Scottish Forestry
Coilltearachd na h-Alba

Scottish Windblow Contingency Plan

Preparing for major windblow events in Scottish forests

Scottish Forestry is the Scottish Government agency responsible for forestry policy, support and regulation

Is e Coilltearachd na h-Alba a' bhuidheann-ghnìomha aig Riaghaltas na h-Alba a tha an urra ri poileasaidh, taic agus riaghladh do choilltearachd

Scottish Government
Riaghaltas na h-Alba

Scottish Forestry
Coilltearachd na h-Alba

This plan is owned by Scottish Forestry:

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Key contacts:
This plan and associated documents are maintained by the Forest Transport and Innovation Advisor.

The Forest Transport and Innovation Advisor is responsible for coordinating contingency responses. If unavailable, the Head of Forestry Sector Development will lead.

Leave arrangements:
Please note, Scottish Forestry does not provide a 24-hour 7-day service therefore any response will be next business day after the storm has abated.

Version control:
This plan was updated in September 2024 and is scheduled for review in September 2025

Any actions required by this plan will follow Scottish Government and FISA (Forestry Industry Safety Accord) Guidelines at the time of the event and during the subsequent operational phase(s) of the plan.

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Contents

Executive Summary

- Major windblow events[1] are defined as incidents where the volume of windblown timber is equal to:
    - 100% of annual cut (in m3) or, >1 million m3 (circa 2,500 ha) in any one of the timber forecasting zones (Fig. 1), whichever is the lesser volume, or
    - >1.5 million m3 across combined timber forecasting zones (circa 3,750 ha)

- Forest Research have concluded that winds of ≥90 mph are likely to cause incidents of large-scale windblow therefore forecasts of winds at this level are the key trigger for this plan[2]

- When gusts of ≥90 mph have been forecast *(as much as is possible to determine, in afforested areas*):

    - The Scottish Forestry Forest Transport and Innovation Advisor/ duty officer will initiate processes/ actions as described

    - Individual agencies, organisations, businesses, forest owners, and forest managers are expected to initiate the relevant measures within their Windblow Contingency plans

    - Scottish Forestry will work with the Scottish Government's Resilience Response team (SGoRR) and Scotland's three multi-agency Regional Resilience Partnerships (see 2.2.1 and Appendix 5), who are responsible for co-ordinating the planning for, and coordinating the response to, significant civil contingency incidents and major events in their local areas to ensure that they capture the full range of issues that could result from a major windblow occurrence in their risk registers

    - Should a major event occur, once confirmed as a major windblow, Scottish Forestry will convene the Scottish Windblow Action Committee (SWAC)

    - Efforts should be made to increase the resilience of individual forests to storm events by using ForestGALES software when undertaking initial forest planning

    - Forest owners/ managers are encouraged to sign up to the Met Office automatic weather alerts system and prepare action plans for the forest areas under their control

Note: With only a few limited exceptions, clearance of windblow now requires a Felling Permission from Scottish Forestry[3].

[1] Please note that the terminology has changed from "Catastrophic" to "Major" since the last version, but this does not affect process
[2] Advice from FR scientists based on: Gardiner *et al*. (2010) Destructive Storms in European Forests: Past and forthcoming Impacts
[3] Please see **Appendix 4** for more detail

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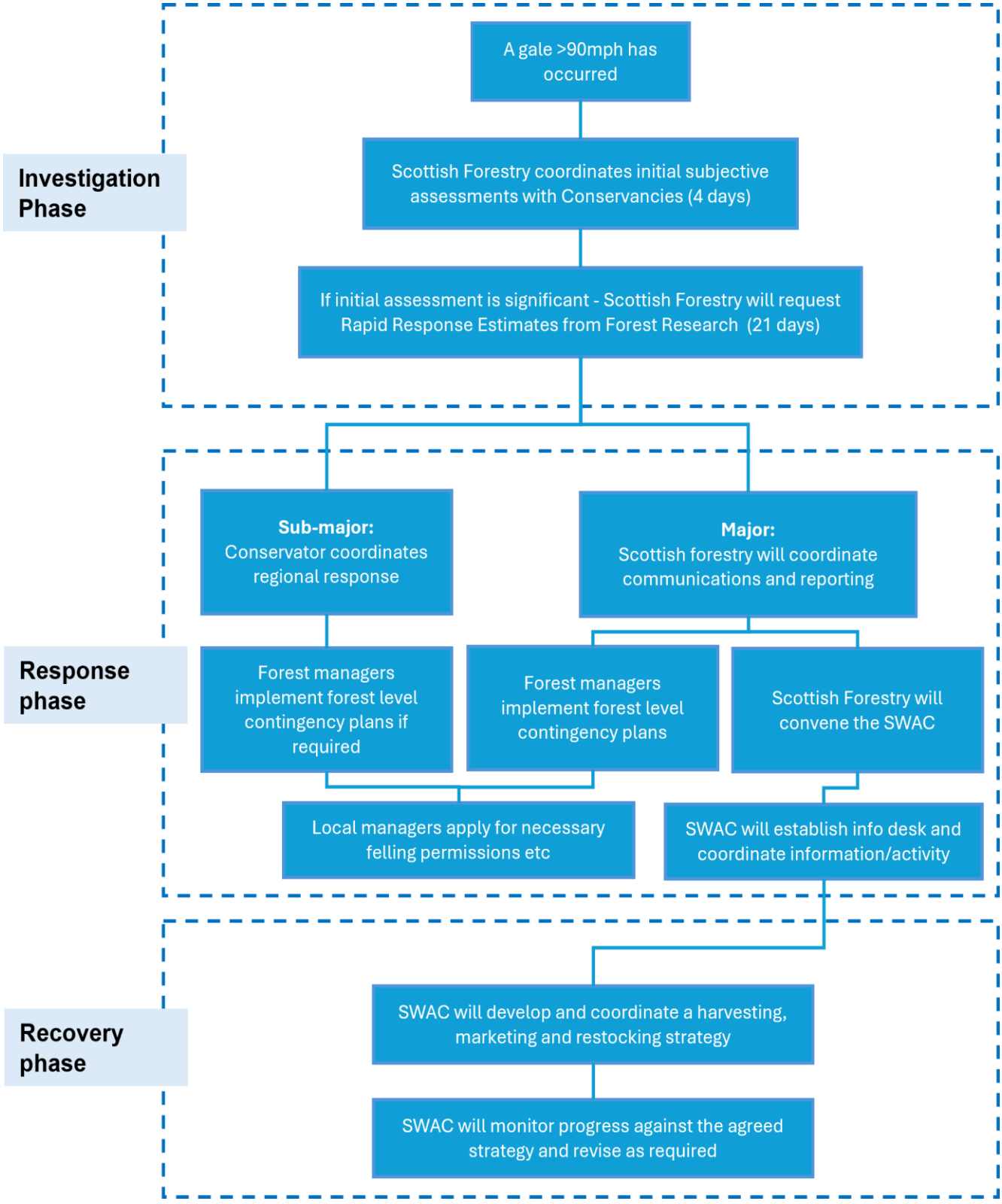
Key steps after a potentially major windblow event



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1. Aims of this plan

- **Preparation:** To advise on mitigating actions before a potentially major windblow event
- **Response:** To ensure national, regional, and local forest sector responses are co-ordinated effectively
- **Recovery:** To enable a longer-term strategic response at the sectoral level

NOTE: It is recommended that all forests have a dedicated windblow contingency plan.

All forest owners, managers and timber stakeholders should be participants in windblow contingency planning processes as all would be essential actors in, and potentially affected by, resultant outcomes.

1.1 Background

Major windblow events are rare and their frequency, scale and location are unpredictable. However, research suggests that the incidence of severe storms in the UK has been increasing over the last few decades and will continue to do so as our climate warms. Recent years have seen climate change increase the chance of windblow as trees are stressed by the regular and repeated effects of waterlogging and drought, reducing root growth, tree vigour and reducing soil support as an anchoring medium. It is also clear that climate change can compound the impact of windblow, providing large quantities of dead or stressed trees which are highly susceptible to pests and disease and wildfire. Table 1 below details some previous major windblow events across Britain and Europe and the volumes of windblown timber, but it is understood these figures are likely an underestimate with more recent works indicating wind disturbances are likely to have caused 46% of total timber volume damage in Europe since 1950[4]

Table 1: Previous major windblow events in Europe[5]

Date	Region/s affected	Windblown timber (million m3)
January 1953	North-east Scotland	1.80
January 1968	Central Scotland	1.64
January 1976	Mid-Wales, Midlands, and East Anglia	0.96
October 1987	South-east England	3.91
January 1990	North-Western Europe	1.26
December 1999	France, Germany, and Switzerland[6]	152.00
November 2021	North-east Scotland, Central Scotland, Southern Scotland	2.85
Cumulative damage due to selected major storms (75 years)		**164.42**

The impacts of a major windblow may constitute an emergency as defined by the Civil Contingencies Act (2004)[7] i.e., may seriously threaten human welfare and may be likely to cause major disruption to infrastructure and/or services including power, transport, and communications. As such, the lead

[4] Patacca *et al.* (2022) Significant increase in natural disturbance impacts on European forests since 1950
[5] Adapted from: Quine *et al.* (2014) Forests and Wind: Management to Minimise Damage
[6] UN/ ECE (2000) Storms of December 1999 fell 165 million m3 of timber: equivalent of 6 months harvest in three days
[7] Civil Contingencies Act 2004

organisation in terms of response would be Police Scotland, via a multi-agency co-ordination structure, also involving the Scottish Government's Resilience Response team (SGoRR).

After these key elements have been addressed it is important to assess the full scale of the impacts and to regain access to the forests. The resultant challenges then include the likely need for greater harvesting capacity in the affected area and a resultant glut of timber coming to the market. This is very likely to have knock-on effects to the supply chain outside the affected area.

This Windblow Contingency Plan is therefore a strategic document which seeks to ensure a co-ordinated and effective response from the Scottish forest industries. It should be noted that there is a lag in activity between storm and response, but this is intended to allow the immediate needs and priorities to be met by the emergency responders and associated actors.

1.2 Definition of a major windblow event

For the purposes of this plan, a major windblow event is defined as one where the volume of windblown timber is equal to 100% of the annual cut (in cubic meters (m^3)), or more than 1 million m^3 in any one of the timber forecasting zones (Figure 1), or, more than 1.5 million m^3 across combined zones (Table 2). These timber forecasting zones cover both the National Forest Estate and privately owned woodlands.

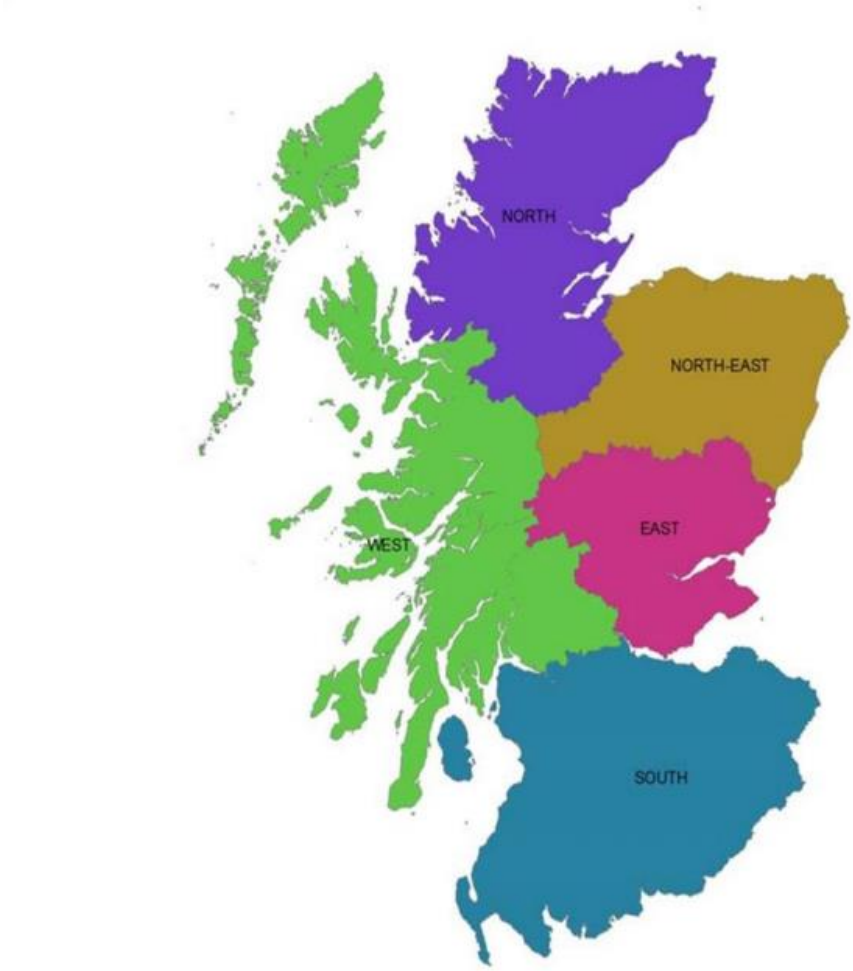

Figure 1: Timber forecast zones in Scotland

Table 2: Timber volumes equating to a major windblow event in each timber forecast zone (in 2022-2026)[8].

Timber forecast zone	Annual cut (m3)	Windblown timber (m^3) resulting in a major windblow event
North	843 000	843 000
North-East	1 599 000	1 000 000
East	1 238 000	1 000 000
South	2 564 000	1 000 000
West	3 476 000	1 000 000
Multiple	NA	1 500 000

1.3 Structure of this plan

The Scottish Government's approach to emergency planning and response is based on the five principles of Integrated Emergency Management (IEM)[9]:

- Assessment
- Prevention
- Preparation
- Response
- Recovery

Section 2 is focused on "Before a significant gale occurs" and covers the actions that should be taken to plan for and mitigate against a major or potentially major windblow event.

Section 3 considers "After a significant gale has occurred" and covers actions required in the aftermath of a major windblow event to respond to the post storm situation, and to recover from it.

This plan defines the key roles and responsibilities for Scottish Forestry and the wider forest industry when preparing for, and responding effectively to, a major windblow event in support of the emergency planning network at a national, regional, local, or cross-border level.

Note: Health and safety is <u>always</u> the primary consideration.

In the event of a major storm, Scottish Forestry will report key stages of implementation to SGoRR, and if required, will respond to calls for support from the Category 1 and 2 responders through the Resilience Partnerships as they are responsible for managing preparation and response to emergencies in their local areas.

Note: Neither Scottish Forestry or Forestry and Land Scotland are category 1 or 2 responders.

From this, any strategic or tactical response from Scottish Forestry will be on the following business day. Forestry and Land Scotland are only responsible for their own business/forest level contingency activities. Holidays will be covered by on-call staff resources.

[8] Forest Research (2022) 25-year forecast of softwood availability
[9] Preparing Scotland - Philosophy, Principles, Structure and Regulatory Duties (webpage accessed 28/09/2024)

2. Before a significant gale occurs

2.1. Minimising the potential risk

Risk assessment is the first step in the planning process and the focus is on increasing the state of preparedness of the forest industry to deal with a major or a major windblow event. **Prevention** then requires identified measures to be taken to eliminate, isolate or reduce risks so far as is reasonably practicable.

2.1.1 Local and forest-level risk management

Forest managers can risk assess individual woodlands and use appropriate management regimes to help minimise windblow risks. It is however very difficult to manage woodlands to withstand the wind and gust speeds likely to result in significant levels of damage. As an aid, the following tools and guidance can help **reduce risk and impact when designing and managing forests and woodlands**:

- *Windthrow Hazard Classification; DAMS* (Detailed Aspect Method of Scoring); and *ForestGALES*[10], a wind risk management tool, can all be used to help manage forests to reduce windblow. *ForestGALES* can be used to estimate the probability of wind damage to forests.

- *Forests and Wind: management to minimise damage*[11]; *Climate Change Impacts on UK Forests* (chapter 4)[12]; *Forest Design Planning: A Guide to Good Practice*[13]; and the European Forest Institute's book *Living with Storm Damage to Forests*[14] each give advice on the silvicultural measures that can be taken to increase the resilience of forests to storm events.

NOTE: Responsibility for designing the forest and any operations to minimise the opportunity for, and extent of windblow lies with the forest manager.

2.2. Preparing to respond to a major windblow event

This involves planning and informing people so that both individuals and organisations that may have to respond to such an emergency are ready and understand their roles and responsibilities.

2.2.1 Scottish Government Resilience Partnerships

Within the Integrated Emergency Management (IEM) framework[15], three Regional Resilience Partnerships (RRPs) – North, East, and West – manage preparation and response to emergencies within their designated geographical areas[16]. The three RRP areas (Fig. 3) mirror the areas established by the Police and Fire services to support strategic management of their local activity, with the RRPs then broken down into twelve Local Resilience Partnerships (LRPs) – three in the North, three in the East, and six in the West.

[10] Forest GALES (webpage accessed 07/06/2023)
[11] Forests and Wind: management to minimise damage (webpage accessed 07/06/2023)
[12] Climate Change Impacts on UK Forests (chapter 4) webpage (accessed 07/06/2023)
[13] Bell (1998) Forest Design Planning: A Guide to good Practice
[14] Gardiner *et al.* (2013) Living with Storm Damage to Forests
[15] Preparing Scotland - Philosophy, Principles, Structure and Regulatory Duties (webpage accessed 28/11/2023)
[16] Ready Scotland: Preparing for and dealing with emergencies (webpage accessed 07/06/2023)

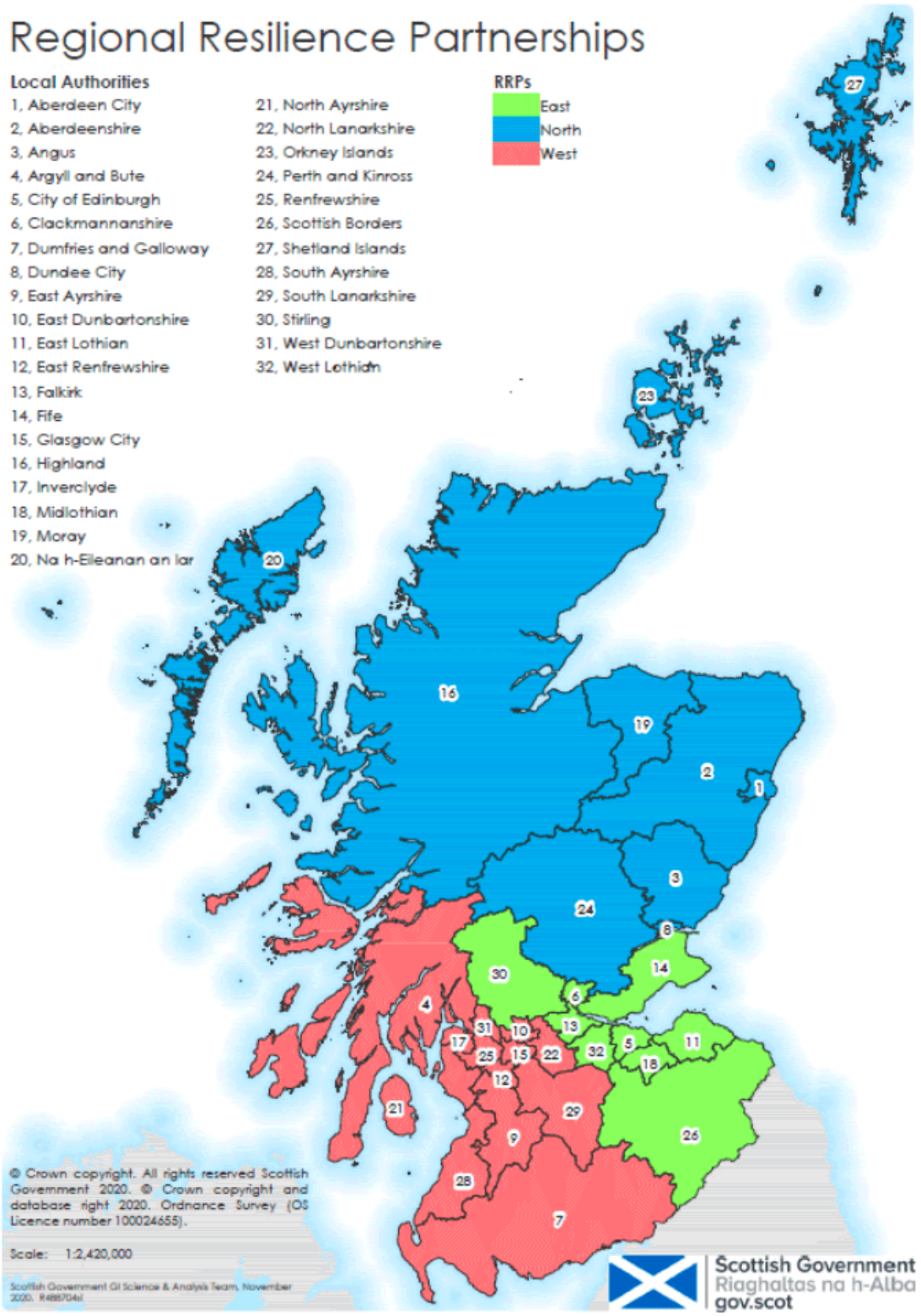

Figure 3: Scottish Government's Regional and Local Resilience Partnership areas[17]

[17] Scottish Regional Resilience Partnership framework

The Resilience Partnerships are made up of organisations designated as emergency responders by the Civil Contingencies Act[18]. These include Local Authorities, emergency services, the NHS and other key infrastructure managers such as telecoms, Scottish Water, SEPA etc., and are collectively responsible for developing and co-ordinating risk registers for a range of potentially disruptive events to assess risk at the regional and local levels. These provide the basis for the responder agencies to develop, implement and monitor generic and specific emergency response plans. It is important that these risk registers capture any regional/local issues that may arise after a major windblow event.

2.2.2 Scottish Forestry

As appropriate, nationally (through National Office) and regionally/locally (through Conservators), Scottish Forestry will:

- Prepare, maintain, and publish the national Scottish Windblow Contingency Plan
- Develop and maintain a list of key emergency contact numbers
- Raise awareness of the Scottish Windblow Contingency Plan within SGoRR and the RPs and the wider forestry industry, encouraging and facilitating joint working within and between sectors
- Liaise with the national and regional networks to ensure that risks from a major windblow event are covered in risk registers and assist in development of action plans
- Through the Scottish Government Resilience networks, liaise with other agencies and organisations responsible for the key transport, power, and communications networks to ensure mutual understanding and awareness of needs, opportunities and potential limitations to actions that could be undertaken
- Test emergency arrangements to ensure the plans are current, valid, and effective
- Provide secretariat functions for the Scottish Windblow Action Committee

2.2.3 The wider forestry sector

The wider forestry sector is encouraged to engage at the most appropriate level to facilitate identification of issues and promote effective planning.

NOTE: It is recommended[19] that all forest owners and managers ensure a windblow contingency plan is prepared in case of such an emergency.

This should include **as a minimum**: critical actions to be taken before, during, and after a severe storm; contact details of key company personnel as well as key individuals within Scottish Forestry such as Conservancies and other relevant agencies; a database of contractors covering harvesting equipment and chainsaw operators (with windblow certificates); drone operators; identified potential large-scale stacking and storage areas; sources of road stone and civil engineering contractors; other forest users; and key customers.

[18] Civil Contingencies Act 2004
[19] The UK Forestry Standard

It is vital to note that, with exceptions, **felling of windblown trees now requires permission** to fell by Scottish Forestry (see Appendix 4). Applications must be accompanied by restocking plans, with maps. The forest areas most at risk are likely to be approaching maturity and so may already have this information covered e.g., within Long Term Forest Plans. It would be sensible to consider having restocking plans in place for any significant areas of mature pine or long-term retentions to enable them to be prioritised in felling operations to minimise the risk of degradation and loss of value.

Note: Storm damage is an insurable risk therefore forest owners should consider the level of cover they might require if there were to be a major storm.

2.2.4 Wind forecasts

By studying past windblow events Forest Research scientists concluded that gusts of wind of ≥90 mph (≥40 metres per second) are likely to cause major damage[20].

The Met Office runs the National Severe Weather Warning Service[21] (NSWWS) and issues warnings when the combination of severe weather impacts and the likelihood of these impact occurring meet the criteria for a warning at any point over a seven-day lead-time. Each warning now contains the following sections:

- A short **weather headline** stating what type of weather is forecast

- A **what to expect** section, detailing the types of impact expected and an indication of how likely those impacts are

- A **what should I do** section which links to advice and guidance on how to stay safe in severe weather

- A **further details** section providing additional information on the forecast weather

The potential for impacts will be communicated along with the level of likelihood. Typically, this means that high wind speeds must be expected to occur over a relatively widespread area before a warning will be issued.

Email alerts are issued by the Met Office, but it is important to consider the **specifics** of the warning, particularly the speed, direction, and location of the wind (and gusts) before deciding on the relevant course of action (see section 2.1.1 for proactive measures). Key stakeholders, forest owners and land managers are encouraged to sign up for these free alerts.

2.3 Precautionary measures before an imminent high wind speed event

2.3.1 When gusts of wind ≥90 mph are forecast

Scottish Forestry will….
Contact the Head of Operational Delivery or their nominated deputy, relevant Conservators, and necessary partners to ensure procedures and likely actions are clear.

[20] Advice from FR scientists based on Gardiner *et al*. (2010) Destructive Storms in European Forests: Past and forthcoming Impacts
[21] MET Office National Severe Weather Warning Service (webpage accessed 07/06/2023)

Conservators will….
Ensure key staff are available in case they are required to provide support and advice, and potentially to process a high volume of enquiries and felling permission applications for windblown trees.

Forest owners or their local managers are strongly encouraged to….
Ensure that key staff and stakeholders are warned and to consider following the precautionary measures contained within their forest level windblow contingency plans, which seek to protect staff, society, the wider environment, and the economy.

Forest level preparative activities immediately preceding a major storm may include:

- Ensuring key staff are familiar with forest level contingency plans and required actions
- Advising organisers of forest events to cancel/postpone activities
- Working with relevant stakeholders to undertake any immediate precautionary works such as closure of forest roads etc.
- Moving necessary equipment (4*4s, ATVs, tractors, harvesters, bowsers, civil engineering plant etc.) from potentially vulnerable areas to more easily accessible locations in case forest roads are blocked
- Placing appropriately qualified chainsaw operators, harvester and cable crane operators, civil engineers, hauliers, and other key staff on standby
- Warning the visiting public of potential dangers through appropriate media channels e.g., Facebook, X, local radio news, warning signs at recreation sites and key forest access points

3. After a significant gale has occurred

There are two key phases of response which are independent:
1. The immediate multi-agency emergency response led by the Police
The priorities are rescuing injured/trapped people and clearing transport links, communications, public utilities, and buildings of fallen trees.

2. The subsequent forest industry response led by the Scottish Windblow Action Committee (SWAC)
At the national level this will include carrying out damage assessments to determine if a storm is a major event. If required, it will develop and co-ordinate implementation of a harvesting, marketing, and restocking strategy.

Summary

After a major windblow event

The multi-agency emergency response:

- Will be prioritised and led by the relevant Cat 1 responder (Police Scotland) through either SGoRR or the Local Resilience Partnerships (LRPs), depending on the scale of the event. Immediate priorities are preservation of life, rescuing injured/ trapped people and clearing roads/railways, telecommunication, public utilities & any buildings[22]. Scottish Forestry will liaise directly and provide support if required.

Note: Forest owners and managers are effectively responsible for their own forests (i.e. forest level contingency plans). Felling trees that present immediate danger to life or property does NOT require felling permission[23].

The executive agency response:

- Scottish Forestry will initiate and coordinate a three phased process:

Investigation

- Scottish Forestry will co-ordinate **preliminary surveys** of damage and collation of **initial assessments** of the extent of windblow provided by forest managers via the relevant conservancy offices to establish whether the damage appears likely to be 'major'. This will take **at least 4 working days** after the storm has abated depending on access etc.

- If initial assessments are indicative that **a major windblow event has occurred**, Scottish Forestry will work with Forest Research to commission a **more thorough assessment** of the extent and type of damage carried out using satellite imagery. This will take **at least 25 working days** after the storm has abated.

Response

- If major damage is confirmed, Scottish Forestry will convene the Scottish Windblow Action Committee (SWAC) to co-ordinate a strategic response at the national level.

[22] Preparing Scotland CHAPTER 5 – Resilience Governance Arrangements in Scotland (webpage accessed 06/06/2024)
[23] Please see **Appendix 4** for more detail

Recovery

- Depending upon the nature of the storm damage and necessary actions SWAC will then coordinate specific aspects of the windblow response such as timber harvesting, haulage, marketing, and restocking.

Note: Scottish Forestry is NOT a Category 1 or 2 responder and as such, does not provide a 24/7 service. **Neither is Forestry and Land Scotland. Both organisations will only assist where they have relevant skills, capacity, and remit to do so.**

The Forest industry response:

The wider forestry sector will be expected to consider implementing their forest level contingency plans. Once the storm has abated, then the priority is to support the emergency response effort where machine and chainsaw operators are trained and registered to assist the Cat 1 responders, and then, to regain access to the forests where possible to assess the extent of windblow more fully.

Note: Please see Appendix 4 for further guidance on Felling Permissions and exemptions where a tree presents immediate danger.

3.1 Introduction

There are two key responses to serious windblow and, depending on the circumstances, both may be employed or only one response may be deemed necessary. Following this and depending upon the extent of the storm damage an appropriate recovery strategy will be developed and implemented.

3.2 Key response 1: Resilience Partnerships

As a major and potentially major windblow event is very likely to result in other damage throughout the area, the initial multi agency emergency response will be co-ordinated by the relevant Resilience Partnership(s). The initial focus will be to ensure public safety, to restore energy supplies and to ensure normal communications are possible with the necessary actions co-ordinated through the Resilience Partnership(s).

3.3 Key response 2: Scottish Forestry and the wider forest industry

3.3.1 Initial damage assessment

After a major storm it is necessary to determine the scale of any windblow. Scottish Forestry's Forest Transport and Innovation Adviser will initiate the **Investigation phase** of the WBCP and will lead efforts to ascertain the extent of the damage to forests in the affected areas and any additional local information which may be available.

Conservator(s) should liaise with the forestry sector locally to assist with initial estimates of both the extent and impact of damage and attempt to collate a very outline assessment of the potential scale and impact within 4 working days of the storm abating, though the weather, scale, and location of the damage may mean that this takes longer.

It is likely that enough subjective information will be received to indicate whether the windblow appears likely to be considered major in scale (circa 2,500 ha in any (single) harvesting zone or circa 3,750 ha over

two or more). If so, Scottish Forestry will work with Forest Research to conduct a more thorough assessment of the full scale and severity of the damage to determine the:

- boundaries of windblown areas
- total area and volume blown down or damaged
- and if possible, to gather information on species breakdown (and, indicatively, by size class)

Based on this information, Scottish Forestry will then determine the most appropriate next steps and generate a briefing note for the relevant Minister which includes a national/regional summary including local areas of particular damage, what actions have been taken (e.g., data gathering, strategic conversations etc), and a situation report as to major status/convening the SWAC. This briefing note will be copied to SGoRR for information only at this stage.

3.3.2 If the damage is found to be at a major level

Once major storm damage is confirmed as per the definitions, Scottish Forestry's Head of Forestry Sector Development will call a meeting of key individuals to form a Scottish Windblow Action Committee (SWAC, see Appendix 1), who will have a key role in developing the recovery response.

The SWAC will initially be comprised of the:

- CEO of Scottish Forestry (Chair)
- Head of Operational Delivery, Scottish Forestry
- Deputy Chief Executive, Confor
- National Manager for Scotland, Confor
- Head of Marketing and Sales, Forestry and Land Scotland
- Head of Forest Sector Development, Scottish Forestry
- Forest Transport and Innovation Advisor, Scottish Forestry (Secretary)

The SWAC will be able to co-opt other members as required and to seek specialist advice on aspects of the response and recovery stages. Some potential areas of expertise available to be drawn on are set out at Appendix 2.

It may also establish one or more task and finish groups to deal with specific aspects of the windblow response such as timber harvesting, marketing, and restocking. It may also choose to set up a Scottish Windblow Information Desk and website to act as a central point of contact for media interests with the Secretariat gathering, evaluating, and disseminating information as required.

Where the windblow event has been classed as major, the SWAC will provide strategic coordination of local efforts once the work of the Regional Resilience teams has been completed.

3.3.3 Cross border events

For cross border major windblow events, the SWAC will co-opt the Forest Management Director of Forestry England's North District onto the Committee.

3.3.4 If the damage is not major – local/regional forestry sector response

Where the damage is not classified as major, the relevant Conservator(s) should lead the forestry sector response and recovery phases in their area(s) as it may still have a significant local/regional impact.

The initial local forestry sector response will focus on securing public safety and regaining access to the forests and may include, where appropriate and relevant:

- Closure of formal recreation facilities and provision of on-site signage at known access points to warn of the potential dangers in a windblown forest
- Liaison with local access officers over facility closures and the impacts of the storm on core paths and rights of way
- Cancellation of planned events in forests and suspension of formal permissions e.g., firewood permits and sporting permissions

Local resources will be focused on gaining access to key internal forest roads to provide access to previously inaccessible harvesting equipment, facilitate damage assessments and secure access to existing roadside timber stocks or harvesting sites to maintain timber supply to mills i.e., business as usual.

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4. Developing harvesting, marketing, and restocking strategies

Once accurate estimates of the total area (including the likely felling boundaries), volumes, species and indicative size class of the timber blown down or damaged in the major event have been obtained, the SWAC will decide whether a strategy for harvesting, marketing, and restocking should be developed. This will be the responsibility of the SWAC and should consider addressing the following:

- Set out the overall priorities and targets (including volumes/areas, species) and timescales for harvesting operations
- Define the roles and responsibilities of the key players in implementing the strategy
- Define strategic priorities for marketing of the windblown timber, including measures to limit the overall impact on markets and prices
- Consider the landscape and wider nature conservation issues relating to the windblow
- Set out the priorities for restocking (including areas and timescales) and how they will be achieved, including financial and grant considerations
- Identify the barriers and risks associated with the strategy, and the measures that will be implemented to address these

The structure of the strategy will be highly dependent on the nature and location of the windblow event. Experience has shown that the final volume removed from windblow sites can greatly exceed the assessed volume due to the practical difficulties and safety implications of assessing storm damage as well as the need to harvest to wind firm edges.

5. Monitoring and evaluation

As the harvesting, marketing and restocking strategy, or other actions, are implemented it will be important to monitor progress against the targets to ensure that, where necessary, adjustments to the strategy can be made where necessary.

The SWAC may wish to commission an independent evaluation of the response to the event, including the lessons learnt and recommendations on the response for future major windblow events.

The likely options for data gathering are:

- Satellite based radar remote sensing. Obtain/purchase new post storm images and compare these with pre-event images using the processes developed by Forest Research. This area of work is the subject of continued efforts to refine it

- Helicopter or drone aerial geolocated photographic surveys. Accessing helicopters can be difficult as the utility companies have priority for survey work. There are also a limited number of Scottish Forestry staff with the appropriate training

- Drone sourced photographic images will be of immense value in the field and potentially replace the need for field-based plot surveys by the National Forest Inventory (NFI) surveyors

- Should it be both safe and necessary to establish an indicative volume and assortment breakdown based on NFI data field surveys could follow on.

6. Appendices

Appendix 1: SWAC Terms of Reference

Purpose
The Scottish Windblow Action Committee (SWAC) will be convened in the event of a major windblow event to implement the Scottish Windblow Contingency Plan and develop a response. These terms of reference will be agreed by the SWAC in the event of a suspected major windblow event.

Remit

- Ensure the effective implementation of the Scottish Windblow Contingency Plan
- Develop a co-operative response and recovery strategy, in liaison with forest industry representatives and other experts as required (see Appendix 2), including strategic guidance on priorities for harvesting, marketing, and restocking
- Ensure the effective use of resources across the forest industry
- Disseminate up to date information to the forest industries, wider stakeholders, and the media
- Provide progress reports, as required, to Ministers

Reporting

Investigation phase (4-25 working days)

- An initial assessment will be made by the Forest Transport and Innovation Advisor, working with others, as to whether a major windblow event has occurred. The Head of Forestry Sector Development will initially notify the CEO of Scottish Forestry and the SGoRR committee that the WBCP has been triggered.

Response phase (25+ working days)

- If a major windblow event has occurred the SWAC will be convened, SGoRR notified, and a preliminary report produced, ideally within six weeks of the storm event, giving an initial assessment of the damage, proposed actions, and outlined implications for the forest industries.
- Another report, if considered necessary, could be prepared at a later stage, after further consideration and discussion, setting out a comprehensive assessment of the damage and the proposed actions for harvesting, marketing, and restocking, together with the implications for the forest industries.

Recovery phase

- At the end of the operational work following the windblow, the SWAC may commission an evaluation of the response to the windblow event.

Appendix 2: Expert advisors to the SWAC

The following[24] could be called upon to assist the SWAC as required:

Key contacts in Scotland

Head of Response and Engagement Team, Scottish Government Resilience Division

Head of Inventory, Forecasting and Operational Support, Forest Research

Head of Forest Information and Statistics, Forest Research

Head of Tree Health, Scottish Forestry

Head of Sustainable Forest Management, Scottish Forestry

Geo-information Services Delivery Manager, Scottish Forestry

Head of Planning and Environment, Forestry and Land Scotland

Head of Marketing and Sales, Forestry and Land Scotland

Country Civil Engineer, Forestry and Land Scotland

Resilience Manager, Forestry and Land Scotland

Timber Properties Programme Leader, Forest Research

Senior Entomologist, Forest Research

Forestry processing sector representatives

Timber Haulage sector representatives

Network Resilience Manager, Roads Directorate, Transport Scotland

Senior Asset Engineer, Network Rail (Scotland)

Key contacts in England

Head of Plant Health and Contingency Planning, Forestry Commission England

Technical Guidance Adviser, Forestry Commission England

Forest Management Director, North Forest District, Forestry England

Forestry and Timber Sales Manager, Forestry England

[24] Contact details are held by the Forestry Transport and Innovation Advisor

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Appendix 3: Strategic issues and considerations

Harvesting resource availability and skills base

The availability and skills base of contractors to undertake machine harvesting and chainsaw operations is likely to limit the speed and rate of clearance. However, measures can be taken to increase clearance capacity by redeploying existing resources onto windblow clearance operations and bringing in additional contractors from outwith the area.

Note: If a storm affects multiple regions simultaneously there is risk of competition for resources.

Fast-track felling permissions

The Fast-track felling permission process can be streamlined if owners and managers include completed forms alongside illustrative pictures or videos of the damage, appropriate maps/ restocking maps, and any other relevant documentation at time of submission.

Ability of the forest industry to restrict or adjust existing thinning and felling commitments

Timber substitution i.e., harvesting windblown timber rather than other planned harvesting sites, will have an important role to play in both the private and public sectors.

Expected rate of deterioration of the timber

Research shows that pine degrades more rapidly than spruce once felled due to its susceptibility to attack by bark beetles and sap stain fungi (blue stain). Although blue stain has no effect on timber quality, for many uses the blue stained timber is not aesthetically acceptable. Other species, including spruces, Douglas fir, larches and some broadleaves may degrade at a slower rate, but will still be susceptible to decay where their moisture content remains at elevated levels for prolonged periods. The SWAC will take advice from FR on the latest guidance on windblown timber degradation and the pest and disease implications.

Timber storage and preservation options

After the 1987 storm in England water storage was used for pine saw logs and other species to prevent fungal decay. The practical limiting factors are the availability of bulk storage sites, the economic haulage distance from the forest to the storage site, the double handling of the material and availability of harvesting resource to process the timber before it degrades. Spruce can be successfully stored under water but the economic viability of this may be limited. The Forestry Commission Bulletin[25] gives further guidance on this issue. Internal advice by FR on the degradation of larch and options for storage has been produced[26].

NOTE: Water storage will require permissions from relevant agencies due to potential for diffuse pollution. Hence, it is unlikely that water storage would be feasible and alternative means should be sought.

Capacity of the timber markets to absorb additional volume

Following an assessment of the scale of the damage, likely rate of degrade, restriction of normal production and the expected product split, the SWAC should consider the possible markets for the windblown timber, including export, and the capacity of these markets to absorb additional timber volumes within the relevant timescales. Consideration should also be given to any geographical constraints in terms of the location of the windblown timber and the location of available markets. The domestic processing sector, including sawmills, wood panel and biomass plants, will be an important stakeholder.

[25] Webber and Gibbs (1996) Water storage of timber: experience in Britain

[26] Price and Macdonald (2013) Timber from larch trees infected by Phytophthora ramorum: options for harvesting and storage.

The SWAC will also need to know whether the high winds have caused similar windblow events in other parts of Europe because this is likely to have an impact on the wider market as well as harvesting capacity. Further information is available on the extent of the windblow in other European countries[27,28].

Financial considerations

The windblow event is likely to have financial implications for both the private sector and the National Forest Estate around additional costs for harvesting, impact on timber prices, and restocking costs.

Health and safety

Harvesting windblown wood is potentially dangerous work and should only be carried out by fully trained and properly equipped professionals. It will be essential to engage with the Forest Industry Safety Accord.

Restocking

The site conditions following major windblow damage often require the adaptation of normal establishment techniques, either due to pressure on resources or because of the greater quantities of brash, un-harvested timber and the presence of large, upturned root plates. These factors will make access to restocking sites more difficult and will dictate appropriate establishment techniques.

Constraints

The availability of plants, labour, and machinery to carry out site preparation and planting can limit the size of annual restocking programmes. Careful budgeting for the restocking operations will be required as costs are likely to be higher because of the difficult site conditions involved. Other issues which will require consideration include risk of invasion of vegetation which will be difficult to control, likelihood of natural regeneration of an acceptable species, the opportunity cost of not using the site, plus the visual and environmental impacts of delaying restocking.

Forest Planning

There are likely to be implications for the planning resource where there is a requirement to amend or review Land Management Plans on the National Forest Estate and/or Long-Term Forest Plans for private sector forests, and both will need to be carefully managed. It will be important to review forest plans adjacent to major transport infrastructure (trunk roads, railway lines etc.) and key utilities (power lines, gas mains etc.), and to consider how to improve resilience to potential future windblow events.

[27] UNECE Timber Committee
[28] FAO European Forestry Commission

Appendix 4: Permission for felling – Windblown trees

Windblown trees require a Felling Permission unless covered by other exemptions, such as:

1. A tree where necessary for the prevention of **immediate danger** to persons or to property.

2. Trees on land occupied by a **statutory undertaker** and at the request of a statutory undertaker which are obstructing or interfering with the construction or maintenance of their work

3. A tree by, or at the request of Scottish Water where the tree is or may interfere with the functions of Scottish Water

4. A tree by, or at the request of, an electricity operator, where the tree is in close proximity to an **electric line or electrical plant** (existing or to be installed) and the presence of the tree is:

    a) obstructing or interfering with the installation, maintenance or working of the line or plant
    b) constituting an unacceptable source of danger (whether to children or to other persons)

5. **Dead trees** must be completely dead. Trees that are starting to die or are blown over are not exempt

Note: If in doubt it is advisable to seek the views of the relevant Conservancy Office.

Application Guidance

Felling Permission provides legal authority to fell trees covered by the permission and may include conditions to ensure trees are replanted. Please refer to Scottish Forestry guidance[29] for information.

Felling Legislation

The responsibilities of the applicant, and Scottish Forestry's, are set out under the Forestry and Land Management (Scotland) Act 2018[30] (the Act) and associated Regulations.

The Act provides the legal basis for the regulation of forestry in Scotland and includes the requirement to be in possession of a Felling Permission to fell trees. The Forestry (Exemptions) (Scotland) Regulations 2019[31] and The Felling (Scotland) Regulations 2019[32] include further detailed provisions about operation of Felling Permission procedures.

Felling Permission Applications

Application forms[33] relating windblow will be considered for a 'fast-tracking' approval process, where they may be assessed without the normal public consultation period to expedite the issuing of the permission. However, if the area has significant environmental sensitivities, it is unlikely to be suitable for fast tracking.

The Act places a duty on Scottish Ministers (which includes Scottish Forestry) to promote Sustainable Forest Management. To discharge the Sustainable Forest Management duty, applications for Felling

[29] Felling Permission – Application Guidance
[30] Forestry and Land Management (Scotland) Act 2018
[31] The Forestry (Exemptions) (Scotland) Regulations 2019
[32] The Felling (Scotland) Regulations 2019
[33] Felling Permission application form

Permission will be assessed against the UK Forestry Standard. Felling proposals will therefore normally be expected to comply with the UK Forestry Standard requirements and guidelines for a Felling Permission to be granted and will require supporting maps and details of the operations.

Map Requirements

When applying for Felling Permission you are required to provide maps that show the areas you are applying for and the operations you intend to carry out. All applications must be accompanied by a 'felling map' that outlines the proposal.

For clear-felling, selective felling or felling of individual trees, where replanting will be required. You will be expected to provide a 'restocking map' that details the location and species of trees to be replanted. The restocking proposal should include 100% of the area felled, and this can include Open Ground (OG) which allows you to comply with the UK Forestry Standard[34].

It is important that you ensure that the species proposed for replanting are suited to the site and will establish into mature trees or woodland.

To ensure that replanted woodlands can fully establish and develop, Scottish Forestry will expect restocking proposals to include minimum stocking densities. In exceptional circumstances, an alternative approach where there is a clear justification in line with Sustainable Forest Management may be accepted.

Scottish Forestry expect all maps to have:

- An Ordnance Survey base map
- North arrow
- Legend
- Central grid reference
- Scale or scale bar
- Compartment numbers directly relating to the felling or restocking tables in the application
- Highlighted compartments
- Clear and unambiguous information

Transporting harvested windblown timber

When assessing an application for Felling Permission the timber transport implications of the felling proposal will be assessed. If using public roads, you should consider the Agreed Route Maps (ARMs)[35] which will help you find the most suitable route for haulage, ideally keeping timber traffic off vulnerable roads.

If you propose to move timber along an **excluded, severely restricted** or **consultation route**, you **MUST** contact your Local Authority roads department to discuss your proposals, even where the trees are windblown. Failure to do so may delay the processing of your Felling Permission application.

[34] UK Forestry Standard (UKFS) (webpage accessed 21/09/2024)
[35] Timber Transport Forum Agreed Route Maps (webpage accessed 27/06/2024)

Scottish Forestry and the Timber Transport Forum[36] also recommend you also notify any key stakeholders who may be affected by your intended timber haulage[37].

Long Term Forest Plans

If you have an approved forest plan, the tolerance table outlines windblow clearance and where approvals can be agreed by an exchange of email and map. Some windblow felling may also be covered by the tolerance for adjustments to felling coupe boundaries. Detailed information is available on the Scottish Forestry website[38]

The areas covered by a tolerance table are however very unlikely to be sufficient to cover the major areas of windblow which would contribute to a major windblow event as in this case it is likely that some 2,500-3,750 hectares will have been directly impacted by windblow. In this case amendments will be required.

Within the LTFP Applicant's Guidance booklet it states that:

i. Windblow
Where windblow occurs you must contact your local Conservancy Office who will approve clearance of windblow and any associated standing trees (up to 5 hectares) by exchange of letters. A map showing the location and extent of windblow will be required but there will be no requirement to enter this felling onto the public register.

Where windblow is extensive (greater than 5 hectares) a formal plan amendment will be required. Windblown areas must be replanted according to the agreed restocking map.

ii. Restocking proposals
There is a presumption that all felled areas will be restocked unless exceptions are justified within the plan. Your plan must give a clear description of your restocking species proposals over the whole forest with more detailed information on timing and stocking densities for areas being restocked within the first 10 years. A key consideration when restocking the woodland is to ensure that the tree species is suitable to the site.

[36] Timber Transport Forum (webpage accessed 27/09/2024)
[37] Forestry Engagement and Consultation Processes
[38] Long Term Forest Plans – Applicants Guidance

Dealing with Windblow: Top 10 tips for clearing and selling wind thrown trees on your land[39]

1. Safety first: Working with windblown timber is very dangerous – do not tackle it yourself. Use experienced professionals with the right equipment.
2. Landowners are responsible for taking reasonable steps to ensure the safety of those working in, walking across or otherwise visiting their land. So, make sure to use clear signs to let visitors know where it is unsafe to visit.
3. Land owners and farmers should engage experienced professionals with the relevant training to assess and clear windthrow whatever the severity or size of the area involved. They can guide you through the process and give you the best advice about how and where to sell your timber.
4. Don't panic, take time to take advice and plan. Most conifer species that are windthrown with at least part of the root plate still in contact with the soil, are unlikely to degrade for many months and the timber can still be of use two years later. The exception to this is Scots pine which develops a blue stain due to fungal growth. This species should be your initial priority plus snapped trees, since these will degrade quicker, and delay may limit the markets that will accept the timber.
5. Do not harvest your trees until you have a buyer for them. Once cut they will degrade more quickly. Different markets prefer different size and quality of logs, and any woodland will produce timber that can be used for different purposes, for instance the larger diameter logs can be sawn into planks, smaller ones used in fencing or chipped for panel boards or biomass. A professional forester can help you to sell your timber.
6. Do not harvest trees until you have applied for and secured the relevant permissions/licenses.
7. In Scotland, Felling Permissions are required for clearing windthrown trees. Scottish Forestry has local teams who can provide advice and guidance relating to Felling Permissions (Scottish Forestry - Contact)
8. Licenses are required for work than may disturb badgers in Scotland / badgers in England or other protected woodland species in Scotland.
9. Access to the woodland to extract the timber is also an important consideration and needs to be planned before harvesting. Is there enough loading space? Can timber lorries turn, where will they access the public road and is the road strong enough to take a fully laden truck?
10. Once felled the woodland will need to be restocked. Good design can reduce the risk of windblow in the future and this gives you a moment to consider your objectives for the future of the woodland.

[39] Available as a downloadable/printable factsheet HERE

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Appendix 5: Resilience Governance Arrangements in Scotland

Scottish Government Resilience Room (SGoRR)

When the scale or complexity of an emergency is such that some degree of central government co-ordination or support becomes necessary, Scottish Government will activate its emergency response arrangements through SGoRR. The precise role of SGoRR will vary depending on the nature of the emergency but as a simplification, SGoRR recognises that local decisions must be made at local level, so they effectively act as a conduit for strategic information to enable an efficient and effective response.

SGoRR will:

- provide strategic direction for Scotland
- co-ordinate and support the activity of SG Directorates
- collate and maintain a strategic picture of the emergency response with a particular focus on response and recovery issues
- brief Ministers
- ensure effective communication between local, Scottish and UK levels, including the co-ordination of reports on the response and recovery effort
- support response and recovery efforts as appropriate, including the allocation of scarce Scottish resources
- determine the Scottish Government's public communication strategy and co- ordinate national public messages in consultation with Resilience Partnerships and other key stakeholders
- disseminate national advice and information for the public, through the media
- if appropriate, liaise and work in partnership with the UK Government.

Regional Resilience Partnerships (RRPs) and Local Resilience Partnerships (LRPs)

The Regional Resilience Partnership (RRP) structure supports multi- agency co-ordination. Currently there are three, in the North, West and East of Scotland. Within each RRP area are several Local Resilience Partnerships (LRPs) which are determined by the RRPs themselves. The RRPs and LRPs bring together all the relevant organisations in an area (category 1 and category 2 as defined in the act but also other organisations e.g. third sector) to develop and deliver a flexible, adaptable, and effective approach in dealing with emergencies.

Organisational structure	Level
SGoRR	**Strategic** Main point of contact between Government and RPs. Considers the emergency in its wider context, supports multi-agency coordination, communicates the overarching strategy and objectives for the emergency response, and monitors risks, impacts and progress towards defined objectives.
RRP	**Tactical** Ensures actions taken at the operational level are co-ordinated, coherent, and integrated to maximise effectiveness and efficiency.
LRP	**Operational** Management of immediate “hands-on” work is undertaken at the site(s) of the emergency or other affected areas. LRPs use local frameworks to manage any windblow so it remains the responsibility of managers to look after their own trees.

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