoretical analysis we now distinguish *selection for participation* ($P=1$) from *actual participation* (or 'treatment') ($D=1$) so as to represent the counterfactual case: the university was selected for participation but did not actually participate ($D=0$ and $P=1$).

The intention here is to test whether the expectation conditional on selection for the pilot, participation in the pilot and on the observable drivers yields a different result for the expected improvement in outcomes from the expectation conditional on selection for the pilot, non-participation and on the observable drivers:

$$E[(y_{it} - y_{i0})|X_{it}, X_{i0}, D = 1, P = 1] - E[(y_{it} - y_{i0})|X_{it}, X_{i0}, D = 0, P = 1] > 0 \quad (5)$$

Since we cannot observe a case where a university was selected but did not participate, we require additional assumptions to identify the impact that we are trying to estimate. If we assume that the factors that influence selection are partly incorporated in the observable drivers of performance, X_{it} , and partly incorporated in the additive, unobservable individual effects that are constant over time, η_i , then the parameter associated with D_i in equation (3) identifies the term on the left hand side of (5). If, however, the unobservable factors driving selection are not constant over time, or not linearly additive (for example, if the impact of more funding is greater when university staff have entrepreneurial skills) then this difference-in-differences procedure will not completely eliminate the selection bias. The question as to how important such effects might be in practice could be explored in qualitative research to inform assessment as to the extent of this possible bias.

Empirical application

Having established the theoretical basis for applying the difference-in-differences approach, we turn now to consider its feasibility given the data availability. The BIS document 'University Enterprise Zones Pilot: Evaluation Proposal' (version of 26/6/14) incorporates a thorough review of the available indicators to measure both outcomes and observable drivers, and so this is not repeated here.

The key issue, noted in that paper, is the small number of observations available for universities that are participating in the pilot: just six universities (in four UEZs). The risk is that the variation in experience among these participating universities, even after controlling for observable drivers, will lead to a large standard error for the estimate for the impact of participation, so the estimated size of impact would be imprecise. The underlying impact represented by (5) would then have to be that much larger to support a finding that the estimated impact was statistically significant (different from zero). This highlights the importance of conditioning on the observable drivers to reduce the standard error.

This issue arises for any statistical approach to the evaluation of impact, not just the difference-in-differences approach.

Since the quantitative method proposed here is not difficult to apply (given the data, which probably need to be collected anyway to provide contextual information to support the evaluation), we recommend that it be tried. It would, in any case, be of some interest to know if the estimate of β in (3) is positive, even if not statistically significant and whether the estimated effects of the observable drivers have the expected signs. But it is likely that the statistical finding will be inconclusive.

Using an econometric approach to evaluate the impact on business/tenant performance

Econometric methods that seek to assess the impact of a policy on individual firms rely on having

- a sufficient number of firms that have been subject to the policy (the ‘treated’ firms)
- a sufficient number of firms that have not been subject to the policy, with characteristics that make them suitable to provide the information required to construct the counterfactual (what would have happened to the treated firms if they had not been treated)
- for each firm, a sufficient number of observable characteristics to act as controls for other influences on performance

The method

One of the possible variants of the ‘difference-in differences’ approach appears to be suitable: comparing the change in some measure of business performance over the period of implementation of the programme for treated and untreated firms. The question is whether such an approach is feasible in practice and likely to be able to detect the scale of impact that the programme might plausibly have.

The number of observations

The number of firms in each case has to be ‘sufficient’ to achieve a sufficiently low standard error for the parameter estimates to detect (as statistically significant) the scale of impact on performance that might be plausible in the context of the programme. If the performance of the firms in the sample (and the wider population) varies greatly from one

firm to another in a way that cannot be well explained by observable drivers (such as age of firm, size, sector of operation), which seems likely (particularly in the context of start-ups), the residual error in any econometric analysis will be quite large, leading to a high standard error for the parameter estimates. Unless the scale of impact of the programme is particularly large (so that it is clearly different from zero, even allowing for a wide confidence interval), this kind of case calls for a large number of firms to be included. How large is 'large' enough cannot be determined without carrying out the analysis, but we would expect that at least 50-100 firms in each category (treated and untreated) would be needed.

The number of characteristics observed for each firm

The more influences on performance that can be controlled for, the greater the precision of the parameter estimate and hence the greater the likelihood of being able to detect an impact from the programme on performance. Unless data are gathered directly (by a survey) for identified firms, these characteristics are likely to be limited to the kind of information available from a database of company details, which typically leave out factors that are likely to have been an influence on performance. In the present context, the small firms in question are likely to be difficult to characterise with regard to their sector of activity: the definition of 'sector' will be broad. While there are some similarities among bio-tech firms, for example, a key driver of performance is likely to be the particular application and market that a firm is operating in. Furthermore, the firms in question may not yet be registered companies and so present in databases based on company accounts. Equally, others could be research arms of larger businesses and so not report turnover or profitability separately from those businesses.

The selection of untreated firms

In order to provide the information required to construct a reasonable counterfactual, the untreated firms need to be a reasonably close approximation in characteristics to the treated firms. If they are not, parameter estimates that seek to control for these characteristics will be very imprecise; in more general terms, a method that relies on comparing the relative performance of treated and untreated firms requires that any differences can reasonably be attributed to participation (or not) in the programme, rather than other differences.

This is likely to be the key weakness in any attempt to apply an econometric method in the assessment. The untreated firms need, say, to be at a similar stage of development to the treated firms, operate in the same field, have access to the same scale of funding, and be located in areas with similar levels of cluster benefits. In the case of firms specialising in innovation, many of the firms in the same market segment are likely to be located in places with distinct cluster advantages (say, the golden triangle London - Oxford - Cambridge); if these were ruled out as not comparable, it would greatly reduce the pool of possible comparators. More generally, it is not clear how such firms could be identified, and whether a reasonable match could be found even if information about these characteristics were readily available.

Annex B: Pilot baseline material

Liverpool

Indicator	Baseline Value	Comment
Value of BIS investment	£5m	As in application form
Value of leveraged investment	£10m	£7m expected from ERDF; £3m from other sources, underwritten by the Universities
Engagement with partners	High	See case study description for details
Sqm of business space created	0 to date	2,500 sq m to be created in new build centre; also some space to be allocated in Liverpool Science Park prior to 2017 building completion. Possible further 2,000 sq m in subsequent phase
How many members of staff at your HEI (full-time equivalent) are employed engaging with commercial partners	60 – UoL 16-LJMU	HE-BCI – figures for institutions, UEZ data to be shown separately when operating
Estimate the percentage of your HEI's academic staff who have directly provided services to commercial partners	40-UoL 34-LJMU	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Value of collaborative contracts with SMEs	£1.768m-UoL £200k - LJMU	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Income from licences to SMEs	£102k-UoL £1k- LJMU	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Income from facilities and equipment related services to SMEs	£300-UoL £0-LJMU	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Consultancy contracts with SMEs	£9.681m-UoL £5k-LJMU	HE-BCI– figures for institutions, UEZ data to be shown separately when operating

<p><i>Which of the following statements (best) describes your partnership arrangements with local and regional bodies?</i></p>	<p>5 - UoL 4 - LJMU</p>	<p>The UEZ will be delivered as a joint venture between the two Universities, facilitated and supported by others LCR LEP has been engaged throughout, in advising on strategic fit and ensuring that the project will be in line with the SEP; continued support expected in delivery, notably on inward investment and enterprise support; also links with UKTI, TSB Liverpool City Council has also been involved and supportive throughout, notably with regard to planning; also in respect of an early £1m commitment from the Mayoral Investment Fund. Current ratings show 4 and 5 (active and creative engagement with community programmes)</p>
<p>Alignment of objectives and strategies</p>		<p>Already a good network and partners working on a number of other activities.</p>
<p>Number of formal joint projects and informal co-operation in projects</p>		<p>The Universities together were already keen to collaborate on this type of project and the timing was right to support it Sensors was the right project to engage the partners – cross-discipline and the Universities together offered complementary strengths</p>
<p>Level of communication and information sharing</p>		<p>Strong support from Chamber of Commerce and direct from businesses; useful new contacts already made – ‘SensorCity’ domain name offered to them free LCR LEP engaged and provided link into the SEP so some evidence that this is aligning objectives.</p>
<p>Number and value of businesses in key sectors</p>	<p>No figures for relevant sectors</p>	<p>Innovation, science, knowledge and creativity seen as a cross-sectoral, market facing, asset-based means of identifying and following up sectoral opportunities: key sectors include manufacturing (esp automotive) and creative & digital</p>
<p>Value of GVA in LEP area</p>	<p>£23.1bn</p>	
<p>Employment in LEP area</p>	<p>574,000 jobs; 37,000 businesses</p>	

Nottingham

Indicator	Baseline Value	Comment
Value of BIS investment	£2.4 million	As per application form
Value of leveraged investment	£5.6 million	As per application form
Engagement with partners	High	<p>UoN has good relationships with relevant local stakeholders. It has prior engagement with both the City and County Councils on a range of issues. It is contributing to the LEP's innovation plan, in which the UEZ is a key priority.</p> <p>All partners share an interest in local economic development and value the contribution of business support and incubation to boosting the creation of innovative start-ups.</p> <p>A joint meeting was held to develop the bid and an internal Steering Group to which external stakeholders will be invited will be set up in the near future.</p> <p>Feedback from LEP also</p>
Sqm of business space created	0	Construction not started (planned 2,000 sqm)
How many members of staff at your HEI (full-time equivalent) are employed engaging with commercial partners	UoN (48)	Figures are for the University. They will be able to show an estimate for UEZ contribution once it is operating
Estimate the percentage of your HEI's academic staff who have directly provided services to commercial partners	UoN (15)	Figure is for institution. They will be able to show an estimate for UEZ contribution once it is operating
Value of collaborative contracts with SMEs	UoN £1.2m	<p>Figure is for institution.</p> <p>Further comment can be added on the UEZ contribution once it is operating</p>
Income from licences to SMEs	UoN £231m	<p>Figure is for institution.</p> <p>Further comment can be added on the UEZ contribution once it is operating</p>
Income from facilities and equipment related services to SMEs	UoN £476,000	<p>Figure is for institution.</p> <p>Further comment can be added on the UEZ contribution once it is operating</p>

Consultancy contracts with SMEs	UoN £367,000	Figure is for institution. Further comment can be added on the UEZ contribution once it is operating
Which of the following statements best describes your partnership arrangements with local and regional bodies?	UoN (5)	<p>High level of engagement with stakeholders prior to the development of the UEZ bid. The UEZ has provided a specific opportunity for partners to focus on.</p> <ul style="list-style-type: none"> • D2N2 LEP – previous engagement had consisted of holding joint events, input on EU bids and UoN's contribution to the LEP's Innovation Plan. The LEP were very interested in supporting the UEZ bid because it fits well with their agenda and priorities. • Nottinghamshire County Council – the Council and University had overlapping agendas in terms of contributing to local economic development, particularly through supporting business. The Council runs a network of innovation centres across the county so is interested in complementarities. • Nottingham City Council – as with the County Council, the City shares some priorities with the university and is highly supportive of the UEZ. They are considering extending the rate relief available to the Enterprise Zones to tenants of the UEZ if they meet certain criteria. <p>UKTI – there is an existing partnership that works through the Asia Business Centre and it is anticipated that UKTI will work with the UEZ to encourage inward investment.</p>
Alignment of objectives and strategies	<p>D2N2 LEP has limited delivery capacity so it looks to work in partnership with those that share its agenda and priorities. UoN and Nottingham Trent University and the University of Derby were enlisted by D2N2 to produce an innovation plan for the area. One key action is to develop the area's innovation infrastructure – the UEZ is thus an important element of the LEP's innovation plan.</p> <p>The strategy and the ongoing communication between partners demonstrate the alignment of objectives in this area and also the co-operation and co-ordination that is already taking place</p>	
Number of formal joint projects and informal co-operation in projects		
Level of communication and information sharing		
Number and value of businesses in key sectors	Advanced manufacturing sector is of particular significance: grew 4.3% while the economy flatlined 2008-2012, adding 2,300 employees	

Bristol

Indicator	Baseline Value	Comment
Value of BIS investment	£4.0 million	As per application form
Value of leveraged investment	£4.4 million	As per application form
Engagement with partners	High	<p>UWE has good relationships with all the relevant stakeholders in the region through its existing involvement in collaborative research and business support delivery in the West of England. Leading the UEZ, which is a key project within the Strategic Economic Plan (SEP), the UWE becomes even more central to delivering the Plan. Discussions and support have been developed bilaterally and steering group in the next few months will provide platform for further collaboration. Key stakeholders are:</p> <ul style="list-style-type: none"> • South Gloucestershire Council (relationship includes planning, education, transport as well as economic development and innovation). • West of England Academic Health Science Network (members of this Network) • Business West (Vice Chancellor Steve West is Chair) • West of England LEP (Presence on the Board) • University of Bristol (collaborators on existing projects) <p>The project was discussed with each partner and received strong support. It is one of the key LEP/SEP projects. Less contact to date with UKTI, which will happen once there is a stronger offer. UWE plans to hold Steering Group of stakeholders to happen in the next three months</p>
Sqm of business space created	0	Construction not started (planned 4,000 sqm)
How many members of staff at your HEI (full-time equivalent) are employed engaging with commercial partners	UWE (35) University of Bristol (26)	Figures are for the institutions. They will be able to show an estimate for UEZ contribution once it is operating
Estimate the percentage of your HEI's academic staff who have directly provided services to commercial partners	UWE (5) University of Bristol (20)	Figure is for institution. They will be able to show an estimate for UEZ contribution once it is operating
Value of collaborative contracts with SMEs	UWE £10,000 UoB £260,000	Figure is for institution. Further comment can be added on the UEZ contribution once it is operating

Income from licences to SMEs	UWE £177,000 UoB £962,000	Figure is for institution. Further comment can be added on the UEZ contribution once it is operating
Income from facilities and equipment related services to SMEs	UWE £0 UoB £687,000	Figure is for institution. Further comment can be added on the UEZ contribution once it is operating
Consultancy contracts with SMEs	UWE £12,000 UoB £132,000	Figure is for institution. Further comment can be added on the UEZ contribution once it is operating
Which of the following statements best describes your partnership arrangements with local and regional bodies?	UWE (5) UofB (4)	UWE has good relationships with all the relevant stakeholders in the region through its existing involvement in collaborative research and business support delivery in the West of England. Leading the UEZ, which is a key project within the Strategic Economic Plan (SEP), the UWE becomes even more central to delivering the Plan. Discussions and support have been developed bilaterally and steering group in the next few months will provide platform for further collaboration. Key stakeholders are: <ul style="list-style-type: none"> • South Gloucestershire Council (relationship includes planning, education, transport as well as economic development and innovation). • West of England Academic Health Science Network (members of this Network) • Business West (Vice Chancellor Steve West is Chair • West of England LEP (Presence on the Board) • University of Bristol (collaborators on existing projects) The project was discussed with each partner and received strong support. It is one of the key LEP/SEP projects. Less contact to date with UKTI which will happen once there is a stronger offer. UWE plans to hold Steering Group of stakeholders to happen in the next three months
Alignment of objectives and strategies	No impacts yet	UWE already involved in development of the The strong existing relationships helped the application process to work particularly well Having the building was very important as it made the project more “shovel-ready” for the LEP Having a good idea of what the UEZ should look like also helped
Number of formal joint projects and informal co-operation in projects		
Level of communication and information sharing		
Number and value of businesses in key sectors	Advanced Engineering & Aerospace: 23,400 jobs, 2012; £1,039.8m GVA, 2010	

	Professional Services: 52,700 jobs, 2012; £4,020m GVA, 2010 Creative and Digital: 15,900 jobs, 2012; £658.5m GVA, 2010 High Tech: 16,400 jobs, 2012; £162.5m GVA, 2010 Low Carbon: 5,900 jobs, 2012; £333m GVA, 2010
Value of GVA in LEP area	£25.5bn
Employment in LEP area	538,700

Bradford

Indicator	Baseline Value	Comment
Value of BIS investment	£3.8m	
Value of leveraged investment	£8.25m	Including £5.1m from the University; £1.4m from CBC (premises, in-kind, cash); £1m from BT (in-kind); £0.75k from
Engagement with partners	High, with key partners involved to date	Strong working links already in place with CBC and BT; links to be developed further with NHS and with LEP
Sqm of business space created	0	Now expected to create <ul style="list-style-type: none"> • 1,400 m² in Digital Exchange, from 2015 • C 2,200m² in HWC, from 2016/17
How many members of staff at your HEI (full-time equivalent) are employed engaging with commercial partners	35	HE-BCI – figures for institutions, UEZ data to be shown separately when operating
Estimate the percentage of your HEI's academic staff who have directly provided services to commercial partners	40%	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Value of collaborative contracts with SMEs	£312k	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Income from licences to SMEs	0	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Income from facilities and equipment related services to SMEs	£39k	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
Consultancy contracts with SMEs	£490k	HE-BCI– figures for institutions, UEZ data to be shown separately when operating
<i>Which of the following statements best describes your partnership arrangements with local and regional bodies?</i>	4	UoB has been in the lead throughout. BT and Bradford Council (CBC) have both been closely engaged in discussions about form/content, and committed into the scheme <ul style="list-style-type: none"> • CBC through the design Exchange building and commitment of business support • BT through in-principle commitment of a specialist

		team (details to be fully agreed) and in on-going discussions to help shape content and delivery of the company's role in the UEZ
Alignment of objectives and strategies	Yes	LEP commitment cited in Strategic Economic Plan: <i>"The Bradford-BT Digital Health Zone (DHZ) will become an ecosystem for innovation and growth in communications-enabled healthcare. In partnership with Bradford Council and BT Global, the University of Bradford proposes to build twin business growth facilities in central Bradford"</i> .
Number of formal joint projects and informal co-operation in projects	No	Health and Life Sciences is one of the six major sectors named in the SEP. Strengths which complement this, in advanced manufacturing (equipment), and digital industries, including electronic patient record systems, are also cited.
Level of communication and information sharing	No	
Number and value of businesses in key sectors		<i>'One of the most important places in Europe for healthcare and medical technologies.'</i> Health & life sciences (36,000 jobs) and digital and creative industries (64,000 jobs) are two of the six key sectors in the SEP; also significant strengths in advanced manufacturing and high value-added manufacturing services. Total healthcare jobs including service provision, 193,000 – 16% of LCR employment
Value of GVA in LEP area	£55bn	
Employment in LEP area	1.4m people; 106,000 businesses	

Annex C: Impact evaluation question design

This Annex sets out examples of some of the core questions that can be used to assess the impact of the UEZs on their tenants.

It assumes that a full database of all UEZ tenants is available, including those that have moved on.

This covers only the core impact questions that relate to performance, the counterfactual and the role of the UEZ in their development. In both the interim and final evaluations these would be supplemented by other questions that consider “how” the UEZ has led to any changes in performance and its effect on the scale and nature of their research and development.

At the time of the evaluation, it will also be clearer what type of businesses or organisations have participated and the questions can be amended to reflect this.

More example questions for use in impact evaluation through beneficiary self-assessment are available in the BIS report at

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32112/11-979-survey-questions-for-impact-evaluations-beneficiaries-self-assessment.pdf

The questions here cover:

- Type of organisation
- Past and current performance
- Costs
- Deadweight

Together these provide a basis for measuring the change in the turnover, employment and GVA of operations that have participated in the UEZ. The questions on deadweight consider the difference that the UEZ intervention has made to employment and turnover, which can be used as a proxy for estimating the change in GVA. Some assumptions about timescales will need to be made around performance in the years between the business engagement with the UEZ and current performance at the time of the evaluation.

Type of organisation

Is this workplace....:	Tick one
One of a number of different workplaces in the UK belonging to the same organisation	<input type="checkbox"/>
A single independent workplace	<input type="checkbox"/>
The sole UK workplace of a foreign organisation?	<input type="checkbox"/>

If there is more than one workplace, how many workplaces, including this one, are there within your organisation in the UK?	
Number	

IF MULTI SITE BUSINESS When thinking about your participation in the UEZ, would you prefer to answer for this/your workplace only or for the organisation as a whole? Use this for all questions	Tick one
This workplace only	<input type="checkbox"/>
The organisation as a whole	<input type="checkbox"/>
(Don't Know)	<input type="checkbox"/>

What is the main activity of this workplace?
Describe

Past and current performance

Complete the following information, starting with the first year on the UEZ and then subsequent years. Turnover and employment data may have been collected from the Annual Tenant Survey.

Has this organisation/business completed a full financial year?	Tick one
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
DK	<input type="checkbox"/>

When does your business's financial year start and end?
Month

In what year did your activities locate on the UEZ?
Year

The following data should be available as part of the annual tenant survey

Can you provide the following information for your FIRST FULL FINANCIAL YEAR with engaged with the UEZ...	
If there is no complete financial year can you provide your best estimate	
Employment	
Employment costs	£
Turnover	£
Value of R&D investment	£
Profit before tax	£
<ul style="list-style-type: none"> • Employment should be the average FTE's, including owner/manager, during the financial year • The annual turnover of should relate to the activities of the workplace associated with the UEZ. You may also refer to turnover as income, sales, invoices or receipts • R&D investment is all expenditure made for the purposes of R&D including equipment, materials and value of staff time 	

Can you provide the following information for the MOST RECENT financial year?	
Employment	
Employment costs	£
Turnover	£
Value of R&D investment	£
Profit before tax	£

Costs

<p>Engagement with the UEZ may have led to additional costs that would not have been incurred otherwise.</p> <p>Can you estimate the total additional costs of engaging with the UEZ. This should include staff costs, materials and additional equipment?</p>
Value £s

Deadweight

These questions are designed to provide an assessment of what would have happened to the activities/business if the UEZ and related support had not been available.

What effect has being located on the UEZ and the related support had any effect on the nature, scale and activities of your business or research?
Describe
If the same activities or business would have taken place elsewhere, where would you have located instead?
Describe

Note that the following question should be routed to a number of sub-questions that explore the type of research project that has been replaced, the change in scale and in timing.

Thinking about the options, what would have happened to the research activities/business if the UEZ and related support had not been available?	Tick any
The research activities or business would not have taken place at all	<input type="checkbox"/>
Been LESS LIKELY to develop research activities/business	<input type="checkbox"/>
Undertaken DIFFERENT research activities/business	<input type="checkbox"/>
Undertaken similar research activities/business, but ON A SMALLER SCALE	<input type="checkbox"/>
Undertaken similar research activities/business, but LESS EFFECTIVELY	<input type="checkbox"/>
Undertaken similar research activities/business but it would have taken LONGER	<input type="checkbox"/>
Undertaken similar research activities/business IN THE SAME TIME FRAME	<input type="checkbox"/>

Thinking about your activities/business at the end of last financial year, how different do you think the following performance indicators would have been if you had not been involved with the UEZ?

e.g. without the UEZ employment would have been “moderately lower” etc.

	A lot lower	Moderately lower	About the same	Moderately higher	A lot higher
Employment	<input type="checkbox"/>				
Turnover	<input type="checkbox"/>				
R&D investment	<input type="checkbox"/>				
Profit before tax	<input type="checkbox"/>				

If you indicated an impact on any of these measures, can you indicate *how much* higher or lower your most recent employment and turnover would have been without your involvement with the UEZ?

	Employment	Turnover	Value of R&D investment	Profit before tax
0% to 1% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+1% to 2% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+3% to 5% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+6% to 10% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+11% to 20% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+21% to 50% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
+51% to 100% lower	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-0% to 1% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-1% to 2% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-3% to 5% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-6% to 10% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-11% to 20% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-21% to 50% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-51% to 100% higher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you think there will be impacts attributable to the UEZ in the future?	
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Don't know	<input type="checkbox"/>

Thinking about any financial returns over the next 5 years resulting from your participation in the UEZ. Do you expect these returns to...	Tick one
rise	<input type="checkbox"/>
...remain constant	<input type="checkbox"/>
...diminish	<input type="checkbox"/>
...cease	<input type="checkbox"/>

Where there has been, or will be an impact For how many years will the impact of the UEZ and related support will continue?	Tick one
No further impact	<input type="checkbox"/>
1 more year	<input type="checkbox"/>
2 more years	<input type="checkbox"/>
3 more years	<input type="checkbox"/>
More than 3 more years	<input type="checkbox"/>
Don't know	<input type="checkbox"/>

Taking into account the effort and all the costs would you say that it has been worthwhile participating in the UEZ?	Tick one
Definitely, yes	<input type="checkbox"/>
On balance, yes	<input type="checkbox"/>
On balance, no	<input type="checkbox"/>
Definitely not	<input type="checkbox"/>
Don't know	<input type="checkbox"/>



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BIS/15/46