

Carbon Literacy Project



Carbon Literacy: The Carbon Literacy Standard

Version 1.05

Carbon Literacy is about understanding what I actually need to do, where I can get help to do it, actually doing it and seeing that I've done it.

MANCHESTER:
A CERTAIN FUTURE

cooler

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Introduction:

What Is Carbon Literacy?

Appropriately for the world's first industrial city, **Manchester is the first city** to undertake to empower all its residents with carbon literacy. This unique project is driven by the fact that it is imperative that we change the aspects of our collective behaviour that result in the generation of carbon dioxide and other greenhouse gases. If we do not, then the scale of change demanded of us by the science in order to maintain a safe and healthy place to live, will simply not be achieved. The consequence of this failure will be **catastrophic climate change**.

Carbon literacy is the **underpinning knowledge** required to create this **vital shift** in how we live, work and study. The project is built on the principle that residents, workers and learners who are carbon literate will have an embedded and instinctive understanding of the carbon impacts of their activities, and make informed choices about the most energy and resource efficient and lowest carbon options available to them.

Manchester: A Certain Future (MACF), the city's climate change action plan, pledges the city to a 41% cut in CO₂ emissions by 2020 and the creation of a '**low carbon culture**'. The Carbon Literacy project is a direct result of this latter aim. It is working with the communities, workplaces and educational establishments of the city to demonstrate the vital relevance of carbon literacy in all of those places.

This document is based on the work of the **Manchester Carbon Literacy Working Group (CLWG)** convened by **Cooler**. The group includes representatives of the city's universities, schools and colleges, as well as private, voluntary and public sectors. Cooler is funded (by the City Council and founding sponsors Westford Mill) to co-ordinate the roll-out of carbon literacy across Manchester.

The Working Group has created a definition for carbon literacy for use internally within training organisations

An awareness of the carbon dioxide costs and impacts of everyday activities and the ability and motivation to reduce emissions on an individual, community and organisational basis.

But more succinctly for carbon literacy participants:

Carbon literacy is about understanding what I actually need to do, where I can get help to do it, actually doing it and seeing that I've done it.

The Working Group also concluded that the term 'carbon literacy', whilst an effective description of what is to be achieved, is not currently a particularly engaging public-facing term. Therefore, as part of the pilot work carried out here, alternative public brand(s) will be trialled.

Another finding of the group was there was one thing worse than no climate change learning – **bad climate change learning**. Therefore this standard contains substantial **emphasis on the training methods for carbon literacy** – to ensure that Carbon Literacy learning under this Standard is always effective and relevant to the learner.

The Carbon Literacy Project is ambitious in its scale, and necessarily so, but none of what it asks of participants, their workplaces, communities and places of education, is impractical or unreasonable. Indeed, it is hoped that this programme enhances the quality of life, productivity and life chances of all those who do participate, and at the same time support and help expand the growing low-carbon economy, to the benefit of us all.

Since the first edition of this Standard the Carbon Literacy Project has been recognised as the **Best Community Initiative in the Climate Week Awards 2013** and short-listed in Business Green's WWF Game Changers Innovation Award.

Principles of Approach

In approaching the coordination of this project, a number of principles have been applied in order to deliver the scale and impact required:

- ⌚ The project is delivered by many different organisations and individuals working in **partnership**.
- ⌚ Rather than reinvent the wheel the project utilises and builds upon **the best of existing resources, existing initiatives and best practice – especially those already under the MACF banner**.
- ⌚ Learning and learning outcomes are context-sensitive and “meet learners where they are” be **relevant to learners in the method of delivery and their daily lives**.
- ⌚ Learning content is appropriate to each audience. There is **core content** common to all and **customised content** appropriate to each audience. (see below)
- ⌚ Delivery is organised around the **three audiences**/channels identified in the headline objective: those who **live, work or study** in the area
- ⌚ Participation and delivery follows “**open-source**” **principles wherever possible**. Delivery partners and participants are happy that - within the context of the Carbon Literacy Project - materials are in a shared commons and non-profit in principle.
- ⌚ There is no central funding for project delivery, so delivery partners are **actively involved in helping source resources, support and funding** for sections of the project in which they are involved.
- ⌚ Quality of information, training and learning are paramount and the project **kite-marks** both training delivery and training outcomes to the benefit of recipients but also directly to those delivering the training. This approach balances the need to engage a number of delivery partners for different audiences with the need to safeguard quality.
- ⌚ Wherever possible both “hard” and “soft” **outcomes are measured to assess the effectiveness** of training and of the wider project.
- ⌚ “One day’s worth of training” may be delivered in many forms. It does not need to be delivered in a single unit or in isolation from other learning or activity. In fact the opposite is positively advantageous.

Core and Customised Elements

Carbon Literacy straddles a vast **range** of learning environments. It must remain **relevant** to all the participants with sufficient consistency to be credible to employers and learning establishments and for the kite-marked certification to have currency across all three audiences. The CLWG therefore determined at an early stage that the project would define some of the elements of learning as ‘core’ and some as ‘customised’. This does not just apply to **what is learned** but also **how it is learned**. To have Carbon Literacy delivered in a boring, irrelevant or ineffective way that does not emphasise the role of the participant in **devising solutions** to climate change is probably worse than not having carbon literacy training delivered at all.

Core elements are described below and are mandatory. By adhering to these elements participants, trainers, training organisations and host organisations (e.g. employers, learning establishments, voluntary or community groups) will ensure that participants in their delivery can become accredited or kite-marked.

Customised elements are those parts of carbon literacy that ensure that **what is learned** is both directly relevant to the participant *and engages them* in the devising of solutions to climate change.

Carbon Literacy may become an addition or enhancement to an activity that is already happening (e.g. workplace induction or CPD, or an existing curriculum or community activity such as a local food growing project), or may be part of an initiative especially devised for the delivery of Carbon Literacy. It is hoped that the customised content that flourishes through Carbon Literacy will be diverse, exciting and fun, as it is in the delivery of the customised elements that the '**social learning**' elements of the project really come to the fore.

How to Use this Standard

This standard is used by organisations and trainers who wish to deliver Carbon Literacy training and gain the kite-mark(s) associated with the project for their participants and themselves.

The standard is intended as a check list for **existing projects** or be used as building blocks for **new projects** as it sets out the elements against which assessment takes place.

If this Standard is being used as a PDF or electronic document, all of the resources, websites or further reading recommended are **hyper-linked**, and can be clicked through to, directly. Where a web address is synonymous with the name of an organisation, this is stated in full. For those occasions when the Standard is being used as a printed hard copy, all of the relevant URLs are also reproduced in full in the References section at the end of this document, (Section Six) and can be accessed using these. Furthermore, a comprehensive directory of online and offline resources is available to those organisations registering to deliver Carbon Literacy training.

The Standard is not intended to be used in isolation and any queries about its use should be raised directly either with any professional trainer or parent organisation you are working with, checked against the Frequently Asked Questions section of the website, or submitted as a question via the contact form on the www.carbonliteracy.com

Section 1:

The Consistent Elements of Carbon Literacy: Learning Method, Knowledge, Values and Action:

Core Element 1: Learning Method

- ⌚ The delivery of Carbon Literacy creates a learning environment which leads to participants maximising their sense of independence, expertise and purpose (see Notes) in responding to climate change and thus maximises their motivation to act further.
- ⌚ Guidance will be given to trainers and training organisations seeking the Carbon Literacy kite-mark to use the methods outlined here in their training delivery.
- ⌚ Trainers are expected to be able to deliver training to learners with different learning styles and be able to accommodate differences between groups and within groups.
- ⌚ As well as being a learning programme in its own right, carbon literacy can be an outcome of other activities or projects originating in the learner's community e.g. local growing, waste reduction or energy efficiency projects and form part of the 'content' for other learning programmes such as team working, volunteering etc.
- ⌚ One day's worth of training may be delivered in many forms.

Carbon Literacy *Learning Method* is characterised by:

"Local" Learning:

The relevance of what is learned to the learner's own environment is maximised at all times.

Delivery by Peers:

Training is most trusted and best delivered by peers; people who, to the learner, "feel like themselves".

Group Enquiry:

CL learning takes place in an environment where, with the input of expert knowledge and peer support, learners jointly find their own answers and devise their own solutions.

Positivity:

CL learning emphasises the things that can be done as opposed to the things that cannot.

Notes:

'Local' learning – or 'social' learning is recognised as an effective means of embedding behavioural change in a group, especially when it is used alongside the other learning methods as suggested for Carbon Literacy. This means that the subject material must be introduced **from the start** as being directly relevant to where the learner is and 'modelled' for learners. This is especially important when the training is mandatory and the learner might not be clear about its relevance.

Peers are the most trusted source of information.

We seek to ensure that Carbon Literacy training is, wherever possible, delivered by people who share a common background with the participants. This might not always be possible (e.g. in a formal education setting) but we still encourage organisations to introduce elements of this method into their delivery. This could take the form of having learning group members taking the lead for parts of the training. Outside experts may be used where no peer is available, to train trainers and help devise learning programmes. To minimise any potential lack of credibility, peer leaders should be equipped with sufficient expertise to perform this function – either through the use of properly referenced resources or input from experts (such as a facilities manager).

Group or collaborative enquiry proposes a cycle of learning that moves from the group to the individual and back again, with structured reflection in-between. This will reinforce the delivery methods outlined in Local Learning and Delivery by Peers above.

Positivity: Whilst still stressing the scale and urgency of the need to respond to climate change, Carbon Literacy learning focuses on what can be achieved by the individual and the group (both the learner group within which the learning is taking place and the community or organisational groups to which the participant belongs)

Training which is positively framed is more effective in changing behaviour than training which is not. (See References Section 6)

Supporting Information:

“Local” Learning:

The relevance of what is learned to the learner’s own environment is maximised at all times

‘Local’ learning – or ‘social’ learning - is recognised as an effective means of embedding behavioural change in a group, especially if used alongside the other learning methods suggested for Carbon Literacy. It means that the subject material must be introduced from the start as being directly relevant to where the learner is and ‘modelled’ for learners. There is a summary on Wikipedia here: ([link](#)).

Social learning theory outlines three requirements for people to learn and model behaviour: 1: [attention](#) / [spaced repetition](#) (remembering what one observed), 2: reproduction (ability to reproduce the behaviour), and 3: [motivation](#) (good reason) to want to adopt the behaviour.

Delivery by Peers:

Training is most trusted and best delivered by peers; people who – to the learner, “feel like themselves”.

Following the work of COIN (www.coinet.org.uk) and others we seek to ensure that Carbon Literacy training is, wherever possible delivered by people who share a common background with the participants.

Group Enquiry:

Learning will take place in an environment where, with the input of expert knowledge and peer support, learners jointly find their own answers and devise their own solutions.

Group or collaborative enquiry (see [link](#)), proposes a cycle of learning that moves from the group to the individual and back again, with structured reflection in-between. This will reinforce the delivery methods outlined in Local Learning and Delivery by Peers above.

Positivity:

Learning will emphasise the things that can be done as opposed to the things that cannot.

Independence (or autonomy), expertise and purpose – are three elements of learning which will increase the learners’ motivation to do more and is inspired by the ‘Drive’ theory of workplace motivation which is explained in an animation here (see [link](#)), an approach which is directly applicable to the effective delivery of Carbon Literacy.

Core Element 2: Knowledge

- ⌚ **The Knowledge and Learning Outcomes described here are core elements but need not be delivered in the order stated.**
- ⌚ Linked delivery of the knowledge and other outcomes is encouraged from the start.
- ⌚ Points 1 – 4 cover a very broad subject area. As the first wave CL training continues, and expands, the Carbon Literacy project will, beyond these Notes and Supporting Information sections, provide an online set of resources recommended by the coordinators and participants, and develop a resource pack to assist with the delivery of these sections. Please contact us if you have learning resources that you would like to share.

Carbon Literacy Project Participants will demonstrate their knowledge and learning of:

1. What Greenhouse Gases are, and their relationship to weather and climate.
2. How climate here and elsewhere is likely to change, and how we know this.
3. How changes in the climate are likely to affect us locally, regionally, in the UK, and in other parts of the world.
4. How our actions impact on the amount of greenhouse gases produced and the impact that they have.
5. What we can do to reduce our impact and the benefits and disadvantages of taking action.
6. What we are already doing locally and nationally.
7. Where we can go to get help. What help is available to us locally.
8. How we can motivate others to take action, including gaining the confidence to express our carbon literacy to others.

Notes:

1. The role of Carbon Dioxide (CO₂) as the main anthropogenic greenhouse gas should be reviewed, but reference to Methane, water vapour and other minor greenhouse gases (GHGs) should be made.

Emphasise the age and substance of this basic science – going back to Tyndall's experiment (see Wikipedia here: [link](#)) should be made. The question 'what is climate' is answered by the Met Office here: [link](#)).

2. Introduce the 'hockey stick' graph. The now discredited 'controversy' over it should also be referenced – if briefly – depending on the learner group.

New Scientist explanation here: [link](#)).

Very good short explanation from the BBC here: [link](#)).

3. By degrees – Guardian Article here: [link](#)) describing impacts of climate change by degrees of increased global temperatures.

An imagined [audio] scenario for Manchester [link](#)), can be used to stimulate debate. A resource for children and polar bears may be found here [link](#)).

4. As well as energy conservation, define direct and indirect/embedded carbon consumption. Emphasise that our direct energy consumption is only part of the picture and that the embedded carbon in most of our purchases (their 'total carbon footprint') should be considered in any solution to climate change. There is a simple breakdown of a product's carbon footprint here [link](#)). The Carbon Label initiative also has useful explanations of the concept. [link](#)). The myth-busting section also useful.

5. What we can do - Include an introduction to the concept of 'embedded emissions'- (that goods and services that we purchase/use all have a carbon impact), the fact that some actions have a relatively minuscule impact (e.g. plastic carrier bags and mobile phone chargers), and review the business, organisational and personal benefits of taking action.

6. If in the city, this includes an awareness of the Manchester climate change action plan – Manchester: A Certain Future (www.manchesterclimate.com) and the Greater Manchester Climate Change Strategy. Please also use projects relevant to where your learners are – in the class room (lots of good practice here [link](#) to Eco-Schools) and resources from MEEN here: [link](#)), the workplace (see Carbon Trust and their Empower on-line tool [link](#)), household good practice is well described here: [link](#)).

7. What help is available – can include the usual sources of information and advice in the workplace (Carbon Trust), community (home – Energy Saving Trust) or place of education but should also encompass resources, especially in a community context, that address collaboration. Please avoid giving learners answers on a plate but ask them to explore/research, and adapt what they find to where they are.

8. Motivating others – a very good opportunity to embed 'core skills' into the learning – especially in the area of communication skills and self esteem. This heading also allows learners to reflect on how what they have learnt affects them emotionally – are they motivated enough to

motivate others? Using periods of self reflection and feedback in the learning process assists this growth in self confidence.

Supporting Information

Carbon Literacy must be portrayed as the **start** of a journey that impacts on many areas of the learners' life. The small actions that can be created by this training **must** be expanded upon if there is to be a significant impact on climate change - As David MacKay, Chief Scientific Advisor to the Department of Energy and Climate change writes:

"Don't be distracted by the myth that 'every little helps'. If everyone does a little, we'll achieve only a little" (MacKay, 2008).

In the Climate Change Communications Advisory Group paper 2010 it says – 'Overall, there is a need for emotionally balanced representations of the issues at hand. This will involve acknowledging the 'affective reality' of the situation, e.g. *"We know this is scary and overwhelming, but many of us feel this way and we are doing something about it"*.

The Carbon Literacy Project believes that encouraging the notion of '**resilience**' is important - especially in reference to working together to create solutions. Strike a balance between stressing the scale and urgency of the action required with the ability of us all to work together to achieve this.

It is also hoped that opportunities to progress to higher levels of carbon literacy learning will be made available, and there are certainly other courses that could provide progression for learners such as the BTEC Sustainability Skills suite.

Core Element 3: Values:

- ⌚ **These are the fundamental values that underpin ‘Manchester: a Certain Future’** (www.manchesterclimate.com) and thus Carbon Literacy. Trainers and training organisations should be able to explain how these values are embedded in the training they undertake both through the way they carry out the training and its content.
- ⌚ This is equally relevant to the Greater Manchester Climate Change Strategy – and many other local and regional strategies.

Carbon Literacy Project Values express that:

1. The action of individuals can and does make a difference.
2. We need to work with others to create change.
3. Overall, the outcome of the changes we need to see can lead to a better world and a better way of life.
4. Equity and fairness, now and in the future, underlies the changes that we want to see in the UK and globally.

Notes:

Carbon Literacy learning must be empowering and enjoyable to the learner and to the group.

This will be most effective when it is embedded in the way that the learning is delivered.

It can also be realised by planning discussion/reflection of these values as part of the learning process.

CL deliverers should also enable the participants to realise that acting in a carbon literate way adds ‘purpose’ to actions which in themselves do not seem significant. “You’re not just saving money by turning down your thermostat or buying low carbon services – you’re doing something good for us all”

Supporting Information

Common Cause is a project that examines how working with values improves communications/campaigns on global issues, and makes the case that it is essential ([link](#)). Working to activate and strengthen a set of helpful 'intrinsic' values, while working to diminish the importance of unhelpful 'extrinsic' values.

[Talking Climate](#) is a useful website for climate change communication – more at trainer level than for most learners.

Core Element 4: Action:

- 🕒 **The focus of carbon literacy is about empowering people to take action.**

By the end of their learning, the aim is that Carbon Literacy Project learners will:

1. Create at least one significant action personally to reduce their own personal carbon footprint.
2. Create at least one significant action involving other people to reduce the collective footprint of their workplace, community or place of education.

Notes:

Longer learning units (e.g. the BTEC in Sustainability Skills mandatory unit) have time for the delivery of action in the learner's environment, and this can include working with others to plan activity.

As part of Carbon Literacy, as a minimum, planning for the delivery and measurement of the impacts of the actions 'created' during learning must be capable of being evidenced. Plans should be practical, relevant to the participants' circumstances and they should be able to and actually assess the potential impact of their actions.

What is 'significant' (in terms of making a difference to carbon use where they work, learn or live) is partly for the individual or group to decide. Reflection on what a 'significant' action is should be part of the learning.

Whilst ensuring that the learners are devising their own solutions, deliverers should ensure that participants are aware of the full range of options for action, from basic energy and resource saving, to more informed purchasing and consumption decisions, to energy generation, to more informed lifestyle choices, to the 'political' (e.g.; being vocal in support of low carbon initiatives at a community, local and national level) actions.

Supporting Information

The website of the Manchester climate change action plan – Manchester: A Certain Future – www.manchesterclimate.com – has some examples of what is being done in that city.

For organisations participating in Carbon Literacy we have prepared an online workspace in www.carbonliteracy.com which already has links to resources mentioned here and a larger selection of sources of information and online resources. We are populating this further with suggestions from other participants, examples from other Carbon Literacy schemes, and shared comments and ideas as a source of advice and inspiration. Whilst it will grow and become a publicly available online resource later in the year, it will never be an exhaustive list and participants should be encouraged to research other sources and, most of all, devise their own solutions. Please contact us if you have resources that you wish to share.

Section 2: Carbon Literacy Certification

One of the key aspects of the Carbon Literacy Project has always been that involvement would enable any successful participant to receive a certificate to confirm their carbon literacy. This is currently being done through the Carbon Literacy Co-ordinating Organisation (Cooler Projects CIC) but in due course an independent Carbon Literacy Co-ordinating Body (an independent charity acting on behalf of the city) will be established to oversee this scheme, and its establishment on some of the recognised educational frameworks.

It has also always been intended that this award will also carry across all three audiences, so that a certificate received in, say, an educational setting, would have good standing in a workplace or community setting, and vice versa.

Carbon Literacy Certificate (CL)

Successful participation in a Carbon Literacy training course results in the award of a Carbon Literacy Certificate. (CL)

Each certificate is uniquely numbered and participant details will be held on a secure database by the co-ordinating organisation to allow later verification by employers or other external bodies.

When a sufficient number of participants have been certified, a “certificate card” scheme will be introduced and all participants certified up to that point will each receive a wallet card to evidence their achievement.

Carbon Literacy Trainer (CLT)

Much of Carbon Literacy training delivered so far has been delivered by non-professional trainers who belong to the peer groups of the participants. This is exactly as intended and is likely to remain the case, however some organisations have sought the support of a professional trainer in developing and customising their own MCL training and in some cases in delivering it. Much of this work is delivered by existing experienced sustainability trainers, however the project recognised the need to identify some of the most experienced and capable trainers and enable them to evidence this experience and ability.

For professional trainers a Carbon Literacy Trainer (CLT) certification has been developed.

The CLT certification is based around

- 1: being CL certified (as an individual),
- 2: familiarity with the Standard,
- 3: experience delivering CL training and
- 4: an external assessment of training delivery and communication skills.

The development of these skills is supported by a professionally delivered CL Train the Trainer course geared toward independent professional trainers and trainers operating within large organisations. The course includes CL certification for those who do not have it as a prior qualification, a day long training course, a half day training observation and assessment exercise, and, for successful participants; marketing and communication support, a CLT certificate, logo

usage and branding.

If you would like to know more about the requirements and costs for this certification there are more details on www.carbonliteracy.com or contact the project.

Carbon Literate Organisation (MCLO)

Launched in January 2013, the Carbon Literate Organisation certificate is the visible 'badge' that means that an organisation is committed to Carbon Literacy, that a substantial number of members are CL certified and that the organisation has a commitment to maintain this capacity. The organisation is also using this status to better interact with your communities – whether they are customers, neighbours, learners or suppliers. There are four levels of certification; Bronze, Silver, Gold and Platinum reflecting increasing levels of Carbon Literacy.

If this is something that might interest you, once again there are more details on www.carbonliteracy.com or contact the project.

Carbon Literate Training Organisation (MCLTO)

We are also interested in hearing from organisations that wish to be certified as CL Training Organisations (CLTO)'s. These are organisations, business units or departments delivering CL training to internal or external customers. The launch of the CLTO certification scheme is scheduled for July 2013 once the CLT scheme has had time to become established, but feel free to contact the project for more information.

Measurement and Assessment

If a certification is to have any value or consistency clearly a scheme of measurement and assessment is required and this laid out in Section Three below.

Section 3: Measurement

It was clear from the outset that Carbon Literacy is an ability or skill rather than an action with a directly attributable 'hard numbers' outcome.

It is however essential to be able to measure the learning of participants in order to assess whether or not they reach a sufficient standard of understanding to be classed as Carbon Literate.

Participants belong to any of three audiences and vary enormously in ability and the context in which they will apply their knowledge, thus the approach to measuring Carbon Literacy needs to be rigorous enough to allow a determination to be made, but adaptable enough to be applied to any participant.

The approach therefore consists of the trainer and participant jointly supplying sufficient evidence to support the awarding of a certificate of carbon literacy. (See Approach To Measurement table below)

For the purposes of this Carbon Literacy Pilot, Cooler (the Co-ordinating Organisation) will:

1. Review and discuss the approach to training with each pilot to ensure that the exercise they are about to commence is very likely to result in carbon literate participants, (Approach To Measurement table below, Column One);
2. Review the portfolio of evidence for a substantial number (if not all) participants to understand what they have done and know, (Column Two);
3. Review the evidence of Action and Participation for a substantial number (if not all) participants, to understand what effects their involvement in a Carbon Literacy exercise has had, and what outcomes they have achieved as a result, (Column Three);
4. Review any examples of Best Practice or Case Studies that the delivery organisation submits. This will not only serve as excellent evidence on behalf of participants, but will serve as a key part of the portfolio of evidence for the later accreditation of companies and groups as Carbon Literate Organisations (CLOs), of individuals as Carbon Literacy Trainers (CLTs), and of training organisations as Carbon Literacy Training Organisations (CLTOs), (Columns Four & Five).

Carbon Literacy: The Approach to Measurement

	Training Structure	Evidence	Action and Participation	Best Practice	Case Studies
Requirement	The trainer or training organisation will supply evidence of how knowledge is tested.	The participant, trainer or the training organisation will supply evidence of the participant's knowledge.	The participant, trainer or the training organisation will supply evidence of the participant's action during, or preferably some time after, training.	The participant, trainer or the training organisation will supply evidence of an action, or activity, or result that is innovative, particularly effective and could be acted upon or adapted by others.	The participant, trainer or the training organisation will supply enough evidence for the preparation of a case study which can be used to inspire and encourage others.
Examples	This may be a “pre and post” questionnaire, clear learning objectives and testing of knowledge against these within the lesson plan, a quiz, an exam, a report back talk, a presentation, a report or other mechanism.	This may be a “pre and post” questionnaire, clear learning objectives and testing of knowledge against these, a quiz, an exam, a report back talk, a presentation, a report or other mechanism, but needs to be identifiable with the participant.	This may be: 1: Evidence of action taken during or as a consequence of training – reduced energy consumption, changed behaviour, or an activity planned or begun or reduced, and/or: 2: Evidence of participation in an activity planned or begun, a group, or campaign supporting the objectives of MACF.	A particularly effective method of engaging a community audience, a particularly good game or exercise to explain a key concept, or a particularly inspiring outcome that might inspire others.	The benefits and challenges of a trial employee participation scheme; the pleasures and pitfalls of a green street scheme, or a school campaign on energy efficiency involving and reporting back to both other pupils and parents.
Standard Required	The testing mechanism needs to be sufficient to demonstrate knowledge of each of the core Knowledge Components.	Material Evidence of the above.	Material Evidence of the above.	Material Evidence that can be shared with others	A page of text probably with some supporting photographs or evidence and a follow up interview to allow the Case Study to be prepared and shared.

Carbon Literacy: The Approach to Measurement

	Training Structure	Evidence	Action and Participation	Best Practice	Case Studies
Method of Assessment	External Assessment of training approach.	External Assessment of evidence.	External Assessment of evidence or commitment.	Approval by the Co-ordinating Organisation / Body.	Delivery of a completed Case Study in association with the Co-ordinating Organisation / Body.
Notes:	This part of the assessment is a test that the route the training experience follows is sufficient and likely to deliver the knowledge and learning outcomes.			The concept of sharing ideas is fundamental to the city becoming Carbon Literate. Those coming up with great ideas deserve the full credit.	The concept of ideas resulting in real action and results is fundamental to the concept of Carbon Literacy. Successful ideas inspire others and those delivering them deserve the full credit.
Accreditation toward which each stage contributes:	Carbon Literacy Trainer. (CLT) Carbon Literate Organisation. (CLO)	Carbon Literacy Certificate. (CLC)	Carbon Literacy Certificate. (CLC)	Carbon Literacy Certificate. (CLC) Carbon Literate Organisation. (CLO) Carbon Literacy Trainer. (CLT)	Carbon Literacy Certificate. (CLC) Carbon Literate Organisation. (CLO) Carbon Literacy Trainer. (CLT)

Section 4: Frequently Asked Questions

“Who is organising all this? Who owns it”?

The Carbon Literacy Project is currently being organised by Cooler Projects Community Interest Company, a Manchester based social enterprise, on behalf of the city of Manchester. As part of Cooler's work, an independent charitable co-ordinating body will be established, to own the project on behalf of the people of Manchester and more widely.

“How is Carbon Literacy being paid for”?

The development, launch and initial co-ordination of Carbon Literacy was underwritten by Manchester City Council and founding private sector sponsor Westford Mills. The delivery of Carbon Literacy is paid for from a wide range of sources within organisations themselves, but mainly from existing training and education budgets, as the delivery of Carbon Literacy is down to the people and organisations of Manchester and more widely. This delivery and the further co-ordination of the project is being funded from public, charitable and private sector sources.

“What do you mean by “Appropriately for the world's first industrial city”? In 1780 in Manchester, Richard Arkwright built his first factory for cotton manufacturing by connecting the newly invented “steam-engine” to a loom, on a site only a few hundred metres from where Cooler's offices are currently situated. In doing so, he turned Manchester into the powerhouse behind the cotton industry and industrial manufacture. It was the mechanisation of machinery for production and transport that resulted in our present day consumption of the fossil fuels which are driving climate change. It is therefore particularly appropriate for the city which was the foundation of the Industrial Revolution to be the source of the Carbon Literacy initiative in the cause of carbon reduction.

“How long is the Carbon Literacy Project going to run for? -till we hit the 41% by 2020 target”?

The initial project has an aim of offering everyone who lives works or studies in Manchester access to training within a three year period, however Carbon Literacy is an activity in support of the MACF objective of changing the culture of Manchester, so is intended to become part of the fabric of “what we do” in Manchester and beyond, and run for many years.

“How long will a Carbon Literacy Certificate last”?

Certificates awarded to individuals will not expire, but it is likely that the core elements of the content will evolve over time, and standards and expectations will rise. When subsequent “upgraded” versions of the certificate become available, individuals may choose to refresh their skills to ensure they retain the latest version. This is particularly likely to be the case if these certificates are used to support the organisational CLO certificate which will have an expiry date, but is likely to last for at least three years.

“What do you mean by hard and soft outcomes”?

Hard outcomes tend to be quantitative and directly measurable e.g.; the city's target of a 41% cut in CO₂ emissions by 2020. Soft outcomes are no less real but are harder to measure directly e.g.; the report by an individual that they had changed their buying patterns to buy more organic food locally.

Section 5: Glossary

A

Anthropogenic

An effect or object resulting from human activity, particularly human impacts on the environment. Most commonly used in connection with global warming and climate change to differentiate between the natural warming of the biosphere, and the additional warming being generated as a consequence of the use of fossil fuels and other human activities.

B

Behaviour Change:

In environmental terms, behaviour change refers to the individual actions one needs to undertake and the lifestyle changes one needs to make in order to lead a more sustainable lifestyle. It also refers to the change in our way of thinking.

C

Carbon:

A fundamental element upon which all known life is based. Used most commonly in climate change terms as shorthand for Carbon Dioxide (see below).

Carbon (dioxide) / CO₂:

Carbon dioxide is a colourless, odourless, incombustible gas present in the atmosphere and formed during respiration, the decomposition and combustion of organic compounds, and in the reaction of acids with carbonates: used in carbonated drinks, fire extinguishers, and as dry ice for refrigeration. Formula: CO₂.

Carbon Footprint

A measure of the impact that human activities have on the environment in terms of the quantity of greenhouse gases produced as a consequence, measured in equivalent units of carbon dioxide.

Carbon Literacy:

See page 4.

Climate:

Weather is the temperature, precipitation (rain, hail, sleet and snow) and wind, which change hour by hour and day by day. Climate is the average weather expected over a long period of time. While weather brings different temperatures all over the world on a day to day basis, over a year global climate would be expected to deliver an average planetary temperature of about 14 °C.

Climate Change:

Climate Change refers to a change in the average state of the climate and/or the variability of its properties.

CLWG

Abbreviation: Carbon Literacy Working Group.

CPD

Abbreviation: Continuing Professional Development.

D

Direct Emissions The quantity of Carbon Dioxide emitted as a direct consequence of the use of energy/a fuel at the point of consumption.

E

Embedded (Carbon) Emissions

The sum of the carbon footprints of all of the resources and processes required to bring a product or service to the point of its consumption. One way of attributing greenhouse gas (GHG) emissions is to measure the embedded emissions of goods that are being consumed (also referred to as "embodied emissions").

Emissions (Carbon)

This is the term used to describe the emitting of carbon dioxide into the atmosphere, usually in connection with human activity, mainly from the burning of fossil fuels.

Energy conservation

Energy conservation refers to efforts made to reduce energy consumption. Energy conservation can be achieved through more efficient energy use, and/or decreased energy consumption.

Energy efficiency:

Energy is the capacity to perform work, thus energy efficiency is the measurement of how much work is derived from a given amount of energy or, the amount of energy required to gain a given amount of work. The less energy that is required in a system for a given amount of work, the more energy-efficient a system is. The more work that is gained in a system from a given amount of energy, the more energy-efficient a system is. In an environmental context, it is often used as shorthand for measures or behaviour taken either to increase the efficiency with which energy is used within a system, or to reduce the amount of energy consumed.

F

Fossil Fuels

Most commonly coal, oil, and gas, Fossil Fuels are hydrocarbons formed over millions of years from the underground decomposition of the carbon based organic compounds making up the tissues of formerly living plants and animals. The combustion of these compounds releasing their stored energy also releases carbon dioxide as a by-product.

G

Global Warming

The rise in average planetary atmospheric and oceanic temperature and its projected continuation, primarily applied to the unnatural additional warming above the norm as a consequence of the use of fossil fuels and other human activities.

Greenhouse Gases (GHGs)

Greenhouse Gases are gases in the planet's atmosphere that have the effect of warming the planet's surface. They do this by absorbing more thermal infrared radiation than they emit. In the earth's atmosphere, the main greenhouse gases are: Water vapour, Carbon dioxide, Methane, Nitrous Oxide, and Ozone, although each gas differs in how much thermal energy it absorbs and thus how much of an effect it has on atmospheric warming.

K

Kite-marking

Shorthand for the assessed mark of a Quality standard, referring to the UK product and service quality certification mark which is owned and operated by The British Standards Institution (**BSI Group**).

L

Local growing

Referring to growing local food. Local food or the local food movement is a "collaborative effort to build more locally based, self-reliant food economies - one in which sustainable food production, processing, distribution, and consumption is integrated to enhance the economic, environmental and social health of a particular place" (Feenstra, G. (2002)

Low carbon culture

A culture whose fundamental values aid sustainability and behaviour change and help support and create a Low Carbon Economy (see below).

Low carbon economy (LCE)

A Low Carbon Economy is an efficient and sustainable economy that delivers high quality of life for its participants whilst minimising the output greenhouse gases into the biosphere and using energy and natural resources in a sustainable manner.

Low Carbon Economic Area (LCEA)

In December 2009 Greater Manchester was designated the UK's first Low Carbon Economic Area for the Built Environment. This has resulted in a 5 year project to address carbon abatement through existing and new technologies and increase employment and investment in low carbon skills and supply chains.

M

MACF

Abbreviation: The city of Manchester's climate change action plan, "Manchester: A Certain Future".

Methane

A Hydrocarbon chemical compound with the chemical formula CH₄. It is produced by living organisms, primarily as a consequence of decomposition and as a fossil fuel is the principal component of natural gas, and is probably the most abundant organic compound on earth.

R

Resource Efficiency

Refers to the act of using natural resources (air, water, plants, minerals) in the most efficient and effective way, maximising their reuse, minimising their consumption, whilst all the time minimising the impact of that use on the wider environment.

S

Sustainability

Sustainability is the capacity to continue. Applied to ecosystems and economies it means the ability to continue indefinitely without declining or breaking down. Applied to humans, the concept involves the concept of stewardship, the responsible use and management of energy and resources, and the long-term maintenance of responsibility, which has environmental, economic, and social dimensions.

Sustainable Change

A change in human behaviour and activity which meets or moves towards the fundamental requirements of sustainability.

W

Waste reduction

Waste Reduction is the process and the policy of reducing the amount of unutilised physical resource produced by a process, an individual, an organisation or society.

Section 6: Selected References

Section One

Core Element One: Learning Method

There is a summary of Social Learning Theory on Wikipedia here:

http://en.wikipedia.org/wiki/Social_learning_theory.

Training which is positively framed is more effective in changing behaviour than training which is not. This is basic coaching theory. See for example: Whitmore John, Sir, Coaching for Performance, GROWing human potential and purpose – the Principles and Practice of Coaching and Leadership: ISBN-10 185788535X
ISBN-13 978-185788535X

Wikipedia specifies the following Social Learning Theory requirements for people to learn and model behaviour:

- 1: Attention: <http://en.wikipedia.org/wiki/Attention>
- 2: Spaced Repetition: http://en.wikipedia.org/wiki/Spaced_repetition
- 3: Motivation: <http://en.wikipedia.org/wiki/Motivation>

COIN, Climate Outreach and Information Network: www.coinet.org.uk

Wikipedia indicates the following information on Cooperative Enquiry:

http://en.wikipedia.org/wiki/Cooperative_inquiry

RSA Projects provide a useful animation on 'Drive':

<http://www.thersa.org/events/video/animate/rsa-animate-drive>

Core Element Two: Knowledge

John Tyndall's main scientific work and experiments are described on Wikipedia here:

http://en.wikipedia.org/wiki/John_Tyndall#Main_scientific_work

A definition of Climate set by the Met Office:

<http://www.metoffice.gov.uk/climate-change/guide/climate>

The New Scientist provides an explanation on 'Climate Myths' here:

<http://www.newscientist.com/article/dn11646-climate-myths-the-hockey-stick-graph-has-been-proven-wrong.html>

The BBC provides a graph and an audio commentary on Climate Change here:

<http://www.bbc.co.uk/news/science-environment-15887129>

The Guardian presents an article on Climate Change and Temperature Rises:

<http://www.guardian.co.uk/environment/2009/apr/14/climate-change-environment-temperature>

An imagined [audio] scenario for Manchester's future can be found here:

<http://soundcloud.com/radio-regen/the-long-descent>

Climate Classroom has resources for children and polar bears here:

<http://www.climateclassroomkids.org/climatecards.aspx>

Walker's offers a simple breakdown of a product's carbon footprint:

http://www.walkerscarbonfootprint.co.uk/walkers_carbon_footprint.html

The Carbon Trust's Carbon Label initiative provides useful explanations:

<http://www.carbon-label.com/>

Manchester: A Certain Future - the action plan for Manchester:

www.manchesterclimate.com

Information on Keep Britain Tidy Eco-Schools project:

<http://www.keepbritaintidy.org/ecoschools>

Manchester Environmental Education Network (MEEN):

<http://www.meen.org.uk>

Carbon Trust and the Empower on-line tool may be found here:

<http://www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/web-tools/empower/Pages/empower.aspx>

Household good practice is well described here:

<http://www.energysavingtrust.org.uk/in-your-home>

Sustainable Energy – Without the Hot Air. Chapter 19, Page 114. David MacKay, 2008.

Communicating Climate Change to Mass Public Audiences.

Climate Change Communications Advisory Group, 2010

Core Element Three: Values

Common Cause, the Case for Working with Values and Frames:

<http://valuesandframes.org/>

The Authors

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Cooler is a Manchester-based Community Interest Company that delivers projects and advocacy to create a low carbon future. Its founders and associates have wide and substantial experience in community engagement, coaching, project delivery and advocacy.

Dave Coleman **Director**

Co-author and Cooler co-founder, began his career with Deloitte, and then as a director of an award winning IT company. For the last ten years he has worked as a management trainer and coach in the commercial sector. Having recently stepped down after six years on the Boards of Friends of the Earth, he chaired the “Energy” writing group of “Manchester: A Certain Future”, and sits on the MCC Environmental Advisory Panel and the Climate Change Action Plan Steering Group.

Phil Korbel **Director**

Co-author and Cooler co-founder, is an experienced social entrepreneur, founder/director of the community development charity Radio Regen and occasional advisor to DCLG and DCMS. He sits on the Board of the Manchester Local Strategic Partnership and Climate Change Action Plan Steering Group. He chaired the “Buildings” writing group of “Manchester A Certain Future”, and helped found the 100 Months Club.

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