



## Achieving Silver

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### 1. Purpose

The purpose of this document is to provide guidance on answering the questions in the LEAF silver award criteria. Each section of this document explains what should be considered when answering the questions. If any questions are not suitable for your area than 'Not applicable' along with an explanation can be written in the answer box. Any sustainable activities carried out in your area that are not captured by the framework can be captured in the 'Open Initiatives' section at the end of the questions.

### 2. Scope

This guide is for laboratory users who have been nominated to carry out LEAF in their area and are filling out the criteria for the silver award.

### 3. Procedure

#### 3.1. Waste

**17. The lab has assessed its use of consumables and implemented realistic measures to reduce use. These efforts should target single-use plastics where feasible and best practice for when this has been achieved is shared amongst lab users. Where changes impact on standard protocols, this has been captured as part of the documenting procedure.**

- The laboratory has addressed its use of consumables and implemented measures to reduce use – particularly targeting single use plastics. Examples are using the smallest possible tubes, carefully planning experiments and reusing where appropriate can all help to reduce plastic waste.

- Change in practice has resulted in a reduction of single use plastic, which may be quantified in some manner.
- Guidance on how to reduce consumables is available and any changes to protocols have been made.

**18. There is minimal contamination of recycling in clinical waste bins and lab members are aware of best practice. Labs have clear processes in place to ensure waste is correctly segregated to minimise the impact of cross contamination of waste streams. These processes must cover what to do if waste is disposed of incorrectly.**

- Correct disposal procedures are well communicated via documentation and training. This includes posters and induction material.
- There is minimal contamination of recycling in clinical waste bins.

### 3.2. People

**19. The lab has communicated with other groups/labs/departments about sustainable practices, and/or has taken part in a sustainability audit.**

- The laboratory has communicated with other groups about sustainable practises.
- This can take place in a number of formats such as laboratory meetings and departmental meetings.

### 3.3. Purchasing

**20. The lab is aware and makes use of schemes offered by suppliers/manufacturers which increase reuse, recycling, and waste reduction. This includes, but is not limited to, tip box recycling and the return of polystyrene boxes and Winchesters to suppliers. Instructions for lab users on which schemes are in use, how to engage with them and regular reminders to prevent inadvertent disposal of items are provided to all lab users.**

- The laboratory makes use of schemes offered by suppliers which increase reuse and recycling and reduce waste. i.e. Tip box recycling, packaging return, glass Winchester recycling.
- This is communicated and all lab users are aware of the schemes the lab uses.

### 3.4. Equipment

**21. Freezers, fridges, and LN2 dewars are maintained or there is a plan in place going forward to achieve this. This includes defrosting, removing unwanted samples, checking seals, and cleaning filters on ULT freezers. The plan shall identify those responsible for ensuring its implementation, along with the schedule for doing this and will be communicated to all lab users.**

- Cold storage is well maintained – the seals on freezers are regularly checked and the freezers are regularly defrosted. Unwanted samples are removed from fridges/freezers and LN2.
- There is a schedule for routine maintenance of freezers.

**22. Washers, autoclaves, and any equipment which permits batching, are only run when full. The lab considers appropriate sizing when buying such equipment. The procedure should be communicated to all lab users.**

- Autoclaves, washers and other equipment that permits batching are only run when full.
- All lab members know the details of how such equipment is run.

**23. There is a system in place permitting the booking and sharing of communal equipment. Details of the equipment covered by this process should be communicated to all lab users and would likely benefit from being documented for easy reference.**

- Booking systems are available for communal equipment.
- All lab users should know what equipment can be booked and how to book.

**24. A review of the lab's equipment has been undertaken to determine opportunities for changing the way it is operated to improve energy efficiency and reduce carbon e.g. evening, weekend, holiday switch-offs. For freezers and fridges, where feasible, their temperatures have been raised and drying cabinets/ovens have had temperatures lowered. For incubators, compartmentalised models are used where possible.**

- Temperature regulating equipment has been assessed and changes in temperature have been implemented wherever feasible.
- The way equipment is operated has been reviewed to improve energy efficiency e.g. through records or use of switch off stickers.

### 3.5. IT

**25. There is a local or institutional system in place to ensure critical data is backed up. This also ensures large files are not excessively stored and deleted where feasible. Whilst it is critical to back-up data it is also very important to delete unwanted files and regularly review files in cloud storage. Information on the systems available within your organisation to support this activity are provided to all users.**

- Losses of data can represent immense amounts of laboratory research time, including the usage of resources There should be systems or plans in place to ensure all critical data is retained and backed-up.
- However, with data centre energy use being one of the fastest growing areas, ensuring only appropriate data storage occurs. Make sure that non-critical data is not backed up unnecessarily.
- Data should be stored on the M:\drive or RDM (Research Data Management) system as these meet backup requirements.

### 3.6. Sample and Chemical management

**26. Procedures for equipment breakdown are in place and well communicated to minimise losses. This may include but is not limited to freezer alarms, back-up storage spaces identified, call-out procedures, etc. Service contracts are in place where possible and details of maintenance schedules along with information on breakdown reporting procedures are shared with lab users.**

- Procedures for equipment breakdown are in place – freezer temperature monitoring, back up storage availability, equipment maintenance plans.
- Maintenance schedules are available.
- Lab users know what procedure to follow in the event of a breakdown.

**27. The 12 Principles of Green Chemistry have been considered for current lab members, and communicated to the new members when they start.**

- The 12 principles of green chemistry are considered when planning experiments.
- Resources and/or training on the 12 principles of green chemistry is available to current and new lab members.
- Green chemistry will not be applicable to all but if hazardous chemicals are used has a safer alternative been considered? Are users not making up excess chemicals when they don't need them?

### 3.7. Research quality

**28. The lab is aware of any relevant local core and shared facilities or equivalents. Either there is a valid rationale for not utilising such a facility (which has documented, with senior level approval), or the lab makes regular use of them. Any institutional policies relating to shared facility use will be communicated to lab users and adopted as appropriate. Reasons for not using shared facilities shall be re-evaluated periodically to ensure validity of approach.**

- Laboratories are aware of the core facilities available and these are utilised where relevant and feasible.
- If the facilities are not used when it is feasible to use them this has been documented and the rationale for not using them is justified.

**29. The lab has a forum for sharing and discussing negative results or discussing how experimental procedures could be optimised.**

- Lab members are encouraged to share negative results at a minimum with other lab members.
- In this forum it is also discussed how experimental procedures can be optimised.

### 3.8. Ventilation

**30. Fume cupboards and Local Exhaust Ventilation equipment is not used for extended storage, and nothing impedes internal airflow. The procedure for how to run this equipment has been communicated to all lab users and may benefit from being documented for easy reference.**

- Items stored in the fume cupboard are kept to a minimum and do not impede the air flow.
- The running of such equipment has been communicated to all lab users i.e. in the form of a document that can be re visited.

**31. Users have been trained on when to lower fume cupboards sashes, and/or turn safety cabinets off. Where good practice is not regularly followed there is a system in place to improve this.**

- Fume cupboard sashes are lowered, and safety cabinets switched off 90% of time when not in use. Fume cupboards are not left in high-flow mode unnecessarily.
- Guidance on the benefits of sash lowering and turning off safety cabinets is provided to all lab users.

### 3.9. Water

**32. Sustainable water use is communicated to all lab users. This includes specifying what levels of water purity are necessary for various applications and why, along with ways to avoid taps running (e.g. soaking glassware).**

- Lab users can demonstrate understanding of the differences between different water types and what applications to use these for.
- Best practice is included in the lab induction.
- Any incorrect usage is communicated at lab meetings.

### 3.10. Teaching

**33. An awareness of resource use and associated environmental impacts is incorporated into practical laboratory learning and teaching. For Undergrad, Masters and PhD students**

- Lesson plans integrate the best sustainable practices such as instructions of waste streams to use.
- Sustainability is a key aspect of the inductions for students.
- For masters and PhD students there is evidence that they are taught to consider the environmental impact of their work.

## 4. Changes to the procedure

Version	Reason for change	Date
1.0		November 2023
2.0	Change to purpose and scope	January 2024
3.0	Change to section 3 for criteria update	November 2024