

## Appendix B – High-Performing Depot Specification

### INTRODUCTION

The idea for this specification arose from a cross-industry workshop in December 2007. The aim was to challenge fleet to deliver the next big step change in reliability. Asset improvement was one of the key issues, noting that good maintenance facilities and practices are just as important in providing reliable trains as modifications to vehicles themselves. This specification for high-performing maintenance facilities has subsequently been put together by a sub-group.

The list of depot requirements includes all the elements expected from a modern, purpose-built train maintenance facility and is in line with the rest of Europe. However, one size does not fit all and requirements should be customised for each project with new or significantly upgraded maintenance or servicing facilities.

It is accepted that in some cases it will not be possible to justify all the features on the list. However, when producing business cases, the true cost of not providing certain features should be taken into account. For example, not having space for storage of consumables at point of use could add several man-years' lost productivity over the course of a franchise. Further, ReFocus has case studies of reliability improvements achieved by point-of-use stores freeing up people to resolve root causes, address deferred work, etc.

The scope and design of new or upgraded maintenance facilities should take full account of depot flow (e.g. to minimise the number of movements between the different facilities within the depot), minimise unproductive time and maximise touch time on vehicles.

There also need to be clear plans for the overhaul and renewal of maintenance facilities. It is recognised that vehicles themselves have a finite design life with periodic overhaul, after which they are renewed. The same principles need to be applied to facilities for rolling stock maintenance (although the design life of the buildings and equipment will be different). The responsibilities of the infrastructure manager and lessee for renewal, overhaul and maintenance need to be clearly defined, as they are for rolling stock.

### MAINTENANCE DEPOTS

#### Maintenance berths

- Separate berths for servicing, light maintenance, heavy maintenance and lifting/major component change.
- No more than [80%] utilisation of any bay (based on down time for both planned and unplanned activities, average unit mileage and maintenance frequencies).
- Some flexibility regarding the use of bays for different activities.
- All berths to have extraction equipment for diesel emissions (DMU depots only).
- Able to isolate OHLE or 3<sup>rd</sup> rail for each road separately (EMU depots only).
- All berths to have shore supplies, air supply and battery charging points.
- All berths to have pneumatic supply and power points.
- Foot-printed areas to be provided next to each bay for oil storage, etc.
- Suitable pit lighting to be provided.
- Access to pits to be provided at each end and at intermediate points.

- [Where justified] a bogie drop pit to be provided in at least one maintenance bay. It should be possible to place any bogie within a normal unit formation over the drop pit without fouling other roads or having vehicles outside the building.
- All clean fluids (oil and coolant) to be piped to point of use.
- All waste fluids (oil and coolant) to be piped from point of use.
- Side and centre pits to be provided in all servicing and light maintenance bays. Centre pits only to be provided in heavy maintenance bays. Pits to be designed to suit the type of rolling stock being maintained.
- Fixed roof access equipment in at least one berth; further berths to have roof access in line with the production use of the berth.
- At least one set of jacks suitable for a synchronised lift of a full unit in normal formation should be provided. Where justified, separate jacks should be provided for heavy maintenance and planned component change.
- Each berth should have depot protection designed around one unit of normal length (depot protection required across the whole site).
- An overhead crane to be provided in at least one heavy maintenance bay and on any jacking road.
- Fork lift truck access should be possible on both sides of each bay.

#### **Paint facility**

- As a minimum, one berth to be provided with extraction equipment to allow touch-up painting.
- For larger depots, consideration should be given to providing a dedicated paint facility.

#### **Fuelling facilities**

- Fuelling roads should be long enough to accommodate maximum length of formation of arrivals on depot.
- Fuel road capacity should be based on each road being turned over no more than [6] times per night.
- Fuel dispensing equipment to allow all vehicles on a fuel road to be fuelled simultaneously.
- The fuelling area should be covered.
- All pipes should be suspended off the ground and trays provided to collect spillage.
- IT system at fuel point to allow fuel registration or input of defects.
- Equipment should allow fluids to be topped up at the fuel point.

#### **Underframe cleaning facility**

- Automatic underframe cleaning equipment should be capable of cleaning the full length of a unit in normal formation.
- Lances to be provided to allow localised cleaning of the underframe.
- Access to the underframe cleaning facility should be provided direct from the depot arrival roads.
- More than one boiler should be provided to give an element of redundancy to the underframe cleaning equipment.
- Availability of diesel and fuel additive

## **Wheel lathe**

- The wheel lathe should be capable of exporting data to industry systems.
- A ground wheel lathe should be provided [on a ratio of 1 lathe to 300 vehicles].
- The wheel lathe road should be long enough to allow any vehicle of a normal unit formation to be placed on the lathe without the need to split the unit.

## **Wash plant**

- Should be capable of working at temperatures as low as 0°C
- A device should be provided to warn drivers if they exceed the required speed, except where it would distract drivers, as exit signals are present.
- Should be capable of cleaning the vehicle roof and side skirts.
- Wash plant brushes should cater for all types of vehicle allocated to the depot.
- Should be capable of working on detergent or water only.
- Should be fitted with a basic underframe cleaning system and full biohazard kits to deal with fatalities.
- Provision should be made for automatic vehicle identification.

## **Controlled emission toilet emptying**

- Should be capable of simultaneously emptying all toilets in a typical rake.
- Should be capable of emptying a CET tank from full in no more than 5 minutes.
- Covered accommodation should be provided for the operator.
- A facility to manually discharge CET tanks should be provided.
- The CET emptying facility should be at the fuel point if necessary.

## **Stores, etc.**

- Covered storage to be provided for all components, including large items such as engines and gearboxes.
- Space should be provided adjacent to each bay for the storage of tools, low-value consumables and other components for efficient exchange at the point of use.
- An area to be provided where major components can be built up.
- Workshop facility to be provided for in-house component overhaul.
- Electronics clean room to be provided.
- Jobbing shop, including small welding facility, to be provided.
- Adequate workshop and mess facilities for subcontractors.
- Load bank or dynamometer facility.

## **Office/staff accommodation**

- Sufficient accommodation to be provided in the form of offices, mess rooms, meeting rooms and classrooms.
- There should be a mixture of open plan and enclosed offices.
- Easy-to-maintain mess and locker room facilities should be provided.
- Mess room to be shared with traincrew if possible.
- An area should be provided for communications and start-of-shift briefings, etc.
- A depot IT network should be provided that is fast, efficient and future-proof (including IT at the maintenance berths).

- Space for traincrew cab simulator (better to have at maintenance depot to ensure fleet and operations relationships are cemented).

### **Cleaning facilities**

- Cleaning facilities to be covered where possible.
- Access platforms to be provided.
- Shore supply to be provided.
- Hot and cold water to be available adjacent to vehicles.
- 13-amp power points to be provided.
- Storage facilities to be provided.
- Mess room to be provided adjacent to cleaning facilities.
- IT facility to be provided to allow input of work done.
- Dry room for seat covers, carpets, etc.; dry cleaning facility, where justified.

### **Stabling facilities**

- Sufficient stabling berths to be provided that, under normal planned circumstances at peak time for departures, will not be more than [90%] utilised.
- Ideally each departure road should not accommodate more than 2 rakes of units.

### **Access to depot**

- Access between the main line and the depot arrival road should ideally be provided at both ends of the depot.
- Each arrivals road should be long enough to accommodate the longest foreseeable rake of vehicles.
- The depot should have a simplified signalling system that is operated from the production office, but complex depots may require a more substantial control panel.
- Electrified depots should have an independent power supply such that off-depot isolations do not affect depot supply.

### **Depot environment**

- Adequate lighting and safe walking routes to be provided around the depot.
- Depot to be securely fenced.
- Security facilities to be provided at the depot entrance.
- CCTV to be provided covering the depot entrance.
- Sufficient car parking to be provided for the depot workforce.
- Road access to be provided for a low loader (moving vehicles by road).
- Lorry turning circles for stores access and road access for stores at the correct end of the depot, without the need for isolations or line blocks.
- Depot to be very close to a triangle, or within one, to enable reorientation of train sets or vehicles.

### **Light maintenance depots**

At a typical light maintenance depot, the facilities under fuelling facilities, cleaning facilities and controlled emission toilet emptying should be provided as a minimum. At least one light maintenance bay should be provided, as described under maintenance berths.

## **Servicing locations**

At a typical servicing location, the facilities under fuelling facilities, cleaning facilities and controlled emission toilet emptying should be provided as a minimum.