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References & Appendices



6. References

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7. Appendices

APPENDIX 1. APPROPRIATE PERIODS FOR FIELD SURVEY

Note that the timings below simply reflect the best timings for general surveys. If particular species are thought or known to be present, however, they may have to be surveyed at a different time (for example some moths can only be surveyed in specific winter months). Some other rare species can be looked for at any time of the year, for example Killarney Fern which, in fact is at its best in January / February.

□ – Best period ■ – Sub-optimal period

SUBJECT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
General habitat surveys	■	■	■	□	□	□	□	□	□	■	■	■
Botanical surveys												
Woodland/scrub			■	□	□	□	□	□	■			
Grassland					□	□	□	■				
Wetlands						□	□	□				
Heath/moor	■	■	■	■	□	□	□	□	■	■	■	■
Dunes/coast				□	□	□	□	□				
Tall herb swamps					□	□	□	□	□			
Mires and bogs					□	□	□	□	□	■		
Marsh				■	□	□	□	□	■			
Saltmarsh					□	□	□	□				
Bryophytes, lichens	■	■	□	□	□	□	□	□	□	□	■	■
Fungi									□	□	□	
Zoological surveys												
Birds: breeding			□	□	□	□						
Birds: wintering (general)	□	□	■	■					■	■	□	□
Water birds: wintering	□	□	■	■					■	■	□	□
Terrestrial mammals	□	□	□	■	■	■	■	■	□	□	□	□
Bats: breeding roosts				□	□	□	□	□	□			
Bats: winter roosts	□	□	□								□	□
Amphibians: breeding		□	□	□	□	□						
Fish: Salmonid spawning	□	□	■								■	□
Salmonid stocks							□	□	□			
Fish: Lamprey spawning			□	□	□	□	□	□				
Fish: Coarse fish stocks							□	□	□			
Fish: Shad spawning				□	□	□	□					
Insects: Butterflies & moths*	□	□	□	□	□	□	□	□	□	□	□	□
Insects: Dragonflies					■	□	□	□	■			
Insects: Hoverflies					□	□	□	□	□			
Insects: Beetles				□	□	□	□	□	□			
Insects: Grasshoppers								□	□			
Spiders and allies			□	□		□	□		□	□		
Molluscs				□	□	□	■	■	□	□		
Freshwater invertebrates	■	■	■	■	■	□	□	□	□	■	■	■

* - NB main flight time for butterflies is April – September, but moths may need to be surveyed in any month of the year, depending on the species.

Source - adapted from NRA (undated) Guidelines for Assessment of Ecological Impacts of National Road Schemes.

APPENDIX 2. SITE EVALUATION SCHEME

RATING	CRITERIA FOR ASSESSING ECOLOGICAL IMPORTANCE OF SITES
A	<p>Internationally important Sites designated (or qualifying for designation) as SAC₁ or SPA₂ under the EU Habitats or Birds Directives. Undesignated sites containing good examples of Annex I <i>priority</i> habitats under the EU Habitats Directive. Major salmon river fisheries. Major salmonid lake fisheries.</p>
B	<p>Nationally important Sites or waters designated or proposed as an NHA₃ or statutory Nature Reserves. Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). Undesignated sites containing <i>significant populations</i> of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000. Major trout river fisheries. Waters with major amenity fishery value. Commercially important coarse fisheries.</p>
C	<p>High value, locally important Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species. Small water bodies with known salmonid populations or with good potential salmonid habitat. Sites containing <i>any</i> listed Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Large water bodies with some coarse fisheries value.</p>
D	<p>Moderate value, locally important Sites containing some semi-natural habitat or locally important for wildlife. Small water bodies with some coarse fisheries value or some potential salmonid habitat. Any stream with an unpolluted Q-value rating.</p>
E	<p>Low value, locally important Artificial or highly modified habitats with low species diversity and low wildlife value. Water bodies with no current fisheries value and no significant potential fisheries value.</p>

SAC₁ = Special Area of Conservation, SPA₂ = Special Protection Area, NHA₃ = Natural Heritage Area

APPENDIX 3. CRITERIA FOR ASSESSING IMPACT SIGNIFICANCE: Terrestrial Sites

Site category* Impact level	A sites Internationally important	B sites Nationally important	C sites High value, locally important	D sites Moderate value, locally important	E sites Low value, locally important
Severe negative	Any permanent impacts	Permanent impacts on a large part of a site			
Major negative	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site		
Moderate negative	Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site	
Minor negative		Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site
Neutral	No impacts	No impacts	No impacts	No impacts	Permanent impacts on a small part of a site
Minor positive				Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site
Moderate positive			Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site	
Major positive		Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site		

* Site categories A to E are defined in Appendix 2.

APPENDIX 4. CRITERIA FOR ASSESSING IMPACT SIGNIFICANCE: Aquatic Sites

A Sites

	TEMPORARY	SHORT-TERM	MEDIUM-TERM	LONG-TERM
EXTENSIVE	Major	Severe	Severe	Severe
LOCALISED	Major	Major	Severe	Severe

B Sites

	TEMPORARY	SHORT-TERM	MEDIUM-TERM	LONG-TERM
EXTENSIVE	Major	Major	Severe	Severe
LOCALISED	Moderate	Moderate	Major	Major

C Sites

	TEMPORARY	SHORT-TERM	MEDIUM-TERM	LONG-TERM
EXTENSIVE	Moderate	Moderate	Major	Major
LOCALISED	Minor	Moderate	Moderate	Moderate

D Sites

	TEMPORARY	SHORT-TERM	MEDIUM-TERM	LONG-TERM
EXTENSIVE	Minor	Minor	Moderate	Moderate
LOCALISED	Not significant	Minor	Minor	Minor

E Sites

	TEMPORARY	SHORT-TERM	MEDIUM-TERM	LONG-TERM
EXTENSIVE	Not significant	Not significant	Minor	Minor
LOCALISED	Not significant	Not significant	Not significant	Not significant

In line with the EPA guidelines (EPA 2002), the following terms are defined when quantifying duration:

- Temporary: up to 1 year
- Short-term: from 1-7 years
- Medium-term: 7-15 years
- Long-term: 15-60 years
- Permanent: over 60 years

Localised impacts on rivers are loosely defined as impacts measurable no more than 250m from the impact source. Extensive impacts on rivers are defined as impacts measurable more than 250m from the impact source. Any impact on salmonid spawning habitat, or nursery habitat where it is in short supply, would be regarded as an extensive impact as it is likely to have an impact on the salmonid population beyond the immediate vicinity of the impact source.

* Site categories A to E are defined in Appendix 2.

APPENDIX 5. APPROPRIATE TREES AND SHRUBS FOR PLANTING SCHEMES

Common name	Latin name	Height (max) spaces	Suitable for public open confined spaces	Suitable for streets and	Suitable for tubs, containers, raised beds etc.	Guide to planting: see key below
Alder	<i>Alnus Glutinosa</i>	22m	Yes	No	Yes	ADPS
Alder buckthorn	<i>Frangula alnus</i>	6m	Yes	No	Yes	D Restricted distribution Not commonly available
Arbutus (strawberry tree)	<i>Arbutus unedo</i>	8m	Yes	No	Yes	Not frost hardy
Ash	<i>Fraxinus excelsior</i>	28m	Yes	No	No	ADIPS
Aspen	<i>Populus tremula</i>	24m	Yes	No	No	DPSV Not close to buildings or any services
Bramble	<i>Rubus fruticosus</i>	2m	No	No	No	C/H note: tends to be invasive
Broom	<i>Cytisus scoparius</i>	2m	Yes	No	Yes	*
Burnet rose	<i>Rosa pimpinel lifolia</i>	2m	Yes	No	Yes, but vigorous	C/H Restricted distribution. Not commonly available
Common (or European) gorse	<i>Ulex europeaus</i>	2.5m	Yes	No	In a rural setting	HV
Crab apple	<i>Malus sylvestris</i>	6m	Yes	No	No	AHIP
Dog rose	<i>Rosa canina</i>	2m	Yes	No	Yes. Vigorous	C/H
Downy birch	<i>Betula pubescens</i>	18m	Yes	Yes	Yes	ADIP
Elder	<i>Sambucus nigra</i>	6m	In hedge	No	No	V
Guelder rose	<i>Viburnum opulus</i>	4.5m	Yes	No	No	DH
Hawthorn	<i>Crataegus monogyna</i>	9m	Yes	Yes	Yes	AHIPS
Hazel	<i>Corylus avellana</i>	6m	Yes	No	No	AHS
Holly	<i>Ilex aquifolium</i>	15m	Yes	Yes	Yes	AHPS
Honeysuckle	<i>Lonicera periclyrnenum</i>	Climber	Yes	On walls	No	C
Ivy	<i>Hedera helix</i>	Climber	Yes	Yes	Yes	C
Juniper	<i>Juniperus communis</i>	6m	Yes	No	No	S
Pedunculate Oak	<i>Quercus robur</i>	30m	Yes	No	No	AI only suitable for large spaces
Privet	<i>Ligustrum vulgare</i>	3m	Yes	Yes	Yes	No
Rowan or mountain ash	<i>Sorbus aucuparia</i>	9m	Yes	Yes	Yes	ADHIP
Scots pine	<i>Pinus sylvestris</i>	24m	Yes	No	No	AI
Sessile oak	<i>Quercus petraea</i>	30m	Yes	No	No	AI only suitable for large spaces
Silver birch	<i>Betula pendula</i>	18m	Yes	Yes	Yes	ADIP
Sloe, blackthorn	<i>Prunus spinosa</i>	3m	Yes	No	No	AHPV
Spindle	<i>Euonymous europaeus</i>	7,5m	Yes	No	No	H
Western (or mountain) gorse	<i>Ulex gallii</i>	1,5m	Yes	No	Yes	*Restricted distribution Not commonly available
Whitebeam spp.	<i>Sorbus aria</i>	12,	Yes	Yes	Yes	IPS
Wild cherry	<i>Prunus avium</i>	15m	Yes	Yes	Yes	AHI
Willow spp.	<i>Salix spp.</i>	6m	Some	No	No	V Not suitable near buildings or services
Wych elm	<i>Ulmus glabra</i>	30m	Yes		No	PS
Yew	<i>Taxus baccata</i>	14m	Yes	No	Yes	AIPS

A - Grows in a wide variety of soils, C - Climber, H - Suitable for hedging, I - Suitable as an individual tree, D - Tolerates or prefers damp conditions, P - Tolerates smoke or pollution, S - Tolerates shade, V - Invasive, * - Tolerates dry conditions

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