

Managing Japanese knotweed
on development sites

the knotweed code of practice



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The Environment Agency wish to
thank Defra and Network Rail for their
contribution towards the cost of
production of this code.



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Summary

Managing land infested by Japanese knotweed in a timely and appropriate way can avoid:

- excessive cost
- potential prosecution and/or compensation claims
- physical damage to buildings and hard surfaces
- harm to the environment.

Identifying Japanese knotweed on a site early lets developers assess and cost options for destroying, disposing of and managing it, as well as negotiating an appropriate change in the purchase price of the land.

You should keep the amount of Japanese knotweed-infested soil you excavate to a minimum.

Making sure your staff can identify Japanese knotweed rhizome can reduce waste costs and improve how you manage Japanese knotweed on site.

Do not accept topsoil until you have inspected it for Japanese knotweed rhizome.

Japanese knotweed-infested soil that has been treated can be reused for landscaping the site, but should not be taken off site, unless to landfill.

Designating a clerk of works to oversee the Japanese knotweed management plan is a good way of ensuring that contractors treat Japanese knotweed in an appropriate manner.

You have a choice of herbicides that are effective against Japanese knotweed, depending on your situation.

It is an offence to plant or cause Japanese knotweed to spread in the wild under the Wildlife and Countryside Act 1981 and all waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990.

You can get advice on managing waste from us on our customer services line; 08708 506 506

If you see anyone illegally moving or disposing of waste, call our incident hotline on; 0800 80 70 60.

Introduction

Purpose

This code has been written for anyone involved in the development and haulage industry who may encounter sites with Japanese knotweed, or soil containing it. It allows our staff to provide consistent advice.

This code replaces “The Environment Agency code of practice for the management, destruction and disposal of Japanese knotweed” May 2001.

This code of practice will help developers manage Japanese knotweed legally. It also gives you options for cost effectively managing Japanese knotweed on site. Architects, planners, designers, contractors, consultants and landscape gardeners can also use this code.

Japanese knotweed *Fallopia japonica* var *japonica* is a non-native invasive species of plant. Since it was introduced into the UK as an ornamental garden plant in the mid-nineteenth century it has spread across the UK, particularly along watercourses, transport routes and infested waste areas.

Plants within their native range are usually controlled by a variety of natural pests and diseases. When these plants are introduced into new areas that are free from these pests and diseases, they can become larger and more vigorous. They invade natural habitats and out-compete the native plants and animals that normally live there. Rivers, hedges, roadsides and railways form important corridors for native plants and animals to migrate, and large infestations of non-native weeds can block these routes for wildlife.

Japanese knotweed isn't just a problem for our native wildlife. The vigorous growth can damage buildings and hard surfaces. Once established underneath or around the built environment, it can be particularly hard to control. Riverside Japanese knotweed damages flood defence structures and reduces the capacity of channels to carry floodwater.

Footpaths become crowded with tall canes, making it difficult for pedestrians to see and making them feel less safe. In winter, the tall dead canes show



where litter has become caught up and rats can live there. Lawns and gardens become infested and the cost of maintaining buildings increases.

There are a number of ways in which we can manage the impact of Japanese knotweed. It is important that we find out the ways in which Japanese knotweed has been spread and try to tackle these. Disposing of soil from development sites is one way Japanese knotweed has spread.

Brownfield development is an important aspect of urban and rural regeneration and protecting green belt. Many of these sites support infestations of Japanese knotweed, which can live in poor soil quality and contamination common to these areas. These sites have often been used to receive waste, often fly-tipped by gardeners.

Managing Japanese knotweed - legislation

Legislation covering the handling and disposal of knotweed includes the following:

The Control of Pesticides Regulations 1986

require any person who uses a pesticide to take all reasonable precautions to protect the health of human beings, creatures and plants, safeguard the environment and in particular avoid the pollution of water. For application of pesticides in or near water approval from the Environment Agency should be sought before use.

Section 14(2) of the **Wildlife and Countryside Act 1981 (WCA 1981)** states that “if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence.” Japanese knotweed is one of the plants listed in the Schedule. Anyone convicted of an offence under Section 14 of the WCA 1981 may face a fine of £5,000 and/or 6 months imprisonment, or 2 years and/or an unlimited fine on indictment.

The **Environmental Protection Act 1990 (EPA 1990)** contains a number of legal provisions concerning “controlled waste”, which are set out in Part II. Any Japanese knotweed contaminated soil or plant material that you discard, intend to discard or are required to discard is likely to be classified as controlled waste. The most relevant provisions are in:

section 33 (1a) and (1b) which create offences to do with the deposit, treating, keeping or disposing of controlled waste without a licence. Exemptions from licensing are available in some circumstances, and are set out in Schedule 3 to the Waste Management Licensing Regulations 1994 as amended (the WMLR 1994) s.33 (1c) which makes it an offence to keep, treat or dispose of controlled waste in a manner likely to cause pollution of the environment or harm to human health.

section 34 places duties on any person who imports, produces, carries, keeps, treats or disposes of controlled waste. Waste must be handled responsibly and in accordance with the law at all stages between its production and final recovery or disposal. Waste must be transferred to an authorised person, in other words a person who is either a registered carrier or exempted from registration by the **Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991**. A waste transfer note must be completed and signed giving a written description of the waste, which is sufficient to enable the receiver of the waste to handle it in accordance with their own duty of care. The provisions concerning waste transfer notes are set out in the **Environmental Protection (Duty of Care) Regulations 1991** (as amended). Failure to comply with these provisions is an offence.

The **Hazardous Waste Regulations 2005 (HWR 2005)** contain provisions about the handling and movement of hazardous waste. Consignment notes must be completed when any hazardous waste is transferred, which include details about the hazardous properties and any special handling requirements. If a consignment note is completed, a waste transfer note is not necessary. Untreated Japanese knotweed is not classed as hazardous waste, but material containing knotweed which has been treated with certain herbicides, may be classified as hazardous waste.

The **Waste Management Licensing Regulations 1994** describe ‘waste relevant objectives’ in Paragraph 4 of Schedule 4. These objectives require that waste is recovered or disposed of “without endangering human health and without using processes or methods which could harm the environment and in particular without –
risk to water, air, soil, plants or animals; or
causing nuisance through noise or odours; or
adversely affecting the countryside or places of special interest”

The above legal provisions have consequences for a range of people, including anybody involved in the management or disposal of knotweed. For example knotweed which is cut down or excavated and removed from a development site must be transferred to an authorised person, and correctly described. It must be disposed of appropriately, as set out below in this Code. If you are going to bury knotweed on the development site you will need to consult us first to make sure that the material does not contain any other contaminant that may affect the quality of groundwater. If you pollute the environment or cause harm to human health you may be prosecuted. Anyone who uses a herbicide must ensure that they do not pollute the water environment and the use of herbicides in or near water requires approval from us.

If any waste soil or knotweed is sent for landfill either before or after any treatment, it must go to a landfill that is authorised to receive it.

It is not an offence to have Japanese knotweed on your land and it is not a notifiable weed. Allowing Japanese knotweed to grow onto other peoples property may be regarded as a private nuisance under common law, but this would be a civil matter.

Where you rely on the methods of on site knotweed management in paragraphs 4.1, 5.4 and 5.5 this would normally require you to have a waste management licence or a pollution prevention and control permit.

However if you carry out these activities in full accordance with this code of practice, and the work meets the waste relevant objectives described above, then in accordance with our Enforcement and Prosecution Policy we would not normally prosecute for failure to have a waste management licence or permit.

Our role

The Environment Agency is responsible for regulating waste. We grant waste management licences, register exemptions and can take enforcement action including prosecution if the law is not complied with. We give approvals under the Control of Pesticides Regulations 1986 for use of pesticides in or near water.

We may take enforcement action under WCA 1981, but there are also a number of other organisations that can do so. We would not normally use this legislation unless a waste offence had also been committed.

We are not responsible for controlling Japanese knotweed, other than that growing on our land. Managing knotweed is the responsibility of the owner/occupier of a site. We do not endorse Japanese knotweed management plans, or endorse companies that do this.

The status and use of this Code

Provided there is a suitable location, this code describes ways of managing Japanese knotweed that developers may wish to consider, which will avoid creating a waste disposal problem. We are keen to provide alternatives that allow developers to treat Japanese knotweed on site, so you don't have to use landfill. Landfill is very expensive for the development industry, it reduces valuable landfill capacity and needs haulage, which damages the environment and increases the risk of Japanese knotweed spreading. Sometimes, due to shortage of time and location, landfill is the only reliable option, but it should be treated as a last resort.

There are a number of ways of managing Japanese knotweed within a development site. Site managers need to be careful of claims made about products and methods on offer for controlling Japanese knotweed, particularly those that claim it can quickly destroy the problem completely.

We cannot guarantee that any of the methods we describe in this code will be successful. We believe the methods within this code are among the best that are currently available, but do not reflect the complete choice that is available. The contractor and client need to agree a contract for effectively treating the problem. Remember that Japanese knotweed can stay dormant for many years.

You may wish to use this code of practice to assist you in carrying out your legal duties concerning knotweed. However this code does not constitute legal advice and it does not aim to give a detailed or comprehensive account of the legislation that could apply to you. You should be aware that it is your responsibility to make sure that the law is complied with. Waste legislation is especially complex. You need to discuss these issues with us to make sure you act appropriately.

If you need advice, call our customer services line on 08708 506 506. If you see anyone illegally moving or disposing of waste, call our incident hotline on 0800 80 70 60.

Much of the information in this code concerning on-site treatment options is aimed at suggesting best practice rather than setting out legal obligations.

This code should be used in conjunction with other guidance or regulations concerning Japanese knotweed if relevant, such as the model specification and tender documents produced by the former Welsh Development Agency, now part of the Welsh Assembly Government.

Tips for developers

We hope that, by developing this code, we will help industry to avoid excessive costs, protect the environment and use natural resources in a sustainable way. We would encourage developers to consider the following particular points:

Check for Japanese knotweed before buying a site.

- a) The information and internet links within this code should be enough for you to find out about Japanese knotweed in its various forms. If there is Japanese knotweed on a site, this should not stop you buying it, but you will need to consider this when working out how profitable a development is likely to be.
- b) If a site has been skimmed or treated, look for evidence of Japanese knotweed material. Consider some form of legal protection from the potential subsequent cost of managing Japanese knotweed within the purchase agreement.
- c) If there is Japanese knotweed, consider whether you will be able to treat the material on site. Have you bought enough space to shift soil and create a bund, for instance?
- d) If you think there is no Japanese knotweed on the site, consider getting legal guarantees that say this before you buy the site.

Timetable for treatment and development.

- a) Plan to minimise the amount of Japanese knotweed that you have to excavate.
- b) Make sure you have allocated enough time within the project timescale to develop and apply a Japanese knotweed management plan.
- c) Treating Japanese knotweed early and effectively can significantly reduce the chance of it growing again. You should agree and implement a treatment plan as soon as possible.
- d) Consider phasing the development, to allow more time to treat the problem.
- e) Use the best methods, including the most effective herbicides for the site in question. This will be determined by factors such as how close the site is to controlled waters and desirable trees and other vegetation.

Managing treated material.

Just because soil has been treated, this does not mean Japanese knotweed cannot grow again. However, if soil is treated effectively, it can be clean enough to be used for landscaping within the development.

You should only use treated soil in localised areas, where Japanese knotweed control methods could easily be used, if material starts to grow again. We advise that you should not use treated soil within 50m of a watercourse.

Long-term management.

You need to consider the chance that Japanese knotweed could grow back when you are managing the site long-term.

Current owners of the site need to accurately record within the deeds of the property where any material is buried and make this available to all subsequent owners so the material is not disturbed.

A summary of the treatment should be included within the vendor statement declaration.



Ecological information on Japanese knotweed

1.1 What is Japanese knotweed?

Japanese knotweed is a tall, vigorous ornamental plant that escaped from cultivation in the late nineteenth century to become an aggressive invader in the urban and rural environment.

1.2 What does Japanese knotweed look like?

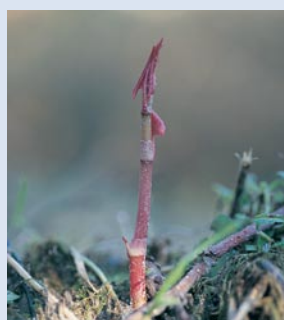
Japanese knotweed, scientific names *Fallopia japonica* (Houtt. Ronse Decraene), *Reynoutria japonica* (Houtt.) or *Polygonum cuspidatum* (Siebold & Zuccarini) is a member of the dock family (Polygonaceae). It is a rhizomatous (produces underground stems) perennial plant with distinctive, branching, hollow, bamboo-like stems, covered in purple speckles, often reaching 2-3 m high. The leaves of the mature plant are up to 120 mm in length with a flattened base and pointed tip and are arranged on arching stems in a zig-zag pattern.

The plant flowers late in the season, August to October, with small creamy-white flowers hanging in clusters from the leaf axils (point at which the leaf joins with the stem). The underground rhizomes are thick and woody with a knotty appearance and when broken reveal a bright orange-coloured centre. The rhizome system may extend to, and beyond, a depth of at least 2m and extend 7m laterally from a parent plant.

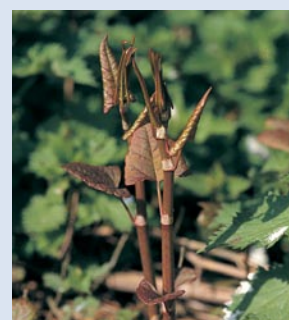
During winter, the leaves die back to reveal orange/brown coloured woody stems which may stay erect for several years. Stem and leaf material decomposes slowly, leaving a deep layer of plant litter. During March to April, the plant sends up new shoots, red/purple in colour with rolled back leaves. These shoots grow rapidly due to stored nutrients in the extensive rhizome system. Growth rates of up to 40 mm a day have been recorded.

1.3 Regeneration

Only female Japanese knotweed (*F. japonica* var *japonica*) plants have been recorded to date in the UK. Although seeds are produced, they are not true Japanese knotweed seeds but hybrids, and rarely survive.



Spring Growth



2-3 metre high canes



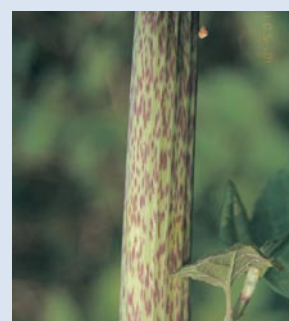
August - October flowers



Alternate leaves



Zig-zag pattern



Purple speckles

Two species closely related to Japanese knotweed are also found in the UK. These are, giant knotweed (*Fallopia sachalinensis*), a much taller plant which reaches a height of 5m; and a smaller compact variety (*Fallopia japonica* var. *compacta*), which grows to a height of only 1m. The hybrid (*Fallopia x bohemica*) (a cross between Japanese knotweed and giant knotweed) is also found throughout the UK but is not as common as Japanese knotweed. Both giant knotweed and the hybrid should be managed in the same way as Japanese knotweed.

Japanese knotweed rarely produces viable seeds. In the UK the plant is mainly spread through rhizome fragments or cut stems. Greenhouse trials have shown that as little as 0.7 gram of rhizome material (10 mm in length) can produce a new plant within 10 days. Cut fresh stems have also been shown to produce shoots and roots from nodes when buried in soil or immersed in water. Once cut stem material has been allowed to dry out thoroughly and has reached the orange/brown 'woody' stage, there is no further regeneration. Rhizome material may take much longer to die and may remain dormant for long periods, possibly as long as 20 years.

1.4 Dispersal

The spread and high regeneration rates of the plant have serious implications for dispersal by both natural and human means. In river catchments, fragments of rhizomes or cut stems that are washed into watercourses under high water flows can form new plants downstream. Fly-tipping garden waste that contains stem or rhizome fragments, using contaminated topsoil and transporting soil from infested sites during construction works

are the main ways that people spread the plant. Small fragments of stem and rhizome may also be transferred from an infested site to other sites on machinery, for example for building works or for maintaining road verges.

1.5 Why do I need to manage Japanese knotweed on my development site?

Habitats affected by Japanese knotweed include those in both urban and rural areas. In an urban environment, sites such as road verges, railway land and watercourse corridors may be affected. Waste ground, cemeteries and heavily disturbed ground are particularly vulnerable. In rural areas, the problems include disrupting sight lines on roads and railways and, in the riverside environment, disrupting flood defence structures. The plant damages the urban environment by pushing up through tarmac and paving, out-competing other species in planting programmes as part of landscaping schemes and causing aesthetic problems as litter accumulates in the dense thickets formed by the plant. This also encourages vermin.

Japanese knotweed is also invading continental Europe, particularly in the east. It is also causing problems on the western seaboard of the United States. Within its native range, Japanese knotweed rarely causes problems.

Japanese knotweed has been removed from the natural enemies that control it in its native range in Japan. It out-competes our native plants and animals. The spread of Japanese knotweed is a serious threat to our countryside, and the native plants and animals that rely upon it.



Dead winter canes

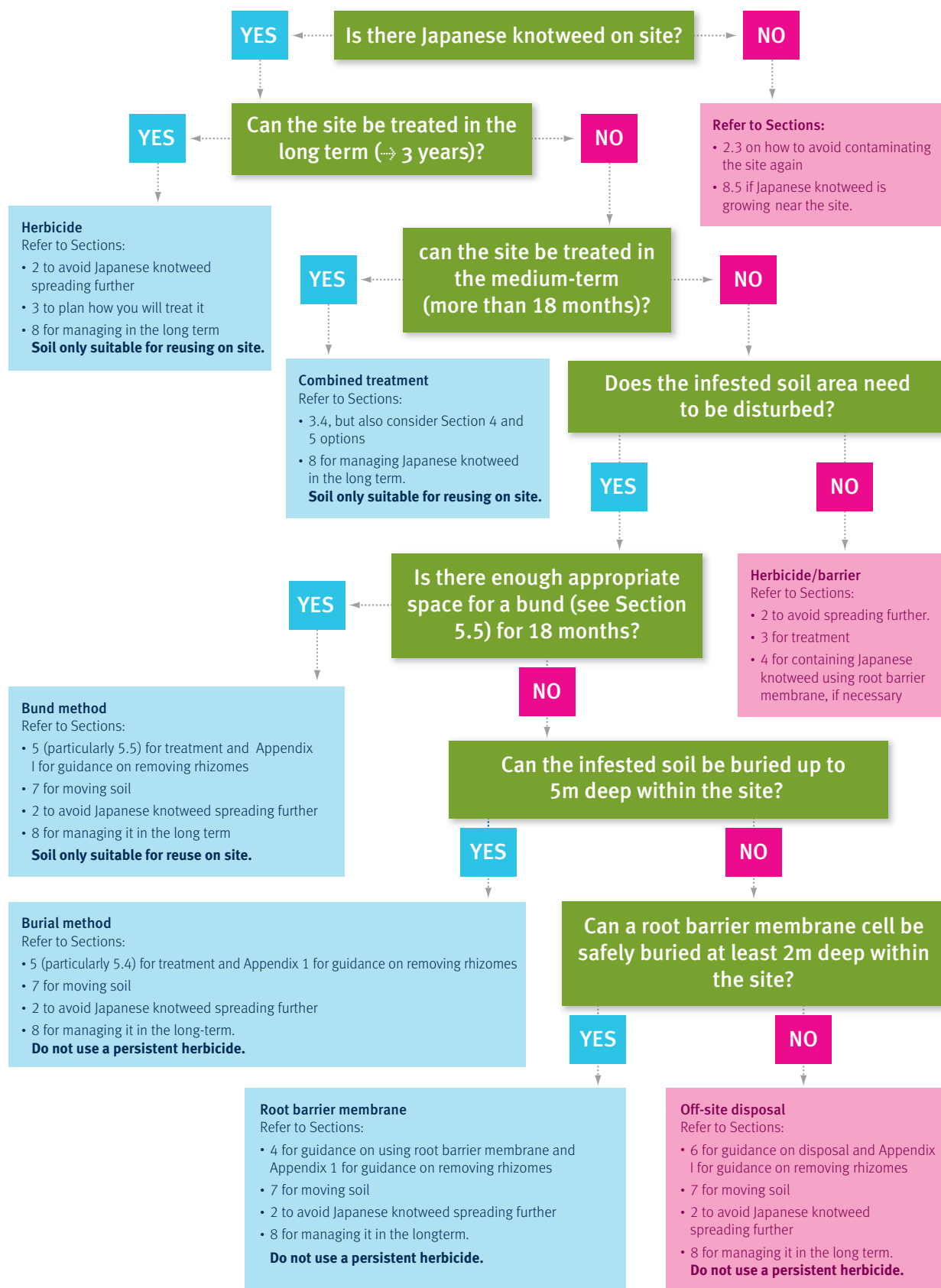


Giant knotweed *F.sachalinensis*



Hybrid knotweed *F.x bohemica*

Flowchart for treating Japanese knotweed



How do I prevent Japanese knotweed spreading?

It is important to make sure that the site is not contaminated by fresh Japanese knotweed, or that parts of the site previously unaffected by Japanese knotweed do not become contaminated. We recommend that:

- i) you have a Japanese knotweed management plan (see section 3.1);
 - ii) all staff are aware of what Japanese knotweed looks like and what their responsibilities are;
 - iii) you have a clerk of works responsible for the management of Japanese knotweed.
- f) vehicles used to transport infested soils must be thoroughly pressure-washed in a designated wash-down area before being used for other work;
 - g) areas infested by Japanese knotweed that are not going to be excavated should be protected by root barrier membrane if they are likely to be disturbed by vehicles (see section 4). Root barrier membranes will need to be protected from damage by vehicles with a layer of sand above and below the root barrier membrane, topped with a layer of hardcore or other suitable material as specified by an architect or engineer (see section 7.1);
 - h) the material left after the vehicles have been pressure washed must be contained, collected and disposed of along with the other Japanese knotweed material;
 - i) a clerk of works should oversee the Japanese knotweed management plan (appendix V), including the provisions for avoiding contamination. Everyone working on site must clearly understand the role and authority of the clerk of works.

2.1 Avoiding contamination around the site

It is essential that you find out how much Japanese knotweed infestation there is on the site and that everyone working there clearly understands this. You should brief all contractors fully. You should record any areas that are contaminated with Japanese knotweed in the Japanese knotweed management plan (Appendix V and VI), isolate them with fencing and put up a restricted access sign (Appendix VII). Section 7 describes the precautions you need to take when moving soil infested with Japanese knotweed.

2.2 Good site hygiene

To maintain good site hygiene, we suggest:

- a) as a general rule, the area of infestation is 7m horizontally from the nearest growth of Japanese knotweed that can be seen. To determine exactly how far the rhizomes have spread, you would need to dig a series of test pits and examine them carefully;
- b) a fence that can clearly be seen should mark out the area of infestation. Signs should warn people working there that there is Japanese knotweed contamination (appendix VII);
- c) you should indicate stockpiles of soil contaminated with Japanese knotweed with appropriate signs and isolate them;
- d) you should not use vehicles with caterpillar tracks within the infested area;
- e) vehicles leaving the area should either be confined to haulage routes protected by root barrier membranes, or be pressure washed (see section 7.1);

How do I prevent Japanese knotweed spreading?

2.3 Avoiding new contamination to the site

This advice is particularly relevant to sites fortunate enough not to be infested by Japanese knotweed.

The three most common ways a site can become infected are:

Infested topsoil: There have been numerous incidences where site owners have paid to remove Japanese knotweed infested soil from their site, only to introduce it again with topsoil they have bought and not inspected.

Section N.6.4.5 of BS 3882:1994, the British Standard for topsoil clearly states that it is critical that material should be free from Japanese knotweed propagules, rhizome and vegetative fragments. You should always inspect topsoil brought into the site, using the guidance in appendix I-IV of this code. You can often get topsoil from different sources. Ideally, you should inspect these sources before you receive material on site. You should use topsoil from different sources within distinct areas of the site and keep a record of this. This may help you with compensation claims against the supplier, should Japanese knotweed subsequently grow. If you have any evidence that sub-standard topsoil is being sold, you should let the local Trading Standards Office know.

Contamination on vehicles: You should inspect vehicles before using them on site. You need to pay particular attention to caterpillar tracks and where trucks and dumpers are stowed.

Fly-tipping: Most Japanese knotweed infestations on development sites started as a result of fly-tipped waste and this often continues after the development has started.

You should report any fly-tipping incidences to us on the 24-hour freephone number 0800 80 70 60.

2.4 Reusing treated soils on site

If soil has been treated and is free from Japanese knotweed contamination and suitable for use, it can be reused on site without the need for a waste management licence or an exemption. **If taken off site, this material must be disposed of in a landfill.**

Developers reuse treated soils at their own risk, unless the agreement they have with their contractors states otherwise. To minimise the potential problems there could be if the soil was not treated adequately, you should only use soil again where there is little risk of spreading Japanese knotweed. The site should also facilitate herbicide treatment, if it is necessary. Suitable areas should be away from:

- a) watercourses (we advise, at least 50m) and ditches;
- b) being disturbed by people or livestock;
- c) existing amenity areas, lawns and gardens;
- d) boundaries with other properties;
- e) an area that could be disturbed in the future.

You should also use the soil in a restricted area, rather than spread out across the site. You should record this area in the Japanese knotweed management plan and keep a record of inspection. You must treat any regrowth appropriately.