
Urban Greening Factor Waldegrave Mews

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Executive Summary

Urban Greening Factor

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Overview

Eight Associates has been commissioned by MAA Architects to complete an Urban Greening Factor (UGF) calculation and report, in connection with the proposed Waldegrave Mews development, located in the London Borough of Richmond upon Thames.

Proposals for the site consist of a comprehensive redevelopment of the site including demolition of the existing single storey rear buildings to provide 16 new 1-bed apartments. 189 Waldegrave Road will be replaced with a new mixed-use building providing employment space on the ground floor with a 2-bed maisonette unit above. This report outlines the contribution of greening at the development, in line with Policy G5 of The New London Plan (2021). It includes the overall UGF value of the site in comparison to the Greater London Authority (GLA) target score of 0.4 for predominantly residential developments.

The UGF calculation involves assigning a factor between 0 and 1 to different surface cover types. The lowest score of zero is given to impermeable surfaces such as asphalt and concrete, and the highest score of 1 is given to natural vegetation on deep soils. The factor for a particular surface cover is multiplied by its area. The resulting figures for each factor are added together and then divided by the overall site area. This gives an overall UGF score for the site of between 0 and 1.

Proposed habitat types on the completed site comprise buildings, permeable paving, an extensive green roof, amenity grassland, flower-rich perennial planting, hedgerows and green walls.

The calculated UGF score is 0.31 and therefore does not meet the UGF target score of 0.4 for predominantly residential developments in The New London Plan.

It must be taken into consideration that the biodiversity of the developed site, to include green wall, green roof, hedgerow and flower-rich perennial planting, will largely improve the predominant building and hardstanding infrastructure prior to development.

Introduction and Methodology

Urban Greening Factor

Waldegrave Mews

Introduction

Eight Associates has been commissioned by MAA Architects to complete an Urban Greening Factor (UGF) calculation and report, in connection with the proposed Waldegrave Mews development, located in the London Borough of Richmond upon Thames.

This report outlines the contribution of greening at the development, in line with Policy G5 of The New London Plan (2021). It includes the overall UGF value of the site in comparison to the Greater London Authority (GLA) target score of 0.4 for predominantly residential developments.

Site Description

The site currently comprises building, hardstanding, bare ground, amenity grassland, tall ruderal vegetation and ephemeral/short perennial vegetation, with a line of broadleaf trees adjacent to the west boundary of the site. The site is bound by residential buildings, mixed-use buildings (comprising local shops, services and restaurants with upper floor residential units and gardens) and Shacklegate Lane to the north, a railway line to the west, Waldegrave Road to the east and mixed-use commercial and residential buildings with gardens to the south. Prior to any work being carried out on site, the site was deemed to have low ecological value. The site covers an area of approximately 1218 m², and the National Grid Reference (NGR) for the centre of the site is TQ 15550 71670 with postcode TW11 8LX.

Building Proposals

Current proposals consist of a comprehensive redevelopment of the site including demolition of the existing single storey rear buildings to provide 16 new 1-bed apartments. 189 Waldegrave Road will be replaced with a new mixed-use building providing employment space on the ground floor with a 2-bed maisonette unit above. Proposed habitat types on the completed site comprise buildings, permeable paving, an extensive green roof, amenity grassland, flower-rich perennial planting, hedgerows and green walls. The Landscape Plan of the scheme can be found in Appendix A.

Urban Greening Factor

The increasing population in London combined with an increased density of development in many areas of the city is likely to increase pressure on London's greenspace and natural environment. The New London Plan presents an opportunity to consider new policies to address these pressures and ensure measures are in place for new development which will result in an increase in green cover across the city.

Policy G5 of The New London Plan sets out the following requirements:

- A. Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.
- B. Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Appendix B of this report, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).
- C. Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Appendix B.

Further information on the above policy can be found in Appendix B of this report.

Introduction and Methodology

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Urban Greening Factor

The architects for the site (MAA Architects) were contacted in order to obtain the area in square metres of each surface area type proposed for the completed site.

Factors between 0 and 1 for each surface type were assigned using Table 8.2 in The New London Plan. This table can be found in Appendix B. Using this table, the lowest score of zero is given to impermeable surfaces such as asphalt and concrete and the highest score of 1 is given to natural vegetation on deep soils.

The factor for each surface cover is multiplied by the area of the site in square metres which is made up of this surface cover. The resulting figures for each facture are added together and then divided by the overall site area. This gives an overall UGF score for the site of between 0 and 1. Please see a summary of the calculation below.

$$UGF = \frac{(\text{Factor A x Area}) + (\text{Factor B x Area}) + (\text{Factor C x Area}) + (\text{Factor D x Area}) \text{ etc}}{\text{Total Site Area}}$$

Limitations

It should be noted that the UGF calculated in this report relies on the correct and up to date areas of each surface cover being provided by the design team. Should there be changes to the design of the site which may affect surface area cover ratios, the calculation should be updated.

Calculation

Urban Greening Factor

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UGF Calculation

The completed UGF calculation can be found below. Appendix B provides information on how each surface cover type was assigned a UGF factor.

Habitat	Classification according to Policy G5 of The New London Plan (Appendix B)	Factor weighting (F)	Area, m ² (A)	Score (F x A= S)
Buildings	Sealed surfaces (e.g., concrete, asphalt, waterproofing, stone)	0	323.3	0.00
External paving	Permeable paving	0.1	446.7	44.67
Extensive green roof	Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket)	0.7	250.3	175.21
Amenity grassland	Amenity grassland (species-poor, regularly mown lawn).	0.4	9.0	3.60
Flower-rich perennial planting	Flower-rich perennial planting	0.7	60.5	42.35
Hedgerow	Hedges (line of mature shrubs one or two shrubs wide)	0.6	15.2	9.12
Green wall on 3 facades (2 south-facing and 1 north-facing)	Green wall – modular system or climbers rooted in soil	0.6	112.7	67.62
			ΣS:	342.57
Total Area of site, m² (TA)*: 1217.7			UGF Score (ΣS/TA):	0.31

*Please note, the sum of the areas of each different surface type (ΣS) may be greater than the total area of the site. This is because the vertical area of the green wall is used in the calculation rather than its coverage when looking down from above.

Recommendations & Evaluation

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The proposals were found to result in a UGF score of 0.31. This is below the target score of 0.4 for predominantly residential developments. in The New London Plan. Although the current design does not meet the UGF target score for residential developments, the completed design provides improvement for biodiversity through additional soft landscaping.

Prior to development, the site consisted predominantly of buildings and hardstanding. Whilst the UGF target score of 0.4 for predominantly residential developments is not met, it must be taken into consideration that the biodiversity of the developed site, to include green walls, flower-rich perennial planting, hedgerows and green roofs, will largely improve the building and hardstanding infrastructure predominantly present prior to development.

Contribution to urban greening by ecological enhancements currently proposed at the site

The below ecological enhancements contribute to ecological greening at the site and thus provide benefits to biodiversity in the local area.

Green Walls

The green walls will cover a total area of 112.7m² and will be climbers rooted in soil, complying to guidelines provided in the NBS Guide to Façade Greening for overview (Reference G in Appendix B).

Green walls can support biodiversity in cities such as London by acting as a green corridor or stepping-stone to facilitate movement and dispersal of species, thus increasing connectivity across the city. Green walls also provide feeding, breeding and resting sites for birds. Outside of biodiversity, further benefits of green walls include regulation of temperatures, reducing the likelihood of localised flooding and trapping of gaseous and particulate pollution. It is considered that this feature at the site will be a valuable addition to biodiversity and urban greening in the London Borough of Richmond upon Thames.

Permeable paving

Permeable paving will be used in all patio and lightwell areas around the site. Advantages of permeable paving include natural filtration and flood risk alleviation. The installation of permeable paving will follow CIRIA guidance (Reference J, Appendix B).

Flower-rich perennial planting

Areas of flower-rich perennial planting will be present in garden areas and on balconies throughout the site. Flowers provide pollen and nectar for insects such as bees and butterflies. This is important for fertilisation and thus seed and fruit production for many plants. A variety of different species will be used to maximise biodiversity, following recommendations provided by the Centre for Designed Ecology (Reference D, Appendix B).

Hedge Planting

Evergreen hedge planting is assigned a factor score of 0.6. By increasing the ratio of this surface type to lower scoring surface cover types, the final UGF score could be increased.

Green Roofs

Like green walls, green roofs can support biodiversity in cities such as London by acting as a green corridor or stepping-stone to facilitate movement and dispersal of species, thus increasing connectivity across the city. They can also provide important refuges for wildlife in urban areas. Outside of biodiversity, green roofs can reduce the risk of flooding (and are often used for Sustainable Urban Drainage, SUDs, purposes), improve air quality and reduce the urban heat island effect. Species used should be native and locally sourced. An extensive green roof should have a substrate with minimum settled depth of 80mm (or 60mm beneath vegetation blanket) to achieve a factor of 0.7. The roof should meet the requirements of GRO code 2014 (Reference C, Appendix B).

Recommendations & Evaluation

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The green roof will cover 250.3m², with 180m² of this total area being situated under PV cells. This is likely to further support biodiversity in the local area because these panels provide variations in moisture, sunlight and wind exposure, resulting in the presence of microclimatic conditions and a greater number of ecological niches. Additionally, a green roof can help the PV cells work more efficiently as the cooling effect of evapotranspiration from the plants can help maintain ambient temperatures.

Conclusions

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The UGF of the site was found to be 0.31. This is below the target score of 0.4 for predominantly residential developments in The New London Plan.

Whilst the UGF target score has not been met, it must be taken into consideration that the green infrastructure potential at the site has been maximised by the replacement of the mainly building and hardstanding infrastructure present prior to development with biodiverse green roofs along with green walls, hedgerows and flower-rich perennial planting.

Validation

Urban Greening Factor

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Report produced by Philippa Nicholls

Ecologist's Qualifications:	MSc – Conservation BA – Biological Sciences
Evidence of practicing Ecologist	Eight Associates, Assistant Ecologist, conducting habitat and protected species surveys (present); London Wildlife Trust, Technical Assistant, assisted in the production of Biodiversity Net Gain and Urban Greening Factor reports (2018–2019).

Report reviewed by Gemma Golding

Ecologist's Qualifications:	WML–CL08 Natural England Class Survey Licence (CLS) for great crested newt MSc – Ecology and Evolutionary Biology BSc – Zoology
Evidence of practicing Ecologist	Eight Associates, Ecologist and Sustainability Consultant, conducting habitat and protected species surveys (2019 to present date); Atkins, Assistant Ecologist. habitat and protected species surveys (2018 – 2019); Jacobs, Seasonal Ecologist, protected species surveys (2018).

Report verified by Stacey Cougill:

Ecologist's Qualifications:	UCert – Species Identification and Biological Recording MSc – Conservation Biology BSc – Environmental Science
Evidence of practicing Ecologist	Eight Associates, Sustainability Consultant specialising in Ecology (2011 to present date), Open University, iSpot, Biodiversity Mentor (2009 – 2012) and Westminster City Council, Biodiversity Project Manager (2007–2010).
Professional Code of Conduct	I am a full member of the Chartered Institute of Ecology and Environmental Management.

Validation

I confirm the information provided in this document is truthful and accurate at the time of completion.

Suitably Qualified Ecologist	Stacey Cougill
Signature of Ecologist	SC
Date	01/10/2021

References

Urban Greening Factor

Waldegrave Mews

Document	Reference
Appendix A – Landscape Plan	MAA Architects (2021) MA014_SitePlanGraphic_Flat
Appendix B – The New London Plan (2021)	Greater London Authority (2021). The London Plan – The Spatial Development Strategy for Greater London. This can be found at: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf [last accessed on date of issue]
Appendix B – London Borough of Richmond upon Thames Local Plan (2018)	London Borough of Richmond upon Thames Council (2018) Local Plan. This can be found at https://www.richmond.gov.uk/services/planning/planning_policy/local_plan/local_plan_review/local_plan_examination#adoption [last accessed on date of issue]

Appendix A – Landscape Plan

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Appendix B – Local Policy

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The New London Plan (2021)

The below extract is taken from Policy G5 (Urban Greening) of The New London Plan.

Policy G5 Summary

- A. Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of the site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.
- B. Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2 but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for predominately residential developments, and a target score of 0.3 for predominately commercial development.
- C. Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Table 8.2.

8.5.1

The inclusion of urban greening measures in new development will result in an increase in green cover and should be integral to planning the layout and design of new buildings and developments. This should be considered from the beginning of the design process.

8.5.2

Urban greening covers a wide range of options including, but not limited to, street trees, green roofs, green walls, and rain gardens. It can provide a range of benefits including amenity space, enhanced biodiversity, addressing the urban heat island effect, sustainable drainage and amenity – the latter being especially important in the most densely developed parts of the city where traditional green space is limited. The management and ongoing maintenance of green infrastructure should be considered and secured through the planning system where appropriate

8.5.3

A number of cities have successfully adopted a 'green space factor' to encourage more and better urban greening. The Mayor has developed a generic Urban Greening Factor model to assist boroughs and developers in determining the appropriate provision of urban greening for new developments. This is based on a review of green space factors in other cities (https://www.london.gov.uk/sites/default/files/urban_greening_factor_for_london_final_report.pdf). The factors outlined in Table 8.2 are a simplified measure of various benefits provided by soils, vegetation and water based on their potential for rainwater infiltration as a proxy to provide a range of benefits such as improved health, climate change adaption and biodiversity conservation

8.5.4

The UGF is currently only applied to major applications, but may eventually be applied to applications below this threshold as boroughs develop their own models. London is a diverse city so it is appropriate that each borough develops its own approach in response to its local circumstances. However, the challenges of climate change, poor air quality and deficiencies in green space need to be tackled now, so while each borough develops its own bespoke approach the Mayor has recommended the standards set out above. Further guidance will be developed to support implementation of the Urban Greening Factor.

8.5.5

Residential development places greater demands on existing green infrastructure and, as such, a higher standard is justified. Commercial development includes a range of uses and a variety of development typologies where the approach to urban greening will vary. Whilst the target score of 0.3 does not apply to B2 and B8 uses, these uses will still be expected to set out what measures they have taken to achieve urban greening on-site and quantify what their UGF score is.

Appendix B – Local Policy

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8.5.6

The Urban Greening Factor for a proposed development is calculated in the following way:

(Factor A x Area) + (Factor B x Area) + (Factor C x Area) etc. divided by Total Site Area

So, for example, an office development with a 600 sqm footprint on a site of 1,000 sqm including a green roof, 250 sqm car parking, 100 sqm open water and 50 sqm of amenity grassland would score the following;

$$(0.7 \times 600) + (0.0 \times 250) + (1 \times 100) + (0.4 \times 50) / 1000 = 0.54$$

8.5.7

So, in this example, the proposed office development exceeds the interim target score of 0.3 for predominately commercial development under Part B of Policy G5 Urban greening.

Appendix B – Local Policy

Urban Greening Factor

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The below table is found in Table 8.2 in The New London Plan.

Surface Cover Type	Factor
Semi-natural vegetation (e.g., woodland, flower-rich grassland) created on site.	1
Wetland or open water (semi-natural; not chlorinated) created on site.	1
Intensive green roof or vegetation over structure. Vegetated sections only. Substrate minimum settled depth of 150mm – see livingroofs.org for descriptions ^A .	0.8
Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree – see Trees in Hard Landscapes for overview ^B .	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014 ^C .	0.7
Flower-rich perennial planting – see Centre for Designed Ecology for case-studies ^D .	0.7
Rain gardens and other vegetated sustainable drainage elements – See CIRIA for case-studies ^E .	0.7
Hedges (line of mature shrubs one or two shrubs wide) – see RHS for guidance ^F .	0.6
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6
Green wall – modular system or climbers rooted in soil – see NBS Guide to Façade Greening for overview ^G .	0.6
Groundcover planting – see RHS Groundcover Plants for overview ^H .	0.5
Amenity grassland (species-poor, regularly mown lawn).	0.4
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014 ^I .	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable paving – see CIRIA for overview ^J .	0.1
Sealed surfaces (e.g., concrete, asphalt, waterproofing, stone).	0

Foot note references:

- | | |
|--|--|
| A. https://livingroofs.org/intensive-green-roofs/ | F. https://www.rhs.org.uk/advice/profile?pid=351 |
| B. http://www.tdag.org.uk/trees-in-hard-landscapes.html | G. https://www.thenbs.com/knowledge/the-nbs-guide-to-facade-greening-part-two |
| C. https://livingroofs.org/wp-content/uploads/2016/03/grocode2014.pdf | H. https://www.rhs.org.uk/advice/profile?PID=818 |
| D. https://cfde.co.uk/front-page/about/case-studies/ | I. https://livingroofs.org/wp-content/uploads/2016/03/grocode2014.pdf |
| E. http://www.susdrain.org/case-studies/ | J. http://www.susdrain.org |

Appendix B – Local Policy

Urban Greening Factor

Waldegrave Mews

The London Borough of Richmond upon Thames Local Plan (2018)

The below extract is taken from Policy LP12 (Greening Infrastructure) of The London Borough of Richmond upon Thames Local Plan.

Policy LP12 Summary

Green infrastructure is a network of multi-functional green spaces and green features, which provides multiple benefits for people, nature and the economy.

A. To ensure all development proposals protect, and where opportunities arise enhance, green infrastructure, the following will be taken into account when assessing development proposals:

- a. the need to protect the integrity of the green spaces and features that are part of the wider green infrastructure network; improvements and enhancements to the green infrastructure network are supported;
- b. its contribution to the wider green infrastructure network by delivering landscape enhancement, restoration or re-creation;
- c. incorporating green infrastructure features, which make a positive contribution to the wider green infrastructure network.

5.1.1

The borough is characterised by extensive areas of open land, designated as Green Belt, Metropolitan Open Land, as well as the borough's rivers and their corridors, which link across borough boundaries and have a strategic function in southwest London, Greater London and beyond. The borough also benefits from highly significant historic landscapes, including those on the Historic England's national Register of Parks and Gardens, all of which make a significant contribution to the borough's green infrastructure network. The need to protect the historic significance of the borough's exceptional landscapes is set out in Chapter 4: Local Character and Design. In addition, there are many smaller pieces of open land, including land designated as Other Open Land of Townscape Importance, as well as non-designated land, all of which are of value to the local area and enhancement of its environment and the wider green infrastructure network to ensure the borough remains an attractive area for people to live, work and visit to enjoy their heritage and leisure time.

5.1.2

The green spaces and green features that contribute to and make up the overall green infrastructure network range from borough-wide and strategic features such as parks, watercourses, woodlands to local features such as playgrounds, sports pitches, allotments, public open spaces, trees, woodlands, private gardens and other green spaces used for recreational purposes. There are also other features such as highway verges, railway embankments as well as site-specific elements such as green roofs and green walls that are considered to be part of the wider green infrastructure network.

5.1.3

Housing delivery, and infrastructure required to support it, is expected to be met without compromising the green infrastructure network and there is a presumption against the loss of, or building on, greenfield sites. It is acknowledged that there is current recreational pressure on existing green infrastructure, including nationally and internationally designated areas such as Richmond Park and Bushy and Home Park, and residential development is likely to exacerbate this pressure.

5.1.4

The provision of multi-functional green infrastructure, including urban greening, green corridors and green roofs have biodiversity as well as social, health, recreational, flood storage and cooling benefits, which can reduce urban heat islands, manage flooding and help species adapt to the likely effects of climate change as well as contributing to a pleasant environment. Green infrastructure can support healthier lifestyles by providing green routes for walking and cycling, and green spaces for recreation, exercise and play.

5.1.5

The presence of a network of green spaces may reduce the likelihood of flooding by allowing water to permeate through the ground. Green infrastructure can also be designed to act as flood storage areas, holding large volumes of water in temporary ponds to protect built up areas from flooding.

Appendix B – Local Policy

Urban Greening Factor

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5.1.6

The Mayor of London's All London Green Grid SPG seeks to ensure that in and through Local Plan policies, green infrastructure needs are planned and managed to realise the current and potential value of open space to communities and to support delivery of the widest range of linked environmental and social benefits. The two All London Green Grid areas within this borough are the Arcadian Thames, and the River Colne and Crane Area. Each area has its own Framework and list of associated projects. The Council will work with partners to help realise the vision for the Green Grid and the objectives of the relevant area frameworks.

5.1.7

The creation and enhancement of green infrastructure helps to:

- create attractive and accessible places for people to enjoy direct and regular contact with the natural environment;
- strengthen links between urban areas and their surrounding open spaces, and bring the natural world into a neighbourhood, with benefits for both individual and community health and well-being.

5.1.8

Many of the components of green infrastructure, such as parks and play spaces, also relate directly to place-making and enhancing local character. At a wider scale, green infrastructure can contribute to local identity and landscape character.

5.1.9

The public open space hierarchy as set out in the policy follows the categorisation of the London Plan and provides for a range of open spaces for formal and informal recreation. Many of the borough's parks and open spaces are of 'regional' or 'metropolitan' importance in providing opportunities for recreation, and many have historic significance, biodiversity value or can be regarded as areas of relative tranquillity. The open space network, including the Blue Ribbon network such as the River Thames and River Crane corridors, as well as the links in between provide the natural green infrastructure that performs a wide range of functions for residents, visitors, biodiversity and the economy. It is important to recognise that the borough's parks and open spaces provide not only

recreational opportunities for those that live and work in this borough, but also for local communities and residents in neighbouring and other London boroughs, thus providing a green lung for southwest London.

5.1.10

A network that includes parks, playing fields, open spaces, woodlands, trees, allotments and private gardens contributes to ecological connectivity to overcome habitat fragmentation and increases the ability of the natural environment to adapt to climate change.

5.1.11

There may be opportunities to incorporate or retrofit elements of green infrastructure on all development sites. Where appropriate, these can be realised through for example :

- green roof systems and roof gardens,
- green walls to provide insulation or shading and cooling,
- swales integrated as part of streetscape and traffic calming schemes or neighbourhood play areas, and
- new tree planting or altering the management of land associated with transport corridors.