Code of Practice for Flailing Operations Using OTP

M&EE Networking Group
Document revision history

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Background

A sub-group of the M&EE Networking Group have looked at the arrangements for Flailing Operations using OTP. The M&EE Networking Group recommend this COP as good practice for the industry.

M&EE COPs are produced for the benefit of any industry partner who wishes to follow the good practice on any railway infrastructure. Where an infrastructure manager has mandated their own comparable requirements, the more onerous requirements should be followed as a minimum for work on their managed infrastructure.

The M&EE Networking Group makes no warranties, express or implied, that compliance with this document is sufficient on its own to ensure safe systems of work or operation. Users are reminded of their own duties under health and safety legislation.

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The M&EE Networking Group agreed and signed off this Code of Practice on 15 July 2020 and published on 05 September 2020

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Purpose
This Code of Practice details the actions to be taken, when planning for, and undertaking flailing operations using OTP.

Scope
This Code of Practice applies to all personnel responsible for the planning and operation of all types of flail equipment using OTP on railway infrastructures.

Definitions

Any Line Open (ALO)  Any line that is open to traffic that is affected by the plant operation.

Flail  A power-driven rotary flail head attachment fitted with tines/teeth/chains.

Flailing  The process of trimming vegetation using a power-driven rotary flail head attachment.

OTP  On-track plant, vehicles with rail wheels capable of running on railway track, limited by their engineering acceptance to running within a possession only. These are split into three main groups: demountable machines, road rail vehicles (RRVs) and trailers.
1. Safe Systems of Work

1.1 Planning

1.1.1 All flailing operations should be planned to ensure that a safe system of work is established. The planning process should include a site inspection in accordance with the requirements of COP 0002 and this COP prior to the commencement of any work. The site inspection should be a physical inspection undertaken in daylight hours to identify any potential hazards.

1.1.2 Consideration must be given to flying debris, its effect on personnel, property and its disposal.

1.1.3 When planning flailing operations, due to the nature of the work and the hazards involved specific consideration should be given to the following in addition to the normal planning requirements:

   a) The Infrastructure Manager’s requirements and limitations.
      - An exclusion zone needs to be set up around the working flail to the rear, the front and along the track. The dimensions for an exclusion zone should be taken as 100m along track and include lateral separation which takes cognisance of the infrastructure being worked on, the vegetation material being removed and the presence of people and property on the railway and adjacent to it (see Fig 1).
      - It is recommended that when trains or plant are required to pass the site flailing operations are temporarily ceased.

   b) Planned flailing operations and site constraints / hazards in order to identify appropriate type of machines and equipment for work to be undertaken safely.

   c) Where other site activities are being undertaken the requirements of the exclusion zone should be adhered to.

   d) Areas of urban or residential occupation, level crossings and public rights of way should be identified, and steps taken to ensure they are kept clear of flying debris.

   e) Competence requirements of site staff involved in the flailing operation.

   f) Resources required including plant.

   g) Production and documenting of safe systems of work.

   h) Contingency/emergency planning e.g. fire, incident damage, derailment, collision, infrastructure damage.
2. **Stages of Planning of Flailing Operations**

2.1 **Stages of Planning**

2.1.1 The following ‘stages’ are the minimum requirements to be considered when planning the use of flailing machines and equipment.

a) Identify work required to include type of work and volume of work:
   - Vegetation control including tree and shrub profiling, scrub, undergrowth and lineside clearance, volume of work, the yardage to be cleared, how many passes will be necessary.

b) Identify hazards through site survey as appropriate (see 1.1.1).

c) Develop method of work, identifying machine and equipment requirements.

d) Establish human resource requirements and competencies

e) Determine possession and isolation arrangements

f) Identify the contingency and emergency requirements

g) Document the plan

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![Figure 1 Exclusion Zone](image-url)
2.2 Identify Work Required

2.2.1 Nature and scope of work activity needs to be established. (Examples listed below):

- Vegetation control, which could include:
  - Tree and shrub profiling.
  - Scrub, undergrowth and lineside clearance.
  - Volume of work.
  - The yardage to be cleared.
  - How many passes required.

2.3 Identify hazards and control measures through site survey as appropriate

2.3.1 Identification and marking of hazards (where necessary), risks and restrictions associated with work requirements identified above. (Examples listed below):

- Buried services (refer to HSE Guidance document HSG47).
- Overhead power lines (refer to Guidance document GS6).
- Overhead Line Equipment (OLE).
- DC conductor rail equipment.
- On and off tracking of OTP.
- Limited and restricted clearances.
- Physical hazards e.g. fencing, lineside cabinets, signals, structures, bridges, lineside equipment, cables.
- Obstructions and loose materials concealed by the vegetation.
- Lineside drainage.
- Third Party property and people.
- Environmental hazards & special considerations e.g. noise, working over water/enclosed spaces, sites of special scientific interest etc.
- Local authority restrictions.
- Wildlife including protected species.
- Track access constraints.
- Adjacent lines.

Note: This list is not exhaustive
2.4 Develop method of work, identifying machine and equipment requirements

2.4.1 Taking account of the work, site hazards and constraints identified above, develop the method of work to be undertaken and appropriate machine and equipment to be used.

2.4.2 The following should be considered when selecting the optimum machine and equipment for the planned work:

- Delivery/access requirements and restrictions for on and off tracking see M&EE COP0007.
- OTP Engineering Acceptance/Conformance Certificate limitations e.g. cant, gradients, working adjacent to open lines, working under live OLE, travel speed, towing and propelling capability machine specification including the required SWL at the planned radius, operator environmental conditions.
- Capability of flail to cut the thickness of vegetation present, or the thicker shrubs and trees cut down prior to the flailing operation.
- Machine capabilities.
- Operator protection/guarding.
- Communication method between operator and the person in charge of the operation.
- Possession and protection arrangements required (e.g. the adjacent line next to the work closed, clearance requirements, gauge infringement etc.).
- Electrified lines (OLE & conductor rail).
- OTP interface with other work and plant.
- Re-fuelling requirements, site storage.
- Establishment of a layered cutting strategy e.g. cut and inspect and mark hazards.
- Control and disposal of vegetation debris.
- Specific machine hazards (available in machine specific risk assessments).
- Provision of adequate site lighting.

2.5 Establish Resource Requirements and Competencies

2.5.1 Taking account of work, machine and equipment requirements, identify the following resources with the associated competencies:

- Machine operator(s).
- Person controlling/supervising machine movements.
- Control of exclusion zone.
- Staff with responsibility for debris clearance.
- First aider(s).
- Handover / handback.
2.6 **Determine possession and isolation arrangements**

2.6.1 Taking account of work activities, machine and equipment requirements, including access arrangements, ensure that possession and isolation arrangements are appropriate.

2.6.2 Identify any lines that could potentially be fouled.

2.6.3 Identify the control arrangements for all points and level crossings to be traversed by the OTP.

2.7 **Identify required contingency arrangements**

2.7.1 Taking 2.2 to 2.6 into account, and using historical data and experiences, determine any additional emergency and / or contingency arrangements that may be required in response to unplanned events such as:

- Machine failures.
- Fire.
- Adverse weather.
- Collision and derailments.
- Staff shortages.
- Delays in track access.
- Infrastructure damage.
- Third party damage.
- Injury to staff or third parties.
- Entanglement of flail head with lineside debris.

2.8 **Document the plan**

2.8.1 Taking 2.2 to 2.7 into account, the method of work, machine and resource requirements, type of machine including limitations and restrictions should be documented for inclusion in the site-specific method statement / work package plan and task brief.

3 **Use of Flail**

3.1 **General**

3.1.1 The flailing operation should only commence once the safe system of work has been documented and fully briefed out.

3.1.2 The flail should only be used if all components are securely in place, e.g. guards ground skids and rollers. If any guard is damaged during the operation, then flailing should cease until rectified.

3.1.3 Before flailing commences ensure between all site staff that there is a clear understanding of the exclusion zone and the method of communication.

3.1.4 The flailing operation should only commence once it has been ensured that no person (except the machine operator) is in the exclusion zone. Where two, or more, machines are used each should maintain a
3.1.5 If the flail develops a vibration in use, it should be stopped immediately for investigation of cause.

3.1.6 The flailing operation should only be used when the flail head is in line with the direction of travel (as shown in Fig 1). Great care should be taken when flailing around fixed obstacles to avoid debris from the flail head being thrown over the rail boundary or on the railway line. Operation of the flail in reverse direction should not be undertaken.

3.1.7 The person controlling/supervising the flailing operation is responsible for observing the exclusion zone and should be positioned so that work is able to be ceased should the zone be infringed by any person.

3.2 Isolation of Rotation of Flail Head

3.2.1 No one should approach the flail head until it has ceased rotating and the machine is isolated against accidental operation.

3.2.2 In all circumstances during delivery to site, on and off tracking process, the flail head should have rotation stopped and isolated. In this circumstance, isolate means hydraulic hoses disconnected, or electrical connections isolated.

3.2.3 If the flailing head requires debris to be cleared, or other reason for inspection of head, the flail head should be isolated as set out in 3.2.2.

3.3 Post Flailing Operation

3.3.1 Following the flailing operation and prior to handing back the infrastructure for the passage of trains a physical check of the site of work should be undertaken to ensure it is free from debris, any S & C present should be checked to ensure correct operation of the S & C is not impaired.