



Fitting Landscapes

Securing more sustainable landscapes

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May 2013 / 7743

Foreword

Status and Aims of Fitting Landscapes

Fitting Landscapes is the new policy statement addressing the landscape design and management of our transport corridors.

The Scottish landscape is one of our prime national assets. It is diverse in type and much of it has a high scenic quality and highly distinctive character. Many of us experience Scotland through the window of its transport networks, whether as a visitor travelling distances to remote destinations or as a commuter travelling to work.

An important element in the experience of the landscape is the treatment of transport corridors and the traveller's perceptions of landscape quality.

The Scottish Government with the new **Fitting Landscapes** policy seeks to further advance its commitment to quality in all aspects of landscape design and management. The focus will be on the better integration of design and management, resource efficiency, engagement and place making. The policy will continue to promote the opportunity for more sustainable, more bio-diverse and more attractive transport landscapes.

Creating added value through the quality of landscape design

This policy seeks to empower landscape architects, engineers and all the varied specialists involved in road planning, design and management to develop schemes of added value. The intention is to secure improved environmental enhancement and mitigation through high quality design and management solutions supported by the use of natural characteristics, wise use of resources and adaptability to future change.

More sustainable design and management approaches involve closer integration of nature with engineering needs. The policy promotes quality of design and management as key mechanisms in this process.

Setting a new Policy Context for Fitting Landscapes

Transport Scotland has based this policy on lessons learnt from more than a decade of applying the previous policy Cost Effective Landscape: Learning from Nature. The policy is applicable across all land-based transport modes and will be adopted as setting the high-level design approach for all strategic road, rail and national cycleway routes.

Fitting Landscapes builds upon, updates and widens the scope of the successful CEL:LfN and brings Transport Scotland's landscape policy into line with current Scottish Government policies on sustainability and the environment.

The updated policy promotes design quality and sustainability through an 'outcomes' approach. Outcomes are the planned changes and benefits achievable within the transport estate and which the new **Fitting Landscapes** policy seeks to target. The policy framework set out in this document is neither prescriptive nor narrowly based on procedure. It seeks intelligent and balanced design-led decision making that offers clear outcomes and supports a more sustainable approach to design and management.

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Fitting Landscapes Policy

The policy seeks to promote design quality and more sustainable outcomes for the transport estate. The policy states:

- Transport landscapes should enhance natural heritage, address quality of place, make wise use of resources and be adaptable to future change.
- Landscape and environmental objectives will be set to inform the planning, design, implementation and management of new transport infrastructure and the management of existing networks.
- Landscape design will promote design approaches that support stronger integration of natural heritage and place quality based on a full understanding of landscape character and context.
- Landscape architects will actively engage with other design and environmental professionals to secure a multi-disciplinary and collaborative approach to all landscape related design and management processes.

The ***Fitting Landscapes*** policy aims and objectives shall be employed in the planning, design, implementation and management of all transport landscapes.

Fitting Landscapes recognises the value of developing planning and design solutions through consultation. This Landscape Policy supports close iterative working within Design Teams and open and inclusive consultation with statutory bodies and stakeholders.



INTRODUCTION

This document introduces and explains Transport Scotland's new landscape policy: **Fitting Landscapes**. The following sections explain how the policy works and how it will be implemented:

- Section 1 explains the background to the policy.
- Section 2 gives the vision, involving four key design and environmental aims, which are in turn supported through setting more detailed objectives.
- Section 3 explains how the policy is to be used and gives guidance on implementation.
- Section 4 provides detailed examples of objectives and supporting mechanisms.
- Section 5 summarises the intended long term benefits of the policy.

Fitting Landscapes

Transport Scotland manages a large public estate associated with transport infrastructure. The 'transport estate' passes through and is influenced by a diverse mix of urban, rural, lowland and highland landscapes. These transport corridors have been created and are managed to address strategic transport objectives, environmental mitigation and safety.

Scotland has long promoted a sustainable and integrated approach to the design and management of transport corridor landscapes. *Cost Effective Landscape: Learning from Nature (CEL:LfN – 1998)* provided a set of principles to guide new and innovative approaches to landscape design and management of roads.

The new policy **Fitting Landscapes** builds on the previous policy whilst also:

- Reflecting changing national policy frameworks, legislation and Scottish Government/
- Transport Scotland objectives;
- Creating a fresh vision for all transport landscapes and their capacity and contribution to Scottish Government policy and guidance;
- Building on lessons learnt and innovation to maximise opportunity for high quality design and the development of sustainable long term outcomes.

This document introduces and explains Transport Scotland's new landscape policy: Fitting Landscapes.



Introduction

The new policy is deliberately concise and strategic in its approach. It seeks to define a clearer, bolder vision reflecting Scotland's future needs, and focuses on those key areas of activity with the potential to make the greatest contribution to national environment and sustainability outcomes.

It promotes a more holistic approach to transport landscape design, implementation and management. It seeks an enhanced contribution to design quality, place-making, the enhancement of natural heritage, climate change adaptation and the sustainable economic development of Scotland. The policy supports:

- Clear definition of aims
- Objective and design-led decision making
- Empowerment of design teams that recognise the value of high quality landscape design

It sets in place a framework for action that applies across a range of professionals involved in the planning, design, implementation, management and maintenance of transport corridors; it supports engagement with statutory and non-statutory agencies and wider stakeholders; and it promotes best practice and clarifies our commitment to more sustainable management of the transport estate.

The policy seeks to promote design quality and more sustainable outcomes. It is founded on the application of design, implementation and management that works with natural systems and processes and gives recognition of the value of learning from nature.

The policy advocates a flexible, adaptive design approach. In the context of the project-specific objectives it supports innovation, the exploitation of opportunities, and the exploration of alternative solutions all with the aim of using resources wisely, developing more sustainable landscapes and accommodating future change.

Application of the Policy

Fitting Landscapes is a high level document which sets an agenda for policymakers, planners, designers, contractors, operational managers and maintenance teams involved in the planning, design, implementation and management of the transport estate.

The policy looks to address the challenges of delivering a transport network that can offer a demonstrable contribution to national policy targets, supports natural heritage and ensures a 'best fit' with local landscape character.

It is a policy that should inform and support decisions associated with planning, land acquisition, design, implementation and management of the transport estate..

The document is not a 'how to guide'. Case studies highlight lessons learnt and useful examples to inform debate and assist design professionals, managers, wider stakeholders and contractors to understand the range of opportunities and possibilities in creating more integrated design and management solutions. The Policy shall be implemented through early and regular consultation seeking within the consultation additional opportunity for innovation.

Application of the Policy

Promoting the concept of 'change' becomes possible when we 'change the ways we do things' with a wish to engage across all the disciplines and stakeholder interests that contribute to the design, delivery and management of our transport infrastructure and estate

This is a high level document which sets an agenda for policymakers, planners, designers, contractors, operational managers and maintenance teams involved in the design and management of the transport estate.

The policy is intended to empower those involved in the transport estate and allow them to respond appropriately to the challenges of delivering a transport network that can offer a greater contribution to national policy targets and guide landscape practice in a more sustainable direction. It is a policy that should inform aims and objectives and provide support for decisions associated with planning, land acquisition, design and management. It is not a 'how to guide' although the range of case studies associated with this policy update will provide useful pointers to design professionals, managers and contractors.



THE POLICY

Policy Vision

To promote the more sustainable design, implementation, maintenance and management of the transport estate and ensure that the landscapes we create and manage are of high quality, well integrated, bio-diverse, adaptable and deliver a meaningful contribution to national sustainability policies.

*The **Fitting Landscapes** policy requires a design and management approach that works with natural systems and processes in a manner that supports quality of design, innovation and the commitment to wise use of resources with recognition of the value of learning from nature.*

Fitting Landscapes Policy

The policy seeks to promote design quality and more sustainable outcomes for the transport estate. The policy states:

- Transport landscapes should enhance natural heritage, address quality of place, make wise use of resources and be adaptable to future change.
- Landscape and environmental objectives will be set to inform the planning, design, implementation and management of new transport infrastructure and the management of existing networks.
- Landscape design will promote design approaches that support stronger integration of natural heritage and place quality based on a full understanding of landscape character and context.
- Landscape architects will actively engage with other design professionals to secure a multi-disciplinary and collaborative approach to all landscape related design and management processes affecting the transport estate.

The **Fitting Landscapes** policy aims and objectives shall be employed in the planning, design, implementation and management of all transport landscapes.

To promote the more sustainable design, implementation, maintenance and management of the transport estate

The policy promotes a clearer set of aims and objectives for environmental performance and stewardship. At the heart of the policy is the belief that landscapes which are relatively self-sustaining can only be developed if the design and management regime works with nature and understands and respects natural processes. Creating new landscapes involves activities which if closely aligned with nature, offer more sustainable and successful solutions. The following sections describe in more detail the key policy aims and the supporting process of setting objectives.

Policy Aims

Fitting Landscapes has four key aims, each of which addresses aspects of the vision.

It is a prerequisite of all Transport Scotland projects that the servicing of these aims is given full consideration at the outset of all transport projects, whether associated with constructing new infrastructure or for specifying maintenance and management.

Key Aims

1. *Promote Design and Place Quality*
2. *Enhance and Protect Natural Heritage*
3. *Encourage Wise Use of Resources*
4. *Build in Adaptability to Change*

*Promote
Design and
Place
Quality*

*Enhance and
Protect
Natural
Heritage*

*Encourage
Wise Use of
Resources*

*Build in
Adaptability
to Change*

Fitting Landscape Policy Aims

Vision & Policy

Aim 1

Promote Design and Place Quality

Transport landscapes are integral to the character and experience of Scotland. New schemes can be successfully integrated with their surroundings as well as create new landscapes and provide an enhanced experience for travellers. Existing schemes can be managed to improve landscape integration and character and maintain views and vistas.

Promoting design and place quality requires designers and managers to:

- Understand the landscape character and context (including structure, historical context, elements, features and visual amenity)
- Understand the concept and practice of place-making in design and its importance to users of transport corridors
- Instigate early co-operative and integrated working between all sections of the design and maintenance teams including:
- Appreciating the importance of route selection, geometry, land use context and landform in integrating transport corridors with the landscape
- Having an early understanding of detailed infrastructure, maintenance and functional requirements to ensure these can be integrated with the landscape design.
- Retain valued features wherever possible and address landscape/habitat fragmentation
- Use local and site-won materials, promote local vernacular building methods and where appropriate use plant species and species mixes of local provenance
- Achieve an appropriate balance between landscape and visual mitigation and the amenity of route users
- Implement bespoke and locally appropriate solutions



Kylescu Bridge: an iconic example of harmony in Design and Place.

Aim 2

Enhance and Protect Natural Heritage

Transport corridors can create positive and adverse impacts to nature conservation. Effective mitigation of adverse impacts on natural heritage and ecosystems is a primary consideration of this policy, as is the positive enhancement of biodiversity through the creation and management of new habitats and green networks.

Enhancing and protecting biodiversity requires designers and managers to:

- Understand and respect ecological and natural processes
- Be fully aware of conservation requirements of protected species and priority habitats/ecosystems and how this may affect route selection, design and management
- Understand site/scheme context and the capacity to support the natural heritage, and enhance/create a range of existing and new habitats
- Support local biodiversity action plan priorities including the re-establishment/ re-colonisation of local species and habitats
- Reduce adverse impacts by more robust protection, integration and more extensive retention of existing natural assets and habitats
- Provide effective mitigation of residual impacts and, where this is not possible, explore opportunities for meaningful offset or compensation through habitat creation and enhancement
- Use native plant species mixes and local provenance plants and seeds
- Support and link with integrated habitat networks and help address habitat fragmentation and species dispersal resulting from development and the effects of climate change



Protection of Wildlife.

Vision & Policy

Aim 3

Encourage Wise Use of Resources

The wise use of resources, including reducing consumption of materials and energy, minimising waste and retaining valuable assets, is a core aim of all works undertaken under this policy.

Created and managed landscapes are not natural but can establish over time a state of dynamic equilibrium, where natural forces are in broad balance and landscape change involves relatively slow and self-regulating trends that support habitat development through natural processes.

Using simple design principles and a clear understanding of future management can allow a natural equilibrium or balance to be achieved early in the establishment of a new landscape. This delivers a range of benefits including conserving natural assets, reducing long term maintenance inputs and accommodating future change.

Encouraging the wise use of resources requires designers and managers to:

- Understand and respect existing site assets such as landscape features, landscape character, natural materials and valued habitat
- Design and develop landscapes that are 'fit-for-purpose' and give early consideration to short /medium and long term management and maintenance objectives
- Give early consideration to the integration of active travel routes and transport corridors
- Employ natural characteristics and processes in the design of earthworks, drainage and landscape, integrating both habitat and landscape elements
- Design and specify schemes to reduce future maintenance and management requirements including minimising the use of fertilisers, herbicides and the need for labour intensive thinning and mowing
- Reduce the use of non-renewable energy and materials during construction and maintenance
- Minimise waste during construction and encourage re-use of site won materials including earthworks, soils, stone, timber, seed banks, plants and habitat
- Exploit unforeseen and chance opportunities to minimise unnecessary use of resources at all stages.

Aim 4

Build in Adaptability to Change

There is an increasing awareness that all development needs to take account of future implications of climate change, as well as other environmental and operational changes. Transport landscapes will be subject to the effects of changes in rainfall, temperature and species ranges as well as future changes in transport modes, technologies and priorities. Transport corridors may also help with wider climate change adaptation by accommodating storm drainage, providing refuge habitats and forming linkages to wider green networks.

Natural systems respond to environmental change to achieve new states of dynamic equilibrium. The policy promotes flexibility and with it the capacity of transport landscapes to allow adaptation to future change in climate and other parameters.

Building in adaptability to change requires designers and managers to:

- Recognise that change is inevitable
- Promote innovation and allow for alternatives that take advantage of the opportunities that arise at all stages of planning, design, implementation and management.
- Promote the natural heritage resilience through links with other habitats
- Build in capacity for future adaptation through land take and adaptable designs
- Encourage resilience by using suitable planting stock and species mixes
- Recognise that some schemes or elements may be relatively short term by designing and/or managing the landscape to create early effectiveness
- Build sustainable drainage solutions capable of accommodating future increased water flows
- Encourage flexible maintenance and management regimes that respond to changing climate, habitats and soil conditions



Accommodate storm drainage and provide refuge habitats.

Vision & Policy

Setting Project Specific Objectives

The ***Fitting Landscapes*** policy requires the landscape architect or landscape manager to develop project specific design objectives based on securing the policy aims. Lessons learnt within transport schemes indicate that collaborative working and clearer objective setting offers the best mechanism to capture the opportunities inherent within a scheme and identify areas for innovation.

The policy therefore requires:

- Setting of detailed landscape scheme objectives
- Engagement with statutory consultees / advisors in setting these objectives
- Early engagement with the future maintenance and management team for the scheme

The setting of objectives needs to be undertaken on a project by project basis and should be conceived as central to the design process. Engagement with statutory consultees is a key part of this process.

Objectives can and should be developed and further refined as the scheme proposals are progressed and should always relate to the special project characteristics and opportunities. It is important that objective setting is led by experienced landscape architects and that the objectives are confirmed through consultation.

The diagram (see over) provides an indicative list of possible objectives broadly applicable to the typical range of works encountered across transport corridors. It is important that, in the case of each scheme and route, objectives are developed and tailored to suit the specific characteristics and requirements of the project.

Connecting Objectives with Outcomes

Setting landscape objectives also helps in being clearer about outcomes. Outcomes are important as they help to introduce forward thinking into the design process about the type, character, quality and function of the landscapes we are seeking to create and what will define success.

Thinking about outcomes often requires a team to stand back and take stock of a scheme. An outcome approach helps strengthen the connections between the design aspiration and design proposals. Outcomes should also focus design thinking around the effectiveness of delivery and help to confirm that the proposals are delivering long term sustainable value.

Overall Vision

**Sustainable High Quality
Transport Landscapes**

Aims

Enhancing and Protecting Biodiversity	Promoting Design and Place Quality	Encouraging Wise Use of Resources	Embedding Adaptability to Change
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Project
Objectives
(to be set for
each scheme)

Use natural characteristics in design	Innovate to mitigate adverse environmental effects	Protect species and habitats	Support biodiversity with native planting	Retain existing features and re-use site won materials	Design for low maintenance and management	Secure adequate land to allow integrated solutions	Build on distinctive place quality and character
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Mechanism



Vision & Policy

Establishing greater clarity around objectives and the consideration of anticipated outcomes offers opportunity for all parties to make an informed input to the design process - to seek out innovation and support well integrated, balanced schemes. The policy recognises the value of getting perspectives from differing sources and encourages design teams to seek the input from specialists and wider stakeholders through consultation. This helps build a stronger understanding of natural systems and local landscape characteristics whilst ensuring the needs of land managers and maintenance and management teams are fully considered from the outset. Overly complex design and interventions that impose on nature, rather than work with nature, typically fail to offer long term solutions or capture meaningful benefits.

In summary, the setting of objectives and consideration of outcomes opens up opportunity for more holistic thinking. It reinforces a design approach that recognises both the value of design review processes and the multi-disciplinary contributions to design. Objective setting will support balanced, sustainable and well integrated landscapes.

Setting Project Objectives

Setting objectives is important to both the design and the engagement process and is helpful in setting the ambition and opportunities of the project. Consultations with stakeholders including statutory consultees and with professionals of other disciplines within the design team will be important in defining objectives and identifying the key areas of opportunity. It is important that the context, opportunities and constraints of the site and scheme are fully understood when setting objectives.

Typical Objectives (indicative examples)

- *Innovate to Mitigate Adverse Environmental Effects*
- *Protect Species, Habitats and Ecosystems*
- *Use of Natural Characteristics in Design*
- *Support Biodiversity with Native Planting*
- *Retain Existing Features and Re-Use Site Won Materials*
- *Design for Low Maintenance and Management*
- *Secure Adequate Land to Allow Integrated Solutions*
- *Build on Distinctive Place Quality and Character*

The hi-level objectives can be supported by more practical understandings of the mechanisms around which objectives will be delivered. These help to provide an understanding of how the design challenges of the project will be addressed and identify specific areas of opportunity.



Key points

The capacity of the transport estate landscape to deliver stronger benefits and outcomes is dependent upon developing clearer better defined scheme design objectives.

Multi-disciplinary working and design integration between engineers and landscape architects is essential to secure enhanced outcomes

Design objectives should be developed from a clearer understanding of context and thereafter encourage quality of design and design innovation.

DELIVERING FITTING LANDSCAPES

Fitting Landscapes strongly promotes the role of good design in securing more sustainable outcomes for the transport estate. It is founded on design that works with natural systems and processes and recognises the value of learning from nature. Important in achieving the policy aims is to strengthen the opportunities for collaborative working within design teams and closer consultation with stakeholders and managers.

Strengthening the Design Role

Transport schemes are frequently large complex projects and require good communications to support design coordination and the delivery of effective and well integrated solutions. Early engagement within project teams and with network managers and external stakeholders is vital in establishing from the outset a process of partnership between the relevant parties.

Lessons learnt from past experience highlight the holistic nature of the design process and that the best and most sustainable solutions involve collaborative inputs across disciplines.

Fitting Landscapes therefore recognises:

- The design of transport corridors should promote close, multi-disciplinary working based on balanced decision-making and clear objectives
- Landscape architects have a key role in delivering integrated design for place quality as well as environmental and landscape mitigation: this requires considered input at all stages of planning, design and implementation.

The policy looks for continuous improvement by embracing best practice, the adoption of lessons learnt and better design team communication. The following considerations are important in this regard:

- all members of the design team are to be involved in setting land requirements and making recommendations on CPO and land made available boundaries
- active travel opportunities and facilitating connections of path and cycleway provision is considered and committed to early in the design process
- landscape design shall inform the planning and design of sustainable urban drainage (SUDs) and drainage outfalls to secure integrated solutions
- design integration is required around structures, built elements and their detailing to ensure successful schemes
- green network and integrated habitat development needs to be addressed through consultation and incorporate relevant national and local biodiversity targets

Fitting Landscapes strongly promotes the role of design in securing more sustainable outcomes

Promoting Engagement and Consultation

Statutory consultees and other specialist organisations have a key role in contributing to and informing the design process. Quality design is best secured through an informed process that openly addresses a breadth of issues and secures balanced solutions. The following considerations are important in this regard:

- protocols are established at the outset of the design process for consultation with all statutory consultees
- early design team engagement with statutory and relevant non-statutory consultees on scheme specific and detailed objectives
- design teams are encouraged to take full advantage of the best practice expertise and local officer knowledge to inform the design process
- designing to reflect end users' needs and aspirations can only be understood through effective consultation

Strengthening the Integration of Maintenance and Management

The policy gives equal importance to maintenance and management as to design and implementation. Sustainable design requires clear understandings based on collaboration between design professionals, route operators and maintenance managers. An informed process will help to clarify established management regimes and the scope for developing design solutions that reflect practical and effective future maintenance and management.

The following considerations are important in this regard:

- landscape plans specifically include landscape and habitat protection measures defining restricted work areas and measures to safeguard landscape features, habitats and trees
- innovation takes account of future maintenance requirements to ensure sustainability
- early consultation with management team officers to clarify management regimes and future scheme management arrangements

Guidance on Project Implementation

The policy encourages an active approach to design, engagement and management at all stages of a project. Good design should be an inclusive, iterative and informed process with opportunity taken at every stage to create bespoke solutions that address the policy aims and project specific objectives. Consultation is an important element of the process.

There are a several important stages in the development of transport landscapes. These were identified in the original *CEL:LfN* policy document and remain largely unchanged for ***Fitting Landscapes***.

Delivering Fitting Landscapes

Project Stages

1. *Understanding the context and set objectives*
2. *Developing conceptual solutions*
3. *Detailed design and specification*
4. *Scheme implementation*
5. *Maintenance and management*

It should be noted that not all stages may apply to a transport scheme at any one time.

1 *Understand the Context and Set Objectives*

There is a need to fully understand the setting and environmental context of the project, as well as understand its purpose and functional requirements. These combine to establish the potential constraints and opportunities in establishing scheme specific objectives.

Gain a thorough understanding of the site and project including how the site has developed, the current character of its setting, how and why it may change in future and how the project requirements may affect and be best realised within this context:

- Past history, present development context and potential for future changes.
- Undertake stakeholder consultation and take cognisance of resulting information and requirements in setting objectives.
- Survey of site including existing topography, geology, soils, ecology, landscape elements, features, character and condition.
- Understand, through consultation and engagement, the wider environmental/geographical context
- Understanding of legal and planning obligations, protected areas and species and other potential sensitivities including direct and indirect potential impacts
- Review of the proposed/existing scheme including key objectives, functional requirements, potential physical/safety/legal constraints and potential opportunities for fulfilling the key policy aims.

Set key sustainability objectives relating to the main aims of protecting and enhancing place quality and natural heritage, making wise use of resources and building in adaptability to future change.

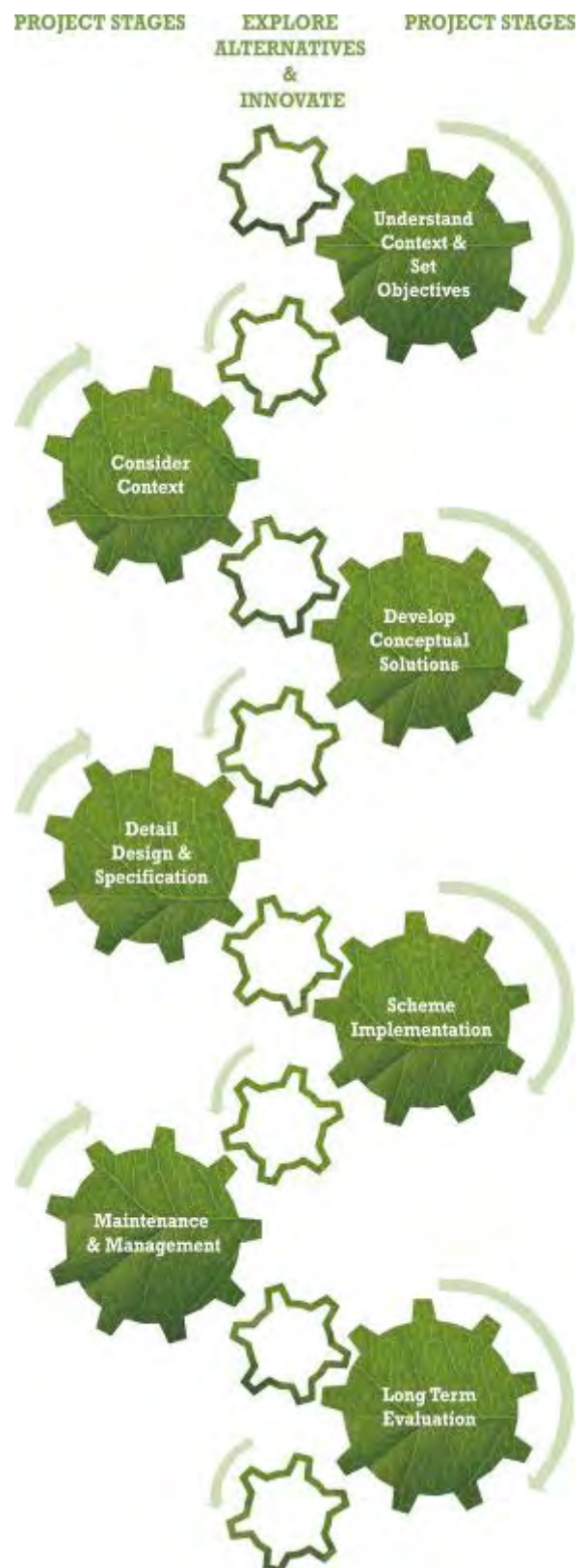
2 Develop Conceptual Solutions

An important foundation for design is to develop a clear and strong landscape vision for the project which captures the spirit and intent of the proposals and brings together and communicates the main project objectives and options.

This is a important creative stage and a key opportunity to capture ideas and influence other members of the design team. It is also the point at which many potential adverse impacts can be identified and addressed, and opportunity exists to integrate different design elements, secure balanced solutions and avoid impacts at source. Conceptual solutions should be developed and alternatives tested against the project environmental and functional objectives. Those which best fulfil the objectives are taken forward to the detailed design stage.

Landscape and other environmental professionals should work closely together with the engineering design team in order to fully understand the functional requirements of the project and develop integrated solutions. Design engagement is an important part of this stage. A further key requirement is an assessment of the practical, shorter and longer term environmental and operational implications of the project, including those relating to maintenance and management. This is particularly important in protecting and enhancing natural heritage associated with landform, geo-diversity, sustainable urban drainage, boundary treatments, habitat protection measures and integration of active travel.

Conceptual solutions should capitalise on integrating scheme requirements and existing landscape and environmental characteristics; seek to maximise the potential for landscape and biodiversity benefits; consider ways of minimising resource use and be accommodating of potential future change.



Delivering Fitting Landscapes

3 *Detailed Design and Specification*

This stage adds practical detail to the preferred conceptual solution, creating the design and/or management change that will be ultimately be implemented.

The conceptual proposals are realised through development of design details and a specification that fully addresses the practicalities of implementation. Whilst there is an existing palette of design details and specification standards that may be appropriate to use these should not stifle the potential for design innovation. This stage should fully test, and if necessary revisit, conceptual solutions, and alternative means of fulfilling these should be considered. Where potential adverse impacts are unavoidable detailed scheme specific design may significantly reduce/mitigate them.

At this stage a detailed knowledge of the site and the scheme functional requirements is essential as well as an understanding of the specified materials. Environmental professionals should consider the future consequences of detailed design and management decisions for landscape and natural heritage and for future maintenance and management inputs.

Project documentation should be sufficiently detailed to guide implementation. Nevertheless, requirements should be flexible enough to allow scope for regular and meaningful review of design and/or specification, including the potential to adopt opportunities that arise during the works.

4 *Scheme Implementation*

It is important to monitor implementation carefully to ensure the realisation of aims and objectives, including the delivery of committed mitigation. Unexpected issues can often arise which may present problems or create opportunities for improved solutions.

Discovering unexpected issues and overcoming practical problems during implementation should be used as an opportunity to maximise landscape and natural heritage benefits through the development of alternative solutions. Contractual and regulatory/ legal obligations will require to be met and may prove to be a constraint but the potential for alternative, creative solutions should be promoted wherever possible.

The exploitation of opportunities requires regular monitoring of implementation by the landscape professional and an understanding of the project objectives by other project professionals and workers, with strong lines of communication established between all.

5 *Maintenance and Management*

The maintenance and management requirements of the project may be a final consideration, or the ultimate purpose of the project when applied to an existing scheme. In all cases there are implications for key sustainability/ quality aims and environmental objectives.

The developing landscape requires ongoing monitoring and assessment by the environmental professionals. Opportunities that achieve enhanced landscape and natural heritage outcomes should be exploited.

Maintenance and management are the mechanisms which allow successful and sustainable landscapes to be developed. Design awareness of future maintenance regimes strongly influences project success. Equally impracticable and inappropriate design solutions can generate adverse consequences and early failure.

Maintenance and management activities should be reviewed and wherever possible inputs should be minimised. Design strategies and management regimes should be adapted to achieve outcomes that are as close to a self-sustaining dynamic equilibrium as possible. Consultation with the relevant operating and management team will be important and future arrangements for maintenance and management should be clearly defined and concluded.

Delivering Fitting Landscapes

Promoting an Iterative Review Process

The **Fitting Landscapes** policy encourages a process of continuous review. The review process should draw lessons from scheme implementation and management and introduce change where appropriate to improve future outcomes. The review process will be led by Transport Scotland and include consultation and engagement with key stakeholders as appropriate.

Illustrative objectives have been included in Part 4 and are supported by a series of suggested mechanisms. These mechanisms provide additional detail to guide scheme design and establish a useful basis against which to review scheme delivery and assess how effectively and successfully the scheme has been delivered.

The **Fitting Landscapes** policy will be monitored by Transport Scotland to secure feedback and adopt lessons learnt. The policy will support the raising of standards in design and management and the creation of long term outcomes such as:

- Improved public perceptions of transport landscapes;
- Enhanced capacity for transport schemes to contribute to national environmental policy
- Secure added value through statutory consultee / stakeholder involvement;
- Facilitate knowledge transfer relating to best practice





River Tyne Bridge, A1 Expressway: Integration of Structure and Landscape

Detailed Examples of Objectives & Indicators

- 1 Innovate to Mitigate Adverse Environmental Effects
- 2 Protect Species, Habitats and Ecosystems
- 3 Use of Natural Characteristics in Design
- 4 Support Biodiversity with Native Planting
- 5 Retain Existing Features and Re-Use Site Won Materials
- 6 Design for Low Maintenance and Management
- 7 Secure Adequate Land to Allow Integrated Solutions
- 8 Build on Distinctive Place Quality and Character

Each project should, through consultation, develop project specific objectives and identify the task indicators that help to deliver more sustainable landscapes

Objectives & Mechanisms

1 INNOVATE TO MITIGATE ADVERSE ENVIRONMENTAL EFFECTS

Potential adverse environmental effects on people, the landscape, habitats and water are an inevitable consequence of existing and new transport corridors. The requirement to mitigate impacts provides a basis on which to innovate and seize opportunities, not just to mitigate but also to create features and habitats which serve environmental aims and objectives.

Innovation to mitigate adverse environmental effects will require:



Road alignment shaped by topography and landform

Design Team Collaboration

Designing major transport infrastructure and the maintenance and management of road and rail networks is complex and involves multi-disciplinary teams and high levels of design coordination. Design needs to balance a wide range of objectives. Successful integration of engineering, transport and environmental objectives requires good dialogue in which landscape architects, landscape managers and key environmental specialists have key roles.

Engagement with statutory consultees and local environmental groups/officers should be undertaken to inform design.

Case Example

Transport Scotland's A1 Dualling Scheme promoted a range of embankment profiles from 1:2 to 1:4.5 to secure closer integration of landform and road engineering in the area of Pencraig.



Contouring at Pencraig (A1)

Design Integration

Delivering scheme outcomes requires landscape architects to assist the design team in preparing integrated solutions.

This is of particular importance in the engineering and landscape integration of sustainable drainage, earthworks and landforms; reconnection of new and existing landscape elements; and the reconciliation of transport and safety requirements of issues such as geometry, sightlines, barriers and signage etc with landscape and environmental objectives.

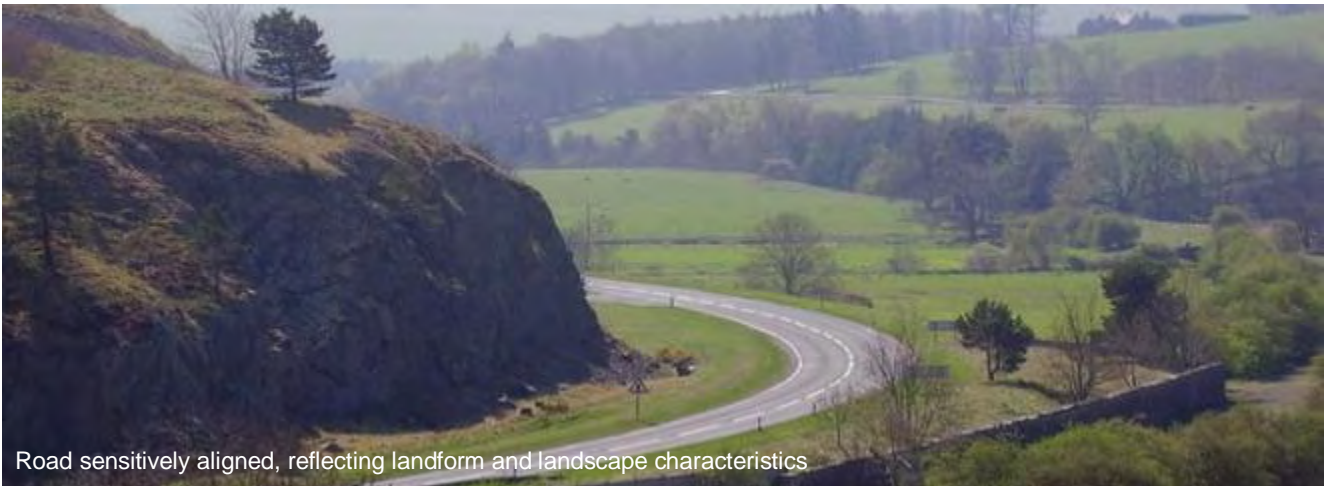
Early dialogue is always important to ensure all parts of the design team are aware of the design objectives and areas offering opportunity for innovation.



Heavy clays offer opportunity to form wet habitat zone.

Addressing Unforeseen Opportunities

A key part of innovation includes addressing unforeseen events and turning new circumstances and constraints into opportunities. Unforeseen events create opportunity to enhance design detailing and identify new more locally responsive solutions by exploiting site conditions and local circumstances; through measures such as transplanting, re-use of materials, composting and involving communities and landowners.



Road sensitively aligned, reflecting landform and landscape characteristics

Integrate Local Characteristics

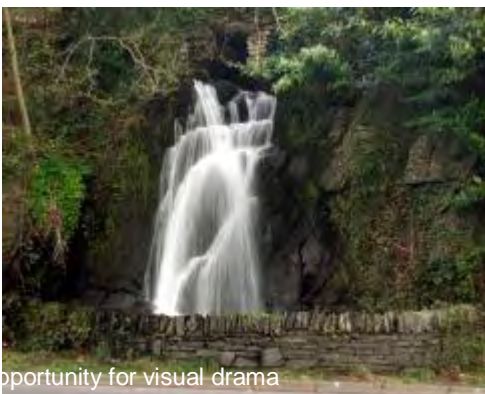
Local characteristics and associated assets are primary tools that should be used to inform the design and development of the transport corridor. Appreciation of local elements, features and landscape character and their integration into the transport landscape should have a high priority in design. Local characteristics can include a variety of elements such as landforms, rock outcrops, water features, mature habitats and trees, distinctive boundaries or key views.

Understanding of landscape characteristics developed in consultation with Scottish Natural Heritage and local stakeholders has ensured a sensitive response to the special qualities of place .



Case Example

Transport Scotland's A830 scheme involved innovative rock cut and rock profiling treatments to stabilise and revegetate slopes and secure the best fit of the road and landscape including views of the wider landscape



opportunity for visual drama



Simple SUDS feature in a flat , open landscape



Objectives & Mechanisms

2 PROTECT SPECIES, HABITATS AND ECOSYSTEMS

Transport schemes can affect species and habitats, both directly and indirectly. A number of animal and plant species as well as certain habitats are protected under European and national legislation. It is a legal duty to ensure that these are not adversely affected by planned development, operational activities or maintenance requirements. Some areas are also designated as nature reserves or local areas of nature conservation interest and some habitats are long standing features of ecological and landscape value. Early consideration to be given to these potential constraints to allow route planning and mitigation which minimises adverse effects and potentially capitalises on these natural assets.

Protecting species, habitats and ecosystems will require:



A85 diverse green verges

Avoid Sensitive Species and Habitats

Early route planning of transport corridors should give consideration to alternatives that avoid adverse impacts on protected species and habitats, and this happens as part of the EIA process. The EIA will seek to address impacts through mitigation and set out requirement to minimise effects on species and habitats. Mitigation approaches should prioritise minimising the extent of effect and where appropriate, should consider compensatory measures.

Protect Ecosystems

Individual species and habitats form part of wider ecosystems. A well functioning ecosystem can provide a range of natural benefits called ecosystem services. These include physical benefits such as flood and climate regulation as well as the quality of life benefits people gain from pleasant surroundings. Consider the natural system holistically to avoid unforeseen impacts to wider environment.

Protect Assets

Where route corridors interact with sensitive habitats and species, or include long established features such as woodlands and hedgerows, provision should be made to protect these during construction or maintenance operations. At various stages opportunity should be taken to protect assets (in design/pre-construction/construction/maintenance) and this may include a range of measures from design team and contractor briefs, design amendments, physical protection and establishment of no-work zones.



Semi-natural acid grassland, developing around wetland

Buffer Habitats

Proximity to sensitive habitats provides opportunities for creating or maintaining buffering habitats and features along the route corridor. This includes most typically SUDs drainage systems between transport corridors and rivers but may also include groundwater barriers, physical screening or intervening intermediate habitats.



Road cuts, seeded with locally appropriate wildflower mixes

Provide for Networks

Transport corridors are part of an extensive interconnected system of linear features. Typically these cross a variety of habitats and landscape features, some of which (for example, hedgerows, tree belts and rivers) are also linear and interconnected. Addressing habitat connections that reduce severance and allow for the movement of species can be an important consideration in nature conservation.

The transport corridors also cross and sometimes include other transport modes such as footpaths and cycleways. This connectivity provides opportunities for connection between habitats, landscape and differing transport modes leading to the creation of Green Networks.



Case Example

SUDs and drainage facilities associated with roads offer a very significant opportunity to introduce new habitat and support biodiversity. Specification of SUDs features will be developed by the design engineers and collaborative working on design detail, bank profiling and planting offer opportunity for innovation.

A90 Inchture: Planting and SUDs enhance the green network

Objectives & Mechanisms

3 USE OF NATURAL CHARACTERISTICS IN DESIGN

Natural characteristics reflect the qualities of natural features and processes, which respond to their environment by achieving states of dynamic equilibrium through the minimum consumption of energy and materials. Wherever possible, design and management of landscapes should exploit natural characteristics and processes to reduce resource consumption and long term maintenance requirements as well as encouraging natural heritage and landscape integration. Successfully achieving this objective requires a thorough understanding of context, materials and processes.

Use of natural characteristics in design will require:

Promote Variation

The variety inherent in natural characteristics develops from differences in the environment. Where possible and appropriate, policy and specific scheme objectives should discourage uniform and geometric finishes on earthworks and other landforms and, instead, assist designers to take inspiration from natural processes to create natural variations in the environment and landform. Minor changes in slope, aspect, substrate and drainage encourage variation in the development of habitats and the establishment of species. This in turn increases biodiversity and can provide the basis for successfully responding to future environmental change.



Low productivity grasslands on subsoil on A90 Inchtuthill.



A1 Howburn to Houndwood: Natural processes in the Eye Water realignment.

Allow Natural Processes to Work

The development of features and habitats should be encouraged through the action of natural processes including drainage and water flow, habitat succession, and breakdown of materials. The controlled harnessing of natural processes reduces initial inputs and long term maintenance requirements but successful implementation requires a thorough understanding of the processes and materials involved and may take time to evolve.

Earthworks Contouring

Shaping earthworks to reflect local natural and/or characteristic landforms can achieve desirable outcomes including: stability of subsoils and topsoils at their natural angle of repose; landscape integration with the surroundings; creating varied slope gradients and aspects which encourages diversity. It can also allow minimisation of the transport corridor with resulting reductions in maintenance and return of land to productive use or natural habitat development and can help deliver specific communities.

Rock Cut Treatments

Exploit natural bedding planes and fracturing of rock to create naturalistic rock features reflecting the characteristics of local outcrops. The surface irregularities of cracks, ledges and scree provide variation and opportunities for plants to establish and can provide refuge for a variety of birds and other animals such as reptiles. Whilst transport networks must be inherently safe for users, care should also be taken at the design stage to ensure a measured and proportionate response is made to the perceived hazards of adjacent rock cuttings and outcrops.



Rock cutting and vegetation on A1 Expressway

Natural Drainage Solutions

Drainage of transport corridors is a key opportunity for innovation in the exploitation of natural processes. It can include harnessing of natural processes to minimise artificial interventions, lead to creation of new habitats, create valuable landscape features and reduce long term maintenance requirements. Introduction of man-made elements such as extensive safety fencing and engineered retaining structures should be avoided wherever possible.



Well integrated sustainable drainage offering nature conservation and green network benefits on A1.

Objectives & Mechanisms

4 SUPPORT BIODIVERSITY WITH NATIVE PLANTING

Native plant species have been the longest established in the British Isles, forming associations of species that have developed in geographical regions and in specific habitats, responding to local soil, water and microclimatic conditions. As such native plants, particularly those of local provenance, are most likely to successfully establish and develop in balanced plant assemblages and create naturalistic habitats in which other native plant and animal species are encouraged. Some species such as Scots pine, birch and rowan are highly characteristic of Scottish habitats and landscapes, forming the key species in widely distributed plant assemblages.

Supporting biodiversity with native planting will require:



Wetland meadow offer a specialist habitat

Local Provenance

Most native species have a wide geographical range across the UK, over which there are significant variations in climate and soil conditions in which plants grow. Over thousands of years this has led to selection of species most appropriate for the conditions but also to adaptations within populations of species. Scotland and the rest of the UK are divided into a series of geographically defined plant provenance zones each with similar climate and soil factors. It is therefore important that all native plants used on schemes should, wherever possible, be sourced from stock originating in the scheme's local provenance zone. Such plants are most likely to be adapted to local conditions and have the best chance of successful establishment.

Native Plants and Seeds

Native plants and seeds appropriate to the geographical location and local conditions should be used for all schemes. If particular local characteristics or factors warrant the potential use of non native species it must first be established that the location concerned is not considered 'in the wild' under the terms of the Code of Practice on Non-native Species (Scottish Government 2012). This definition affects all rural and some urban fringe transport corridors, and non-native species are not permitted for use in such areas unless authorised by an order made by the Scottish Ministers or according to the terms of a licence issued by the appropriate authority.



Mosaic of interconnected habitat linked to road corridor

Species Mixes

In natural and semi-natural habitats, where human intervention has been minimal or low, plant species are found in common associations that respond to local conditions and maintenance. These associations are found repeatedly across areas in which similar conditions prevail and have been classified in the National Vegetation Classification system. Where native species are used, planting and seeding mixes should be based on these assemblages, or on simple combinations that allow such assemblages to develop through invasion of locally established native plants in the vicinity.



A90 Inchture Interchange: Transition across woodland and wetland habitats.

Collect and Grow Seeds and Cuttings

One means of ensuring local provenance is to collect and grow on seeds and cuttings from native plants growing in or near the scheme location. Successful implementation of this procedure requires forward planning 2-3 years ahead of the scheme and local plant nurseries in which plants can be grown on.

Bespoke Solutions

Transport corridors, by virtue of their design and implementation requirements, create localised microclimatic, soil and drainage conditions which may not reflect those of the habitats in the immediate vicinity. Local characteristics may also include plant species which are non native but typical or key to local landscape character. Detailed local solutions should take account of such factors and if necessary create a bespoke solution that maximises successful plant establishment and scheme integration.



A1: Biel House gateway replacement



Well integrated landform and planting mixes on the A1 at Penmanshiel

Objectives & Mechanisms

5 RETAIN EXISTING FEATURES AND RE-USE SITE WON MATERIALS

Successful integration of transport corridors with their surrounding landscape and habitats requires local characteristics to be taken into account. Early and ongoing consideration should be given to the potential for retaining and integrating with local landscape features and elements and for re-using local materials generated by site clearance and earthworks excavation.

Retaining existing features and re-use of site won materials will require:



Former main road becomes cycleway

Local Context and Route Selection

Knowledge of the scheme context and setting will identify key local features and characteristics. This can inform a routing process in which the potential for retaining features such as landforms, mature trees and distinctive boundaries is maximised.

Protect during Construction

The footprint required to build a scheme should be large enough to allow successful integration with its surroundings. Nevertheless, the objective of integration may also require that valued existing features are retained and protected. An appropriate balance should be struck between these two approaches. Where protection of features is required this may include physical barriers, control of drainage and briefing of site personnel.

Balanced Earthworks

Balancing of cut and fill not only minimises the footprint of a transport corridor and the need for disposing or importing of materials but also usually improves landscape integration. Creative use of unsuitable site won materials can include lime stabilisation of clay soils, landscape integration by grading out embankments or environmental mitigation by creating screen bunds and false cuttings.

Soil Conservation

Care should be taken to strip, store and re-spread site won soils as these provide the basis for establishing naturalistic assemblages of plants. Stripped soils can contain desirable seed and plant fragments which allow successful re-establishment of semi-natural local vegetation.



Adjacent habitats should be protected.

Translocation of Plants and Habitats

Some plants and habitats (eg. small saplings, and turves from grassland or moorland habitats) are capable of successful translocation to alternative locations in which they will re-establish. Detailed site survey will identify such opportunities. The process requires careful forward planning and handling: lifting and transferring is best carried out as a single handling operation but suitable temporary storage may be required between these stages depending on the implementation programme.



Translocation of grasslands

Chipping and Composting

Woody vegetation and brash cleared from a route construction corridor, or as part of vegetation management on an existing scheme, can be chipped, composted and re-used as mulch or a soil improver. Site mulching has useful but limited applications and where larger volumes of chipped or mulched material are available contracts should consider alternative uses and applications e.g. wood fuel/biomass. It may also be appropriate to leave brashings and arisings on site as habitat piles etc.



A1 Houndwood: Chippings used to suppress weed growth.

Case Example

Grow tubes increase planting success rates and secure strong early growth. Planting densities should reflect plant establishment risk and wider design objectives.

Objectives & Mechanisms

6 DESIGN FOR LOW MAINTENANCE AND MANAGEMENT

Most planting and seeding in transport corridors requires some maintenance and management. This may be early inputs to promote successful establishment or later inputs to control effects on operational and safety aspects. This requires the commitment of materials, labour and energy. The need for intensive or frequent management is a sign that habitats are not in equilibrium. Project planning and landscape design should ensure that the potential for intensive, frequent or long term management inputs is minimised. Consultation with maintenance managers will be important.

Designing for low maintenance and management will require:

Right Plant for Right Place

Plants are often used which fail to establish due to local soil and microclimatic conditions. Detailed knowledge of these factors, together with a working knowledge of native plants and plant associations is required to ensure that appropriate plants and plant mixes are chosen. Modification of specifications, plant mixes, or their intended location may be required if inspection of works during construction or during establishment indicates localised factors which may affect plant establishment.



Tree shelters accommodating growth



Viper's Bugloss on rock cuttings

Appropriate Planting Densities

Various planting and management strategies can be employed to ensure successful establishment of planting. Too low a density will leave significant areas in which control of weeds is required for a long time before shading out occurs. Too high a density is intensive in time and materials to plant and may leave a long term requirement for thinning. A balanced strategy should be developed appropriate to the location and future requirements.

Low Productivity Grasslands

Almost all transport corridors include extensive areas of grassland. This often requires significant and ongoing maintenance inputs in the form of mowing. In outfield areas grass growth should be controlled by using low fertility soils/ minimal soil depth and seeding with low productivity native grass and/ or wildflower mixes. These will often also serve biodiversity and landscape objectives.



Minimise Chemical Applications

Maintenance and management strategies should be employed which reduce the need for intensive long term chemical applications. This may include planting and seeding without fertilisers. It also includes using passive weed control measures where appropriate such as shelters, mulches or low productivity grass.



Use of tree shelters and planting in subsoils reduces the need for chemical weed control.

Objectives & Mechanisms

7 SECURE ADEQUATE LAND TO ALLOW INTEGRATED SOLUTIONS

Successful integration of transport routes with their surroundings is a desirable environmental objective and contributes to mitigation of effects. This may require additional land beyond the immediate corridor needed to accommodate construction of the route. This not only addresses landform integration but also allows for natural drainage solutions and future adaptation to changing circumstances, including climate change.

Secure adequate land to allow integrated solutions will require:

Landform Integration

Successful integration with the surrounding landscape may require permanent or temporary land acquisition beyond the immediate construction corridor. This may include allowance for grading out embankments and cuttings to smoothly flow into surrounding landforms, or to later return land to agriculture and minimise the final footprint of the scheme.

Case Example

Landform integration is best achieved where all elements of the new and existing landscape can be successfully 'knitted together' and existing features can be retained and enhanced.



A1 Penmanshiel: Integration of landform and vegetation.



Adequate space allows integration of landform and SUDS

SUDS Attenuation and Treatment

Sustainable drainage should be used to attenuate and treat water runoff, create semi-natural habitats and enhance landscape character. To successfully accomplish this requires adequate space to create naturalistic water bodies with extensive shallows, varied depths and shorelines and gradual transitions between habitats and landscape types. Adequate provision of land and SUDs may also allow future changes in rainfall and runoff to be accommodated.

Green Networks

Landscape and natural heritage objectives can be served by connecting the transport corridor landscape with existing habitats and landscape features. It may be appropriate in terms of mitigation objectives to secure additional land to achieve a better integration with nearby green networks including woodlands, hedgerows and river corridors.

Active Travel Routes

The earliest opportunity should be taken to plan for integration and enhancement of alternative travel corridors, including pedestrian and cycling, within main transport corridors. New or upgraded corridors should not sever or adversely affect existing routes.



Spectacular roadside views

Conserve and Create Views

Key views can be affected by transport corridors. Equally, construction of a route can lead to new experiences of landscapes previously unavailable. Design and maintenance of transport corridors should allow for retention of existing views and adequate framing of newly realised views, either *en route* or as part of the provision of rest areas and lay-bys

Address Boundaries

Distinctive boundaries such as hedges and drystone walls create a sense of place as well as contributing to habitat diversity and green networks. Adequate provision should be made to conserve or connect with existing boundaries, as well as to construct new boundaries that sit naturally in the landscape.



Underpass and cycleway



Local stone walling



SUDS and woodland planting

Objectives & Mechanisms

8 BUILD ON DISTINCTIVE PLACE QUALITY AND CHARACTER

Landscapes by their combinations and patterns of elements and features create areas of distinctive character. Sense of place arises from the character and special qualities of location and the connections people make with it. A positive sense of place and strengthening of distinctive place qualities is fundamental to how we perceive our environment. Transport corridors can provide access to and experience of landscapes as well as affect them positively or adversely. Policy and scheme objectives should support the conservation and creation of distinctive character and experience of landscape.

Build on distinctive place quality and character will require:

Respect Setting

A critical element in the design process and setting of design objectives is an understanding of landscape context. Context requires an informed understanding of place; an appreciation of landscape character and respect for setting.

Continuity of Elements

Linear transport corridors create severance and introduce new forms into the landscape. Engineering works sever existing patterns and can fragment elements such as woodlands, shelter belts, field patterns, walls and habitats. An important scheme objective is reconnecting features, re-establishing patterns and ensuring continuity of elements through good design.



Craigellachie: Roadside planting provides visual connection of woodlands.

Conserve Key Features

Local distinctiveness is often contingent on or enhanced by distinctive features such as the historic environment, particular buildings, tree planting or landforms. These can be unique to a particular location or characteristic of a particular region or area. Design priorities should aim to protect or integrate with these features.



Use Local Materials

Local materials help create distinctive place qualities. Conserving local materials and re-using materials and design references supports design integration and protects local character. Drystone wall boundaries and rock faces can be particularly distinctive.

Conserve and Create Key Views

Transport corridors can direct or screen views, create vistas and inform how we read and perceive the landscape. Understanding the value of views and designing to create and retain views and vistas is important in place-setting and the experience of travel.



Rhynie: A village setting seen from the road.



A832 Improvements: Spectacular views to Loch Maree.



Draft Image. Copyright not held by Ironside Farrar

SUSTAINABLE BENEFITS

The benefits of the **Fitting Landscapes** policy will be the establishment of a clearer, more focussed approach to the design, implementation and management of the transport estate. The policy will empower the designer and other professionals in the setting of clear project objectives, addressing the policy aims and supporting decisions made at each of the project stages.

A less procedural, more deterministic approach to carrying out projects will free up and support the landscape designer in taking decisions, making innovations and seizing opportunities without reducing transparency and accountability. In particular the four specific policy aims will address key areas contributing to improvements in sustainability:

- The aim of enhancing and protecting biodiversity will encourage the conservation of and integration with existing resources through design integration and innovation in mitigation.
- The aim of promoting place quality will promote design engagement, vision and aspiration.
- The aim of encouraging the wise use of resources will encourage observation and innovation and promote landscape integration, the re-use of materials and the use of natural characteristics to inform design.
- The aim of building in adaptability to future change will justify forward thinking decisions about the land resources and design measures required for resolving the interface between functional requirements of transportation corridors, their surroundings and natural processes.

In summary, this policy builds upon, updates and widens the scope of the successful CEL:LfN policy and brings Transport Scotland's landscape policy into line with current Scottish Government policies on sustainability and the environment.

The policy will empower the designer and other professionals in the setting of clear project objectives



A1 Expressway: Wildflowers provide visual and habitat benefits.

APPENDIX 1

TRANSPORT LANDSCAPE AND ITS CONTRIBUTION TO WIDER POLICY

Fitting Landscapes updates Transport Scotland's landscape policy. It builds upon the ground breaking and successful *Cost Effective Landscape: Learning from Nature* (CEL:LfN) and brings landscape policy into line with current Scottish Government policies on sustainability and the environment.

The Scottish Government has set objectives that underpin its core purpose - to create a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.

Environmental policy and the commitment to addressing climate change have implications for all investment and particularly long term investment in infrastructure. An important part of policy is the focus on the **quality of outcomes**, with due attention given to the sustainable use of land, high quality design and the protection and enhancement of the built and natural environment. In this context it is useful to understand the range of relevant policy areas to which **Fitting Landscapes** must respond. The key current drivers are summarised in this appendix.

Climate Change and Adaptation

The Climate Change (Scotland) Act 2009 is a key commitment of the Scottish Government and seeks to reduce greenhouse gas emissions by 80% by 2050.

Scotland's Climate Change Adaptation Framework acknowledges that, however successful mitigating climate change is through emissions targets, an element of climate change will be unavoidable and that steps must be taken to adapt to it.

The importance of sustainability, emissions reduction and climate change adaptation as priority issues for Transport Scotland is reflected in the following key areas:

- Establishment of a Climate Change Steering Committee and participation in Carbon Reduction Commitment (CRC).
- Development of a Carbon Calculator Tool for infrastructure- Carbon Management System (CMS).
- Production of a Climate Change Action Plan
- Production of a Sustainability Review to establish issues and opportunities relative to the Transport Scotland estate

Landscape design and management has a key role in reducing the impacts of the transport network and in climate change adaptation:

- Understanding the potential for landscapes as carbon sinks via the provision of green infrastructure corridors to maximise carbon storage in biomass, where appropriate in landscape terms
- Promoting sustainable procurement of contractual services from organisations which demonstrate that effective measures are in place to minimise the carbon intensity of capital works and site management activities
- Robust Landscape and Planting Specifications – understanding changing climatic conditions and how different species respond to these changes
- Landscape for Climate Change Adaptation - linkages between landscaping and resilience of the network to climate change impacts e.g. reducing surface water runoff during heavy rainfall events, protecting against landslips etc.

Biodiversity

Protection and enhancement of biodiversity is a key responsibility for Transport Scotland underpinned by Nature Conservation (Scotland) Act 2004 and a range of wildlife legislation. Section 1 of the Act states:

“It is the duty of every public body and office holder, in exercising any functions, to further the conservation of biodiversity so far as it is consistent with the proper exercise of those functions”.

Scottish Planning Policy underlines the importance of biodiversity in Scotland. *“Biodiversity is important because it provides natural services and products that we rely on, is an important element of sustainable development and makes an essential contribution to Scotland’s economy and cultural heritage.”*

The Scottish Government’s policy document: ‘Scotland’s Biodiversity: It’s in Your Hands’ has an aim to “conserve biodiversity for the health, enjoyment and wellbeing of the people of Scotland now and in the future.” This policy has been augmented by *The 2020 Challenge*, prepared to respond to the EU Biodiversity Strategy for 2020.

Transport Scotland is responsible for 3,405km of trunk road representing 6% of all Scotland’s roads/railway infrastructure including 340 railway stations and 3,000 kilometres of railway track passing through a wide variety of landscape and habitat types. The resource associated with this infrastructure ranges from narrow grass verges to relatively broad woodland areas. This estate offers a significant opportunity for the conservation and promotion of biodiversity through diversity and interconnectedness.

The ***Fitting Landscapes*** policy seeks to promote Transport Scotland’s role in conservation and promotion of biodiversity.

Green Networks

Green networks describe an integrated approach to the provision of open spaces and habitat, promoting access within and between settlements and the countryside. Scottish Planning Policy describes the concept:

‘Linking greenspaces in and around settlements through green networks can deliver benefits for people and nature. By encouraging connectivity between habitats, green networks can improve the viability of species and the health and viability of previously isolated habitats and ecosystems, supporting adaptation to climate change.

The Central Scotland Green Network is being promoted through the National Planning Framework 2 as a national development. The aim is to create a strategic network of woodland and other habitats, active travel routes and greenspace links across the broad area of central Scotland. Other regions are also developing green networks in their Supplementary Planning Guidance.

Whilst transport landscapes are not primarily dedicated to the aims of green networks, it is clear that, due to the extensive and linked nature of transport routes, they coincide with and can contribute to many green network aims. ***Fitting Landscapes*** supports opportunities for integrated approaches to habitat, landscape and amenity.

Landscape and Quality of Place

Scottish Planning Policy underlines the fundamental importance of Scotland's landscape to its identity, culture and as an attractive place to live, do business and invest. This policy takes account of the European Landscape Convention (ELC - ratified by the UK in 2006) which emphasises that all landscapes, not just designated areas, are important and that opportunities should be taken to improve linkages between habitats and greenspaces and to improve degraded landscapes. The ELC defines landscape as:

'An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors, and makes it clear that all landscapes require consideration and care. Different landscapes will have a different capacity to accommodate new development, and the siting and design of development should be informed by local landscape character.'

Scotland's Landscape Charter underlines the aims of the European Landscape Convention and encourages action from all sectors of society, including public authorities, to fulfill its vision to make sure that all our landscapes are places we will be proud to pass on to future generations. Transport Scotland is a signatory to this initiative.

The transport estate is extensive and covers much of Scotland. It is a window on the country, as it is the means by which most people, visitor or resident, view Scotland. Many people also live, work and spend recreation time in locations adjacent to transport corridors. The appearance of the transport estate from within or outside the corridor is therefore of critical importance to Scotland.

It is a critical part of the policy that transport landscapes address the potentially significant adverse impacts of transport corridors and that they integrate with and where possible enhance the landscape structure, character and quality of the areas through which they pass.

Design Quality

The Scottish Government policy '*Designing Places*' emphasises the importance of design in creating successful places. Much of the policy chimes with the aims and objectives of ***Fitting Landscapes***:

'The design of places plays a large part in determining what impact we have on the land and other scarce resources. Decisions about design determine how much energy we will use, how efficient transport systems will be, and what people and economic activities will flourish in a particular place'.

The policy identifies six qualities – identity, safe and pleasant spaces, ease of movement, a sense of welcome, adaptability and good use of resources – that are at the heart of good design for urban and rural development.

Landscape design can create places in harmony with natural processes of change. Landscape architects are particularly conscious that design is a matter of directing a process of continuous change and that success depends on carefully managing what has been created.

Fitting Landscapes is intended to empower landscape designers and other professionals in achieving quality of design and place in outcomes.



A1 Howburn to Houndwood: A generous land-take allows successful integration of road and river diversion.

APPENDIX 2

THE TRANSPORT LANDSCAPE ESTATE

Transport Corridors: The Landscape Estate

Scotland has a total of 3,405 kilometres of trunk road and 2,776 kilometres of rail track. Assuming a typical average maintained 'soft' landscape corridor and supporting infrastructure this combined network brings the order of 90-120 square kilometres of land area under management.

Transport Scotland manages the trunk road asset, including all landscape, through a number of operating companies who undertake all cyclic and routine maintenance.

The quality of the landscape and management is important by reason both of area, extent and the range of habitats it supports. The area under transport estate management supports and abuts habitats as diverse as acid and neutral grassland; rock and scree; shrub heath; deciduous, mixed and conifer woodlands; watercourses; wetlands and seashore.

Developing the 'Green Infrastructure' and safeguarding and restoring valuable natural ecosystems is a key component of European Biodiversity Policy and links to the National Planning Framework (NPF2) Green Network Priority. Furthermore all landscape, designated or not, has value as recognised by the European Landscape Convention and Scottish Landscape Charter.

The transport estate is widely distributed across Scotland and has the potential to contribute positively to local landscapes and habitats through reinforcing and connecting green networks.

Transport Network: Usage and Users

Scotland's road and rail networks involve an estimated 50 million plus journeys per annum covering in total excess of 60,000 million kilometres per annum. Many experience Scotland through the window of its transport networks. The visual quality, distinctiveness and contribution to sense of place are therefore important to the travelling experience as part of everyday quality of life and as a showcase to transport users.

The view from the road or rail corridor impacts on place perceptions and is important to tourism and awareness of our wider landscape. Poor detailing, inappropriate foreground treatments, lack of integration with the surrounding landscape and poor maintenance and management can negatively impact on place quality.

The successful landscape fit and detailing of transport infrastructure requires multi-disciplinary thinking early in the route selection and design process. It is important to secure collaborative working between engineering and landscape designers to extend options and alternatives for integration of the transport corridor and its surroundings. Why here?

Multi-disciplinary design working early in the design process can add value to create a more integrated, distinctive and appealing view for transport users. This supports perceptions of Scotland and supports enhanced place-qualities.