Development of a Natural Asset Register Data Portal: Access Consultation Report

RESAS1.4.1a [O1.4.1ai D1 Consultation report]

Authors: C.J.A. Macleod* and D. Donnelly

*Corresponding author: kit.macleod@hutton.ac.uk

Contents

Executive summary

This report summarises an email consultation on a prototype Natural Asset Register Data Portal: covering its content, how the data was structured, and the functionality of the web application and the user experience of the interface. The consultation ran from 22nd August to the 8th September 2017. A wide range of external stakeholders were contacted e.g. Scottish Environment Protection Agency, Scottish Government, Scottish Natural Heritage, and related initiatives e.g. Scotland's Environment Web (SEWeb) and Scottish Spatial Data Infrastructure Metadata Portal (SSDI); as well as 22 key James Hutton Institute and Biomathematics & Statistics Scotland colleagues spanning Strategic Research Programme Theme 1, Hutton Executive, Scottish Environment, Food and Agriculture Research Institutes (SEFARI) and other relevant individuals.

The consultation exercise was based around a series of questions and screenshots of a prototype Natural Asset Register Data Portal. The consultees were invited to explore the prototype and reply with their feedback. In addition to summarising the consultation exercise, we have provided background on key steps in the development of the Natural Asset Register Data Portal over the past 18 months. Following early feedback from Scottish Government we drafted a vision of future development of the Natural Asset Register Data Portal, and shared this with Scottish Government colleagues. We have included this vision document in the appendices.

During the consultation we received 16 sets of written comments, along with valuable feedback from two meetings with key external stakeholders. The comments were split into those focussing on the **purpose of the Natural Asset Register Data Portal** and its **linkages to related initiatives** e.g. SEWeb; and those related to its **content, structure, functionality, and user experience of the prototype's interface**. The main themes related to its purpose were wide-spread support for the prototype, the need for additional potential requirements, ambiguity of the prototype's earlier name (natural asset register), and inclusion of a wider set of SEFARI datasets. In relation to linkages with existing web-based initiatives, the main themes were its relationship to SEWeb and SSDI, and connections with other web and data initiatives. In this report we set out how we will address the specific comments on the content, structure, functionality and interface of the prototype.

The development of the Natural Asset Register Data Portal will benefit greatly from the consultation responses. We are working through these suggestions to improve the web application, before a public launch in the Spring of 2018.

1. Aim and objectives of this consultation summary

The aim of this report is to summarise a recent consultation exercise in support of developing a Scottish Government funded Natural Asset Register Data Portal (NAR-DP), as part of the Strategic Research Programme. In this report we focus on two specific objectives:

1. We present feedback gained through an email consultation activity i.e. what was said and what does this mean for future development of the NAR-DP. Including how this valuable feedback provides a better understanding of the requirements for the NAR-DP e.g. what the web application will do and how.

2. Summarise how we will use the feedback to improve the NAR-DP.

To aid a reader's understanding of the steps we have completed in the development of the NAR-DP, these are presented in Appendix 1. These include a review of related initiatives, workshops and testing of software options to provide the NAR-DP. Following early feedback from Scottish Government staff we drafted a vision of future development of the NAR-DP, and discussed this with Scottish Government colleagues. This vision document can be found in Appendix 2.

2. Who was consulted, how and why

An email (Appendix 3) was sent out on 22nd August 2017 to approximately 25 key external stakeholders covering a range of organisations e.g. Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), Scottish Government and relevant initiatives e.g. Scotland's Environment Web (SEWeb) and Scottish Spatial Data Infrastructure Metadata Portal (SSDI); as well as 22 key James Hutton Institute and Biomathematics & Statistics Scotland (BIOSS) colleagues spanning the Scottish Government's Strategic Research Programme (SRP) Theme 1, Hutton executive, several Scottish Environment, Food and Agriculture Research Institutes (SEFARI) and other important individuals (a list of consultees organisations is provided in Appendix 4). The consultation ran for 18 days between 22nd August and 8th September, and a reminder was sent out on 6th September.

The purpose of the consultation was to make non-research stakeholders and research colleagues aware that we had developed a prototype NAR-DP, and as potential end users we were looking for feedback to guide the next phase of development. The focus of the consultation on the prototype covered its content; how the data was structured; and the functionality of the web application and the user experience of the interface.

The consultation email included a series of screenshots of the prototype NAR-DP, along with a link to the NAR-DP web pages. Due to essential maintenance by our IT department, the web mapping services were not working for part of the consultation period, and several respondents commented on the lack of maps.

2.1 Consultation responses

We received 16 sets of written comments; one of which was jointly authored by five SNH colleagues. Another comment referred to a meeting held between the work package coordinator (James Hutton Institute), and two RESAS science advisors on 4th September following discussions on this initiative at the Ecosystems & Land Use Policy Exchange Group (ELPEG) meeting. In addition, a teleconference

was held on the 27th September 2017 with members of the Scottish Government's Geographic Information Science & Analysis Team, with responsibility for SSDI. Eight sets of comments were received from SEFARI colleagues from across James Hutton Institute, Scotland's Rural College (SRUC) and the Royal Botanic Garden Edinburgh (RBGE). Responses were also received from SEFARI Gateway, Scotland's Centre of Expertise for Waters (CREW), Scottish Government, SEPA, SNH and ClimateXChange (CXC), and SEWeb.

3. Comments on its purpose and links to related initiatives

3.1 Summary of main points and our responses

In this section we set out feedback that related to the purpose of the NAR-DP, and its relationship with other online data and information resources, in particular SEWeb and SSDI.

A range of comments were made in relation to the prototype's purpose. The main points raised are provided in Table 1, along with illustrative examples of the comments, and our responses. These fell under three main headings: support for the prototype, and the need for additional potential requirements; related to this was ambiguity of its purpose based on its earlier name (natural asset register); and the breadth of data it would contain. In general responses were supportive of the NAR-DP's purpose, for example SNH colleagues welcomed "the intention to make available outputs from the Strategic Research Programme", they also made it clear they were also looking for additional functionality from "a Natural Asset Register that brings together and interprets data on the state, values and risks to Scotland". Several comments related to additional potential requirements, for example ability to provide interactive tool for all the natural assets in a particular location.. In response to the ambiguity and purpose of the NAR-DP we have produced a vision that sets out its purpose (Appendix 2). In summary, the purpose of the NAR-DP is to provide open access to relevant spatial information about Scotland's natural assets generated by the SRP, to complement existing web portals.

In relation to linkages with existing web-based data and information resources several respondents were looking for clarity in the relationship between the NAR-DP and these other resources e.g. SEWeb (Table 1). We have discussed the linkages of the NAR-DP with colleagues leading SEWeb and SSDI, and they agree that our vision for the NAR-DP is complementary to existing web-based initiatives in Scotland. As set out in the Vision document (Appendix 2), the NAR-DP is dependent on the research projects that supply the data on Scotland's natural assets. The NAR-DP will provide links to these other web-based resources e.g. SEWeb.

It was clear from several respondents that there was a need to "explain the rationale for what you've done and why – not duplicating, improving the knowledge base, not a decision support tool but more than a database". As part of this consultation report we provide an overview of work to date (Appendix 1) and our vision for future development of the NAR-DP (Appendix 2). Given the many developments since the original request to develop a register of Scotland's natural assets, our rationale has been to focus on providing access to spatial information from the SRP that is currently inaccessible to non-researchers and researchers, complementing existing web-based resources.

Table 1Main themes and examples of responses related to purpose and linkages to related web-based initiatives, and our responses

Theme: prototype to make research natural assets datasets available online	How we will address these comments?
Support for the prototype NAR-DP, and the need for additional potential requirements One external consultee replied "in principle it would be good to have a list of datasets that are developed as part of the SRP and links to where to find them because it's not always obvious what the outputs are or where to find them. Whether a new website is required for that I am not sure." They went on to say "I guess I would be more interested in a site that lists the datasets but also tells me what I can do with them – why have they been developed and what do they tell me? What are they useful for? Another colleague from SEPA said "it is more of a shop window for what data is available through SEFARI. This in itself would be valuable. However it is not the comprehensive one stop shop envisaged in the original proposal".	Further development priorities (requirements) of the NAR-DP will be discussed with the proposed steering group.
Ambiguity of the prototype's name (natural asset register) There were several comments from email respondents (and during the September 2017 ELPEG meeting) about the ambiguity of the original name (natural asset register), and what this would provide to a broad range of users. For example comments from CXC about the title said "natural assets sounds more like the actual ecosystem 'features' rather than a collection of datasets, which is confusing, especially as it is not a complete register of natural assets, but only those worked on through the SRP that are easily accessible".	We have changed the name to NAR-DP.
Inclusion of wider SEFARI datasets A colleague from CREW said "overall I think it is a great idea. We often get feedback from the end users that the outputs of the SRP are not clear enough or accessible and so anything that goes some way to help with that is a good thing." They went on to suggest that CREW datasets could also be included.	We will explore the potential for adding these datasets.
Theme: linkages with existing web-based initiatives	
Relationship to SEWeb Several respondents flagged up the relationship with SEWeb, for example colleagues at SNH said "…we have some concerns about how this website fits or adds value to existing sources and portals for data (particularly SEWeb and daughter websites like the Scottish Soil Website)…". A respondent from CREW asked about the link with SEWeb as "my understanding was that SEWeb was a one stop shop for data (this may be wrong). Will the two speak to each other, are they duplicating, what is the difference between them and how does an additional repository help?"	Through the proposed steering group we will continue dialogue with key SEWeb colleagues.
Relationship to SSDI No email respondents raised the issue of relationships to the SSDI. On 4th September following the ELPEG meeting RESAS colleagues raised the issue of linkages to SSDI. A telephone meeting was held with key Scottish Government SSDI colleagues on 27th September, where they said that they had no concerns over the NAR-DP duplicating the SSDI, but that any datasets appearing in the NAR-DP should have a metadata record stored in the SSDI.	Through the proposed steering group we will continue dialogue with key SSDI colleagues.

| Linkages to other web and data initiatives | We will provide links |
| SNH colleagues asked "how this web site relates to other public portals, notably SEWeb, NBN Atlas Scotland and NMPi." In terms of focus and it's unique selling point (USP) they said "the web site USP is a little unclear but seems to be (and is hopefully) the platform for the open data publication of RESAS research programme and SEFARI outputs." Responding to a direct request for information on the purpose of the SEFARI Gateway, the Hutton's representative has described the SEFARI site as pointing to resources available on other sites and containing "case studies or summaries of research", adding that there would be no overlap with the NAR-DP. | to key web-based initiatives. |

4. Comments on the content, structure, functionality and interface of the prototype

In this section we set out specific comments in relation to its content, how the data was structured, and the functionality of the web application and the user experience of the interface as set out in the consultation email (Appendix 3).

4.1 Content

Table 2 Key themes related to content of the NAR-DP and our responses

What were the key themes?	How we will address these comments?
Requirements for more data sets The draft prototype only contained a limited set of data. Several comments related to this directly, and indirectly: for example a Hutton researcher suggested "looks like NAR will work well when populated with more data."	We are working closely with the WP1.4 leader and Theme 1 coordinator to identify and access data outputs from the SRP. Research outputs will be added as they are made available by researchers.
Requirement for reports linked to data sets A suggestion of providing linked reports was made by one email respondent.	We will provide this functionality. Guidance for researchers on providing reports linked to data is needed from coordinators of the SRP.
Clarity on licensing One research colleague asked about licensing of different datasets "maybe (it is) worthwhile to be more explicit with licences and what you can and can't do".	The main purpose is to provide outputs from the SRP. As part of the meta-data process, the licence conditions will be checked and appropriate wording provided, however, where possible data will be provided under an open license.
Ability to see what datasets organisations held A researcher liked to have the ability for "clicking on organisations to see what they hold".	Anyone can navigate to the organisations to see what datasets they have provided.
A question on how the NAR-DP will be maintained? A colleague with expertise in managing research data asked about "who will be responsible for uploading and checking data before we make it public." a CXC colleague went on to say "To be useful it will require constant curation to ensure that new datasets and reports are added when	We have discussed longer term maintenance of the NAR-DP with the WP1.4 leader, and will raise this with the Directors' Executive Committee that manages SEFARI and the SRP. Our suggestion is that this resource is supported through SRP 'underpinning' funding, following the end of the current research programme.

available. You don't want to join the graveyard of online registers that aren't used because there is no one to maintain them."	
Requirement for a glossary and spelling out acronyms Several comments highlighted this need, for example a research colleague suggested "it needs a glossary to explain some of the terms and/or abbreviations". Another said "I thought you'd done a great job in spelling out acronyms in appropriate places, but there seem to be a few that slipped through (e.g. NAR)".	We will add a glossary related to the operation of the data portal. We will also try to limit the use of acronyms.

4.2 Structure

In general the respondents were positive about the structure, for example a colleague from SRUC said the "structure seems pretty intuitive and clear to navigate".

Table 3 Key themes related to structure of the NAR-DP and our responses

What were the key themes?	How we will address these comments?
Use of Common International Classification of Ecosystem Services (CICES) The respondents were supportive of the use of CICES (required in the SRP Invitation to Tender). Specific comments were made to using to search for data: one respondent highlighted the need to "search for ecosystem services using CICES, as we usually use this classification system as our starting place." They went on to say " I would want to know what information is available, what it is telling me, some information on the method used to generate it (limits of resolution for its use and when the original surveys used to create the information were undertaken)." Another comment related to the CICES category individual datasets are added to: "I could see that in terms of your CICES section I would not normally place species richness or pollination under 'provisioning'. I think species richness you may use as an indicator of condition of the asset. Pollination would be under "Regulating and maintaining services" in CICES.	We will explore how we can use CICES (and related pressures) to search and navigate the data contained in the NAR-DP. We will also check how we assign datasets to CICES classes. The NAR-DP will make available outputs created under the SRP, so its structure and classification systems will reflect and accommodate those research outputs, rather than attempting to force the research outputs to fit CICES or other classification systems.
Correct labelling of datasets and their headings Comments on the correct labelling of datasets were made by two respondents. One SNH colleagues suggested "Presumably datasets need to be tagged to the relevant groups – a slightly awkward manual stage".	We will check the labelling of datasets and headings.

One comment related to headings was "I found some of the conceptual linkages to datasets too broad, e.g. the Hutton dataset on 'Species Richness' is I think about hedgerows, and the dataset title should reflect this level of specificity to avoid users thinking the map is species richness in Scotland. Some of the subheads need to be clarified in this regard."	
Navigation, and inclusion of a home tab On suggestion was for a "Home tab that takes you back to the top level (I struggled a bit with navigation backwards from a point at which I'd arrived)".	Clicking on the main logo in the top left hand side of the screen takes a user back to the home page. We will highlight this in user guidance.

4.3 Functionality

In general respondents were positive about the prototype's functionality, for example "the ability to see the data there and then via map view is very useful and you can get there quickly and to then be able to download seems great." As highlighted above, some of the web mapping functionality was disabled for part of the consultation, and several colleagues commented on this.

Table 4 Key themes related to functionality of the NAR-DP and our responses

What were the key themes?	How we will address these comments?
Use of web mapping services (WMS) A couple of respondents said "it's good to see that it points to existing resources and uses the same WMSs as other websites".	We will continue to use this common functionality.
Guidance on interpretation "It's good to see tables for e.g. SSKIB data and maps giving access to e.g. NSIS data – however depending on the intended audience it might be necessary to provide some guidance on how to use the functionality in the table / explain what the data shown in the pop up boxes are (as it is just now I don't think this is helpful)."	We will aim to simplify the interactions with table views and provide examples and guidance on what can be done.
Ability to view data A research colleague liked the ability to select datasets and "seeing them load up as new dots on the map- fabulous!"	As new datasets are made available to the NAR-DP, we will experiment with varying configurations of display to ensure that the information is useful and presented in interesting ways.
Audit trail A research colleague stated they liked the "audit trail available against datasets too".	This approach will be continued throughout the development of the NAR-DP.
Linkages to other sites Respondents asked "as well as linking to where the datasets can be downloaded, would it be possible to put links from the relevant dataset page to where they can be viewed and interrogated elsewhere on the web?" Another	At a minimum we will include signposting to other web sites (SEWeb, SSDI, and Scotland's Soils etc.). However, there are practical limitations to providing anything other than basic links (e.g. to SEWeb) to other sites- as page addresses are subject to change.

asked "would there be an opportunity to signpost the user to more info e.g. on the soils data, to the Scotland's Soils website? if a user clicks on the soils data in the register, they might not know the soils website exists."	
Additional functionality Suggestions for additional functionality included "Some of the maps could do with telling you what each point represents while hovering, especially where there are more than categories".	There are technical limitations inherent to the CKAN platform that limits the functionality we can provide, however, we will investigate if this can be achieved. If it cannot, we will ensure that the mapping symbology and legend are clear about what information is being shown.

4.4 Interface and design

Table 5 Key themes related to interface and design of the NAR-DP, and our responses

What were the key themes?	How we will address these comments?
Support for the CKAN interface An external stakeholder involved with SEWeb said they liked the CKAN interface.	We will continue to use the CKAN interface.
Requirement to change brand to SEFARI A couple of colleagues commented on the need to change the CKAN branding. For example "I would say you could lose the CKAN logo from the top of every page, it's a bit overpowering and if replaced with the Hutton/SEFARI logos would mean we maintained branding on each page. I like the layout and colours etc but remember SEFARI is red so you probably don't want red logos on a green background."	We will change the CKAN branding, and bear in mind accessibility for all users. We will consult RESAS, SEFARI representatives and SRP Theme leads to decide on the appropriate branding.
Map design A research colleague suggested changing map colours based on industry tools such as ColorBrewer. Another two research colleagues suggested to add "legend in the previewing of maps in the WMS" as one of them went on to say "I can't tell what the different habitat types are in the EUNIS map".	Several of the mapping layers on the draft NAR-DP used symbologies which are well established and which a user would expect to find. However, where appropriate we will use colour schemes that are accessible to those with colour vision deficiency. Map legends will be included for all dataset resources.
CKAN architecture A respondent highlights "on pages there is a 'Resources' section but sometimes there are 4 different resources that start the same way so they appear as if they are all the same thing".	The CKAN software has a specific architecture designed around "resources" and "datasets", we will aim to make the relationship between these types clearer to users.

5. Next steps

The valuable comments on the prototype NAR-DP: its content, how the data was structured, and the functionality of the web application and the user experience, will help us improve it. We will

implement these changes, described above, during 2018 and where necessary before the public launch of the site in Spring 2018. As the SRP progresses, an increasing number of research outputs will be made available to the NAR-DP and these will be added as maps and non-spatial data to be viewed and downloaded. Appropriate associated metadata records will be created on the SSDI.

To guide future development of the NAR-DP we will set up a small steering group, so that it meets the needs of non-researchers, as well as SEFARI researchers.

Acknowledgements

Appendices

Appendix 1 Key steps in developing the Natural Asset Register Data Portal

Developing a prototype of the Natural Asset Register Data Portal (NAR-DP) for this consultation involved a series of steps, often involving a range of research and non-research end users.

The first step was to review the current state of development of natural asset registers (Donnelly et al. 2016). This review highlighted the rapid recent increase in projects related to the NAR-DP. During writing this review, we exchanged emails with a range of research and non-research colleagues to understand their needs, and to learn about related tools and initiatives.

The second step involved a workshop (5th October 2016 in Aberdeen) with 20 SEFARI researchers to gain a better understanding of who wants to use the NAR-DP and for what purposes. Key themes that arose included: who for and at what level of use e.g. local or national scale; what are RESAS, wider Scottish Government and national agencies needs that the NAR-DP will address; a draft set of general principles (or high level requirements) that might guide the purpose, functionality and visual interface of the NAR-DP; suggested uses and purposes of the NAR-DP; relationship to the wider SRP research; and suggestions to phase development around a single policy question.

The third step was based around a Natural Asset Register session at the Ecosystem & Land Use Stakeholder Exchange Group (ELSEG) on 14th November 2016 with 14 attendees, from a range of organisations. The aims were to share what we had done so far i.e. our review and SEFARI researcher workshop; to engage stakeholders to gain their views on a thematic focus, better understand their needs; and to set a clear path for the next 18 months. Key points raised during the discussion included: wide range of interest in a Natural Asset Register; need to set out more clearly who the non-research users of the Natural Asset Register; need for greater engagement with potential user groups; trying to design a tool/resource for multiple audiences may not meet individual needs; may need to start from what decisions are people making (or outcomes they want to achieve) and what they need to make those decisions on natural capital assets (ELSEG 2016, p11-12).

The fourth step was to develop a NAR-DP prototype, following a search for potential software we tested two, widely used and freely available, options to enable the discovery and use of spatial data. The initial screening requirements were: ability to provide metadata and data that was spatial and aspatial/non-spatial as we needed to provide both these types of data, was freely available as there was not a budget for expensive software and ongoing annual licensing costs, ability to provide data through a web page, the software made use of modern web development standards, and the software could be easily modified by the authors of this report. The two software options we selected and tested against these requirements were Esri GeoPortal - http://www.esri.com/software/arcgis/geoportal and the CKAN- data portal software https://ckan.org/ Based on these initial requirements and our hands-on testing process, we decided to further develop the CKAN option as it had greater flexibility for the project team to customise and used a more modern web interface.

Once we had a working version of the CKAN prototype in July 2017, we asked researchers involved in Theme 1 for feedback, and to provide relevant sample data from the current research programme that we could add to the NAR-DP.

Subsequent to holding this consultation we have drafted a vision document for the NAR-DP (Appendix 2). This has been shared with key Scottish Government contacts.

References

D. Donnelly, C.J.A. Macleod and A. Ibiyemi. (2016). Review of existing natural asset registers and literature.
Ecosystems and Land Use Stakeholders Engagement Group (ELSEG), November 2017, Workshop Report.

Appendix 2 Natural Asset Register Data Portal: a vision to guide its development

Purpose of this vision statement

To develop/establish a shared understanding of what the Scottish Government funded Natural Asset Register will provide in terms of what it will do and for whom. This vision builds on feedback gained during a recent email consultation with a wider range of CAMERAS stakeholders and SEFARI researchers.

Vision

The aim of the Natural Asset Register Data Portal (NAR-DP) project is to create an accessible and easy to use online resource for a wide range of users including CAMERAS stakeholders and the wider public to access outputs from SEFARI research (and from other data providers if agreed). Figure 1 shows how research guided by stakeholders leads to production of information on Scotland's natural assets, and the use of this information by a wider range of people and organisations. The NAR-DP is dependent on the research projects that supply the data on Scotland's natural assets.
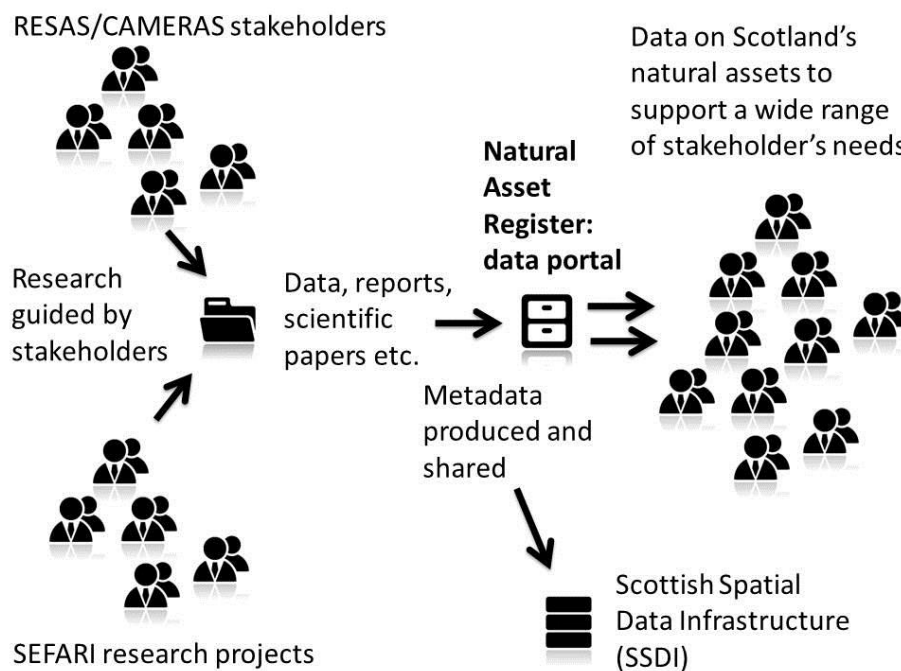

Figure 1 The pipeline from stakeholders to the Natural Asset Register Data Portal and its users

Why is a data portal for research datasets to support stakeholders required?

Natural asset information produced under the Scottish Government's Strategic Research Programme (SRP) is currently not readily available to CAMERAS stakeholders, other SEFARI researchers or the wider public. Consultations (physical events and email surveys) have highlighted the need for these data sets to be easily accessible.

Linkages to other Scottish data initiatives

Colleagues in the Geographic Information & Spatial Analysis Team (Scottish Government) have agreed that the NAR-DP fits within the existing wider spatial information structure in Scotland, and does not compete with or duplicate the Scottish Spatial Data Infrastructure (SSDI). SEWeb colleagues

are also supportive of our vision. Links with Scotland's Environment website will be explored and developed as content is added to the NAR-DP. The Hutton's SEFARI Gateway representative has described the SEFARI site as pointing to resources available on other sites and containing "case studies or summaries of research", adding that there would be no overlap with the NAR-DP.

Steering Group

A small steering group will be formed to guide future development work, so that it meets the needs of non-researchers as well as SEFARI researchers. Invitations will be sent to key colleagues in SEPA, SNH and Scottish Government including a RESAS representative, and a small number of others to be confirmed in dialogue with RESAS. The intention is that this group would meet by teleconference on an occasional as-needed basis and in person when appropriate.

Content of the Natural Asset Register: data portal

We will focus on providing research outputs from the strategic research programme (SRP); other existing published datasets will be included where appropriate. The NAR-DP will present maps of the data (where appropriate), downloads and supporting information for previously inaccessible spatial data on natural assets. The NAR-DP content will include context setting social-economic research spatial outputs as well as biophysical datasets. This content will make the NAR-DP a unique source of information in Scotland. Having this material in a single portal, providing a one-stop shop with signposting to and from other sites e.g. SEWeb, will thereby increase the impact of the SRP.

At present there is limited content available from research in the current SRP. However, a review of the research deliverables framework has shown that more than 80 deliverables in years 1-3 will produce outputs which may be included in the NAR-DP. There will be a delay between datasets produced and their inclusion in the NAR-DP in order to allow researchers to publish their data in leading journals; and protect their competitive advantage in funding applications. We expect the number of datasets in the NAR-DP to increase towards the end of the current SRP.

We propose to give researchers the ability to edit webpages in the NAR-DP, so they can maintain their part of the NAR-DP providing up to date and comprehensive supporting information related to their research data, perhaps linking to new related outputs or acting as a blog etc. This process aims to foster a wider sense of ownership of the NAR-DP within SEFARI. At present we are proposing to include only research <u>outputs</u> in the NAR-DP (e.g. maps of assets at risk) so input datasets and models will not in all cases be included. We intend to leave the decision on inclusion or not of these supplementary data to the individual researchers as they are best placed to know of restrictions in terms of copyright and publication embargoes etc.

Note that we have not yet confirmed if and which type of non-MRP data will be included in the NAR-DP – that will be decided in conjunction with RESAS and the proposed steering group.

Initially the focus is on ensuring that previously fragmented and inaccessible data sets are made available in a user-friendly portal. Once these data are more readily available it may be possible to build on further refinements to help specific stakeholder groups and end-users. However, the consultation feedback suggests that it is too early to tailor the NAR-DP to different end-users needs until the NAR-DP has been up and running for some time.

Other Considerations

There are a number of legal and institutional requirements that the NAR-DP is well placed to satisfy. The Scottish Government's guidance to INSPIRE (Scotland) Regulations, 2009 states that the regulations apply to third party organisations. Researchers have a mixed record in making research outputs available. The NAR-DP is perfectly placed to coordinate publishing and making accessible these outputs and also to assist researchers in creating compliant metadata for uploading to the SSDI.

The Data Management Plan for the SRP states that data should be made openly and freely available and that the data management will operate in accordance with best practice (including INSPIRE, Scotland's Open Data Strategy etc.). The NAR-DP team will facilitate this by creating web mapping services (when needed), providing a metadata template (and assistance to complete it where necessary) while supplying a single location from which all this data may be accessed. The NAR-DP can act in part as an integrating project supplying these skills, coordinating outputs, creating compliant services and providing other support where needed.

Appendix 3 Consultation email

Dear,

Under the Scottish Government's Strategic Research Programme (SRP) we are developing an online tool to provide access to research datasets on Scotland's natural assets. In addition to the results of the current programme (2016-21), our ambition is to make available the results of previous rounds of Scottish Government funding. Where licensing and resources permit we will also include research outputs created with funding from other bodies.

We now have a prototype register ready to hold these natural asset datasets and with this email we are seeking some feedback from those working in this and related fields on the potential usefulness of our approach. The current draft of the site may be visited by clicking HERE. Please note that the site is being made accessible for the purpose of this consultation only between today, **22nd August** and **Tuesday 5th September**. We would welcome any comments that you are able to give by **8th September**.

I have attached a PDF with annotated screen shots which explains some aspects of the structure and could help with your initial viewing of the site. Our current approach is outlined below:

Content
At present the content is limited to a few published data sets, primarily Hutton, but also including some SNH data. These are provided to show how the tool could work. The aim is to include as many outputs from research as we can as these are rarely accessible elsewhere.

Structure
A number of thematic structures has been proposed such as the four SRP themes of soil/water/biodiversity/integrated land use and a structure based on CICES (Common International Classification of Ecosystem Services). These would appear under the 'Groups' tab in the tool.

Functionality
The CKAN software underpinning the tool permits the display of mapped data, tables and reports. We anticipate that each dataset will be accompanied by a short abstract and links to existing web sites, plus any relevant reports that may be included. Mapped datasets will be shown with a map view (produced using Web Mapping Services) and include a link to the location from which the data may be downloaded. Higher functionality such as spatial analysis will not be included.

Interfaces
At present the tool hasn't been set up with any detailed design, but it is likely that it will be required to follow guidelines and branding set down by SEFARI (Scottish Environment, Food and Agriculture Research Institutes), so flexibility may be restricted.

If more information is required please do get in touch by phone or email.
2
If you have a colleague with a particular interest in this area then we would be grateful if you could forward this email.

Thank you for your time,

Appendix 4 List of organisations and initiatives consulted

ClimateXChange (CXC)

James Hutton Institute (JHI) and Biomathematics & Statistics Scotland (BIOSS)

Moredun Research Institute (MRI)

Natural Capital Forum

Royal Botanic Garden Edinburgh (RBGE)

Scotland's Rural College (SRUC)

Scottish Environment Protection Agency (SEPA)

Scotland's Environment Web (SEWeb)

Scottish Natural Heritage (SNH)

Scottish Government including RESAS

Scottish Spatial Data Infrastructure Metadata Portal (SSDI)

Scottish Environment, Food and Agriculture Research Institutes (SEFARI)

Scotland's Centre of Expertise for Waters (CREW)