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Department
for Environment
Food & Rural Affairs

Improving honey bee health

Proposed changes to managing and controlling pests and diseases

January 2013

Llywodraeth Cymru
Welsh Government

This document/publication is also available on our website at:

http://www.defra.gov.uk/consult/open/

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Scope of the consultation

Topic of this consultation:	Proposals on managing and controlling honey bee pest and disease risks in the future so that the optimum policies and interventions are in place, priorities for future collective action by government and beekeepers (bee farmers and hobby beekeepers) are clear, and we are making best use of resources available for this programme to optimise honey bee health (by minimising impacts of pests and diseases). Specifically, to sustain a healthy honey bee population for pollination and the production of honey. These proposals have developed in consultation with bee farmer and hobby beekeeper representatives.
Scope of this consultation:	The purpose of this consultation is to seek views on proposed changes in England and Wales to managing and controlling American and European Foulbrood, *Varroa* and *Nosema* which are already present in the UK and exotic pests such as Small hive beetle, *Tropilaelaps* mites and the Asian hornet. A number of specific questions are posed throughout the paper but other comments and suggestions are welcome. For ease of response, the complete list of questions can be found at Annex 2.
Geographical scope:	England and Wales
Draft impact assessment	We have prepared a draft consultation impact assessment (see separate document) although not strictly necessary as the proposed change to policies will not lead to a change in the overall level of regulatory activity. We would welcome comments and any additional data on the draft impact assessment.

Basic information:

To:	Bee farmers, hobby beekeepers and others with an interest in the health of honey bees and the pollination services they provide e.g., farmers and growers.
Bodies responsible for the consultation	Joint consultation by Defra and the Welsh Government

Duration	10 January 2013- 9 March 2013
Enquiries:	Please contact the Honey Bee Health Policy Team: beehealthinfo@defra.gsi.gov.uk
How to respond	Please send your response to: Honey Bee Health Policy Team, Defra, Rm 10GA07, Sand Hutton, York YO41 1LZ E-mail: beehealthinfo@defra.gsi.gov.uk
Additional ways to become involved	In addition to this written consultation to interested parties, Defra and WG may hold a workshop(s) for stakeholders towards the end of the consultation period. A decision to hold a workshop(s) will be subject to issues and questions emerging from the consultation.

Contents

Annexes

Section 1 – Introduction and purpose of this consultation

1. This consultation is seeking your views on proposed changes to managing and controlling pest and disease risks to honey bees in England and Wales including American and European Foulbrood (AFB and EFB), *Varroa* and *Nosema* which are already present in the UK and exotic[1] pests such as Small hive beetle (SHB), *Tropilaelaps* mites and the Asian hornet[2].

2. The proposals have emerged from a review of policies on honey bee pests and diseases undertaken by the Food and Environment Research Agency (Fera), on behalf of Defra and Welsh Government (WG), with the National Bee Unit (NBU), representatives from bee farmer and hobby beekeeper associations, an independent scientist and others over 12 months from July 2011. Fera acknowledges and is grateful to the review group for their input and advice which has been taken into account in developing the proposals on future policy set out in this document. Annex 1 provides further details on the policy review including background, members of the review group, terms of reference and a brief summary of their discussions and conclusions.

3. The term 'beekeeper' and 'beekeeping' is used throughout this document and refers to bee farmers and hobby beekeepers. Distinctions are made in the text where necessary. The term 'beekeeping association(s)' is also used throughout the document and refers to the Bee Farmers Association (BFA), the British Beekeepers Association (BBKA) (nationally and locally) and to others such as the National Diploma of Beekeeping and local associations.

4. The focus of the review was on honey bee pest and disease control policies including beekeeping practices and husbandry, and on making best use of current resources available to optimise honey bee health (reduce colony losses) for pollination and honey production. However, Defra, WG, Fera and the review group recognised that many other factors influence honey bee health (and the health of other insect pollinators), such as having access to adequate nutrition (pollen and nectar) from a diverse range of floral sources from spring to autumn, environmental impacts (and the weather). These factors were noted but not discussed in any details during the review[3].

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[1] Exotic pests and diseases are those which are not present in the UK but could spread here from other countries by many pathways such as trade. If they were to arrive in the UK and spread they could have deleterious impacts on honey bee colonies.

[2] AFB and EFB are notifiable diseases and SHB and *Tropilaelaps* mites are notifiable pests (Bee Diseases and Pests Control (England) Order 2006). *Varroa, Nosema* and the Asian hornet are not notifiable pests.

[3] Policies which influence these other factors are covered by other programmes in government such as agri-environment schemes which support nectar-rich plants.

5. This document sets out three proposals considered during the review. These are:

   i. **refine and build on current policies with a renewed commitment to collective action by government, beekeepers and beekeeping associations (option 1);**

   ii. maintain current policies (no change) (option 2); and,

   iii. do the minimum required to meet current EU obligations (which would include removing EFB from disease control programmes in England and Wales, stopping registration of beekeepers on BeeBase and the NBU's targeted surveillance programme (option 3).

6. Defra and WG are recommending **option 1 above - refine and build on current policies with a renewed commitment to collective action by government, beekeepers and beekeeping associations** to manage and reduce serious pest and disease risks and colony losses. This option sets the future direction for policies and the NBU's implementation programme and includes the following themes:

   i. **enabling beekeepers and improving their self-reliance**, for example by sharing data and analysis on pest and disease risks at local and national levels and by improving the planning, coordination and delivery of education and training;

   ii. **tackling the causes of problems (not just symptoms**), for example improving the response by government, supported by beekeeping associations, to recurrent outbreaks of EFB;

   iii. **formalising and extending better regulation approaches for the control of AFB and EFB**, specifically by recognising and rewarding good practice (by reducing inspection burdens) which the NBU has in place for some commercial and semi-commercial beekeepers; and,

   iv. **broadening the focus of government's role to cover other pests and diseases (**not just notifiable foulbroods) including re-focusing on *Varroa* management (campaigns and training) to reduce colony losses; early detection of exotic pests; and expanding management options for exotic pests, particularly SHB.

7. The recommended proposal is intended to help enable beekeepers given their crucial role in managing pests and disease risks and in sustaining the health and welfare of the nation's honey bees for pollination and honey production. The commitment to collective action recognises the important contribution of local and national beekeeping associations in raising the profile pest and disease management by beekeepers, including maintaining good disease prevention (biosecurity) practices at apiary(ies) to benefit their bees and their neighbours'. Defra and WG recognise that many

beekeepers and associations already take their responsibilities seriously in this regard and contribute to improving honey bee health.

8. The recommended proposal sets the future direction for pest and disease control. It would operate within the current regulatory framework and would not result in a change to the **overall** level of regulatory activity. The aim would be to implement the proposed changes within current resources over the next 3 to 5 years, although timescales may be affected by possible future pressures on resources.

9. We will be interested to receive your views on the proposals and particularly your replies to the questions set out within this consultation paper (and also set out in one place in Annex 2). We are also interested in views on the draft preliminary Impact Assessment. Defra and the WG will consider all responses to arrive at conclusions on future policy on honey bee pest and disease risks.

Guide to the rest of this document and supporting material

10. **Section 2** sets out an overview of honey bee health status and the review group's assessment of the effectiveness of current pest and disease control policies. **Section 3** sets out the recommended changes to current policies for each of the pests and diseases. **Section 4** sets out alternative proposals considered by the review group: maintain current policies (no change) or do the minimum required to meet EU obligations (which would include removing EFB from disease control programmes in England and Wales, stopping the NBU's targeted surveillance programme and registration of beekeepers on BeeBase).

11. Additional annexes in this document are:

    i. Annex 3 - further background on pest and disease risks to honey bee health and current policies to address these risks including the government's current objectives for the programme; current policies on each of the pests and diseases; and the NBU's delivery programme.

    ii. Annex 4 – further details on proposed additional measures on AFB and EFB.

    iii. Annex 5 – current surveillance activities and proposed changes.

    iv. Annex 6 – other relevant issues, e.g., import controls, beekeeper registration

    v. Annex 7 – list of additional and separate documents which set out additional background and evidence which helped to inform the review group including evidence profiles on AFB, EFB, *Varroa* and *Nosema.* These profiles include new data and analysis from the Defra-commissioned random apiary survey (RAS) which was undertaken by the NBU from 2009 to 2011. A brief profile on exotic threats includes links to risk assessments and contingency/ response plans on SHB, *Tropilaelaps* mites and the Asian hornet. In addition,

the review group also developed a prioritisation tool to help inform its consideration of how to make best use of available resources to optimise honey bee health (by minimising impacts of pests and diseases).

Section 2 – Honey bee health status and effectiveness of current policies

Current health status

12. Current policies and programme implemented by the NBU have been effective leading to a significantly reduced incidence of AFB and EFB (the two endemic notifiable diseases) since the 1940s down to very low current levels in England and Wales (0.1 to 2% of colonies inspected) as shown by the NBU's inspection data and confirmed by the Defra- commissioned random apiary survey (RAS):

    i. AFB disease occurs rarely with no obvious pattern or geographical distribution of infection over time, except at certain risk points (further details are in the AFB evidence profile – see Annex 7). The inspection data highlighted a limited number of counties in England and Wales with persistent outbreaks in apiaries over several years, although the infection was usually cleared up within two to three years. The RAS data showed a similar rare occurrence of the disease (1 in 400 apiaries or 0.25%) and also of the pathogen (0.25% of apiaries in the first year and 0.27% in the second year). The RAS did not show any significant correlation between AFB and apiary ownership by bee farmers or hobby beekeepers.

    ii. the prevalence of EFB disease is higher than for AFB but very low overall with a mixed geographical distribution. There are fewer cases in the north of England than in the south and east and some well-established entrenched areas with recurrent outbreaks as well as other areas where cases are sporadic. It is absent from the northernmost counties of England. The RAS confirmed this very low prevalence for both the disease (1 in 80 apiaries or 1.2%) and the pathogen (1.6% of apiaries in first year of survey and 1.3% in the second year) and a similar geographical distribution for the disease and pathogen. The RAS showed that apiaries owned by bee farmers were more likely to have EFB than those owned by hobby beekeepers.

13. Further data on disease trends and RAS results are in the AFB and EFB evidence profiles (listed at Annex 7).

14. In contrast to the low levels of losses from AFB and EFB, colony losses over the winter of some 15-20% have been reported over recent years with up to 30% losses in 2007/08 representing significant losses to beekeepers and pollination services. High levels of winter losses are assessed by the NBU and the review group to be mainly

caused by poor management of the *Varroa* mite by beekeepers even though advice on effective management strategies exists. The RAS confirmed that the *Varroa* mite and associated viruses, particularly Deformed wing virus, are widespread with some regional differences in the impacts from *Varroa* (varroosis); for example, nearly 35% of the apiaries visited in NBU's western region had varroosis compared with 10% or less in the north eastern region and in Wales.

15. The RAS showed the viruses (Kashmir Bee Virus and Israeli Acute Paralysis Virus) linked to Colony Collapse Disorder in the United States to be at very low levels, and none of the apiaries in the RAS were suffering from this condition.

16. The RAS also confirmed that many apiaries are infected with both species of *Nosema* and that exotic pests are currently absent.

17. The evidence profiles on *Varroa*, *Nosema* and exotic pests provide further data and analysis on these pests and diseases (see Annex 7).

18. Overall, at present honey bee colonies in England and Wales are in good health in relation to impacts from the serious diseases AFB and EFB. In addition exotic pests are absent. However, the *Varroa* mite and associated viruses, particularly Deformed wing, virus are widespread and contribute to significant losses of colonies in some cases, including over-winter losses, particularly where there is poor management of this pest by beekeepers.

Effectiveness of current policies and programmes on honey bee pests and diseases and the case for change

19. Taking into account this overview of pests and diseases in England and Wales and the good progress made in reducing notifiable diseases, as well as inspection data and insights from bee inspectors and beekeepers, the review group considered each of the pest and disease risks in turn to identify what worked well and what could be improved. A brief summary of their discussions and views on current policies is given in Annex 3 (with further details in the evidence profiles for the various pests and diseases – listed in Annex 7).

20. In the light of the evidence and discussions, the review group concluded that overall the government's policies had been effective in reducing notifiable disease risks and preparing for exotic risks. However, AFB and EFB continue to absorb considerable resource, whilst *Varroa*, a non-statutory pest, was currently widespread and poorly managed by many beekeepers. The group considered there was scope to update and re-shape policies so that they tackled the causes of problems (and not just symptoms); placed greater emphasis on enabling beekeepers; tailored the government's response to reflect beekeepers' disease history, experience and competence including extending better regulation approaches; and broadening the government's role to improve beekeepers' management of *Varroa* and to ensure the early detection of exotic pests.

21. The review group recognised that, whilst the role of government was important, the success of pest and disease control policies and the health of the honey bees in England and Wales rely crucially on beekeepers with support from their associations. The review group acknowledged that, although not a legal requirement, beekeepers have a duty of care for the health and welfare of their bees, including the management of pests and diseases. This includes maintaining good disease prevention (biosecurity) practices at their apiary(ies) to reduce risks to their own bees and also risks of disease spread to other apiaries nearby and/or further afield. Beekeepers also have a legal obligation to report any suspicion of notifiable pests or diseases to the NBU.

22. Beekeeping associations at national and at local level contribute to honey bee health by supporting beekeepers in many ways. For example by providing appropriate education and information (including via joint initiatives with the NBU) on managing pest and disease risks as well as accurate, current and impartial advice; by encouraging beekeepers, where appropriate, to improve practices and to aspire to higher standards of beekeeping, including their disease recognition and management skills; and in some cases by developing breeding programmes and/or advice to help beekeepers produce and maintain quality stock.

23. The review group also recognised that the beekeeping sector mainly comprises hobby beekeepers (in terms of numbers of beekeepers[4]) and as such does not (currently) have the capacity to adequately address threats to honey bee health either individually or collectively (in economic terms, this is a good example of market failure).

24. In the light of the review group's advice, Defra and WG concluded that in order to optimise honey bee health outcomes and pollination (by reducing colony losses), the original objective[5] of the honey bee health programme should be broadened to put more focus on other pests and diseases, particularly *Varroa*, in addition to those which are notifiable and to acknowledge the important role of beekeepers. As follows:

    - To protect stocks of honey bees needed for the pollination of agricultural and horticultural crops, as well as wild plants, and for the production of honey and wax; by

    - Preventing the introduction of serious exotic bee pests and diseases into the country, and limiting the spread and impact of serious pests and diseases that are already present, including by enabling bee farmers and

[4] There are around 28,000 beekeepers in England and Wales managing around 138,000 colonies (source NBU's BeeBase), although this is likely to be an underestimate. Around 300 are bee farmers who rely on beekeeping for their livelihood, owning and managing 40% or more of the colonies and the main producers of honey sold in bulk as well as the main providers of commercial pollination services. The rest are hobby beekeepers.

[5] set out in Annex 3 of this document

hobby beekeepers to be self-reliant in minimising pest and disease risks and in keeping pest and disease levels low.

Questions on the revised objective for the honey bee health programme

Q 1. Do you agree with the proposed revision to the objective for the overall programme – see para 24 in this section? If yes, please explain why.

Q 2. If not, please explain why.

Section 3 – Recommended changes to current policies

25. This section sets out Defra and WG's recommended changes to current policies for each pest and disease risk reflecting the advice from the review group. It includes objectives/ strategic goals shared by government and beekeepers for each pest and disease, the scope of the proposed changes and the case for and against. Specifically AFB and EFB, *Varroa*, *Nosema* which are already present in the UK and exotic pests SHB, *Tropilaelaps* and the Asian hornet. Other potential exotic pests are also considered. The section also includes the results from the prioritisation exercise and highlights the potential for additional regulatory controls on beekeepers and their suppliers in emerging proposals from the European Commission.

American and European Foulbrood (AFB and EFB)

26. **Objectives/strategic goals shared by government and beekeepers** - to prevent spread to new areas, reduce incidence in areas where it is already established, and in the longer term eradicate from areas as/if this becomes feasible (regionally).

27. **Legal status**: notifiable diseases.

28. **Intended outcomes from updated policy on AFB and EFB**:

    i. Low incidence of AFB and EFB (new cases each year);

    ii. Avoidance of losses by beekeepers (and reduced costs to them from replacing colonies lost from disease);

    iii. (in the longer term) reduced costs to tax payers (for AFB and EFB surveillance and control) with opportunities for reallocation of resources to other bee health priorities;Increased appreciation, value and use of disease prevention (biosecurity and barrier management[6]) by beekeepers;

[6] Barrier management – as a minimum this entails continuous implementation of simple biosecurity measures: regular close examination of brood; yearly replacement of brood frames, or shaking of complete colonies where necessary; scorching of boxes by blowlamp; return of supers to same apiaries; removal of

iv. Increased appreciation by beekeepers of the importance of AFB and EFB and their role in effective control of these diseases;

v. (longer term, if in-field diagnostics can be developed particularly to confirm presence of the EFB pathogen) evidence of beekeepers using these tools and taking action to reduce risk of symptoms/outbreak;

vi. No outbreaks of AFB or EFB associated with sale of bees, particularly starter colonies (nucleus colonies);

vii. No outbreaks of AFB associated with honey packing plants (where AFB risks may be present due to spores in imported honey).

29. **Scope of changes** – (building on current policies) government and beekeeping associations work together to deliver guidance, advice and training on AFB and EFB prevention measures (e.g., biosecurity and barrier management), good husbandry and disease recognition, taking into account evidence on how best to address problems of poor uptake of good practice by beekeepers. National and local beekeeping associations would raise the profile of AFB and EFB and beekeepers' responsibilities to the health and welfare of their bees and their neighbours'.

30. Better regulation approaches of recognising and rewarding good practice would be formalised and extended mainly for commercial and semi-commercial beekeepers subject to the bee inspectors' case-by-case assessment of the competence and ability of these beekeepers to manage and control AFB and EFB outbreaks. Disease history will also be an important factor in this assessment given that the RAS results showed that professional beekeepers were more likely to have EFB than amateur beekeepers.

31. As a result, some beekeepers may be awarded greater autonomy (leading to reduced inspection burdens) to manage and control AFB and EFB outbreaks reflecting their disease history, experience and competence. These beekeepers would continue to follow the requirements of disease control legislation[7] including notification of suspect cases to the bee inspector or NBU and compliance with destruction/treatment requirements and movement restrictions in statutory notices which would continue to be issued on confirmation of disease. The bee inspector may still visit these beekeepers' apiaries to undertake spot checks of disease control measures and/or full inspection of colonies as required. Achieving this status may provide an incentive for

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EFB and AFB infected colonies to isolation site(s) under licence; and quarantine of any incoming stock for assessment away from other colonies. Other aspects include clear and permanent identification of hives and their components and ensuring that all apiary workers have a clear understanding of these measures and their importance in reducing pest and disease risks.

[7] The Bee Diseases and Pests Control (England) Order 2006 and similar legislation in Wales.

some beekeepers to improve their disease management practices in order to reduce inspection burdens.

32. As well as recognising and rewarding good practice, the other proposed additional measures are:

    i. a more formalised approach by the NBU, assisted by the associations to raise beekeepers' awareness about AFB and EFB outbreaks and risks including locally, regionally and nationally;

    ii. an updated EFB control policy (with presumption of destruction as main response, although uncertainties about the effectiveness of destruction on recurrence of EFB cases will be investigated by the NBU before finalising future EFB control policy);

    iii. target beekeepers with recurrent EFB outbreaks to improve their management of this disease and to eliminate/reduce its recurrence and incidence; and,

    iv. improve the ability of beekeepers to detect and manage AFB and EFB, including the causative agents/pathogens.

33. Further details on these additional measures for the foulbroods are in Annex 4.

34. The success of these changes depends on cooperation from beekeepers to take greater responsibility for the health of their colonies and their willingness to work in partnership with government and each other to reduce and manage disease risks. In particular, the attitude and perception of a small number of beekeepers (leading to poor disease prevention practices in their apiaries, disease spread to neighbouring beekeepers' apiaries and high costs to the public purse – see cost impacts on page 3 of EFB evidence profile) was identified by the review group as a significant barrier which needs to be addressed to secure effective control of EFB in some areas.

35. **When to implement**. Phased implementation from 2013; dates to be confirmed.

36. **Benefits** - improving beekeepers' awareness about AFB and EFB and their role in managing these disease will help towards government's overall goal of enabling beekeepers to be self-reliant in minimising disease risks while at the same time keeping disease levels low. Recognising and rewarding good practice is consistent with government's aims of reducing inspection burdens on those who have a strong track record of reliability and adherence to standards. Once phased in and operational, NBU and inspection resources would be available for other bee health priorities and the increased demands on its services from the growing number of new beekeepers.

37. **Drawbacks** – It is possible that AFB and EFB cases may increase as a result of awarding greater autonomy to some beekeepers, although mitigated by NBU visits to undertake spot checks of apiaries in this scheme. In relation to EFB, any increase in

cases from greater autonomy to some beekeepers may be offset by reductions in cases from more effective control of recurrent outbreaks. It is possible that some beekeepers given greater autonomy for EFB controls could resort to using antibiotics (under veterinary prescription) which may lead to further spread of EFB and could mask AFB in the apiary.

38. Subject to progress with reducing both recurrent EFB outbreaks and associated costs to the public purse from such outbreaks, Defra and WG may consider at some stage in the future introducing new sanctions for beekeepers' poor risk management and/or lack of cooperation such as recouping the inspection costs for these apiaries and requiring the beekeepers to pay for, and attend compulsory barrier management training courses. Whether to introduce such new sanctions would be subject to further analysis and a separate consultation and would also require new legislation.

Varroa

39. **Objectives/strategic goals shared by government and beekeepers** - to improve effective management of *Varroa* by all beekeepers to minimise impacts on colonies particularly colony losses.

40. **Legal status**: none i.e., not a notifiable pest of honey bees.

41. **Intended outcomes from updated policy on *Varroa***:

    i. Renewed commitment by government, working with beekeeping associations, to improve beekeepers' management of *Varroa*;

    ii. Reduced colony losses and associated costs to beekeepers;

    iii. Effective use of authorised treatments; and

    iv. No veterinary medicines or illegal residues in honey.

42. **Scope**: (building on current policies) government and beekeepers working together on a package of additional measures, including a renewed commitment by government, which would raise the profile and priority of *Varroa* and improve its management by beekeepers leading to reduced colony losses. This includes a renewed commitment by government:

    i. updated guidance (NBU and associations) taking into account evidence on beekeepers' behaviour including:

        - agreed key messages about effective *Varroa* management and practical solutions for beekeepers;

        - welfare code on keeping honey bees;

- agreed rolling coordinated training programme over next (3) years including events led by the NBU and beekeeping association events which are extended to non-members. It is proposed that attendees would pay a contribution [8] to help government cover the costs of NBU events and lectures. The proposed renewed commitment by government to improve beekeepers' management of *Varroa* would gain additional impetus and impact from extra resources for the NBU which could be funded from training revenue.

ii. 'train the trainer' courses to improve understanding and competence of trainers (including generic training skills and specific *Varroa* management skills building on and encouraging uptake of courses for beekeeper trainers supported by the Healthy Bees Plan, such as City and Guilds 6302 Preparing to Teach in the Lifelong Learning Sector, and short courses to improve trainers' beekeeping knowledge and skills run by the National Diploma in Beekeeping);

iii. practical, apiary-based training as far as practicable and as resources allow;

iv. raise profile of *Varroa* and beekeepers' role in its management (through multiple channels);

v. review effectiveness of treatments and management practices and document results, as resources allow; and,

vi. develop evidence for, and publicise integrated pest management approaches, as resources allow.

43. **When to implement:** Phased implementation from 2013; dates to be confirmed.

44. **Benefits**: the main benefit would be reduced colony losses and associated costs to beekeepers, particularly hobby beekeepers. In addition, there would be more reliance on authorised treatments. Revenue from training events would provide training resources for the NBU to help deliver their renewed focus on *Varroa* training which would gain additional impetus and impact to improve beekeepers' management of *Varroa*.

[8] evidence indicates that beekeepers are willing to pay for training events: (i) beekeepers who attended free pilot NBU training events on *Varroa* management (in winter 2009) indicated that they would be willing to pay for future events; (ii) advertisements in the beekeeping press show that training events provided by organisations in the private sector are charging rates of £50 or more per student per day. In addition, NBU staff and its bee inspectors are occasionally offered fees from beekeeping associations for lectures at beekeeper training events and currently turn them down; and advice from some beekeepers suggests that free NBU training downgrades the importance of pest and disease skills, possibly exacerbating poor beekeeping standards.

45. **Drawbacks**: Success depends on effective communication with beekeepers to help them manage this pest. The review group felt frustrated that there were many sources of advice on *Varroa* management, and yet there was poor uptake of this advice. Any additional training and communication activities, such a developing and promoting a welfare message, would need to be carefully planned and based on evidence on what would work to ensure uptake by beekeepers.

Nosema (apis and ceranae)

46. **Objectives/strategic goals shared by government and beekeepers** - To improve effective management of *Nosema* by all beekeepers to minimise impacts on colonies.

47. **Legal status**: none.

48. **Intended outcomes from updated policy on *Nosema*** - reduced colony losses and associated costs to beekeepers (although these losses are considered to be negligible by most beekeepers. The results from the RAS reinforced this view.

49. **Scope**: (building on current policy) government and beekeepers working together to develop and implement refreshed and updated guidance, including on alternative treatments (if any become available), and advice and training on *Nosema* management. Elimination of susceptible colonies and sourcing resistant queens were important practical solutions for beekeepers (as identified by the review group).

50. **When to implement**: Phased implementation from 2013; dates to be confirmed.

51. **Benefits:** the main benefit would be reduced colony losses and associated costs to beekeepers.

52. **Drawbacks:** Success depends on effective communication with beekeepers to encourage them to implement the necessary management measures to reduce the impacts of this pest. Success also depends on availability of, and access to *Nosema* resistant queens.

Small hive beetle (SHB)

53. **Objectives/strategic goals shared by government and beekeepers** - to prevent establishment and if this is no longer possible and this pest becomes established, minimise impacts on colonies.

54. **Legal status:** notifiable.

55. **Intended outcomes for updated policy on SHB**:

    i. optimise chances of early detection;

ii. in the event of arrival, (effective implementation of the contingency plan to) eradicate and prevent establishment;

iii. clear rationale for moving from eradication policy to a containment policy, (including informing beekeepers);

iv. if established, beekeepers manage this pest effectively to minimise impacts on their colonies.

56. **Scope**: (building on current policy) government and beekeepers working together on a package of additional measures to increase the chances of early detection and eradication, and if unsuccessful in preventing establishment, to provide robust advice to beekeepers on effective management:

    i. Step up awareness raising so beekeepers (and others) are able to identify and detect this pest leading to early notification of arrival;

    ii. Expand network of sentinel apiaries at risk points and also at other sites to increase likelihood of detecting introductions at non-risk sites;

    iii. Expand exotic pest surveys;

    iv. Raise beekeepers' awareness of number of incursions/ outbreaks (trigger points or thresholds) which are likely to guide decisions about moving from an eradication policy to longer term management/containment;

    v. Exercises to test contingency plan including training of beekeepers who would assist the response (disease liaison contacts);

    vi. Develop and/or clarify additional treatment and management options for eradication and containment;

    vii. Provide robust advice to beekeepers on how to manage this pest if it becomes established, taking into account evidence on how best to influence beekeepers' behaviour.

57. **When to implement**: Phased implementation from 2013; dates to be confirmed.

58. **Benefits:** the main benefit would be increased likelihood of early detection (from increased surveillance) and from improved ability of beekeepers to identify this pest and notify suspect cases to government (as required by the Bee Diseases and Pests Control (England) Order 2006). Early detection would increase the likelihood of an effective response to prevent establishment. In the event of establishment, beekeepers would have a range of tools to help them manage this pest.

59. **Drawbacks**: Success depends on cooperation from beekeepers to expand surveillance activities. Even with greater surveillance, improved beekeeper awareness to ensure

early detection and NBU/association preparedness to deal with this pest, on arrival this pest is likely to spread rapidly and become established. Hence, the importance of developing/clarifying treatment and management options for containment.

Tropilaelaps mites

60. **Objectives/strategic goals shared by government and beekeepers** - to prevent establishment and if this is no longer possible and this pest becomes established, minimise impacts on colonies.

61. **Legal status**: notifiable.

62. **Intended outcomes for updated policy on *Tropilaelaps* mites**:

    i. optimise chances of early detection;

    ii. in the event of arrival, (effective implementation of the contingency plan to) eradicate and prevent establishment;

    iii. clear rationale for moving from eradication policy to a containment policy, including informing beekeepers;

    iv. if established, beekeepers manage this pest effectively to minimise impacts on their colonies (although this would be subject to ensuring practical advice was available to beekeepers on treatments and husbandry methods).

63. **Scope**: (building on current policy) government and beekeepers working together to increase beekeepers' awareness of this pest and to test contingency plan through exercises including training of beekeepers who would assist the response (disease liaison contacts).

64. **When to implement**: From 2013.

65. **Benefits**: the main benefit would be an increased likelihood of early detection and an effective response to prevent establishment, including an improved ability of beekeepers to identify this pest and notify suspect cases to government (as required by the Bee Diseases and Pests Control (England) Order 2006).

66. **Drawbacks**: Success depends on cooperation from beekeepers to take greater responsibility for the health of their colonies and their willingness to work in partnership with government to ensure early detection of this pest.

The Asian hornet

67. **Objectives/strategic goals shared by government and beekeepers** - To prevent establishment and if this is no longer possible and this pest becomes established, minimise impacts on colonies.

68. **Legal status** : none i.e., not a notifiable pest of honey bees.

69. **Intended outcomes of policy on the Asian hornet**:

    i. optimise chances of early detection;

    ii. in the event of arrival, (effective implementation of the response plan to) eradicate and prevent establishment (if possible);

    iii. Clear rationale for moving from eradication policy to a containment policy, (including informing beekeepers);

    iv. if established, beekeepers manage their colonies effectively to minimise impacts.

70. **Scope:** (building on current policy) government and beekeepers working together to increase likelihood of early detection and eradication, and if required to manage this pest effectively to reduce impacts on colonies:

    i. Step up awareness raising;

    ii. Expand network of sentinel apiaries at risk points

    iii. Exercises to test response plan

    iv. Provide robust advice to beekeepers (and other stakeholders) on how to manage this pest if it becomes established, taking into account evidence on beekeepers' behaviour.

71. **When to implement**: From 2013.

72. **Benefits:** the main benefit would be an increased likelihood of early detection and an effective response to prevent establishment, including an improved ability of beekeepers to identify and report this pest.

73. **Drawbacks**: Success depends on cooperation from beekeepers to follow advice on reporting this pest should it arrive in the UK and managing their apiaries to minimise impacts.

Other pest and disease risks

74. The review group acknowledged that beekeepers routinely and successfully manage a range of other pests and diseases in their apiaries including acarine, chalkbrood, Chronic Bee Paralysis Virus and sacbrood. The NBU already provides advice on these pests and diseases on Beebase and no additional measures are proposed.

75. The review group also identified the additional risks to honey bees presented by:

i. Colony Collapse Disorder (CCD) - a condition observed in the USA (but not in the UK or other EU Member States) characterised by large-scale, unexplained losses of colonies in particular sudden or rapid loss of adult worker bees in whose absence the colony cannot be sustained and eventually dies. This condition is not fully understood. The presence of Kashmir Bee Virus (KBV) or Israel Acute Paralysis Virus have been strongly correlated to the occurrence of CCD (in the USA) but not thought to be the single cause. The causes of this condition are recognised to be complex and multifactorial. Both viruses are present in apiaries in the UK but at very low incidence levels. The review group agreed that the NBU should look for opportunities to monitor these viruses as part of their existing surveillance programme, and as resources allow.

ii. A range of other known exotic pests or undesirable species such as Africanised honey bees, the Cape honey bee and various mites, although none has yet been found in the UK. The review group noted the importance of early detection and management of these species to safeguard honey bees (and other insect pollinators) in the UK.

iii. Potential deleterious impacts from currently unknown species and other risks not yet identified. Such risks were recognised based on experience of emergence of previously unknown risks to honey bees over the last 16 years (SHB, the Asian hornet, *Nosema* ceranae). It is reasonable to assume that one as yet unknown risk could emerge once in every 5 years.

Results of prioritisation exercise

76. The review group conducted a prioritisation exercise to help inform its consideration of how to make best use of available resources to optimise honey bee health. The exercise provided a means to compare different policies by a snapshot projection of impacts into the future (year 2020 for which cost impacts were estimated using 2012 prices without discounting, and hence should not be interpreted as a formal economic appraisal). The method and results from the prioritisation exercise are available for review in a separate annex (see list of evidence in Annex 7).

77. In brief, the results highlighted the substantial costs (losses) to beekeepers and crop pollination under the baseline scenario (i.e., no change to current policies) about half of which was from pests and disease already present and about half are potential costs from exotic threats. The recommended changes to policies, including a shift in the focus for collective action by government and beekeepers onto reducing colony losses through improved control of *Varroa,* indicate potential decreases in losses from *Varroa*, the Asian hornet and other known exotics.

78. The effect of the recommended changes on EFB and AFB is more uncertain. On the one hand, if the targeting of beekeepers with a history of repeated infection is effective,

and if those (limited number of) beekeepers who are given autonomy to detect, report and manage these diseases in their colonies, continue to do this effectively, the recommended changes are expected to maintain losses to EFB and AFB at about current levels.

79. On the other hand, if targeted beekeepers are uncooperative and those beekeepers given autonomy seek lower cost options to disease control, such as use of antibiotics for EFB, then the recommended changes might result in increased losses to EFB and AFB. This emphasises the importance of implementing the proposed changes in policy regarding EFB and AEB well, and of monitoring implementation to detect and address unintended consequences.

80. The quantitative results of the analysis have to be interpreted carefully due to the assumptions and uncertainties involved. Under the preferred option, the overall cost of pests and diseases to beekeepers and agriculture could either increase or decrease compared to the baseline scenario (no change to current policies), with about a 95% chance of lying between a £45m decrease and a £20m increase. The median estimate of the change is almost certainly negative (a decrease in costs/losses), and is perhaps most likely to lie in the region of a £10m -15m decrease. This reflects reductions in losses from improved *Varroa* management and from early detection and management of the Asian hornet and other known exotics. Larger decreases in cost/losses would be expected if the recommended policy changes for EFB and AFB work well.

Review of EU animal health legislation

81. In 2007 Commission published its blueprint for a new Animal Health strategy to run 2007-2013, under the strapline “Prevention is better than cure”. One of the objectives of the strategy is to revise the regulatory framework and deliver a new Animal Health Law (AHL) (replacing a complex set of regulations currently). This is a complicated project as it covers all aspects of animal (and honey bee) health including responsibilities, disease control, surveillance, biosecurity, vaccination, imports, movements and trade.

82. The AHL is to be a component of a package of legislation that will be produced in conjunction with a revision of the Official Food and Feed Control Regulation (882/2004), Plant Health Law and Seed and Propagation Law. The Commission highlighted as a key objective of the AHL a reduction in administrative burdens and costs.

83. As proposals and further details emerge from the Commission over the next two years, we will be seeking views and input from beekeeping stakeholders to help with the UK’s negotiations. To help prepare Defra for this work, we have included a question (see question 11 in box below) inviting your initial views on possible additional regulatory controls on beekeepers and their suppliers which could include compulsory registration and controls on high risk activities such as nucleus suppliers.

Questions to consultees on the recommended changes to current policies

Q 3. Do you agree with the recommended changes to current policies as set out in this section? If yes, please explain why. You may wish to offer comments on specific pests and diseases.

Q 4. If you disagree with any of the recommended changes, please identify which pest or disease and which aspect(s) and explain why you disagree.

Q 5. Would you support the introduction of new sanctions to address beekeepers' poor management of disease risks at their apiaries and/or lack of cooperation to address these risks? [see para 38 for further details]. Whether to introduce such sanctions would be subject to further analysis and a separate consultation and would also require new legislation.

Q 6. Are associations (nationally and locally covering bee farmers and hobby beekeepers) prepared to pay a realistic contribution towards the costs of lectures and training events delivered by NBU staff and bee inspectors (as proposed in para 42 (i) If so, how much would be realistic?

Q 7. Are beekeepers (bee farmers and hobby beekeepers) prepared to pay a realistic contribution towards the costs of training events organised and run by the NBU(as proposed in para 42 (i) If so, how much would be realistic?

Q 8. Do you have any other suggestions on how we might change or re-focus current pest and disease control policies and actions to improve health outcomes for honey bees?

Q 9. Do you have any other suggestions on how government can work more closely with national and local associations to improve pest and disease control of honey bees?

Q 10. Do you have any comments on the preliminary draft impact assessment (see separate document)?

Q11. To help Defra prepare for discussions and negotiations from autumn 2012 to 2014 on changes to the EU's animal health legislation, what are your initial views on possible additional regulatory controls on beekeepers/suppliers, such as compulsory registration of beekeepers, or specific requirements for nucleus or queen suppliers to reduce risk of disease spread?

Section 4 – other proposals considered by the review group

84. This section outlines the cases for and against the other two proposals considered and subsequently rejected by the review group:

i. maintain current policies (no change);

ii. do minimum required to meet EU obligations (which would include removing EFB from England's disease control programme);

Maintain current policies (no change)

85. As already noted in Section 2, the review group concluded that current policies have been effective in controlling notifiable disease risks and preparing for exotic risks and are supported by beekeepers. The review group identified areas to improve the response (see para 19 above) and considered that updated pest and disease policies also needed a renewed focus on reducing colony losses.

86. The results of the prioritisation exercise highlighted the substantial costs (losses) to beekeepers and pollination from current policies (baseline scenario), about half of which were from pest and disease already present (particularly *Varroa*) and about half were potential costs from exotic threats.

Do minimum required to meet current EU obligations

87. Current EU obligations focus on AFB, SHB and *Tropilaelaps* . Member States may have an EFB control programme but this is not mandatory. If our response policies were simply to do the minimum required to meet EU obligations, this would entail (continuing with):
    i. Notification to the Commission if we were to detect SHB and/or *Tropilaelaps* in honey bees/colonies in the UK;
    ii. (if SHB was confirmed in UK) implement EU safeguard measures;
    iii. Certifying export of honey bees including specific requirements that bees intended for export do not come from an area subject to a prohibition order in response to AFB;
    iv. Checking third country imports of honey bees, including packaging material;
    v. Notification to the Commission if we were to find SHB, *Tropilaelaps* or AFB in honey bee imports from other Member States.

88. However, government would stop:
    i. maintaining or keeping a voluntary register of beekeepers and the location of their apiaries (BeeBase);
    ii. The EFB control programme (ie, beekeepers would no longer be required to notify government about suspect cases and would manage disease outbreaks themselves);
    iii. The AFB control programme except where this is necessary in compliance with specific EU requirements that bees intended for export do not come from an area subject to a prohibition order in response to AFB; and,
    iv. Active targeted surveillance of apiaries to look for pest and disease risks (as there is no specific EU requirement for Member States to undertake surveillance programmes), relying instead on beekeepers to report suspect findings of notifiable SHB and *Tropilaelaps* in their apiaries.

89. The scale of the impact of these proposed changes would depend on the extent to which beekeeping associations and others such as private vets take specific additional steps to mitigate pests and disease risks. The incidence of EFB is likely to increase

although this is uncertain as we do not fully understand the epidemiology of this disease, including whether or not some cases would die out anyway without controls and whether targeting only certain EFB cases would be as effective as controlling all cases detected.

90. Adopting this 'do minimum' proposal, assuming limited if any mitigating actions by associations and/or vets, would significantly undermine the health of honey bees in England and Wales, reversing the improvements made over many years from the current programme which includes active surveillance for endemic and also exotic pest and disease risks. Loss of the surveillance programme would be in contrast to current trends at EU level which are placing greater emphasis on surveillance systems in Member States. For example:

    i. 2009 scientific report submitted to the European Food Safety Authority, *Bee Mortality and Bee Surveillance in Europe,* noted weaknesses in surveillance systems in some Member States, and praised the UK's systems and approaches as the best surveillance programme in the EU http://www.efsa.europa.eu/en/supporting/pub/27e.htm

    ii. in May 2012, as part of its strategy for tackling declining bee numbers, the European Commission allocated €3.3 million to support 17 Member States, including the UK (England and Wales), to carry out surveillance studies aimed at gathering further information on losses of honey bee colonies and underlying causes. These studies will gather data on a comparable basis for the first time across the Member States.

91. Loss of an active surveillance programme in England and Wales would lead to increased colony losses from EFB and AFB and also increase the risk of not detecting other pests and diseases, including exotic pests. Loss of a register of beekeepers (BeeBase) would also mean losing knowledge of apiary locations, thereby significantly undermining the effectiveness of contingency measures required by the EU on SHB for example. Apiary location data is not available from associations' membership lists which would be an alternative source of information on beekeepers during an emergency.

92. Loss of the EFB control programme would also:

    i. undermine the current basis for beekeepers' disease insurance which is only available from Bee Diseases Insurance Ltd (BDI). Without being able to offer insurance cover for EFB (as it would no longer be a statutory notifiable disease), BDI would not be so financially attractive causing reduced income from premiums and potentially being unable to continue cover for the other notifiable pests and diseases.

    ii. potentially lead to increased use of antibiotics by beekeepers, subject to prescriptions by private veterinary surgeons and supervision of use in the apiary,

including withdrawal periods. Such increased use of antibiotics could mask signs of AFB in the apiary.

93. The review group rejected this 'do minimum' proposal due to the potentially significant impact on honey bee health, particularly the impact of loss of the surveillance programme and a register of beekeepers which are key building blocks in the defence of honey bee health.

94. The results from prioritisation exercise highlighted the potentially high cost impacts of this option. Although uncertain, they showed potentially large increases from Varroa, EFB and AFB, together with substantial additional losses to the Asian hornet and other known and unknown exotics (see page 13 of the separate report on the prioritisation exercise).

95. Subject to the changes and improvements in enabling beekeepers and improving their self-reliance (a recurrent theme in the new policy proposals in Section 3) could, in the longer term, provide the right circumstances under which government could review the future of EFB controls.

Section 5 – Impacts of recommended changes to policies on the work of NBU and beekeeping associations

96. In light of the responses to the consultation and conclusions on future policies by Defra and WG, further work will be undertaken by NBU supported by the associations to plan the details of implementation and to phase in the agreed changes, within current resources.

97. As these changes set the future direction for pest and disease control, including some aspects which require further development work, their implementation will be phased in over 3 to 5 years, and possibly longer, starting in 2013/14.

98. Beekeeping representatives (including on the review group and national associations who were briefed separately in July 2012) are supportive of the proposed changes and have signalled their willingness work with the NBU on implementation, including helping to raise the profile of pest and disease management by beekeepers.

99. Further details of the NBU's and associations' implementation of the changes will be available by the end of 2012/13, including confirmation of timescales.

Surveillance programme

100. The NBU undertakes a surveillance programme to actively monitor endemic and exotic pests and disease risks and this will be updated in the light of the recommended changes. Annex 5 sets out current activities and identifies additional activities within current resources which will be incorporated into the implementation programme.

Annex 1 - Background to pest and disease control policy review, terms of reference, evidence

1. In 2009, Defra commissioned the NBU to undertake a survey of honey bee pests and diseases with the aim of using the results to inform a review of current policies on managing these risks. The NBU carried out this survey from 2009 to 2011 by visiting and taking samples from around 5000 apiaries selected at random from BeeBase, their database of beekeepers in England and Wales. As the results started to become available in the second half of 2011, Fera (who lead on honey bee health policy on behalf of Defra) initiated the review of pest and disease control policy.

2. To help with this work, Fera set up a review group in July 2011 comprising the NBU, an economist from Fera, WG including one of their vets, an independent scientist, three stakeholder representatives (an amateur beekeeper from England, one from Wales and a bee farmer) and an observer from the Scottish Government. Members were:

    - Fera's Policy Programme (bee health) – Dr Richard Watkins, Liz McIntosh, Kim Chadwick, Dr Belinda Phillipson, Marie Holmes;
    - Welsh Government - Huw Jones and Les Eckford (veterinary expertise);
    - National Bee Unit – Mike Brown, Andy Wattam, Dr Giles Budge, Dr Gay Marris, Ivor Flatman, Keith Morgan, Dr Helen Crews;
    - Professor Rob Smith (independent scientist);
    - Dr Mohamud Hussein (Fera economist)
    - Dr David Aston (BBKA)
    - Stephen Thomas (Welsh Beekeepers Association (WKBA))
    - Robert Field (BFA)
    - Observer – Stephen Sunderland (Scottish Government),

3. The review considered how best to manage pests and diseases in the future so that the optimum policies and interventions are in place, priorities for future collective action (partnership working) by government and beekeepers are clear, and we are making best use of current public funding/resources for this programme to optimise honey bee health. Specifically, to sustain a healthy honey bee population for pollination.

4. The overarching aim of the policy review was to inform the future direction for bee health policy and delivery in England and Wales, and in particular to ensure that government and stakeholders:

    - are clear about the rationale for government intervention in honey bee health;

    - have in place the optimum policies and interventions on honey bee pest and disease threats, including a clear understanding of the costs and benefits and aligned, as necessary, with other Defra policy areas; and,

    - are clear about our short-, medium- and long term policy goals/outcomes.

5. The review would deliver:

    - updated policies covering AFB, EFB, *Varroa*, exotic pests (and other serious pathogens), setting out goals/outcomes, package of response measures (statutory and non-statutory interventions) to achieve the goals, and surveillance required in support of the policy outcomes;

    - recommendations on resources required for implementation;

    - assessment of costs and benefits to government and society.

6. The scope of the review also included consideration of current thinking and approaches to policy making in Defra and other departments. In particular, whether and how to introduce greater flexibility and alternative approaches to achieve policy goals rather than through regulations, given that government wants to minimise regulatory burdens. As part of this wider discussion on alternatives to regulations to achieve objectives, the review group recognised that an important first step would be to have the right mix of policies to enable beekeepers to take greater responsibility for the health of their colonies, including helping beekeepers to be more self-reliant when managing pests and diseases. However, the group recognised that the specific features of the beekeeping sector where hobby beekeepers formed the majority[9], presented a particular challenge to getting this right.

7. The review was timely and took on a new urgency given the upsurge of interest in beekeeping over the last 2-3 years leading to an increased number of new beekeepers and increased demands on NBU inspection and training services and on training and mentoring provided by beekeeping associations. For example, the number of beekeepers on the NBU's voluntary register of beekeepers (BeeBase) has increased from 17,000 in 2008 to over 28,000 beekeepers (November 2012) (England and Wales) as a result of increased efforts to increase registration. Similarly, the BBKA's membership has increased since 2008 from 14,000 to over 23,000 (July 2012). This increase in demand from new beekeepers has reinforced the need for government and beekeeping associations to agree priorities for collective action and to make best use of available resources to optimise honey bee health.

Sources of evidence for the review

8. New data and analysis from the Defra-commissioned random apiary survey of honey bee pests and diseases was an important pre-cursor to, and source of evidence for the review. Other sources of evidence for the review included the NBU's apiary inspection records, Defra-commissioned research and risk assessments as well as scientific

[9] There are around 28,000 beekeepers in England and Wales (source NBU's BeeBase), although this is likely to be an underestimate. Around 300 are professional beekeepers who rely on beekeeping for their livelihood. The rest are hobby beekeepers.

literature. Insights on beekeeping practices and behaviours provided by bee inspectors and by beekeeping representatives were also an important source of evidence. In addition, the review was informed by the results of a prioritisation exercise which sought to identify the losses from each of the pests and diseases to beekeepers and to agricultural and horticultural production. This information helped the review group identify the highest risks in terms of losses and how policy changes could reduce those losses (see Annex 7 for list of the sources of evidence used for the review).

Brief summary of points made by the review group

9. The review group met over 12 months from July 2011 and considered each pest and disease risk in turn before a broader debate to review priorities for collective action and to ensure we are making best use of resources to optimise honey bee health. Further details of the review groups discussions are in the separate evidence profiles (listed in Annex 7).

10. **In relation to the foulbroods**, the review group applauded the many successes of beekeepers learning and adopting good husbandry practices and getting on top of AFB and EFB outbreaks. In contrast, the review group also considered case studies where some beekeepers were not taking their responsibilities seriously for honey bee health and welfare and persisted with poor beekeeping practices leading to recurrent outbreaks of EFB in spite of advice, in some cases over many years, from the bee inspectors with significant costs to the taxpayer (see page 9 in evidence profile on EFB).

11. In the light of these case studies of good and bad practices and other evidence, the review group made the following observations about current disease control policies for the foulbroods:

    i. the case studies had helped to highlight that many factors are under the control of beekeepers which determine how effectively EFB outbreaks and risks are managed. This observation could also apply to beekeepers' management of other pest and disease risks;

    ii. inspection visits (free of charge) over many years to beekeepers with recurrent EFB problems would appear to be a disincentive for the beekeeper to deal with disease risks him/herself. This raised the question of whether current policies provided the right incentives or signals for beekeepers to accept disease as a liability and to take appropriate action to address or minimise disease risk and spread. It also suggested that there was still much to do to achieve our longer term goal of increasing beekeepers' self-reliance;

    iii. whether the various control options available for EFB (destruction, shook swarm and use of antibiotics) had been helpful overall in controlling this

disease (i.e., would it be more effective to destroy infected colonies and not offer any treatment options?) (see page 16 in EFB profile); and,

iv. whether current expenditure on controlling AFB and EFB was value for money as these were at low levels and there was a broad range of other pest and disease risks to consider if we wanted to improve bee health overall.

12. *Varroa* was recognised by the review group as beekeepers' number one priority needing active management to achieve effective control. However, good husbandry (and pest management) was not a high priority for many beekeepers. The NBU and others had provided advice and training to beekeepers on managing this pest over many years, including appealing to beekeepers' common sense, but this pest remains a problem and its ineffective control is a significant contributing factor to losses of honey bee colonies. The review group considered that it might be time to try a different approach to communicating with beekeepers. For example, appealing to conscientious beekeeping around a welfare message.

13. In relation to exotic pests, for which contingency plans were in place, the key points raised by the review group were as follows:

i. SHB (notifiable pest) would present a particular challenge to government and beekeepers as it was likely to spread rapidly following arrival. As a result, the response policy was likely to move rapidly from one of eradication to containment. Given the current lack of management options, other than destruction, there needed to be more focus on early detection to improve the likelihood of eradication. Training and education of beekeepers and others to recognise this pest and a robust sentinel apiary programme were key to early detection. The network of sentinel apiaries could be expanded to help improve likelihood of early detection. In addition more focus was needed on developing and/or clarifying management options in advance of arrival (in the event of moving quickly to a containment policy). The review group also questioned whether it made sense to put resources into eradication of SHB, if we know that very quickly the response would move from eradication to containment.

ii. *Tropilaelaps* (notifiable pest) was likely to spread relatively slowly following arrival which suggested that an eradication (destruction) programme could be effective and continued for longer (than compared with SHB). Treatments were available (same as those used for *Varroa*) and husbandry measures were available to reduce brood (on which this pest feeds).

iii. The Asian hornet was not a notifiable pest and this seemed inconsistent with its potential impacts on honey bees. Fera's response plan was pragmatic in aiming for early detection and interception to prevent establishment, nest destruction to eradicate localised outbreaks and moving to longer term management depending on the spread and number of outbreaks.

14. Turning to more general points, the review group:

    i. recognised that as beekeeping was mainly an amateur sector, considering beekeepers as farmers of livestock, and what that implied for disease control responsibilities, was a particular challenge as beekeeping was not their livelihood. However, the review group noted that policies had been developed (by government and stakeholders) in another amateur sector (e.g., pet ownership) and these had been successful in improving animal welfare;

    ii. noted that the national and local beekeeping associations had an important role to play in raising the profile of effective pest and disease management amongst their members;

    iii. population biology could help our consideration and selection of response options and control strategies for EFB (and AFB). Discussion of policy options had made assumptions about the dynamics of EFB. However, as the review group did not identify these dynamics as part of its work, we were not able to get a handle on how any changes in response measures or control strategies would impact on the number of EFB cases. For example a source-sink assumed that the sink was self eliminating. If this was the EFB model, then there wasn't much point in expending effort and resource to control EFB in colonies where the disease would die out anyway. In addition, if this was the model for EFB the focus might need to be just on controlling EFB in colonies which have been moved (e.g., by bee farmers for pollination or floral resources). However, available data suggests that infection does spread locally without beekeeper movement of colonies.

    iv. emphasised that the health and productivity of honey bee colonies was determined by many other factors in addition to effective control of pests and diseases, such as the importance of adequate nutrition and access to multiple floral sources for pollen and nectar;

    v. noted that there was currently no exit strategy for ending controls on individual pests and diseases nor was there an approach for reviewing priorities which would allow scarce resources to be allocated between the various priority pest and disease risks to minimise impacts and maximise honey bee health.

Results of prioritisation exercise

15. In order to help the review group with its key question of how to make best use of available government resources to optimise honey bee health, we conducted a prioritisation exercise with guidance and expert input from Dr Andy Hart from Fera. The aim was to provide a transparent way of identifying the relative importance of pest and disease risks to help inform the government's allocation of resources on managing honey bee pest and disease risks. The exercise helped the group examine the investment and reward from allocating resources to manage honey bee pest and

16. The results are captured in Sections 3 and 4 of this document with additional information in the evidence annex on the prioritisation exercise.

Overall conclusions of the review group

17. The review group concluded that overall the government's policies and their implementation by the NBU had been effective in reducing notifiable disease risks and preparing for exotic risks. However, AFB and EFB continue to absorb considerable resource, whilst Varroa, a non-statutory pest, was currently widespread and poorly managed by many beekeepers. The group considered there was scope to update and re-shape policies so that they tackled the causes of problems (and not just symptoms); placed greater emphasis on enabling beekeepers; tailored the government's response to reflect beekeepers' disease history, experience and competence including extending better regulation approaches; and broadening the government's role to improve beekeepers' management of *Varroa* and to place greater emphasis on ensuring the early detection of exotic pests. The review group also considered that collective action by government, beekeepers and associations was key to success in terms of optimising honey bee health.

Annex 2 - List of questions posed in the consultation document

Q 1. Do you agree with the proposed revision to the objective for the overall programme – see para 24 in section 2? If so, please explain why.

Q 2. If you do not agree with the proposed revision, please explain why.

Q 3. Do you agree with the recommended changes to current policies as set out in section 3? If yes, please explain why. You may wish to offer comments on specific pests and diseases.

Q 4. If you disagree with any of the recommended changes in section 3, please identify which pest or disease and which aspect(s) and explain why you disagree.

Q 5. Would you support the introduction of new sanctions to address beekeepers' poor management of disease risks at their apiaries? (see para 38 for further details). The introduction of such sanctions would be subject to further analysis and a separate consultation and would also require new legislation.

Q 6. Are local associations prepared to pay a realistic contribution towards the costs of lectures and training events delivered by NBU staff and bee inspectors (as proposed in para 42 (i) If so, how much would be realistic?

Q 7. Are beekeepers prepared to pay a realistic contribution towards the costs of training events organised and run by the NBU(as proposed in para 42 (i) If so, how much would be realistic?

Q 8. Do you have any other suggestions on how we might change or re-focus current pest and disease control policies and actions to improve health outcomes for honey bees?

Q 9. Do you have any other suggestions on how government can work more closely with national and local associations to improve pest and disease control of honey bees?

Q 10. Do you have any comments on, or additional evidence for the draft impact assessment (see separate document)?

Q11. To help Defra prepare for discussions and negotiations from 2013 to 2014 on changes to the EU's animal health legislation, what are your initial views on possible additional regulatory controls on beekeepers/suppliers, such as compulsory registration of beekeepers, or specific requirements for nucleus or queen suppliers to reduce risk of disease spread?

Note: We are considering holding a stakeholder workshops(s) towards the end of the consultation period, although a decision to hold a workshop(s) would be subject to issues and questions emerging from the consultation. We will update stakeholders on this in due course.

Annex 3 - Further background on pest and disease risks to honey bee health and current policies and delivery by the NBU

Risks to honey bee health

1. Current Defra and WG policies on pest and disease control and implemented by the NBU address the following risks to honey bee health[10]:

    i. colony losses and/or poor productivity from serious endemic pests and diseases (specifically control programmes on notifiable foulbroods and others such as advice on *Varroa*) and from incursions by exotic pests (including notifiable pests and others);

    ii. pest and disease outbreaks, spread and colony losses from sale and movement of honey bees (within GB) and potential risks from trade/imports of honey bees, bumblebees and apiary products;

    iii. (not knowing the) location of apiaries;

    iv. beekeeping practices; and

    v. (in relation to AFB outbreaks and spread) practices of honey packing plants.

Current policies and the NBU's delivery programme to address these risks

2. Regulations have been in place since the 1940s to control the spread and impact of the two bacterial honey bee brood diseases – AFB and EFB – which were widespread at that time in the UK. Policies and associated legislation have evolved since then and focus on beekeepers notifying suspect cases of disease to government, powers for authorised persons (bee inspectors) to destroy or treat infected honey bee colonies and movement restrictions.

3. Policies were extended in the 1980s to include the *Varroa* mite as a notifiable pest which, following its establishment and spread across the country in the 1990s, was deregulated in 2006, although the government's programme continues to provide advice and training on *Varroa* management.

4. The objective of Defra and WG's honey bee health programme in England and Wales is:

[10] Policies which influence other risks to honey bee health are covered by other programmes in government such as agri-environment schemes which support nectar-rich planting.

- To protect stocks of honey bees needed for the pollination of agricultural and horticultural crops, as well as wild plants, and for the production of honey and wax; by

- Preventing the introduction of serious exotic bee diseases into the country, and limiting the spread and impact of serious notifiable diseases that are already present.

5. The legislation underpinning the current programme is set out in Annex 3 (a) and includes EU requirements for AFB, SHB and *Tropilaelaps* mites. Whilst there is no EU requirement for EFB, this is given the same status as AFB, SHB and *Tropilaelaps* mites in our domestic legislation, i.e., it is designated as notifiable under which the beekeeper is required to notify suspect cases to government (i.e. NBU and its bee inspectors). There are no legal requirements for the Asian hornet i.e., it is not a notifiable pest of honey bees or for *Nosema*, and for other aspects of the programme, such as the voluntary register of beekeepers (BeeBase) and voluntary codes of practice on the sale of bees and on biosecurity of honey packing plants.

6. Further details of how current policies and programmes address the risks to honey bee health are in the table below. There is a mix of regulatory and voluntary measures:

Risks to pollination and honey production	Defra/Fera and WG response delivered by the NBU working with beekeepers and others
Colony losses and/or poor apiary productivity from serious endemic pest and diseases (including notifiable foulbroods) and other serious pests and diseases (particularly *Varroa*)	• Regulations to control outbreaks of notifiable diseases (AFB, EFB), including requirement for beekeepers to notify suspect cases to government. • Voluntary and targeted risk-based surveillance programme by NBU and bee inspectors to monitor and detect outbreaks of notifiable diseases. For example in 2012, the NBU's programme checked nearly 36,000 colonies and dealt with 57 outbreaks of AFB and 947 outbreaks of EFB. • Provision of advice and training by NBU and bee inspectors to beekeepers on pest and disease management, including foulbroods and *Varroa* during 1 to 1 surveillance visits and training events. For example in 2011, the NBU delivered nearly 500 training events on pest and disease control (i.e., lectures, field demonstrations, liaison meetings and training events) in England and Wales attended by 19,179 beekeepers. • Advice on other adult bee diseases (on BeeBase).

Colony losses and/or poor apiary productivity from incursions by, and impacts from exotic pests (notifiable and other)	• Regulations to control incursions of notifiable exotic pests (SHB, *Tropilaelaps*); • Contingency planning and exercising for notifiable exotic pests as well as for the Asian hornet; • Voluntary exotic pest surveillance and (working with beekeepers on a network of sentinel apiaries) to ensure early detection.
Pest and disease spread from sale and movement of honey bees (within GB and risks from trade/imports)	• Regulations to manage notifiable endemic and exotic pests and diseases include controls on movements of bees, e.g., standstill requirements at infected apiaries. • To address risk of suppliers potentially spreading notifiable diseases from sale and movement of nucleus colonies, Fera worked with suppliers in 2011/12 to develop a voluntary code of practice on the supply of nucleus colonies. The code was published in spring 2012 and its impact will be assessed by Fera by the end of 2012. • Regulations controlling imports of queens (honey and bumble bees) and packaged honey bees and colonies of bumble bees from third countries (i.e., non EU Member States). These require consignments to be accompanied by a health certificate. • Regulations on intra-union trade require health certificates to accompany honey bees (and bumblebees) imported from other Member States. • (In addition - regulations controlling import of animal products (e.g., beeswax) from other EU Member States and third countries are implemented by Defra's Animal Health and Veterinary Laboratory Agency).
(Not knowing the) Location of apiaries	• A voluntary register of beekeepers and apiary locations (BeeBase) developed and maintained by the NBU as a crucial tool for managing notifiable pest and disease risks.
Beekeeping practices	• NBU and bee inspectors provide advice and training of beekeepers during inspection visits and events to improve beekeeping practices and reduce pest and disease risks. • Funding of Healthy Bees Plan – 10 year plan published in 2009 to sustain honey bees, including building capacity in beekeeping sector to improve husbandry skills through education and training programmes delivered by beekeepers/associations. Delivered by Fera and the NBU in partnership with beekeepers and their associations.
Practices of honey packing plants in potentially spreading AFB	• (following an NBU/University of Newcastle analysis of AFB risks associated with packing plants) the Honey Association developed a voluntary code of practice for packing plants to follow to improve their biosecurity and reduce risk of honey bees visiting their sites to 'rob' any waste honey in discarded drums. Published in 2010.

	• Packing plants send reports on their compliance with the code to the NBU which continues to monitor outbreaks of AFB close to packing plants.
Defra and WG also fund research into improving the management of these risks and policies with a particular focus on notifiable pests and diseases.	
Additional risks to honey bee health include potential risks from other insect pollinators carrying and spreading pests and diseases to honey bees (in addition to the risk from imported bumblebees which are already addressed above), although there is limited evidence about these risks; inadequate nutrition of honey bees if they don't have access to adequate nutrition (pollen and nectar) from a diverse range of floral sources from spring to autumn; environmental impacts; (and the weather).	

7. Turning to current policies and courses of action for each of the pests and diseases, these are set out in the table below:

Pest or disease	Current policies/courses of action including government and others
AFB and EFB	1. Priority inspection programme and control of outbreaks. 2. Movement controls on infected apiary 3. Import controls (3rd country and EU Member States (AFB only)). 4. Guidance, advice and training (leaflets, BeeBase, training events). 5. A voluntary code of practice for suppliers on the supply of nucleus colonies. **And in relation to AFB**: 6. Honey Association's voluntary code of practice to reduce AFB risks at honey packing plants, and associated monitoring by NBU.
Varroa	1. Guidance and advice on *Varroa* management 2. Training on *Varroa* management including during inspection visits and association and other training events 3. (VMD action plan to encourage manufacturers to license and/or develop new products).
Nosema	1. Guidance and advice on *Nosema* management.
SHB and *Tropilaelaps* mites	1. Awareness raising amongst beekeepers and others such as Plant Health and Seeds Inspectors. 2. Sentinel apiaries at risk points (managed by beekeepers who are supported by NBU) 3. Exotic pest surveys 4. Contingency plan to implement on confirmation of arrival aiming to prevent establishment, or if no longer possible move to management to minimise impacts. 5. Exercising contingency plan by Fera and NBU
The Asian hornet	1. Awareness raising amongst beekeepers and others such as Plant Health and Seeds Inspectors. 2. Sentinel apiaries at risk points (managed by beekeepers who are supported by NBU) 3. Response plan to implement on confirmation of arrival aiming to prevent establishment, or if no longer possible move to management to minimise impacts. 4. Exercising response plan by Fera and NBU
CCD risk factors	1. none

8. Policies are delivered by Fera's NBU and its bee inspectors (around 60 people although mostly part-time seasonal bee inspectors) which cover England and Wales. The NBU manages BeeBase, the voluntary national database of beekeepers which also serves as a management tool for planning and executing the inspection programme. The NBU's services are free of charge to the beekeeper. Defra provides £1.3 million per year to the NBU for this delivery programme (WG provides £0.44 million). Part of the funding for this programme is reimbursed from the EU under the apiculture programme[11] .

9. Defra also provides funding for implementation of the Healthy Bees Plan and has contributed £2.9m between 2009 and 2012. Defra has approved an additional £579,000 each year for three years from April 2012 to continue this work (overall commitment from Defra of £4.6m since 2009). About 70% of this additional funding has been to provide additional inspection visits to apiaries at high risk of disease.

10. Support for research in support of policy development. Defra provides £100,000 per year for honey bee research including work on control and risk management of honey bee pests and diseases. Defra is also providing £2.5m over 5 years (from 2010/11) towards the £10 million Insect Pollinators Initiative which is being jointly funded with Scottish Government, BBSRC, NERC and the Wellcome Trust. Of the 9 projects being funded, 2 are specifically about honey bees and 6 will benefit both honey bees and bumblebees.

11. Additional work for government by the NBU includes a contract to take honey samples directly from beekeepers on behalf of the Defra's Veterinary Medicines Directorate as part of Defra's statutory residue monitoring programme - the National Surveillance Scheme. Each EU Member State has a statutory responsibility to monitor food for residues to ensure safety for the consumer. This scheme helps to protect consumers by minimising the risks of residues in harvested honey entering the food chain. The NBU also works within the Wildlife Incident Investigation Scheme (WIIS), which is led by the Health and Safety Executive's Chemicals Regulation Directorate, to monitor the effects of pesticides on wildlife, pets and beneficial insects (such as honey bees and bumble bees).

Annex 3 (a) REGULATORY FRAMEWORK FOR HONEY BEE PEST AND DISEASE CONTROL

1. Domestic legislation relevant to managing and controlling the health of managed honey bees in England and Wales is mainly derived from EC legislation. The main purposes of the legislation are to manage the risks to honey bee health associated with

[11] Council Regulation (EC) No. 1234/2007 provides EU support for improving general conditions for the production and marketing of apiculture products. Under the Regulation, member states may draw up national apiculture programmes covering a three year period. Within an overall annual EU budgetary ceiling, up to 50% of a member state's expenditure may be reimbursed by the European Commission.

international trade and to control notifiable diseases and pests. Most honey bee health legislation falls within the scope of EC animal health legislation and structures because honey bees are regarded as food producing animals along with other livestock.

Domestic legislation

2. Domestic legislation is implemented under the Bees Act 1980, which empowers Ministers to make Orders to control diseases and pests affecting honey bees, and provides powers of entry for authorised persons. Such Orders are implemented separately by Government Departments in England, Wales, Scotland and Northern Ireland.

3. In relation to offences, the Act provides that 'any persons who:

   (a) imports any honey bees or other things into Great Britain in contravention of an order under Section 1 of the Act;

   (b) moves any honey bees or other things within Great Britain in contravention of any such order; or

   (c) otherwise contravenes or fails to comply with the provisions of any such order or with any condition imposed by any licence issued under any such order;

   Shall be liable on summary conviction to a fine not exceeding £1,000.' However, as a result of the standardisation of fines under the Criminal Justice Act 1982, fines for offences under the Bees Act, and orders made under it, have been set not to exceed level 5 on the standard scale (currently £5,000).

4. In England, the Bee Diseases and Pests Control (England) Order 2006 requires beekeepers (and others) to notify the Secretary of State (in practice the NBU acting on her behalf) of the suspicion of the presence of the notifiable diseases, AFB and EFB, and the notifiable pests, SHB and *Tropilaelaps* mites.

5. In response to a notification of a suspected notifiable disease or pest, restrictions will be imposed on the movement of anything that might spread the disease or pest until an authorised Bee Inspector has visited the affected premises to confirm the presence of the disease/pest and a decision has been made on action to eradicate or control the outbreak. The Secretary of State may also declare an infected area and implement control measures within it, if the SHB or *Tropilaelaps* has been found.

6. The Order also implements the requirements for post import controls of queen bees and attendant workers, and bumble bee colonies, imported from third countries contained in Commission Regulation (EU) 206/2010.

7. In England, the Trade in Animals and Related Products Regulations 2011 implements the EC Directives on the certification requirements (92/65/EEC) and veterinary and zootechnical checks (90/425/EEC) applicable in trade between member states of the

EU in certain live animals and products and eliminates the need for veterinary checks on these at frontiers. Instead it provides for a system of intensified checks at points of origin and discretionary spot checks at places of destination. The Regulations also implement Directive 91/496/EEC which covers veterinary checks for animals, including honey bees, entering the Union from third countries.

8. In Wales, the relevant legislation comprises the Bee Disease Pest Control (Wales) Order 2006 No. 1770 (W.172) and the Trade in Animals and Related Products (Wales) Regulations 2011 No 2379 (W.252).

EC legislation

9. At European level, the 'Balai Directive', 92/65/EEC on animal health requirements for trade in bees lists AFB, SHB and *Tropilaelaps* mites as notifiable pests and diseases throughout the EU in trade. The directive lays down the provisions for trade between member states in honey and bumble bees, and requires consignments to be accompanied by an original health certificate confirming that the consignment comes from an area free from AFB, SHB and *Tropilaelaps* mites..

10. Commission Regulation (EU) 206/2010 sets out the requirements honey and bumble bees destined for the European Union. It includes the health certification requirements and the list of countries from which bees may be imported if, in addition, these countries can make various statements about the status of the notifiable pests and disease.

11. The NBU's Bee Inspectors are appointed as authorised persons under the Bees Act 1980, the Bee Diseases and Pests Control (England) Order 2006, and the Trade in Animals and Related Products Regulations 2011. This gives Bee Inspectors authority to:

    - Enter premises where it is believed honey bees, hives, appliances and honey bee products are kept for the purposes of the Order and the Regulations.
    - Examine these items and to take samples of them in order to see if they are free from infection.
    - Mark any hive or appliance for identification purposes.
    - Serve notices imposing movement restrictions on colonies and other products where the presence of a notifiable disease or pest is suspected or confirmed.
    - Serve notices when the notifiable diseases and pests are found requiring destruction and or treatment of colonies and other products depending on the pest/disease.
    - Treat colonies infected with EFB with antibiotics.
    - Carry out documentary and physical checks on imported consignments from other member states as necessary.
    - Carry out checks on attendant workers and packaging imported with consignments of queen bees from third countries.

Legal responsibilities of beekeepers

12. The Bee Diseases and Pests Control (England) Order 2006 obliges beekeepers to:

- Report immediately (to the NBU or one of its Bee Inspectors) any suspicion of the presence of AFB, EFB, SHB or *Tropilaelaps* mites.
- Where the presence of a notifiable pest or disease is suspected, provide the information and facilities that a Bee Inspector may require to carry out their work, including details of the number and whereabouts of all owned or managed colonies and movements of bees and bee products that have been in their possession.
- Not move any honey bees, hives or appliances from a place where honey bees with suspected AFB, EFB, SHB or *Tropilaelaps* mites are kept until a sample sent to the NBU has been examined and it is confirmed that no AFB, EFB, SHB or *Tropilaelaps* mites is present, or until the honey bees have been examined by a NBU Bee Inspector who has confirmed that he/she is satisfied that no notifiable disease or pest is present.
- Comply with any Notices issued regarding the movement of colonies and other products and the destruction and or treatment of colonies and other products.
- Not to treat honey bees with any substance that may disguise the presence of AFB or EFB.
- Import responsibilities - where bees have been imported from third countries, the beekeeper must comply with the post-import controls laid down in the Order. In particular:
    - when the honey bees arrive at the apiary of destination (as indicated on the health certificate accompanying the honey bees), the consignee (named on health certificate) shall:

        - transfer the queen honey bees to new cages before they are introduced to any local colonies of honey bees; and

        - send the cages in which the bees were transported from the country of origin, the attendant bees and other material that accompanied the queen bees to the NBU for the purpose of investigating the presence of a notifiable pest.

        - under the Trade in Animals and Related Products Regulations 2011, beekeepers must provide prior notification of any intended import of bees from both other EU member states and third countries.

Annex 4 - Further details on additional measures on AFB and EFB. Build on current response to add measures which are tailored to reflect beekeepers' disease history, experience and competence

Five additional measures:

1. A more formalised approach by the NBU, assisted by the associations to raise beekeepers' awareness about AFB and EFB outbreaks and risks including locally, regionally and nationally;

2. An updated EFB control policy (with presumption of destruction as main response, although uncertainties about the effectiveness of destruction on recurrence will be investigated before finalising future EFB control policy);

3. Target beekeepers with recurrent EFB outbreaks to improve their management of this disease and to eliminate/reduce its recurrence and incidence; and,

4. Improve the ability of beekeepers to detect and manage AFB and EFB, including the causative agent/pathogen.

5. Recognise and reward good practice by giving commercial and semi-commercial beekeepers greater autonomy to manage and control AFB and EFB.

Note: specific requirements under the Bee Diseases and Pests Control (England) Order 2006 remain in place alongside these additional measures.

1 - raise beekeepers' awareness about AFB and EFB outbreaks and risks including locally, regionally and nationally

Scope: NBU to build on current work to provide information and regular updates to beekeepers about AFB and EFB disease risks (part of overall aim of NBU working with the associations to publicise the risks and raise the profile of disease and beekeepers' responsibilities for responding to, and minimising disease risks). This would be a more formalised and well publicised intervention helping (enabling) beekeepers make informed choices about where to keep their bees (for example, based on this information, beekeepers may decide not to move their colonies to forage in an area with current outbreaks of EFB (or AFB) and to inform them in a more targeted way about EFB (and AFB) disease status.

Benefits: Beekeepers will be enabled to make informed choices about apiary location and movement of hives to reduce exposure of their bees to pest and disease risks.

Drawbacks: Possibly raises expectations that making decisions on locations based on this information guarantees that your bees are safe from disease, whilst this is unlikely to be the case.

2 - Updated EFB control policy

Scope: (subject to further investigation and analysis by the NBU on the effectiveness of destruction on recurrence of EFB) a renewed commitment to colony destruction as the first choice control policy, shook swarm second choice, and antibiotic treatment only in specific limited circumstances. All to be well publicised and at the discretion of the bee inspector.

The beekeeper would be responsible for carrying out the destruction/treatment not the bee inspector, although this would be subject to a case-by-case decision by the bee inspector. In the event that the bee inspector specifies that the beekeeper should carry out destruction/treatment set out in the statutory notice, but the beekeepers does not do so, the bee inspector would implement and recover the costs of doing so (as per provisions in Bee Diseases and Pests Control (England) Order 2006).

Note: Ongoing research under the Insect Pollinator Initiative should improve understanding of EFB including how it spreads and its control. When the results are available by end 2013, we may need to revisit EFB control policies.

Benefits: this is a renewed commitment to try to remove the EFB pathogen from the apiary and reduce recurrence, although uncertainties about the effectiveness of destruction on recurrence will be investigated before finalising future EFB control policy. The renewed policy would further limit the use of antibiotics for treating bees given continuing pressures to reduce use of antibiotics in food-producing species. It would help raise the status of EFB as a notifiable disease which is subject to requirements set out in legislation.

Drawbacks: Some uncertainties remain about the effectiveness of colony destruction in controlling EFB. Antibiotics are a useful tool in the tool box at certain times of the year. Shook swarm works in many cases and cost effective. Beekeepers may not report EFB to the bee inspector/NBU if they think that their colonies will be destroyed with a potential risk of further EFB spread and outbreaks.

3 - Specific policy to target beekeepers with recurrent EFB outbreaks to improve their management of this disease and to eliminate/reduce its recurrence and incidence

Scope: A more formalised and well publicised response working with beekeepers who have recurrent EFB outbreaks i.e., where EFB tends to persist in an apiary for two or more years, including publishing the areas with recurrent outbreaks and highlighting the many factors under the direct influence of the beekeeper contributing to the successful control of EFB. The response would include BFA and BBKA working together to produce a code of practice for beekeepers on how to avoid recurrent EFB outbreaks.

In the event of an EFB outbreak, in addition to statutory notices issued to beekeepers under the Bee Diseases and Pests Control (England) Order 2006, the NBU/bee inspector would also provide tailored/personalised advice and recommendations, in writing, for the

beekeeper to follow to reduce EFB risks in the future (e.g., source their bees/starter colonies from suppliers following best practice, attend biosecurity/ barrier management course, specific steps to reduce EFB risks). If further outbreaks of EFB were found in the beekeeper's apiary or in the local area, the bee inspector would identify on a case by case basis how best to address this recurrence which may include specific training events on barrier management for the beekeepers in that area and/or seeking cooperation from local associations to run EFB training events due to local hotspots of disease.

Subject to progress with reducing both recurrent EFB outbreaks and associated costs to the public purse from such outbreaks, Defra and WG may consider at some stage in the future introducing new sanctions for beekeepers' poor risk management such as recouping the inspection costs for these apiaries and requiring the beekeepers to pay for, and attend compulsory barrier management training courses. Whether to introduce such sanctions would be subject to further analysis and a separate consultation and would also require new legislation.

A similar approach could be taken for recurrent AFB outbreaks, although this does not seem to be as much of a problem as for EFB. Inspection evidence (see AFB profile page 3) suggested that AFB disease does not tend to persist in apiaries for more than two to three years, as disease control (destruction of infected colony) and clean up is effective in most cases.

Benefits: Beekeepers, supported by BFA, BBKA and WBKA, respond to peer pressure and assume greater responsibility to improve beekeeping practices leading to reduction in recurrence of EFB and elimination of hotspots. The bee inspector's more tailored approach to advice and recommendations may help address the problems identified from inspection case studies where beekeepers' attitudes and perceptions were acting as a significant barrier to getting on top of EFB in their apiaries; for example, a high number of repeat inspection visits over 10 or more years to a limited number of beekeepers who have persistently mis-managed EFB (see page 9 of EFB evidence profile).

Drawbacks: in the light of a well-publicised response of dealing with recurrent outbreaks, could lead to the perverse outcome of some uncooperative beekeepers not reporting EFB to the bee inspector to avoid having to undertake improvements at their apiaries, leading to further spread of EFB and additional outbreaks. This could include resorting to using antibiotics (under veterinary prescription) leading to further spread and possibly masking AFB in the apiary.

4 - Improve the ability of beekeepers to detect and manage AFB and EFB, including the causative agent/pathogen

Scope: as part of a renewed focus of the NBU supported by associations to enable beekeepers to manage pest and disease risks in their colonies, develop beekeeper-friendly diagnostics and new training materials including self learning and (mobile phone) application resources on BeeBase:

- **Diagnostics**: To include investigation of whether and how currently available lateral flow devices (LFD) can be used by beekeepers to detect the EFB pathogen prior to symptoms (disease development). If this is successful their use would be piloted in the field. The pilot would include a survey of beekeepers' attitude to using diagnostics, barriers and benefits for disease control.

  Subject to the success of the pilot, we would consider how best to commercialise any new tools. Or further work would be commissioned to develop beekeeper-friendly diagnostics for EFB disease and/or pathogen.

- Self-learning resources: revise and update training materials on BeeBase to include additional self-learning courses and applications for mobile phones/devices.

Benefits: providing diagnostic tools is consistent with our overall aim of enabling beekeepers and improving their self-reliance; the tools would produce information on which they could act to improve their management of disease. For example, if the beekeeper detected the pathogen in their apiary, they may decide to shook swarm as a preventive measure. Evidence from the NBU's research on EFB demonstrates that beekeepers act to reduce disease risks if they know that the EFB pathogen is present in their symptomless apiary. Widespread use of such tools by beekeepers could also contribute to surveillance of AFB and EFB disease and/or pathogens in the future. Providing self-learning tools would help improve the beekeepers ability to spot and manage disease risks. In the longer term, due to more pro-active AFB and EFB risk management by beekeepers, AFB and EFB outbreaks may reduce even further.

Drawbacks: raises expectations of a field-based technology solution for detecting the pathogen which due to potential technical difficulties may not be readily achievable. Relies on beekeeper competence (which is variable) and willingness to use (and pay for) diagnostic tools. In relation to additional training and self-learning materials on BeeBase, this would add to the many materials already available including through the beekeeping associations. Development of these new materials work would require close cooperation and coordination between the NBU and the associations.

5 - Recognition and reward of good practice by giving commercial and semi-commercial beekeepers greater autonomy to manage and control AFB and EFB.

Scope: A national programme to manage AFB and EFB in commercial and semi-commercial apiaries. This would build on and expand the NBU's current response in commercial apiaries where beekeepers are following best practice. Beekeepers would be invited to join the programme subject to the bee inspectors' case-by-case assessment of their competence and ability to manage and control AFB and EFB outbreaks. As a result, some beekeepers may be awarded greater autonomy to manage and control AFB and EFB outbreaks reflecting their disease history, experience and competence. The requirements of the Bee Diseases and Pests Control (England) Order 2006 (notification, destruction notices and movement restrictions) would remain in place. Beekeepers would send a specified number of samples to the NBU for checking; record outbreaks and

measures; carry out controls; and report to NBU for inputting on BeeBase. The NBU would issue statutory notices as now and would carry out spot checks/audit of beekeepers in the programme.

The NBU would identify commercial and semi-commercial beekeepers to be invited to join this programme and as necessary, offer training. In developing the programme, the NBU would take account to lessons from a similar approach in Scotland which is running a pilot during 2012, and may include pilots to implement this new policy in England and Wales.

Benefits: Consistent with our overall aim of improving the self-reliance of beekeepers in managing and controlling disease risks. Recognises and rewards good practices of commercial and semi-commercial beekeepers consistent with better regulation. Subject to the programme's effectiveness in controlling AFB and EFB, it could be extended in due course to other beekeepers who follow best practice. Once the programme is operational, NBU and inspection resources would be available for other bee health priorities and the increased demands on its services from the growing number of new beekeepers.

Drawbacks: may lead to poorer control of AFB and EFB disease and increased spread at local and/or national level to other apiaries.

Annex 5 - Current surveillance activities carried out by the NBU and proposed changes

Policy purpose	Surveillance activity		
	Already in place		Possible additional or new activities (within current resources)
	Routine	Ad-hoc or as required	
Assessing progress with disease control policies	Priority inspection programme	(not applicable)	Routine samples from beekeepers (i.e., those to be identified to manage notifiable diseases at their apiaries); seek routine samples from trained (association) Disease Liaison contacts and/or Suitably Qualified Persons (when in place) and/or private vets. Subject to development of in-field diagnostics, expand role of beekeepers in early detection of pathogen and/or disease.
Detecting new outbreaks of notifiable diseases	Priority inspection programme	Notification and/or voluntary samples of suspect cases from beekeepers. (Samples are also submitted for chargeable adult disease diagnosis service).	
Assessing trends in endemic pests and diseases	Random part of inspection programme	Random Apiary Survey 2009 to 2011 (and EU-wide pilot surveillance project 2012 and 2013).	Subject to EU decisions, possible expansion of EU pilot surveillance project.
Detecting exotic pests and diseases (with the aim of earliest detection to increase chances of eradication given escalation risks)	Exotic pest survey (as well as other routine inspections). In addition, Non-native species Information Portal (the Asian hornet).	Voluntary samples from sentinel apiaries.	Expand numbers of apiaries included in survey. Expand number of sentinel apiaries.
Assessing disease-free status for export purposes (export health certificates)		Inspection of colony by bee inspector.	

Assessing pest/diseases on imported bees	Inspection of 100% of third country imports; 50% documentary and 30% physical check for EU trade.		
Assessing colony survival.	In-season and over-winter: priority inspections; Over-winter: NBU annual husbandry survey; BBKA and BFA annual surveys.		
Monitor CCD known risk factors (particularly viruses)			EU pilot surveillance project provides opportunity to screen for viruses implicated in CCD (and/or look for screening opportunities in other existing surveillance activities).
Assessing progress in education and training activities and campaigns in reducing disease risks and/or spread	(NBU husbandry survey provides some information on standards)		Need to agree measurable objective(s) or outcomes for the education programme against which to track progress. Baseline data on health status could be provided by random part of the inspection programme, Random Apiary Survey (and EU-wide pilot surveillance project 2012 and 2013).
Wildlife Incident Investigation Scheme (CRD policy lead and Natural England)	NBU investigates bee samples submitted under this scheme for adult bee diseases.		

Annex 6 - Other issues – import controls; health risks to honey bees from other insects; charging for NBU services; registration of beekeepers; compensation.

1. A number of additional issues are pertinent to honey bee health and/or the work of the NBU. These are covered briefly in this section, although currently no changes to policies are proposed (except to seek contribution to costs incurred by the NBU to provide lectures and practical demonstrations – see Consultation Questions 6 and 7).

2. Section 1 of the main document already mentions another key issue for honey bee health (and the health of other insect pollinators) – the importance of access to adequate nutrition (pollen and nectar) from a diverse range of floral sources from spring to autumn. Beekeepers influence the nutrition of their bees by decisions on the location of their apiaries and also by providing feed supplements during poor weather or poor local flora. Landowners, local authorities, utility companies, farmers, professional and hobby gardeners also influence insect pollinator nutrition by planting pollinator-friendly plants.

3. **Import controls**. Available evidence from BeeBase and presented in the various evidence profiles (see list in Annex 7) showed no outbreaks of AFB or EFB from third country imports over the last 5 years, and a limited number from intra-Union trade over the same period (1 EFB and 3 AFB cases). Based on this evidence, it was considered that current controls were working (i.e., 100% physical checks of queens, attendant workers and packaging from third country imports as required by EU legislation; and discretionary checks on intra-Union imports currently 30% physical checks at the recipient apiary and 50% documentary checks) and there was no need to change policies.

4. **Health risks to honey bees from other insects including wild bees and imported bumblebees (for pollination)**. This is potential risk which has been raised by beekeepers over recent years. Bumblebee imports are required under EU legislation, as with honey bee imports, to be accompanied by a health certificate. In 2009, Defra commissioned a short study to look at disease risks associated with commercially imported bumblebee colonies and to provide recommendations for screening to ensure, as far as possible, that imported colonies were disease free. The rearing facilities for commercial bumblebees are based in Belgium and Slovakia as well as the Netherlands.

5. The report noted that honey bee diseases may be imported with bumblebees: bumblebees are reared on pollen collected from honeybee hives from across Europe (Hungary to Spain), and many of these honey bee colonies are not certified disease-free. There is evidence that some honey bee parasites can infect bumblebee nests (e.g. SHB) and that bumblebees can carry honey bee viruses (e.g. deformed wing virus), so that commercial movement of bumblebees can spread organisms which may affect honey bee health. Other diseases such as AFB are sometimes present in the

pollen stores given to bumblebees before export, and could be vectored by bumblebees visiting flowers back into the honey bee population.

6. On the basis of the findings, importers of bumblebees (if non-native) are required by Natural England (reference Wildlife & Countryside Act 1981, non-native release licence) to screen the colonies for various species which could affect bumblebees (*Nosema bombi, Apicystis bombi, Crithidia bombi, Locustacaris buchneri, Mellitobia acasta and Sphaerularia bombi)*, as well as for honey bees risks, specifically Deformed wing virus (DWV), AFB and SHB.

7. Spillover of DWV or AFB (or SHB) from imported bumblebees leading to impacts in honey bee colonies remains a theoretical risk. Research under the Insect Pollinator Initiative includes a project which is looking at the exchange of pests and diseases between honey bees and native bumblebees. In addition, the Asian hornet is known to carry Israeli Acute Paralysis Virus which is associated with Colony Collapse Disorder.

8. Based on current understanding and import requirements for bumblebees, and absence of evidence of spillover to honey bees, the review group considered that no further measures or interventions could be identified at this time although this should be reviewed as and when new information or evidence became available.

9. **Charging for NBU services**. The NBU provides free services to beekeepers comprising apiary inspections (for endemic statutory disease and exotic pests), diagnostic tests for statutory pests and diseases, post-import control checks, export certificates, lectures/ practical demonstrations, BeeBase and advisory leaflets and guidance. This approach is not consistent with government policy which seeks to achieve full cost recovery for its services, where this is possible, although has been accepted by Ministers as an exception due to the public good provided by beekeepers through pollination of agricultural crops and wild plants.

10. There are currently no plans to introduce charging except for seeking contributions to the costs of NBU delivery of lectures and practical demonstrations (see para 42 (i) in Section 3 of this document) which can be introduced without additional legislation. However, charging for other services cannot be ruled out in the future.

11. **Registration of beekeepers**. In view of the successes over recent years in increasing the number of beekeepers registered voluntarily on BeeBase (from 17,000 in 2008 to over 27,000 in 2012), the current preference of government is to continue with a voluntary register. Compulsory registration would require new regulations including sanctions and penalties for non-compliance, and costs associated with implementation and enforcement. These additional regulatory and cost burdens would be difficult to justify given that the voluntary register is working well and government policy is to minimise regulatory burdens.

12. The ongoing EU review of animal health legislation[12] includes the registration of operators, amongst other things, which may suggest more rigorous requirements for beekeepers in the future, although there may be scope for exempting certain categories of operators.

13. **Compensation to beekeepers from compulsory destruction of SHB-affected colonies**. Government does not compensate beekeepers for statutory destruction of colonies affected by notifiable pests and diseases. Beekeeping stakeholders on the review group challenged this with respect to SHB given that infested apiaries would be destroyed as part of the current eradication policy with potentially significant cost implications particularly for bee farmers. Compensation for the first interception(s) was proposed as a useful incentive to encourage reporting of suspect SHB leading to early detection and increasing the likelihood of eradication.

14. However, compensation was unlikely to be acceptable to government given current developments on responsibility and cost sharing (for example in the livestock sector). In addition, BDI already provides insurance cover to beekeepers for losses associated with SHB statutory controls. As a result, there are no plans for government to introduce compensation for SHB, although this does not rule out beekeeping associations, nationally or locally, working together to set up and maintain a small contingency fund.

[12] The Commission's project to develop a new legal framework for animal health, within the context of their EU Animal Health Strategy published in 2007, is seeking to issue proposals in autumn 2012 followed by formal negotiations with Member States, and implementation during 2014.

Annex 7 - Sources of evidence for the review – separate documents. These are located on the same Defra webpage as this consultation document (http://www.defra.gov.uk/consult/open/) except where indicated

1. AFB evidence profile
2. EFB evidence profile
3. *Varroa* evidence profile
4. *Nosema* evidence profile
5. Exotic pests evidence profile
6. Prioritisation exercise – method and results
7. Risk assessments on SHB, *Tropilaelaps* and the Asian hornet (available at https://secure.fera.defra.gov.uk/nonnativespecies/home/index.cfm)
8. Response plan on the Asian hornet (available at www.nationalbeeunit.com)
9. Contingency plan on SHB and *Tropilaelaps* (available at www.nationalbeeunit.com)
10. NBU inspection data on pest and diseases (available at www.nationalbeeunit.com)