ITAPA Collated Questions and Answers

This document collates questions and answers gathered during stakeholder engagement as part of the Integrating Tools for Air Pollution Assessment (ITAPA) project. These may form part of a searchable Q&A tool to support ITAPA Stakeholder engagement. This version was last updated after the Project Planning Workshops held in May 2020

Theme	Question	Answer
Cost	Would this tool be available at no cost to local authorities?	In Netherlands the AERIUS Calculator is free at the point of use. There are commercial aspects subject to a fee such as AERIUS Connect that facilitate large consultancies interfacing with the AERIUS system. A decision needs to be made about what cost, if any, would be applied for a UK tool. However, in the Business Case all options for charging were considered and even in the free for the end user scenario, cost savings for regulators, local authorities and applicants was significant through saved time.
Cost	How can the tool can be funded in the long term?	There are several options for long term funding and this needs to be determined as part of the ITAPA project. Funding for operation costs could be achieved through UK or Devolved Government contribution, application fees or a combination of these. Given the volume of permits issued in the UK and the costs of legal challenge, covering the £250,000 normal operation costs each year provides a cost-beneficial result for applicants and decision-makers in any of the charging scenarios.
Cost	What are the ongoing Dutch running costs?	AERIUS costs the Dutch Government about £250,000 per year in running costs. Addition of new modules currently costs around £1.2-1.4 million as the Dutch AERIUS tool is still in significant development phases. There are additional costs for the recently established Helpdesk service which have not been defined at this time.
Cost	How much did it cost to develop the initial AERIUS tool?	The Dutch Government investment €8m in the initial implementation of AERIUS Calculator and Register.
Data - Agriculture	In the Netherlands the ANCA (Annual Nutrient Cycling Assessment) tool became mandatory for dairy farms in 2015/16. Is this information used in AERIUS?	Yes, the Annual Nutrient Cycling Assessment animal numbers are included in the AERIUS emission data that informs the background concentration maps.
Data - Agriculture	In the Netherlands the Annual Nutrient Cycling Assessment (ANCA) was introduced as a compulsory tool for dairy farms in 2015. Is there a link to AERIUS?	Yes, this data is included in AERIUS register and provides an indication of the number of animals in each area around designated sites. This helps to inform the background concentrations and deposition of nitrogen.
Data - Agriculture	How can AERIUS be used in the UK if the thresholds for registration of an emission source are different?	It is true that in the Netherlands, even very small plans or projects such as a change of a few animals, get recorded on the system, AERIUS will be more effective with more detail about emission sources. However, this can change over time and be accommodated by the tool if desired. As is done with current UK risk assessment, this uses the best data available. An integrated tool provides another reason to then use it for streamlining data entry of new emissions sources that are outside of regulatory regimes but recorded for different purposes. This then improves the data over time that would mirror the Dutch dataset more.
Data - Air Pollution	Can AERIUS use a large variety of deposition velocities?	AERIUS can use whatever input data is provided to support the chosen dispersion model. Theoretically, AERIUS could implement many deposition velocities assigned to each habitat type. However, this should be validated data based on the best available evidence and may not be necessary to produce a reasonable and valid result. As part of any UK implementation, input data will be agreed and then the results validated to ensure an integrated tool is fit for purpose.
Data - Habitat	Does AERIUS include habitat data such as qualifying features?	Yes, an inherent part of the AERIUS calculator process is to compare the habitat sensitivity to air pollution (eg critical load) to the predicted deposition for the areas of habitat affected. Currently the Dutch AERIUS implementation does not include habitat condition data but it is theoretically possible to supply where the data is available. This could be part of a data improvement programme to assist with decision-making through an integrated tool in the longer term rather than part of an initial implementation due to the UK variation in this dataset.

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Data - Habitat	What habitat information is included in AERIUS?	As with tools in the UK like SCAIL, Simple Calculator for Atmospheric Impact Limits, AERIUS includes habitat classifications and critical loads. AERIUS habitat maps are currently based on Habitats Directive Annex 1 habitats. This could be expanded to other habitat types or classifications and/or adapted for UK country specific needs.
Data - Habitat	Does AERIUS include information about each habitat and its critical load and level like the UK Air Pollution Information System?	Yes, AERIUS includes this data as it is essential to undertake the risk assessment of air pollution and effects on ecosystems.
Data - Habitat	How can AERIUS deal with changes in habitat names/labels e.g. different habitat classification.	AERIUS habitat maps are currently based on Habitats Directive Annex 1 habitats. This could easily be expanded to other habitat types or classification and adapted for UK country specific needs. These changes occur same way that any UK database would through a habitat label matching exercise. We currently use this approach in Air Pollution Information System and have matching tables from which to start.
Data - Habitats	Is there a report or link to the website detailing the habitat management measures implemented in Netherlands?	Yes, there is a yearly report per SAC for monitoring the implementation of habitat management measures. see https://ec.europa.eu/environment/nature/natura2000/platform/action-results/recovery-strategies-for-nitrogen-sensitive-habitats-en.htm for the Dutch report on recovery strategies for Nitrogen sensitive habitats
Data - Management	How are new sources incorporated into AERIUS?	When a permit is issued through AERIUS this is entered into the inventory in AERIUS Register. These are entered in real time and taken off of the budget of room for development in that location. A short video explains how AERIUS Calculator works and how permits are issued.
Data - Management	How is information about sources kept up to date, for example if a source stops operating or improves their emission profile?	Where a permit exists in the Netherlands, the operator benefits from updating their entry with the reduced emission from their area as this frees up room for development. In the Netherlands many activities including small changes in the number of animals require registration on the AERUIS system. These are reviewed annually and updated in AERIUS Register to ensure room for development calculations are current.
Data - Management	Can AERIUS import real time spatial data from other systems using web feature services?	No, AERIUS tools are not currently equipped for users to import real time spatial data to the system.
Data - Management	AERIUS predated General Data Protection Regulations (GDPR) - have changes had to be made to the system to hold personal data in a secure way?	In the calculator, no personal information is recorded. The calculations are not stored within the system, you can export them yourself. The pdf report has to be downloadable for a certain time, but that is about it. With Register, there is a lot of personal data. There is a nation-wide system for this to securely log-in, there is an audit trail.
Data - Meteorological	What is the complexity of the meteorological data included in the AERIUS Tool?	The Dutch AERIUS tool has six different meteorological regions. Each of these has their own meteorological dataset used in the calculation. This is averaged over multiple years in a similar way to current UK tools and what is required by the OPS model used in Dutch AERIUS. It is technically possible to change this and incorporate more detailed wind rose data and create very small “regions” in for example, mountainous areas. Whilst this is technically straight-forward there is a computational cost to consider. Any model used in a UK tool would be validated and ensure that outputs and methods were fit for purpose.
Data - Mitigation	Does AERIUS record the mitigation measures made to reduce N deposition / pollution (activity recording)	Yes, the Netherlands use AERIUS to determine the reduction resulting from policy measures. Therefore, the system you base the amount of "room for development" on are the same as you use when deciding on individual permits. More discussion on this is required.
Data - Mitigation	Do the background emissions maps in AERIUS account for degradation of abatement technology?	Yes, abnormal operations and equipment degradation are included when assembling the Dutch background concentration map
Data - Mitigation	Currently the UK struggles for data on mitigation measures (eg emission factors). Where does AERIUS source this data and could it be applied anywhere given local variations?	As with any system, it will produce results in line with the data available. Many emission factors are available that get considered on a case by case basis in the UK. AERIUS has emission factors for a wider variety of mitigation measures than the UK systems. This means AERIUS can accommodate a broader range of local variation. There is also the option to enter bespoke emission factors in the tools and then have this approved by the competent authority on specific proposal. This approved emission factor, if shown to be more widely applicable, could then be used to update the emission factor options.

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Data - Modelling	How does AERIUS handle transboundary pollution?	The contribution of pollutants from outside of the Netherlands is incorporated into AERIUS through the background concentration and deposition maps. This method is the same as we use in the UK for current tools and to fulfil obligations under the Convention for Long Range Transboundary Air Pollution as outlined in the Mapping Manual.
Data - Modelling	Can any temporal variations in emissions be taken into account in AERIUS?	You can use temporal variations in emissions, whether it is during the day or during the year.
Data - Modelling	Can the UK use a model in AERIUS that can deal with the complexity of UK situations?	There is scepticism that a complex model appropriate for the UK could produce results quickly enough to use AERIUS sensibly. AERIUS in the Netherlands uses a relatively simple model, OPS. More complex models will work in AERIUS but will have a computational cost. AERIUS' user interface has clever mechanisms such as display of interim results that mean the longer calculation time is less perceptible to the user. Any chosen model will be validated and fit for purpose.
Data - Robustness and Uncertainty	How robust are the results from AERIUS Calculator?	The results from AERIUS Calculator have undergone several technical reviews including suitability studies. Results are considered sufficient to inform decision-making for new emission sources. There is challenge to how the Dutch Government outlines what is or is not acceptable. However, the results from the tool are considered robust for use in Netherlands. For a UK integrated tool, validation is planned to ensure any implementation was fit for purpose with comparably robust outputs when contrasted with currently available tools.
Data - Robustness and Uncertainty	Could results from AERIUS be challenged by the use of alternative air quality assessments, for example during a planning appeal?	AERIUS and its outputs have been adopted in law as the method for implementing the Dutch Integrated Approach to Nitrogen. As such, challenge through submission of alternative results from other models is limited. When considering a UK integrated tool, the potential for including data generated by a different model is technically possible through AERIUS Register. This has implications for the magnitude of validation required and complexity of the final integrated tool which could make the build more costly. Ideally, agreement could be reached on how the tool is used and when data from other models is appropriate to include.
Data - Robustness and Uncertainty	What is the uncertainty in the AERIUS results and is this presented in the report produced by AERIUS?	Uncertainty can arise from several sources including the dispersion model, monitoring data used to validate or parameterise the model and certainty behind predicted effects of policy. When reviewed OPS was found to have a ±50% uncertainty, which is similar to many dispersion models. Typically, the biggest uncertainties are related to actual deposition which can vary at very small spatial scale and the averaging displayed in predicted deposition at a coarser scale. AERIUS has had several technical reviews that describe the uncertainty and how it is addressed. Uncertainty is not included in the Dutch reports but could be included if needed in a different implementation.
Data - Spatial Resolution and Outputs	Can AERIUS provide outputs such as contours of change or coloured polygons?	Yes, AERIUS provides maps showing the variation in concentration and deposition. Unlike the typical UK representation using grid squares, AERIUS uses hexagons. Hexagons separate easily into contours and are easier to scale than squares.
Data - Spatial Resolution and Outputs	Can AERIUS export spatial data results to other systems using web feature services?	Yes, AERIUS can provide data and has a module called AERIUS Connect that enables interface with other applications.

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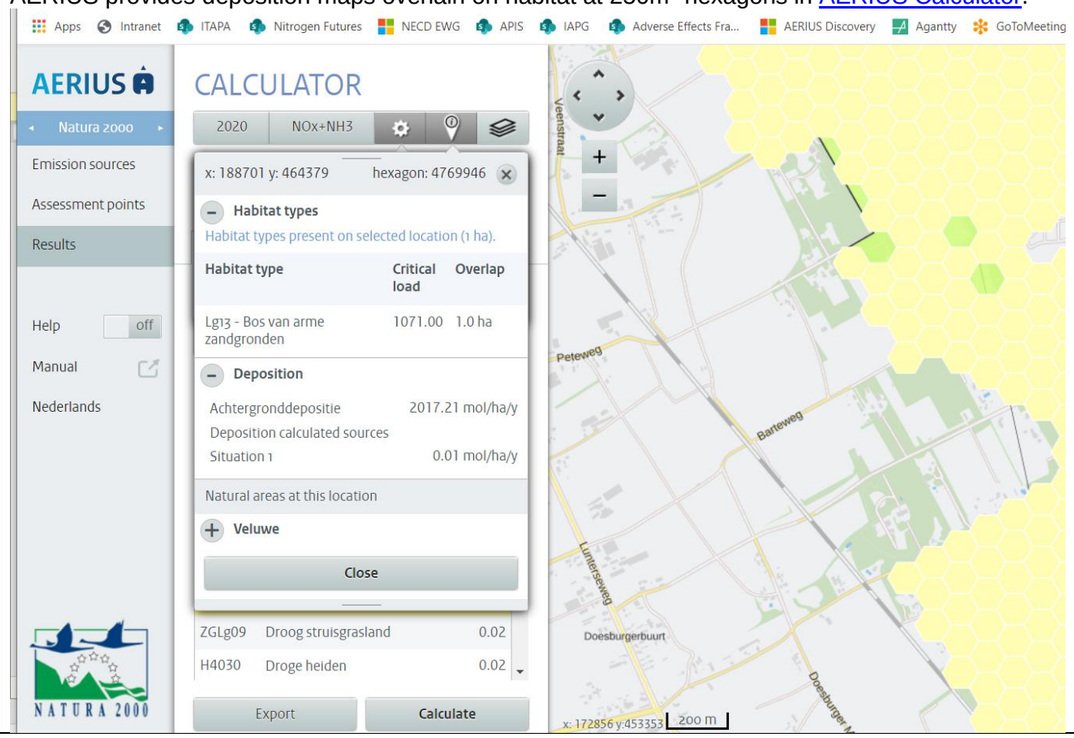
Data - Spatial Resolution and Outputs	What is the spatial scale of AERIUS outputs?	AERIUS provides deposition maps overlain on habitat at 250m² hexagons in AERIUS Calculator. 
Data - Spatial Resolution and Outputs	Is the resolution of the output data related to the needs of the decision-making?	Yes, the spatial scale in an integrated tool is ultimately defined by the decision-making process and its needs. Whilst higher resolutions could be modelled with significant extra effort, it may not be necessary for the main aim of the tool. For example, UK tools use 1 and 5km resolution for several decision-making situations, but it is noted that a higher resolution is needed for detecting aspects such as change in roadside emissions.
Data - Spatial Resolution and Outputs	What is the spatial resolution of the AERIUS model outputs?	Dutch AERIUS uses a 250 square meter hexagonal grid for deposition and a 100 square meter hexagonal grid for concentration estimates. This is influenced by policy and the needs of the assessment results.
Data - Traffic	How are road traffic sources incorporated in the AERIUS model?	AERIUS uses a traffic specific module, with a traffic emissions specific model, to account for reactive nitrogen from road traffic emissions. All non-traffic sources are calculated using the OPS dispersion model.
Data - Traffic	How can data from different traffic models with varying traffic flow calculations be incorporated?	The AERIUS traffic module helps to align traffic model input where possible. Users can provide alternative numbers but need to provide sufficient justification for varying from the agreed AERIUS system and legal framework.
Data - Traffic	How does AERIUS maintain consistency for predicting traffic related emissions across neighbouring counties or districts?	The AERIUS traffic module has a guided mechanism for providing traffic projection data and predicting the resulting change in emissions. It is inherently aligned and allows emissions to be considered across neighbouring regions to inform predicted changes in deposition at protected sites. The difference comes at decision stage if there are regional variations in implementation of the framework outlined in law.
Data - Traffic	In the UK we have to consider the impacts of air pollution on protected areas arising from Local Plans. This can cover changes in traffic over a large area. Is AERIUS suitable for such an assessment and has it been used in the Netherlands in this way?	Yes, AERIUS can be used to predict road traffic at regional scale for local plans. The Dutch Government regularly use AERIUS Calculator to predict emissions from major roads and road schemes. They don't even need to use the large data handler, AERIUS Connect.
Governance	Who oversees the tool and keeps it up to date?	As with any software, there needs to be a product owner that will oversee updates to the tool and ensure that security and technological aspects are fit for purpose. This would likely be the Government Body hosting the software and is expected to be centralised. This video explains how changes are made in AERIUS in the Netherlands.

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Governance	How centrally controlled is the Dutch use of the AERIUS Register tool?	In terms of technology, the servers are centrally controlled by the Dutch Government although AERIUS started in a cloud-based system. For decision-making, there are differences between the Dutch regions. Regional management can set their own approaches. Every regional management can set their own rules as long as they work within the legal framework outlined for use of AERIUS in the Dutch Integrated Approach to Nitrogen (PAS).
Governance	As Aerius is open source is there a large development community contributing to its further enhancement?	The AERIUS software is open source as it is paid for through public money and needs to be transparent in its implementation. However, it has a unique use and thus limited interest from those improving open source software. Any changes would need to go through the AERIUS change process. This video explains how changes are made in AERIUS in the Netherlands.
Learn More	Where can I see a demonstration of AERIUS?	A short video is available that explains how AERIUS Calculator works or get in touch at ITAPA@jncc.gov.uk.
Learn more	Is a similar tool in use (or being developed) in any other country other than the Netherlands?	Germany and Flanders are working with the Netherlands to look at using AERIUS. Germany will likely end up using AERIUS. Flanders undertook a similar project to ITAPA but ended up creating a slightly different approach to AERIUS. In Denmark, they also have a similar system and it is more like ADMS. Turkey is also investigating use of AERIUS for their environmental assessment. However, despite this investigation, currently the Netherlands are the only country currently using AERIUS. It is one of a kind for now!
Options Appraisal	What options were considered when deciding to pursue a UK integrated risk assessment tool like AERIUS? Was there demand for something less technical?	Based on the user needs gathered during the ITAPA initial phase and subsequent expert advice on possible solutions, Technical solutions explored included a 'signposting' document, a data portal, shared metadata for existing data sources and an integrated tool for assessing project impacts on habitat.
Planning and Permitting - Dutch Approach	If a planning permission is granted based on this system and then not implemented, how is this taken into account?	The general rule in Dutch AERIUS is that you have to start building within 2 years of receiving your permit. If you have not done it within this time-frame, your permit expires. This is then accounted for in the AERIUS Register entry for that area and the room for development increases again.
Planning and Permitting - Dutch Approach	What is the Dutch “de minimis” used in AERIUS to define when a proposal does not need to be recorded?	Before the Dutch Nitrogen Judgment (Case 293/17 of the Court of Justice of the European Union; Cooperatie Mobilisation for the Environment v Verenigin Leefmilieu), the Dutch “de minimis” was 0.05 mol nitrogen per hectare per year where there was “no room for development”. This relates to sites already above the amount of nitrogen allowed for that area. This amount of nitrogen is equivalent to 0.7 grams or 0.0007 kilograms of nitrogen per hectare per year. Since the Dutch Nitrogen Judgment, there is no de minimis value and everything needs to be a permitted.
Planning and Permitting - Dutch Approach	Permitting assessments in the UK often use worst-case emissions, based on the maximum allowed. Would it not be more appropriate to use realistic emissions, or is this what is built into AERIUS emission factors?	In most cases in the Netherlands, the user will have to choose the pre-defined emission factor. Some constructions will be experimental and can provide additional information on how they came to their emission factor. Experience in the Netherlands shows that this rarely happens with farming cases. It also shows applicants typically ask for more emissions in their permit than what they can actually use. Actual farm emission levels are typically around 30% less than what the permit is for. For industrial sources, this is much more differentiated.
Possible Tool Functionality	Would a UK tool reflect the same functionality as AERIUS?	The UK considered the AERIUS tool to be the best cost-beneficial mechanism to meet UK user needs because of its functionality. Although elements of the tool such as the underlying dispersion model and subsequent data would need tailoring to the UK, key aspects such as the software architecture, user interfaces and functionality would remain largely similar to the Dutch AERIUS tool.
Possible Tool Functionality	Do the AERIUS modules work independently of each other or are there a lot of dependencies?	While there are a lot of technical dependencies every product can be deployed individually. Some applications access similar data, but the work independently. Updates to the individual AERIUS products typically have their own timeline.
Possible Tool Functionality	Can AERIUS expand to risk assessment for other parameters (eg odour, noise, water quality)?	Yes, AERIUS is a modular tool that can be adapted to use a model for most risk assessment applications. The Dutch Government has investigated use of AERIUS for other Industrial Emissions Directive parameters such as dust, noise and odour.
Possible Tool Functionality	Can AERIUS be used to assess a development affecting traffic emissions?	AERIUS currently accounts for emission sources that include road traffic by using a separate modelling module. AERIUS is used for relatively small developments generating road traffic as well as national transport and infrastructure projects. AERIUS Scenario is specifically designed to enable local authorities to investigate options for spatial policy and planning.
Possible Tool Functionality	How are high background concentrations and deposition treated in AERIUS?	AERIUS is the tool used to implement the Dutch Integrated Approach to Nitrogen. The law in Netherlands outlines the rules for how room for development is determined and this is related to the amount of nitrogen deposition in a particular area (eg background concentrations or deposition). Where background levels are high enough to indicate there is no room for development by AERIUS Register, then a permit is not able to be issued. This determination can vary regionally within the framework outlined by the law.

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Possible tool functionality	Can AERIUS be used to identify if the permitted technologies are being used properly (eg if modelled emission levels are not what is being monitored)?	This would require that the monitoring data would also be input into the system rather than as an annual emission map update. Theoretically this could be possible through AERIUS Monitor but would require significant modification from the current implementation. At the moment, the tools can monitor annual change rather than immediate changes you would expect due to a technology change. It would depend on what technology you are looking at. This can be considered in development of the case studies to test any integrated tool in the UK.
Project planning	How will ITAPA project account for existing UK tools and data sources?	ITAPA is a UK-level project conducted with technical advice from the UK's Country Nature Conservation Bodies and Regulators that produce current UK tools such as SCAIL, Simple Calculation of Atmospheric Impact Limits, and the Air Pollution Information System (APIS) website. There are improvements planned in these tools that an integrated tool could assist with, particularly mapping or digitisation of data input/output. ITAPA has existing tools and discussion about transition arrangements in the forefront of its planning.
Project planning	When is a tool likely to be available?	Once funding is secured, a working version of AERIUS Calculator and AERIUS Register could be ready for testing within 12-18 months. Please see the proposed project plan for a brief outline.
Project planning	How can our organisation get involved?	Contact us at ITAPA@jncc.gov.uk to express interest in the project. Participation could be just keeping informed about ITAPA or could be broader contribution of technical advice, user testing, validation and facilitating stakeholder engagement. To keep informed, ask to sign up to the ITAPA Mailing List. For the more detailed involvement this will depend on funding. Email your interest and we will get in touch at the appropriate time.
Project planning	If a UK tool had the same functionality as AERIUS would it be provided in stages?	The Dutch implementation of the AERIUS modules was phased and remains underway. A UK implementation would expect to have a prioritised and phased implementation in a similar way.
Project planning	How can a test version of a UK integrated tool like AERIUS Calculator be so quickly implemented (eg in 12-18 months)?	As a UK implementation of the AERIUS tool builds on the Dutch implementation, timelines are much faster than if a tool was developed from scratch. Rather than being full software development, there is a significant element of "plug and play" for using a UK dispersion model and UK data. Feasibility for this was tested in earlier phases of ITAPA. Timelines proposed were developed with advice from the AERIUS development team who would facilitate a UK integrated tool implementation alongside a UK team. The greatest risk for timelines is considered to be in non-technical aspects such as policy decisions. As a result of the project planning workshop feedback, the consultation and software development time has been extended.
Project planning	Being as realistic as you can, roughly when do you expect to start the process off?	We are starting it right now. We are hopeful that we have funding. The focus will be on the initial discussions right now, so this is not dependent on funding. The tool itself would need to wait. The moment we get the money, we will be able to contract out etc. within a matter of weeks and start to deliver the tool itself over 12 to 18 months.
Tool benefits	Would an integrated tool mean UK countries no longer need to implement strategic approaches for addressing emissions around protected sites (eg Shared Nitrogen Action Plans)?	An integrated tool would facilitate strategic approaches rather than replace them. The AERIUS suite of products helps gather emissions data, visualise this and calculate effects of new emission sources or changes in existing ones. The tool incorporates emissions from all sectors and their contributions to a specific area. This can be used to develop strategic solutions as well as monitor progress of actions within the planned intervention.
Tool benefits	Can AERIUS be used in strategic planning for different sectors (eg development plans, transport, industry) for source apportionment and accounting for strategic mitigation (eg modal shift in transport)?	Yes, AERIUS is specifically designed to facilitate this sort of cross-sector, large scale consideration of emissions and their effects on protected sites or other sensitive receptors.

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Tool benefits	How can AERIUS benefit farmers and other users?	Currently UK tools and data for assessment of air pollution effects on ecosystems are held in several places. This can be confusing to navigate and difficult for applicants and decision-makers alike. Key improvements are: • **Streamline sustainable development** - The AERIUS tool is user friendly and makes the assessment, and potentially, permission process more streamlined, clear and faster. An agreed approach for risk assessment in decision-making also provides more certainty for applicants about whether the proposed design would likely gain approval. This also enables decision-makers to be confident in the quality of assessment to prevent delays. • **Automatic "in-combination" assessment** - In particular the integrated tool accounts for emissions from all source types and automatically performs an "in-combination" assessment. • **Ease of testing mitigation options** – AERIUS Scenario and AERIUS Calculator enable users to input a variety of mitigation scenarios and to compare them to find the best outcome for the proposal as well as the environment. • **Improved national inventories** - By bringing data into one place and recording source specific activity data, the AERIUS tool enables more detailed input to the National Atmospheric Emissions Inventory. This will improve over time as existing sources are included when they seek new permissions or as part of regulatory change. • **Facilitating strategic approaches** – AERIUS Monitor enables habitat managers and competent authorities to observe the number and type of emission sources in proximity of their protected areas. This can be tracked over time and combined with habitat data to inform development of strategic approaches to reducing pressure on ecosystems from air pollution and then monitor their success.
UK Tool Implementation	Would a UK integrated tool like AERIUS be adopted as a national standard?	As seen in the Dutch use of AERIUS, the tool can be used to a national standard for risk assessment. It is at decision-making and the permit issue stage that a framework can be used to account for regional or UK country variation. Ultimately the aim is to be as standardised and integrated as possible and to work on this over time.
UK Tool Implementation	Will training be provided when an integrated tool it is launched?	Yes, training and guidance will be provided and tailored through trained user testing groups. As the AERIUS tool has been in operation in the Netherlands for several years, there are a lot of materials that can be adapted for use in the UK.
UK Tool Implementation	How are results from developers submitted to local authorities for their review?	A short video explains how AERIUS Calculator works. In the Dutch AERIUS tool, applicants or their advisers enter the data into AERIUS Calculator and can produce risk assessment reports based on their data. When the applicant is content with the report, they can submit through AERIUS and a permit may be issued to standard rules or the decision-maker is notified for review. This is then recorded in the Room for Development for the area in AERIUS Register and can be tracked by the decision-maker through and AERIUS Monitor.
UK Tool Implementation	How different are UK air pollution and ecosystem risk assessment needs from those in the Netherlands?	Although the Netherlands has higher ammonia concentrations and deposition than the UK, both countries have a significant proportion of their protected sites exceeding the amount of nitrogen deposition they can handle and maintain ecosystem function. Both countries need to ensure that air pollution effects on protected sites are addressed in decision-making. As such, the ITAPA project determined that an integrated tool such as AERIUS would be beneficial to meet UK user needs.
UK Tool Implementation	AERIUS is originally a Dutch tool; as AERIUS is updated could the UK version also adopt the changes from the parent system?	Yes, part of the AERIUS project is to provide benefit to other countries wishing to use AERIUS. This includes sharing any improved software or new modules.
UK Tool Implementation	Could improvements made in a UK version of AERIUS be shared for use on the Dutch AERIUS tool?	As an open source software projects improvement exchange is expected to be two way. Any proposed changes would undergo the AERIUS decision process before being implemented in the next software release. This video explains how changes are made in AERIUS in the Netherlands.
UK Tool Implementation	A UK wide system would need to cope with data and mapping in OSGB and Irish Grid (TM65) - how integrated could the systems be?	It would be technically possible to have two separate grid systems in the model and tool. They would be included in the database as one table. For the application itself, it would reference the relevant grid system depending on where the user was setting their source. Technically, this is simple for the AERIUS tool to address.

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UK tool implementation	Will there be a standardised tool across the UK?	Yes, our aim is to produce a UK tool that produces a standardised risk assessment. There are some areas of variation that can be accommodated in AERIUS as they are regionally in the Netherlands. For example, variation in mapping grid or different decision rules due to different policies can be included. However, the aim is to be as integrated and harmonised as possible and to work on this over time.
UK tool implementation	Are there plans for the tool to support not only assessment under the Habitats Regulations but also the further tests (eg Imperative Reasons of Over-riding Public Interest, assessment of alternatives, and the use of compensation)?	We need to think about this a bit more and will include it in the project workshops. AERIUS is primarily suited to assist with risk assessment including the appropriate assessment stages of Habitats Regulations Assessment. This is the most common activity and further stages are rare when considered across all types of permissions. In strategic planning perhaps the process reaches these later stages as a matter of course. Some of the data gathering and visualisation in AERIUS could be helpful for these later stages. There are opportunities to use the AERIUS Scenario function to explore alternatives and verify whether there is a solution. The mapping facility could also help with recording and monitoring compensation areas and not double counting.
Usability	Does the end user/applicant normally use the tool or the regulatory body?	Yes, everybody uses the tool. It has functionalities for the regulatory body but also for the end user or applicant. Typically, applicants or their consultants enter the data into AERIUS Calculator and explore mitigation options in AERIUS Scenario. AERIUS Register is then used by regulators, decision-makers and advisers to keep track of the emissions sources. AERIUS Monitor helps advisers, competent authorities and others get an overview of emissions around a certain area of habitat or region.
Usability	How user friendly is it? Could your average farmer use it or would a professional need to do it on their behalf?	Yes, there has been good success with farmers using AERIUS. AERIUS has undergone substantial user testing to ensure the interface was clear and simple to use. This is important as many activities need to be entered including changes of small numbers of animals. In reality, most applicants end up using a consultant anyway. But this is by choice rather than because the system is too difficult. Before AERIUS this would have cost several thousand Euros, now it is only a couple of hundred.
Validation	How is the AERIUS model (OPS) calibrated?	As part of the Dutch Integrated Approach to Nitrogen, an extensive monitoring network was installed to support validation and calibration of the AERIUS tool and underlying dispersion model, OPS. The model is calibrated annually.
Validation	When people have entered a new source, is there an independent QA check to ensure they've used i.e. correct location, correct emission factors, etc. and not done something that would lead to underestimating the emissions?	Yes, there are several data validation measures. Dutch AERIUS uses a formally defined information model. This checks what the applicant has entered and ensures it fits defined standards (e.g. you can't enter a negative building height etc.). Dutch AERIUS also uses pre-described emission factors. If for some reason applicants are not happy with the AERIUS data, they can define their own emission factors. This is highlighted to the regional authority upon submission and they ensure the data entered makes sense. Regional authorities also get a warning if applicants try to place emission sources outside the country borders.