Non – Destructive Testing of Bearer/Sleeper Housings

Network Rail would like to establish if there is a non- destructive testing method to assess the integrity of rail fastener housings cast into concrete sleepers/bearers.

1. System Requirements

- be capable of testing the integrity of cast iron housings that are cast into concrete sleepers/bearers.
- mobile and operable in the field.
- able to be operated by a maximum of two people.
- able to be easily lifted from a vehicle to site.
- able to operate in all weathers and in a temperature range of -10^{o} to 40^{o}C.

1.1 Housing Integrity Testing

Essential:

- be able to consistently confirm if the housing stem is fractured, broken or intact.
- provide a negative/positive result on site.
- provide repeatable and consistent results.
- able to test each housing with the rail and baseplate in situ.
- not require an external power source.
- capable of measuring fast-clip and e-plus housing types.
- be usable by NR staff (after relevant training).

(b) Fast-clip housing

(a) e-Plus clip housing

Figure 1(a) & (b) – Types of housing to be tested

Desirable:

- able to test with fasteners installed in situ.
- be battery powered.
- capable of testing all housings in a complete switch and crossing layout in one shift.
- Provide a quick and accurate result.