



Digitising the Environmental Impact Assessment (EIA) Process

A user-centred approach to designing an EIA process for the future.

DISCOVERY REPORT



Project partners:



Project funded by:



If you have any questions regarding the content of this report, or would like to get involved, contact Kate Taylor – Digital Planning Team Lead, or Liam Dargan – Service Designer at Connected Places Catapult:

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Or get in touch via our website:

www.digitaleia.co.uk

We've also created a #cpc_digital_eia channel on our public Plantech Slack workspace. This is a free online space to exchange ideas and learnings, hear about events, opportunities and to collaborate with others in the Digital Planning sector. Sign up and join in the conversation.

plan-tech.slack.com



The Digital EIA project explores how the Environmental Impact Assessment (EIA) process could be transformed. Using a human-centred design approach, we've explored what a more designed, digital and data-informed future for EIA could hold. We've identified key challenges within the process, developed some initial concept ideas and explored the feasibility of a new vision for EIA.



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Who we are

Funded by Innovate UK, The Digital EIA project is a collaboration between Connected Places Catapult (led by their Digitising Planning Programme), Quod, Temple, ODI Leeds and Liquorice Marketing.



Connected Places Catapult is a government backed technology and innovation centre with a track-record in developing digital tools for planning and transport.



Quod is a renowned planning consultancy offering Environmental Impact Assessment services and are known for leading cutting-edge technology solutions on development projects.



Temple is a leading independent infrastructure and property consultancy specialising in environment, planning and sustainability.



ODI Leeds are a pioneer node of the Open Data Institute, created to explore and deliver the potential of open innovation with data at city-scale.



Liquorice are a communications and marketing agency working across a variety of platforms and sectors including the built environment.

What is an EIA?

Environmental Impact Assessments (EIAs) are regulated by EU/UK legislation and are a crucial part of the design evolution and approval process for development, infrastructure, forestry, agriculture and other projects. Their purpose is to ensure that the environmental and social effects of proposals are understood prior to decisions being taken and to aid public participation in decision-making. Consultation with the public is a key part of an EIA.

An EIA is comprised of several key stages:

Screening

1

This stage determines whether a proposed development falls within the remit of the Regulations and whether it is likely to have a significant effect on the environment and therefore requires an assessment. For example, a new road with a continuous length beyond 10km and four or more lanes would require an EIA.

Scoping and Baselineing

2

This stage determines the significant environmental issues that need to be considered. It involves the collection and analysis of current environmental data to inform the judgement on which environmental topics are to be included and assessed further through an EIA.

Assessment and Prediction

3

Once existing conditions are understood, likely environmental effects are predicted using a variety of assessment methods and tools. This information is reported on within an Environmental Statement (ES).

Submission and Consultation

4

The ES is submitted to the relevant Local Planning Authority who examine and consult upon the information provided. This includes consultation with the general public.

Decision and Monitoring

5

In combination with other planning application documents, the Local Planning Authority either approves or refuses planning permission based on the information provided. If approved, they can impose certain requirements (e.g. environmental mitigation monitoring measures).

Why it matters

In the context of rapid urbanization and rising uncertainty surrounding climate change, the increasing rate of natural habitat loss, and wider social and cultural inequalities, EIAs are of increasingly crucial importance to safeguard our environment and inform good design.

But today's Environmental Statements (ESs) are often criticised for being an administrative burden, ending with a bloated, inconsistent and inaccessible report replete with technical jargon that is difficult to navigate, understand and even simply to read. Furthermore, digital technology is not being exploited to capture data or deliver more efficient and effective ways of producing ESs – which means EIAs are falling behind other already industries harnessing technology to drive productivity (e.g. FinTech, PropTech).



Today's average ES (for a 500-dwelling housing development) is **4,350 pages long** and may even be delivered in stacked boxes to local planning authorities.*



The process can have the equivalent carbon footprint to making **1,050 lattes**, or a **return flight from London to Iceland**.**



The procedure becomes excessively burdensome, to the extent it could lose its audience and therefore even risks redundancy. For High Speed 2 Phase 1, the final ES was estimated to be approximately **49,000 pages long**.***

*Source: surveys and interviews

**Source: Greengage Environmental

***Source: City A.M.

Our aims and objectives

- Carry out user-research to understand the **pain points** and **challenges** of the current system
- **Explore relevant changes** needed to transform the process
- Develop ideas for potential concepts to **overcome the challenges** identified, and develop prototypes to bring them to life
- **Consult with key national and regulatory stakeholders** to develop a roadmap for the next steps required to bring forward a Digital EIA platform
- Explore the **potential economic impact and benefits case** for a new digital approach to EIA, and
- To **drive forward industry discussion** around opportunities for innovation in this area.

A snapshot from our collaborative session to cluster insights on challenges and opportunities



Our approach

Human Centred Design techniques are at the heart of this project.

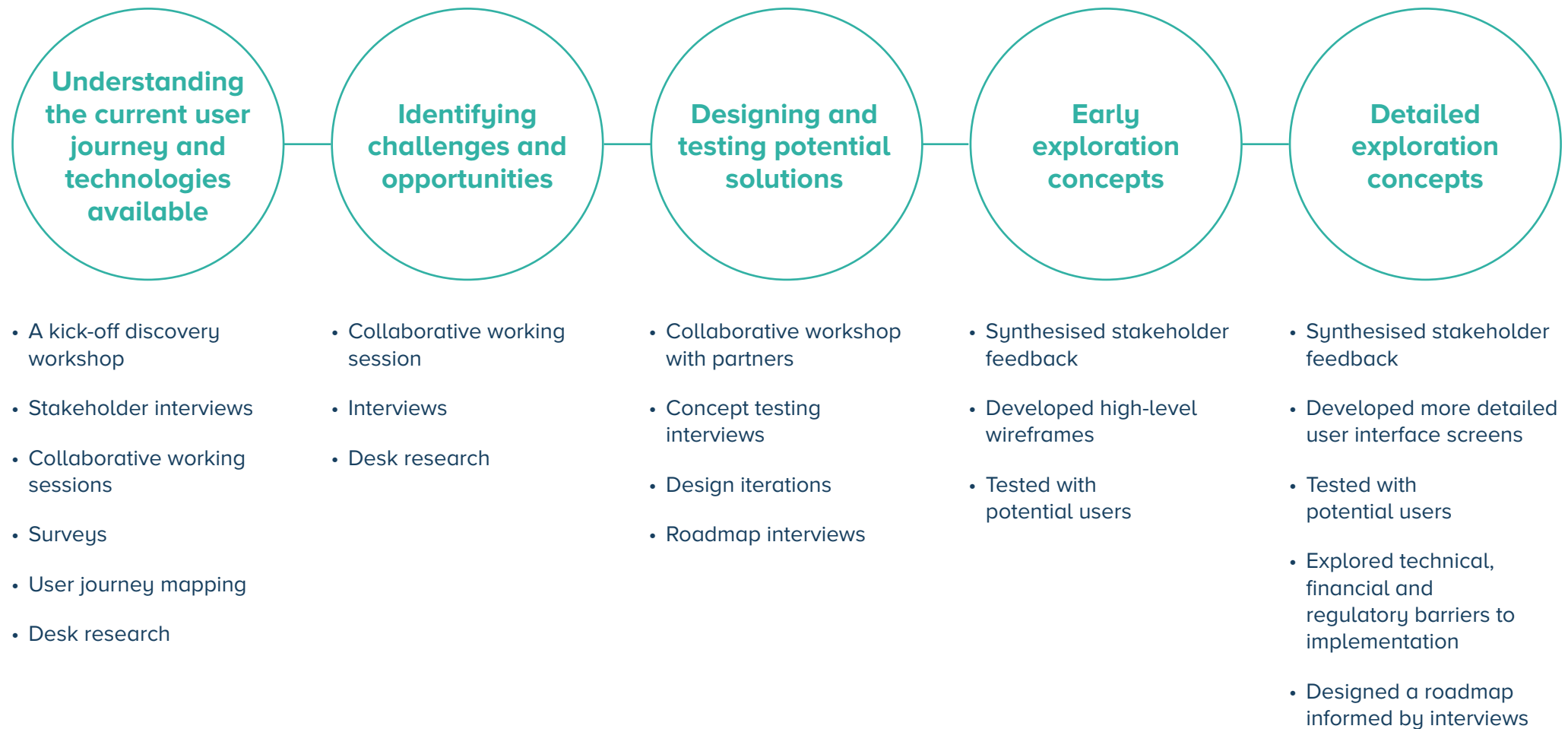
By conducting user-research and workshops with relevant stakeholders, an in-depth understanding of existing EIA processes, challenges and pain points has been established.

Our human-centred approach ensures that our insights are based on evidence and the ideas we develop and prioritise are grounded and impactful.

We have:

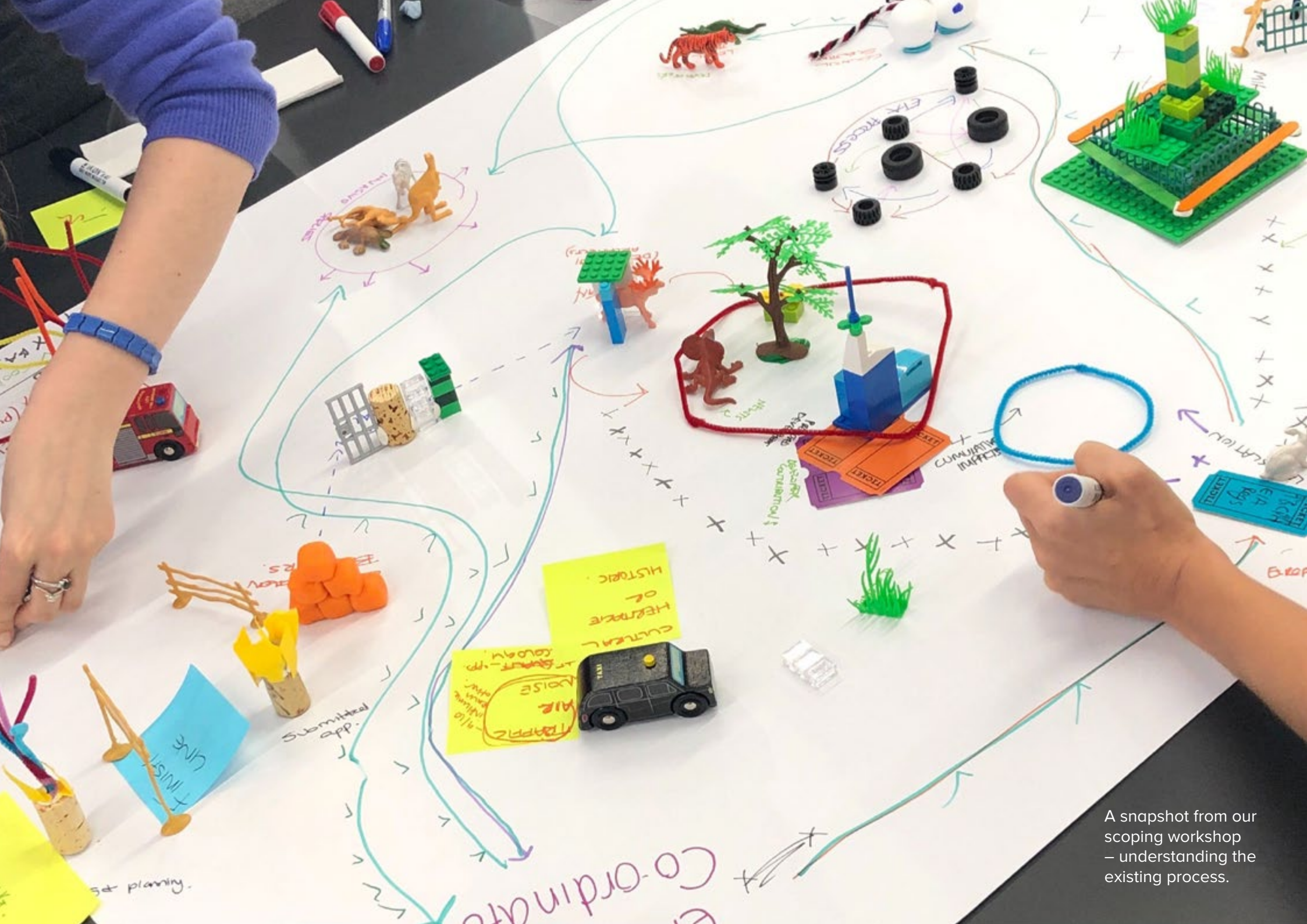
- Interviewed 45 people from organisations including:
 - The Ministry of Housing
 - Communities and Local Government
 - The Geospatial Commission
 - High Speed Rail 2
 - Transport for London (TfL)
 - City of Bradford Metropolitan District Council
 - London Borough of Southwark
 - Historic England
 - The Institute of Environmental Management & Assessment (IEMA)
 - Scottish Power Renewables
 - and many more.
- Held three collaborative workshops
- Defined six key challenge areas
- Developed seven idea groups and taken a closer look at three of them, designing user interface (UI) prototypes and developing roadmaps for each.

What we did:



Understanding the current user journey and technologies available





A snapshot from our scoping workshop – understanding the existing process.

Understanding the current user journey and technologies available

Our methodology



Hosted an exploratory scoping workshop with a range of experts to determine areas of focus and a framework for the next stages of research.



Conducted expert interviews with our own domain experts (Quod and Temple) to use their existing knowledge to map and outline user-journeys and their networks to identify the right interviewees.



Validated the journey through a series of expert interviews with a diverse group of stakeholders.



Reviewed the current state-of-the-art in digital EIA and planning tools.

There are three key stakeholder groups

We identified three key stakeholder groups throughout the EIA process:

Proposers

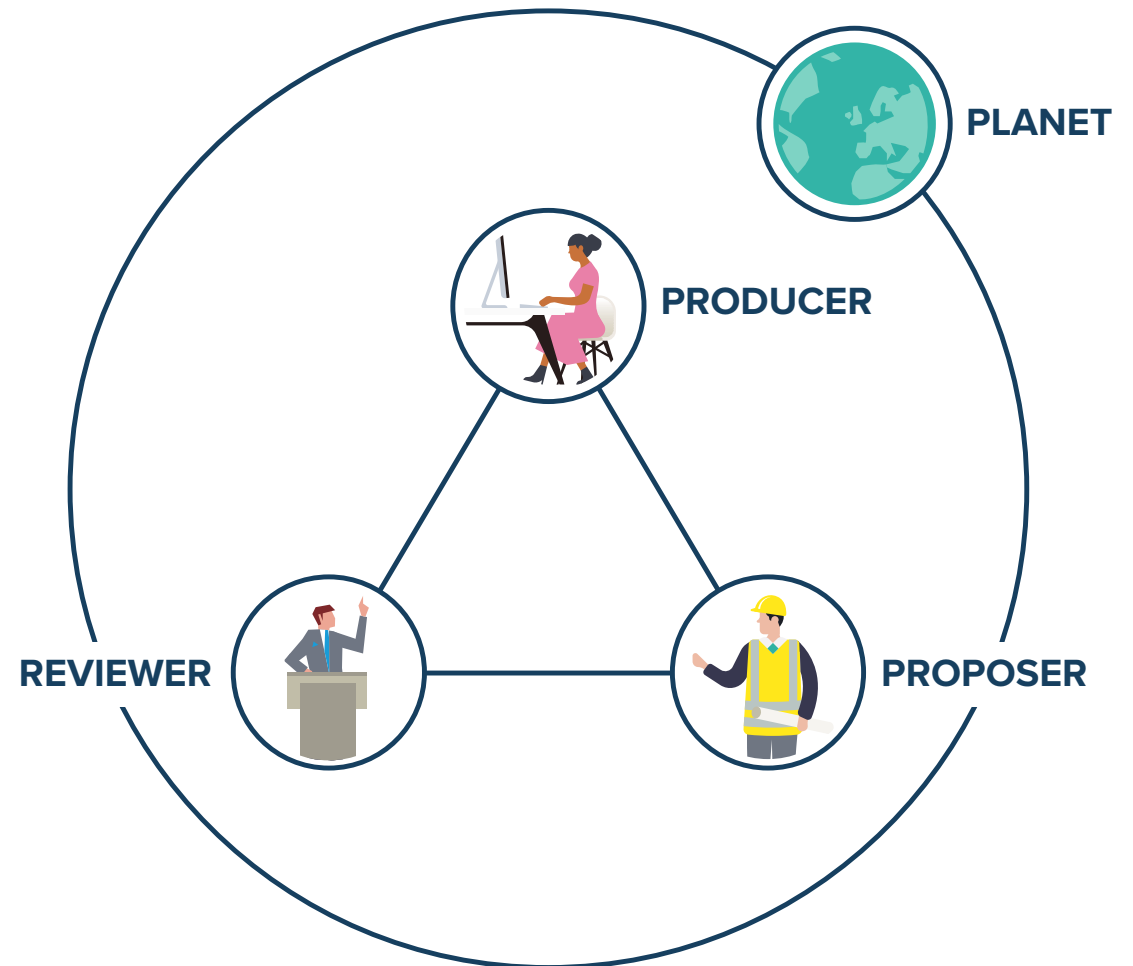
The applicants for new proposals such as developers and major infrastructure providers

Reviewers

Such as local authorities (the deciding body), statutory consultees and the general public

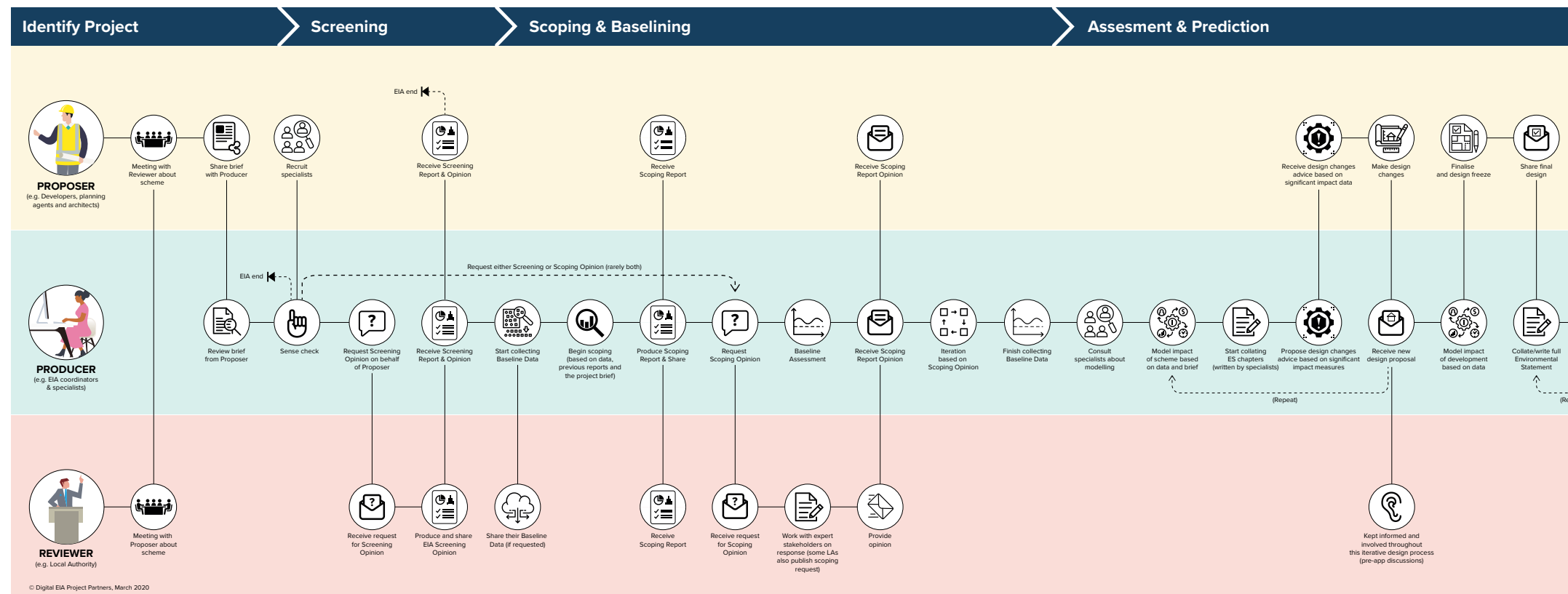
Producers

Such as EIA consultants and their specialists that produce EIA data

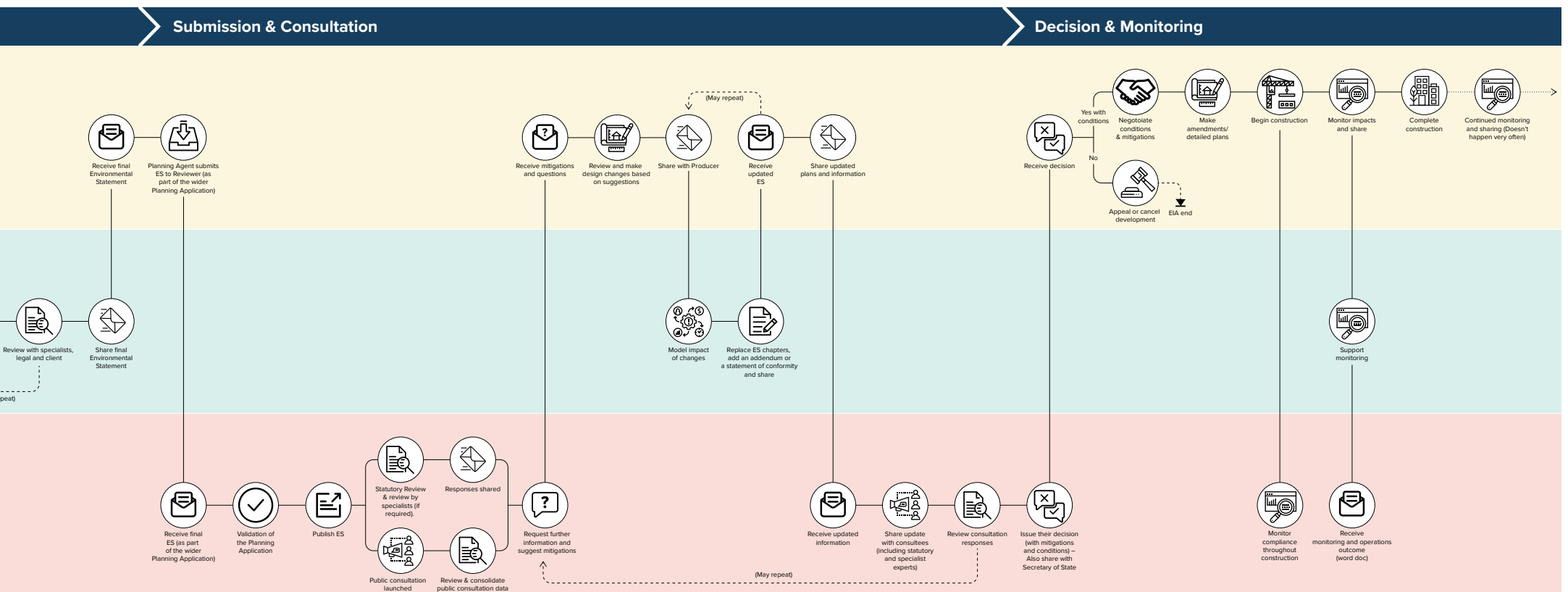


The journey is complex and chaotic

Following the scoping workshop, user research interviews and a mapping workshop, we were able to visualise a typical existing EIA process journey for the three stakeholder groups. From here, we were able to highlight the pain points in the process which went on to inform our ideas.



Existing EIA process journey

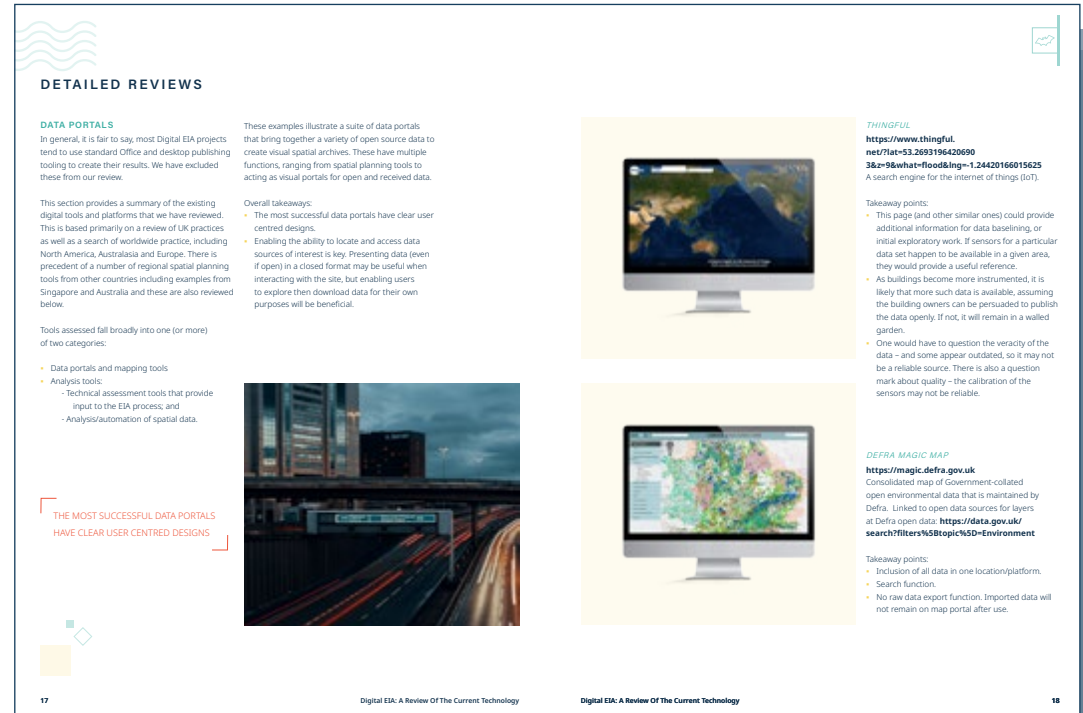


Technology review

A technology review was carried out to consider the potential advantages and disadvantages of existing or emerging tools in the planning/environmental sector and elsewhere (as applicable). Platforms and tools were considered where they were designed for or had applicable use in supporting a digital EIA process such as digital planning platforms, portals, toolsets and/or reporting functions.

These were reviewed against criteria to understand their analytical/reporting capabilities, domain alignment and usability. The review was also used to help inspire stakeholders in the art of the possible, as well as identify gaps in existing technologies

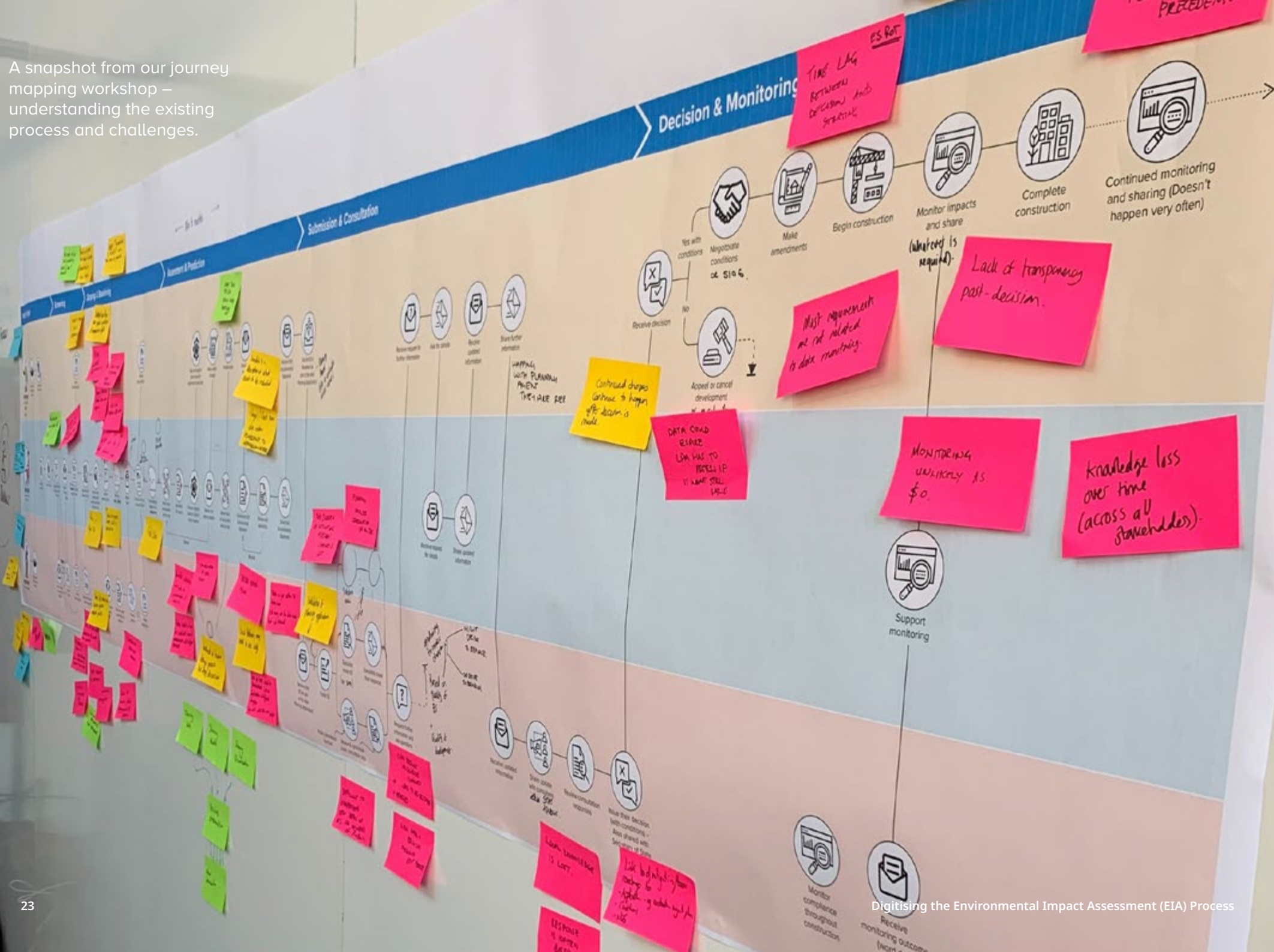
To see more in-depth review of our findings around data and technology, please get in touch.



Identifying challenges and opportunities



A snapshot from our journey mapping workshop – understanding the existing process and challenges.



Identifying challenges and opportunities

Our methodology



Mapped the EIA process and its key stakeholders to identify pain points and opportunities.



Conducted in-depth user research interviews with a wide range of stakeholders across the EIA process.



Surveyed stakeholders to understand the cost and effort expended on the EIA process today.



Synthesised our findings and clustered key insights around the current challenges and hopes for the EIA process.

Following our identification of pain points across the process map, we were able to identify **six** key challenge areas.



Self-regulation is leading to an 'obesity crisis'

- Fear of challenge and reliance on best practice rather than regulation has driven the industry to the over-production and over-scoping of EIAs
- This leads to a disproportionate production of data, analysis and information in the EIA process
- This makes EIA reporting impenetrable and difficult for local communities to understand the real impact of a development. This lack of understanding creates further challenges and thereby exacerbates the 'obesity' circle.



Current Environmental Statement formats do not enable high quality community engagement

- Navigating through an ES can be difficult. The level of unnecessary information in the document makes recommendations and impacts hard to find
- Users often have to cross reference and consult several versions of a document, making them impenetrable even for a specialist
- The language of the ES is often technical and full of acronyms, which can be challenging and inaccessible to the general public.

3

Access to valid data is restricted

- Data Standards for collecting, presenting and storing data are often inconsistent
- Where data is available online, access to the underlying data itself is rarely provided. When new primary data is captured within the EIA process, it is locked away in PDF's or on consultants' inaccessible storage systems
- Inaccessibility (due to ownership and Intellectual Property) and low searchability discourage stakeholders from relying on the data that already exists and prompts the need for further primary data to be gathered
- Data has a lifespan which varies by specialist topic area. Once 'expired', its validity is questioned resulting in repeat surveys.

4

Today's EIA is undervalued as a key tool to inform design

- ES's have become today's symbol of the EIA process, despite them being only the write up of the outcome of this process
- Instead of being recognised as an iterative process to inform design and development, EIA's and the mitigations are often miscommunicated and misunderstood
- Architects and developers do recognize the impact of this process on design, but often see it as burdensome and costly.



A lack of post-application evaluation and monitoring

- Post construction, data about the actual impact of the development is rarely collected, making it difficult to ascertain whether the predicted significant effects were correct and the proposed mitigations successful. This makes it hard to learn from previous estimations and improve the overall EIA process in the future
- Monitoring analysis is rarely shared to inform future developments or to scope out impacts. Currently, each EIA starts from scratch and there is little learning from previous applications
- This is driven by a lack of clarity around who is responsible for the (often costly) monitoring and little guidance around methodology.



Data is often scattered across several locations

- Data from different developments, past and present, even though available to the public, is often scattered between project-specific domains, or buried in council websites
- There are no legal requirements as to what data from the process should be held and stored for inspection or future research, and even nationally accessible data isn't centrally located.

EIA in numbers

Based on an average EIA for a 500-dwelling housing development (source: survey and interviews)

**£150,000 to
£250,000**

Average cost to a
developer

8-18 months

Average duration
from EIA initiation to
determination

0.2–3 FTE

Coordinating an EIA
on average, plus
6 to 10 technical
specialists

4350 pages long
and 14–17 chapters
of content on average

**£5,000 – £15,000 per
chapter on average,**
depending on the topic

Almost 55 days
of effort on average
are spent by each firm
on areas with potential
inefficiencies across
data, modelling and
reworking content

Opportunities for improvement and innovation

Following synthesis of our findings above, we prioritised a number of key opportunity areas for transformation to guide our concept development. These were founded on better data, data sharing and more collaborative tools. We focused most of our effort on opportunities to improve the assessment and prediction stage, following our finding that 64% of effort is focused on this area.

The identification of key challenge clusters facilitated collaborative development of a number of opportunity areas for transformation:



Data digitisation

The process needs to systematically collect, feed, store and access data in a standardised machine readable format, to allow recouping and recycling within and across assessments.



Improved communication

The Environmental Statement needs to explore new technologies and visualisation to communicate the impacts in an accessible, interactive, transparent and personalised way.



Streamlined processes

The EIA process needs to be streamlined, where previous stages inform and build subsequent ones, e.g. the Scoping process should automatically generate the EIA chapters template.



Feedback-based iterative evolution

The whole assessment needs to be reviewed by post-development monitoring to re-configure mitigation, environmental baseline and re-assess methodologies.



Real-time collaboration

A digital EIA should allow multiple stakeholders to write, collate, model, and assess impacts simultaneously, while managing, visualising and tracking overall progression.

Designing and testing potential solutions



3. Mark on this map where the development is planned to take place.



No Environmental Impact Assessment needed.

Download Summary

Reasons:

Environmental Impact Assessment or not (Screening). Users provide basic data the scheme (it's footprint, size, uses etc) and answer some simple questions. This information is then processed, together with other contextual data (e.g. nearby proposed developments, known animal habitats etc.) and relevant legislation to decide whether an EIA is required.

Where an EIA is required, more detailed information is requested about the scheme. This is used to generate feedback on the major issues and impacts that will need to be forecast as part of the EIA. (Scoping).

Features of this concept:

- 'Draw on maps', 'drag and drop' and other interactive elements
- Begins to create a 'template' for the EIA Platform
- Ability to use information from other schemes to inform yours.

- Highlight suggested or required modelling methodologies and relevant legislation

Impact of this concept:

- Prevent unnecessary assessments being conducted
- Reduce the length of EIA outputs
- Reduces risk-averse decision making

DATA CHANGES ALL THE TIME. HOW DOES IT KEEP UP TO DATE.

HIGHLIGHTS - SPEED UP PROCESS - COMMS CAN TAKE OUT OF THE

SOME SAYS THE LDD PLANNING FRAME AT SCALE

GOLD FOR STRENGTH BUT NOT CONSISTENT - EXTRA WORK FOR THEM.

SCOPING BODIES CAN BE EXTREMELY RISK ADVERSE - HAVE TO DEM WHAT'S OUT NOT IN!

ANNEX'S CAN BE A HUGE PROBLEM. - I HAD TO BE PAID FOR A WEEK TO READ ONE! IT WAS WORSE - INFO BURIED AWAY.

Profoundly understood what is likely to be a significant effect before completing huge volume of work

THERE ARE THRESHOLDS CAN USE THEM TO SUPPORT IN 3

MAKES THE DECISION TRANSPARENT AS EVERYONE.

Very helpful to gather evidence to aid decision making early on.

Risk Averse nature to EIA. Because of lawyers. Always Risk was

Narrowing down the qualitative data information overload.

Importance of setting up border that is often a making one going to be reported against at scoping stage

Would stop people trying to start of doing an EIA! Fear of consulting bodies!

Simplified, streamlined guidelines at Scoping Stage.

Extreme Conservative Culture. Want to demonstrate a lot through Scoping

Define procedure (Scoping) - Set this duty deliver assessment and bodies - Helps for monitoring

Set scope correctly, so baseline is set correctly, a threshold measurement

Consulting bodies are here to help

Would stop people trying to start of doing an EIA! Fear of consulting bodies!

Scope & Error Happen often

Look to all bodies with questions about your own project.

Used to be an 100% finality and then the policy simulation and decision in the industry

Like the simplicity. External assessment. More stakeholders across the industry

Not a black or white answer. More nuanced than that, can be grey

You do scoping to make sure it is not needed (EIA) not the contrary

Consulting body and bodies are not meant to be kept

Look to all bodies with questions about your own project.

Used to be an 100% finality and then the policy simulation and decision in the industry

Like the simplicity. External assessment. More stakeholders across the industry

Not a black or white answer. More nuanced than that, can be grey

Digital EIA Workshop Planning and relevant

Thoroughly understood what is likely to be a significant effect before completing huge volume of work

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Our methodology



Prioritised and converted our identified challenges into opportunities by turning them into a series of ‘How might we...?’ questions



Ran a collaborative co-design workshop with project partners (and additional EIA experts from Quod and Temple) where a number of different ideas were formed in response to these questions



Clustered these ideas into seven concept areas, each of which aimed to tackle the challenges identified in our research



Tested these high-level concepts in a series of interviews with potential users and stakeholders, and identified priority features and needs



Prioritised three concepts to develop further, which were further tested and iterated, informed by another round of user testing.

Our seven ideas

Following our research and a series of idea generation workshops, we were able to cluster our ideas into seven concept areas which aim to solve the challenges identified earlier in our design process.



National Environmental Datahub

One open and accessible hub for all environmental data



Automated Screening

An automated tool that helps the applicant understand if they need to undertake an EIA or not



Assisted Scoping

A digital tool that generates scoping recommendations and builds a custom EIA Workspace structure



Digital EIA Workspace

A standardised collaboration space for coordinating the EIA and writing the Environmental Statement



Impact Modelling

A plug-in tool to test and model different impacts and scenarios within a digital environment



Interactive & Accessible Environmental Statement

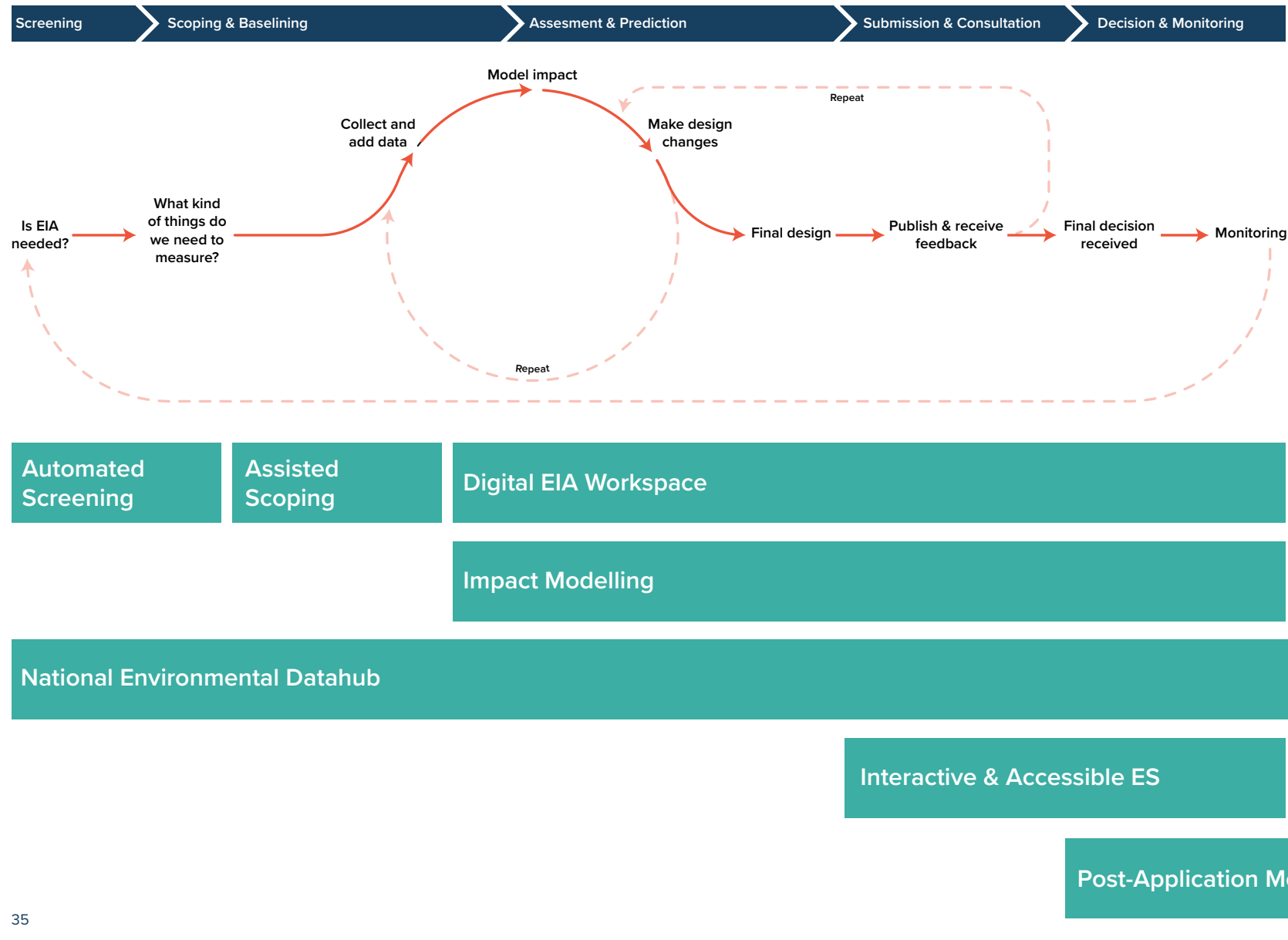
A digital and interactive output of the EIA process that allows users to easily discover and understand information relevant to them



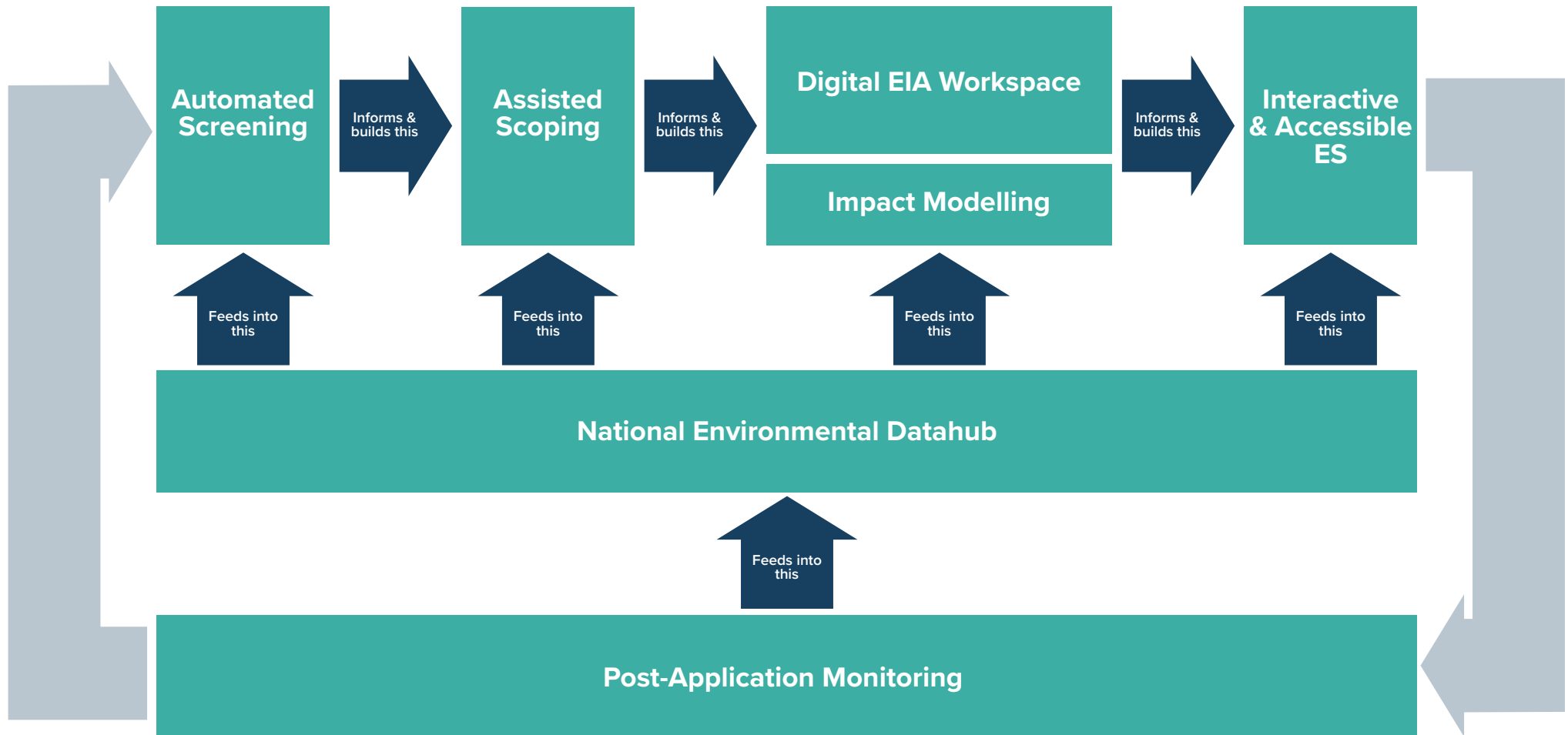
Post-Application Monitoring

A 'must-do' process that will improve the quality of mitigation and data.

How the seven concepts sit across EIA process:

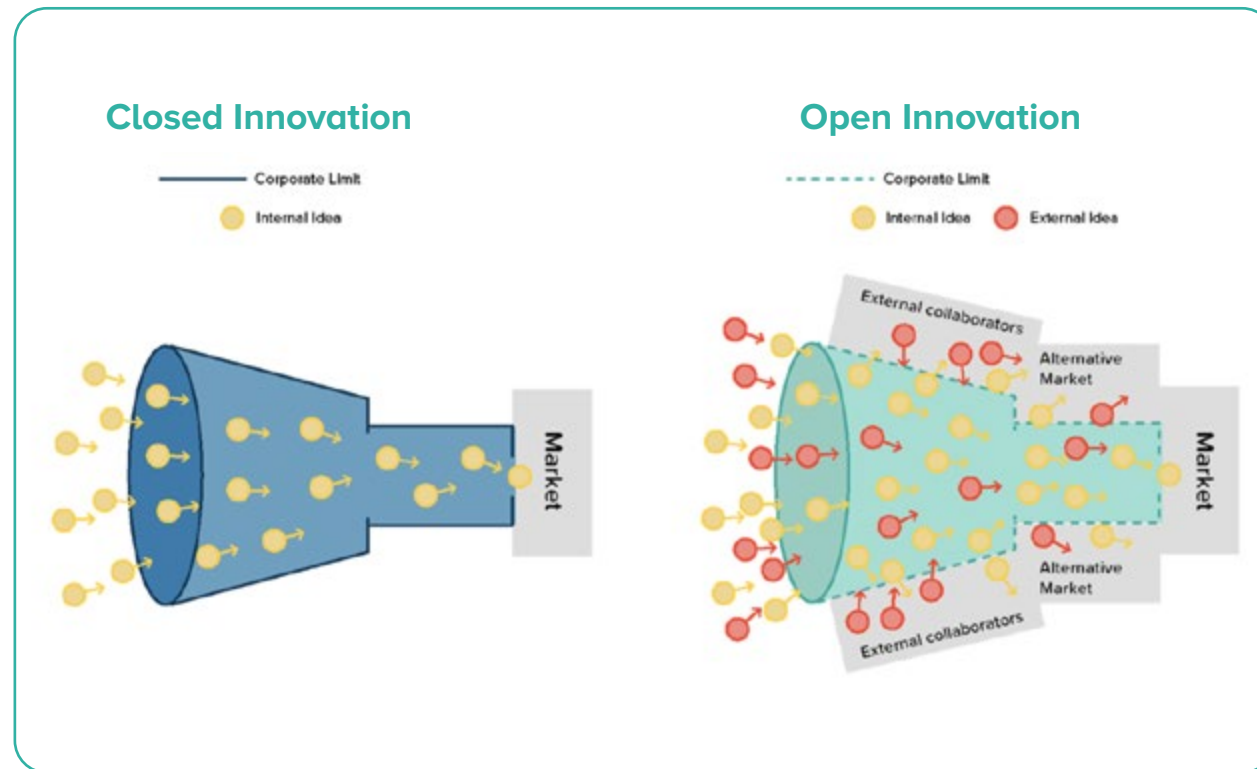


How they could build over time and work together to create a Digital EIA Framework



The ideas create opportunities for open innovation by others

The following concepts form part of a wider 'Open Innovation' strategy that will accelerate innovation and open new alternative markets.



“Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.”

Henry Chesbrough (American organisational theorist known for coining the term 'open innovation')

Early exploration concepts



Early exploration concepts

A series of concept-testing sessions with relevant stakeholders and experts were undertaken to gain feedback on our high-level ideas.

Whilst all the concepts were identified as having value across the process, the following four were de-prioritised to allow us to take a more in-depth look at the remaining concepts.

The Interactive & Accessible Environmental Statement was often chosen as one of the most important to the transformation. However, we identified that work on similar solutions is already being delivered by the market.

The remaining concepts were identified as having less impact on the overall process, or as needing further refinement before being taken further.

For each of these concepts we:

- Synthesised stakeholder feedback and used this to update and build each concept
- Developed a high-level wireframe to visualise what the idea could look like
- Documented our findings

Early exploration

Automated Screening

Assisted Scoping

Impact Modelling

Interactive & Accessible
Environmental Statement

Automated Screening

A semi-automated tool that helps developers to understand if they need to undertake an EIA or not

What is it?

An online platform that enables users to test and confirm if a new development proposal will require an Environmental Impact Assessment (Screening).

The tool asks those proposing a new development to provide basic information and data on the scheme (footprint, size, uses etc) as well as answer a series of standardised questions about their specific development proposal. This information is then processed, together with other contextual data (e.g. nearby proposed developments, protected species, flooding, etc) and checked against thresholds set out within national legislation and guidance, generating an automatic response as to whether an EIA is required.

Specialist and technical advice (human intervention) may be required for some 'grey-area' decisions. Where this is the case, the tool will create an EIA Screening Request, to seek additional advice, and automatically compile this request to the deciding body (e.g the local authority). Over time, machine-learning will seek to reduce the requirement for human intervention for 'grey-area' decisions.

Who is it for?

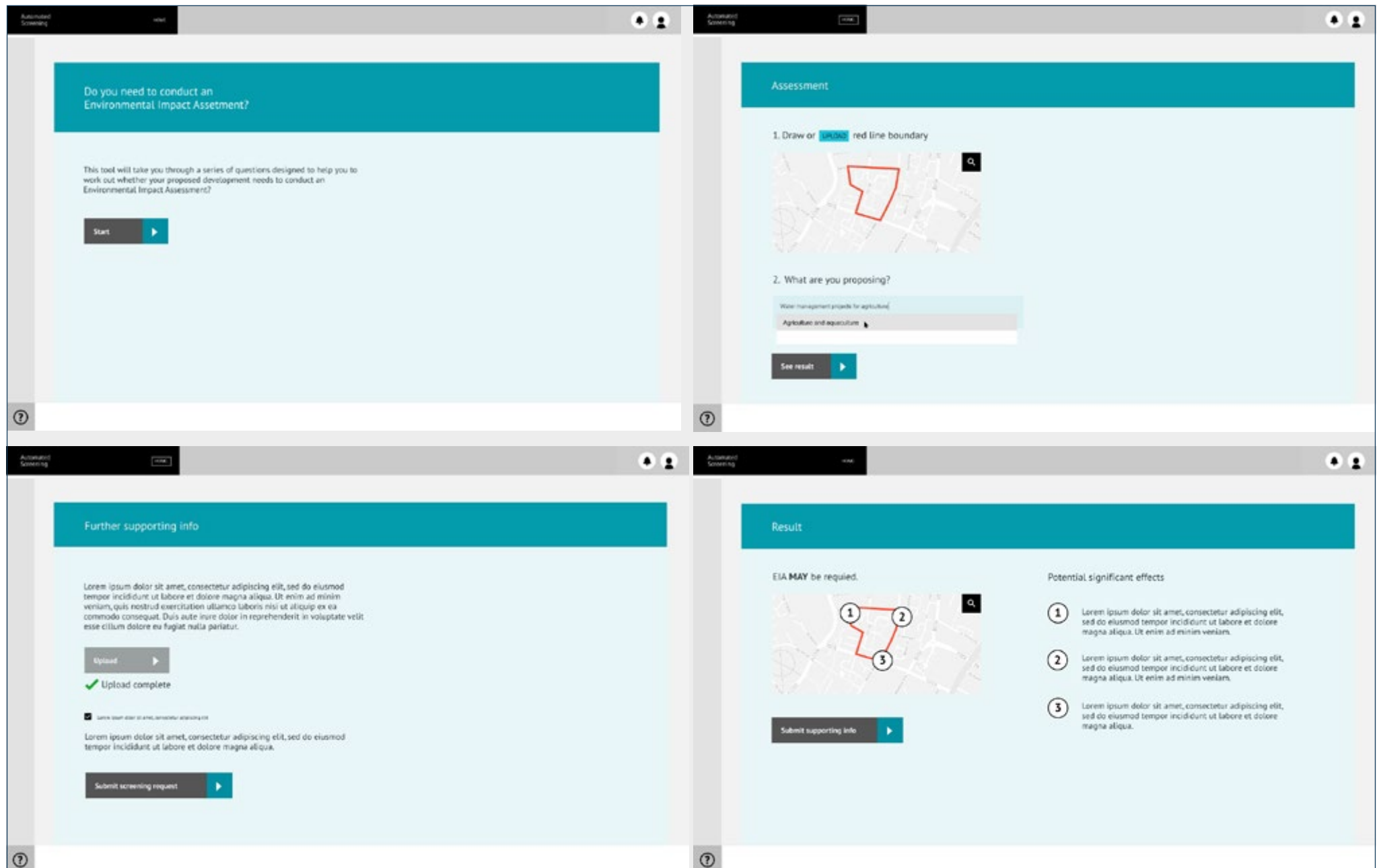
Developers and EIA consultants would be the main users. LPAs would also be secondary beneficiaries.

Benefits

- Reduces unnecessary screening requests and therefore local authority time and resource
- Increased transparency of decision-making and EIA screening requirements
- Increased certainty for applicants
- Reduces risk-averse decision-making
- Ensures direct alignment between proposals and the EIA Regulations and Government guidance.

Feedback

- Building trust amongst users is key for successful application of this tool. This means it needs to be clear what is a regulatory requirement and what is advisory, where specialist recommendations would still need to be sought for 'grey areas'
- Allows learning from other projects: however, they may have set bad precedents and therefore poor quality practice is included within the process
- Seen as one of the easier concepts to implement, but it felt the efficiencies and savings were less significant than transforming other parts of the EIA process.



Assisted Scoping

A digital tool that generates scoping recommendations, consolidates scoping feedback and builds a custom Digital EIA Workspace structure.

What is it?

A digital tool to improve the efficiency and transparency of the EIA Scoping process for both public and private sectors.

Applicants input scheme details and can choose to automatically collate baseline data and relevant legislation as well as policy and assessment methodology. It also allows them to identify potential surveys required, highlight likely impacts and make recommendations for appropriate mitigation. The tool would enable users to explore and select previous precedents to understand the methodology and mitigations applied to similar proposals and use this to populate a semi-automated, standardised EIA scoping report.

When a Local Planning Authority (LPA) receives the scoping opinion request, the tool automates the distribution of the report to the relevant statutory consultees. Once they have provided feedback, it automatically consolidates consultee responses into one report for review by planning officers.

Users will be able to geolocate all comments, for example highlighting potential environmental impacts spatially on a map. There will be a clear dialogue between the applicants and the consultees for each specific impact to demonstrate how they have been actioned and/or where further correspondence is required.

There is potential to link with the Digital EIA Workspace and Interactive and Accessible ES so that topics 'scoped-in' are automatically populated in these tools. Machine-learning could also be incorporated through a link to the Post-Application Monitoring platform to create a feedback loop that helps the tool become more intelligent over time.

Who is it for?

Applicants and their consultants will use the tool to submit a scoping request to LPAs who will in turn use this tool to streamline the consultation process, through greater efficiency in the collation and review by statutory consultees.

Benefits

- Efficiencies and cost savings for LPA's through automation of low value, resource intensive tasks such as collation of consultee responses
- Increased transparency and efficiency of scoping reports through standardised templates
- Reduced over-scoping and inclusion of topics that do not need to be assessed.

Feedback

- Due to the complexity of the scoping process and the number of consultees, a standardised and digital process would be very difficult to achieve
- The digital scoping dashboard makes managing and observing the progress of the scoping process more interpretable and user-friendly
- The tool needs to be 100% reliable in order for people to trust and use it.

Assisted Scoping

HOME

Topics

Ecology

Cultural heritage

Landscape

Noise

Water

Wind

Air Quality

+ Add themes

Consultees' Responses

+ Add consultee

Likely Significant Impact

Mid

High

Low

High

See responses

Ecology Impact

Natural England

Impact: Mid

Noise Impact

Environmental Health Officer

Impact: High

Water Impact

Central Gov

Impact: Low

Air Quality Impact

Environmental Health Officer

Impact: High

Progress

40%

Impact Modelling

A plug-in tool to test and model different impacts and scenarios within a digital environment.

What is it?

This plug-in within the Digital EIA workspace application enables different impacts and scenarios of a development to be tested.

The tool will demonstrate, in real-time, how a design will impact various parts of the environment (flooding, noise and air pollution, habitats, etc.) by measuring the proposal against data in the Datahub application.

As project partners make real-time changes to a scheme, impact data will respond accordingly and highlight where potential issues lie.

Who is it for?

Environmental consultants, together with project partners such as engineers and architects.

Benefits:

- By working in real-time, the Impact Modelling plugin will facilitate immediate and direct impact reporting from a scheme from the early stages of development, effectively making the 'design freeze' process more streamlined and simpler
- The application will utilise and integrate with Building Information Modelling (BIM) or other simulation software, which is already commonly used amongst built environment consultants. BIM will also allow users to track design changes as they are made, so that alternative options can be explored
- Environmental experts will be able to easily demonstrate to designers how various changes will impact the environment
- Data in the Datahub will not only be used for responsive impact testing, but will also link to other EIAs in the area and provide a library of previous scheme designs, demonstrating management and mitigation solutions.

Feedback:

- The functionality of the tool is reliant on the emergence of the Datahub as well as the breadth of the data contained within. Similarly, as a plug-in, delivery of the tool will be dependent on the Workspace application
- As scheme designs evolve there is a certain level of confidentiality that may be required. Given the tool is reliant on open and transparent information about a scheme at any point in time, there are likely to be issues with confidentiality
- There are issues around the types of data that are collected for EIA, of which, some data are qualitative. Qualitative measurements frequently require human assessment and consideration, which may make immediate responsive testing difficult.
- This was seen as being most useful if included as part of the Digital EIA Workspace concept

The screenshot displays the 'Impact Modelling' interface of the Digital EIA Workspace. The top navigation bar includes 'PROJECT TITLE', 'MODELLING', and 'EDITOR'. The sidebar on the left, titled 'Impact Assessment', lists various categories with checkboxes: AIR QUALITY (checked), CLIMATE CHANGE IMPACT..., CULTURAL HERITAGE AND..., ECOLOGY, LANDSCAPE AND VISUAL IMPACT..., NOISE AND VIBRATION (checked), SOCIO-ECONOMICS (checked), and WATER RESOURCES. A 'RUN MODEL' button is located at the bottom of the sidebar. The central map shows a project area outlined in blue, with a green square indicating the model location. The map includes street names like Henley Dr, Fort Rd, Alma Grove, Reverdy Rd, Longley St, Monnow Rd, Trothy Rd, Esmeralda Rd, Lynton Rd, and Avondale Square. The right sidebar, titled 'Scheme Design', shows two 3D renderings of building options (Option 1 and Option 2) and a floor plan. A 'Stats' section at the bottom right provides key metrics: 18 flats, 225 kWh/m2 per annum, and 2000 m3. A 'Graphs' section is also present.

Interactive & Accessible Environmental Statement

A digital and interactive output of the EIA process that allows users to easily locate and understand information relevant to them.

What is it?

An interactive ES platform that can be personalised by the user. It provides a concise digital format that will allow the user to easily navigate the ES, and provide them with interactive and easily understandable environmental information. Users will have the ability to use filters to see the information relevant to them, and translate technical jargon at the click of a button.

As a fully integrated ES platform, it allows users to leave feedback and ask questions. Users can interact with the information to understand the proposed development and its impacts in ways that are relatable to them, through features like Virtual Reality, 3D modelling, fly throughs and aural simulations of impacts.

With further research and development, the concept of an interactive ES could also be used to support the decision maker (e.g. LPA) with making a more informed conclusion on the potential environmental effects of a development.

Who is it for?

The local community and any interested parties. A variation of this tool could be created for LPAs and statutory consultees.

Benefits

- Impacts can be translated into easily relatable concepts (e.g. hear examples of what noise impacts might sound like)
- Increased transparency and inclusiveness by involving, more effectively, the public and other stakeholders throughout the process, in particular harder to reach members of the community
- Reduced lengths and complexities of an ES
- Increased accessibility and potential savings on printing costs and resources.

Feedback

- Today there is still a regulatory requirement for a paper ES. Unless regulatory requirements are updated, the interactive platform would need an export tool to PDF or similar
- Digital literacy and access are barriers to some members of the public which will need to be overcome to ensure effective public engagement for all
- Protecting sensitive information (such as drinking water extraction, the location of certain protected species etc.) would need to be considered carefully
- An ES could also communicate the positive impact of the EIA process and the 'trade-offs' that had been made
- This is starting to happen across the UK with most environmental consultancies developing basic digital ES reporting tools. Therefore, this concept was not seen as a priority to develop in more detail during this project.

insert paper prototype here

How will the Seven Hills housing development impact you?

Attend Event Stay informed Share

1 Customise

You are a:

☒ Resident ☐ Business owner

☐ Other

Your postcode is:

BB3 2JE

or search for areas of interest: ?

Market Ha

Find on map

Topics of interest:

☐ Air quality

☐ Ecology ?

☒ Noise ?

☒ Water

☐ Heritage & Archaeology

☐ Traffic

2 Understand

Introduction

Future

Now



We are building 503 two to five bedroom houses 0.8 miles away from your address.

per suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praedidam nonumad minim veniam, quis nostrud exerci tation ullamcorper.

Read more FAQs

Noise

The level of noise once the development is complete is expected to be 10dB higher

Current noise levels	Noise levels during construction	Expected noise levels post-completion
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud	Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud	Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud

Compare noise Compare noise Compare noise

3 Feedback

What are your first impressions?

😊 😊 😐 😞 😡

Add comments

How do you feel about the developments effects on local noise levels?

😊 😊 😐 😞 😡

I am impressed with the measures you have taken to avoid having a negative effect on!

+ More comments

Detailed exploration concepts



Detailed exploration concepts

Following feedback, the following three concept areas were prioritised for further development.

These were identified as the concepts that could have the largest positive effect on the EIA process and industry.

For each of these concepts we:

- Synthesised stakeholder feedback and used this to update and build each concept
- Used imagined scenarios for how they might be used to develop more **detailed user interface screens**
- Have thought in more-depth about the **user experience and features**
- Explored technical, financial and regulatory **barriers to implementation**
- **Consulted** with national and regulatory stakeholders
- Designed a **roadmap** which explains how the idea could be implemented over time

Detailed exploration

National Environmental Datahub

Digital EIA Workspace

Post-Application Monitoring

National Environmental Datahub

One open and accessible hub for all environmental data.

What is it?

A central and standardised open data portal where users can discover, access, analyse and contribute raw data for use and in the Environmental Impact Assessment process.

The future vision for the Datahub would be that innovative digital data solutions such as sensors, citizen science and predictive analytics and learning would be used to improve the quantity and quality of data and the frequency of data collection.

Whilst promoting an open data approach where possible, the Datahub concept incorporates different levels of data access to protect sensitive data, and various business models options have been developed to incentivise private organisations to share their data.

Who is it for?

EIA consultants, developers, councils and potentially the public

Impact:

- Drives efficiencies in the process, reducing the time to locate and access data, and enabling the re-use of data by others
- Opens up opportunities for SMEs and other businesses to develop new tools and innovations from the data that has been opened up
- Gives greater transparency to the data used in decision making.

What did we learn?

- This was seen as the most transformational concept by participants
- A distributed access model, which provides a portal for users to access data held in different places rather than a centralised database would be the most technically feasible approach
- It will be crucial to show the source of data, who it was generated by, as well as how and when it was collected for users to build trust and consider it reliable
- Starting with a minimal viable version of the Datahub to prove its value and feasibility is key – many users suggested starting with data for one environmental topic area, or a test project first
- Central Government were viewed as the key partner needed to drive this concept forward
- Identifying where this would be mandatory or incentive-led to promote use would be a key next step.

Some early ideas that informed this concept

Digital EIA - Ideas

Project information (same) Project specific (ie Subject site level) (Client funded)

Baseline

Collated Micro-data - standardisation and sharing

- A visual, digital platform illustrating and giving intuitive access to data collected by competent experts.
- Data has to be recorded with the exact location, date, time of day, weather conditions that were present when the data was being collected.
- Platform should show Tree Preservation Orders and Grade A trees and Bats Conservation Trust's records.
- Statutory consultee can mark the expectations on the map (to cut down time spent waiting for Scoping Opinion response) - for example, that they would expect naturalisation of the brook.
- It can be a simple GIS platform, with geolocated data.
- Could be part of a wider platform.

Which stakeholder group/s does it affect (and how)?

All stakeholders & general public

What challenge/pain point does this idea tackle?

- Technical consultants not willing to share data.
- Data standards to be agreed upon.

What phase in the journey are you tackling?

Submission & Consultation Phase

Digital EIA - Ideas

Regional + local

EIA National Spatial Data Platform (BIG DATA) NOT CLIENT.

WHAT ARE OPPS FOR THIS IN TERMS OF DATA TYPES?

Concept - There is no fixed concept here, just a suite of ideas that could assist in better managing, maintaining and sharing baseline EIA data. Part of the concept is starting with data that can inform scoping - this is likely to be less contested and granular - compared to the kinds of data required in assessment. By creating more standardised data within the EIA process, this is likely to help with providing the foundation of the data platform. If the temporal nature of the data could be captured, machine learning might then be able to 'fill the gaps'. Could all EIA related sensor data (from stakeholders, proposers and consultants) be stored here?

Who is responsible for maintenance?

Quality?

Will data have to be legislated?

If data is optional, will we get it?

Priority - the data that a business through the EIA process is most likely to use.

What challenge/pain point does this idea tackle?

Data relating to the current condition of a place (the baseline) is an essential component of all phases of the EIA process. Yet whilst some good resources exist such as Magic map, these are often insufficiently granular, up to date or authoritative, leading to consultants having to re-measure data.

What phase in the journey are you tackling?

Submission & Consultation Phase

Digital EIA - Ideas

Make data accessible and impact relatable

Concept - When mentioning data in ES reports, it should be compared or contrasted with relatable data that people are familiar with. (E.g. XXXkwh would power an average home for XX weeks) etc.

- NATIONAL - Relatable particularly for the UK's (non-innovative) sustainability

CAN THIS DATA BE SHOWN IN NEW PLACES? E.G. INFO BOARDS NEAR NEW DEVELOPMENT PROPOSALS SO IT CATCHES PEOPLE'S EYES WHEN THEY WALK PAST? + THEN AM MENTIONING OF EQUAL IMPACTS BE COMMUNICATED ON THE SAME BOARD?

- Communicate daily the trade-offs for any design e.g. higher density lower more ground floor for greenery

What challenge/pain point does this idea tackle?

Lack of understanding of impact by during public consultation and inaccessibility.

What phase in the journey are you tackling?

Submission & Consultation Phase

Digital EIA - Ideas

Data Model

Concept - Create a standardised (but extensible) data model for the reporting of environmental impact. In the first instance this could be merely a data 'executive summary' but then extend to provide more clarity and transparency on methodologies, before potentially creating a market for EIA data for use in other projects. The model could also be used by others to create new digital products and services.

Has agile/scalability qualities - can start narrow i.e. noise & evolve -> quicker to market/develop

Big enough impact?

- No state-independence
- Drive change over time
- Incremental
- Low transparency, more digitalisation

Which stakeholder group/s does it affect (and how)?

Producer & Reviewer

What challenge/pain point does this idea tackle?

Data does not always emerge from the EIA process, with much of it retained by consultants or at best included as tables within a pdf. This makes the data less accessible, reusable and interrogatable, leading to duplication of data production, reduced trust, and inability of assessments to be reused to e.g. reduce EIA 'obesity'.

What phase in the journey are you tackling?

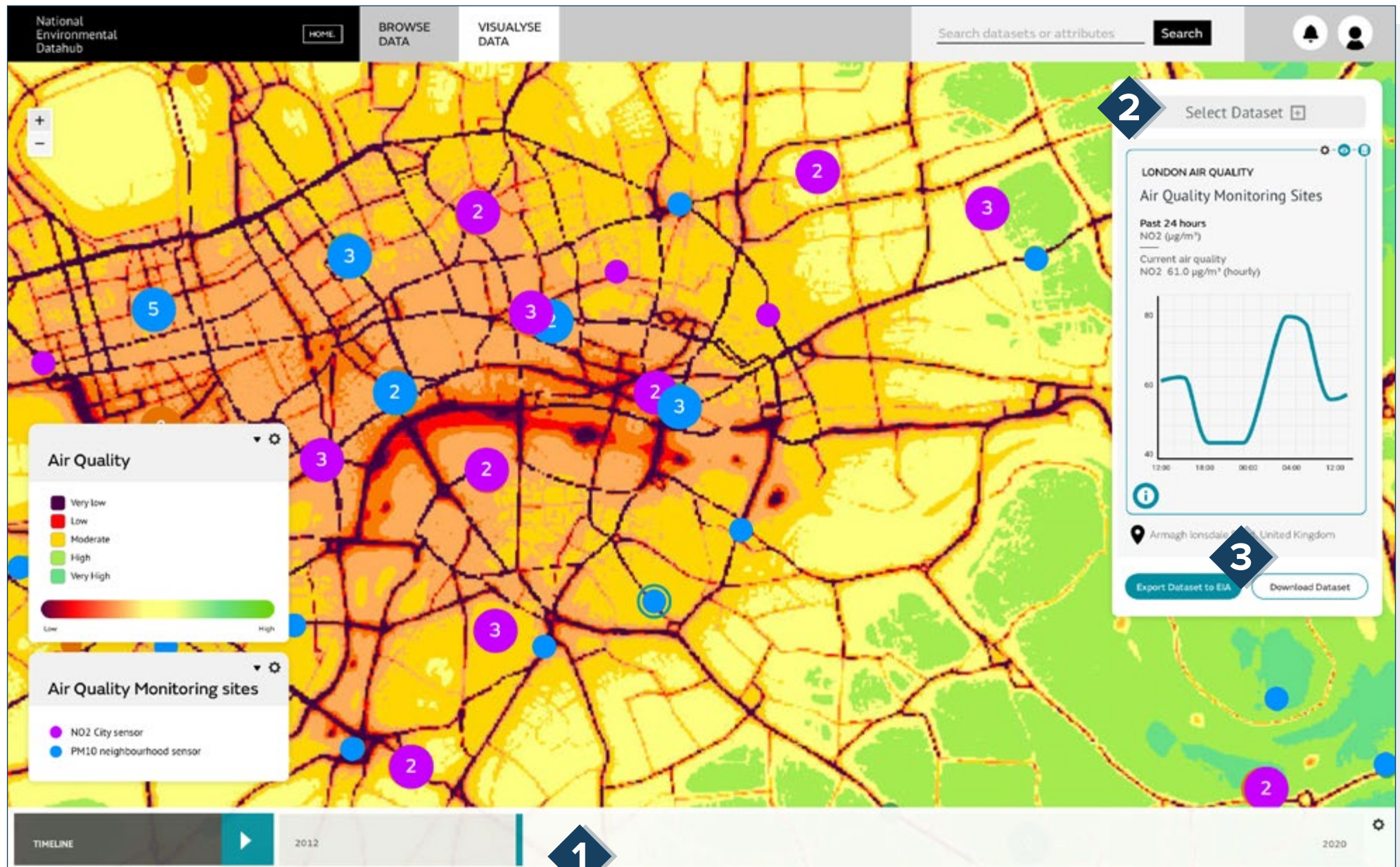
Submission & Consultation Phase

Example screen 1:

Locate datasets (Map view)

Enables users to search for different datasets on a map. This screen uses Air Quality as an example:

- 1 Scroll through a timeline to see how data has changed over time
- 2 Add multiple data-sets or categories to be visualised on the same map
- 3 Export datasets to the Digital EIA Workspace for use on Impact Modelling analysis.

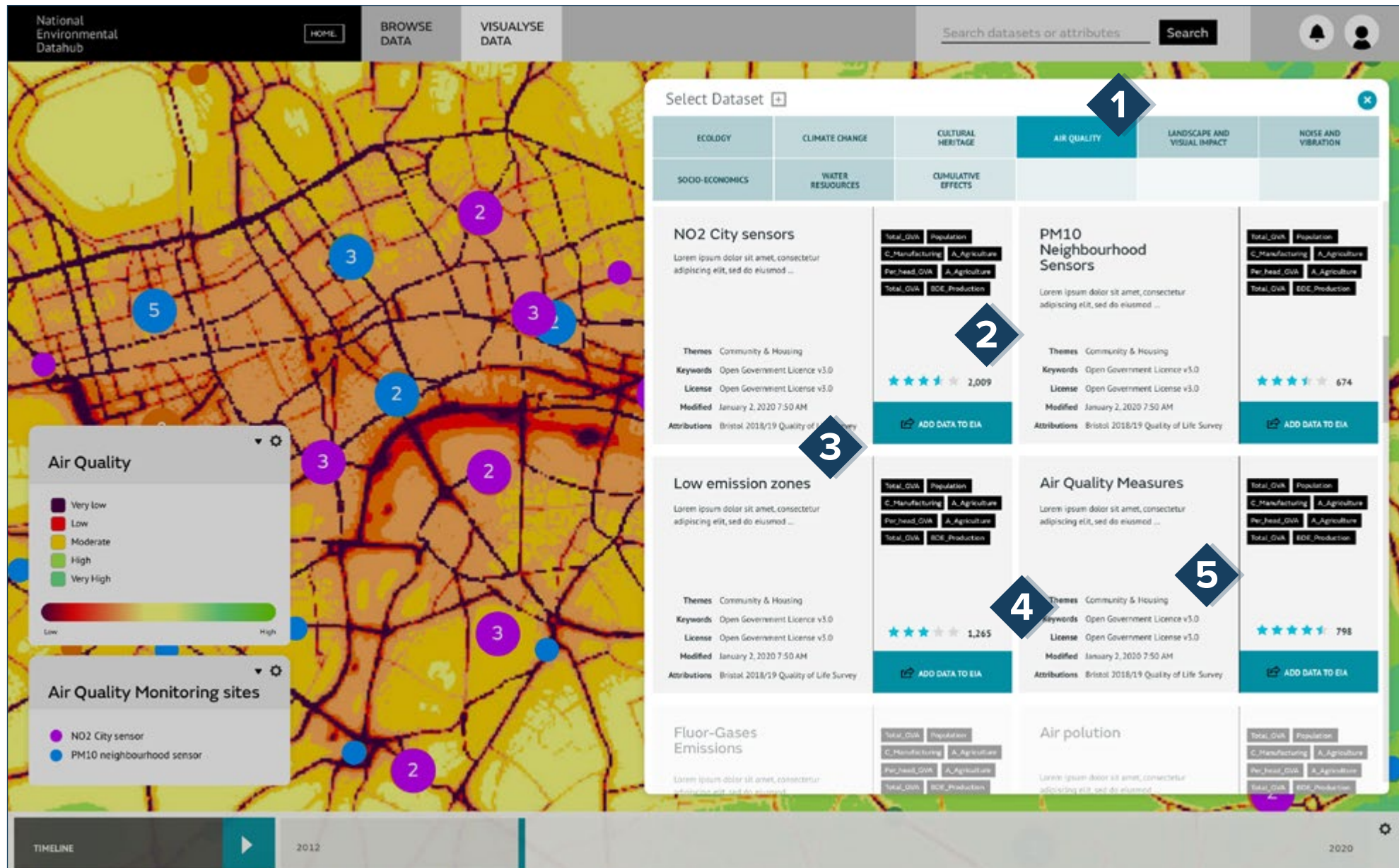


Example screen 2:

Locate datasets (List tab)

Enables users to search for different datasets relevant to the EIA process and view and filter as a list.

- 1 Easily search for and filter data
- 2 Metadata tags enable users to see key information such as data licensing
- 3 'Timestamps' show when the data was added or last modified
- 4 User-generated ratings to see how useful and reliable a dataset has been to others. This is key to building trust around data sets, and for the Datahub to learn about users' needs for data
- 5 Data has different levels of accessibility relating to its sensitivity, and any ownership restrictions.



Key Barriers

Issues of data trust and perceptions of bias regarding data sources collected by the public

Despite a positive increase in the variety of information available, there is a perception that data uploaded by members of the public is at risk of being of low quality and/or biased. Key concerns were that it may be:

- in favour of local issues that affect the community personally or have a strong emotional resonance
- at risk of being invalidated or misinterpreted due to the lack of appropriate tools and/or context.

Commercial value of data

Private companies and consultants often monetise data, creating licenced data hubs that sees information locked under IP laws. Some data is privately owned (e.g. data relating to private land) and is therefore not publicly accessible. Due to the commercial earning potential of data and the revenue potential that it provides, convincing stakeholders to buy-in and contribute to the Datahub would require a carrot-and-stick approach, with clearly defined incentives, and consequences for non-participation.

Liability

A lack of clear and transparent information about the ownership of data can create confusion due to fears of using somebody else's IP without permission. The repercussions associated with this may cause users to be nervous about using data collected by others.

Standards and trust in data

Data and the methods by which it is collected and processed isn't always in accordance with any standards or independently checked and validated. This can mean it's not always reliable. Any omissions or errors can undermine its validity.

GDPR and sensitive data

Some data used in the EIA process is sensitive and cannot be made publicly available. This might include government data about strategic zones, protected species or high-security sites and assets. There are also GDPR concerns over some data. Both of these cases require a qualified body to assess and advise.

Outdated data

Some data becomes outdated quickly, therefore a mechanism would need to be in place for allowing information to be kept up-to-date and accurate and to ensure data is time-stamped.

Multiple data formats

There is still a lack of clarity regarding how information can be consolidated into a uniform format and system that supports all different types of uploads. Currently, datasets aren't captured and held in compatible formats to facilitate consolidation of information. This applies to both the structure (a.k.a. schema) and format of the data (e.g. CSV, GeoJSON). Both are important, although a common schema to enable datasets to be effectively linked is the most pressing concern, as format transformation is possible in code.

National Environmental Datahub

Roadmap

	Now	Next	Future
GOAL	Identify and prioritise data sets to create a MVP prototype of the Datahub and explore the key requirements for a common data standard and schema.	Building on findings from the Datahub MVP, develop the understanding needed for delivery of a pilot. Key to this will be gap analysis of data. This will also be the right stage to begin to think about funding or monetisation streams.	Explore how emerging and advanced technologies could be applied to introduce new data types to the Datahub.
ACTIONS	• User needs identification Conduct research to identify specific future users of the service and their needs. • Data discovery and prioritisation Focus on data sets required under relevant legislation and regulations and those most commonly used. • Data review Segment data based on its sensitivity, openness and propriety. • Market sizing Understand the value and price of open and privately held data and the frequency of EIAs for different types of developments. • Development of Data Standards Adjust and/or develop key standards for collection and provision of data. • Prototype development and testing Create and make available the first version of the project.	• Federated data platform Analyse learnings from the prototype and establish requirements to build a “meta database” (platform that allows access to data sets from different locations). • Gap analysis of data Conduct a gap analysis of the data already featured in the Datahub to identify what is missing or could benefit from improvement or added complexity. • Incorporated monitoring Research the impact of incorporation of the monitoring data into the Datahub. • Pilot Datahub Create and test a pilot of the Datahub. • Funding and business models Establish a business model and funding models of the Datahub.	• New technologies Explore potential use of AI and machine learning innovations. • Government – Local Planning Authorities – Defra – MHCLG – Geospatial Commission • IT and Data specialists • Product and Service designers • Academia • IEMA

Digital EIA Workspace

A standardised collaboration space for coordinating

What is it?

The Digital EIA Workspace can be used when completing an EIA for a project. It enables users in various locations and organisations to access standard templates and methods, use pre-populated policy and legislation text, collate and assess information and data. It acts as a centralised place for collaboration between project teams and stakeholders, where they can manage tasks and overlaps, visualise data and work together on outputs.

Over time the vision for the workspace is that it will grow to enable users to access and retrieve data, interact with live modeling and assess impacts in one project space.

This can be interfaced with the Impact Modelling concept, whereby semi-automated modelling can interact and influence the emerging outputs in the workspace.

At the end of the process, the Digital EIA Workspace could be 'published' and presented as an Interactive & Accessible Environmental Statement for use in consultation and stakeholder engagement.

Who is it for?

The prototype we have developed focuses on the view and journey for EIA consultants. However the vision for this concept would be that the LPA and statutory stakeholders would also have access.

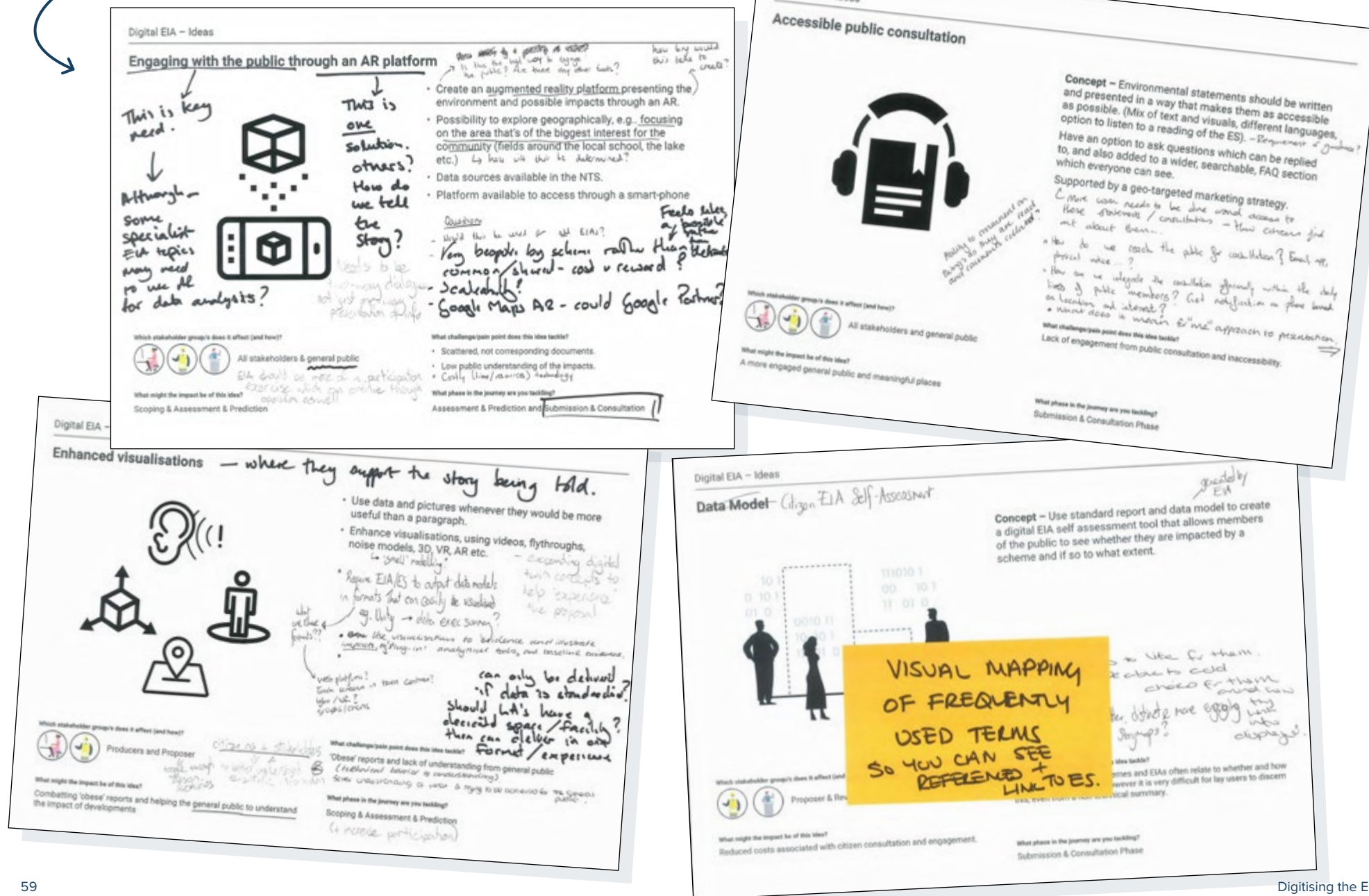
Impact:

- Provides transparency of working and promotes a culture of collaboration between specialists
- Reduces 'obesity' in reporting through standardised methods, and restricted word counts and formats
- Reduces hours currently spent on tracking changes and consolidating comments.

What did we learn?

- It's already starting to happen in large, multi-disciplinary firms and for major projects but these are often bespoke and based on individual best practice
- There was a strong desire for a customisable structure with plug-in capacity
- Differing levels of digital literacy across stakeholders, means that this idea may need to be accompanied by a programme of skills and training
- Users thought the concept would have a greater impact if it could synchronise the writing process with data sourcing and impact modelling
- Taking a UX approach to future development of the workspace is key, to encourage EIA teams to use it and in turn make the process more efficient.

Some early ideas that informed this concept



Example screen 1:

Collaborate and write in the Editor

Enables all involved in the coordination of an EIA to log in and work in a shared and transparent working area to write the Environmental Statement.

-  Precise writing locations are presented with word limits to avoid lengthy chapters
-  Select pre-populated text and hyperlinks to relevant policy legislation to avoid repetitive and lengthy chapters
-  Add visualisations of project data, images, maps and tables directly to the editing space
-  Track version history and review changes
-  A 'jargon buster' automatically identifies unnecessarily technical language and recommends simpler text
-  See the current completion status of each chapter

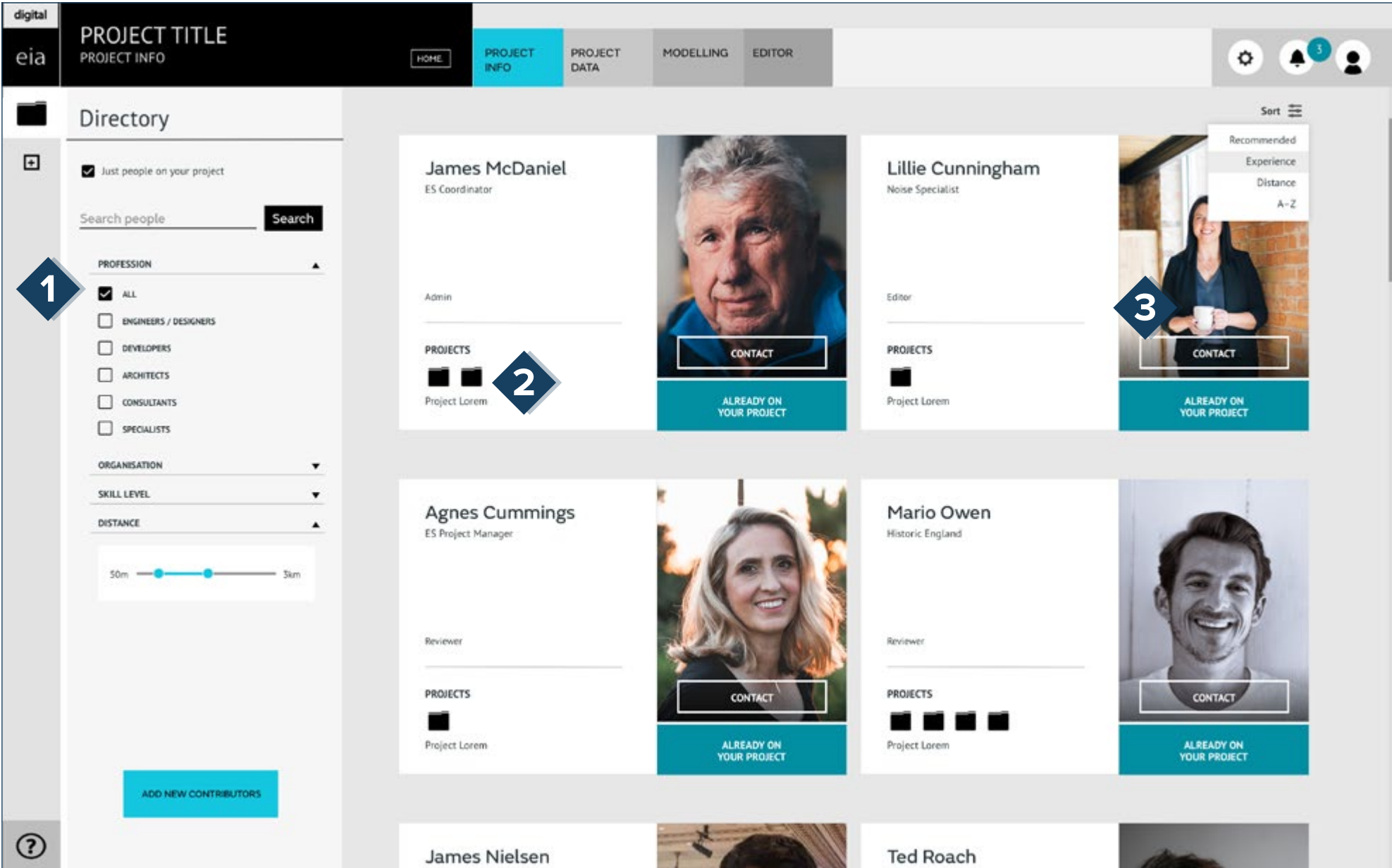
The screenshot displays the 'EDITOR' interface of the Digital EIA Workspace. The top navigation bar includes 'PROJECT TITLE EDITOR', 'HOME', 'PROJECT INFO', 'PROJECT DATA', 'MODELLING', and 'EDITOR'. The left sidebar shows a 'Chapters' list with 13 items, including '1 - INTRODUCTION', '2 - PROJECT DESCRIPTION', '3 - THE LEGISLATIVE AND PLANNING ...', '4 - ENVIRONMENTAL IMPACT ...', '5 - AIR QUALITY', '6 - CLIMATE CHANGE IMPACT...', '7 - CULTURAL HERITAGE AND ...', '8 - ECOLOGY', '9 - LANDSCAPE AND VISUAL IMPACT ...', '10 - NOISE AND VIBRATION', '11 - SOCIO-ECONOMICS', '12 - WATER RESOURCES', and '13 - CUMULATIVE EFFECTS'. The main content area is titled '2. PROJECT DESCRIPTION' and '2.2 Alternatives', showing a progress indicator of 42% and a list of status icons: Under review, Editing, Draft, and Pre-populated. The content is divided into sections: 'Introduction', 'Legislation, Policy and Guidance', and 'Summary'. The 'Introduction' section contains text about the ES assessing the likely significant effects of the Proposed Development. The 'Legislation, Policy and Guidance' section contains text about the air quality assessment. The 'Summary' section contains text about current air quality conditions and a note about nitrogen dioxide levels. The right sidebar shows 'ADD ELEMENT' options: Data graphic, Members, DATA VISUALISATION Example 1, TABLE Example 1, IMAGE Example 3, and MAP Example 4. Below this is a 'TO-DO' checklist with items: 1. BASELINE COLLECTION, 2. MAP, 3. REVIEW OF ALTERNATIVES, 4. FIRST DRAFT, and 5. TECHNICAL REVIEW. At the bottom right is a 'VERSION HISTORY' section with entries: 1. Feb 06, 2020 at 10:52AM, 2. Feb 06, 2020 at 11:00AM, and 3. Feb 07, 2020 at 10:37AM. The interface also features a 'Map visual' at the bottom and a 'Cumulative Effects' section. Annotations include a comment from Leila Lynch on the 'Introduction' section and a comment from Paul Fitzgerald on the 'Summary' section. A 'Map visual' is shown at the bottom of the main content area.

Example screen 2:

Search the directory to coordinate large project teams

Enables users to see who else is collaborating in the EIA workspace, search and add new contributors and set access levels.

-  Filter by location, specialism and experience
-  Ability to add new users to the project workspace and set access levels
-  Profile information for each contributor, such as responsibilities, tasks, and actions, plus job titles, contact details and past projects.



Example screen 3:

Impact Modelling

Impact Modelling forms part of the Digital EIA Workspace and allows users to overlay different scheme details with existing open data and project data to predict the changes in environmental effects.

- 1 Drop precedents into the scheme and test
- 2 Option to see 3D visualisations
- 3 Test environmental impacts on different stages of the development. This could potentially be automated
- 4 See data that has been connected to this project via the Datahub.

The screenshot displays the 'Impact Modelling' interface of the Digital EIA Workspace. The top navigation bar includes a 'PROJECT TITLE' field, a 'HOME' button, and tabs for 'PROJECT INFO', 'PROJECT DATA', 'MODELLING' (active), and 'EDITOR'. A '3D' view toggle is also present. The left sidebar, titled 'Impact Assessment', contains a list of categories with checkboxes: AIR QUALITY (checked), CLIMATE CHANGE IMPACT..., CULTURAL HERITAGE AND..., ECOLOGY, LANDSCAPE AND VISUAL IMPACT..., NOISE AND VIBRATION (checked), SOCIO-ECONOMICS (checked), and WATER RESOURCES. Below this is an 'Add impact assessment' button and a large 'RUN MODEL' button. The central map shows a street grid with a blue-outlined project area and a green building footprint. A status bar at the bottom of the map indicates 'Running impact assessment ...'. The right sidebar, titled 'Scheme Design', features an 'UPLOAD SCHEME' button, two 3D building renderings (Option 1 and Option 2), a floor plan, and a 'Stats' section. The 'Stats' section lists: 18 flats, 225 kWh/m2 per annum, 2000 m3 per annum, and 20 new jobs. A 'Graphs' section with a pie chart is also visible.

Example screen 4:

Add Plug-ins for Advanced Functionality

Users can add or purchase plug-ins to add new functions to the workspace. These may be developed by SMEs and other businesses who have taken the opportunity presented by the workspace to develop new products and services.



Filter plug-ins by category, price range, company and function



User generated star-rating reviews to measure the reliability of plug-ins.

The screenshot displays the 'Add Plug-ins' interface of the Digital EIA Workspace. The top navigation bar includes 'HOME', 'PROJECT INFO', 'PROJECT DATA', 'MODELLING', and 'EDITOR'. The sidebar on the left contains a search bar and various filters. The main area shows a grid of plugin cards, each with a puzzle piece icon and an 'ADD PLUGIN' button.

Left Sidebar (Filter 1):

- Search plug-ins: [Search]
- CATEGORY:
 - ☐ ENVIRONMENTAL IMPACT ...
 - ☐ AIR QUALITY
 - ☐ CLIMATE CHANGE IMPACT...
 - ☐ CULTURAL HERITAGE AND ...
 - ☒ ECOLOGY
 - ☒ LANDSCAPE AND VISUAL IMPACT ...
 - ☐ NOISE AND VIBRATION
 - ☐ SOCIO-ECONOMICS
 - ☐ WATER RESOURCES
 - ☐ CUMULATIVE EFFECTS
- PRICE RANGE: £5 to £110
- COMPANY: [Dropdown]
- FUNCTION: [Dropdown]

Main Grid (Filter 2):

Plugin Name	Description	Rating	Count	Version	Updated	Size	Language	Action
CadnaA Plugin	Noise modelling output	★★★★☆	1,176	2.0	December 24, 2016	268KiB	English	ADD PLUGIN
ArcGIS Plugin	GIS analysis and display	★★★★☆	1,233	2.0	December 24, 2016	268KiB	English	ADD PLUGIN
TRICS Plugin	Future traffic projections	★★★★★	2,009	2.0	December 24, 2016	268KiB	English	ADD PLUGIN
Hydraulic Plugin	Flood model	★★★★☆	988	2.0	December 24, 2016	268KiB	English	ADD PLUGIN

Bottom Bar:

- TRICS Plugin
- Hydraulic Plugin

Digital EIA Workspace

Key Barriers

Inaccessible formats

A centralised workspace requires shared and interoperable formats across project teams and stakeholders. However most of today's information is produced in locked PDFs and image files which aren't accessible or machine readable. Consequently, compatibility of inter-related project data and tools, e.g. field data and 3D development models is harder to complete successfully.

Limited culture of collaboration

Despite having collaboration tools present in our everyday lives, the EIA sector lacks full utilisation of them. To promote the use of a collaborative tool such as the Workspace, there will need to be a change in culture for this digital tool to be successfully adopted by users.

Carrot-and-stick approach

For EIA professionals to use this platform and change current ways of working, some incentives might need to be introduced.

Digital EIA Workspace

Roadmap

	Now	Next	Future
GOAL	Identify user needs and develop and test a working prototype with users. It will be essential at this stage to identify interoperability requirements with other digital EIA tools and regulatory requirements.	Recruitment and upskilling of stakeholders (champions). This will necessitate, alongside training, certification and lobbying, the running of a pilot workspace platform.	In the long term, the broader software development market should be encouraged to develop plugins and features for the workspace platform.
ACTIONS	• Develop user needs and stories Carry out further research into the needs of key users of the platform. • Develop format requirements Create templates and open file formats and use data recording standards to enable collaboration. • Co-development, Testing and Creating of Prototype Through development and iterative testing of prototypes, understand and test the requirements for the key collaboration points between different users. • Research into regulations Carry out a review of existing regulations of the EIA process to ensure compliance of the Workspace. • Technical and data architecture Research technical requirements and develop technical architecture of the Workspace.	• Recruit pilot champions Recruit Champions from local authorities and consultancies to test the developed pilot project. • Develop pilot platform Create a pilot platform to be used by the Champions for EIA projects for testing and learning purposes, allowing future improvement. • Establish training and certification Establish a training programme to scale the platform beyond the Champion users and ensure liaison and buy in from professional organisations such as Institute of Environmental Management and Assessment (IEMA). • Digital & Interactive ES Establish the technical, regulatory and data requirements to enable a 'Digital & Interactive ES' to be submitted through the Workspace. • Business case Develop the business case, governance arrangements and funding models needed to take the tool to the next stage of development.	• Expansion of features Engage commercial markets to create plug-ins to expand features of the Workspace and support the EIA process and writing of the ES. Key Stakeholders • Environmental consultants and planners • Planning Inspectorate • Central Government • Local Planning Authorities • Digital and Tech Developers • IEMA • Developers

Post-Application Monitoring

A ‘must-do’ process that will improve the quality of mitigation and data

What is it?

During construction and following completion of a development, data is rarely collected about the actual impact of a development and whether mitigation measures were successful or not. This means there is no feedback loop detailing whether the tools and methods used to predict the effects during the EIA process and the mitigation measures applied were correct or have been effective or not.

There are, however, various benefits associated with encouraging post-application monitoring, and we have explored three ways in which it could be **encouraged, collected** and **utilised**.

Who is it for?

Councils would be the primary user of our high level prototype. Different solutions within this concept area would be relevant to developers, citizens and EIA consultants as their users.

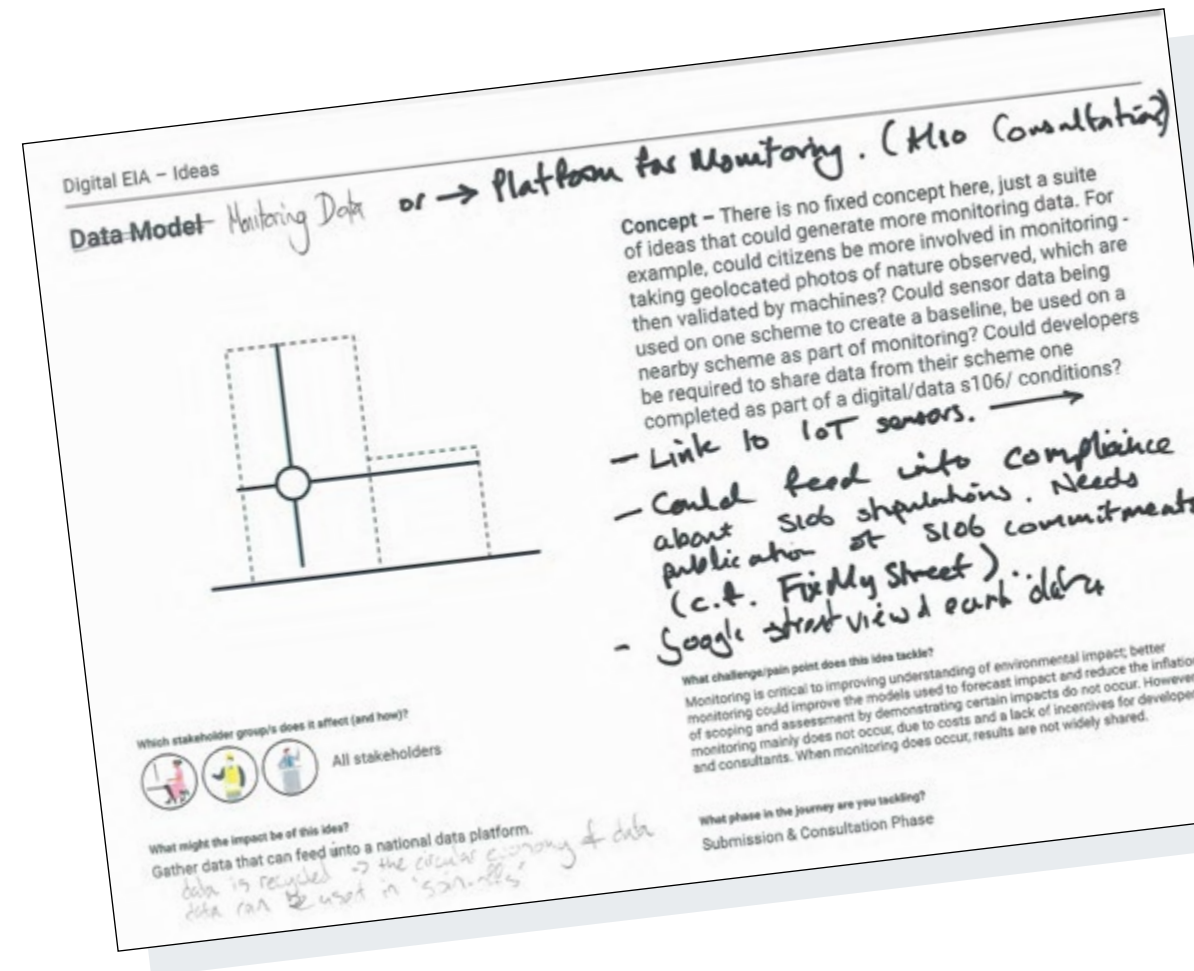
Impact:

- Data, processes, policy and regulations will be improved through a feedback loop of data detailing whether predictions of impacts were correct and mitigation measures performed as expected
- Promotes accountability in the EIA processes and predictions. Currently, EIA experts estimate that only approximately 10% of developments monitor impacts during the operational phase (source: surveys and interviews)
- Improved trust from the public in the EIA process through the sharing of this data.

What did we learn?

- This was seen as impactful in promoting transparency and accountability of predictions, and creating new data outlining the success of mitigation strategies
- Defining responsibilities for monitoring, ownership and reporting of monitoring data will be crucial for monitoring it becoming a more integral part of the EIA process
- Pilot projects to test how impacts could be monitored were seen as a key next step for this idea and it was considered likely that major developers of infrastructure and homes may want their name associated with these
- Ensuring monitoring requirements are considered from the outset of the process and scoped into an EIA would be a key enabler for this idea
- It was considered that developers may not want to meet the additional cost of monitoring, and were only likely to do this if it were to be made mandatory under planning requirements.

This concept is more complex than simply digitising an existing process. We have considered ways in which we might be able to create behaviour change to **encourage**, **collect** and **utilise** post-application monitoring data.



Post-Application Monitoring

Encouraging Monitoring – Accreditation

Accreditations and certifications are already used in the construction industry to incentivise particular behaviours from developers, consultants and construction organisations. This is one way that developers and other stakeholders could be encouraged to participate.

Post-Application Monitoring would entail receiving an official accreditation, a mark of recognition, for continuing to monitor (and mitigate) the developments effect on the impact during and beyond the construction phase.



Collecting monitoring data – Citizen Science

Whilst it wouldn't be the only way of collecting data for the Monitoring Dashboards and Datahub, Citizen Science – the practice of public participation and collaboration in scientific research to increase scientific knowledge – is a quick and effective way to collect large amounts of data whilst also encouraging transparency and public engagement.

There are some great examples of this already happening across the world, from detecting cancer to monitoring dolphins. Applying this to EIA monitoring by opening up the Datahub to innovation has the potential to change the face of EIAs and the way they use and collect data.

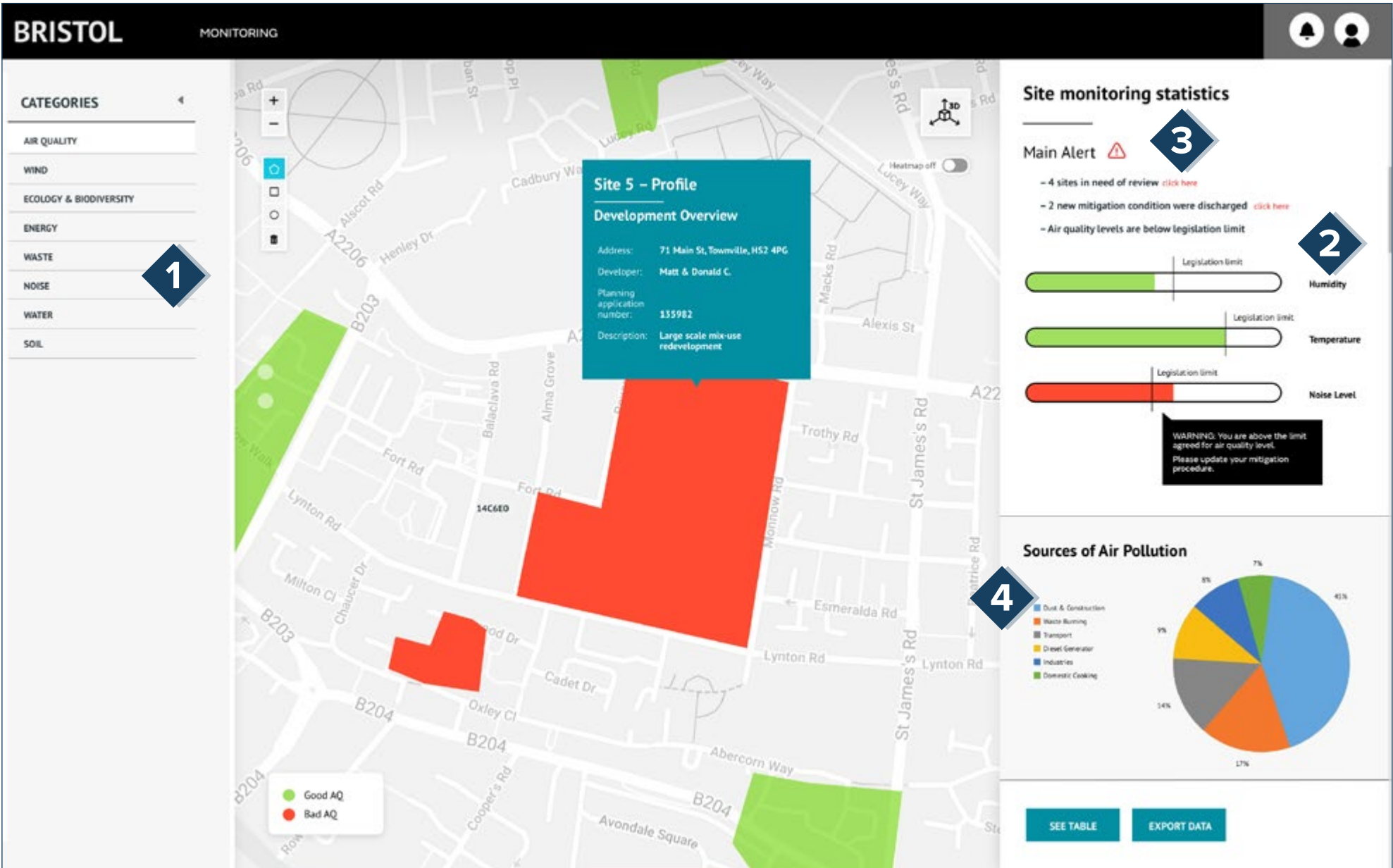


Utilising Monitoring data – Dashboard for Local Authorities

(Example Screen 1: Area view)

Users can add or purchase plugins to add new functions to the workspace. These may be developed by SMEs and other businesses who have taken the opportunity presented by the workspace to develop new products and services.

- 1 Select the category of environmental impacts you want to view
- 2 See the cumulative environmental impact of developments in your area and compare with legislation
- 3 An alert function notifies users to developments that are exceeding their predicted impacts
- 4 Provides a breakdown of key sources having an impact.

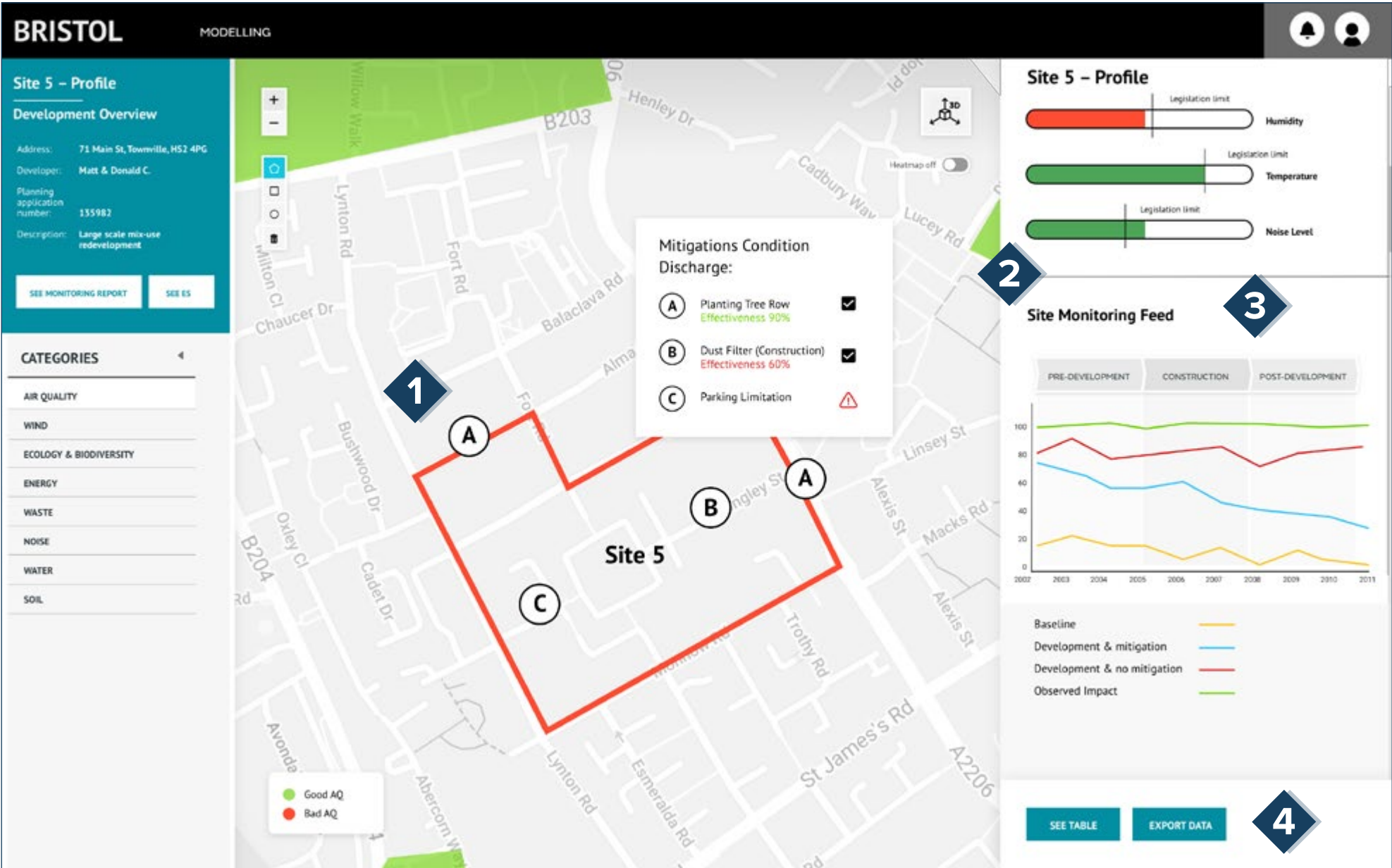


Utilising Monitoring data – Dashboard for Local Authorities

(Example Screen 2: Site specific view)

Users can view site specific monitoring data. It includes a conditions tracker feature where data detailing whether additional mitigation imposed through planning has been discharged:

-  View agreed mitigation measures
-  View the level of impact against key legislation
-  View a comparison of predicted environmental impacts of a scheme vs. actual impact over time
-  Data can be exported for use in other reporting documents, or to be used to inform future EIA assessments.



Post-Application Monitoring

Key Barriers

Lack of existing approaches and techniques for EIA monitoring

As post-application monitoring is rarely undertaken, best practice and approaches are much less developed for this than for other aspects of the EIA process. Techniques would need to consider issues such as isolating sources of environmental impact, validity and compatibility of data.

Liability

As responsibilities for monitoring are poorly defined in today's regulations, there is a need to establish who has the responsibility for carrying out monitoring once a developer sells/changes the ownership of a development.

Resources and capacity amongst LPAs

Lack of adequate resources in terms of skills, capacity and funding are a key barrier to the utilisation of Post-Application monitoring. This is a particular issue for Local Authorities who's IT systems may not be prepared to handle monitoring data, and may have a lack of resources to regulate monitoring. There is likely to be pushback from developers should low cost monitoring methods not be identified.

Lack of evidence of the benefits and tools for conducting EIA post-application monitoring in a cost-effective way

This means that there may be less support for monitoring post-development than focusing efforts on new development proposals.

Post-Application Monitoring

Roadmap

	Now	Next	Future
GOAL	Identify and prioritise key user, technological and regulatory requirements for future post-development monitoring to inform the development of best practice and pilot projects in the next phase.	Develop and test proposals to transform post-development monitoring through a pilot programme. Trial options for capturing monitoring data on real project examples. Explore options to integrate monitoring data within the Datahub.	Identify and test ways to use monitoring to improve engagement and understanding of the EIA process with local communities.
ACTIONS	• Exploring which impacts should be monitored Conduct research into where the monitoring of actual environmental impacts of a development could have the greatest impact on future practices for screening, scoping and mitigation measures. • Review of existing monitoring requirements Explore and develop best practice for the monitoring of impacts as part of planning obligations. • Identify methods of data collection for monitoring Analyse data already being collected by developers that could inform monitoring and existing technology. • Data Standards development Develop standards and principles for monitoring. • Review of existing tech and capabilities for monitoring Conduct research into maturities and existing technical systems able to process and analyse monitoring data and produce a gap analysis to establish user needs versus capabilities.	• Low-cost monitoring Research low cost monitoring methods and develop prototypes. • Develop best practice Develop best practice guidance on monitoring of environmental impacts. • Pilot project Identify and secure pilot development projects to test identified data capture options (eg. citizen science, sensors). • Datahub integration Test integration of monitoring data into emerging Datahub. • Validate benefits of modelling Demonstrate how monitoring could improve understanding of EIA impact predictions.	• Improved communication and interactive engagement with communities Develop better communication between developers, the LPA and local community. Key Stakeholders • EIA and planning consultants • Developers • Academia • Local Authorities • IEMA • Government – MHCLG – DEFRA – Local Planning Authorities



For further reading, also see:

- Digital EIA Technology Review
- Digital EIA User Research Report
- Digital EIA Business Case Report

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