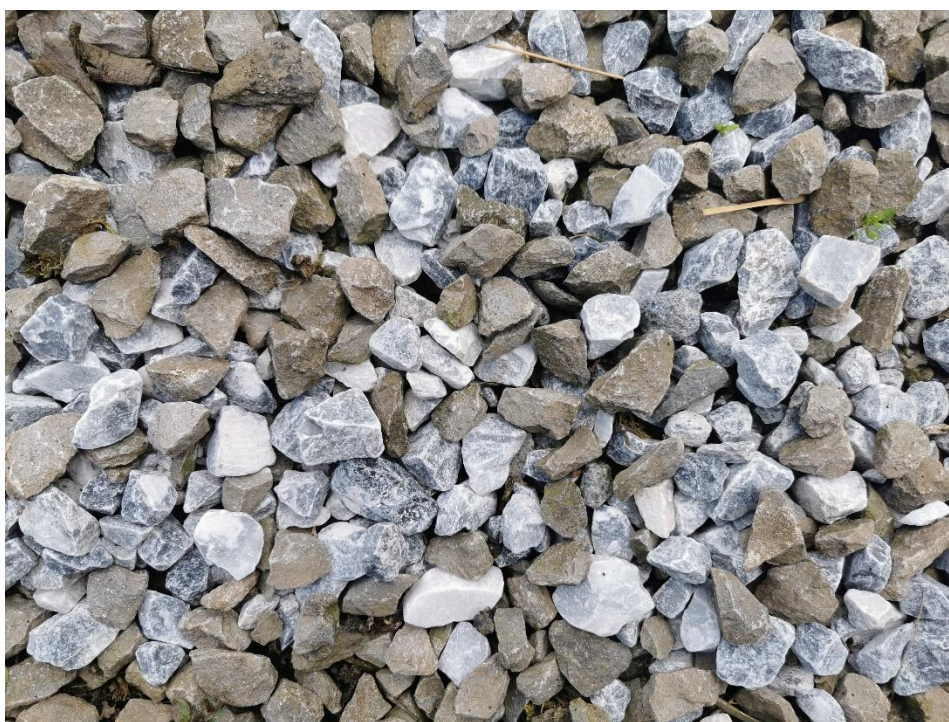


Scoping the risk of bulk aggregate (topsoil, sand, gravel, stone, wood chips) movement into and within Scotland

Policy Summary



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1 Policy Summary

1.1 Background

The biosecurity risks to plants posed by movement of bulk aggregates (e.g., sand, stone, wood chips, and soil) to and within Scotland is currently unclear. It is theoretically possible for plant pests and pathogens to travel within such products, but the evidence for this is patchy. The UK Plant Health Risk Register (UKPHRR) does not include a specific pathway in relation to bulk aggregates which suggests that these materials are not routinely considered during pest risk analyses beyond soil/growing media, plants for planting (with soil), and bark. There appears to be potential pathways from aggregate to plants either when used at the planting site, or via movement of organisms from aggregate to plants.

In 2015, the European Food Safety Authority (EFSA) investigated the plant health risks posed by EU import of soil or growing media. but no European group has looked at other bulk materials. However, the plant health risks associated with bulk materials has been considered elsewhere. For example, New Zealand have identified bulk aggregates as a biosecurity risk and have introduced an 'Import Health Standard' for Soil, Rock, Sand, Clay, and Water. This Standard describes the conditions that must be met by the exporting country or importer to receive a permit to import. This includes details of the treatment that has been carried out, such as heat treatment, and all consignments must be accompanied by a treatment certificate. This project considered whether greater attention should be given in Scotland to possible risks.

1.2 Key Research Questions

- What is the provenance of bulk aggregates used in Scotland (specifically topsoil, sand, gravel, stone, wood chips)?
- What are the plant health risks posed by bulk aggregates?
- Are there any recommendations for improving biosecurity for these materials?

1.1 Research Undertaken

- This project engaged with the building, quarrying, forestry and landscaping sectors to understand how bulk aggregates are produced and moved into and within Scotland.
- An evidence review was conducted to gain clarity on bulk aggregate provenance and movement from the literature.
- Import data for some of the bulk aggregates in question was examined.
- Laboratory experiments were conducted on samples of bulk aggregate materials to ascertain if there were any pests present.

1.2 Main Findings

Achieving widespread stakeholder engagement during this study was a significant challenge. It soon became clear that the sectors contacted did not consider biosecurity as an issue for their business/organisation. Contamination was a major consideration (e.g., asbestos, plastics, etc.) but we found no evidence that plant diseases had been considered. In addition, it was challenging to understand the provenance of some of the bulk aggregates because the sectors in question are largely unregulated. We undertook a preliminary risk assessment reflecting distance moved and likelihood of pest and disease organisms within the aggregate.

We identified bark chips as the highest risk bulk aggregate examined. They are considered within the UKPHRR on a host-by-host basis (i.e., if it is a possibility that a pest could move in bark it will be noted as a pathway for that pest), but the commodity of bark chips in itself is

not assessed for its plant health risks. Bulk movement of wood chips for landscaping purposes is commonplace across Scotland. This activity is unregulated and the provenance of the material for sale is not always clear. The more responsible suppliers use UK-sourced material from Forest Stewardship Council (FSC) certified forests, but no pest-reduction measures are taken (e.g., heat treatment of the material). Wood chips are also imported into the UK from 39 countries. In the limited laboratory testing undertaken in this study, we found live pathogens in bark samples including *Phytophthora bilorbang*, a pathogen which causes decline in a number of woody hosts, including *Olea* root rot in Italy. We therefore conclude that bark chips are a high-risk bulk aggregate and represent a significant plant health risk to Scotland's green spaces and wider environment (Figure 1).

Topsoil was also considered as a high-risk bulk aggregate in Scotland. This was due to the unknown provenance of topsoil and the few regulations within this sector. There is a voluntary British Standard for topsoil (BS 3882:2015) which ensures that it is of a certain quality, but not all suppliers are signed up, and the standard does not require any heat treatment to remove pathogens. Bulk aggregate products are also available on online marketplaces which poses a significant plant health risk because the origin of these products is unknown.

There is some evidence that sand can be a human health issue as it can carry zoonotic diseases (*Pseudomonas* spp. in beach sand). However, we could find no research that had been undertaken on the plant health risks associated with sand. The UK imports a significant amount of sand (1.2Mt with a value of £86 million between 1st January 2022 and 30th June 2024) from 49 countries. We suggest that the plant health risk from sand is unknown and requires further investigation.

Scotland produces a significant amount of primary bulk aggregates (sand, gravel and crushed rock) within its borders (e.g., 3.74 Mt of sand and gravel, and 17.04 Mt of crushed rock were produced in Scotland in 2019). This material moves within Scotland and may therefore be assessed as low risk. This study did find live pathogens to be present in the small number of samples tested but this could have been due to the storage of the material on the site where it was obtained. Many more samples would have to be tested before conclusions could be drawn on the biosecurity status of these materials.

One specific case considered was the biosecurity risks associated with the building of roads and paths within forests and woodlands (e.g., for timber extraction or for recreational activities) and the natural environment (e.g., estate roads). We found that in Scotland, there is generally sufficient material within quarries across the forest estate to enable forest roads and paths to be built with material of a known provenance within a short distance of the activity (usually less than 100 miles). The risks of the introduction and spread of a forestry pest during this activity is therefore assessed as low (except when sourced from particular outbreak areas).

The UK imported 2.8 Mt of building blocks and bricks between 1st January 2022 and the 30th June 2024 with a value of £667m. This study could not identify any research which

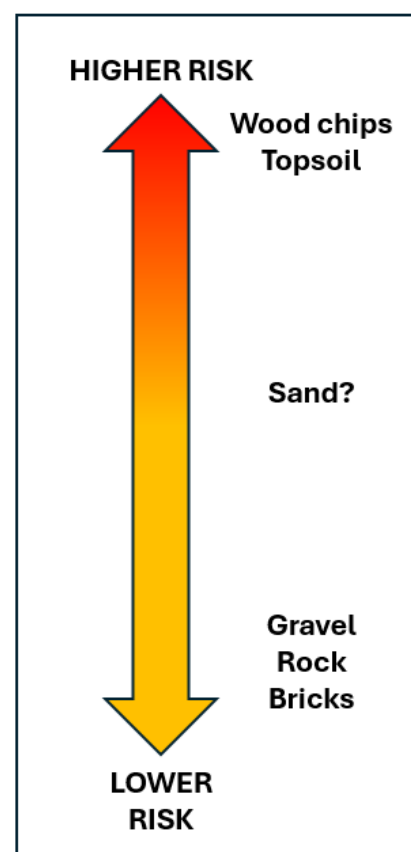


Figure 1: The biosecurity risks associated with each bulk aggregate. ? = unknown.

investigated the phytosanitary status of bricks and building blocks. Given that these materials go through an industrial process during production it is assumed that they are very low risk. However, as these materials move across borders it is conceivable that they may contain hitchhiking species of pests on or within spaces in them (or on the pallets that they are on).

We can potentially learn from international standards, particularly the Import Health Standard (IHS) for Soil, Rock, Sand, Clay, and Water which was introduced in New Zealand to address the biosecurity risks posed by these bulk aggregates (New Zealand Government, 2024). This Standard describes the conditions that must be met by the exporting country or importer to receive a permit to import (such as heat-treatments). This dramatically reduces the risk of the import of the kinds of organisms identified in this study, as well as insect pests and weed seeds (potential invasive, non-native species).

1.5 Recommendations

- Further attempts should be made to engage with the various organisations and businesses involved in the production and movement of bulk aggregates to raise awareness of the potential plant health issues associated with these products. This is particularly important for the topsoil and wood chip sectors because their products are high risk from a plant health perspective.
- The British Standard for topsoil (BS 3882:2015) should be updated to include treatments which lower the risk of the product containing pests and pathogens. In addition, a more rigorous application of the standard to make it obligatory would raise the standard of the product and lower the plant health risks.
- There are currently no restrictions on the import of soil from the EU, the Plant Health Authorities should consider a prohibition to avoid the movement of pests into GB within soil.
- The Plant Health Authorities should consider carrying out Pest Risk Analyses on bulk aggregate pathways so that they can be included in the UKPHRR. This would lead to a better understanding of the trade networks involved and enable stakeholders to carry out more accurate biosecurity risk assessments.
- Sand is a major commodity which is known to contain pathogens associated with human health issues. Further investigation on the ability of sand to contain plant pathogens and enable their movement should be initiated.
- An industry standard for chipped wood and bark products is urgently needed to ensure that this commodity is treated in some way to remove pests (e.g., heat treated). This should be a requirement for all producers because it is clear from this and other studies that plant pathogens can be present in wood chip products which will be applied during landscaping projects. This represents a significant biosecurity risk to Scotland's managed and natural environments.

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