



BANK OF ENGLAND

Assessment of the next steps following the discovery of traces of animal-derived products in £5 polymer banknotes

1. Following the discovery in autumn 2016 that traces of animal-derived products are used in the manufacturing process of polymer for the £5 polymer banknote, the Bank of England has weighed the key factors in its banknote issuance responsibilities and undertaken both detailed internal analysis and targeted external engagement to understand the concerns raised by various groups. In particular, the inclusion of animal-derived products in the manufacturing process of polymer is sensitive to groups and various religions which are either opposed to harm to animals in principle or those with a prohibition on consumption or use of products from specific animals. Having conducted this exercise, the Bank has concluded that it will:
 - not withdraw the current £5 polymer banknotes from circulation and will proceed with plans to withdraw legal tender status of the £5 paper banknotes on 5 May 2017;
 - continue with the proposed launch of the new £10 polymer banknotes in September 2017, using the existing polymer substrate;
 - complete its work with suppliers and internal analysis to determine the feasibility of using alternative substrates to produce polymer notes; and
 - launch a full public consultation on the contents of the polymer substrate to be used in any future reprints of both the £5 and £10 polymer banknotes and the proposed new £20 polymer banknotes.
2. This document summarises the key factors behind the Bank's decision.

Background

3. On 18 December 2013, following a broad public consultation, with 87% of the public in favour of the move to polymer, engagement with the cash industry and the Royal National Institute of Blind People, the Bank announced that the new series of £5 and £10 banknotes would be printed on a polymer substrate.
4. Polymer, when combined with robust security features, offers benefits in its counterfeit resilience and durability, as well as being cleaner and having a lower environmental impact than equivalent paper banknotes. Full results from the polymer consultation can be found [here](#). Subsequently, on 2 September 2015, the Bank announced that the next £20 banknote would also be printed on a polymer substrate.
5. The £5 polymer banknote, featuring Sir Winston Churchill, was launched on 13 September 2016. The Bank has also announced that the £10 polymer banknote, featuring Jane Austen, is due to be launched in September 2017 and that the £20 polymer banknote, featuring JMW Turner, is due to be launched by 2020.
6. In response to a question from the Bank triggered by a public enquiry, the Bank was advised by its polymer supplier in autumn 2016 that animal-derived products (from tallow) were used in trace

quantities in the manufacture of the polymer substrate for the £5 and £10 polymer banknotes. The Bank responded to this enquiry and promptly alerted the public by issuing a **statement** on 30 November 2016, indicating that it was aware of some groups' concerns about traces of tallow in the new £5 polymer banknote, which the Bank respected and was treating with the utmost seriousness, and announcing that its polymer supplier would look into potential solutions.

7. The Bank issued a further **statement** on 15 February 2017 alongside this document.

The Bank's responsibilities in currency issuance

8. One of the Bank's key public functions is the issuance of banknotes in England and Wales and its responsibility is to maintain confidence in the physical currency. The public should be confident that:
 - they can get the quantity and denominations of banknotes they want when they want them;
 - their banknotes are genuine; and
 - the banknotes are good quality and can be easily authenticated.
9. The Bank meets these responsibilities through the design and manufacture of banknotes that are highly secure and recognisable to the public. It works with the cash industry to meet public demand through the distribution (and subsequent withdrawal) of good quality banknotes in sufficient quantities. It also seeks to achieve value for money.

Considerations relating to the Equality Act 2010

10. In reaching its decisions, the Bank has carefully considered the requirements of the Equality Act 2010, including the Bank's public sector equality duty. In particular, it has sought to identify and assess the actual or likely effects (positive and negative) which these decisions may have on persons with protected characteristics and whether any negative impact on a particular group could be justified.
11. In early 2017, in order to identify and assess the potential effects of the inclusion of animal-derived products in the manufacturing process of polymer on certain communities, the Bank met representatives of certain groups with protected characteristics, including representatives of vegan and vegetarian communities and certain potentially affected religious groups. In particular, the Bank identified that this issue was of particular sensitivity to those who are either opposed to harm to animals in principle or those with a prohibition on consumption or use of products from specific animals.
12. Based upon this targeted engagement, the Bank has identified the following negative effects which could potentially be experienced by members of these groups in their use of the polymer banknotes: possible conflict with philosophical beliefs which make them opposed to any consumption of, or contact with, products that exploit or cause harm to animals; and difficulties for certain religious groups where their belief includes the avoidance of violence to animals and/or consumption or use of specific animal groups. The consequences of the inclusion of animal-derived products in the manufacturing process of polymer banknotes for these groups include individuals trying to avoid using polymer notes in transactions, and — for certain religious groups — the inability to take the notes into temples, with potentially consequent impacts on the level of donations.

£5 and £10 polymer banknote production

13. The £5 polymer banknote was launched on 13 September 2016, at which point 590 million banknotes had been printed, sufficient to cover projected volumes until 2019. At the end of November 2016, polymer banknotes accounted for 42% of the stock of £5s in circulation in the United Kingdom. This share had risen to 51% by end-January 2017.

14. In preparation for its issue in September 2017, mass production of £10 polymer banknotes began in August 2016 and by the end of November 2016, 102 million notes had been printed at a cost of £9 million. The Bank had also confirmed orders with its supplier for a further 547 million of £10 polymer banknotes, costing £43 million covering deliveries until April 2017.
15. The potential negative effects of the inclusion of animal-derived products in the manufacturing process of polymer banknotes on certain groups with protected characteristics were assessed against the significant impact of discontinuing production of £5 and £10 polymer banknotes at this point in time. The Bank considered that the following criteria were relevant in assessing the impact:
 - reducing counterfeiting risk;
 - ensuring the continuity of supply of banknotes to the public;
 - value for money;
 - impact on UK business; and
 - environmental impact.

The impact of withdrawing the existing £5 polymer banknote

16. In the event of a decision to have all polymer banknotes free from animal-derived additives, the Bank would need to withdraw £5 polymer banknotes currently in circulation and replace them all with a feature to allow identification between old and new banknotes. This would involve recalling the £5 polymer banknotes in issue, destroying the total stock of £5 polymer banknotes and returning to the £5 paper banknotes to ensure sufficient stocks of £5s in circulation until new design £5 polymer banknotes could be developed, produced and tested by the cash industry.

Reducing counterfeiting risk

17. The £5 denomination is not materially counterfeited and a reversion to £5 paper banknotes would of itself be unlikely to worsen the counterfeiting situation. However, a decision to recall the £5 polymer banknotes and reprint paper £5 banknotes would delay the launch of £10 and £20 polymer banknotes where the counterfeiting considerations are much more significant. In 2015, they accounted for 90% of all counterfeit volumes (~£4 million by value). The delay is because as part of the move to polymer, the size of Bank of England banknotes are being reduced. To avoid the occurrence of overlapping sizes between different denominations, the move to a £5 polymer banknote has to occur before that for the £10, and the move to the £10 polymer banknote before that for the £20 polymer banknote.

Ensuring continuity of supply of banknotes to the public

18. In order to ensure continuity of supply of £5 banknotes in the event of a polymer withdrawal, the Bank would need to re-order the components and print sufficient £5 paper banknotes. The expected lead time for this is 24 weeks. In the meantime, £5 polymer banknotes would need to continue to circulate and increasingly old £5 paper banknotes would remain in issue. This would have a negative impact on the quality of £5 paper banknotes in circulation. It is probable that the deterioration in the quality of £5 paper banknotes would be very noticeable to the public, make them more difficult to authenticate and cause problems for cash handling machines. It is also possible that, for a period, the Bank might not have sufficient quantities of adequate quality £5 notes to meet demand. Such outcomes would have potentially significant public detriment.
19. In December 2016, the Bank asked its supplier of cotton paper to look into the process for making the substrate used in Bank of England's paper banknotes. That supplier has now conducted a thorough review and confirmed in January 2017 that there are no animal-derived ingredients used in the manufacturing process for banknote paper. It has identified one ingredient used in the recycling of offcut material, outside the main manufacturing process, that includes a trace amount of animal-derived ingredients. It has established that this ingredient is wholly consumed in the secondary production process and that no trace has been detected in the finished banknote paper.

Although the banknote paper does not contain any animal-derived ingredients, the fact that one is used during the production process may continue to raise concern for some members of the public.

Value for money

20. The Bank has spent £46 million on printing the first run of the polymer £5. Replacing it with the paper note would incur significant costs. Recalling the notes would incur costs for the Bank and the cash industry and destroying all the £5 and £10 polymer notes printed to date would cost the Bank around £50,000. Reprinting similar quantities of the paper £5 would cost £8 million–10 million. These sums would be deducted from seigniorage⁽¹⁾ income paid to HM Treasury by the Bank and therefore borne by the tax payer.

Impact on UK business

21. From 13 September 2016, the Bank has issued only polymer £5 banknotes from its cash centres and, in turn, Notes Circulation Scheme members⁽²⁾ have only issued polymer notes to their customers. There were no plans to recirculate existing £5 paper banknotes from cash centres. The proposed plan instead was that existing £5 paper banknotes would steadily be withdrawn from circulation ahead of withdrawal of legal tender status on 5 May 2017.
22. A reversion to £5 paper banknotes would impose material costs on the cash industry and retailers. Significant numbers of ATMs and self-service terminals (including, for example in supermarkets) would require re-adaptation to be able to issue £5 paper banknotes.
23. A decision by the Bank to withdraw £5 polymer banknotes could also have implications for the Scottish issuing banks which have issued equivalent £5 polymer banknotes in 2016. It would be a commercial decision for each Scottish issuing bank as to whether it withdrew its own £5 polymer banknotes. Were they to do so, this would involve similar cost issues.

Environmental impact

24. The Bank commissioned in 2013 an independent study⁽³⁾ from PE International to assess the environmental impact of the Bank's current paper banknotes and the alternative use of polymer banknotes. This concluded that polymer, for banknotes, had significant environmental benefits compared with cotton paper thanks to its greater durability. In the event that the polymer £5 banknote was withdrawn, all notes printed to date would need to be destroyed.

The impact of cancelling the launch of the £10 polymer banknote

Reducing counterfeiting risk

25. The £10 paper banknote is the oldest Bank of England banknote design in circulation and therefore the security features require updating to take advantage of developments in technology. The use of polymer is an important part of our anti-counterfeiting strategy.

Ensuring the continuity of supply of banknotes to the public

26. In preparation for the issue of the £10 polymer banknote, stocks of £10 paper banknotes have been run down. It would require significant time to replace them. It would be close to six months before deliveries of new £10 paper banknotes notes could begin. During that time, there would be significant risks to the availability and quality of the note.
27. As referenced in paragraph 19, the process to manufacture banknote paper for Bank of England paper banknotes also uses a trace amount of animal-derived product as part of a secondary

(1) The Bank of England Charter Act of 1844 gives the Bank the exclusive right to issue notes in England and Wales and requires the Bank to account separately for income derived from banknote issuance. This 'seigniorage' income is essentially the difference between the return on the investment of the value of money in circulation and the cost to produce and distribute it. This income is paid over by the Bank to HM Treasury.

(2) The Bank does not distribute banknotes. Instead, members of the Notes Circulation Scheme (NCS) — wholesale cash operators — distribute notes in response to demand from financial institutions and retailers. The current members of the NCS are G4S Cash Solutions UK Ltd, Post Office Ltd, Royal Bank of Scotland Group Plc and Vaultex UK Ltd (a joint venture of Barclays Plc and HSBC Plc).

(3) www.bankofengland.co.uk/banknotes/polymer/Pages/factsheets.aspx.

production process. Although the banknote paper does not contain any animal-derived ingredients, the fact that one is used during the production process may continue to raise concern for some members of the public.

Value for money

28. Mass production of £10 polymer banknotes began in August 2016. The required stock at launch is 1.2 billion. By the end of November 2016, 102 million notes of these had been printed, at a cost of £9 million. The Bank had also confirmed orders to its supplier to print a further 547 million of £10 polymer banknotes, costing £43 million, covering planned deliveries until April 2017. Destroying all the £5 and £10 polymer notes printed to date would cost the Bank £50,000. As with the £5, the cost of re-printing the paper £10 note would be deducted from seigniorage income paid to HM Treasury.

Impact on UK business

29. The cash industry is planning for the issue of £10 polymer banknotes in summer 2017 and will already have incurred associated costs. For example, banknote equipment manufacturers have started to work to develop machine adaptations and firms have started to place orders for key components, such as new ATM parts to accommodate the revised sized note. If the issue date was to move beyond 2017, the delay would require considerable re-planning across the industry. Suspension of the production of £10 polymer banknotes would also impact the Bank's key suppliers.

Environmental impact

30. As referenced in paragraph 24, there are environmental benefits of moving from cotton paper to polymer banknotes. As with £5 polymer banknotes, in the event a decision was made to cancel production of £10 polymer banknotes, all notes printed to date would need to be destroyed. The Bank would also need to reprint £10 paper banknotes to maintain the continuity of supply, as outlined above.

Plans for the £20 polymer banknote

31. The £20 polymer banknote is due to be issued by 2020. This timetable provides an opportunity, if desirable, for the Bank to change certain aspects of the proposed production process without overly disrupting the planned trialling, production and issue of the note. Large scale trials are due to be conducted in the second half of 2017 and due to the complex production process and large volume of notes needed, mass production is planned to start in 2018.
32. However, it takes significant time to test any new substrate. The Bank had tendered the contract for the £20 polymer in May 2016 and was ready to sign it late last year. This has now been put on hold until the Bank has decided the best way forward weighing all the considerations.
33. The Bank has instead instructed polymer suppliers to investigate alternative options to the inclusion of animal-derived products in the manufacturing process for polymer notes. Those alternatives could for example include the use of palm oil or coconut oil as a substitute for animal-derived products. Suppliers have indicated that a plant-based alternative should have no impact on the quality of banknote production, though this would still need to be validated by production trials over the next few months.
34. At the same time, however, the Bank needs to understand whether the use of plant-based alternatives would raise its own concerns. One aim of the Bank's forthcoming consultation, therefore, is to strengthen its understanding of these complex issues and to inform a final decision about whether to use small quantities of animal-derived additives or switch to a plant-based alternative in the manufacturing process for polymer notes. This process would then be used for all £20 polymer banknote production and for future print runs of the £5 and £10 polymer banknotes.

The Bank expects to make this decision in summer 2017 following a review of the responses to the public consultation and when results of trialling, timings and estimated costs are available.

Conclusion

35. The Bank has considered its banknote issuance responsibilities in relation to both the £5 polymer banknote in circulation and the £10 polymer banknote, which is in production. It has carefully balanced these factors against any potential harm that it has identified may be caused to groups with protected characteristics following our outreach programme and research.
36. After careful consideration the Bank has concluded that the severity of the combined impact of the factors outlined in paragraph 15 outweigh potential harm caused. Of particular importance is the fact that the Bank became aware of the issue after £5 polymer banknotes had been issued and after a significant volume of £10 polymer banknote stock had been printed. Withdrawing £5 polymer banknotes and stopping production of £10 polymer banknotes would have significant implications for the Bank's anti-counterfeiting strategy and threaten continuity of supply of banknotes to the public. It would carry environmental risks and impose significant financial costs on the Bank, and thereby the taxpayer, and on the cash industry.
37. Given these factors, the Bank considers that it would not be a proportionate response to withdraw £5 polymer banknotes or to delay issue of the £10 polymer banknote. Having regard to the concerns raised by certain groups with protected characteristics, which the Bank treats with the utmost seriousness, the Bank will publish a full public consultation on future production runs of the £5 and £10 polymer note and the new £20 polymer note. The consultation will be published on 30 March 2017.