



# Streamlined LCA in the Ministry of Defence (UK)

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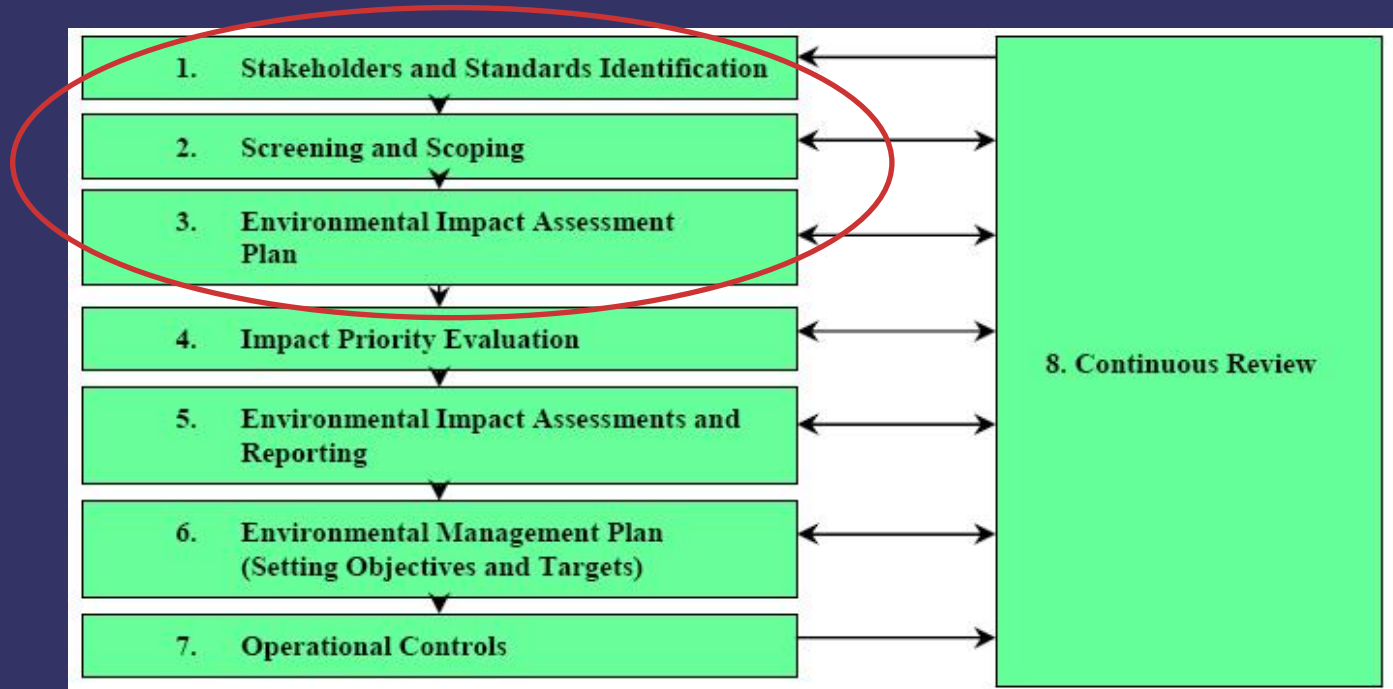
- **Overview of the MOD (UK) Environmental Management System**
- **Environmental Screening and Scoping for Helicopters**
- **Future-Lynx helicopter case study**
- **Merlin helicopter case study**
- **Next steps**



# Environmental Management System in the MOD (UK)

# Structure of EMS

- Implemented by each MoD equipment project team
- Structured approach to identify, quantify and manage the potential environmental impacts



# Execution of EMS

- **Life cycle thinking and streamlined LCA is key;**
- **A tailored approach is required for specific projects:**
  - Size;
  - Complexity;
  - Platform (eg helicopter, land vehicle, etc)



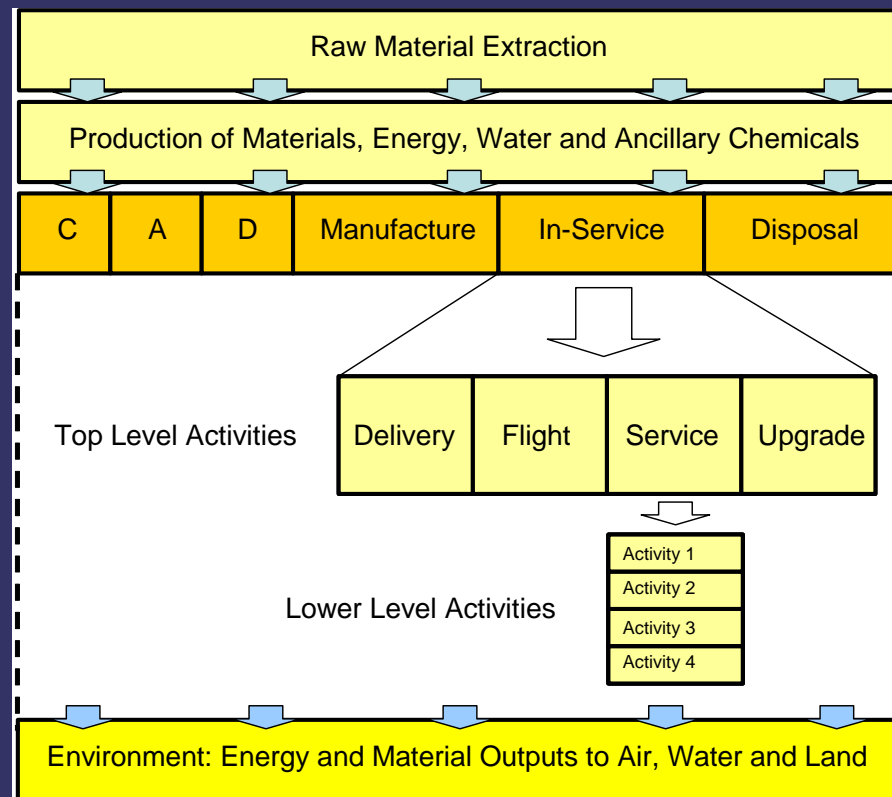
# Environmental Screening and Scoping of Helicopters

# Environmental Screening and Scoping

- **Aim: Identify range of potential environmental impacts**
- **Step-by-step process:**
  - Identify and map significant activities across lifecycle;
  - Identify and record significant aspects;
  - Record potential environmental impacts; and
  - Identify how activities are currently managed.
- **Quantitative data required.**

# Environmental Screening and Scoping

- **Graphical presentation of methodology for helicopter aircraft:**







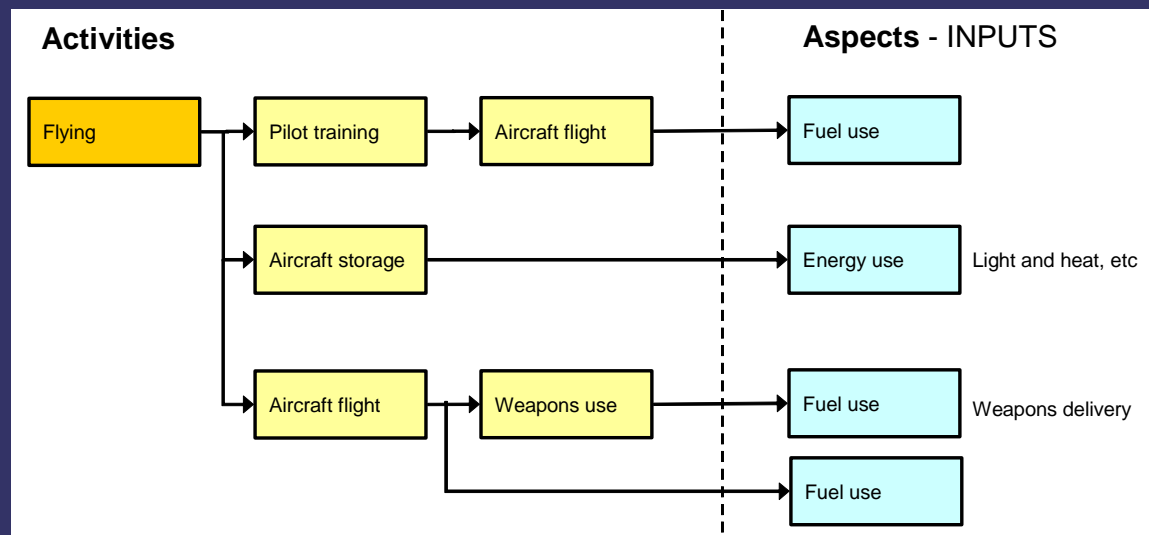
# Future-Lynx Helicopter Case study

# F-Lynx Case Study

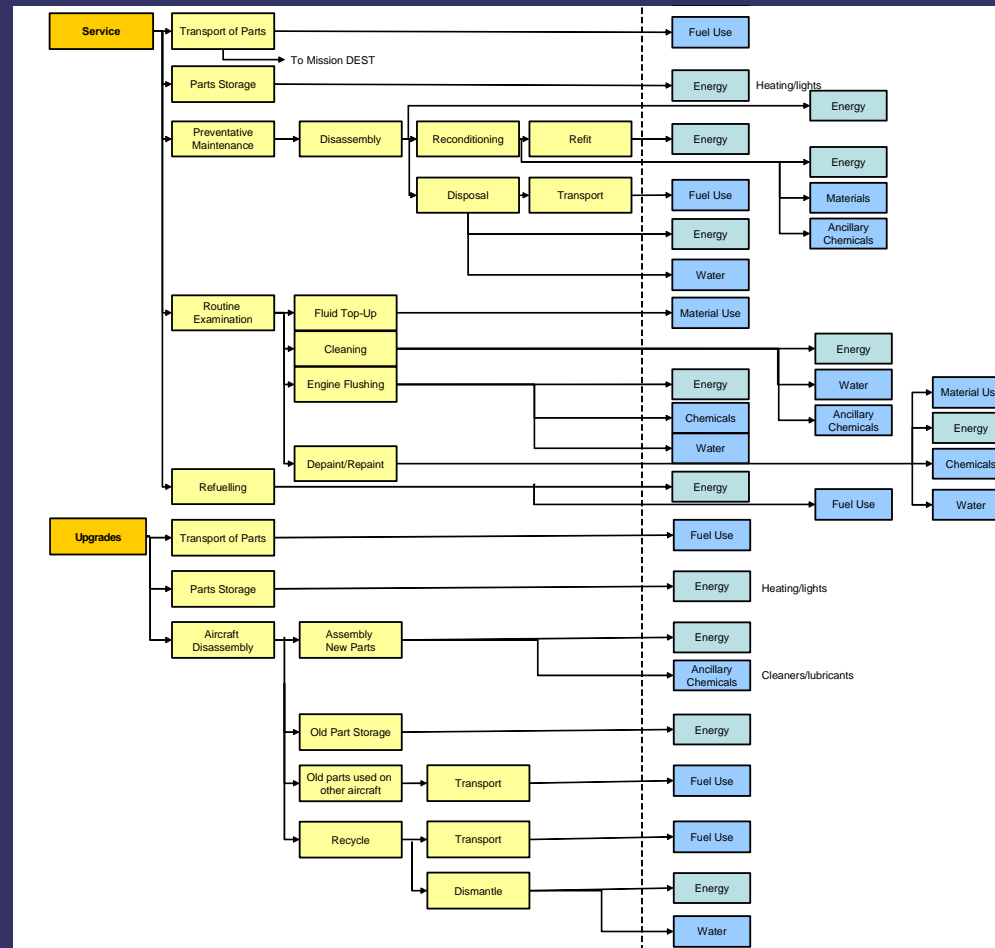
- **F-Lynx programme scope: improved airframe, new engines and updated avionics.**
- **Study focus:**
  - Map activities in aircraft life cycle;
  - Identify main potential environmental impacts; and
  - Recommend further study needs.

# F-Lynx Case Study

- **Identify and quantify life cycle activities and environmental aspects:**
  - Input aspects: fuel, electricity, materials
  - Outputs aspects: combustion emissions, noise, downdraft.



# F-Lynx Case Study



# F-Lynx Case Study

- **Next steps:**

- Aim: to quantify environmental impacts across aircraft life cycle.
- Streamlined Life Cycle Assessment (LCA) recommended – resource efficient.
- Benchmark study for F-Lynx and other helicopter aircraft.
- Results will determine priorities.



# Merlin Helicopter Case study

# Merlin Case Study

- **Merlin CSP programme scope: upgraded avionic systems.**
- **Primary focus:**
  - Map aircraft life cycle; and
  - Verify scale environmental impacts.

# Preliminary Impact Assessment

- **Step-by-step process:**
  - Select context;
  - Identify key indicators for significant environmental impacts based on earlier study;
  - Gather quantitative data; and
  - Interpret results.
- **Life cycle approach essential.**
- **Quantitative data required.**



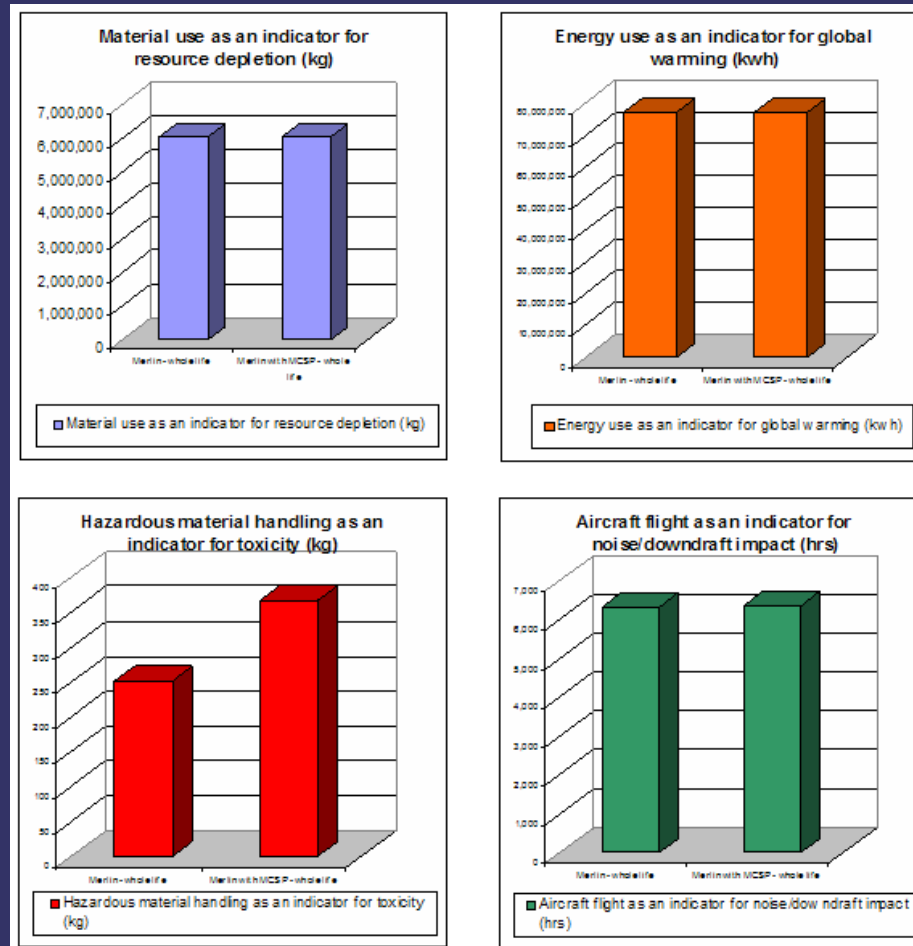
# Merlin Case Study

- **The level of environmental significance can be determined by placing the equipment being studied in a specific context**
- **Context for comparison:**
  - New Merlin Programme
  - Merlin aircraft if it remained unchanged in-service

# Merlin Case Study

- **Four headline indicators were identified from Scoping study:**
  - Material use – to indicate level of resource depletion;
  - Energy use – to indicate level of global warming;
  - Hazardous material handling – to indicate toxicity; and
  - Aircraft flight – to indicate noise/downdraft impact.
- **Quantified data helps remove subjectivity.**
- **Streamlined approach to identify level of impact.**

# Merlin CSP Case Study





# Next Steps

# Next Steps

- **Opportunities:**

- Conduct streamlined life cycle assessment of helicopter (F-Lynx); and
- Establish baseline model for other helicopters;
- Develop streamlined environmental impact assessment (EIA) tools.

- **Benefits:**

- Save costs
- Improve credibility and consistency