Visual guide for identifying and taking action on non-native, invasive species on construction sites

On dry land:
- Japanese knotweed
- Giant hogweed
- Himalayan balsam
- Rhododendron
- Buddleia
- New Zealand flatworm

In freshwaters and wetlands:
- American skunk cabbage
- New Zealand pygmyweed
- Submerged weeds
- American signal crayfish
- Zebra mussel
What are non-native species and why should I care?

Non-native species are plants and animals deliberately or accidentally introduced outside their native range by people. Invasive non-native species (INNS) are those which cause damage to the environment, the economy, our health or the way we live.

The spread of INNS can have significant financial impacts. They can also cause harm to local species and habitats which can impact the food chain and biodiversity.

In Scotland it is against the law to cause the spread of any non-native species into the wild, even accidentally.
How to use this guide

Use the images and text to identify whether you have INNS present on site. Follow the do and don’t recommendations for each species and as well as the general biosecurity measures outlined at the end of this guide.

Before commencing work on site

• Check if a site assessment for invasive non-native plants has been carried out and if not consider commissioning / undertaking one

• Locate areas of known INNS on site map and fence off where necessary

• Where possible, chemically treat or mechanically remove invasive plants before commencing works on site

• Seek advice on and plan disposal methods for plant material and associated soils.

• Consider biosecurity requirements from the start: identify wash-down areas for plant, machinery and footwear and mark these on site map.
Biosecurity for watercourses.

Help protect the environment by following three simple steps when working with watercourses.

Check your equipment and clothing for live plants and animals – particularly in areas that are damp or hard to inspect.

Clean and wash all equipment, footwear and clothing thoroughly.

Dry all equipment and clothing – some species can live for many days in moist conditions. Make sure you don’t transfer water elsewhere.
Biosecurity should be considered at the earliest stage when planning any construction work, from surveying an area to removing non-native species. Some biosecurity measures can be as simple and as quick as making sure footwear is clean.

Deep cleaning facilities should be available too, if required.

Simple wheel wash removing soil before leaving and entering the site. Wash waste should be disposed of appropriately at a licenced facility.
When transporting invasive plants and soil contaminated with invasive plants, make sure that the vehicle is covered or sheeted to minimise escape. If you allow contaminated soil or plant material to escape, you could be prosecuted and fined. Ensure no material travels on the wheels or body of plant. You must have **waste transfer notes** (WTNs) for any material leaving your site. You must list any material that contains invasive plants or their seeds on the WTN. Plant material, or soil containing plant material or seeds, is likely to be classed as non-hazardous waste - this is a different category from inert waste.

**Correct disposal of invasive plants and associated soils**

Minimise the amount of waste you generate that contains invasive plants or their seeds, roots and rhizomes (underground root-like stems). Any waste you do produce should be treated on site where possible.
Japanese knotweed

- Tall plant with lush green, shield-shaped leaves and bamboo-like stems that are often purple speckled.
- Spreads by pieces of root or shoot – not by seed.
- Can cause significant delays and cost to development as well as structural damage (it can grow through asphalt and other surfaces).

Purple speckled stems

Up to 3m tall
DO

✓ Ensure a **specialist** survey has been carried out to identify all locations of Japanese knotweed on site prior to works commencing
✓ Seek advice from a specialist weed control contractor on the options for control
✓ Consider the need for a management plan detailing how and when the plant will be treated (this will likely be for a minimum of 3 years)
✓ Employ and Ecological Clerk of Works to supervise any excavation of Japanese knotweed to ensure plant hygiene is maintained at all times

DON’T

❌ Cut, strim or otherwise create fragments that can spread and cause new growth
❌ Spread plant material or associated soils as regrowth will likely occur requiring further treatment and cost
Giant Hogweed

**WARNING** – sap can cause severe blistering to the skin, contact should be avoided

- Extremely tall plant (up to 5m)
- Biennial – grows leaves year one flowers year two
- Most common on riverbanks but can be found elsewhere

Contact causes blistering

King County Noxious Weed Control Program, USA
**DO**

- Ensure specialist survey has been carried out prior to works commencing; identify all locations of giant hogweed on site and likely distribution of seed in soils
- Seek advice from specialist weed contractor
- Consider the need for a management plan detailing how and when the plant will be treated (likely for a minimum of 3 years)
- Erect site signage to warn site users of dangers of contact with the plant and / or cordon off areas where giant hogweed poses a risk to site users

**DON’T**

- Allow site staff to come into contact with the plant without appropriate PPE (long sleeves, trousers legs, protective gloves, goggles and face mask)
- Move seed heads or soils likely to contain seed as regrowth will likely occur requiring further treatment and cost
- Confuse harmless native hogweed plants with giant hogweed (DO consult a specialist)
Himalayan Balsam
• Long slender serrated leaves on a hollow fleshy stem
• Produces showy pink (white or purple flowers) and exploding seedpods
• Flowers June to October, dies out over winter, replaced by seedlings in Spring
• Seeds can survive for a number of years so regrowth likely after treatment
• Found commonly on river banks and damp woodland

Up to 2m tall
**DO**

- Undertake a survey (May-October) to identify locations of Himalayan balsam on site and likely distribution of seed in soils
- Restrict access, e.g. by using fencing, when plants are in flower to reduce spread of seed
- Contact SNH licensing team if soil containing Himalayan balsam seed is to be reused along the river bank

**DON’T**

- Don’t disturb plants (July to October) when plants in seed as this may cause further spread
- Use soils containing seed in other areas where it may regrow and spread. Movement of soils in areas where the plant is already well established may be permitted under licence from SNH – contact licensing@nature.scot
Rhododendron ponticum
• A large evergreen shrub with leathery leaves up to 5m tall
• Attractive purple / pink flowers and solid stems forming into a trunk when mature.
• Spreads by suckers (root shoots) and seed, which are small and carried long distances by wind.
• Often grows in ecologically sensitive habitats, such as heath, broad-leaved woodland and dunes, where dense growth can considerably alter the structure of the habitat.
**DO**

- Undertake a survey (at any time of year) to identify all locations of *Rhododendron ponticum* on site and likely distribution of seed in soils

**DON’T**

- Disturb (e.g. cut back) plants during September - November when plants in seed as this may cause further spread
- Attempt to control rhododendron by cutting back without follow-up treatment for regrowth in subsequent years.
Buddleia

- An attractive shrub growing up to 3m tall with purple to white flowers from July to October.
- Can cause structural damage to brickwork.
- Seeds blown into cracks germinate and the young plants root into the masonry.
DO

✓ Undertake / commission a survey (March-Nov) to identify all locations of *Buddleja* on site and likely distribution of seed in soils
✓ Consider the need for a management plan for the site – successful treatment may take several years

DON’T

✗ Disturb (e.g. cut back) plants during October-December when plants in seed as this will cause further spread
New Zealand flatworm

- Flat glistening worm up to 10cm long but variable in shape and size.
- Pointed at either end and not segmented like earthworms.
- Predominantly found in gardens hiding under paving stones, stones or other objects on the soil's surface.
- Preys on native earthworms.
**DO**

- Establish whether NZF is already established on site by checking under stones, and other materials in contact with the surface of soil
- Inspect tools, materials and pots entering the site that have been stored on top of the soil, to look for flatworms and their eggs
- If NZF is known to already be present on site then take precautions to prevent it’s spread off site – avoid storing materials on damp areas of earth where NZF may be present

**DON’T**

- Don’t accept soil or materials onto site that you suspect to be contaminated with New Zealand flatworms or their eggs
- Allow materials known to be contaminated with NZF to leave site for use or disposal in uninfected areas – this would be considered an offence under the Wildlife and Countryside Act 1981
American Skunk Cabbage
• A plant of wet ground which grows up to 1.5m tall.
• Bright green, leathery leaves grow in a rosette.
• Large yellow flowers in spring which have an unpleasant odour.
**DO**

- Take precautions to ensure site activities (e.g. digging) don’t result in creation of plant fragments which might spread to new areas downstream
- Safely compost, or bury plants away from areas of damp ground

**DON’T**

- Dispose of soil containing plant fragments in wet ground or near watercourse where it might get washed downstream
Submerged Aquatic weeds
- Can be difficult to identify and distinguish from native species
- Can impede flow, exacerbate flooding and interfere with recreational activities.
DO

- Follow Check Clean Dry biosecurity practice (see page on aquatic biosecurity)
- Clean all machinery thoroughly, preferably with hot water before moving to new water environments
- Seek advice of a specialist if the presence of invasive non-native aquatic plants is suspected
- Consult SEPA before undertaking activities in the water environment
New Zealand pygmyweed
• Forms thick mats on the water’s surface and surrounding banksides.
• Stems growing above water’s surface or on land are short and thick with fleshy leaves.
• Stems below the surface are thin and stringy with flatter leaves.
• Grows in still or slow flowing water margins, up to 3m deep.
• Present all year.
DO

✓ Conduct a specialist survey to identify the extent of the plant on site and advise on management options
✓ Clean all machinery thoroughly, preferably with hot water before moving to new water environments
✓ Follow Check Clean Dry biosecurity practice
✓ Report any new locations to Scotland’s Environment Website
American signal crayfish
• Large red/brown crayfish up to 16cm long.
• Can be found burrowing into riverbanks, rapidly moving up and downstream.
• Found in freshwater but can cross dry land
• Can undermine riverbanks through burrowing and can predate on native fish eggs and aquatic invertebrates.

Signal crayfish claws are bright red underneath with a small turquoise / white blotch on the hinge.
• **DO**
  - Apply for a licence from SNH if trapping of crayfish is planned
  - Clean all machinery thoroughly, preferably with hot water before moving to new water environments
  - Follow good biosecurity practice (Check, Clean, Dry)

• **DON’T**
  - Release any caught crayfish back into the wild
Zebra Mussel

- Very small freshwater mussel, 2-4cm long with dark and light stripes.
- Forms dense colonies attached to hard surfaces.
- Attachment can block pipework, affect lock gates and other structures in the water.
- Larvae are microscopic so can’t be seen with the naked eye and can be spread unknowingly.

Zebra mussel is similar in shape to marine mussels. Has a distinctive “D” shape and is blue or brown and yellow-white alternating zig-zag or wavy bands.
**DO**

- Commission a specialist survey prior to work commencing if Zebra mussel is known to be present in the wider area
- Inform SEPA immediately of any suspected new locations
- Follow good biosecurity practice (Check Clean Dry)

**DON’T**

- Move water where zebra mussel is present
- Allow plant or machinery that has been in contact with an infected water body in another waterbody without thorough jet washing or steam cleaning
Lead bodies on non-native species

- Scottish Natural Heritage – on land including river banks and wetlands
- Scottish Environment Protection Agency – in freshwater
- Scottish Forestry – trees, woody shrubs, tree pests and diseases
- Marine Scotland – in the sea

Further Information

- legislation and advice on managing non-natives - [www.netregs.org.uk/](http://www.netregs.org.uk/)
- GB Non-native species secretariat has responsibility for helping to coordinate the approach to invasive non-native species in Great Britain – [www.nonnativespecies.org](http://www.nonnativespecies.org)