

**LANCASTER & MORECAMBE
MODEL ENGINEERING SOCIETY Ltd**

SUPPLEMENT 01 – 2012

TO

RISK ASSESSMENT 2011

CONCERNING

OPERATION OF NEW CLUB LOCOMOTIVE

(Petrol Engine Powered)

Based on HSE Guideline - HSG 216

PASSENGER – CARRYING MINIATURE RAILWAYS

(CIRCA 2001)

Rev	Date	Purpose of Revision	Writer	Approvals
Draft	27.01.12	For Committee Consideration of Initial Content.	G. A. Duffy	Presented at Feb 2012 Committee Meeting

ASSESSMENT NOT PURSUED BY COMMITTEE

CONTENTS

Introduction to the Risk Assessment **Page**

Part 1

Miniature Railway Installation Compliance Assessment and Review in Respect of HSG 216

1A Outline Description of the Miniature Railway Installation **Page**

1B HSG 216 Risk Topic Review **Page**

Part 2

Annual Operational Risk Assessment

Table A Access and Egress **Page**

Table B Lifting, Falling, Dropped Objects **Page**

Table C Collision & Derailment **Page**

Table D Fuel Explosion & Corrosive Fluids **Page**

Table E Electrical Hazards **Page**

Table F Visiting Locomotives **Page**

Table G Manoeuvrability **Page**

Introduction to the Assessment Supplement 01-2012

This Supplement has been prepared to provide an assessment in respect of a new club locomotive which has been designed and built by Members of the LMMES (based on what generic design?). This new locomotive is petrol engine powered and replaces the existing battery powered unit. At the time of this assessment the new locomotive is undergoing trials prior to being used for public passenger hauling commencing with the 2012 season. The operational demands on the new locomotive will be unchanged from those of the battery locomotive.

To guide the assessment process the Risk Assessment format used in the original assessment at Revision B has been utilised and edited to show topics related only to the operation of a locomotive and its influence on the infrastructure.

This Risk Assessment process is in 2 parts:

- Part 1: Miniature Railway Installation Compliance Assessment and Review in respect of HSG216.
- Part 2: Annual Operational Risk Assessment.

¹ Note: Full title of HSG216 is “Passenger-carrying miniature railways – Guidance on safe practice” referred to hereon as PCMR

Part 1

Miniature Railway Installation Compliance Assessment and Review in respect of HSG216.

1A Outline Description of the Petrol Engine Powered Locomotive

The outline characteristics of the locomotive are:

- No driving wheels
- 7 ¼ Gauge
- Engine model
- Length
- Width
- Height
- Weight
- Audible warning system
- Braking system

Part 1B: Miniature Railway Installation Compliance Assessment and Review in Respect of HSG 216

PCMR Ref	Guideline Topic	Guideline Extract	LMMES Status
17	Risk Assessment:	<i>For an existing miniature railway, a risk assessment needs to be carried out for the ongoing infrastructure and operation.</i>	This Supplement is a reflection of the Guideline.
Step 4	Risk Assessment:	<i>You can keep paper or electronic records but make sure these are easily accessible.</i>	Paper records backed up by an electronic copy are retained.
20	Track	<i>You need to ensure the stability of the gauge, line and level of the track under all conditions of load and temperature.</i>	Comment on the weight loading of the track.
25	Track	<i>The rail should be of a suitable weight and profile for the maximum axle loadings and speed of the trains on the railway</i>	
69	Loco & Stock	<p><i>Locomotives need to be:</i></p> <ul style="list-style-type: none"> <i>• constructed to provide safety and reliability in service;</i> <i>• provided with a system to give an audible warning of approach; and</i> <i>• provided with a system to ensure safety when the locomotive is left unattended or stabled.</i> 	<p>Speed limiter?</p> <p>Warning horns?</p> <p>Security?</p>

PCMR Ref	Guideline Topic	Guideline Extract	LMMES Status
77	Couplings	<i>The design of any coupling should be adequate for the purpose and ensure that the rolling stock is securely coupled in all circumstances, eg when propelling or in a derailment. You need to prevent over-riding in the event of a collision. There are a number of different coupling systems which may be appropriate including three-link with side buffers, bars secured with pins and combined central buffer/coupling. The use of scale couplings of the three-link, instanter or screw type are not recommended as in scale form they have insufficient strength to ensure safety in all circumstances.</i>	Just need words to cover the loco hook up methodology.
78	Couplings	<i>Safety chains should be considered between the locomotive and tender or driving truck. Their use between other vehicles in a train could prevent a division even if the main coupling fails.</i>	When hauling passengers the carriages are rigidly connected with bar and pin links.
80	Brakes	<i>A braking system is required which is adequate for the loaded train weight, normal speed of running, gradients and operating methods. This system needs to be capable of bringing the train to a stop in normal and emergency conditions, in a safe distance.</i>	There is an ongoing project to have all trains fully braked. All trains for public passenger hauling are braked. ??????????
81	Brakes	<i>If the braking system is of a continuous type, operating on the coaches and locomotives, it should be capable of being worked from the locomotive by the driver, in emergency by the guard (if carried) or be applied automatically in the event of a division of the train. Brakes used as the normal 'service brake' should be capable of being applied gradually to stop the train smoothly.</i>	Vacuum braked coaches comply with this intent.
82	Brakes	<i>When the brakes have been applied, they should remain on in order to hold the vehicle(s) for an adequate length of time.</i>	As we briefly discussed at the last committee meeting the new loco is powerful enough to overcome any braking power. Do we need a dead man handle or some means for the guard to stop the loco????????? Discuss.
83	Brakes	<i>Lightweight trains may be operated with a non-automatic brake of adequate power. Where small locomotives are used, it is common to provide a braked 'driving truck', rather than rely on the locomotive brakes.</i>	

PCMR Ref	Guideline Topic	Guideline Extract	LMMES Status
84	Brakes	<i>If locomotives are using one of the various propulsion systems involving a chain, gear or hydraulic drive, the transmission system cannot be relied upon to provide an adequate train braking system. The severance of any chain or gear drive to the wheels would lead to the driver being unable to control the speed of the train. The brakes need to act directly onto the wheels or axle-mounted discs and not be of the sled or skid type that operates on the rails in view of the danger of this type of system lifting the vehicles off the track.</i>	Brakes act directly on the wheels?
85	Wheels	<i>The wheels on any wheelset and the suspension of a vehicle need to be compatible with the rail profile, track geometry, infrastructure and vehicle or train speed.</i>	The track and Society vehicles have proven compatible.
104	Servicing of Locos	<i>Refuelling of diesel, petrol or gas-fired locomotives should be carried out well away from public areas and places where steam locomotives are being prepared or ash disposed of. Care should also be taken when charging or changing batteries in case any sparking could create hazardous conditions.</i>	The Society's petrol fuelled locomotive is fuelled in sidings away from the public and other hot locomotives and away battery powered locomotives.
112	Maintenance	<i>Keep suitable records of the work inspections and any work carried out.</i>	Do we propose to have a Maintenance Schedule?

Part 2: Annual Operational Risk Assessment – Supplement Regarding New Club Locomotive

Ranking System is Event Severity to Health x Likelihood = Ranking Value. Likelihood assessment based partially on site incident history.

Ranking of 0 = Risk is Negligible due to Applied Control Action; no action required; but don't be complacent

Ranking of 1 = Risk is Low but monitor the situation

Ranking of 2 = Risk is Medium; consequence should be avoided; take further action to reduce risk.

Ranking of >3 = Risk is High; take immediate action to reduce risk.

TABLE "A" ACCESS AND EGRESS

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
	No Related Issues					

TABLE "B" LIFTING, FALLING, DROPPED OBJECTS

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
	No Related Issues					

TABLE "C" COLLISION AND DERAILMENT

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
	No Related Issues					

TABLE "D" FUEL, EXPLOSION, & CORROSIVE FLUID HAZARDS

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
D1	Volatile Fuels.	Fire/explosion when refuelling petrol fuelled locomotives.	3	1	1	<p>Refuelling is only permitted in the open area rear of the Members building where there are normally no naked flames of other hot surfaces. Fuels are not stored in quantity.</p> <p>The fuel bunker is a separate store remote from occupied buildings and public spaces. The key to the lock of this bunker warns of no smoking on the key tab and the bunker lid is internally labelled the same. The outside of the bunker is not labelled as such due to the possibility of vandalism if the contents are advertised.</p>

TABLE "E" ELECTRICAL HAZARDS

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
	????????? Any issues?					

TABLE "F" VISITING LOCOMOTIVES

ITEM REF:	CONSIDERATION	POSSIBLE CONSEQUENCE	EVENT SEVERITY 0=Neg 1=Low 2=Med 3=High	LIKE-LIHOOD 0=Neg 1=Low 2=Mod 3=High	RANKING	CONTROL ACTION
	No Related Issues					