



**Impregnation issues** are associated with the bunching up of the inner liner(s) and are unacceptable.

### **Inversion issues**

- **Stopped inversions** due to premature cure are clearly catastrophic failures.
- **Circumferential fins**, unless slight, are unacceptable due to the possibility of deposition upstream. Because they are associated with the thickening of the pipe wall, such fins can be ground-off.
- **Longitudinal fins**, even moderate in nature, are not detrimental to the structural or hydraulic performance of the liner.

### **Seams and patch repair issues**

- **Stains seams** are often due to water passing through in small quantities and impurities filtering out. Unless significant resin loss has resulted, stained seams are a question of aesthetics.
- **Leaking seams** are unacceptable. It is important that the liner is impregnated under adequate vacuum and at the correct nip roller gap. This will normally, with conventional catalyst cocktails, ensure a low porosity and result in sound seams. If the leaks are not too extensive, then a grout packer may be used to correct this issue.
- **Leaking patch repairs** through which groundwater can leak are unacceptable. It is possible that after grinding away the patch, a grout packer may be used to correct this issue.

### **Coating-related issues**

- **Bubbles** on liners can be removed if they are unacceptable aesthetically. If they are caused by ingress of groundwater then some means may be needed to prevent further ingress.
- **Spots and other stains** (e.g., on seams) are associated with leaks of water through small holes in the coating. The cause of the holes is discussed in the spots section.
- **Uneven finishes** on liners are typified by surface irregularities and although appear unsightly when viewed along the pipe on CCTV, do not detract from the structural or hydraulic performance of the liner. Air pockets behind liners are only of significance under high external head.