Management of Goalposts

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Version 1

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1 Introduction

There have been several dangerous occurrences and serious accidents recently where a contributory cause has been poor goalpost provision, repair or maintenance. Unfortunately, some of these incidents have led to serious injury and death. We must take a clear and consistent approach to providing goalposts to avoid further serious incidents.

The specific requirements for safe working on or near overhead power lines (OHPLs) in forestry are set out in the FISA804 *Electricity at Work*.

The information in this publication is aimed at giving guidance on the requirements and types of goalpost on **all** worksites, including harvesting, civil engineering, forest management and recreation.

1.1 Wayleaves

The FC operates a standard wayleave agreement with each Network Operator (NO). The Wayleave Agreement sets out the terms and a price per hectare for the NO to operate their service over our land.

Under the FC Wayleave Agreement NOs are required to pay for erecting and maintaining goalposts on FC land and this is set out in the FC Master Wayleave Agreements for each country. In general, the FC carries out this work and transfers the cost to the NO.

2 What's mandatory in this guide?

- **Timely removal of goalposts and other controls after the operations are completed will ensure that old goalposts are not left.**
- **Rigid crossbars must be used for all spans of 6 metres or less. For spans greater than 6 m, hi-viz or red and white safety marker bunting attached to 6 mm polypropylene rope may be used.**
- **The responsibilities must be discussed and agreed during the Pre-commencement meeting process.**
- **All sites where goalposts are required will be risk assessed individually in recognition of the need to consider the transport, erection and eventual dismantling of the goalposts. Inspection regimes need to be discussed at the Pre-commencement Meeting.**
- **Goalposts must be inspected and their condition recorded in site diaries as agreed at the PCM.**
- **Personnel noticing any damage MUST report it to the FWM or Contract Manager as soon as possible and this must be recorded in AIRs as a near miss.**
- **All emergencies must be reported to the NO's emergency number.**

3 Planning

Planning safe working procedures is important, and the first step in avoiding danger is to confirm whether there are any overhead power lines within or immediately adjoining the work area. If we find OHPLs, we **must** consider whether we can:

- **avoid them** altogether;
- **divert them** clear of the work area; or
- **make them dead** while the work is in progress; or
- **work around them** using the accepted precautions, such as goalposts, signs and barriers.

In most cases the work needs to be done, and power line diversions or cut-offs are difficult or dangerous themselves. They are expensive and limited in how long or how often they can be applied. In these cases, it may be necessary to use suitable combinations of all these measures.

They must be part of a package that includes:

- site planning, including liaison with the NO;
- pre-commencement meeting;
- training, site safety rules, tool box talks and induction;
- line height, warning signs and goalposts;
- inspection, repair and maintenance arrangements; and
- safe and timely removal.

Where OHPLs cross roads which are used by vehicles, the height of the overhead power lines depends on their voltage. The regulated minimum heights are shown in Table 1. However, these may not be achieved and the NO must check and rectify or issue additional control measures before operations start.

It is important that there is good and regular communication between the NO Engineer and the FC (landowner) and both parties discuss long-term programmes and scheduled power stoppages well in advance of any work being carried out.

The agreed procedure is that the FC informs the NO at least two months before starting any operations within specified distances from OHPL.

Note that goalposts alone will not stop contact with an OHPL.
They are intended as a visual final warning and height indicator.

Table 1 Regulated minimum heights for OHPLs

Line voltage	Height not over roads*	Height over roads, including forest roads*
< 33,000 volts.	5.2	5.8
33,000 volts but < 66,000 volts.	6.0	6.0
66,000 volts but < 132,000 volts.	6.7	6.7
132,000 volts but < 275,000 volts.	7.0	7.4
275,000 volts but < 440,000 volts.	7.6	8.1

* Minimum height OHPL to be above ground – metres.

3.1 When to put up and take down goalposts and other controls

FISA 804 states:

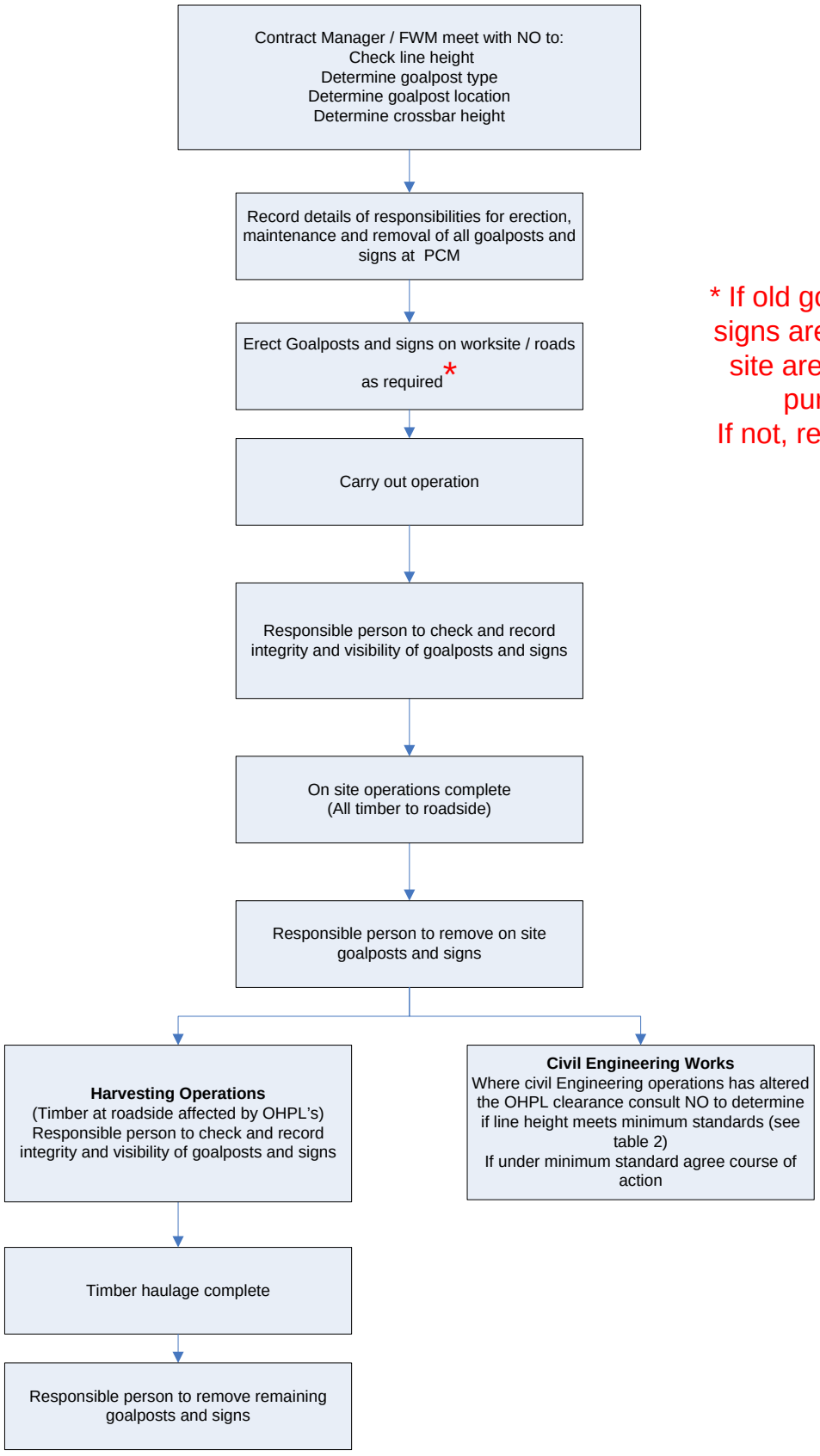
'In consultation with the Landowner and Network Operator, the FWM must find out the routes of all OHPL and underground cables that cross or are near the worksite and access routes and confirm this by onsite inspection. These must be clearly marked on the site and the site maps. "

Figure 1 shows when goalposts and other controls should be erected and taken down following operations near OHPLs.

If old goalposts and signs are present on site they must be fit for purpose, if not they must replaced or removed.

🗝 **Timely removal of goalposts and other controls after the operations are completed will ensure that old goalposts are not left.**

Figure 1 When goalposts and other controls should be erected and removed



3.2 Where are goalposts required on FC land?

The controls required depend on the nature of the work on the site and its location, and will increase as you move from the public highway to the worksite.

On the public highway, the method of control is the height of the line and the maximum height of the vehicle, including its load.

When machinery has moved to the forest roads, the control measures used are the height of the line, warning signs and the height of the vehicle, including its load.

Once machinery has entered the worksite, the increased controls will include height of the line, height of the vehicle, including its load, restricting machine reach, warning signs and goalposts to show the hazards and routes of safe passage.

Table 2 identifies where goalposts and other control measures are necessary for carrying out work safely where OHPLs cross the National/Public Forest Estate.

Table 2 Requirement for goalposts and signage

Situation	Warning signs	Goal posts
1. General forest roads that do not lead to and from a worksite Line height as for a public road. Dependant on voltage. See Table 2.	**No**	**No**
2. Forest roads that lead between the county road network and the worksite i.e. specified access and exit routes The NO must establish the line height. Line height as for a public road. Dependant on voltage. See Table 2.	**Yes**	**No**
3. Forest tracks and roads between nearby worksites used by machines and hauliers e.g. where it is foreseeable that machines will travel between two adjacent worksites. The NO must establish the line height and height for crossbar. Line height as for a public road. Dependant on voltage. See Table 2.	**Yes**	**Yes**
4. Forest tracks and roads crossing the worksite The NO must establish the line height and height for crossbar. Line height as for a public road. Dependant on voltage. See Table 2.	**Yes**	**Yes**
5. On the worksite itself where machinery has to pass under an overhead electricity line. The NO must establish the line height and height for crossbar. Minimise the number of these type of passageways. The passageway must be fenced or marked to define the route. There must be goalposts at each end to act as gateways. Taped barriers must be placed parallel to the overhead line to direct access under the goalposts. See Figure 2.	**Yes**	**Yes**
6. When the forest road is the worksite. The NO must establish the line height and the height for crossbar. Line height as for a public road. Dependant on voltage see Table 2. The passageway must be fenced or marked to define the route. Goalposts at each end to act as gateways.	**Yes**	**Yes**

3.3 Signage

Warning notices (see Plate 1) should be put at either side of the passageway, on or near the goalposts and on approaches to the crossing giving the crossbar clearance height. Signs may also give instructions to drivers to lower jibs, booms, tipper bodies etc and to keep below this height while crossing.

Plate 1 Examples of warning signs

3.4 What types of goalposts are acceptable?

Neither HSE nor NOs have set out a standard specification for a goalpost however, it is clear that any we build and use must be suitable, sufficient and visible day or night. This means that they must alert people approaching them, warn of the dangers ahead and restrict passage to suitably sized vehicles.

The FC specification is to use new UV stable bright yellow pipe (UG460 plain ended pipe 6m x110mm) as supplied by Polypipe Building Products. For further information contact your Operational Support Officer.

The HSE Guidance refers to two types of goalposts and can be summarised as:

1. ***Rigid Crossbar*:** rigid, non-conducting material, such as suitable timber or plastic pipe and distinctively marked with, for example, red and white stripes.
2. ***Rope and Bunting*:** taut polypropylene rope. Coloured bunting can be attached to the tensioned rope to make it more visible.

Determining which type of crossbar to use is governed by the width of the passageway required. HSE guidance states that for single passageway of 6 m or less, a rigid crossbar is required, and it is only for goalposts that cannot be confined to a single passageway, that you may consider a non-rigid horizontal material.

Crossbars need to give a clear indication of the maximum height of vehicle that may pass safely underneath the OPHL. Rigid crossbars are more durable than the rope and bunting type and provide a physical barrier to restrict the height of vehicles.

Rope and bunting tends to stretch thus reducing the tension and so lowering the protective height indication. This system is also more prone to damage caused by the weather and may be blown towards the line causing flash-over.

In situations where rope and bunting is used, goalposts will need to be situated at least 12 metres horizontally from the path of the outer conductor. This increased distance is essential to reduce danger from the loss of safety clearance if ropes are stretched by cranes and other appliances moving towards the line.

Temporary 'Guardian' type goalposts are an alternative to the fixed goalposts. However, restrict their use to short duration jobs. These systems are easily transported and can be installed by one person. However, due to their construction and fixing methods, are easily knocked down or stolen.

For examples of goalposts that may be used see Plate 2:

Plate 2 Examples of goalposts

Rigid Crossbar

Goalpost with bunting

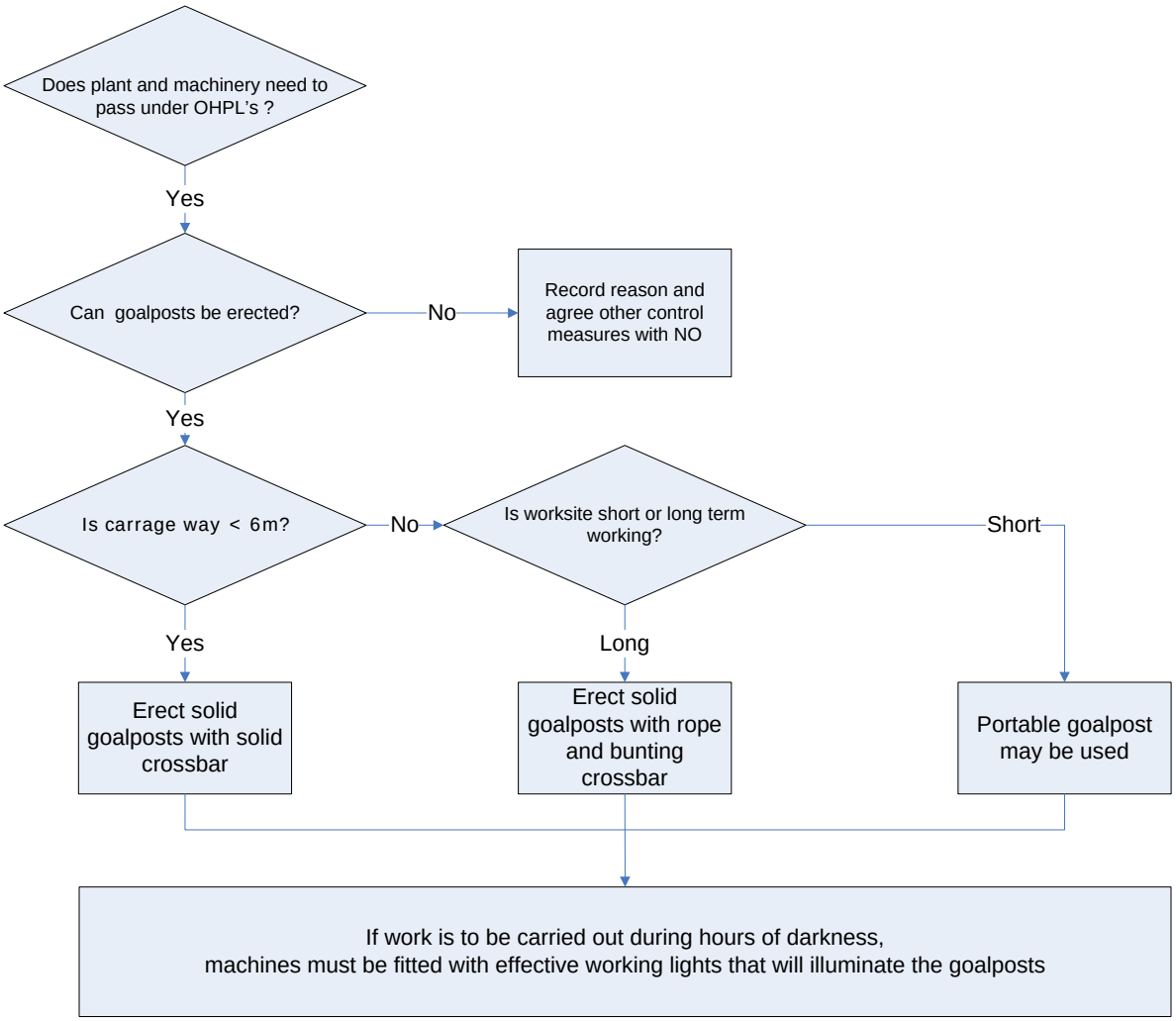
Guardian Goalposts

Rigid crossbars must be used for all spans of 6 metres or less. For spans greater than 6 m, hi-viz or red and white safety marker bunting attached to 6 mm polypropylene rope may be used.

3.5 When to use types of goalposts

The chart in Figure 2 may help you decide on the type of goalpost to use.

Figure 2 Which type of goalpost?



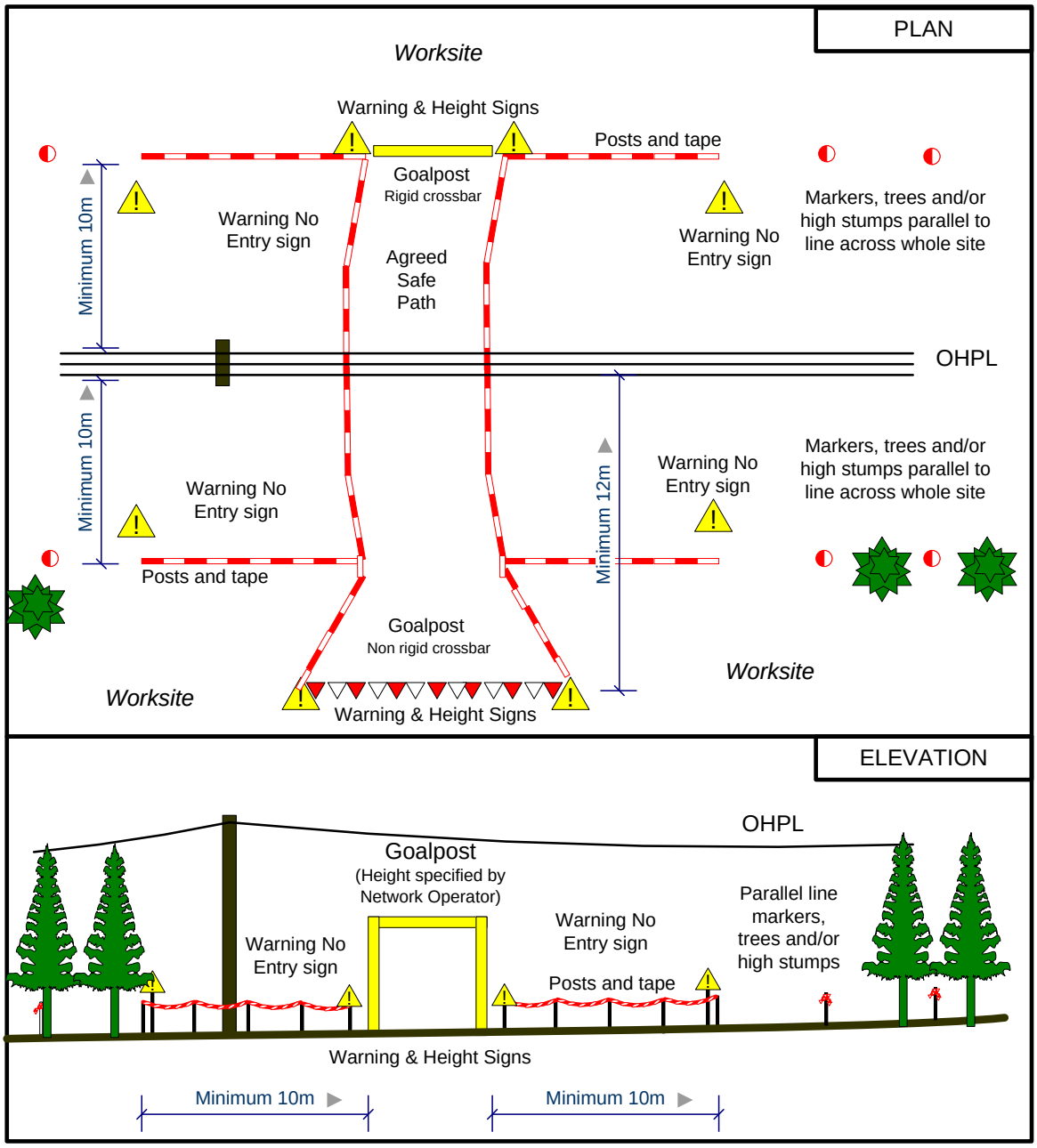
Site layout for signs and goalposts

Adhere to the following standards when working on sites where there are OHPLs.

1. The number of goalpost passageways must be kept to a minimum.
2. Consult the NO on the height of the line, and they will specify the height for the crossbar and its location.
3. Goalposts should be positioned no closer than 10 m from the nearest conductor. The NO may advise a minimum distance greater than 10 m, depending on the voltage of the overhead line. Where you use rope and bunting, you will require a distance of at least 12 m.
4. Goalposts should be parallel to the OHPL where possible and clearly visible.
5. They must be constructed from non-conducting materials.
6. A warning sign giving the crossbar clearance height should be positioned on or near the entrance to each goalpost, and approximately 30 m away on forest roads (and council roads if need be) to alert drivers.
7. For single passageways less than 6m wide, a rigid crossbar is required. This should be clearly visible. In exceptional situations where a single passageway is not sufficient, you may use tensioned polypropylene ropes with hi-viz or red and white bunting attached to the tensioned ropes to improve visibility.
8. On worksites, the entrance to the goalposts must be clearly marked with a barrier for 10 m on either side of the goalpost. The NO may advise a greater distance.
9. Clearly define and mark the passageways between goalposts to show the route that must be taken.
10. On exposed sites, support uprights to withstand high winds. This may require polypropylene guy ropes on each post.
11. Where sites are to be worked at night, all vehicles must be equipped with effective working lights that will illuminate the goalposts, regardless of direction of approach.
12. On roads where maintenance work has been carried out that may have adjusted the road height, the NO must re-measure the line height.

Diagram 1 shows how the site should be laid out to these standards

Diagram 1 Site layout



4 Responsibilities

For every site, we must establish who is responsible for the safe access routes, goalposts and signage, operator briefing, including contractors and hauliers on those routes. Table 3 sets out the responsibilities for the situations given in Table 2.

Responsibilities must be discussed during PCM.

Agreement will be reached between the FWM and NO on the appropriate level of protection. An engineer from the NO will visit the site and measure the ground clearances to ensure the minimum distances as detailed in Table 2 are being met, and stipulate the distance away from the line for siting the goalposts. Depending on site conditions and the voltage of the OHPL, the NO may specify greater distances from the outer conductor to the position of ground level protection.

Emergency number and how to identify the OHPL must be provided by the NO at the site meeting.

For further information see FISA804 Electricity at work: Forestry

The responsibilities must be discussed and agreed during the Pre-commencement meeting process.

Table 3 Responsibilities for managing signs and goalposts

Situation	Warning signs	Goal posts	Who's Responsibility
1. General forest roads that do not lead to and from a worksite	**No**	**No**	**Network Operator** - The FC to report faults to NO. Line height as for a public road.
2. Forest roads that lead between the county road network and the worksite i.e. specified access and exit routes	**Yes**	**No**	**FC** - The FC has responsibility to establish the safe access routes with the FWM, who will brief operators, including contractors and hauliers on those routes. The FC as Landowner must: • Establish safe access routes • Contact NO to measure line height • Erect warning notices • Pay for, erect, inspect, maintain and remove. The NO must establish the line height. Line height as for a public road.
3. Forest tracks and roads between nearby worksites used by machines and hauliers e.g. where it is foreseeable that machines will travel between two adjacent worksites.	**Yes**	**Yes**	**Where FC is FWM** The FC as FWM knows what machines are on site and method of work. As FWM you have the responsibility to establish the safe access routes and brief operators, including contractors and hauliers on those routes. The FC as FWM must: • Establish safe access routes • Contact NO to measure line height • Erect warning notices and goalposts • Manage the erection, inspect, maintain and remove. **Where FC is <u>NOT</u> FWM i.e. Timber Purchaser is the FWM** The Timber purchaser as FWM knows what machines are on site and methods of work. As FWM they have responsibility to establish the safe access routes on the worksite and must brief operators, including contractors and hauliers on those routes. The Timber Purchaser must: • Establish safe worksite access routes • Contact NO to measure line height • Erect warning notices and goalposts • Manage the erection, inspect, maintain and remove The NO must establish the line height and height for crossbar.
4. Forest tracks and roads crossing the worksite	**Yes**	**Yes**	
5. On the worksite itself where machinery has to pass under an overhead electricity line.	**Yes**	**Yes**	
6. When the forest road is the worksite.	**Yes**	**Yes**	

5 Transporting, erecting, maintaining and dismantling goalposts

The variability of sites and situations that you are likely to encounter when transporting goalposts makes it impossible to be too prescriptive about standard techniques.

All goal post erections will require site specific risk assessments that cover activities such as transport, erection and takedown. Erection requires a minimum of two people and ideally three.

Heights for crossbars must be specified by the NO or their representatives. Powerlines crossing existing FC roads should already have a clearance of 5.8 metres as in table 1. They must be checked and, or, confirmed as being at the correct specification by the NO.

All sites where goalposts are required will be risk assessed individually in recognition of the need to consider the transport, erection and eventual dismantling of the goalposts. Inspection regimes need to be discussed at the Pre-commencement Meeting.

5.1 Methods of erection

With the variety of site conditions and varying lengths of time goalposts are erected, it is difficult to recommend a best practice method for erecting that would be suitable for the full range of cases encountered by site managers.

Before any digging takes place, you must check the location of any underground cables or services using local records or by using a Cable Avoidance Tool (CAT). The precautions for digging holes to secure goalposts is described in guidance document HS (G) 47 *Avoiding danger from underground services* and is only practised if the ground conditions allow for this method of excavation.

Manual lifting should follow the guidance in *Getting to grips with manual handling*, HSE INDG143 (2nd rev) and only use mechanical assistance after approval has been granted by the NO.

Follow all current guidance on manual lifting and handling when erecting or dismantling goalposts. Lifting the uprights into position is at least a two-person operation and should not be carried out in windy conditions that will reduce control and increase physical strain while raising and positioning the uprights. Guy ropes can provide additional support and control during erection and dismantling.

Consider the fall distance of the goalpost during erection or removal to ensure that the safety zone is not breached should they collapse.

5.2 Maintenance (include repair and replenish)

Regularly inspect goalposts on active sites to ensure their integrity, and the FWM must note the inspections in the site diary. The level of inspections will need to be increased for goalposts which do not use a fixed crossbar. Draw up a schedule of inspection to include goalposts which are not near the site, or are not used for considerable periods. The responsibilities for inspections must be agreed at the pre-commencement meeting (PCM).

Also make inspections immediately after high winds.

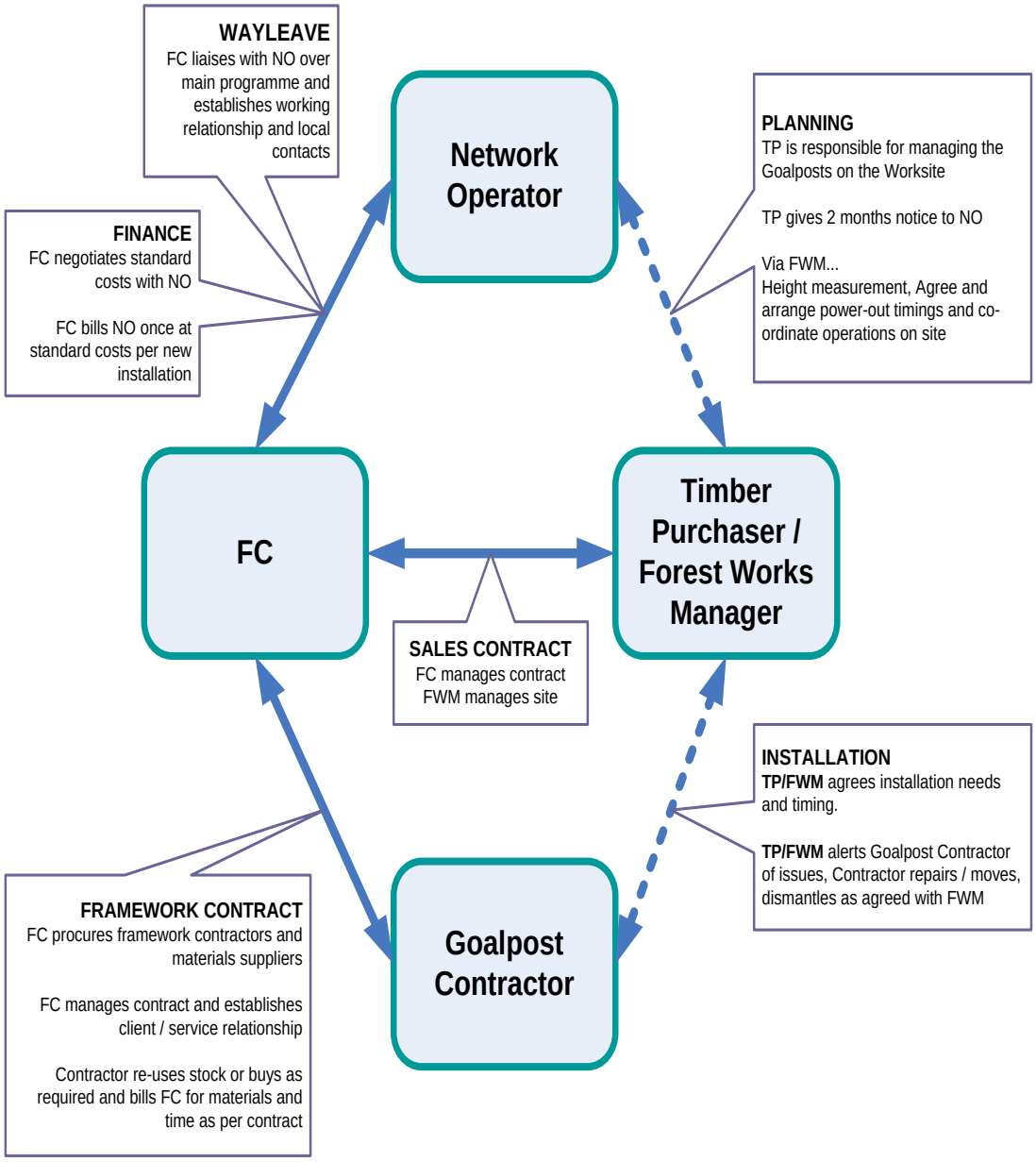
Personnel noticing any damage MUST report it to the FWM or Contract Manager as soon as possible. This must be recorded in AIRs as a near miss. If defects are found, then the crossing must be closed until it is made fit for purpose. **Goalposts must be inspected and their condition recorded in site diaries as agreed at the PCM.**

🔑 **Personnel noticing any damage MUST report it to the FWM or Contract Manager as soon as possible and this must be recorded in AIRs as a near miss.**

5.3 Framework contract

The FC is currently setting up a framework contract for supplying, erecting, maintaining and removing goalposts and signs. Once set up, timber purchasers (TP) will have the opportunity to use the services of the framework contract, with the FC recovering the costs from the NO. Figure 3 sets out how it is likely to work when put in place.

Figure 3 Using the framework contract



6 Emergency procedures

1. Assume that all OHPL wires are live, even if they are broken, not arcing or sparking, or if they otherwise appear to be dead.
2. When erecting goalposts, if any part of the goalpost touches the OHPL, **do not attempt to remove it**. Contact the FWM and NO and ensure everyone stays away until the NO advises that the situation has been made safe.
3. If you come in contact with, or bring down, a set of goalposts, do not continue to drive through the site as you will be within the safe distance specified by the NO from the line. Contact the FWM and close the crossing to prevent further use until repairs have been carried out.
4. If you are in contact with, or close to, a OHPL, move away as quickly as possible and stay away until the NO advises that the situation has been made safe.
5. If your vehicle has touched an OHPL and cannot be moved either stay in the vehicle or, if you really must get out to avoid fire for instance, jump out of it as far as you can keeping arms and legs close. **Do not touch the vehicle while standing on the ground**. Do not return to the vehicle until it has been confirmed that it is safe to do so by the NO.
6. If you see a machine that is in contact with an OHPL, keep everyone at least 30m away from it, even if someone is inside the cab. Do not approach or touch the machine until the NO has confirmed that it is safe to do so.

🗝 **All emergencies must be reported to the NO's emergency number.**