Free form comments for NEIF Operations Group

Comments which suggested changes are included in full below. Not included are positive or neutral comments offering no suggestions.

Question 10 - Do you feel there are ways to improve the application / grant award process?

- **Comment:** "Ideally, improve the response time from meeting to sending out the outcomes."
  Response: NEIF aims to get decision letters sent as quickly as possible, knowing that applicants are keen to know the outcome. Given the large number of applicants, writing, checking and sending these letters is a large task, particularly around other NEIF commitments. Recent addition of the portal has streamlined this process.

- **Comment:** "Perhaps publish a clearer calendar (this year was a bit of a scramble with the new system and dates brought forward). Otherwise, it is straightforward."
  Response: The NEIF website has recently been updated and will display the next application deadline on the main homepage. The application page has also been updated with any upcoming deadlines, located above access to the application portal. NEIF will also be making the application calendar more clear, through making panel meeting and expected outcome dates available for the next two application deadlines.

- **Comment:** Committee's comments can vary in quality, sometimes very detailed and helpful. Sometimes less detailed. The inability to respond to comments is sometimes frustrating – for example if a committee member has mis-interpreted something.
  Response: The NEIF panels always aim to give clear and appropriate feedback, although it is acknowledged that this may vary between panels and years. Unfortunately it is not possible to respond to comments within the same application round, however PIs are allowed to resubmit an application which can respond to panel comments in the next round.

- **Comment:** Several (four) comments regarding the length of NIGFSC applications, most in favour of a longer application form but one requesting a reduction in required information.
  Response: NEIF has strived to select a page limit which allows enough space to provide thorough scientific justification whilst also reducing the requirement for too much detail, both for the sake of applicants as well as the reviewer panel. NEIF acknowledges that the maximum page limit is particularly generous for some of the facilities, however NEIF asserts that it is acceptable to complete the application using less space.

- **Comment:** "We found the process immensely frustrating/costly. A big contradiction arose between the methodology (and associated timescales/costs) that we successfully developed for the AHRC application and the methodology that the NEIF Panel expected us to use - which would not have been feasible within the constraints of the funding. There seemed to be no appreciation that the AHRC had agreed to fund the project, and the long process we encountered having to go through a further application process (twice each time) for the C14 dates resulted in very long delays which have curtailed the impacts of the project. There needs to be much greater alignment between the two parts of this process (the AHRC or other funder) and the NEIF. At the moment, the mismatch must be wasting a lot of money."
  Response: AHRC fully funds radiocarbon analysis within grants where the sample number is >100. For smaller projects, applicants are required to apply through NEIF for radiocarbon support alongside non-AHRC radiocarbon projects. This issue has been noted and is being

addressed by the AHRC, aiming to provide a more streamlined passage for funded AHRC grants.

- **Comment:** “Occasional glitches in website submission process (files did not upload and submit until 3rd attempt). Also unclear regarding HOD approval process - it would be good if the website can automatically e-mail the HOD for approval perhaps.”
  Response: Thank you for your comment, the NEIF website has been improved following this feedback, and will continue to monitor performance in the future.

- **Comment:** “current funding cycles drive \bottle necks\" - COVID-19 has served to highlight these challenges. Radiocarbon is often a key step in a project and a more responsive approach to \"first-phase\" access might be highly beneficial to the wider user community."
  Response: NEIF acknowledges this as an issue but notes that almost all projects are also subject to some form of deadline. NEIF will look into this through a two-staged approach; firstly through organising project schedules in the lab to prioritise pilot/first-phase work (all other project being equal), to ensure quick turnaround for applicants looking to advance quickly to a second work phase, and secondly through potential streamlining of applications for second phase work, for example a “light-touch” review or smaller application through chair actions for successful pilot projects.

- **Comment:** “There is quite a bit of extra work required for radiocarbon analysis if you are working on a AHRC or NERC funded project. Even though this project is running (with several postdocs paid to do analyses) it is not possible to quickly get rangefinder dates to see that you are working on the correct section of the core. This has resulted in the unfortunate situation that time/money have been spent on analysing the wrong section of a sediment core. This seems poor use of taxpayers money and is very demoralising for involved researchers - especially since this can be avoided by making the rangefinder application for AHRC/NERC-funded projects a chair's action without the need for waiting for the official NEIF panel submission deadline.”
  Response: This is resolved by the new NEIF process: applications for NERC-funded projects should go through chairs actions. It is then the responsibility of the chair (with lab head advice) to check if there have been problems with the analysis and whether this should therefore not have been funded. Where there are problems, NEIF will work with applicants to resolve issues with regards to measurement strategy, however radiocarbon date results should still be provided, without applicants waiting for the panel deadlines. If results look good, the project will start with applicants having access to data immediately
  NEIF will investigate this further through the following potential actions:
  - Ensure the correct application process for NERC-funded projects is properly and efficiently followed, to improve user satisfaction.
  - Discuss adopting the same process for AHRC-funded projects - this was raised at the NEIF strategy group, but is still under advisement.
  - Improve communication with applicants to highlight the specific process for NERC-funded projects and remove misunderstanding within the NEIF user group.

- **Comment:** “Greater awareness of role for NERC funded PhD candidates earlier on during PhD planning stages.”
  Response: Assuming this question refers to PI engagement with NEIF prior to funding of PhD studentships, NEIF actively encourages communication with facility staff to design science

projects and specific experiments, including direct involvement within studentship applications. However, NEIF understands that research plans also change throughout student projects and will assist both PIs and students at any stage of their project, when possible. The earlier users engage with NEIF, the more support and guidance can be provided.

- **Comment:** Two comments addressing radio carbon and stable isotope analysis requests from existing NERC or AHRC grants. Both comments suggest the system can be streamlined to avoid applying twice for the funding first to NERC then to the NIGFSC, citing both replication of effort and time constraints with the bi-annual NIGFSC reviews.
  Response: NEIF has recently streamlined this process for all panels. NERC grants holders (and those with AHRC grants requesting radiocarbon) can now apply to NEIF at any time in the year, rather than waiting for the next deadline. NEIF also accepts copied information from the original grant, rather than writing a new case for support. Providing there is enough information in the grant case for support, the panel are likely to approve access to the facility, although in some cases further information may be required, specific to the analytical components of the project.

Question 16 - Do you feel there are ways to improve the facility?

- **Comment:** "Ever more funding and expertise. Replace and extend expertise where lost to retirement etc where possible and reduce turnaround times for analysis."
  Response: The funding received by NEIF is unfortunately outside of panel control. Alongside all NERC facilities, NEIF has been flat funded for nearly a decade now as part of the government's austerity measures. This has meant annual budget cuts, with no information on when this situation is likely to change. It is therefore not possible to expand any of the facilities at the present time, with the best possible staff replacements being made when required.

- **Comment:** "It is almost a year since we submitted the samples and we have not received our results yet, which constitutes an extremely long delay, but I tend to think is due to the Covid-19 situation, so I am not able to pass judgement only based in this year's experience."
  Response: While it is not possible to comment on specific cases, closure of laboratories from mid-March to mid-September due to COVID-19 has caused unfortunately long delays. Usually NEIF endeavours to provide results within 12 weeks, however but this was impossible to achieve in 2020.

- **Comment:** "I find the NEIF turnaround times to be incredibly slow. I don't understand how a group of samples enter the facility together and the results come out over a period of a few weeks or months. This is a regular complaint as it makes it impossible to timetable the next stages of the research that require these results."
  Response: NEIF endeavours to provide data within a fixed period, however there are often delays due to unforeseen problems with samples or equipment, for example when further material is required or when there are difficulties with analysing particular samples (e.g. contaminated or extremely small).

- **Comment:** "Collaboration: There should be clarity regarding authorship expectations of facility staff on publications. This will safeguard both facility staff and academics through the

publication process."
Response: NEIF agrees that this is an important aspect of project collaboration and encourages this discussions between all project members from the start, to ensure clarity. Data ownership and publication expectations for NEIF funded work are also clearly laid out in the accompanying documentation.

- **Comment:** "Try to encourage stronger partnerships with the science in which you are invested."
  Response: NEIF staff are deeply invested within their science areas and aim to provide both analytical support as well as scientific expertise for projects they are involved with, although given the wide scope of science areas NEIF covers, this is not always possible. NEIF staff are often Co-Is on NERC-funded grants, or supervise PhD students that access the facilities (as external Co-Is), with the respective documents detailing the nature of the partnership and why NEIF staff are involved at that level. NEIF staff also regularly work towards developing the current lab capacity to meet the demands of new users and enhance the already extensive science portfolio of the facilities, for example some staff have designed bespoke sampling equipment and novel methodologies which have led to peer-reviewed publications with project PI/Co-Is.

- **Comment:** "The facility is currently not up the standards of other labs in terms of 14C analysis: much slower, require larger samples, and more expensive. I understand plans are in place to improve the equipment which should help this. When not obliged by NERC to use NEIF, I always go elsewhere for my analyse, for the above reasons. The NEIF staff are v helpful though"
  Response: NEIF are addressing these concerns in the following ways:

  • "Much slower" – NEIF have a continuous programme of improvement, for example implementing in-house development of custom software for logging in, tracking and reporting results, as well as a review of logistical processes in the lab. NEIF continue to try and identify how these systems can be improved to reduce turnaround time.

  • "Require larger samples". NEIF encourages PIs to send material that will generate >500 micrograms of carbon (mg C) when possible, as larger samples are less vulnerable to contamination and hence more likely to provide better results. When this is not possible, NEIF also run a full small sample programme, which comparatively similar to the capabilities of other radiocarbon labs worldwide with similar programmes, with successful measurement on samples with as little as 0.1 mg C (ca. 0.2 ml CO_2). NEIF is continually working to improve these capabilities by extending small sample options across our analytical range; in the last year, small sample measurements have been extended to organics, carbonates, dissolved inorganic carbon in waters, and soil organic carbon fraction analyses.

  • "More expensive". NEIF caters to a wide range of sample materials, including many where analytical difficulties can be encountered. When samples are not as expected, or if samples are problematic during pre-treatment chemistry, a programme of development work is often required to obtain or analyse materials, which is undertaken by the laboratory as part of the package of support for NERC-funded work. This also covers financial support to expand on projects and develop new avenues of investigation, as appropriate. NEIF project costings include wider project support including researcher training, data interpretation and modelling, which benefit and enhance the research of all NEIF users. Although similar

benefits are potentially available elsewhere, they will still require costing and are likely to be less flexible around evolving and expanding needs during the project. Full breakdowns are provided in our Technical Assessment letters for transparency. If the requirement to use NEIF creates an issue for project costings, PIs have the opportunity to raise the NERC grant threshold for their project, by contacting NERC directly (as per the NERC grants handbook).

- **Comment:** "It is critical that the Ar isotope facility remain world leading it what it does - this can only be done with ongoing financial support from NERC. In addition to strategic capital, money for people is critical."
  Response: It is agreed that Ar isotope analysis is a key capacity provided by NEIF. It is hoped that NERC will provide further funding for this in the future, but until then this facility will operate with the amount of FTE funded by the contract.

- **Comment:** I know people time is decreasing, increasing funding for people to dedicate to interaction with PIs and PhD students. Training 1-2-1 for students is fantastic but I would like funding available for my students to spend more time with the facility
  Response: SUERC, one of the key NEIF sites, provides access to a SUERC flat for visiting students at an inhouse subsidised rate of £75 per week. However, additional funding for travel and subsistence is not currently within the remit of the NEIF budget. This suggestion will be passed on to NERC for consideration, although all NEIF visits should be costed into student training grants associated with NERC DTP studentships, where applicable.

Question 18 - Do you feel there are ways to improve the training?

- **Comment:** "Perhaps incorporate training as a formal requirement for funded research - use this to strengthen research partnerships."
  Response: NEIF encourages successful applicants to undertake training and get involved with the technical aspects of analysis, particularly for students and early career researchers, however this is optional. NEIF plans to better advertise that training can often be included as part of funded projects more widely going forward.

- **Comment:** "By providing more online resources that can be accessed prior to the start of the analytical phase of a project. Recommending book chapters is good - but in 21st century there should be something more interactive."
  Response: NEIF acknowledges that there is an increased need for such online resource materials, particularly in a COVID-19 world. NEIF has recently had a project funded to develop such online learning materials, which are planned to become available in 2022.

Question 20 - Which new analytical facilities would you like to see within the NEIF?

- **Comment:** Nd isotopic measurements of small samples.
  Response: The Geochronology and Tracers Facility routinely analyses Nd isotopes down to 5-10 nanogram level using the Neptune+ mass spectrometer, with the capability to analyse at sub-nanogram levels with some loss of precision. Unfortunately, NEIF are not able to carry out the methods used by, for example, the Boston College Centre for Isotope Geochemistry, who analyse Nd as oxide in a TIMS instrument, achieving high precision for small loads,

primarily for use in garnet geochronology. However, if there was community demand for such a protocol, NEIF could potentially look into developing this.

- **Comment:** Compound-specific C and H isotopes (see also below - online temperature ramped pyrolysis).
  Response: Compound-specific C and H isotopes are already available at the Bristol node of NEIF.

- **Comment:** "The ability to apply for funding for ancient DNA analysis for small projects would be a great help to the archaeology and Quaternary palaeontology community - esp. if they could be directly linked to C14 and/or isotope analysis with only one application. This would also reduce some of the pressure on specimens for destructive sampling if all samples were taken at once."
  Response: NEIF agrees that this is a good idea and encourages these types of applications, which would combine techniques and reduce sampling and destruction of material.

- **Comment:** "palaeoproteomics would be useful"
  Response: ZooMS is now used to identify species/genus of samples submitted externally from NEIF, to the Oxford facility. Extending this capability to NEIF has been proposed.

- **Comment:** "The following are some suggestions to enable NEIF to retain its position at the forefront of analytical capability. 1. Carbon isotopes in DOC is one example of an area currently not addressed through the UK-wide NEIF portfolio. 2. We have recently been working hard to develop in-house capability with UKCEHCEH NEIF staff (formerly LSMSF CEH) to analyse N2O from the microbial denitrifier method. This is a technique which is in demand in the life sciences stable isotope community and which is currently not offered across the NEIF portfolio. However, the methodology requires samples to be processed on-site and analysed within a short time period. To make this technique accessible to NEIF users, there needs to be in-house capability to prepare as well as analyse these samples. This capability is still absent from the NEIF portfolio. 3. Analysing samples for oxygen-17 is yet another niche area which the facility could move into following modifications to existing instrumentation. All of these techniques will require personnel time, innovation and investment, but that is precisely what the NEIF should be best placed to deliver."
  Response: 1. This instrument is listed as a priority for innovation in the respective lab, however, the capital to acquire it has not yet been allocated. 2. UKCEH are setting up the method to do this conversion chemically, however the use of denitrifying bacteria, which is a microbiology technique, is not currently part of NEIF activities. 3. UKCEH would be happy to discuss potential work to know the exact needs.

- **Comment:** "Push towards small sample analyses; push towards compound specific analyses and ramped combustion methods - to be honest, I lack understanding of what is possible vs what can be delivered?"
  Response: Currently, NEIF can undertake small sample analyses, as well as compound specific analysis and ramped combustion methods. The respective labs can provide evidence of developments and collaborations that are advancing within each area. Also, the relevant equipment has been built (ramped oxidation) and purchased (CSRA).

- **Comment:** “Would it be an idea to organise more one-week training courses where PhD students can come and learn about the techniques. I know that this is available at Oxford (one of my PhD students was going to attend a course on dating methods), but is this also the case at SUERC and BGS (e.g. isotope geochemistry)? Perhaps I'm just not aware of this, in which case ignore this comment.”
  Response: NEIF currently run different techniques short courses and deliver training during 1-2-1 training at the facility sites. During the next 6 months NEIF is formalising the training schedule with respect to short courses for the period 2021 to 2025. The details of this will be made widely available through the NEIF and NERC websites as well as NERC list server.

- **Comment:** “Ability to routinely measure small carbonate samples for 14C”.
  Response: NEIF routinely measure small carbonates at present, with successful measurements on samples with as little as 0.1 mg C (ca. 0.2 ml CO_2) which is equivalent to a carbonate sample of 1 mg $CaCO_3$. This compares favourably with other such facilities worldwide. We operate a dedicated small sample programme for this purpose, with hundreds of samples generating <500 micrograms of graphite measured this way, annually. NEIF continually seeks to improve its capabilities and to provide technical innovations, NEIF therefore encourage working with users to develop new approaches and project-specific innovations, including small sample analysis.

- **Comment:** “Microprobe for tephra analysis. Bring back the Edinburgh facility.”
  Response: Facilities have been flat funded for nearly a decade. This has meant budget cuts which have sadly resulted in some facilities being discontinued in order to keep others.

- **Comment:** “More options for high precision geochronology - latest mass spectrometers for noble gas measurements. 4He/3He would also be a useful addition to the argon isotope facility.”
  Response: NEIF has considered introducing this capability, but it will require resources which are not currently available. It is hoped that during the next phase of commissioning (2024) funding for broadening the scientific portfolio will become available, although NEIF will ensure that this should not be to the detriment of the Ar/Ar capability that is already over-subscribed.

- **Comment:** “MC-ICP-MS (for Hg isotopes)”
  Response: NEIF will continue to pursue avenues for funding of such capability for community access.