

## HS2 Artificial Badger Sett Specification

### Location of artificial setts

Locations for artificial badger setts should:

- Be adjacent to existing areas of scrub or woodland and/or grassland habitats that provide foraging areas;
- Should normally be provided close to the original location as possible, within 100m of the original sett. Where this is not possible an alternative location can be selected in the range 100-500m from the original sett but within the existing territory;
- Be in areas to be created as woodland or scrub, or close to them;
- Not be close to busy roads, preferably more than 100m away;
- Not be in areas with high levels of public access, or else if there is access nearby the artificial sett should be screened and made less accessible using planted scrub plus brushwood;
- Not be in wet areas or areas prone to flooding; and
- Not be where it is likely to cause territorial issues between social groups of badgers.

Artificial setts should be sited within the land required for construction and operation (but outside the route-wide security fence), except where no suitable alternatives are available within the territory of the social group affected.

No active sett should be closed until the artificial sett constructed to replace it has been completed and there is evidence badgers have discovered the artificial sett<sup>1</sup>.

### Design of artificial setts

The exact design (shape, profile and number of chambers) will depend on the size of the sett to be lost, the space available for the artificial sett and the local ground conditions and topography.

The artificial sett should be designed and constructed to be well-drained with no standing water within the sett or sett entrances and be free draining throughout.

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<sup>1</sup> Confirmation that badgers have found an artificial sett can be achieved through monitoring signs of badger activity at the entrances to the ABS such as: uptake of an attractive food such as peanuts and syrup, sand traps for paw prints, hair traps around the entrance and camera traps.

Setts should be created above or below existing ground level.

A larger artificial sett design (i.e. more than 2-3 chambers) should be required to compensate for loss of a main sett.

Materials chosen to construct the artificial sett<sup>2</sup> (e.g. wood or concrete) should be used depending on site conditions. Exterior grade timber chamber walls and roof are preferred due to condensation issues associated with concrete but other material can be used.

Network Rail (2011)<sup>3</sup> badger sett creation design, in conjunction with the guidance of relevant engineers, should be used if an artificial sett is to be created within an embankment, where concrete chambers are required for load-bearing.

## Tunnel and entrance specifications

Tunnel and entrance design for artificial badger setts shall include:

- Multiple entrances, a minimum of four entrances to be provided for each artificial sett;
- Entrances must be at different heights to aid ventilation, angled to avoid excessive draughts;
- Pipes used to construct tunnels shall have an internal surface that allow the animals grip (ridges or rough surfaces preferred); alternatively the base of the pipe can be cut to provide a bare earth surface subject to load-bearing requirements;
- Cross-connections between tunnels to provide at least one alternative exit;
- A minimum of four dead-end tunnels to allow badger to extend the sett internally;
- Tunnel length from the entrance to the start of the chambers shall be a minimum of one metre;
- Constructed in material that can be excavated by badger, preferably loam-rich topsoil, or other light soil, not clay; and
- All tunnels of artificial setts shall have an internal diameter of 300mm.

## Chamber design within artificial setts

- Chamber design within artificial badger setts shall include:
- Provision of multiple chambers (comprising both through chambers and end

<sup>2</sup> Refers to all design elements including chambers, tunnels and tunnel entrances.

<sup>3</sup> Network Rail (2011) *Ecological Works: Artificial Badger Sett Creation* - NR NR/CIV/SD/246 ISSUE A.

chambers) at least half of which will be off-set from the route through the sett, a minimum of six chambers to be provided;

- Maximum internal height 500 mm, Length and width of the chambers will be in the range approximately 450-750 mm.
- Chambers must be roofed with panels capable of bearing the weight of at least one metre depth of overlying soil;
- The floor of each chamber must be earth and must be slightly mounded in the centre to ensure that any damp seeps toward the tunnels or free-draining edges. Chambers must be above the lowest point of the artificial sett;
- Before the chambers are covered by the roof, they must be half-filled with clean, dry straw or hay for bedding;
- The chamber roofs or a wider area above them must be covered with galvanised weldmesh to deter illegal digging for badgers.

Weld-mesh frames with geotextile can be used over the junctions of pipe to prevent soil falling into the tunnels when soil is mounded over the sett.

Materials used in landscaping an artificial sett can vary. Turf fragments, brush wood, salvaged coppice and other salvaged vegetation should be used to provide cover in preference, supplemented by planting of scrub and seeding with grass if required.

Badgers should be encouraged to use the artificial setts by laying food baits and transporting materials from the existing sett.

Landscaping and planting required as part of the design of the artificial sett should be carried out immediately after construction of the artificial sett or as soon as reasonably practicable thereafter, but before badgers have occupied the sett.