SHE001 RF Safety

Contents

1 Introduction

Arqiva owns and manages a large number of sites, rooftops and structures with a variety of antennas. It is essential that the Radio Frequency (RF) hazards that these represent are properly considered at the planning stage for each site visit. Arqiva provide the means by which relevant safety information can be accessed at this stage. Hence the responsibility for RF safety rests with the contractor. This guide outlines more details on all these aspects to ensure that all contractors understand their responsibilities and how to access all the correct information.

The majority of reported “near misses” and “unexpected alarms” are due to poor job planning on the part of the contractor or lack of experience or training of staff. These notes are issued to try to improve both those aspects.

2 Basics

The responsibility for risk assessment lies with the contractor. A site- and task-specific risk assessment and method statement must be carried out.

On an Arqiva-managed mast or tower, each climber must be equipped with a personal RF monitor. For work on most Arqiva-managed rooftops a minimum of one personal monitor per team is required (depending on the risk assessment for the task and site).

Personal RF monitors must be of a type accepted by Arqiva. The frequency range must be suitable for the frequencies found on Arqiva sites, and the frequency response shaped according to occupational limits. The first alarm should be set to 50% of the limit. The second alarm can be set to 90% or 100%. Appendix A of this document has a list of monitors that have been assessed as suitable.

Because of the frequencies of operation, the only units suitable for MF (Medium Wave) sites are Nardalert XT, Nardalert S3, WaveMon RF-8 and WaveMon RF-60. The only units suitable for LF (Long Wave) sites are Nardalert XT, Nardalert S3 and WaveMon RF-60. Should any company wish to use a type of monitor that is not on either list then Arqiva will evaluate it subject to the contractor providing a sample monitor plus all technical specifications.

3 Training

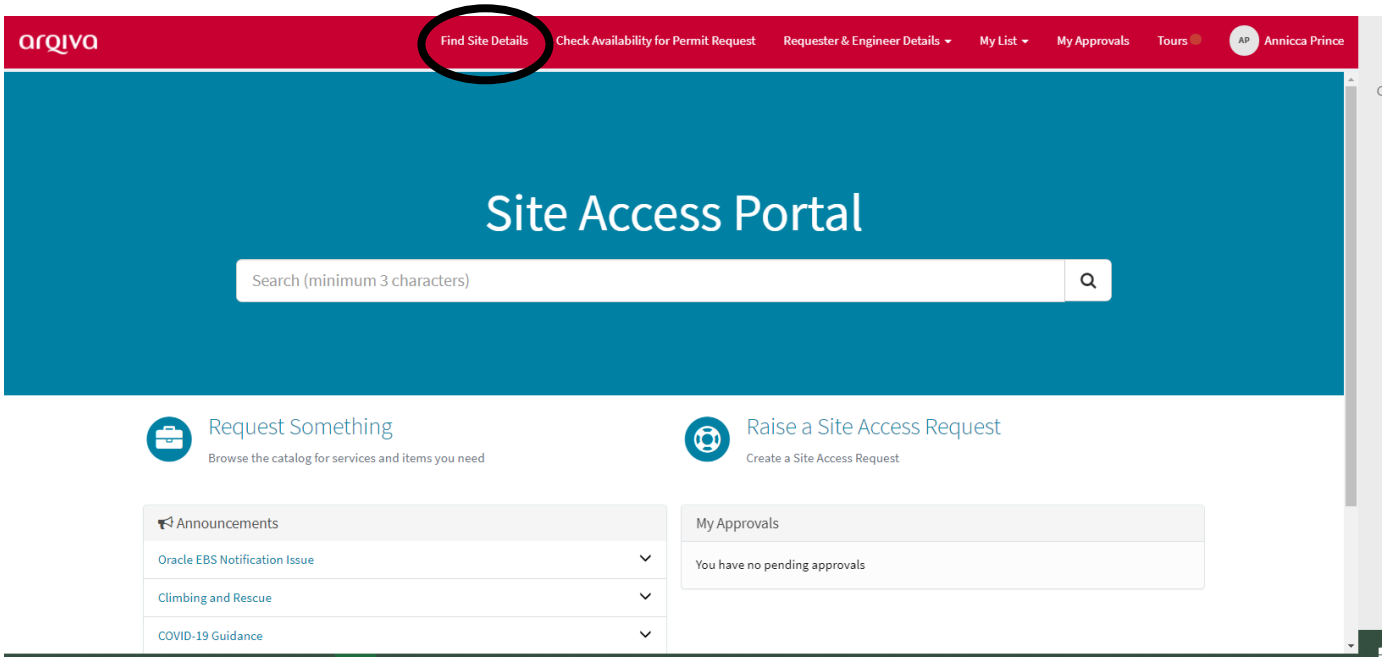
All contractors who access Arqiva structures or rooftops must be trained in RF safety awareness via a course that has been accepted by Arqiva as suitable. The document *Accepted Training Providers* (SHE-GH-021) is available on the Arqiva website.

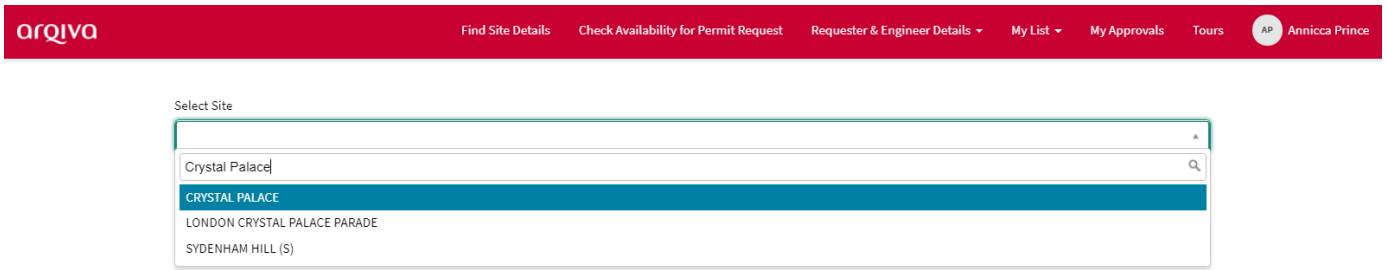
4 Information Provided by Arqiva for Risk Assessment

Prior to planning any task on site the Risk Register for the site should be consulted. This can be emailed to any valid email address so access to Service Now is not necessary. The person within the company who has a Service Now account can request the risk information to be sent to a colleague, for example.

5 Instructions and Screenshots on how to find the Risk Register

From the Site Access Portal home page, use the “Find Site Details” tab and find the site required by using the search bar.



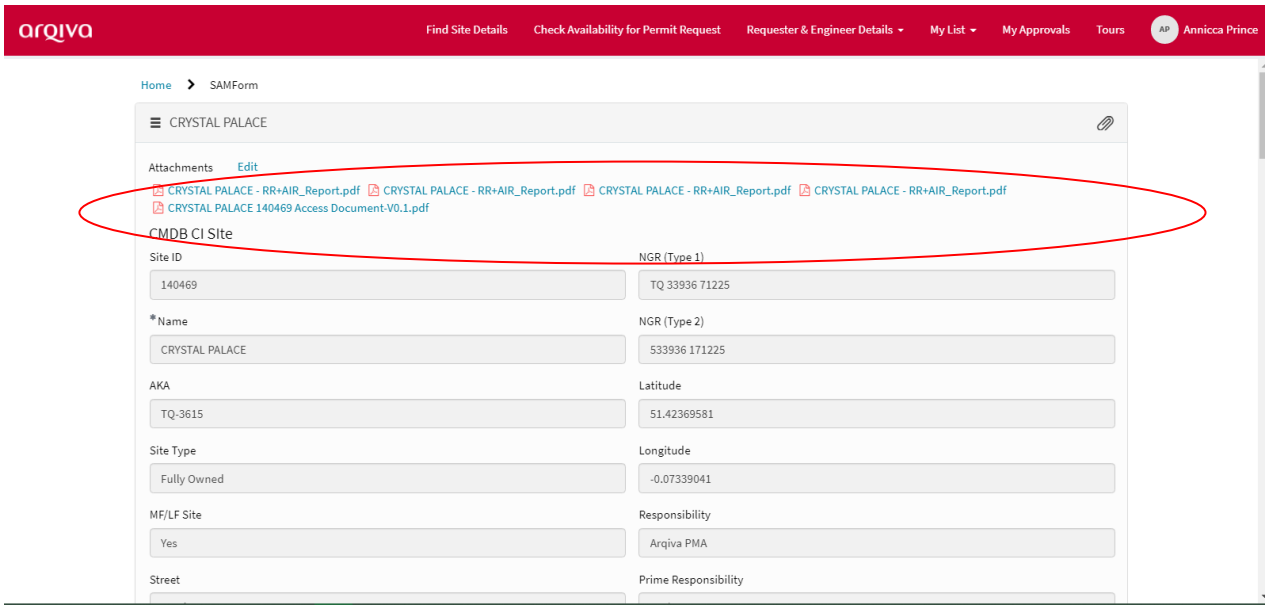


Select Site

CRYSTAL PALACE

Name	Site Id	AKA	Site Type	MF/LF Site	State	Town	Address	PostCode	Country	Description of Access	NGR (Type 1)	NGR (Type 2)	Latitude	Longitude
CRYSTAL PALACE	140469	TQ-3615	Fully Owned	Yes		London	Arqiva Site, Old Cople Lane,Crystal Palace Parade, Upper Norwood,,	SE19 1UE	Greater London 2	2WD	TQ 33936 71225	533936 171225	51.42369581	-0.07339041

The site page for the selected site will now open. The “RR + AIR Report” report is attached at the top of the page.

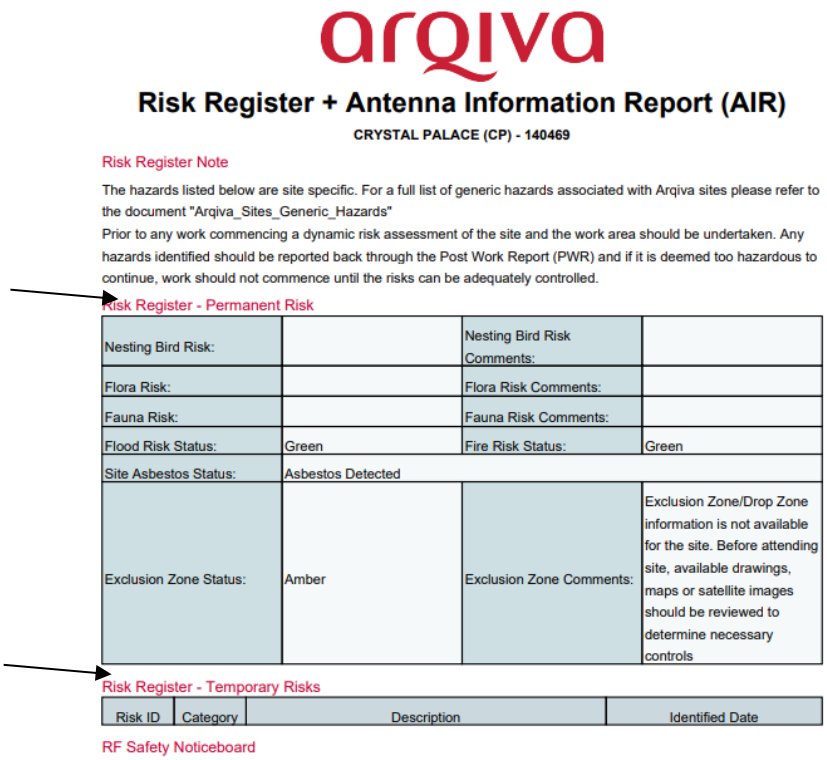


The PDF of the Risk Register + AIR can be opened and saved.

6 What Does the Risk Register include, and how to use it

Site specific general risks

This includes any risks that are specific to this site. Sometimes risks are of a temporary nature and if you notice on your visit that one of these risks is no longer valid then please report it via your post work report.



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Risk Register + Antenna Information Report (AIR)

CRYSTAL PALACE (CP) - 140469

Risk Register Note

The hazards listed below are site specific. For a full list of generic hazards associated with Arqiva sites please refer to the document "Arqiva_Sites_Generic_Hazards"
Prior to any work commencing a dynamic risk assessment of the site and the work area should be undertaken. Any hazards identified should be reported back through the Post Work Report (PWR) and if it is deemed too hazardous to continue, work should not commence until the risks can be adequately controlled.

Risk Register - Permanent Risk

Nesting Bird Risk:		Nesting Bird Risk Comments:	
Flora Risk:		Flora Risk Comments:	
Fauna Risk:		Fauna Risk Comments:	
Flood Risk Status:	Green	Fire Risk Status:	Green
Site Asbestos Status:	Asbestos Detected		
Exclusion Zone Status:	Amber	Exclusion Zone Comments:	Exclusion Zone/Drop Zone information is not available for the site. Before attending site, available drawings, maps or satellite images should be reviewed to determine necessary controls

Risk Register - Temporary Risks

Risk ID	Category	Description	Identified Date

RF Safety Noticeboard

RF Safety Noticeboard

The RF Safety Noticeboard details any known RF hazards in the climbing zone. The climbing zone is defined as the ladder and rest platforms – see diagrams in Appendix B. Information in the RF Safety Noticeboard will detail where the restriction is and what planned work is needed to work in that area. If the restriction is applicable to your task then make sure you speak to the Site Access team to request that the planned work is booked. Broadcast customers need a minimum of 2 week's notice for outages and power reductions.

Your task may mean that you need to work off the ladder and climb around the structure to access your work area. The Information in the RF Safety Noticeboard cannot take that into account and as a trained contractor you are expected to understand industry standard exclusion zones. To understand which antennas, you need to pass or work close to then you must consult the Antenna Information Report (AIR).

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Structure	RF Noticeboard
Structure - Tower - 382	CAUTION MF site. Consider all objects within this site as live. No access to any rooftop or compound without local supervisory engineer permission as engineer attendance or planned work may be required. It is possible to cut grass outside all fenced areas around structures and stays.Personal monitor only required inside MF mast compound and when climbing ALL structures. Please ensure that where a personal RF monitor is used that it has the correct frequency range for the site, both the Nardalert XT and S3 are suitable.Any work requiring use of cherry picker, Hi-abs, concrete pumps or other large plant should be risk assessed considering the hazards from MF antenna, refer to BOW885.The following information applies ONLY to climbing the ladder and/or standing on rest platforms. For all other activities further planned work may be required, subject to risk assessment: No standing or working between 140 - 145m without -6dB reduced power on XFM (V_CP_03), Radio London and Absolute Radio (V_CP_02). No standing or working between 153 - 157.5m without -6dB reduced power on BBC Radio 1 - 4 and Classic FM (V_CP_01). No access above the internal platform below the top platform at 195m without PSB 1-3 and COM 4-8 (DT_CP_01 & DT_CP_02) switched to the reserve antenna. ES 27/02/19

RF Risk Note

All antennas may radiate and industry standard exclusion zones are to be observed. The structure(s) on this site also have the following antennas which may need additional consideration if planning work in the vicinity.

Antenna Information Report (AIR)

This gives a full listing in height order of all the antennas on the structure. The customer information will be listed as either "Arqiva" or "other". Where it is listed as Arqiva this may indicate that the antenna is used for broadcasting. There is also a field to indicate that the antenna is used for paging. In Arqiva's experience it is broadcasting and paging antennas that are overlooked by some contractors in their risk assessment. The AIR can also be used on site as a written "map" of the structure. Please ensure that any errors you notice are fed back via your post work report.

Column indicates paging antenna

VHF or UHF antennas might be broadcast

Structure - Tower - 382

Structure	Antenna Name	Type	Paging Antenna	Base	Mean	Top	Status	Bearing	Leg
Structure - Tower - 382	Antenna 2000925001	VHF dipole	false		197		Installed		B
Structure - Tower - 382	Antenna 2566449001	VHF Centre Fed Dipole	false		97		Installed		D
Structure - Tower - 382	Antenna 2593839001	UHF GPS Antenna	false		3		Installed		WAL
Structure - Tower - 382	Antenna 2566452001	VHF Centre Fed Dipole	false		99		Installed		D
Structure - Tower - 382	Antenna 2545884001	SHF Outdoor Unit ODU	false		65		Installed		A

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Structure - Tower - 382	Antenna 2598515001	SHF Outdoor Unit ODU	false		66		Installed		A
		UHF GSM							

Proper use of all the information provided in the Risk Register should prevent the large number of reported “unexpected alarms” and near misses.

Frequently it is found that “unexpected alarms” are reported when the work area is only 1 m away from a paging or Broadcast Radio antenna for example. These could and should have been expected if the risk assessment had been carried out properly.

7 Use of RF Safe System of Work

Clearly when you are working on your customer’s antenna you will have in place a process to ensure that you or your customer removes the power to the antenna prior to your work. When your task requires that other services need to be reduced in power or shutdown to give you safe access then you are required to follow the Arqiva Safe System of work procedure.

This requires that all the parties involved (the climbing team, the Arqiva representative and any engineers attending site to switch transmitters) have a discussion about what is to be done and how and by whom, and document it on the RF Safe System of Work form before any work commences on site.

8 False Alarms and Minimum Measurement Distance

In situations where there is a significant level of RF, personal monitors will alarm constantly. The occasional bleep, especially in areas where the personal monitor touches the ladder as it is climbed, are not usually considered to be real alarms.

When a monitor alarms on site staff should first ascertain how close they are to Latchways bonds, feeders, metal work etc. and if it is closer than 100 mm then re-position to a distance where the monitor is more than 100 mm away from metal (in free space) and see if the alarm continues. If the alarm continues SHE007 *Reporting and Investigation of Unexpected RF Personal Monitor Alarms* should be followed.

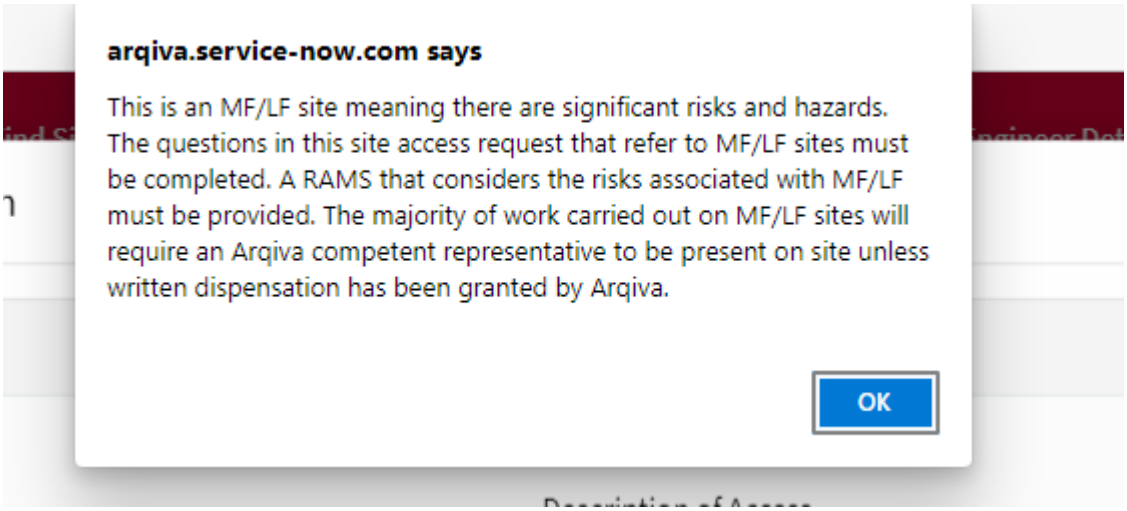
9 Sites with Medium Wave Radio 'MF Sites' and Long Wave radio 'LF Sites'

Some Arqiva sites have medium wave and/or long wave radio antennas. These can be masts or towers where the structure itself is the antenna, or where long wire antennas are supported by one or more masts or towers. On this type of site there is the additional indirect hazard of RF pickup, to any long pieces of metal that are taken onto site. Arqiva have a briefing document on this and the measures taken to avoid it, which can be provided on request (SHE-GH-017).

Because of the frequencies of operation, the only units suitable for MF (Medium Wave) sites are Nardalert XT, Nardalert S3, WaveMon RF-8 and WaveMon RF-60. The only units suitable for LF (Long Wave) sites are Nardalert XT, Nardalert S3 and WaveMon RF-60.

These monitors should always be worn on the body (as they are designed to be used) for most accurate results on this type of site. The WaveMon monitor should be used in its holder.

When you apply for access to a site that has an MF antenna you will be prompted with the following screen



If you acknowledge this message by selecting "OK" to indicate that you understand the hazards then your application will proceed as normal. If you select "Further Information" then you will be taken to a copy of Arqiva document SHE-GH-017 MF sites, Hazards and Precautions which you should read and understand, and ensure that your risk assessment has considered the hazards before continuing your application.

When applying for site access you will be asked to submit site and task specific RAMS.

10 Emergencies

All accident, incidents and near misses must be reported to the Arqiva Accident Report Line by ringing 03330 328555.

Unexpected personal monitor alarms must be reported to the Arqiva Site Access Team on 0800 032 1234 whilst still on site, and in addition the contractor should carry out their own investigation following the procedure set out in 'SHE007 Reporting and Investigation of Unexpected RF Personal Monitor Alarms by Contractors and Site Sharers'. Only when the reporting company has ruled out immediate obvious causes should the form be submitted to the Arqiva Health & Safety Team for investigation. Alarms will not be investigated unless this form has been completed and submitted.

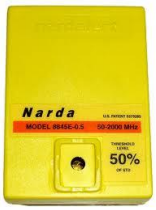
If there has been an incidence of suspected RF overexposure, ring Site Access on 0800 032 1234. The Site Access team will arrange to send RF information for doctors to the medical facility that the individual is attending. Most doctors do not fully understand the effects of RF and it is important that they receive this information so they can accurately diagnose any health implications and provide the correct treatment.

11 List of related documents

SHE-GH-021	Accepted Training Providers
SHE007	Reporting and Investigation of Unexpected RF Personal Monitor Alarms by Contractors and Site Sharers
SHE-GH-017	MF sites, Hazards and Precautions
	Published on arqiva.com

Appendix A

A.1 RF Monitors Accepted for Use on Arqiva Sites

Maker	Name of Monitor	Frequency Range		Limitations
Narda	Nardalert S3	100 kHz – 50 GHz		None
Narda	Nardalert XT (D-860 & D-8862)	100 kHz – 100 GHz		None
Narda	Nardalert 8845E-0.5	50 MHz – 2 GHz		Not suitable for use on MF/LF sites Not suitable for use on satellite earth station sites Not suitable for use on cellular sites
Narda	ESM-20/RadMan XT	1 MHz – 40 GHz		Only suitable for use on satellite earth station sites.
Narda	RadMan 2LT	50 MHz – 8 GHz		Not suitable for use on MF/LF sites Not suitable for use on satellite earth station sites

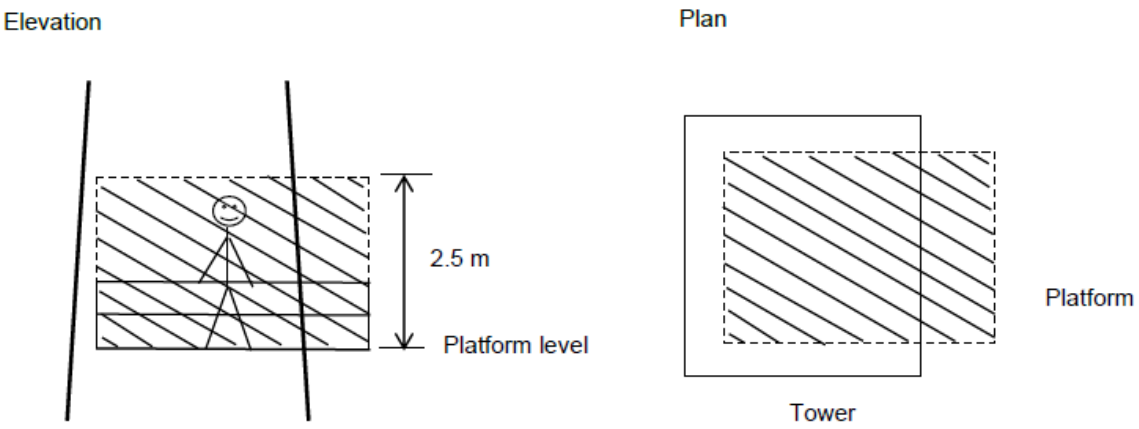
Narda	RadMan 2XT	900 kHz – 60 GHz		Not suitable for use on MF/LF sites, unless the specific frequencies on the site are covered by the monitor. The contractor must check this, and document it in the risk assessment and method statement for the work, including details of the frequencies for the site and the person who has carried out the assessment Ofcom TxParams has broadcast radio frequencies: https://www.ofcom.org.uk/spectrum/information/radio-tech-parameters
FieldSENSE	FieldSENSE 2.0	50 MHz – 6 GHz		Not suitable for use on MF/LF sites Not suitable for use on satellite earth station sites
FieldSENSE	FieldSENSE 60	50 MHz – 60 GHz		Not suitable for use on MF/LF sites

Wavecontrol	WaveMon RF-8 with holder ICNIRP or EU Directive version	300 kHz – 8 GHz		Not suitable for use on LF sites Not suitable for use on satellite earth station sites
Wavecontrol	WaveMon RF-60 with holder ICNIRP or EU Directive version	100 kHz – 60 GHz		None

Appendix B Definition of the Climbing Zone

B.1 Platforms

For a platform, whether inside or outside the structure (or both), the standard climbing zone is the footprint of the platform in plan, and in elevation up to a height of 2.5 m above the platform level. See the note about this in the section on head height below.



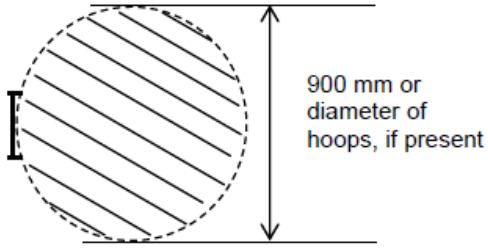
B.2 Ladders

For a ladder on the outside of a structure, or inside a structure of larger face width, we should aim for a circular zone of diameter 900 mm to be kept clear of RF hazards (and obstructions). This is not always possible and sometimes a smaller zone has to be accepted, particularly over short vertical distances.

For a ladder with hoops the zone should be the area inside the hoops, typically about 750 mm diameter. On Arqiva-managed masts, towers and rooftops these hoops are being removed as the Latchways fall-arrest system is installed. There are, though, some cases of short ladders on rooftops where fall-arrest is not required and, in these cases, existing hoops will remain. Also, we deal with some third-party sites that are not Arqiva-managed and these might continue to have hooped ladders.

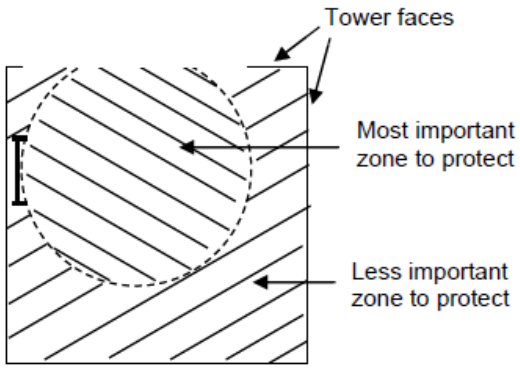
For a ladder inside a mast or tower of small face width (less than perhaps 1.5 - 2 m) it is likely to be straightforward to climb off the ladder and around the inside of the faces, so ideally, we would want to treat the whole area inside the structure as a climbing zone. This is not always possible, and it is then helpful to think of a main climbing zone next to the ladder (shape and size defined as before) and a secondary area away from the ladder, e.g., inside the legs on the opposite side of the structure, which is less important than the ladder zone but still more important than the outside of the structure.

Plan



Ladder on the outside of a structure, or inside a structure of larger face width

Plan



Ladder on the inside of a structure of small face width