Middleton Railway – Practical Colour Vision Assessment Process

1. Introduction

This process has been developed as a means to carry out a practical colour vision assessment for any members of crew who did not successfully complete the colour vision test as part of the medical assessment by the railway doctor.

This process has been developed in line with Heritage Railway Association Guidance Note HRA-P0005 Issue 3 – Fitness Assessment for Safety Critical Workers, issued March 2011 and Rail Industry Guidance Note GO/GN3655 Issue 2 – Guidance on Medical Fitness for Railway Safety Critical Workers, issued 7th June 2014, and has been reviewed and approved by the Traffic Manager, Safety Officer and Medical Officer.

Colour vision defects can be inherited and persist through an individual's life, or can develop later in life and be more variable in occurrence, severity and duration. Any colour vision defect can range in severity, and there are several different tests available for detecting the presence of colour vision defects, however different tests may not be equivalent when measuring the same aspect of colour vision. As part of the Medical Assessment process at the Middleton Railway, an Ishihara test is undertaken in a General Practioner's office environment. Where the results of this test indicate a colour vision defect, in line with the procedure for medical assessments policy directive, a practical colour vision assessment in line with the procedure in this document will be undertaken, where a pass mark of 100% is required to be attained by the individual. Where a pass mark of 100% is not attained, the individual will not be able to undertake train operating duties without appropriate supervision.

The practical assessment takes in to consideration the type of work to be carried out and the environment it is to be carried out in, and any changes to the type of work or environment may necessitate a further practical colour vision assessment, suited to the revised working arrangements and/or environment.

Following a practical colour vision assessment, if the member of staff passes, consideration should be given to deterioration of the colour vision defect, and staff must be made aware of the need to notify the medical officer if they have reason to believe the defect may have worsened.

2. Practical Colour Vision Assessment

The purpose of a practical colour vision assessment is to demonstrate that the individual's colour vision is effective in their normal work environment. The assessment will demonstrate a clear differentiation between coloured flags and lamps used as part of normal operating duties at the Middleton Railway, and at a representative distance of where the signals are likely to be given during normal operations.

The same signals will apply to all duties, as such, a standard assessment can be used for all operating grades where an individual requires a practical colour vision assessment.

The individual undergoing the assessment must wear any normal vision aids, and lighting conditions will be representative of those expected under normal operating conditions. Following consideration of the normal operating conditions, as outlined below, it is not deemed necessary to assess each eye individually.

The assessment requires an assessor and verifier, both of whom must be people who have registered a normal colour vision reading by the railway doctor.

Normal Working Environment:

The normal working environment for operational staff includes operating steam and diesel hauled passenger trains, which can be up to 40m long including locomotive(s), and the movement of vehicles through shunting.

Train operating duties are normally undertaken in generally good, natural daylight, and involve the use of red and green flags for some aspects of operations – predominantly the guard providing authority for trains to depart, or needing to alert the driver to danger. The flags are typically 300mm square, however larger flags are sometimes used.

Occasionally, train operating duties may be planned to be undertaken in periods of darkness or poor visibility, or train operations that were planned to be completed before darkness may extend into periods of darkness/poor visibility due to unforeseen circumstances. Where train operations are being undertaken in darkness/poor visibility, the use of hand lamps is mandated for signalling/operating purposes, as flags cannot always be visible. The colours used for hand lamp signalling are white, red and green.

With the exception of special event days such as galas, the environment in which flags and hand lamps are used is generally a clear and uncluttered one, with very few or no other people (staff or public) in the vicinity of the flag or lamp being used, meaning a clear line of sight between the guard/shunter and the driver. It is noted that for special events, such as galas, platforms/public areas may be busier and so there is an increased likelihood of needing to provide flag or lamp signals with other people in the vicinity. The increased likelihood is mitigated by the train operating regulations, which stipulate authority to depart for trains must be a flag or lamp clearly waved alongside a clear whistle, further stipulating that the driver must acknowledge the signal given by the guard. These steps ensure that the guard and driver are able to come to a clear understanding.

Where hand lamps are being used, this is predominantly for shunting in darkness or periods of poor visibility. As the shunter and driver must ensure a clear line of sight throughout the operation, the environment is again an uncluttered one with very few or no other people around where the lamp is being used.

As part of normal operations where flags and lamps are being used, there will be a need for an individual to select the colour flag or lamp from a stored location (such as flags stored in the passenger coaches) in order to communicate with the driver, and so an ability to correctly complete this task must be demonstrated.

As only red and green coloured flags and lamps are used as part of normal operations, there is no requirement to assess an individual's colour vision with any other colour. The flags used for normal operations are not in a pristine condition, and so the assessment should not use pristine flags, nor should the flags be heavily soiled. The lens of the hand lamp should be free of dirt for normal operations, and so the lens should be cleaned for the practical assessment.

Based on the normal working environment outlined, and to avoid restrictions on conditions or times of day that operating staff can fulfil their duties, the practical colour vision assessment will be a 2-stage assessment;

- A flag-waving test, where the individual will be required to correctly identify the colour of red or green flags waved at random and in daylight conditions, and to also select the correct colour of flag from within a passenger carrying vehicle
- A hand lamp test, where the individual will be required to correctly identify the colour of white, red or green hand lamp signals shown at random and in dark conditions (at least 30 minutes after sunset), and to also select the correct colour lamp signal

The two stages cannot be completed at once, however should be completed as close together as practicable, and a finished practical colour vision assessment will not be recorded until both stages have been completed. ***To be deemed to have passed the practical colour vision assessment, a 100% score for each stage must be attained.***

To determine the sequence that colours will be selected, the assessor will select a point within the assessment record sheet for each part of the assessment to start the sequence for colour selection (e.g. may choose to start at flag number 11 for the flag waving section) and notify the verifier.

Flag Waving Test

1. It is not deemed necessary to undertake the flag waving test on a crowded platform. The individual being assessed will stand at the Southern-most end of the platform along with the verifier, and the assessor will stand adjacent to the platform shelter, with a red and green flag representative of the size of flag likely to be used during normal operations being placed on hand behind the shelter so as not to be seen by the individual. The assessor will pick the corresponding flag, in line with the chosen starting point within the assessment, from behind the platform shelter, wave it for 3 seconds and then replace the flag. The verifier will record whether or not the colour seen by the individual and was correctly identified. The process is repeated until 20 flags have been waved.

   Pass criteria: The individual must correctly identify all 20 flags

2. The assessor will place a red and green flag representative of the size of flag likely to be used during normal operations within a corner of the brake van or passenger coach (whichever is decided to be used). The assessor will then ask the individual to select a colour flag, in line with the chosen starting point within the assessment, and then replace it. The verifier will record the colour selected and if this was correctly identified. The process is repeated until 20 flags have been selected.

   Pass criteria: The individual must correctly select all 20 flags, with minimal hesitation

Hand Lamp Waving Test

3. It is not deemed necessary to undertake the hand lamp waving test in a crowded environment. The individual being assessed will stand at the Southern-most end of the platform along with the verifier, and the assessor will stand adjacent to the platform shelter, with a hand lamp capable of displaying white, red and green. The assessor will select a colour, in line with the chosen starting point within the assessment, and switch the lamp on, waving it gently for 3 seconds and then turning the lamp off. The verifier will record whether or not the colour seen by the individual was correctly identified. The process is repeated until 30 coloured lamp signals have been shown.

   Pass criteria: The individual must correctly identify all 30 coloured lamp signals

4. The assessor will pass a hand lamp capable of displaying white, red and green to the individual, on the platform or similar environment. The assessor will then ask the individual to select and display a colour signal, in line with the chosen starting point within the assessment. The verifier will record the colour selected and if this was correctly identified. The process is repeated until 30 colour signals have been displayed.

   Pass criteria: The individual must correctly select all 30 colour signals, with minimal hesitation

Name of person being assessed: …………………………………………………………..

Date of Flag Test: …………………………………

Assessor Name: ………………………………………………… Verifier Name: ……………………………………………………………

1 Identification of colour of flag being waved

Flag	**Colour**	**Correctly Identified**		**Flag**	**Colour**	**Correctly Identified**		**Flag**	**Colour**	**Correctly Identified**
01	*Redacted*	Yes / No		08	*Redacted*	Yes / No		15	*Redacted*	Yes / No
02	*Redacted*	Yes / No		09	*Redacted*	Yes / No		16	*Redacted*	Yes / No
03	*Redacted*	Yes / No		10	*Redacted*	Yes / No		17	*Redacted*	Yes / No
04	*Redacted*	Yes / No		11	*Redacted*	Yes / No		18	*Redacted*	Yes / No
05	*Redacted*	Yes / No		12	*Redacted*	Yes / No		19	*Redacted*	Yes / No
06	*Redacted*	Yes / No		13	*Redacted*	Yes / No		20	*Redacted*	Yes / No
07	*Redacted*	Yes / No		14	*Redacted*	Yes / No				

Total Score (%)	

2 Selection of flag from corner of vehicle

Flag	**Colour**	**Correctly Identified**		**Flag**	**Colour**	**Correctly Identified**		**Flag**	**Colour**	**Correctly Identified**
01	*Redacted*	Yes / No		08	*Redacted*	Yes / No		15	*Redacted*	Yes / No
02	*Redacted*	Yes / No		09	*Redacted*	Yes / No		16	*Redacted*	Yes / No
03	*Redacted*	Yes / No		10	*Redacted*	Yes / No		17	*Redacted*	Yes / No
04	*Redacted*	Yes / No		11	*Redacted*	Yes / No		18	*Redacted*	Yes / No
05	*Redacted*	Yes / No		12	*Redacted*	Yes / No		19	*Redacted*	Yes / No
06	*Redacted*	Yes / No		13	*Redacted*	Yes / No		20	*Redacted*	Yes / No
07	*Redacted*	Yes / No		14	*Redacted*	Yes / No				

Total Score (%)	

Assessment Outcome:	PASS / FAIL

Assessor Signature	Verifier Signature	Candidate Signature

Date of Lamp Test: …………………………………

Assessor Name: ……………………………………………   Verifier Name: ………………………………………………………………

3	Identification of correct colour lamp being waved									
Lamp	**Colour**	**Correctly Identified**		**Lamp**	**Colour**	**Correctly Identified**		**Lamp**	**Colour**	**Correctly Identified**
01	*Redacted*	Yes / No		11	*Redacted*	Yes / No		21	*Redacted*	Yes / No
02	*Redacted*	Yes / No		12	*Redacted*	Yes / No		22	*Redacted*	Yes / No
03	*Redacted*	Yes / No		13	*Redacted*	Yes / No		23	*Redacted*	Yes / No
04	*Redacted*	Yes / No		14	*Redacted*	Yes / No		24	*Redacted*	Yes / No
05	*Redacted*	Yes / No		15	*Redacted*	Yes / No		25	*Redacted*	Yes / No
06	*Redacted*	Yes / No		16	*Redacted*	Yes / No		26	*Redacted*	Yes / No
07	*Redacted*	Yes / No		17	*Redacted*	Yes / No		27	*Redacted*	Yes / No
08	*Redacted*	Yes / No		18	*Redacted*	Yes / No		28	*Redacted*	Yes / No
09	*Redacted*	Yes / No		19	*Redacted*	Yes / No		29	*Redacted*	Yes / No
10	*Redacted*	Yes / No		20	*Redacted*	Yes / No		30	*Redacted*	Yes / No

Total Score (%)	

4	Selection of correct colour lamp									
Lamp	**Colour**	**Correctly Identified**		**Lamp**	**Colour**	**Correctly Identified**		**Lamp**	**Colour**	**Correctly Identified**
01	*Redacted*	Yes / No		11	*Redacted*	Yes / No		21	*Redacted*	Yes / No
02	*Redacted*	Yes / No		12	*Redacted*	Yes / No		22	*Redacted*	Yes / No
03	*Redacted*	Yes / No		13	*Redacted*	Yes / No		23	*Redacted*	Yes / No
04	*Redacted*	Yes / No		14	*Redacted*	Yes / No		24	*Redacted*	Yes / No
05	*Redacted*	Yes / No		15	*Redacted*	Yes / No		25	*Redacted*	Yes / No
06	*Redacted*	Yes / No		16	*Redacted*	Yes / No		26	*Redacted*	Yes / No
07	*Redacted*	Yes / No		17	*Redacted*	Yes / No		27	*Redacted*	Yes / No
08	*Redacted*	Yes / No		18	*Redacted*	Yes / No		28	*Redacted*	Yes / No
09	*Redacted*	Yes / No		19	*Redacted*	Yes / No		29	*Redacted*	Yes / No
10	*Redacted*	Yes / No		20	*Redacted*	Yes / No		30	*Redacted*	Yes / No

Total Score (%)	

Assessment Outcome:	PASS / FAIL

Assessor Signature	Verifier Signature	Candidate Signature