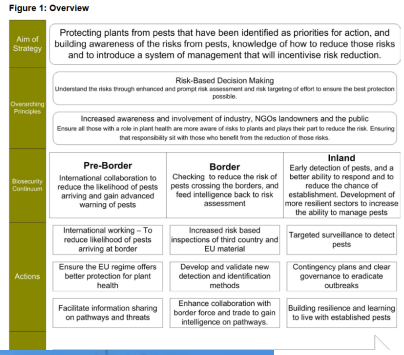

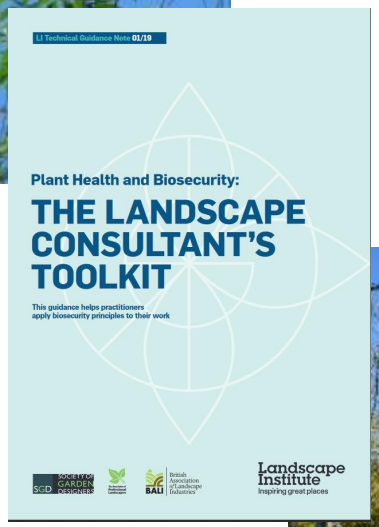

Good Biosecurity Practice

– how the work of Landscape Architects can help prevent the introduction and spread of harmful organisms as part of the Plant Biosecurity Continuum

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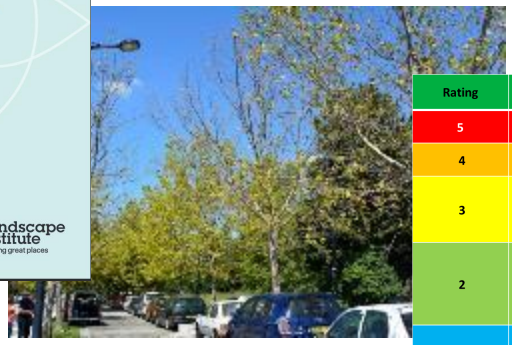
Royal Society of Biology Senior Plant Health Professional



Rating	Plants for planting	Wood and wood products	Other possible pathways	Plant parts and plant products
5	Plants for planting (not seeds)	-	-	-
4	-	Non-squared wood, Bark	-	-
3	-	Solid wood packaging material (ISPM labelled)	Soil/growing medium, natural spread	-
2	Seeds (True)	Squared wood	Agric. machinery, Passengers (luggage), hitchhiking, plant waste	Cut flowers or branches
1	-	-	Manufactured plant products (e.g. wooden furniture)	Fruit or vegetables, grain, pollen, stored plant products

@cobwebdr

What is Plant Biosecurity?

‘A series of precautions that aim to prevent the introduction and spread of harmful organisms’

Derived from: Gregory Koblentz, 2010

What are harmful organisms?

Damage – contributing factors

- Predisposing factors that made plants more **vulnerable** to attack, effect **defence mechanisms** and **impact** of any pest or pathogen

Cultural

- Soil type and compaction
- Nutritional

Environmental

- Light
- Temperature
- Water
- Aspect
- Chemicals

Different roles of organisms

- **Pathogens** e.g. Ash dieback
  - DISEASES

- **Saprotrophs**

e.g. Decomposers - leaf litter decay

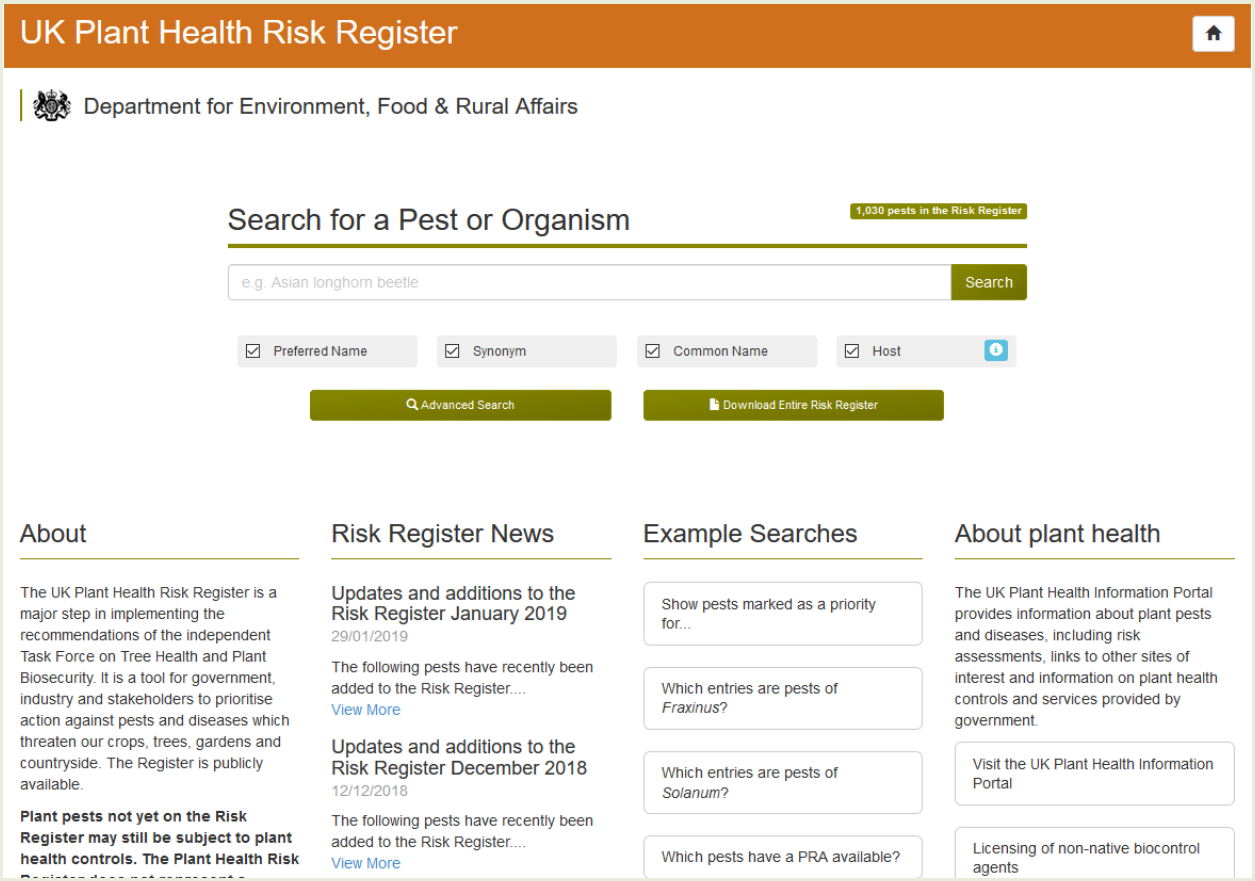
Helps habitat creation and is part of the Carbon cycle

- **Beneficials**

e.g. Mycorhizzal fungi

e.g. Natural biocontrol agents

UK Risk register



- Available online: https://planthealthportal.defra.gov.uk/
- It can also be downloaded into excel to facilitate analysis of the data it contains
- New entries or changes to entries are highlighted via a news feature

Pathways

How could these harmful organisms be introduced?

Pathways of Introduction

- Plants for planting
- Plant products
- Wood and bark
- Wood packaging materials (WPM)
- ‘Natural’ routes – air, water, vectors

UK Risk Register
Inherent pathway risk ratings

Rating	Plants for planting	Wood and wood products	Other possible pathways	Plant parts and plant products
5	Plants for planting (not seeds)	-	-	-
4	-	Non-squared wood, Bark	-	-
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- Further details and guidance in ISPM 36

Wood and bark

ISPM 39

- Wood
  - Round wood – with or without bark e.g. stakes
  - Sawn wood – with or without bark e.g. wooden structures
  - Mechanically processed wood e.g. fibre board, MDF
- Risks?
  - Bark and wood boring beetles, termites, scales…
  - Canker fungi, decay pathogens, rusts, vascular wilts
  - Nematodes



Wood packaging materials

Wood packaging materials (WPM) ISPM 15

Crates, boxes, palettes, cable drums

Must be made from Debarked wood

Dunnage – scrap wood +/- bark used for packing

Exemptions from WPM regulations

< 6mm thickness

Treatment

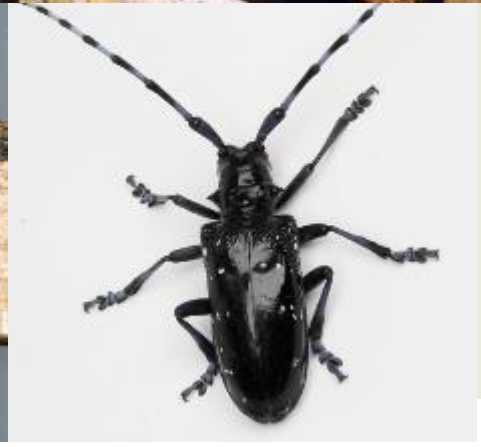
HT Heat treatment (56C > 30 mins)

MB Methyl bromide (sustained concentration over 24h)

DH Dielectric heating e.g. microwave

WPM and Longhorn beetles

Asian or citrus longhorn beetles (*Anoplophora* spp.)



Pathways

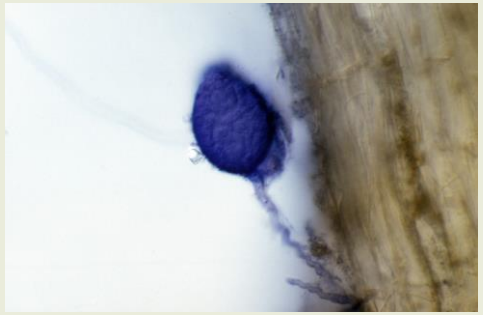
How could these harmful organisms spread?

Natural pathways

- Water

Irrigation source – mains vs ‘green’

Splash risk – basal or aerial



- Soil and growing media (ISPM 40)

Any component that contains organic material can facilitate P&D survival

Risk increases with rootball size

- Air

Distance: Intercontinental to plant to plant

Passive (wind blown) or Active (wings)

Dispersal of vectors

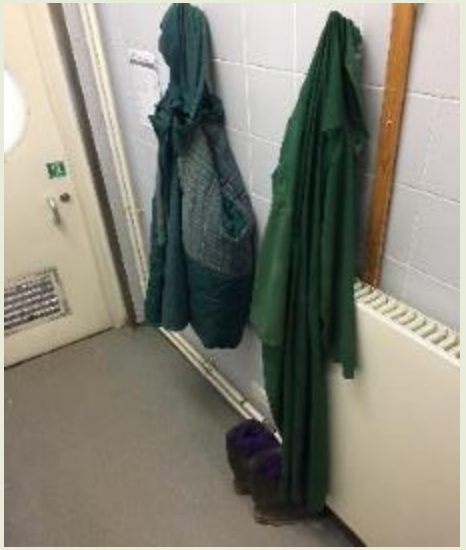
Assisted spread

Apart from natural pathways what other types of mechanisms might be involved in assisting the spread of pests and diseases?

Spread - people

- Hands – mechanical transmission
- Footwear
- Clothing
- Personal Protective Equipment (PPE)
- Tools

- Hygiene regime?
- Cleaning and sterilisation



Spread – vehicles, machinery & equipment (VME)

VME used in: ISPM 41

- Agriculture and forestry
- Construction and Industrial purposes, Mining, Waste management
- Boxes, crates, pots, stakes, canes, fleece, netting, …

May carry:

- Pests, Diseases, Weeds, Soil, Plant debris, Seeds

Cleaning:

- Removing internal and superficial contaminants/debris
- Pressure washing, steam cleaning, vacuuming, compressed air

Treatments:

- Chemical or Temperature

Biosecurity Continuum

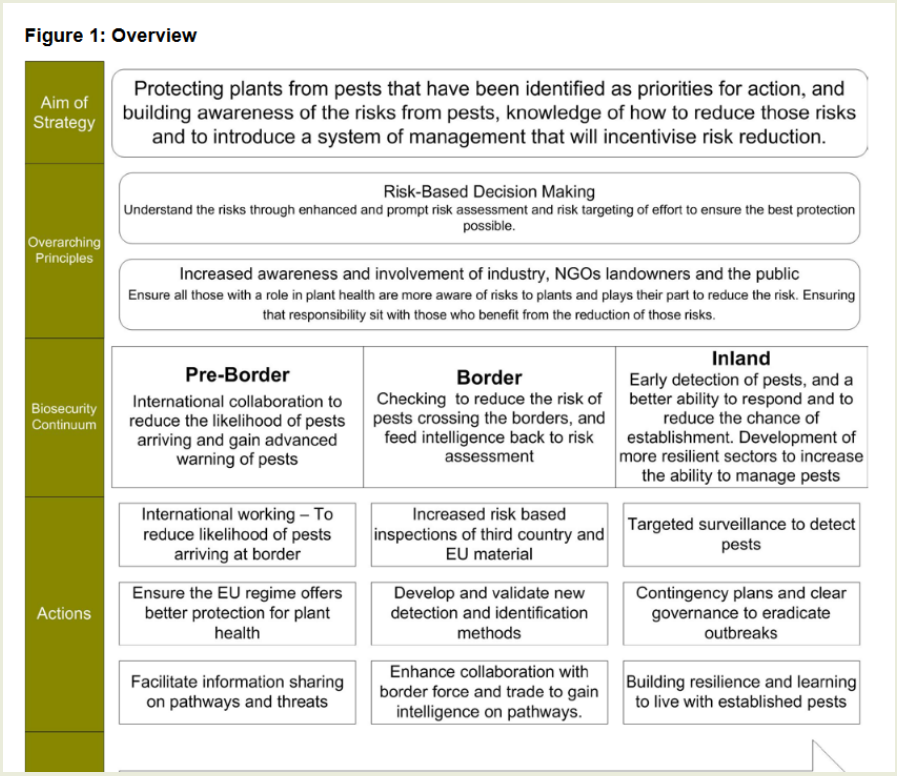


Figure 1: Overview

Aim of Strategy	Protecting plants from pests that have been identified as priorities for action, and building awareness of the risks from pests, knowledge of how to reduce those risks and to introduce a system of management that will incentivise risk reduction.		
Overarching Principles	Risk-Based Decision Making Understand the risks through enhanced and prompt risk assessment and risk targeting of effort to ensure the best protection possible.		
	Increased awareness and involvement of industry, NGOs landowners and the public Ensure all those with a role in plant health are more aware of risks to plants and plays their part to reduce the risk. Ensuring that responsibility sit with those who benefit from the reduction of those risks.		
Biosecurity Continuum	**Pre-Border** International collaboration to reduce the likelihood of pests arriving and gain advanced warning of pests	**Border** Checking to reduce the risk of pests crossing the borders, and feed intelligence back to risk assessment	**Inland** Early detection of pests, and a better ability to respond and to reduce the chance of establishment. Development of more resilient sectors to increase the ability to manage pests
Actions	International working – To reduce likelihood of pests arriving at border	Increased risk based inspections of third country and EU material	Targeted surveillance to detect pests
	Ensure the EU regime offers better protection for plant health	Develop and validate new detection and identification methods	Contingency plans and clear governance to eradicate outbreaks
	Facilitate information sharing on pathways and threats	Enhance collaboration with border force and trade to gain intelligence on pathways.	Building resilience and learning to live with established pests

Critical control points in the system:

- Pre-border
- Border
- Inland

Applied at an International/Regional Level

e.g. GB Plant Health Strategy

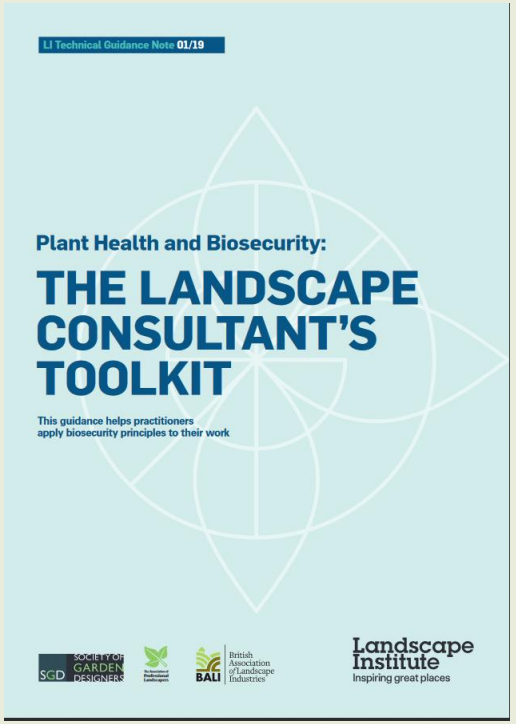
But equally at a Landscape Scale

- Pre-border – design and specification
- Border – construction and handover
- Inland – management

Good biosecurity practice

Pre-border - landscape design and specification

- Understand site environmental characteristics to ensure good establishment
- Specify the right plant for the right place with good genetic diversity and encourage a resilient landscape
- Ensure your design meets plant health regulations e.g. Tree notification scheme
- Understand the potential P&D problems e.g. UK Risk Register
- Specify plant sizes, form and provenance to reduce risk
- Consider advance procurement or contract growing to meet your specification



Good biosecurity practice

6

Landscape Construction and Handover

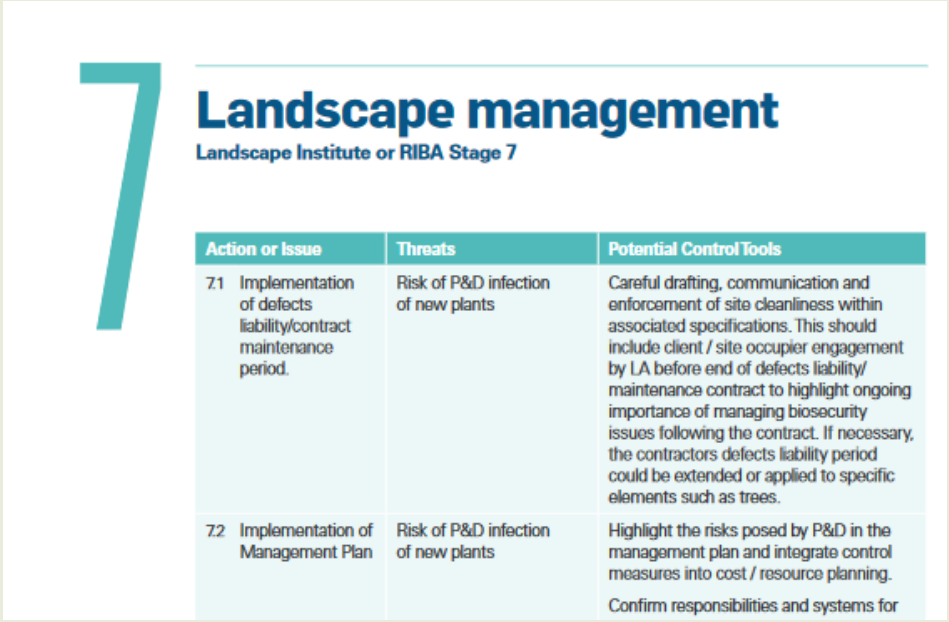
Landscape Institute or RIBA Work Stages 5 – 6

Action or Issue	Threats	Potential Control Tools
6.1 Applying specifications during construction / planting operations	Pressures of cost or timing on site may lead to variations to the contract being requested.	Consider what tools can be written into the specification for timely enforcement and to raise awareness of non-conformities. Use 'traditional' type contracts (rather than design and build) to encourage compliance under contract- this will need to be discussed at project inception and regularly confirmed throughout design stages.

Border - Landscape construction and handover

- Check paperwork to ensure materials meet specifications and legislation
- Understand the risks of variations to specifications or suppliers
- Don't just focus on plants for planting – think about contractors, WPM, VME etc

Good biosecurity practice



7

Landscape management

Landscape Institute or RIBA Stage 7

Action or Issue	Threats	Potential Control Tools
7.1 Implementation of defects liability/contract maintenance period.	Risk of P&D infection of new plants	Careful drafting, communication and enforcement of site cleanliness within associated specifications. This should include client / site occupier engagement by LA before end of defects liability/ maintenance contract to highlight ongoing importance of managing biosecurity issues following the contract. If necessary, the contractors defects liability period could be extended or applied to specific elements such as trees.
7.2 Implementation of Management Plan	Risk of P&D infection of new plants	Highlight the risks posed by P&D in the management plan and integrate control measures into cost / resource planning. Confirm responsibilities and systems for

Inland – Management

- Consider planting programme, impacts upon storage and delay wrt establishment
- Think about pathways of spread around site – water, soil, vectors, people, VME
- Consider Biosecurity in management plans and long term planning