Environmental Colour Assessment

Technical Information Note 04/2018

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Contents

This Note is provided for information only.

Its aims include increasing awareness of, and promoting interest in, Environmental Colour Assessment (ECA) and encouraging landscape practitioners and others to consider developing ECA methods and skills in practice.

1.   Introduction

'Colour matters. It matters in nature, it matters in history, it matters greatly in the art of building'[1]

1.1   Colour is important, for many different and complex reasons, and most of us have to live with colours other people choose. When planning new development, however, deciding which colours to use can sometimes be problematic: '*The concept of colour is so elusive that it eludes even a majority of designers*' says architect, landscape architect and colour consultant Michael Lancaster[2]. Those choices are often highly subjective, influenced by current 'trends' and fashions, and controversial. As a result, the prevailing wisdom tends to err on the side of 'bland and conventional'[3]; this is reflected in the limited and uninspiring range of colours that are commercially available for man-made building materials. It need not be this way.

1.2   Environmental Colour Assessment (ECA) is an objective process that helps to resolve many of the issues associated with colour selection and specification, especially in the external environment.

1.3   Its use can also lead to significant landscape and visual enhancements. These can range from effectively camouflaging or minimising the visual appearance of a utilitarian building, to emphasising the distinctive character and qualities of a place through architecture, expressed in colour, form and massing.

1.4   In addition, colour influences human emotion and behaviour, and selective application has been proven to bring benefits in terms of peoples' health and wellbeing, productivity, and inward investment.

1.5   Although the cost of carrying out an ECA has to be considered, it is almost always outweighed by the benefits. Furthermore, using one colour as opposed to another may not involve any additional project costs at all.

1.6   The history and evolution of ECA is explained in the next section, but in summary, the concept was originally developed in France and Italy in the 1960s and '70s. It was introduced into the UK in the early 1980s, and the term ECA was first used in the mid-1980s.

1.7   Since then, ECAs have been adopted as supplementary planning and other guidance. Furthermore, the requirement for the approach to new development to be 'landscape-led and iterative' means that ECAs are increasingly being asked for to accompany planning applications, and are being carried out alongside Landscape and Visual Impact Assessments and Appraisals (LVIAs / LVAs), since the topics are of course integral to one another.

1.8   There are, however, very few ECA practitioners in the UK and, currently, little published guidance on the subject written in English exists, although the principles of ECA and how it is usually practiced are explained below.

1.9   One of the aims of this Technical Information Note is therefore to increase awareness of, and promote interest in, the ECA process, in the hope of encouraging landscape practitioners and others to further develop ECA methods and skills in practice.

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[1] 'Architecture in Detail: Colors' (2004), James McGown

[2] 'Britain in View: Colour and the Landscape' (1984) Michael Lancaster

[3] James McGown

## 2.	History of ECA

2.1	In the UK today, especially in the context of its relevance to planning, assessment and design, 'colour' is rarely treated as a stand-alone 'topic'. The reasons for this are unclear, but in many other countries it is and has been for many years. However, colour does act as a 'common denominator' which functions on many levels in between different disciplines.

2.2	Italy and France in particular led the way in focussing on colour in the environment as a subject of study in its own right. This was perhaps in response to the increase in industrialisation, transportation and specialisation which was eroding local identity. When building materials were dug up from the ground or cut down from the site where development was happening, the built environment reflected the natural environment.

2.3	During the 1960s, French colourist and designer Jean-Phillipe Lenclos started developing an objective method for documenting and analysing what he called 'the geography of colour'. He wanted to understand the natural and cultural factors that contributed to an area's distinctive 'sense of place', and 'richness', and which were expressed in its architecture. The process '*examined the palettes of diverse habitats to reveal how geology, climate, light, sociocultural behaviour, and the traditions of local residents and construction techniques uniquely shape a landscape's architectural personality and chromatic character*'.

2.4	Lenclos spent several years studying the geographical colours of France, and in 1982, published 'Les Couleurs de la France: Maisons et Paysages'. After that success, he went on to produce palettes for other countries and published more books including 'Colours of the World', which is described as 'a chromatic journey through the colours of vernacular architecture'.

2.5	In the UK, the importance of understanding colour in relation to built form was recognised in the 1970s by colour experts Tom Porter and Byron Mikellides. Their book, 'Colour for Architecture' (1976), refers to Lenclos. The authors recognised that his 'environmental colour programmes' and 'colour approaches' afforded 'a glimpse of the future potential of environmental colour', and ranged 'from the collaboration with architects on individual buildings to the development of a comprehensive grammar of polychromy for new towns'.

2.6	Lenclos' work did inspire British architect, landscape architect and colour consultant Michael Lancaster, who published 'Britain in View: Colour and the Landscape' in 1984, and 'Colourscape' in 1996. He was Senior Lecturer at Gloucester College of Art and Design and Head of Landscape Architecture at the University of Greenwich, and lectured extensively on the use of colour.

2.7	Also, from the 1980s to the 2000s, Tom Porter and Byron Mikellides continued to collaborate on the subject of 'environmental colour'. They lectured at Oxford Brookes University, developed systems such as 'environmental colour mapping', and published other books including the influential Colour Outside (1982) and Colour for Architecture Today (2009).

2.8	Despite the ongoing work on geographical baseline colour analysis, however, until the late 1970s there were very few examples of geographical colour palettes being used for that purpose anywhere in Europe, at least, and probably not elsewhere either. However, at that time, the French Colour Architect Marie-Pierre Servantie - who had worked with Lenclos - was taking the concept forwards. She had decided to do her diploma on 'colour in the architectural environment' (the subject had never been taught at the school of architecture where she studied). Whilst she wanted the buildings she designed, and the colours she chose, to reflect the influences of light, place and culture, she did not always want the buildings to be apologetically 'hidden', or to faithfully 'mimic' what was already there. Instead, she wanted a range of colours which could be used not just to camouflage or visually integrate structures,

surfaces, and hard and soft materials into their surrounding environment, but to accent them without causing visual 'conflict'.

2.9   Servantie and others took Lenclos' process a stage further, developing bespoke 'colour charts' for French towns and cities. The benefits of using colour studies to objectively inform selection were beginning to be widely-recognised in France and elsewhere at that time. In particular, large towns and cities saw an increase in inward investment when bespoke 'colour charts' were used to guide colour choices in both new developments and restoration / refurbishment. Large organisations / institutions reported an increase in peoples' health, well-being and productivity when colour selection was based on colour charts developed with the end-users. Colour was being used as a health and safety aid, for example by articulating openings and accesses and improving legibility, and to reduce anti-social behaviour.

2.10   In the 1980s and 90s, British landscape architect Carly Tinkler worked on several projects in France with Marie-Pierre, including ECAs. As a result, Tinkler decided to introduce the idea of ECA to clients in the UK. The first 'formal' ECA carried out in the UK was part of the design of a flood alleviation scheme for the Environment Agency in 1999, and several other commissions followed.

2.11   On the Environment Agency project, Servantie & Tinkler collaborated with landscape architect, public artist and colourist Jem Waygood, who had independently undertaken colour studies such as the Hartlepool dock regeneration site for Teeside Development Corporation in 1992. The work was aimed at developers and their agents, providing them with a colour palette which belonged intrinsically to the area rather than the generic waterside redevelopments that were occurring around the country.

2.12   Waygood and Tinkler still work together along with other landscape architects and specialists, carrying out combined ECAs (authored by Jem and Christine Waygood) and LVIAs, and producing guidance on colour selection for AONBs[4] and other bodies / organisations.

2.13   In the intervening period, the ECA process has been considerably developed and refined. However, as mentioned above, there are few other practitioners in this field, nor is there an adopted 'working method'. In 2007, Servantie's book 'Chromo-Architecture' was published, which sets out 'a theoretical and practical reflection on the application of the color in the environment, urbanism and architecture'; however, it is in French. An outline of the techniques employed in recent ECAs is provided in Section 4 below.

2.14   At the time of writing, six AONBs have carried out ECAs or about to embark on them and it is likely that the number of ECAs being commissioned will increase. It is hoped that ECA will be taken forward by landscape architects, other professionals and universities in the not-too-distant future.

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[4] See for example http://www.malvernhillsaonb.org.uk/wp-content/uploads/2015/02/guidance_on_colour_use_screen-1.pdf and http://www.highweald.org/downloads/publications/uk-landscape-research-reports/2058-high-weald-aonb-colour-study/file.html

3. ECA Objectives and Principles

3.1   The main objective of ECA is to produce a 'range', 'chart', or 'palette' of colours that is used to inform and guide choices in relation to the introduction of colour on structures - and associated hard and soft surfaces and materials - within a particular environment.

3.2   The developed palettes are 'prescriptive' up to a point, since they are based on factual baseline survey and analysis of 'indigenous' colours; however, the ECA is usually 'scoped' beforehand, so that the aims and objectives - which may vary from project to project - are factored in to the study. Most ECAs are simply the evidence-based starting point for designers, providing the data from which palette design may proceed: they allow people to exercise preferences for particular colours and to be 'creative', but in the knowledge that all the colours applied will work within the given context, and perform the required functions.

3.3   It is important to note, however, that having the skills required to carry out an ECA does not guarantee an easy transition into being a successful colour designer. The ECA helps to establish the parameters of a design requirement, but how these are addressed is open to very many solutions. Colour is a vocabulary, and the more words one knows, the better able one can clearly express subtleties of meaning. This requires dedication and engagement with colour, understanding the colour space, and developing one's own signature approach to colour design.

3.4   The most important principle upon which ECA is based is that a single colour is rarely if ever seen in isolation: it is seen within, or against, a wider context of other colours. Externally, those colours derive from land, water, sky, and built form. Thus, it is essential to understand this wider colour context, so that the most appropriate colours for what is proposed are applied.

3.5   Another important consideration in ECA (and design generally) is light, since this has a profound effect on our perception of colour, and how it 'behaves'. Colour and light should always be considered together, as they are essentially inseparable elements. Also, the interplay of light and materials affects how colour is perceived - even black surfaces which are reflective can appear to be bright white in certain light conditions.

3.6   Colour and material choices also need to be informed by the background texture of the landscape setting. This requires analysis of local building materials, and vernacular detailing, and also the dominant vegetation and ground finishes to understand the depth of relief, play of light and shade and range of tactile surfaces. These observations will help determine appropriate finishes and textures for the development.

3.7   Although the term 'colour' is used on a day-to-day basis, when carrying out ECAs it is necessary to understand the difference between 'hue', tonality' (or 'value'), and 'saturation'.

3.8   Tonality is a particularly relevant factor in ECA. Whilst the nature of hue alters with distance[5], tonal contrasts between built form and landscape remain largely constant. Also, the difference in tone between a building or structure and its surroundings is probably the most important factor contributing to recognition of its form. It is therefore the *tonal qualities* of the colour rather than the *hue* of the colour that will help to achieve a desired objective (such as camouflaging, integrating, or accenting a building, structure or surface in the landscape).

3.9   The photograph below shows the effect of selecting the 'wrong' green for the context within which it would be viewed - i.e. a blue-green hue contrasting a) with the yellow-green hue of the vegetation, and b) with the vegetation's darker background tonality; both accentuate the structure's shape.

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[5] In a study carried out in Sweden on this phenomenon, green close up became darker blue green at 2km and lilac grey at 20km.

3.10 Therefore, if a development will be visible from afar and the objective is to 'lose' it in the landscape, tones are typically selected which match, or are slightly darker than, the tonality of the landscape background / context colours against which the development would be viewed (which of course vary from viewpoint to viewpoint). Conversely, if the intention is to create a landmark structure that is visible from long distances, then select much lighter tones than are present in the visual landscape context.

3.11 When considering proposals to visually integrate or camouflage built form through the use of features such as green roofs, for example, consideration is given early that even from high ground, roofscapes are rarely seen in plan-form, but in combination with elevations and surrounding surfaces. Otherwise, the resulting contrasts are not realised until it is too late.

4.   Summary of ECA Process

4.1   The palette which is developed through the ECA process is based on a technical survey, analysis and synthesis of the colours found within the landscapes / settlements of an identified area, especially those which are inherent and integral to its character, local distinctiveness and sense of place, and which reflect historic / cultural associations (and sometimes, memories).

4.2   At the outset, the ECA's aims, objectives and scope are established and agreed, as these are likely to vary from project to project. For example, will the palette simply be a record of the area's key baseline colours, forming part of a strategic evidence-base-gathering exercise, for example? Or, does it need to be developed further and used to help guide and inform the siting, layout and design of new development (and / or refurbishment of existing buildings / structures), including mitigation / enhancement measures?

4.3   Is the requirement, and / or intention, to camouflage, integrate, or accent new buildings / structures / landscapes? Or, should the ECA develop palettes for all three scenarios?

4.4   Consideration may need to be given to visual effects arising at specific viewpoints, in which case the distance from which a new development could be seen will be factored in, for the reasons set out in Objectives and Principles above.

4.5   Some ECAs are taken to a more advanced stage, with detailed recommendations for the application of colour on and in specific buildings: if colour advice is taken early enough, it can significantly improve a development's visual qualities and assist with reducing levels of visual effects. The judicious use of colour and tonality can improve the 'articulation' of a building by making vertical surfaces appear to recede or advance, for example, and assist with legibility by highlighting routes and main entrances.

4.6   As with Landscape Character Assessment (LCA), which is another type of assessment that ECA can inform, ECA can be carried out at a variety of geographical scales, from regional to local or site-specific. Often, the extent of the ECA study area is similar to that of the associated LVIA, if there is one; otherwise, it will be established using a combination of baseline factors, based on the likely physical and visual 'area of influence' of a certain type of development, by choice at the scoping / briefing stage.

4.7   The ECA proper usually begins with desktop studies similar to those carried out for LCA, in order to gain an understanding of the landscape's natural, cultural and visual baseline. In some parts of the country, the ECA can rely on published LCAs, and use already-established landscape character boundaries as the basis for the area covered by the palette. Regional and countywide LCAs identify broad landscape character areas and types which are helpful when carrying out ECAs covering large geographical areas, since palettes can be produced for each area / type. Smaller-scale ECAs within a single area / type may need to refer to more fine-grained published LCAs that subdivide the areas/ types into smaller zones, parcels or units. Otherwise, the assessor will carry out their own assessment and use professional judgement to determine how many developed palettes are required.

4.8   The next stage of the ECA is undertaking the on-the-ground surveys, during which the baseline colours within the given area are collected, identified and recorded. The surveyor makes informed judgements about which colours to collect. The range will include dominant natural features, and colours which reflect notable social, cultural or economic influences. Some of the colours of features / buildings present in the area may be 'scoped out' at this stage, if they are 'incidental', conflicting or temporary and are not relevant, or do not materially contribute to character.

4.9 Although ECAs can be carried out throughout the year, experience has shown that during the winter months is likely to give the best results. In winter, the landscape is at its most elemental and bare-boned, more clearly exposing its structure, underlying rocks and soils, patterns and forms. Foliage and the play of light and shade in leaf canopies do not distract the eye or screen interrelated views, as they may in the summer. As there may be little leaf-cover in the landscape for up to six months of the year in many parts of the UK, new development has to respond to this context as well as during the summer months. Whilst the incidence, proportions and visibility of colour will vary through the seasons, there is usually a consistency of colours present throughout the year. Therefore, colours selected from a winter palette will always be relevant.

4.10 Most ECA practitioners work with the Natural Colour System (NCS)[6] throughout the ECA process, as it is globally-recognised and applied across many different industries and sectors. When carrying out the on-the-ground surveys, the NCS colour swatch is used to identify each of the relevant colours, and their specific NCS reference numbers are noted. Sometimes, several hundred different colours are collected during the survey. Textures, patterns and other landscape characteristics and qualities are also noted where relevant.

4.11 Once the survey is complete, the various colour ranges and the dominant tonalities are established, using the NCS system. These are then analysed, synthesised, and arranged into representative palettes that reflect the area's character and qualities.


4.12 This information is combined with the results of the desktop studies and consultation, and becomes a record of the inherent / indigenous / culturally-important colours of the study area.

4.13 A good example of a cultural or 'memory' colour was found during an ECA at the former car production plant at Longbridge, Birmingham: in places, a distinctive turquoise-coloured paint had been applied to workshop door frames and other features. Consultation with former workers revealed that it had been left over from the days when the Austin A40 cars were

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[6] The current version of the NCS was developed in Sweden in the 1960s: http://ncscolour.com/

produced in that colour. It was therefore incorporated into the developed palette, although the tonality was adjusted to suit the prevailing landscape context.

4.14 If the ECA is required to go on to recommend colours, either as guidance for future development or as part of the design process for a specific development, the baseline study results are used to develop colour ranges that respond to the project brief's requirements (for example, camouflage, integrate, accent, or all three). The ranges are usually illustrated in 'colour charts', but in all cases, the specific NCS reference for each colour is given, as the colours are likely to alter when printed or viewed on a screen. The types of materials and nature of the surfaces to be coloured may need to be taken into account at this stage.
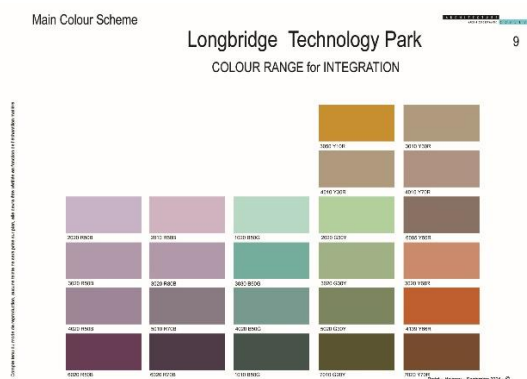
4.15 In some cases, the ECA practitioner will be part of a larger professional team from a project's inception to its completion, cross-referencing the study with landscape, visual and other technical assessments, and working alongside scheme designers on the siting, layout and evolution of built form, using colour to articulate and accentuate. They may assist with technical drawings and the selection and specification of appropriate materials / plants available within the colour range. They may need to carry out site inspections, advising on the implications of substitutions and so on, and be involved in future maintenance and management.

4.16   The ECA practitioner will have a good working knowledge of natural and man-made materials, or access to people who do, and ideally, understand what limitations on colour choices these may impose.

4.17   As explained above, light falling on a surface can substantially alter the perceived colour, making it appear both lighter and brighter in the landscape. Among the common building materials, paint finished steel can be highly reflective. It is possible to find some matt finishes to paint work in different colours, or to find alternative materials such as fibre cement. If there is no realistic alternative to steel, then selecting a dark tone for roofing material may help to reduce the effects, as it will reflect less light than a light-coloured sheet. Slates are another material where sheen can be problematic. Natural slate will weather back to a matt finish with some colour variations; however, manmade equivalents tend to remain consistent in colour and sheen for longer. In the event that the exact colour is not available in the chosen material[7], then the closest-possible match should be selected.

4.18   Either the ECA practitioner or the scheme designers, or both, may need to consider how the proposed development would be seen from multiple viewpoints, from each of which the receiving landscape's context may be very different. It may be possible to apply different colours to different elevations, depending on the angle of the view and the desired outcome. However, it must be borne in mind that attempting to camouflage or integrate where the background context is sky can be extremely difficult, due to the inevitable variations; also, from some viewpoints, the same elevation may be seen against sky, and from others, against land.

4.19   When seen from a distance, the perceived colour of built form or surfaces tends to look less dark and more chromatic or brighter than the inherent colours of the construction material. A colour sample which may look slightly dull in the studio as a swatch will look more colourful and lighter on a façade or surface. The existing colour palettes may need to be adjusted in the developed palettes to take account of this phenomenon, reducing chromaticness, and increasing the amount of black. This quality of 'blackness' is of great importance, as it represents the tone or nuance of a colour.

4.20   Before final selections are made, typically ECA practitioners gather together samples of all the construction material options available in the colours of the developed palette, and assemble them on site. This is the best way of judging which colours work best in situ, and how different colours can be combined, and used to create articulation and legibility. Large-sized sample boards are helpful in understanding how the colours and materials may behave from a distance.

4.21   As mentioned in the introduction, the range of colours for commercially-available man-made building materials is usually limited and uninspiring. This may be due to a combination of suppliers offering consumers little choice, and consumers' lack of confidence limiting the market offer. Many suppliers seem unaware of the origins of their colour range: Corus steel

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[7] Although some colour ranges are limited, especially in terms of variations in tonality as opposed to colour, ECA practitioners are working with manufacturers with a view to including colours more likely to integrate into the landscape.

adopted British Steel range at take over and continued to push this to the market until successfully challenged - through the use of ECA - to make changes.

4.22 Carrying out ECAs can be a very satisfying and rewarding experience, especially when the practitioner is involved in a project from inception to completion, and in collaboration with others.

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