A12 Chelmsford to A120 widening scheme

TR010060

9.22 MATERIALS & LANDSCAPING PALETTE

Rule 8(1)(k)

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Development Consent Order 202[ ]

9.22 Materials and Landscaping Palette

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Artist's impression of how the Marks Tey (junction 25) may look on day of opening (for illustrative purposes only)

Contents

01.

Introduction

1. Introduction

1.0.1 Good design of the proposed scheme has been an integral consideration from the outset. The proposed scheme is in accordance with paragraph 4.48 of the National Policy Statement for National Networks (NNNPS) criteria for 'good design' for national networks and National Highways' 'The Road to Good Design', among other key design guidance.

1.0.2 This document sets out how the design principles referenced in the Design Principles [APP-280] will be translated into physical form, by providing visual indicative examples of materials and landscaping palettes. This document is intended to be read alongside other documents in the Application, in particular:

- Design and Access Statement (DAS) [APP-268]
- Design Principles [APP-280]
- General Arrangement Plans [APP-020 - APP-024]
- Engineering Sections [APP-027 - APP-030]
- Environmental Masterplan [APP-086 - APP-088]

1.0.3 It is important to note that the design of the proposed scheme is already well advanced, as can be seen in the Application documents listed above. The Applicant expects limited further design progression within the parameters and principles set out here and in the other Application documents.

02.

Materials and finishes

2. Materials and finishes

2.1 Structures

2.1.1 Structures were considered against site constraints, structural efficiency, durability, whole life cost, safety in design, safety in construction, buildability, aesthetical appeal to create a positive legacy for the local communities and environmental impact. Each structure was appraised against high-level environmental constraints information and with respect to factors such as the effect on the surrounding landscape and ecology, use of material during construction and its carbon footprint and effects of construction methods in terms of noise, vibration and air quality. The approach has been taken is in accordance with the National Highways' Design Manual for Roads and Bridges on.

Reinforced soil walls

Material: Concrete blocks or concrete panels

Design: 'Split' face finish from the blocks being cast in a mold and later split creating a ragged face look. Proposed to use standard concrete colour blocks, or discrete panel system with smooth panels.

Location: This material is proposed to be used along the A12 corridor mainly for the new embankment where large footprint is available.

Steel sheet pile walls

Material: Weathered steel

Design: The muted tones and slightly rough texture of weathered steel respond to the local landscape and contrasts with the smooth finish of concrete and metal elements. The stable, rust-like appearance negates the need for painting, enhancing the sustainability of the structure.

Location: This material is proposed to be used along the A12 corridor where there is a space constraint.

Overbridges

Material: Weathered steel

Design: The muted tones and slightly rough texture of weathered steel respond to the local agricultural landscape and contrasts with the smooth finish of concrete and metal elements. The stable, rust-like appearance negates the need for painting, enhancing the sustainability of the structure.

Location: This material will be used on new overbridges where only motorised vehicles are present, in local landscapes characterised by rural features to ensure sensitivity to the surrounding landscape.

Overbridges & Underbridge (at junction 24)

Material: Concrete

Design: The concrete structures offer opportunities to deliver slim deck profiles and offers a uniform structural appearance that ties into the underbridges and overbridge. The appearance can be enhanced through the introduction of aesthetic grooves to break up the façade of the abutments.

Location: This material is proposed to be used on a number of existing underbridges, one existing overbridge and one new underbridge.

Footbridges

Material: Painted Steel

Design: Proposed Warren truss structures provide an open appearance and thanks to the see-through parts they blend in well with the surrounding landscape. The use of painted steel make the structures durable and provide light appearance which minimises the visual impact on the environment. Where possible, parts of the ramps would be placed on embankments to respond to the local agricultural landscape and to reduce contrast with the footbridges.

Location: Painted steel warren truss is proposed to be used across all footbridge locations to reinforce sense of place and scheme identity.

Culverts

Material: Concrete

Design: The concrete structures offer opportunities to deliver slender profiles with limited visible surfaces which align with the finishes of the underbridges and overbridges to ensure a consistent family of structures. Where appropriate the appearance of the wingwalls, the only significant externally exposed surfaces, can be enhanced through the use of textured surface finishes or feature grooves to provide visual interest to otherwise plain surfaces.

Location: Off-road in locations not visible to the public.

2.2 Hard standing

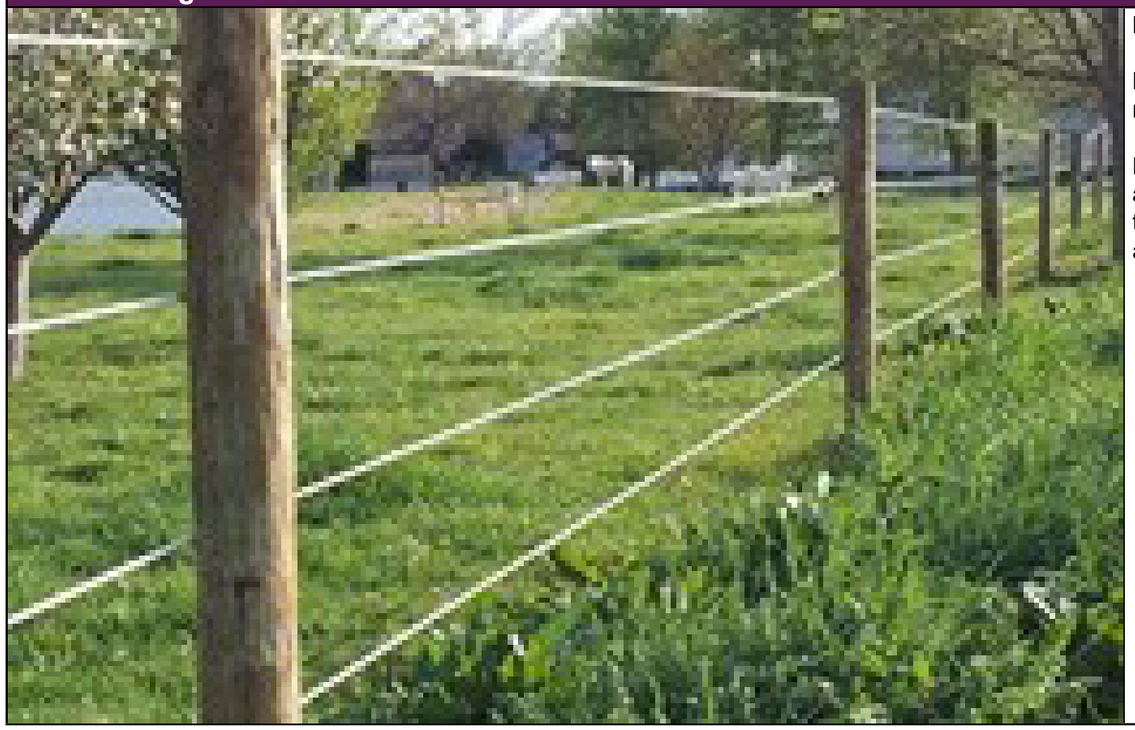
Urban fencing

Material: Closeboard (Featherboard) fencing

Design: Closeboard fencing is a very popular choice for urban fencing for its strength and simple, timeless appearance. It ensures privacy while providing a natural backdrop for planting, complementing both the private garden landscape and the urban landscape.

Location: Used for enclosure of private and public urban properties.

Rural fencing



Material: Timber Post (Chestnut) and 3-Wire (Galvanised) Fence (1.1m high)

Design: Post and wire fencing is a strong and durable option that blends in with the landscape and has minimal visual impact in rural areas.

Location: Used in all areas where the control of livestock is needed such as private agricultural fields and public areas where grazing is allowed. Adapted versions of post and wire fencing are also proposed to be used to enclose ecological mitigation areas where the protection and control of badgers, reptiles, amphibians and water voles needs to be ensured.

Rural gates	
	**Material: Timber Post and Metal Field Gate (1.4m high)** **Design:** Timber post and metal gates represent the optimal choice for rural areas as they are both solid and hard wearing, while blending seamlessly into the landscape and not affecting visibility and landscape character. **Location:** Used in all areas where the control of livestock is needed such as private agricultural fields and public areas where grazing is allowed. Used to ensure optimum security for rural driveways or field entrances.

03.

Landscaping Palette

3.1 Rationale of species mixes

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3.4 Typical ponds (plan view and section)

3.5 Typical borrow pit restoration (plan view and section)

3. Landscaping Palette

3.1 Rationale of species mixes

Introduction

3.1.1 This section provides planting mixes proposed for the replacement of vegetation lost during construction, integration of the proposed scheme into the landscape, provision of screening vegetation, reinstatement of natural habitats and creation of new habitats to compensate for the impact on protected species and maximise biodiversity value.

Landscape and ecology context

3.1.2 The proposed scheme is located adjacent to the settlements of Boreham, Hatfield Peverel, Witham, Rivenhall End, Kelvedon, Inworth, Feering, Marks Tey and Copford.

3.1.3 Outside built-up areas, the proposed scheme is located within a low-lying landscape of intensively cultivated agricultural land and pasture, interspersed by a complex and extensive network of hedgerows, ditches, streams, rivers and waterbodies. Areas of semi-natural habitats are rare, largely restricted to areas along rivers, including at Whetmead Local Nature Reserve and River Brain, along the River Blackwater, River Ter, Domsey Brook and Roman River.

3.1.4 Existing vegetation includes extensive highway plantation along the A12, such as at Boreham, at Hatfield Peverel, south and east of Witham, south-east of Kelvedon and north of Copford, a pattern of small woodland blocks and copses scattered throughout the landscape, an extensive network of hedgerows along field boundaries, lanes and tracks and locally distinctive willow plantations and linear poplar belts in the Blackwater Valley.

3.1.5 The grassland habitats identified are mainly improved grassland, cultivated or disturbed land. However, species-poor neutral grassland is associated with field edges and road verges. Small and isolated areas of species-rich neutral grassland, unimproved neutral grassland and marshy grassland are associated with watercourses.

Landscape and ecological mitigation, reinstatement, and habitat creation

3.1.6 Planting species for the reinstatement of the landscape and habitats surrounding the highway corridor, the integration of the widened online sections, offline sections, new structures and attenuation ponds, and creation of new habitats, have been selected taking into consideration species present within the Order Limits (as detailed in Appendix 8.4 Arboricultural Impact Assessment of the Environmental Statement [APP-122] and Appendix 9.7 Hedgerow Survey Report of the Environmental Statement [APP-131]) to ensure that the proposed scheme reflects the existing landscape character and context of the A12 between Chelmsford and Colchester. The ‘Essex Tree Palette – A guide to choosing the most appropriate tree species for Essex sites according to landscape character and soil type’ (Essex County Council Traded Place Services, 2018) has been considered. The Essex Tree Palette is based upon the landscape character types (LCT) identified in the ‘Essex Landscape Character Assessment’ (Chris Blandford Associates, 2003) which provides further detail on tree and hedgerow species characteristic of each LCT. ‘The dormouse conservation handbook – Second edition’ (English Nature, 2006) has been taken into account to include species with ecological value. The planting mixes have been drawn up in accordance with the Biodiversity Net Gain habitat condition assessments as included in Appendix 9.14 Biodiversity Net Gain Report of the Environmental Statement [APP-138].

3.1.7 Native species and drought/water-tolerant species have been considered to respond to the challenges of dry summers and wet winters resulting from climate change. To improve the resilience of the mixes to pests and disease and to provide diversity, monocultures are largely avoided unless required to reinstate or strengthen landscape character.

3.1.8 Proposed UK native species tree, shrub and hedge planting would be of local regional provenance where practicable and would be supplied in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape - Recommendations (British Standards Institution (BSI), 2014).

3.1.9 Areas of grassland and verges disturbed by construction works would be reinstated by seeding of an appropriate mixture suited to the existing soil conditions and land use. Where arable is being replaced with habitats of higher ecological value, an appropriate mixture suited to the existing soil conditions would be seeded. Appendix 9.8 Phase 1 Habitat Survey Report (of the Environmental Statement [APP-132]) and the National Soil Map (Cranfield University, 2013) would be considered for this purpose.

3.1.10 Where it would be necessary to remove vegetation within temporary works areas, such as construction compounds, utility routes, haul roads and regrading areas, this would be replaced on completion of construction using the same or similar species to that removed where practicable (subject to restrictions to planting over and around pipeline easements and consideration of species with regard to climate change and resilience to pests and disease, and landowner agreement).

3.1.11 Replanting along the easement of utility corridors would be carried out in accordance with utility company’s guidance and best practice standards. Where woodland vegetation is lost and trees cannot be replaced in situ due to restrictions of utility easements, native shrub planting would be used in line with the relevant utilities company’s guidance. Where tree lines and tree

belts are lost and cannot be replaced due to the restrictions of utility easements, native hedgerow planting would be used in line with the relevant utility company's guidance.

3.1.12 Planting design would take account of longer term maintenance, management, nature of the road corridor, including operational as well as safety requirements with shrubs used in edge planting not to be planted within 4.5m from the edge of the carriageway, medium size trees (tree girth less than 450mm) no closer than 7m and larger climax trees (tree girth greater than 600mm) not within 9m, unless otherwise agreed by the Overseeing Organisation, in accordance with LD 117 Landscape design (Design Manual for Roads and Bridges, Highways England, 2020).

3.1.13 The typical mixes included in this document should be deemed as a guide. If species are not available at the time of planting, substitutions with suitable species would be allowed. Flexibility in the percentage of species and densities may be required to respond to local conditions. For example, where space is tight or there are other constraints the larger climax trees may be omitted from the mix and the percentage of other species increased to meet the mitigation objectives. Densities may need to be increased for early screening but could be more spaced in open rural areas.

Planting mixes

3.1.14 The following key planting categories are proposed:

- Woodland planting of trees and shrubs
- Wet woodland
- Woodland edge
- Hedges & hedges with intermittent trees
- Tall screen planting
- Intermittent trees and shrubs
- Individual native trees

3.1.15 Typical species mixes for these planting categories are presented within the tables in section 3.2 along with typical images and illustrative sketches.

3.1.16 Planting mixes for ponds and ditches would comprise typical native species. The ponds would incorporate two types of plant species:

- Aquatic plants, with a mix of floating plants to serve as oxygenators and submerged plants with floating leaves, to avoid problems with excessive algal growth.
- Marginal plants, in shallow water at the pond edge, to provide cover for animals and help to integrate the ponds within the landscape (tall emergent vegetation should not dominate the pond to the point where it shades out other less dominant plants).

3.1.17 Grass seed mixes would be suitable to the specific ground conditions, such as loamy, clay and silty soils, and would be applied to achieve the following:

- Grassland suited to a low nutrient substrate along highway verges and at junctions.
- Wildflower meadows in ecology mitigation areas and around the wildlife and attenuation ponds.
- Amenity grass in open greenspaces and for reinstatement of commercial, amenity and housing areas.

3.2 Species mixes

Typical woodland planting of trees and shrub mix			
Botanical name	**Common name**	**Percentage**	**Typical Images**
Acer campestre	Field maple	25%	
Carpinus betulus	Hornbeam	10%	
Corylus avellana	Hazel	20%	
Crataegus monogyna	Hawthorn	10%	
Ilex aquifolium	Holly	7.5%	
Malus sylvestris	Crab apple	5%	
Prunus avium	Wild cherry	10%	
Prunus spinosa	Blackthorn	2.5%	
Quercus robur	Oak	10%	

Typical wet woodland mix			
Botanical name	**Common name**	**Percentage**	**Typical Images**
Alnus glutinosa	Alder	25%	
Corylus avellana	Hazel	20%	
Populus nigra subsp. betulifolia	UK native Black poplar	10%	
Quercus robur	Oak	10%	
Salix alba	White willow	10%	
Salix fragilis	Crack willow	10%	
Sambucus nigra	Elder	15%	

Typical woodland edge mix			
Botanical name	**Common name**	**Percentage**	**Typical Images**
Corylus avellana Crataegus monogyna Euonymus europaeus Hedera helix Ilex aquifolium Lonicera periclymenum Prunus spinosa	Hazel Hawthorn Spindle tree Ivy Holly Honeysuckle Blackthorn	25% 25% 10% 10% 12.5% 15% 2.5%	 

Typical hedge / hedge with intermittent trees mix			
Botanical name	**Common name**	**Percentage**	**Typical Images**
Acer campestre Corylus avellana Crataegus monogyna Lonicera periclymenum Prunus spinosa Sambucus nigra Malus sylvestris Quercus robur	Field maple Hazel Hawthorn Honeysuckle Blackthorn Elder Crab apple Oak	20% 15% 50% 5% 2.5% 7.5% 30% 70%	 

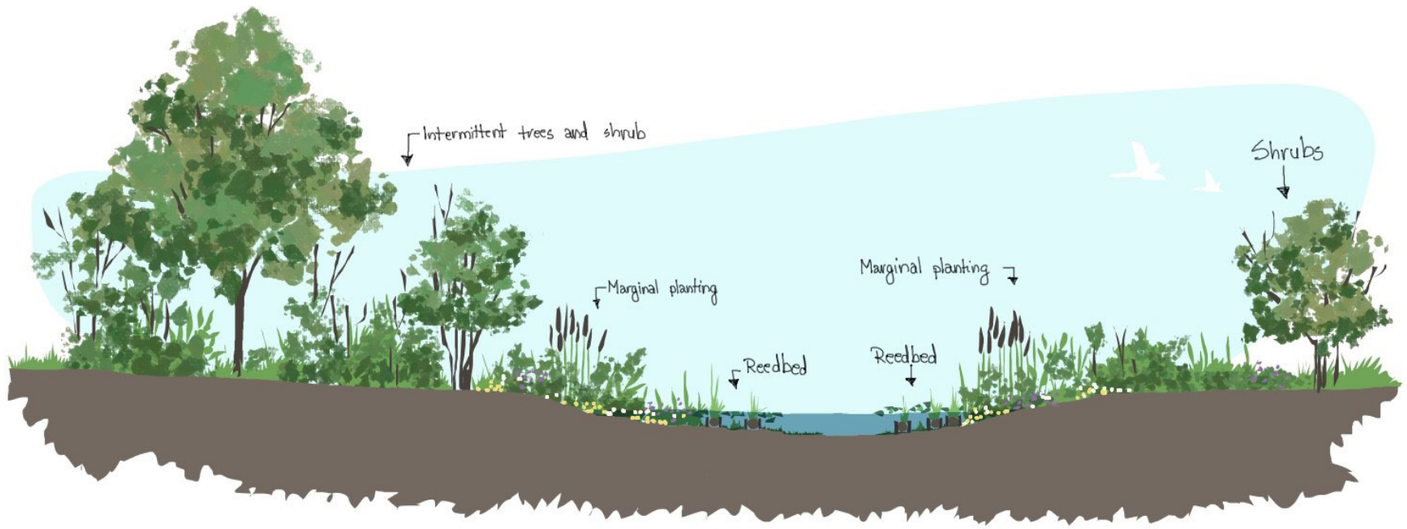
Typical tall screen planting mix			
Botanical name	**Common name**		**Typical Images**
Acer campestre Alnus glutinosa Betula pendula Prunus padus	Field maple Alder Silver Birch Bird cherry	25% 25% 25% 25%	

Typical intermittent trees and shrubs mix			
Botanical name	**Common name**	**Percentage**	**Typical Images**
Acer campestre Corylus avellana Crataegus monogyna Ilex aquifolium Lonicera periclymenum Malus sylvestris Prunus avium Quercus robur	Field maple Hazel Hawthorn Holly Honeysuckle Crab apple Wild cherry Oak	30% 25% 20% 5% 5% 5% 5% 5%	

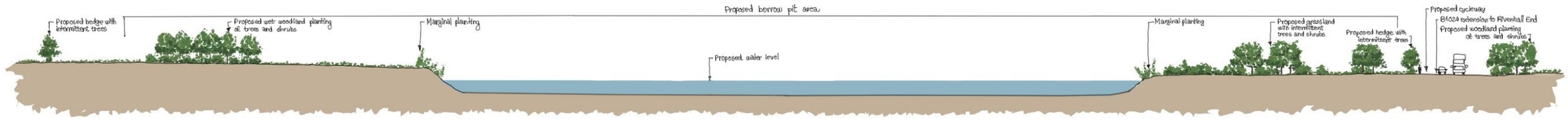
Typical individual native trees		
Botanical name	**Common name**	**Typical Images**
Acer campestre Prunus avium Quercus robur Tilia cordata	Field maple Wild cherry Oak Small-leaved lime	 

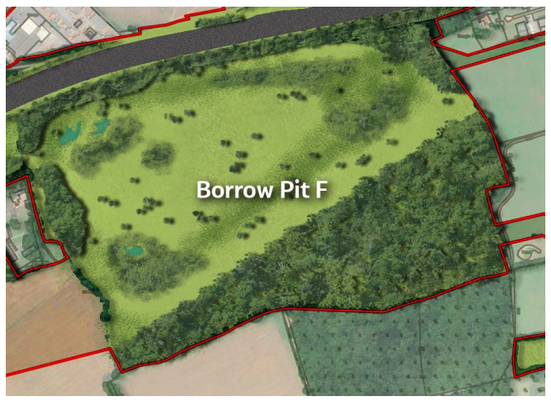
3.3 Typical sections of planting

3.4 Typical ponds (plan view and section)



3.5 Typical borrow pit restoration (plan view and section)





04.

References

4. References

- Biodiversity Metric 3.0 - Auditing and accounting for biodiversity – User Guide (Natural England, 2021)
- Environmental Statement – Appendix 8.4 Arboriculture Impact Assessment [APP-122]
- Environmental Statement – Appendix 9.7 Hedgerow Survey Report [APP-131]
- Environmental Statement – Appendix 9.8 Phase 1 Habitat Survey Report [APP-132]
- Environmental Statement – Appendix 9.14 Biodiversity Net Gain Report [APP-138]
- Essex Landscape Character Assessment' (Chris Blandford Associates, 2003)
- Essex Tree Palette – A guide to choosing the most appropriate tree species for Essex sites according to landscape character and soil type (Essex County Council Traded Place Services, 2018)
- Major Project Instructions - MPI-85-102020 (Highways England, 2020)

national highways