Template, Checklist, and Examples of Local Area Energy Planning – Annexe 1

CATAPULT Energy Systems



UK Research and Innovation

LOCAL AREA ENERGY PLAN



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1. Overview

This document provides a checklist of what could be included in a LAEP, structured in the form of an example template for a LAEP.

The example template LAEP covers the following five sections:

- Executive Summary
- Context
- Assessing Options for the Future
- Intervention Areas
- Next Steps

The LAEP template and the checklist of what a LAEP should cover are suggestions, proposed in order to help an organisation who is undertaking a LAEP gain a better understanding of what it could contain and how it should be communicated. The level of detail that the LAEP contains, whether it is covered in the main body or an annexe, the order of the sections, whether all sections described here are included, and whether content that is not included here should be included in a LAEP, are all decisions that should be made by the organisation leading the creation of the LAEP.

Also included are examples from LAEPs that have been completed to date. The purpose of including these examples is to illustrate some of the aspects of a LAEP, again to assist an organisation that is creating a LAEP. They are included as examples, and do not need to be replicated in other LAEPs.



2. Executive summary

The executive summary provides a synopsis of the LAEP. The level of detail included should be in line with what is normally included in an executive summary of a document.

It may contain maps, graphs, and charts that are also included in the main body of the LAEP document. It should not contain content that is not covered in the main LAEP document.

Section	Suggested content for main LAEP document	Suggested content for annexe document
Executive summary	**Introduction** Brief summary of context – area covered by LAEP, policy drivers for LAEP, stakeholders involved, current position in terms of emissions and energy use. **Assessing Options for the Future** Brief summary of the scenarios that were modelled, and how they were assessed **Intervention Areas** Brief summary of the pathway to net zero, covering key aspects of interventions - both near- and long-term interventions - broken down by area: • Energy efficiency in buildings • Low carbon heating • Industrial clusters • Transport • Local renewable generation • Networks, storage, flexibility These could be covered in a single 'plan on a page', or included in a timeline, as per the examples shown below. **Other** Aspects that could be covered, either separately or integrated with the above three areas: • Total costs of interventions identified by the LAEP • Benefits identified by the LAEP • Trajectory of energy use and emissions • Timeline to net zero • Spatial and visual representation of the Plan	N/A

The following figures give examples of how summary information has been included in previous LAEPs.

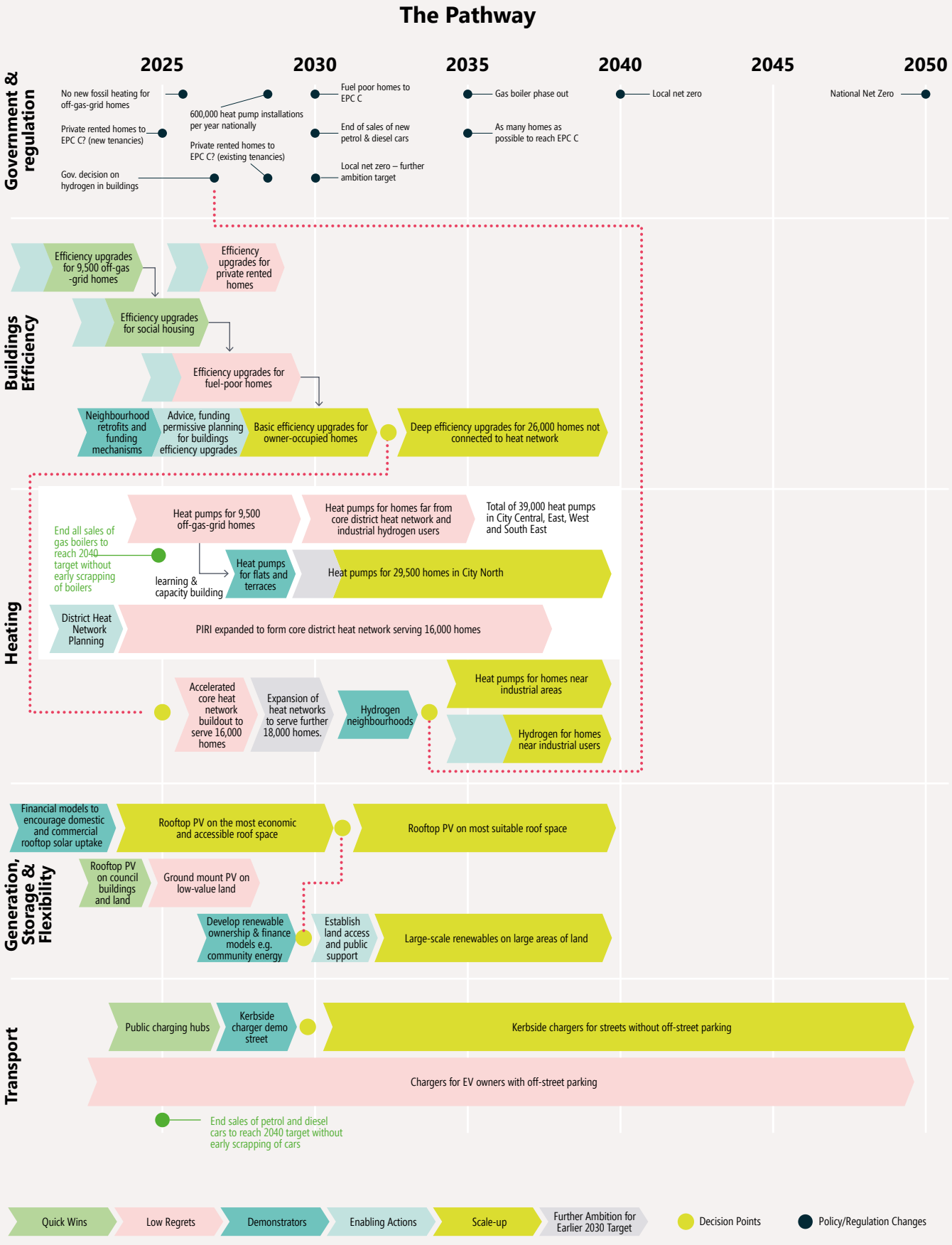


Figure 1: An example of a summary of a LAEP pathway to net zero (Energy Systems Catapult)

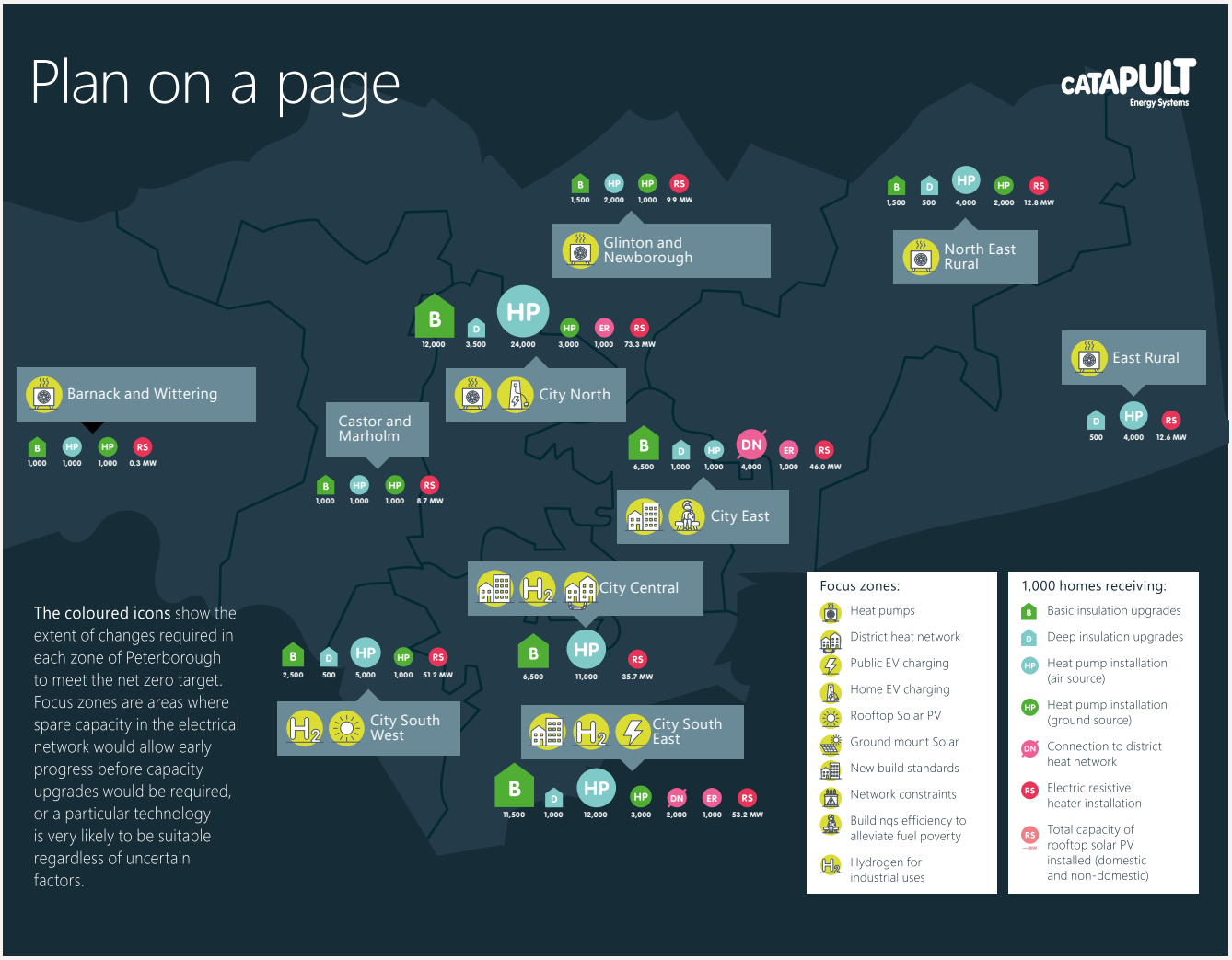


Figure 2: An example of a summary of a LAEP's key interventions (Energy Systems Catapult)



3. Context

The purpose of this section is to provide details of the context for the LAEP. It should cover the geographical area that the LAEP covers, the stakeholders involved in its creation, the policy context, and a description of the current emissions and energy use for the area. Breaking down the inventory of emissions and energy use by sector and/or vector provides information that is useful for understanding why interventions have been identified.

Section	Suggested content for main LAEP document	Suggested content for annexe document
What is the geographical area of the LAEP?	**Geographical area covered in the LAEP** • Map of area, and justification for its selection • Identification of any sub-areas, such as LSOAs or zones • Scale used **Characteristics of the local area** • Identification of any key or large population areas, housing characteristics such as density and age. • Identification of major industrial areas, centres of commerce, or large public sector organisations • Identification of any social and economic considerations • Identification of network characteristics	A detailed breakdown, providing statistics by zone **Domestic building stock** • Location (rural, urban, suburban) • Dwelling type (detached, flats, semi-detached, terraced, etc) • Age / Listed builds • Heating source / on/off gas grid • EPC rating **Non-domestic building stock** • Type (commercial / industrial / public sector) • Location (rural, urban) • Building type • Demand (annual, summer, winter, peak) • Current fuel source • Process energy use **Energy Networks:** • Electricity – spare capacity by sub-station. • Natural gas network – existing "on and off gas regions" and key locations. • Hydrogen network – production sites, fuel source, pipelines, storage. • Heat networks – existing networks, fuel source.
Who is involved?	**Summary of the stakeholders involved in the LAEP** • Who are the primary and secondary stakeholders involved in the LAEP? • What role have they had in creating the LAEP? • How have stakeholders contributed and supported the creation of the LAEP?	Additional details of the stakeholders
What is the Policy Context?	**Identification of relevant national policies and targets:** • Relevant national policies and targets on energy use, emissions, and transport. • Anticipated future national policies and targets (e.g., H_2) **Identification of relevant local policies and targets** • Relevant local policies and targets on energy use, emissions, and transport. • Anticipated future local policies and targets (e.g., Local Plan) • Other local drivers for action (e.g., creating local jobs, enhancing economic growth). **Existing programmes:** • Significant local programmes of work underway already underway that a local area may wish to highlight	Additional details of the policy context

Section	Suggested content for main LAEP document	Suggested content for annexe document
What is the current and historical emissions inventory for the area?	**Current and historical emissions** • Current and historical greenhouse gas emissions broken down by **end use** over time, to include: - Domestic - Commercial - Public sector - Industry - Transport **Exclusions** • To identify emissions sources that the LAEP will not tackle in meeting net zero. • This may include: - Land use, land use change and forestry (LULUCF) - Military bases - Airports, and seaports - Significant energy generation, such as a power station	Show evolution over time to indicate both long- and short-term trends. Matching emissions to national targets set out in the five-year carbon budgets (CB). • CB1 (2008-12) – 25% • CB2 (2013-17) – 31% • CB3 (2018-22) – 37% • CB4 (2023-27) – 51% • CB5 (2028-32) – 57% • CB6 (2033-37) - 78%
What is the current profile of energy use in the area?	**Current and historical profile of energy generation and use** • To cover: - Generation - Demand - Imports and exports - Flexibility - Storage • To cover: - Electricity - Gas - Oil - Other fuels • To be broken down by end use: - Domestic - Commercial - Public sector - Industry - Transport ◊ Public transport (bus, trains, trams) ◊ HGV / Commercial vehicles ◊ Private Car (EV, PHEV, H2, petrol/diesel) • Annualised figures	Show evolution over time to indicate both long- and short-term trends. Breakdown sub-annually, providing seasonal or monthly breakdown, and peak demand. Details that may have been identified by a Local Energy Asset Representation (LEAR) Sankey diagrams: • Energy use - fuel use - emissions • Vector to sector
EV charging characteristics	**Overview of public and private EV charge point installations** • Existing location and numbers • Speed (slow, fast, rapid, ultra-rapid) • Fleet charging / taxi charging	

The following figures give examples of how contextual information has been included in previous LAEPs.

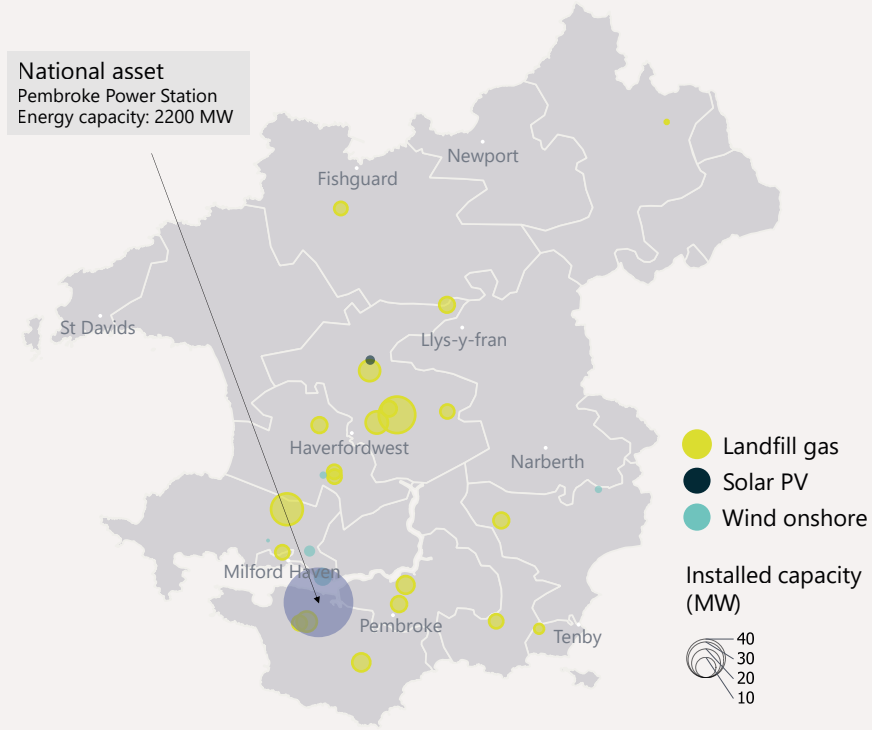


Figure 3: Example map, showing locations of an area's existing energy generation assets (Arup)

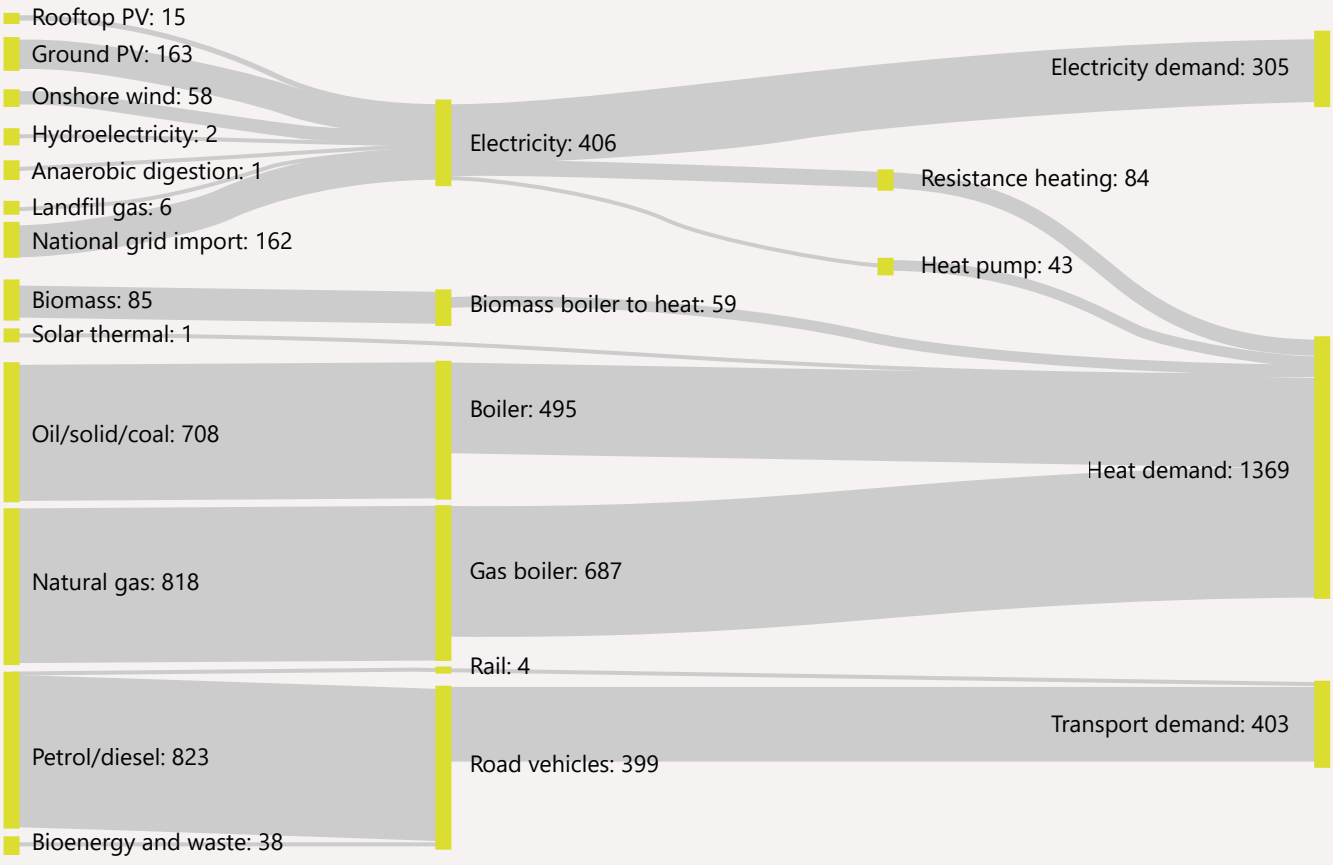


Figure 4: Example Sankey diagram of energy flows in an area (Arup)

4. Assessing options for the future

The purpose of this section is to describe the methods used to model the local area and identify interventions and a pathway to net zero. It describes the future scenarios that were considered, and how they were evaluated and assessed.

Section	Suggested content for main LAEP document	Suggested content for annexe document
Which future scenarios were modelled?	**Brief description and overview of details of scenarios:** • Core scenario: 'do nothing' • Core scenario: Net zero by national target date • Any locally derived 'additional' scenarios **Summary of key outputs and aspects of scenarios:** • Costs of interventions • Benefits resulting from interventions • Projected reductions in emissions • Projected impacts on networks	Baseline against the FES and regional DFES, indicating how the scenarios differ to standard scenarios used by network companies Assumptions for each scenario • Costs for different technologies • Network dependencies • Energy Storage / Flexibility
How were the scenarios evaluated?	**Evaluation process:** • Summary of the technoeconomic evaluation process used to evaluate and select the preferred pathway for the future • Summary of the social and environmental analysis (detailed in the annex) • Wider considerations including impacts on customers **Identifying risks and areas of uncertainty** • Sensitivity analysis on key modelling solutions to test for robustness	Supporting information related to techno-economic modelling for different options and pathways • Deliverability of pathway • Costs and benefits • Impact for consumers Wider social and environment assessment

The following figure gives an example of how assessing future options has been included in previous LAEPs.

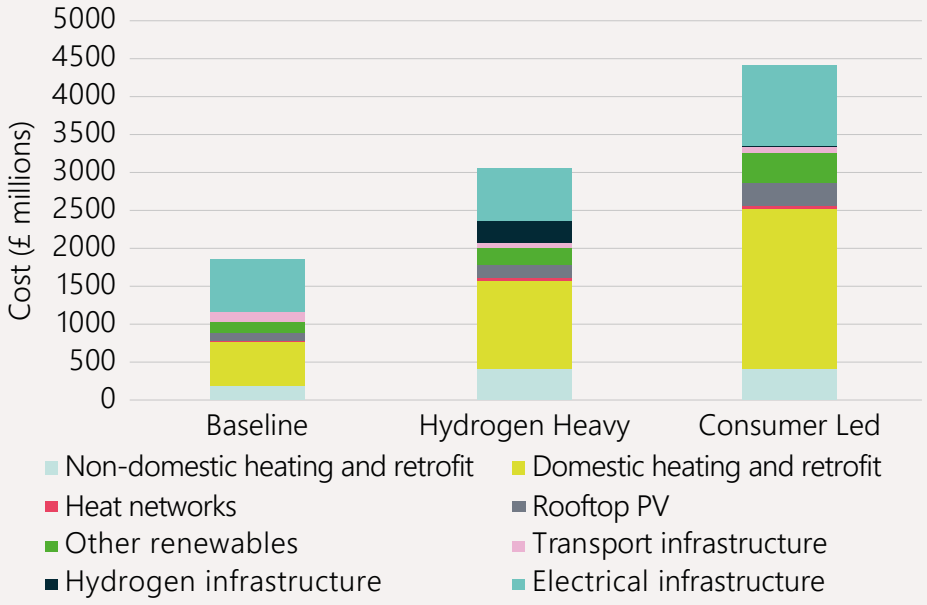


Figure 5: Example of assessing the capital costs of three net zero scenarios (Energy Systems Catapult)

5. Intervention areas

The purpose of this section is to provide a description of the preferred pathway to net zero that the LAEP identifies. It is recognised that there are different ways to present details of the pathway; by demand sector, by energy vector, or by intervention. The example provided here presents details by intervention, covering details such as when interventions will be deployed, and whether they can be grouped into a focus zone.

Six areas of intervention are identified:

- Energy efficiency in buildings (including both domestic and non-domestic)
- Low carbon heating
- Industrial clusters
- Transport (EV charging infrastructure, public transport energy needs, HGV and fleet)
- Local renewable generation
- Networks, storage, and flexibility

Timeline of deployment:

- Near term components: including actions that are identified as 'quick wins' and 'no/low regret', and that can be completed near term, have limited blockers, have identified paths for funding, or apply equally regardless of the future scenario.
- Long term components: including actions that are identified as 'enabling actions' (e.g., that need to be completed prior to an intervention being deployed) or 'key decisions points' that once reached will remove barriers or provide greater certainty on scaling up and mass deployment.

Identification of focus zones:

- If multiple actions are clustered in a particular area or 'focus zone', the disruption to residents and businesses in the area can be minimised by co-ordinating and grouping interventions into logical sequencies, particularly where multiple stakeholders are involved.

Section	Suggested content for main LAEP document	Suggested content for annexe document
Building efficiency	Details of the intervention, including: • What the intervention is • Location of intervention • Costs of intervention • Impact on emissions • Impact on energy use • Rate of deployment • Any dependencies, such as reliance on another intervention • Any dependencies, such as requirement for network reinforcements From the above, it should be possible to determine *'outline priority projects';* these are interventions that an area can commence delivery of right away, to start making tangible progress on their route to net zero. An example of an outline priority project is shown in Figure 9.	
Low carbon heating		
Industrial Clusters		Opportunities with neighbouring local areas not included in the LAEP
Transport		Public transport HGV
Renewable generation		
Network impacts		Detailed network analysis with DNO / GDN

The following figures give examples of how assessing interventions has been included in previous LAEPs.

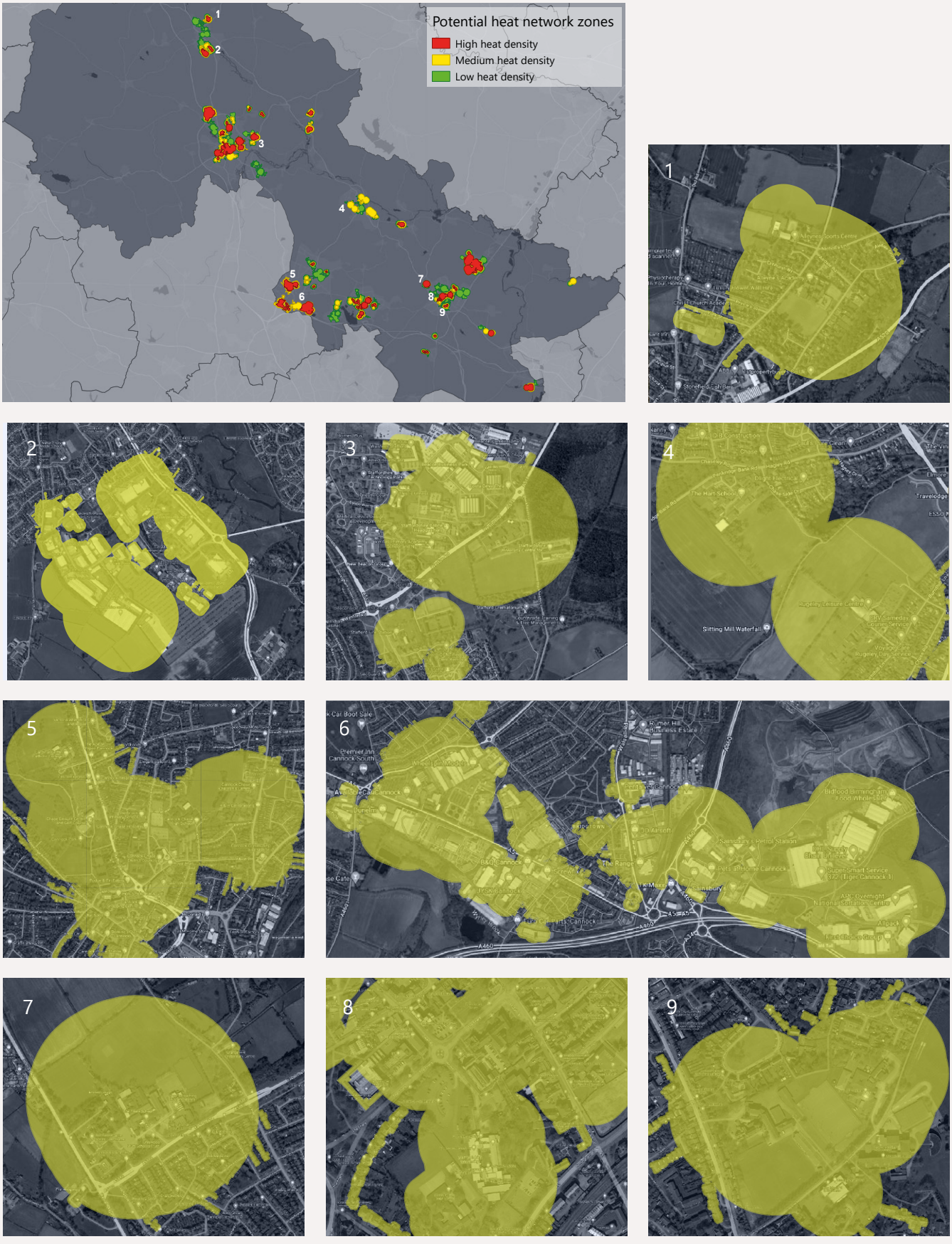


Figure 6: Example of identifying heat network zones (Buro Happold)

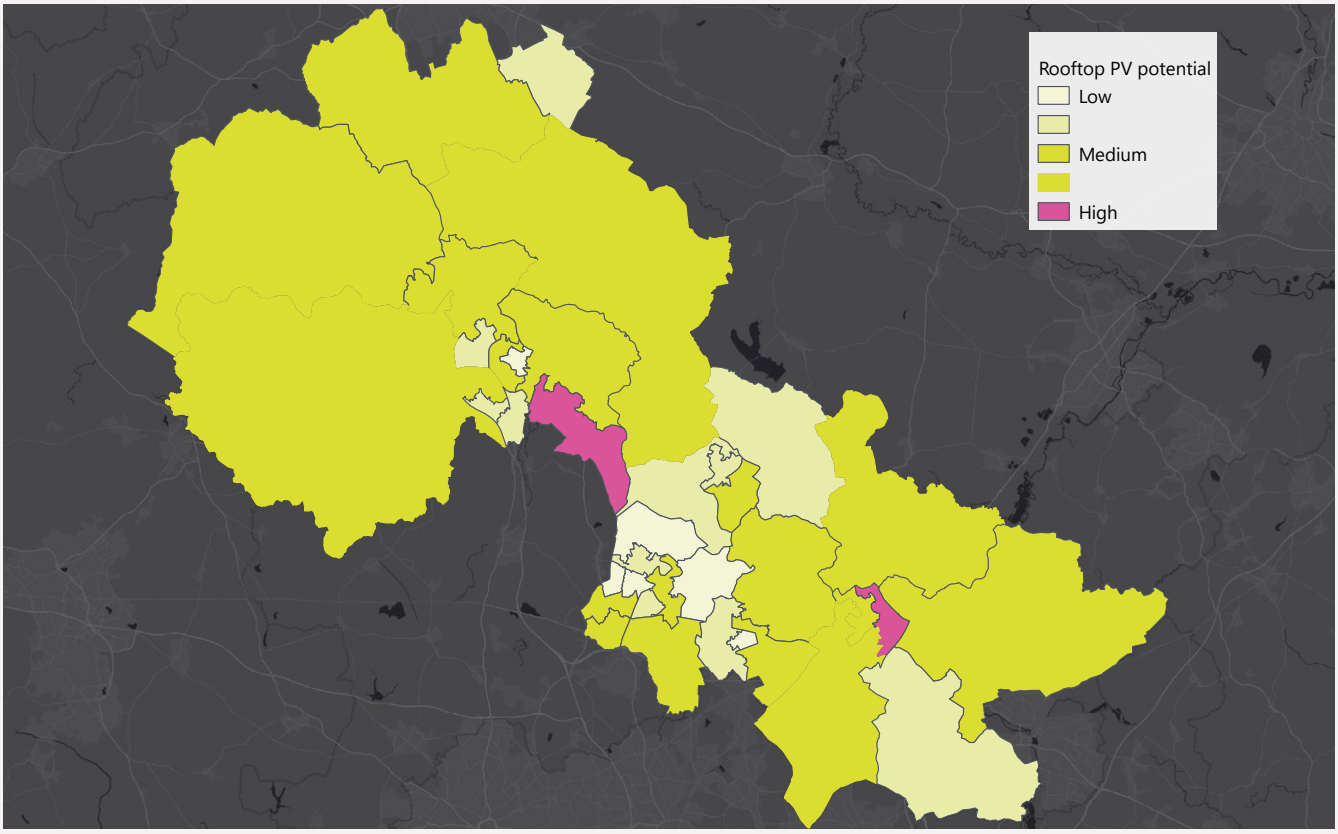


Figure 7: Example of identifying areas for rooftop solar PV (Buro Happold)

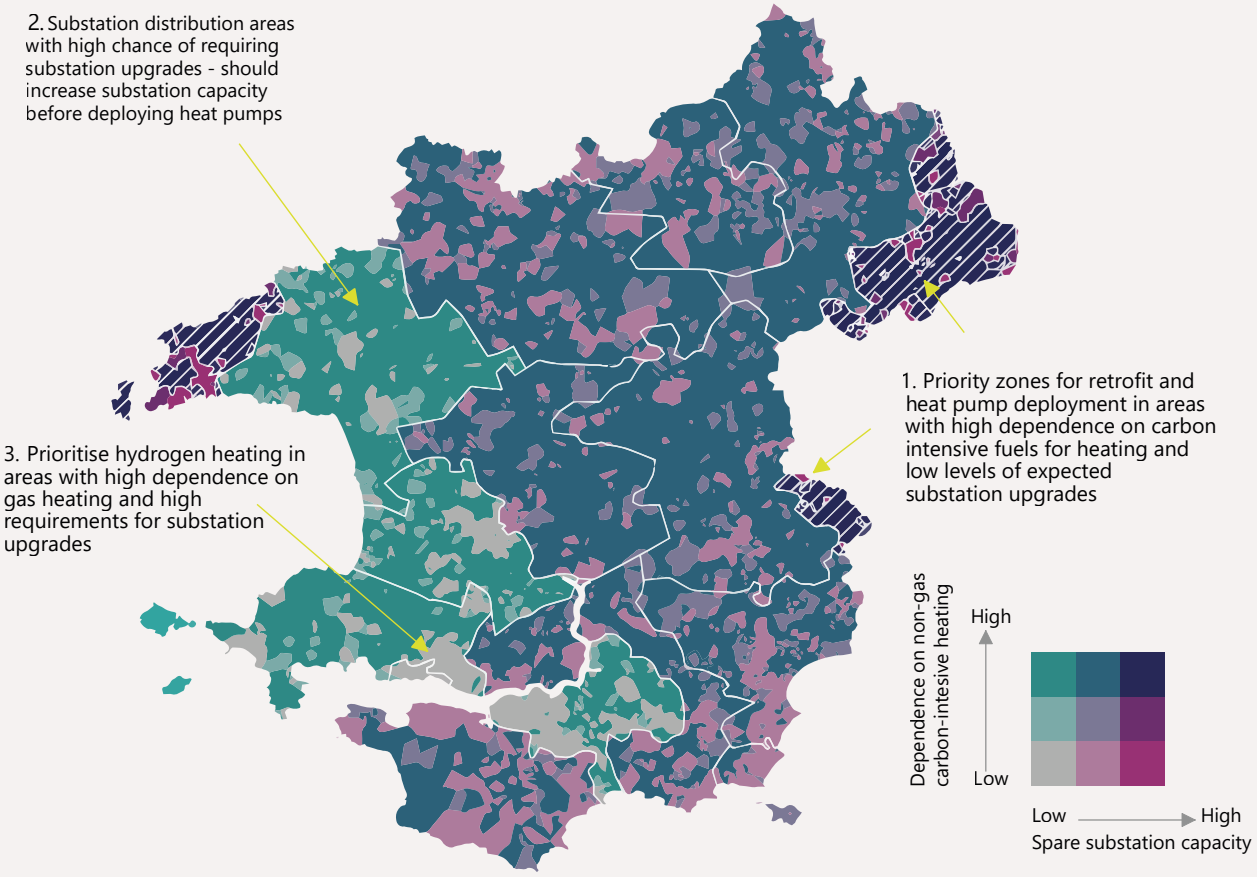
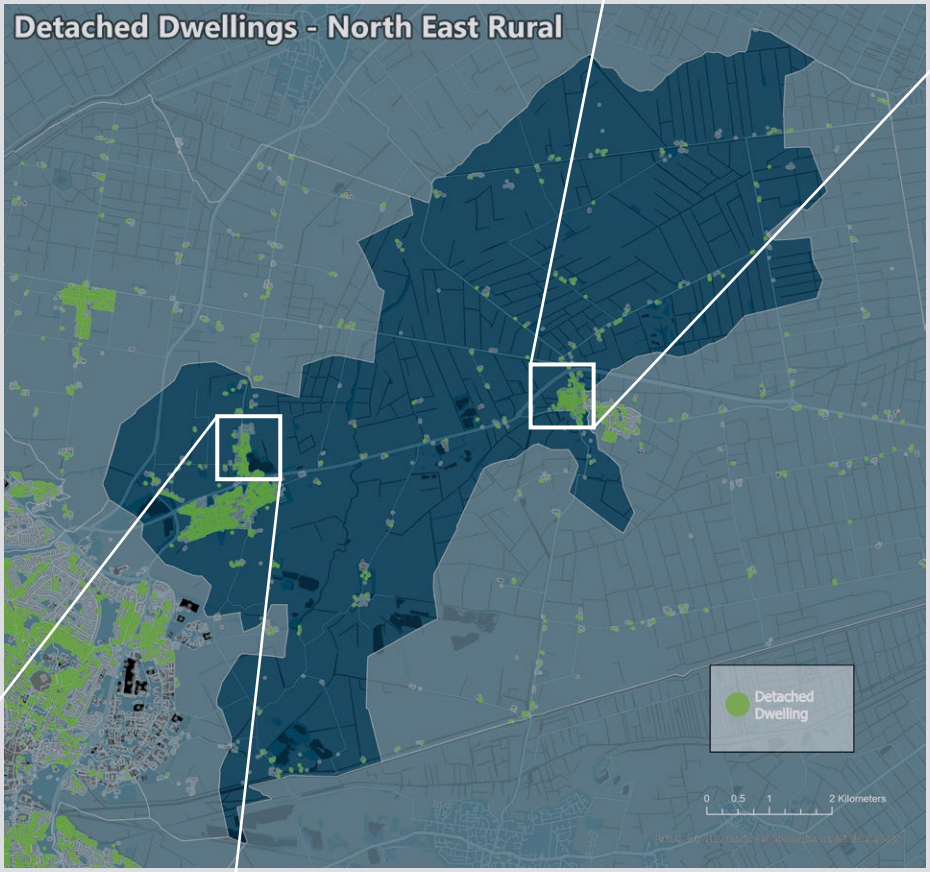


Figure 8: Example of identifying priority zones for deploying heat pumps (Arup)

Outline Priority Projects: Domestic Retrofit

Retrofit projects in fuel poor areas are low regret options. For rural, off-gas areas, the Home Upgrade GRant scheme can provide funding for low income house holds with innefficient homes.







Detached homes built after 1980 may be suitable for loft insulation top-up and/or cavity wall insulation.

Zone	North East Rural
Building type	Post-1980 detached
Number of homes	c. 425
Total cost	£630,000

Figure 9: Example of identifying a domestic retrofit intervention (Energy Systems Catapult)

6. Next steps

The purpose of this section is to describe the next steps, to commence deployment of the interventions that the LAEP has identified, and to start a local area's journey to net zero. It also covers the monitoring of the LAEP in preparation for a future refresh.

Section	Suggested content for main LAEP document	Suggested content for annexe document
Supporting implementation of interventions	Supporting implementation of interventions, highlighting: • Upscaling local skills to support implementation. • Accessing available funding. • Enabling new investment opportunities.	
Actions	Identify roles and responsibilities for priority interventions, highlighting: • Local government organisations. • Network operators. • National policy.	
Monitoring	Implementation targets / metrics (e.g., what needs to be implemented and by when) • Metrics for each 5 years period (2025, 2030, 2035, 2040, 2045, 2050) • Trajectory of emissions reductions. • Targets for each intervention	

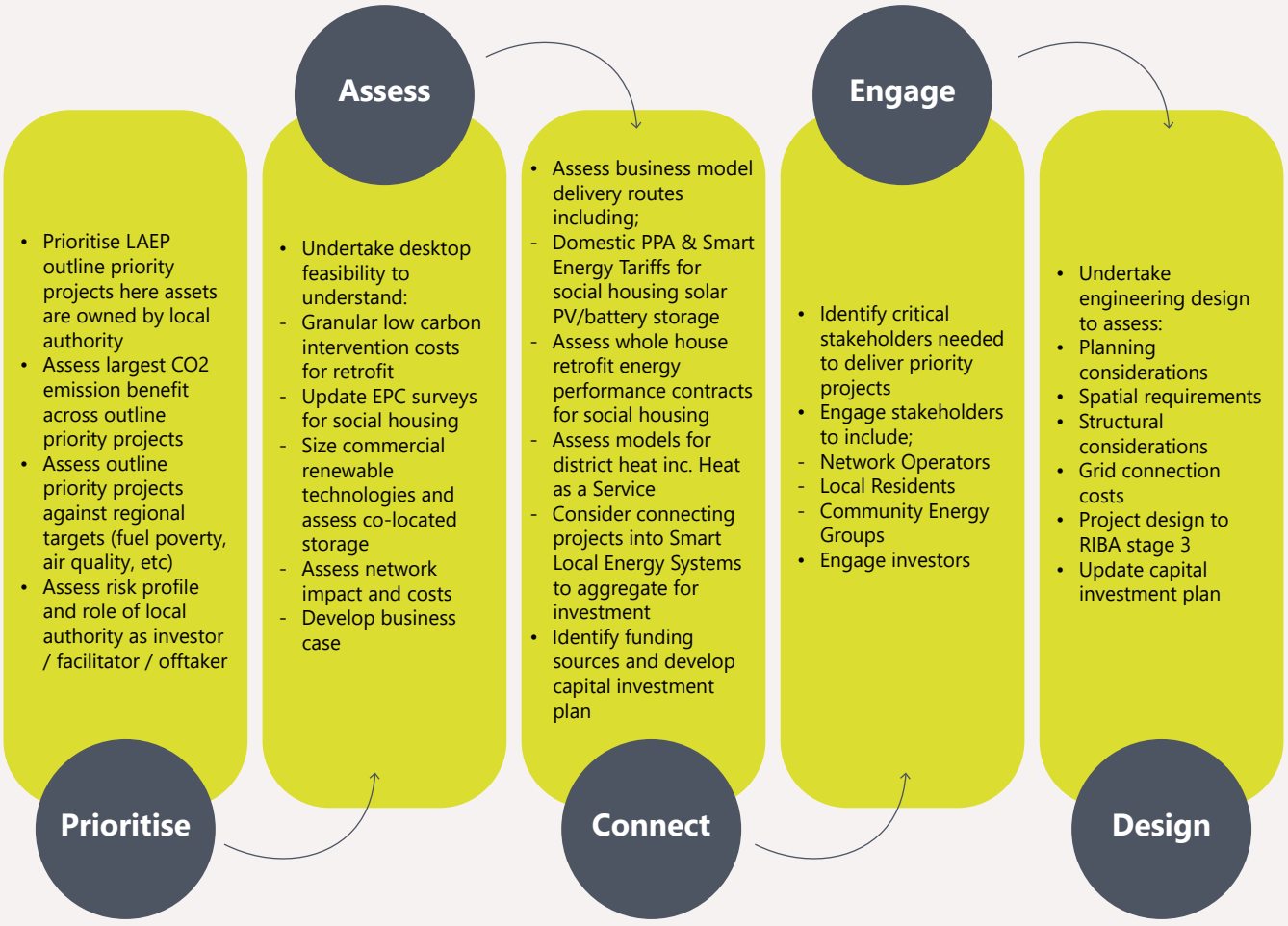


Figure 10: Example of next steps

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