



Risk Analysis Management System Document

Client	Venue	Show Date	Show Time	Duration	Crowd Size
Doug Stack	Phasels Wood	14/09/2024	21:15	7 Minutes	Approx. 400

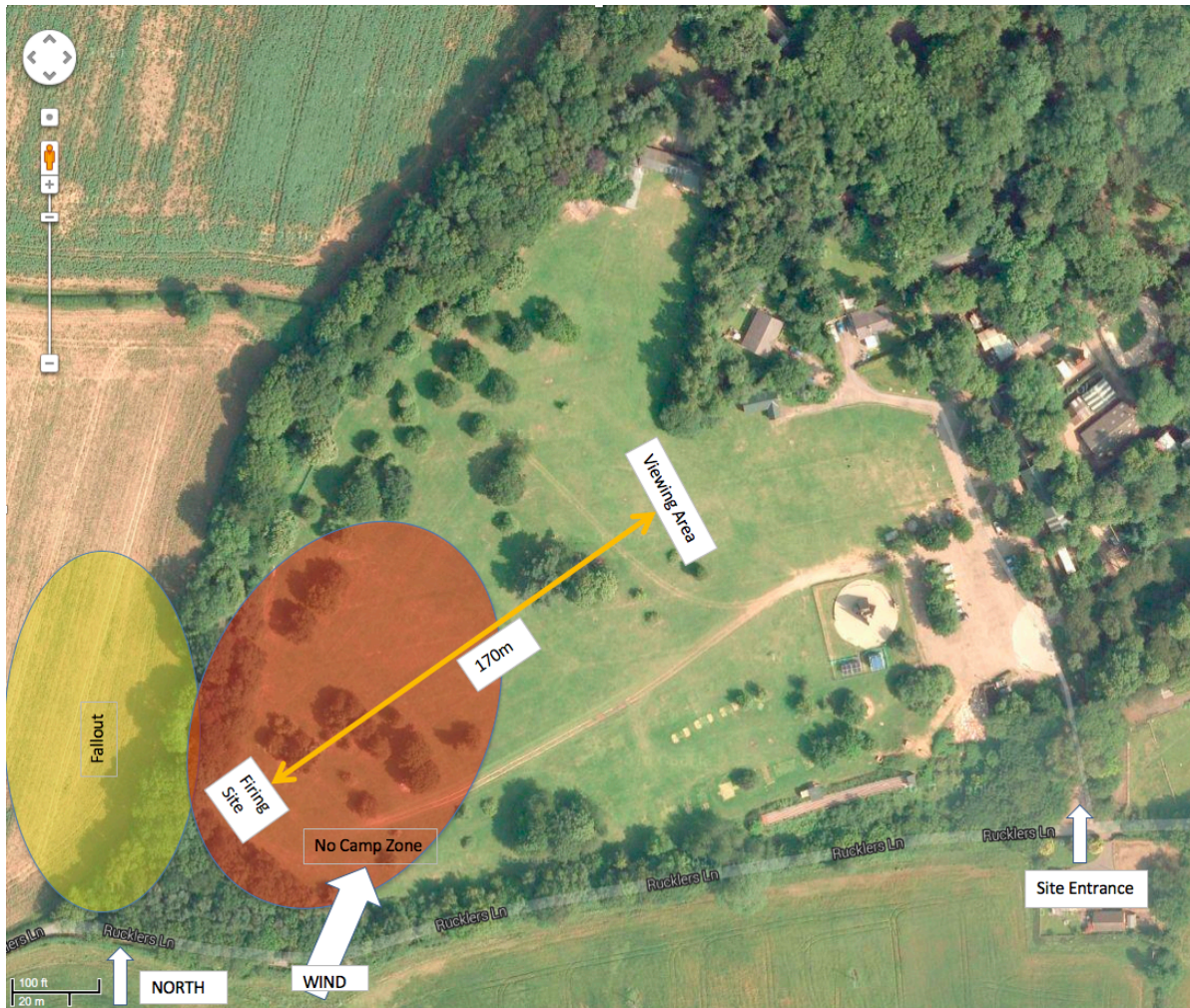
Client Contact	Set to Music?	240v Power	Event Type
Doug Stack	WD4 9NA	Yes	DJ's PA

Contents:

- Site Plan & Layout
- Site Survey Notes
- Site Photographs
- Primary Risk Assessment
- Shellcalc Calculations
- Insurance Documents
- One The Day Onsite Risk Assessment (be to completed by lead firer)

Assessor Name	Date	Time
Cris Matthews	11/09/2023	14:00

Site Plan & Layout



Google Maps image captured 16/08/2018

Site Survey Notes

- A Large Marquee sits behind the viewing area, extra care will be taken to ensure no burning debris will fall in this area
- An on-site risk assessment needs to be carried out by the lead firer on arrival to establish the optimum firing position.
- Firing site can be accessed via the gate in the overflow car park.
- Firing site is good hard surface suitable for a van in most conditions.
- A full sweep of all tents MUST be carried out by Phasels Wood staff before firing to ensure there is no one left inside tents during the show.
- Client has requested the larger shells are removed in an effort to reduce the overall noise of the event.
- A minimum of 50m safety distance from the closest firework site to any empty tent is required, all on-site persons to be collected into the viewing area during the show.

Primary Risk Assessment

		S		
		Potential Severity of Harm		
		Slightly Harmful 1	Harmful 2	Extremely Harmful 3
L Likelihood of Harm Occurring	Highly Unlikely 1	Trivial 1	Tolerable 2	Moderate 3
	Unlikely 2	Tolerable 2	Moderate 4	Substantial 6
	Likely 3	Moderate 3	Substantial 6	Intolerable 9

All activities will be operated in accordance with established Matthews Brothers Pyro Health & Safety Policy and Method Statements. This document identifies specific additional hazards, risks and any divergence from existing documented methods and risk control measures.

Group	Hazard and description of potential risk	Initial Risk			Actions to control the risk	Revised Risk			Action taken By Whom	When
		S	L	R		S	L	R		
Public	Local residents being disturbed by the noise of the firework display	1	2	2	The venue to inform local residents of show and start times. Local resident to take appropriate action.	1	1	1	Client	14/09/2024
Public	Local animals being disturbed by the noise of the firework display.	2	2	4	The client to inform local residents of show and start times. Local residents to take appropriate action to safeguard their animals.	2	1	2	Client	14/09/2024
Public	Wind direction blows debris and smoke in to the crowd causing discomfort and damage to clothing	2	3	6	MBP to review the site on the day of the show and consult weather forecast, review viewing area appropriate to wind direction.	2	1	2	MBP	14/09/2024
Public	Potential of burning embers and debris falling onto member of the public and/or local property	3	3	9	Maintain maximum safety distances from the crowd and local members of the public, adjusting show content on the day based on local conditions. Firing positions to be placed a minimum of 1 metre for every mm of calibre.	3	1	3	MBP	14/09/2024
Public	Possible public entering firing site and are harmed by live pyro	3	3	9	Client to place safety marshals in appropriate positions to ensure firing sites remain clear of public. Any potential of public encroaching marshals will issue a warning via radio contact to the lead firer who will stop the show	3	1	3	Client	14/09/2024
Public	Premature ignition of items on firing site during unloading	3	2	6	Keep public separated from the unloading/transport routes and areas	3	1	3	MBP	14/09/2024

Operators	Premature ignition of items on firing site during unloading	3	3	9	Only qualified and experienced pyro-technicians to handle material and equipment	3	1	3	MBP	14/09/2024
Operators	Mass explosion of entire holding in transport vehicle resulting in onsite risk	3	2	6	Stock to remain in appropriate sealed UN rated transport cases at all times. To be stowed securely, ensuring stack heights do not allow major impacts. All electronic match wires to be shunted.	3	1	3	MBP	14/09/2024
Public	Mass explosion of entire holding in transport vehicle resulting in onsite risk	3	2	6	Maintain safety distances to all members of the public. No access to any part of the firing site	3	1	3	MBP	14/09/2024
All	Unexpected violet event from ignition due to incorrect Hazard Types	1	3	3	Ensure correct labelling of all boxes with clear instructions given and monitoring of site by lead firer	1	2	2	MBP	14/09/2024
Operators	Ignition through poor handling of pyrotechnic articles	3	3	9	MBP safe working methods to be followed at all times and monitored by lead firer	3	1	3	MBP	14/09/2024
Operators	Accidental ignition during unloading/loading	3	2	6	Restrict handling of pyrotechnic articles to qualified team members only	3	1	3	MBP	14/09/2024
All	Premature ignition from any spark/smoke/flame source	3	2	6	All and any sources of ignition banned from work site. Strict No Smoking policy enforced	3	1	3	Client/MBP	14/09/2024
Operators	Personal Injury arising from work carried out at the work site or during transportation	2	2	4	Correct PPE to be worn all times by all team members. Safe manual handling techniques to be employed. Steel capped ankle boots to be worn by all team members and trip hazards minimised.	2	1	2	MBP	14/09/2024
Operators	Premature ignition of pyrotechnic article when adding electronic match, delay fuse or joining quick match.	2	3	6	Main fusing to be completed off site. All onsite fusing made in an open area following the MBP safe working practice document	2	2	4	MBP	14/09/2024
Operators	Road transport of fireworks – Premature ignition	3	3	9	All legal and ADR requirements to be met by fully trained drivers as required. All licences to be checked for valid date by lead firer	3	1	3	MBP	14/09/2024
Operators	Premature ignition of fireworks from stray RF, hot source, lightning strike or other method beyond MBP reasonable control	2	2	4	All electronic match wires to remain shunted until point of installation. Public access to be restricted from firing site. Works to halt in storm conditions	2	1	2	MBP	14/09/2024

Operators	Premature ignition during loading and fusing of pyrotechnic articles	3	3	9	MBP safe working methods to be followed at all times and monitored by lead firer	3	1	3	MBP	14/09/2024
Operators	Failure of pyrotechnic article leads to damage of racking/securing method leading to further failure or pyrotechnic articles	3	3	9	MBP safe working methods to be followed at all times and monitored by lead firer. Use of PyroQuip racking for aerial shells only. Safety distances to be maximised.	3	1	3	MBP	14/09/2024
Operators	Accident/ignition of pyrotechnic article during post show clear up and de-rig	3	3	9	15 minute safety window to be observed, as per MBP safe working practices, before lead firer returns to the firing site to fully inspect site. Live materials to be removed safely and stored in a sealed UN case. All fires and smoulders to be put out fully before de-rig commences. All waste to be boxed/bagged and loaded onto the vehicle last.	3	2	6	MBP	14/09/2024
Operators	Personal Injury arising from working in low light levels	1	2	2	All crew members to wear head torches for they can work with both hands in low light conditions	1	1	1	MBP	14/09/2024
Operators	Air borne pyrotechnic articles causing danger to aircraft	3	2	6	CAA to be notified if within notable distance. Lead firer to watch for local air traffic	3	1	3	MBP	14/09/2024
Public	Smoke drift from show blowing over neighbouring roads causing impaired vision	2	2	4	Lead firer to monitor and test weather conditions and assess prior to firing the show	2	1	2	MBP	14/09/2024
Operators /Client	Protestor attack leading to compromise of site safety	1	2	2	Site security to be maintained and monitored during show	1	1	1	Client/MBP	14/09/2024
Operators	Increased Fire Risk due to warm dry conditions, could lead to ground fires in grass and shrubs/trees	1	2	2	Further risk assessment on the day, potentially remove longer burning material and have more than normal water or fire prevention measures to hand.	1	1	1	MBP	14/09/2024

Shellcalc Calculations

ShellCalc® v5.2.3

Essential Input Parameters		
Type	Shells/Bombettes <small>select type from list</small>	
Shell Diameter	2" (50mm)	<small>select calibre from list</small>
Firing angle	0	<small>° angle from vertical</small>
Tumbling/Mortar Drift	Typical	<small>select option from list</small>
Wind Speed	18	<small>km/h</small>
Relative Wind Direction	90	<small>° relative angle</small>

Optional Input Parameters (leave blank if unknown)		
Height of launch	0	<small>m from ground level</small>
Muzzle Velocity		<small>m/s - Not valid if SBH entered</small>
Fuse Delay		<small>s (99 to allow to hit ground)</small>
Shell Mass		<small>g</small>
Standard Shell Burst Height		<small>m (vertical fired - no wind)</small>
Shell Burst Diameter		<small>m</small>
Elevation of Launch Site	300	<small>m AMSL</small>

ShellCalc Program Options (Rarely used)		
Terrain Category	2	<small>(refer AS1170.2)</small>

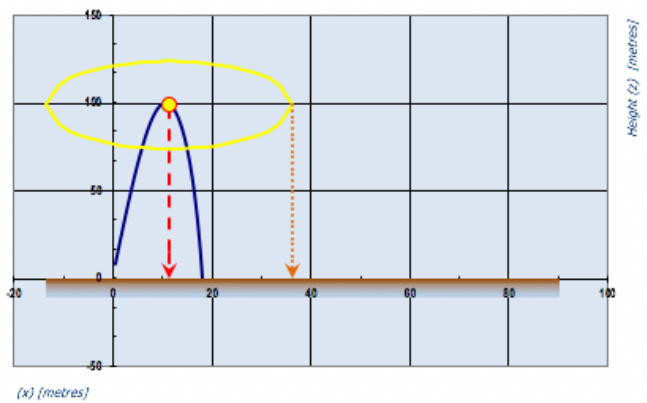
Display Options		
Display "Normal" fallout?	Yes	<small>only valid for Shells</small>
Display "Long Burn" fallout?	Yes	<small>only valid for Shells</small>

Calculated/Entered Output Values		
Max Height	100	<small>m from ground level (z)</small>
Normal fallout range (approx)	73	<small>m from origin (x/y)</small>
Long Burn range (approx)	143	<small>m from origin (x/y)</small>
Approx Burst Diameter	50	<small>m</small>
Ascent Time	3.8	<small>s</small>
Burst Time	4.0	<small>s</small>
Burst Distance (from firing point)	11	<small>m</small>
Burst Height (from Ground Level)	99	<small>m</small>
Max Downrange (Blind distance)	43	<small>m from origin (x/y)</small>
Flight Time (if shell does not burst)	12.4	<small>s</small>
Calculated Muzzle Velocity	93	<small>m/s</small>
Calculated Shell Mass	62	<small>g</small>

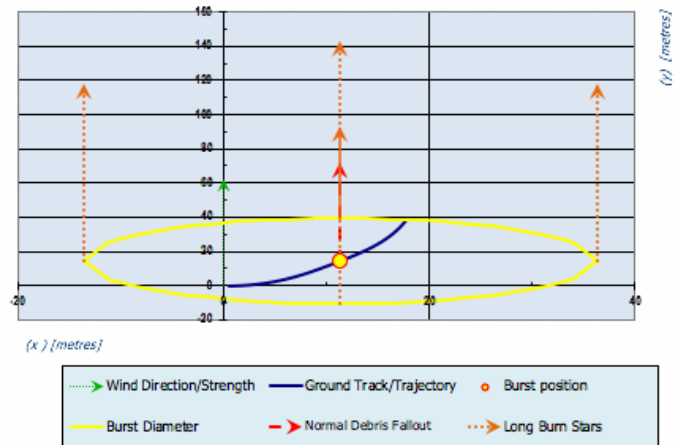
Developed by John Harradine, Manly, Queensland, Australia
 Additions by Tom Smith, CarnDu Ltd, UK - effective Sept 2013 (see revision log).
 See <http://www.jpyro.com/wp?p=23> for more details

See Help TABS for more information

Predicted Trajectory [x/z plot]



Predicted Ground Track [x/y plot]



ShellCalc is an industry recognized algorithm used to estimate the flight of aerial shells. A worst-case scenario has been chosen for the site, with a reasonable wind blowing directly towards the viewing public or shortest safety distance. Calculations show that it is likely to find Normal debris up to 79m from the firing site whilst using the largest 6" (150mm) caliber shell used on the display. Safety distances to the public in the case of this display are a minimum of 150m for the largest Calibre to be used.

Should the wind speed, direction and conditions be different on the day/time of the display, then a further onsite risk assessment will be carried out by the lead firer to determine if the firing site needs to be relocated or product removed from the show.

Weather Report

Hemel Ski Centre (Hertfordshire)



Nearest forecast to WD4 (United Kingdom)

Sat 14 Sep

17° 10°

Beta · [Let us know what you think](#)

⌆ Highest possible: 19°

⌇ Lowest possible: 7°

[What does this mean?](#)

Sunny intervals changing to partly cloudy by early evening.

Sunrise: 06:36 Sunset: 19:18



UV



Pollution

Today



14°
6°

Thu 12 Sep



14°
5°

Fri 13 Sep



15°
8°

Sun 15 Sep



19°
11°

Mon 16 Sep



19°
11°

Tue 17 Sep



20°
12°

	04:00	07:00	10:00	13:00	16:00	19:00	22:00	Sunday		
								01:00	04:00	07:00
Weather symbols										
Chance of precipitation	10%	10%	10%	<5%	<5%	<5%	<5%	<5%	10%	10%
Temperature (°C)	9°	9°	12°	15°	17°	15°	13°	11°	11°	10°
Feels like temperature (°C)	8°	8°	11°	13°	15°	13°	12°	10°	10°	9°
Wind direction and speed (mph)	SW 3	SSW 3	SW 7	SW 9	WSW 8	SW 7	SW 6	WSW 5	SW 5	SW 4
Wind gust (mph)	9	15	22	22	19	16	15	12	11	11
Visibility (description)	VG	VG	VG	E	E	VG	VG	VG	VG	VG
Humidity	78%	82%	65%	55%	52%	66%	76%	84%	87%	89%
UV	-	1	3	4	2	1	-	-	-	1

Updated: 13:05 (UTC+1) on Wed 11 Sep 2024

Show reduced forecast ^

Forecast table explained

Insurance Document



Pyrotechnics, Fireworks and Special Effects Industry Cover Note

Insured:	Matthews Brothers Pyro Ltd t/a QuietWorks
Insurer:	AXA XL
Policy Number:	B1141C23M8170-010824-638
Period of Insurance:	From: 1st August 2024 To: 31st July 2025
Business Description:	GMT and for such further period or periods as may be mutually agreed upon. Professional Fireworks Displays
Employers' Liability:	To indemnify you in respect of all sums you shall become legally liable to pay as compensation arising from accidental death or bodily injury sustained by your employees whilst working on your behalf.
Public/Products Liability:	To indemnify you in respect of all sums you shall become legally liable to pay as compensation arising from accidental death bodily injury disease to third parties or accidental loss or damage to third party property not in your custody or control and arising out of your business.

Limits of Indemnity

Employers Liability	£10,000,000 limit of indemnity
Public Liability:	£5,000,000 each and every occurrence including costs
Products Liability:	£5,000,000 each and every occurrence and in the aggregate.
Excess:	£500 third party property damage only
Geographical limits:	UK and EU

Hired in Equipment Cover

Hired in Equipment, Plant, Machinery	£0.00
Sum insured at any one contract site or premises	£0.00
Excess Applicable	£500 for each and every claim

The information provided is based on the insurance arrangements at the time of writing. Alterations may be made during the period of cover. Any expiry date shown represents the normal expiry date of the policy. In some circumstances, such as in the event of non-payment of premiums due, cancellation could occur before the normal expiry date. We should be pleased to confirm the current position upon request.

Signed by and on behalf of Precision Broking Ltd, 59 Prince Street, Bristol BS1 4QH

A handwritten signature in black ink, appearing to read 'Mumford'.

Dated: 4th July 2024

On The Day Onsite Risk Assessment

Lead Firer Cris	Date of Assessment 14/09/2024	Time of Assessment
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Wind Direction	Wind Speed	Action Required ?
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Observation	Action Taken	End Result

Signed	Time & Date
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