

<b>Committee(s):</b>	<b>Date(s):</b>
Epping Forest and Commons Committee	13 <sup>th</sup> November 2013
<b>Subject:</b> Outcome of Phase 2 trials of invisible fencing and virtual grids at Burnham Beeches.	<b>Public</b>
<b>Report of:</b> Superintendent of Burnham Beeches and Stoke Common	<b>For Decision</b>

### Summary

Approval for a phased and expanding trial of 'Invisible Fencing' and 'Virtual Cattle Grids' at Burnham Beeches was given by this committee in May 2012.

A report updating members of the 2012 trial of invisible fencing was provided in November 2012.

This latest report provides members with the results of the final, phased trials that took place in July - September 2013 and makes recommendations based on their findings.

#### **Recommendations**

- To delay the final delivery of conservation grazing across Burnham Beeches by one year to allow:
  - Equipment improvements and implications to be assessed.
  - Two options to be considered as mechanisms for final delivery.
- That the Superintendent provides a final recommendation report to this committee in July 2014.

### Main Report

#### **Background**

1. In May 2012 your Committee approved a report from the Superintendent that set out a phased and expanding trial of invisible fencing and virtual cattle grids at Burnham Beeches National Nature Reserve (NNR).
2. Each phase of the trials was designed to test the technical reliability of the invisible fencing equipment under a variety of conditions. The phasing also reflected an increased level of trust in the system as risks, such as traffic volume and boundary complexity, grew.

3. On successful completion of the trial it was proposed that up to 95% of the site would be grazed by livestock by 2014 or shortly thereafter.

### **Current Position**

4. The Trial programme has now been completed and the results summarised as follows: **(See Map 1)**

**a. 2012 – Trial 1.** This trial was conducted over 2 weeks during July 2012. The area grazed was approximately 10 ha on the west side of the Beeches. It did not include public roads although the invisible fence ran close by.

**b. 2012 – Trial 2.** This trial ran from September - October 2012. It enclosed approximately 15ha on the North West boundary of the Beeches. It included a 300m length of public road and the use of virtual cattle grids for the first time at the Beeches. An equipment failure occurred before the livestock were introduced to the invisible fence enclosure. This was resolved by replacing the signal generator.

**c. 2013 – Trial 3.** This trial ran for four weeks i.e. July – August 2013 and enclosed an area of 15ha on the north east boundary of the site. It included a 350m length of public road used heavily by commuters and the use of virtual cattle grids.

**d. 2013 – Trial 4 (repeat of Trial 1).** This trial ran for 4 weeks during September and October 2013. On one occasion an equipment failure occurred and the cattle were found calmly grazing outside of the invisible fence loop (within the Beeches) during the daily livestock checks.

### **Marketing and Consultation**

5. A marketing programme was delivered to prepare visitors and motorists for the trials. Two large plywood cows were placed on the green roof of the Information Point. Two large plywood cows were placed adjacent to the virtual grids on the public roads for each trial. Extensive use of the 'Grazing it's Amazing' logo and table talkers at the Burnham Beeches Café was also made.
6. A competition for local school children to design a companion for the cut out cow was held and the winning entry announced at the Lord Mayor's 2012 site visit.
7. Letters were sent informing neighbouring land owners of the trial that would shortly take place on their boundary. No comments were received.

### **Monitoring and risk management**

8. Every aspect of the trials was closely monitored to identify and reduce risks and to help to evolve future working practices. The monitoring programme included:
  - Regular checks of all equipment including loops, batteries, signal generators and livestock. These occurred at 00.00, 04.00, 08.00, 12.00, 16.00, 20.00 and 22.00 the first 5 days of each trial period. This

was reduce to checking between 08.00 and 21.00 for the remainder of each trial period

- Ensuring the availability of spare equipment and tools to resolve any equipment failure or identify problems with the livestock.
9. The risk to livestock and others using the public highway was managed by:
- Use of reflective leg bands on the cattle.
  - Use of additional highway signs warning of the presence of livestock.
  - Use of road markings to indicate the location of the 'virtual grids'.
  - Use of gateway fencing to indicate the start and finish points of the trial area.

### **Outcome of the trials.**

10. Generally the trials were a success with livestock behaving well and grazing safely within the invisible fence enclosures. Public reaction was very positive for each trial with no complaints received. The livestock checking procedures worked well and staff excelled themselves by committing to checks in the very early morning hours. The trials also helped to develop new and more effective techniques to bury the cable and test equipment vulnerability to damage and theft etc. The cattle were not disturbed by dogs despite this being an unusual area for dog walkers to come across livestock. No incidents were reported by road users or other visitors during the trial.
11. There was an equipment failure during Trial 2 in 2012 when an early morning 'pre use' check of the equipment showed that the radio signal was not circulating around the cable. The cows were not within the enclosure at the time of this malfunction. Several tests were carried out on both the equipment and battery and it was concluded that the signal generator was faulty. This was replaced with a second device that worked faultlessly throughout the trial.
12. There was an equipment failure during Trial 4 in 2013. This had the potential to allow cows out along the public roads. The cattle were collected in the livestock trailer by the duty rangers and taken to the livestock enclosure at Tower Wood. The equipment was checked the following morning and faulty equipment replaced. The cattle were reintroduced to the trial area within 48 hours.
13. Whilst there were 2 incidents over the 14 weeks of trials our checking procedures ensured that they were detected at a very early stage and in the case of the latter incident, the cattle remained within the Beeches and very close to the trial area.

### **Options.**

14. The two equipment failures mean that it remains important to continue to work closely with the team at Epping Forest and the manufacturer to seek improvements in reliability and design over the coming years. We are currently expecting a number of equipment improvements that will enhance reliability and reduce the time required to set up the underground cabling.
15. It is now thought best to await these improvements before expanding the use of invisible fencing across the site and this will delay completion of the installation

of cables and equipment by 12 months i.e. until December 2014. This would indicate a livestock release date of April 2015.

There are two main options following equipment improvements:

**Option 1(see map)**

16. To reduce the consequences of equipment failure and risk of cattle escape by exploring the possibility of secondary, 'failsafe' loops to prevent cattle wandering away from the site. This would require the use of neighbouring land and perhaps double the number of virtual grids and loops to monitor and maintain each day. This option would add significant expense to the project but is worth exploring with local landowners and the Highway Authority.

**Option 2(see map)**

17. The risk of cattle egress along the public roads could be greatly minimised by excluding the majority of roads from the grazed area. This would reduce the area grazed to about 80% of the site but has a number of significant advantages over Option 1 i.e.

- Only one loop in use at a time (option 1 would have up to 22 loops in operation at all times) thereby significantly reducing the impact on staff resources
- Reduces risk of harm to cattle and road users
- Significantly cheaper to install and maintain
- Requires fewer livestock and reduces overwintering issues
- Gives greater control over grazing to create the desired habitats
- Less impact on visitors
- Provides alternative areas for livestock should a loop malfunction
- Can be expanded incrementally across the site thus spreading costs efficiently over two or more financial years if required.

**Proposals**

18. Amend the implementation date to expand conservation grazing across Burnham Beeches to April 2015 to reflect the knowledge gained from the recent trials
19. Cattle and ponies to be used to graze the existing trial areas during 2014 to test improvements in equipment function and reliability
20. Use this period to determine which of the two options outlined should be used as the final delivery mechanism
21. Report these considerations to this committee in July 2014 and install invisible fencing according to the final approved option.

**Financial and Risk Implications**

22. The cost of proceeding with the options outlined above, is as follows:

**Option 1**

- Trials 1+2 (2012) £5,000
- Trial 3. (2013) £5,000

• Expansion across the site (2014/15). Including additional 'fail safe' loops	£30,000
• Purchase of livestock – 2015/18	£10,000
<b>Total</b>	<b><u>£50,000</u></b>

## Option 2

• Trials 1+2 (2012)	£5,000
• Trial 3. (2013)	£5,000
• Expansion across the site (2014/15).	£15,000
• Purchase of livestock – 2015/18	£5,000
<b>Total</b>	<b><u>£30,000</u></b>

23. The original estimate for this project was £60,000 (May 2012). This estimate has now been significantly reduced to reflect adjustments to the outcome of the trials and in particular a reassessment (reduction) of the number of animals needed to graze the whole site.
24. The Superintendent will apply for 80% capital funding from Natural England's Higher Level Stewardship (HLS) scheme to fund the cost of installing the invisible fencing and virtual grids. The remaining 20% will be provided from local risk budgets. Delivery remains possible without external funding if necessary.
25. The Superintendent will continue to explore a number of livestock overwintering options.

## Legal Implications

26. The installation of the Boviguard invisible fence system required the City of London Corporation to obtain a street works licence from the local highway authority under the New Roads and Street Works Act 1991. This was a largely administrative cost with some legal costs payable to the grantor of the licence. The licence for each highway location is required to enable the laying of cable apparatus in the public highway.
27. An agreement between the City of London and Buckinghamshire County Council has been entered into in respect of the road markings installed in connection with the "virtual grids" and following consultation with relevant Buckinghamshire County Council officers about the proposals.

## Property Implications

28. The Superintendent remains responsible for ensuring that the implementation and use of the invisible fencing along with the subsequent animal grazing continues to be appropriate for the conservation of Burnham Beeches. In addition the operation of the trial should take place with minimal impact on any existing infrastructure or buildings located at the Beeches.

## HR Implications

29. The expansion of the grazing herd (estimated at between 10 and 15 livestock units when up to 95% of the Beeches is grazed) will alter the emphasis of this

element of our work and require more staff time than presently available to ensure its effective management.

30. The Superintendent has liaised closely with the Director of Open Spaces and the Human Resources Department to accommodate this change by minor adjustments to the current staff structure and individual responsibilities.

### **Strategic Implications**

31. The production of the management plan supports the 'Protect, promote and enhance the environment' and 'Support Communities' elements of the 'City Together Strategy'.
32. The plan to expand conservation grazing across Burnham Beeches is a key project within the Departmental Business plan.
33. The provision of conservation grazing across Burnham Beeches will assist the City to:

#### Economic

- Prepare for and adapt to the likely impacts of climate change.
- Support local workforces, SME's and community activities.

#### Environment

- Encourage best environmental practice in service delivery by the City Corporation, its stakeholders and contractors.
- Encourage walking, cycling and the use of public transport.
- Improve or create habitats for wildlife.

#### Social

- Enhance and encourage preventative health services, activities and education.
- Consult, inform and engage the community in decision making.
- Reduce crime and fear of crime.

34. An Equality Impact Assessment has been produced for this project and has concluded 'no negative' impacts to the relevant groups.

### **Conclusion**

35. The invisible fencing trials have been conducted without major incident albeit two equipment failures have been recorded during the trials
36. The manufacturers of Boviguard invisible fencing are aim to provide technical improvements to the equipment in time for the 2014 grazing season.
37. The Superintendent proposes to test the updated equipment and explore two further delivery options.
38. Costs for existing project delivery are likely to be significantly less than originally anticipated in the May 2012 report.
39. The Superintendent will make a final recommendation to this committee in July 2014 so that the expanded conservation grazing scheme at Burnham Beeches can be delivered by April 2015.

**Background Papers:**

- Report to Epping Forest and Commons Committee – *A 5 year trial of 'Invisible Fencing' at Burnham Beeches. Expansion of the Conservation Grazing Scheme at Burnham Beeches.* May 2012.
- Report to Epping Forest and Commons Committee - *Outcome of the Phase 1 trial of Invisible fencing/virtual grid trials at Burnham Beeches.* Nov 2012.

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