

**FOR DISCUSSION****SITE APPRAISAL RE PROPOSED PHASE TWO DEMOLITION, RE PROTECTED SPECIES**

**Site:** Valley Factory  
Rhydymwyn  
Near Mold  
North Wales

**Client:** BAE Systems

**Job No.:** 0225

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**Introduction:**

An initial survey was requested regarding the proposed demolition of single storey buildings to the northern end of the site and sheeted production buildings positioned to the southern end of the chemical works area, together with a series of smaller buildings to the western boundary on the wooded embankment. A total of twenty four buildings was surveyed and reported. The proposed demolition works being carried out under a RAM strategy as agreed with CCW. A further request has been made for further survey works for presence/absence for a further proposal to demolish 18 buildings, on aesthetic amenity grounds and site enhancement. This survey was undertaken for presence/absence for protected species, this particular document deals with all species of bats in its assessment. The findings of this survey being reported separately. The intention of this document is to assess the impact of such works on bats in general to the area, to both recorded activity within the site boundary and known bat sites within the general area.

**Area Population Status:**

The site is located within the Alyn River Valley. The river starts at the watershed point near to Bryneglwys down through Llandegla, Llanarmon-yn-Ial, Llanferres, Loggerheads, Nant Alyn, Rhydymwyn and to Mold. The river carries on beyond this point but flows over mainly lowland arable pasture. The upper limits of the river are very much confined within a steep valley system. The profile of the valley above Mold acts as a funnel effect and tends to concentrate movement of several species along its length. All of the 9 species of bats present within North East Wales have been recorded within the valley, several being recorded within hibernaculum. The nearest hibernaculum being approx. 500 m to the north of the site. The rarest of these species being the Lesser Horseshoe Bat (*Rhinolophus hipposidarus*). The horseshoe bat is at its extent of its north east range at Rhydymwyn, approx. 350 m to the north east of the valley site, with North Wales now being its most northern limit within Europe. It is worth noting that in the 1960 this species was still being recorded further north within England and within Northern Germany, Denmark and The



Netherlands. Eight years ago the population status of LHB's within The Netherlands was 12 individuals, with no individuals being recorded within Denmark and Northern Germany.

The other species being recorded are Whiskered, Brandt's, Natterers, Daubentons, Noctules, Pipistrelle, Soprano Pipistrelle, and Brown Long-eared. The later two species being recorded within breeding roosts within the local area.

#### **Site Status and Area Location:**

The site was constructed as a chemical armament works and was located alongside the a section of the River Alyn within the village of Rhydymwyn. The site is approximately 200 m wide by approx. 1600 m long running north south in its longest profile. A rail line ran along the eastern boundary and the river Alyn to the western boundary with a large section being culverted across the site. Part of this section is diverted through the caverns within the western embankment. The site is split into two halves with the northern section being used for chemical production and the southern section for armaments construction. The southern area has a lower density of buildings primarily in two rows running north south with the majority of the ground cover being rank grassland. This area has little natural tree and scrub regeneration and gives an open low habitat. The northern area is a combination of single storey storage and admin. buildings, with larger production buildings of a two storey height. As reported previously a percentage of these buildings have already been demolished. The habitat between the buildings is primarily rank grassland, with self generation of scrub, bramble and briar, with willow, birch and sycamore juvenile stock. Some planting is evident in the form of a row of spruce to one road way and a few mature ash, sycamore sited around the site. Some areas between the buildings are raised embankments, which are the result of previously leveled buildings with self generation growth covering. The site to its western edge rises to form an embankment up to pasture at a higher level beyond the site boundary. This embankment is primarily woodland, thinning at places. The present habitat and the juxta positioning of the buildings offers a range of varying habitats for bat foraging from scrub grassland, protected glades along roads between buildings, with the buildings offering sheltered belts for smaller low flying insects, partly open, partly culverted river system, the culverts however are large enough for bats to hawk through and the woodland edge to both sides of the site. The buildings as recorded offer potential for feeding perches, with several being recorded within the site. The northern site boundary is adjacent to a housing estate offering roost potential for Pipistrelle bats.

#### **Proposed Works and Affects:**

The further demolition of the buildings could effect the behaviour and the foraging of some of the smaller species over the site and the reduction of movement across the site from west to east and visa versa. The total loss of feeding perches would also have an effect on species such as Brown Long-eared and Lesser Horseshoe bats which commonly take larger prey back to feeding perches. The Long-eared bats will forage primarily through the woodland edges, gleaning flying insects, beetle, moth off the vegetation. Lesser Horseshoe bats similarly forage within woodland but also have been recorded foraging over rank grassland for small noctuid moth, lacewing and crane fly. Lesser Horseshoe roosts tend to be a combination of buildings with a primary site and satellite buildings, used as transitional roosts pre and post breeding together with specific feeding perches. These sites vary during the year depending on temperature, insect emergence and copulation. As previously noted a small breeding colony is sited approx 350 m to the east of the site boundary. Some records of Lhb. droppings have been recorded on site primarily in buildings 45, 50 and 55. These three buildings have also recorded Long eared feeding perches primarily beneath the internal concrete towers. Similar areas being recorded within the two metal

clad buildings which have now been demolished. The smaller single storey buildings have recorded occasional use by Pipistrelle as well as Long-eared and possible Myotis bats. It has been mainly the buildings that have dead end situations, inner rooms, limited openings and the existing ceiling light fittings and fixtures. The buildings that recorded this activity were buildings 25, 30, and 33 of the buildings proposed for demolition during this next phase and buildings 2, 69, 75/K5 and 85/K4 which have now been demolished. The removal of all of these buildings within the main chemical works area would effect the behaviour simply by the fact that there is at present use of these buildings by bats as feeding perches. The total loss of these sites within the area would greatly effect in our view their feeding range and efficiency for energy retention during the critical breeding season. The use of exposed feeding perches would reduce body temperature and increase energy use for warmth as apposed to fat production and milk for lactating females. Most of the insects taken back to feeding perches tend to be of the larger insect species - beetle, moth, crane fly etc. as they cannot be easily consumed on the wing. It is a matter of scale per quantity taken. A basic insect requirement for a lactating female Pipistrelle is approximately 3000 gnats per night. A large amount of activity is required to gain this quantity of insects, therefore fewer larger species requires less energy output for the same nutrition gained.

#### **Mitigation for Conservation Status:**

As noted it is in our view the total loss of all of the proposed buildings due to demolition will have an effect on the present conservation status for this species on the Valley Site. It is suggested that some buildings are retained and improved with good mitigation to balance the losses of other buildings. The present buildings offer two specific types - single storey small to medium buildings and large production buildings. Most of the buildings offer little potential or suitability for feeding perches and it is recommended that buildings 45, 50, 55 are retained as examples of the larger buildings. It is worth noting that these buildings are also being used by owls. The smaller single storey buildings including some of the buildings which have been demolished in phase 1 offer little potential in their present condition. It is proposed that some are retained and other buildings which have not been allocated for demolition are improved for use by bats as feeding perches. It is suggested that building 58 is retained as this building is already being used by bats. This building has had most of its original openings blocked with brickwork and the only present openings are removed air brick vents positioned just of the floor level and the single entrance door to the west of the site. Other buildings suggested for consideration are buildings 114 sited just beyond the mid site boundary between the chemical works and armament buildings, buildings 13, 40/41, 43, 44, 67 and 68. The later buildings are single storey buildings running parallel to the chemical works within the woodland embankment to the west of the site. These buildings have not as yet been surveyed as they were not included within the original brief, however they are similar to other buildings which have been surveyed which have recorded bat activity. During the demolition works it is suggested that as much of the existing self regenerated tree stock is maintained as the site constraints prevent planting on health and safety grounds. The management of this stock and the retention of the rank grassland should in time improve the habitat quality. A balance between open ground and tree cover needs to be addressed in a longer term strategy and that scrub management should be done in away as to provide cross site tree lines and scrub as linear corridors across the valley. The existing culverts could be improved by the introduction of artificial roosts fixed to the roof line of the culverts. The introduction of bat boxes within the suitable trees stock should also be considered.



## **Methods for Enhancement:**

### **Building 58.**

It is suggested that the ground floor vents/openings be blocked completely to the east side of the building and to the rear western room wall, with the ground floor vents to the west front room remaining open.

A door is to be installed to the main entrance, with either a plain letterbox size opening or part louver to the door. This is to prevent access by unauthorized personnel and to reduce air flow within the building.

A plain timber door with a letter box opening introduced from the entrance corridor to the front eastern room and the doorway from this room to the side corridor blocked up.

The rear passage way to be similarly blocked from the rear eastern room, with the main access to the rear passage from the rear western room. This passage way to have a plain timber door with a letter box opening formed in the door.

22 mm plywood baffle plates approx.. 450 high x 1200 mm long fixed on counter battens introduced. Approx. 2 per room mounted on the external walls.

Untreated timber battens to be introduced to the ceilings randomly spaced to form structures for feeding bats

The vegetation cleared to the south facing wall to allow max solar gain.

### **Buildings 45, 50 and 55.**

To improve roosting capability within the concrete roof towers, where possible the introduction of battens on the ceiling to provide roosting points and the introduction of similar wall baffles at high level to the tower walls, approx. 450 high x 1800 mm long, 8 in total per tower.

To reduce airflow within the building to block all external openings, by either personnel doors at ground level, blockwork or ply boarding to the openings.

Note: any Owl boxes to be within the opposite compartment to the concrete towers sited on the crane gantries.

### **Building 114**

This building has 4 entrance porches to the main building, 2 to the west elevation and two to the eastern elevation. It is proposed to convert these porches into feeding perches (at least two diagonally opposed). To block the inner doorway from the rear of the porch into the main area with blockwork.

To block the larger opening to the outside face and leaving single side door access

Introduce battens for roosting to the ceilings, battens running across the ceiling to its full width at 450 mm c/c's



Building 13, 40/44, 43 and 44

To enhance at least two of these buildings in similar ways to building 114, by blocking all openings bar a single primary entrance, and fixing ceiling battens and wall baffles.

Buildings 67 and 68

To enhance one of these buildings as above.

### **General Site Mitigation**

The introduction of artificial roosts fixed to the culvert ceilings if feasible. To fix bundled approx. 5 per bundle 50 mm clay drainage pipes bundled and strapped with SS straps and drill fix to the ceiling. One end of the pipes to be blocked with 2:1 mortar plug, nominally the outer facing end.

The introduction of Bat Boxes - 3 No. per tree east, south west facing. on approx. 20 selected tree sites with the site boundary, all with easy access for monitoring. A percentage of the boxes to be adjacent to the open water sections of the Alyn River.

### **Conclusion:**

The above proposals should enhance the sites potential for activity and usage by bats. The work to the buildings should improve the present roosting areas as recorded on site. The reduction in airflow and the introduction of the ceiling roost battens will greatly enhance the potential for use by bats. The siting of bat boxes will improve the sites capability for possible tree breeding roosts as at present very little of the existing tree stock is mature enough to offer these sites. The placing of the bat boxes adjacent to the river and the introduction of the tunnel roosts will improve the potential for bats in general but will also possibly attract Daubentons bats. It is considered that this approach will greatly improve the conservation status for bats on the Valley Site

11 February 2003