The planning, development and problems of creating an eco garden within the grounds of a public building with a summary of how it's creation can help improve the local environment and tackle climate change on a local scale.

This report will analyse, in depth, the stages of creating an eco garden within a public building. The planning of the eco garden at SRC Bede College is the main focus of the report but the completed eco garden project at Blakeston School will also feature.

It will cover the planning which involves; consultations, suitability of the site, scale plans, features to be included, costs and work involved and more. The report will also include the biodiversity enhancing plants and features that were chosen and the reasons behind their inclusion. Problems that arose ranging from funding are also included and how some of them were minimised or overcome.

In addition to the actual planning of the eco garden the need for the garden is also included as the advantages of having an eco garden within a public building are examined.

The planning, development and problems of an creating an eco garden within the grounds of a public building with a summary of how it's creation can help improve the local environment and tackle climate change on a local scale.

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Section 1: **How does your garden grow?-**The advantages and need for eco gardens

Since the start of the new ‘green movement’ there has been a massive increase in the number of ‘eco gardens’- gardens which provide benefits to both the local environment, by increasing bio-diversity, global environment by offsetting carbon emissions and also benefits to the community involved in the garden- local and organic produce. This increase in eco gardens has been seen within grounds of public buildings such as schools, colleges and also private gardens.

Gardens provide a benefit to local biodiversity; this could be achieved by providing a habitat such as a pond, bog garden, wood piles or by simply putting up bird boxes. The biodiversity of an area is a measure of the different ecosystems, number of species, number of individuals of each species and genetic variation within each species present in an area. A species is a group of organisms capable of interbreeding to produce viable offspring and that have similar morphology, physiology, behavioural characteristics. The biodiversity of habitat can be identified by looking at abundance and distribution. Line transects and quadrats are good sampling techniques. Then species evenness and species richness can be identified by looking at the results. Finally Simpsons diversity index can be used to calculate a biodiversity ’score’ for the habitat so it can be compared to other sites.

In the Blakeston eco garden we succeeded in attracting many species ranging from hedgehogs, frogs, bats and many species of birds. Pictures:Bird and Box boxes (left) Robin in garden (right)

By encouraging people into the garden it gets them outside in the fresh air and active. This along with the benefit of healthy

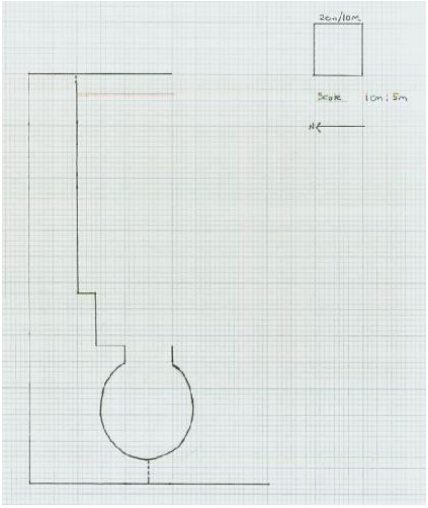
organic food could help to tackle obesity especially amongst children. The produce from eco gardens is organic, with zero food miles and has no excess packaging so the carbon footprint of these vegetables compared to the supermarket equivalent is much less.

Gardens also provide an area that can be used as an outdoor classroom where pupils can learn about the environment. Also these outdoor areas can be used by pupils and staff during break and lunch times. At the Blakeston eco garden we also found that pupils with learning difficulties responded very well to learning and participating in the garden. They enjoyed the hands on work and observing the wildlife.

Section 2: Have I Got Views for You- Ideas, consultations and planning for the Bede Eco garden

After discussion with the student council and staff at Bede about the creation of an eco garden and a few suggestions about features that would be good to include we studied the college plans for a suitable location. We decided a 77m long strip of land between the college building and exterior fence would be appropriate (Appendix 3).It was a site that was partially enclosed behind the main college building but it had easy accessibility with a 1.5m width path running around the college building which lead to the cafeteria patio area. We felt this location was accessible to students and also was accessible to wheelchair users. The location was north facing and would receive sun light most of the day as the strip of land was east-west orientation.

Once we had selected the piece of land I drew a scale drawing of the site. (Below)



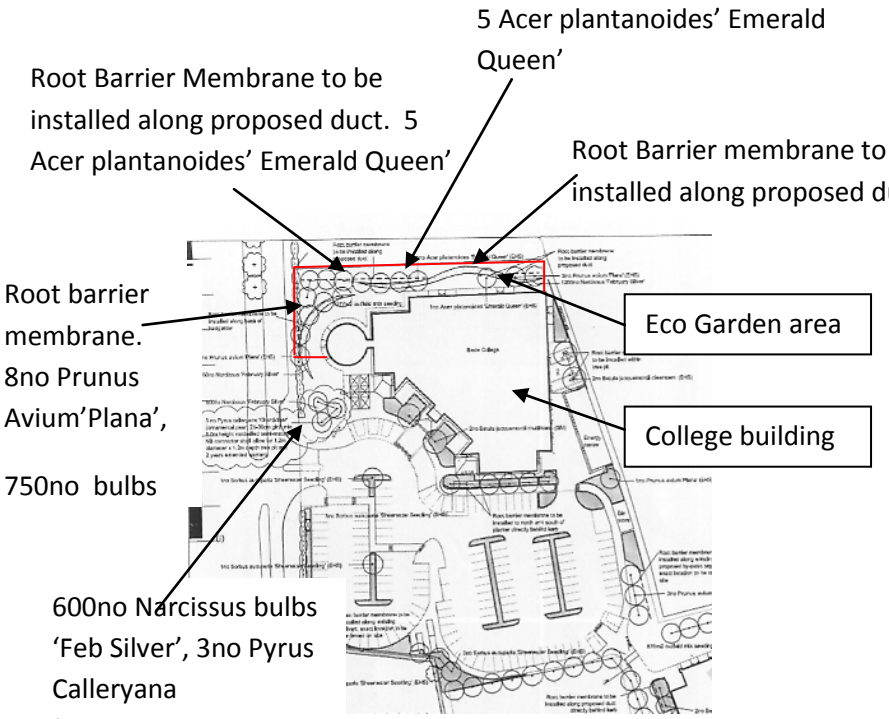
With the college being newly built we learnt that the landscape architects had a pre-planned planting scheme for the entire site. We managed to get hold of these plans to see how we could incorporate what we both had planned for the designated 'eco garden area'. After looking at the plans we saw that the landscapers intended to plant mature trees along the middle of the site and also some narcissus bulbs around the base of some trees. The planning was minimalistic and did little in the way of improving bio-diversity to the site that currently deemed 'devoid of life' by students after a bio-diversity survey was done prior to development.

We had a meeting with the architect team, landscapers and Phil Hastie the vice principal Stockton Riverside College who was overseeing the development. We discussed what we had planned for the site and the general reaction was support for the project. I asked when planting the trees that were on the landscapers plan could they be planted as close as possible to the fence to screen it, as this was originally intended in our eco garden plan to screen the metal fence and provide a hedgerow habitat.

At this time we also registered for the Evening Gazette Wish campaign (Appendix 19)- a scheme in which tokens printed in the paper could be collected by the community and the eco garden project received funds based on the amount of tokens collected.

Photo that appeared in the Evening Gazette of some of the eco team

Landscapers planting scheme:



David Saddington

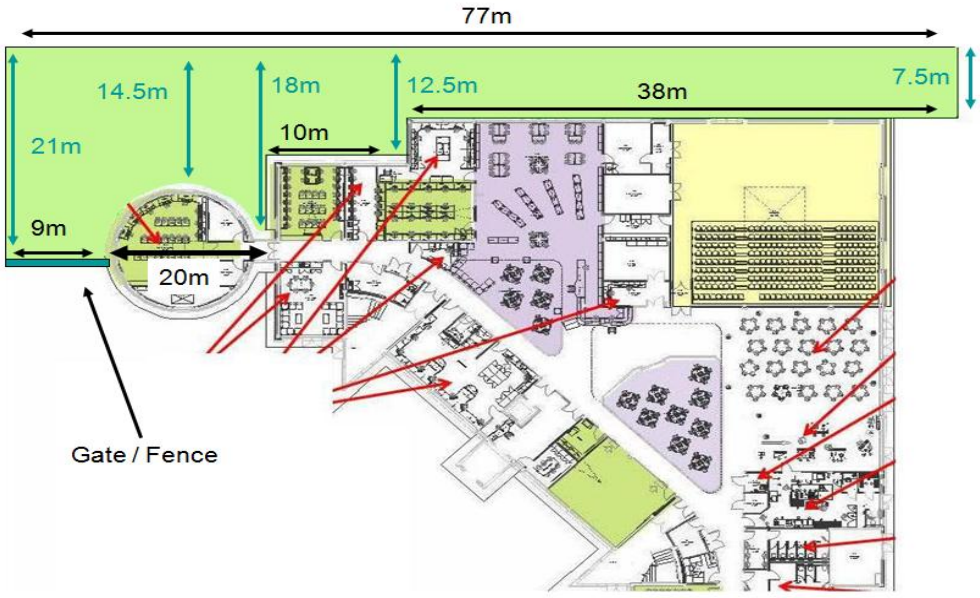
E-mail to Eco Council including plan:

The Ornamental Pears and the 600 narcissus around them will not be in the garden area but it will be way to the 'main entrance gate' into the garden area, so it will look nice. A fence and gate will be put up from the middle of the circle part of the building.

When I met with the architects about the plans they said that the planting is not set in stone but they do have to plant the specified number of plants on this plan somewhere on the college site. We suggested that ideally it would be best for us if the landscapers planted their trees and shrubs along the perimeter running the entire length of the garden to hide the metal fence, encourage biodiversity and screen the garden from the outside field. As we were thinking of doing this anyway it would be great if they could do some of the planting.

When their landscaping is done we can work around it to add what we want to the area.

My scale plan of garden



Plan of features to include from student council discussion, list then presented to governors for approval.

What we would like to include in the garden:

- Seating areas- for students to sit and relax in the garden
- A natural pond- to attract wildlife into to the garden. Max 5x4m, 1m/1.5m depth.
- Wildlife planting- to attract bees, butterflies, birds
- Wildlife habitats, wild flower area, log piles, bird feeders
- Herb Garden- sensory and ornamental feature
- Raised Vegetable Beds- to grow organic vegetables-
- Fruit trees/bushes
- Strawberry patch
- Shed -for tool storage
- Greenhouse- grow a wider variety a veg and propagate seedlings
- Wind Turbine- to provide an exterior power point for grass cutter or greenhouse heating.
- Compost Bins and Water Butts
- A screen along main fence
- A divide across garden to separate different areas- willow screen.
- Tree planting
- Flower beds
- Shrubs

What we would need to have above features in the garden

Tools: Spades, forks, hoes, hand tools- trowels, rakes, shears, secateurs, gloves, wellies, wheelbarrows, (grass cutter, strimmer?)

Shed: tool storage

Greenhouse: shelving, floor cover

Seating: what type, how many, where

Pond: Liner, under-layer, edging, sand, oxygenating plants, marginal plants

Paths: weed control fabric, wood chipping

Plants: Trees, flowers, shrubs, herbs, 'screening' plants for fence, wildflower area.

Raised Veg Beds: Decide what veg to grow, railway sleepers, top soil.

Wind Turbine: Could provide power for garden. Electricity point for lawn mower if needed, heater for greenhouse.

Wildlife features: bird feeders, bird & bat boxes, rock/log piles,

Other: Compost bins/compost pile, water butts,

Between the initial planning and the final plan being presented we raised interest of the project among students, staff, and local community groups, did fund raising events and contacted local businesses for support/donations. This is discussed in more detail in section 5.

These plans after being given the support of the student council were presented to the governors of the college, for approval, in a PowerPoint presentation. The project raised wide-spread support and no objections to the plans, the chair of governors offered to donate a bench and Teesside University donated £250 to the project.

The building instructor and construction students from SRC College volunteered to do the building work involved in the project.

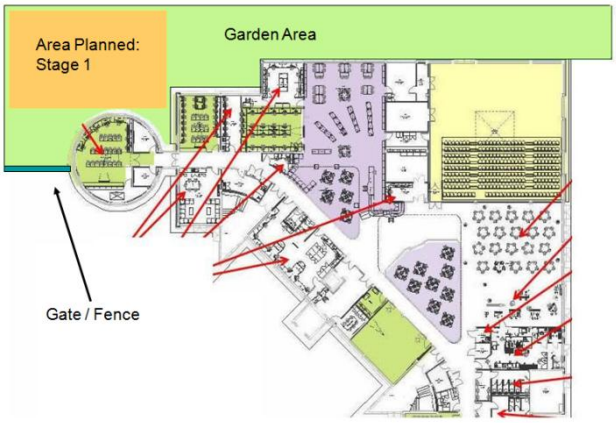
SRC Bede Eco Garden

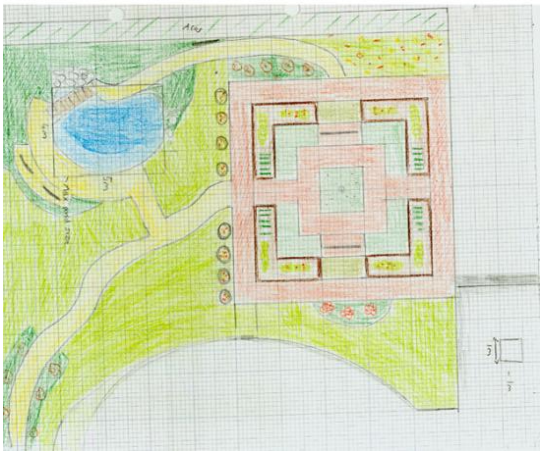
Aims

A project in which students want to create an area to attract wildlife, grow vegetables, trees, reducing food miles, packaging and Bede's carbon footprint, produce an outdoor social space and educate students about environmental issues.

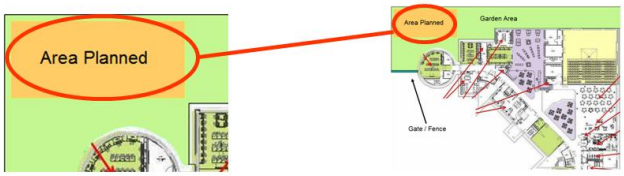
Our Progress

- We have found a site within the college, set out project aims and listed equipment needed.
- We have set up an 'Eco Council' of student representatives and staff, weekly meetings with minutes took.
- We have done a 'Three Peaks Challenge' Climbing Wall fundraiser
- We have done a press release outlining the project which we sent to press- coverage in Evening Gazette, Northern Echo, and TFM. Planning to contact businesses with it to look for donations and sponsorship.
- We have registered with the Evening Gazette 'Wish' token scheme
- I've talked to Kevin from the Billingham Partnership and he has passed me onto Deryck Forrest, landscape designer, horticulturalist, member of organic growing association, allotment holder, an organiser of the Billingham Carnival & Garden Show and president of Billingham Chrysanth & Dahlia Society and a member of various other garden groups. Deryck came to the eco meeting 9/10/09 to discuss plans and look at the site. He was impressed and he is going to help us with the project and he has donated £250 to the project via the Billingham Chrysanth & Dahlia Society.
- Met with Miriam and staff to discuss eco garden plans.
- Met with Phil, Richard and Nancy from architect's team to discuss integrating plans. Trees are going to be planted around the perimeter of the site as close to the fence as possible. Trees to be planted during Oct half term. A fence will be put up to make site secure-along blue line on diagram.
- Talked with Ged to discuss the possibility of involving students at the SRC Riverside site to help with construction. Ged has contacted them, and they would be really happy to help.
- Started looking for businesses that supply equipment we need for the garden e.g.: tools etc.





Plan for Stage 1 of garden area



Plans:
These are the main features that we would like to include in the garden if we had the required funding:
- Seating area
- Raised vegetable beds
- Wildlife planting
- Wildlife features-bird/bat boxes
- Herb garden
- Small natural pond with oxygenating plants max depth, 1m- 5x 4m max size
- Compost bins & water butts
- Tool storage
- Possible 'plastic panel' greenhouse/polytunnel
- Possible wind turbine- Stockton Council

At the moment we don't not know the location of these features due to the landscapers plan and the cables under the site.

Prunus Avium 'Plena'- Wild Cherry

Makes a fantastic show in May when it's in full bloom. There's another good show in the autumn when the dark green leaves colour up before falling. It has been given the Award of Garden Merit by the RHS.

Raised Bed – Single Brick

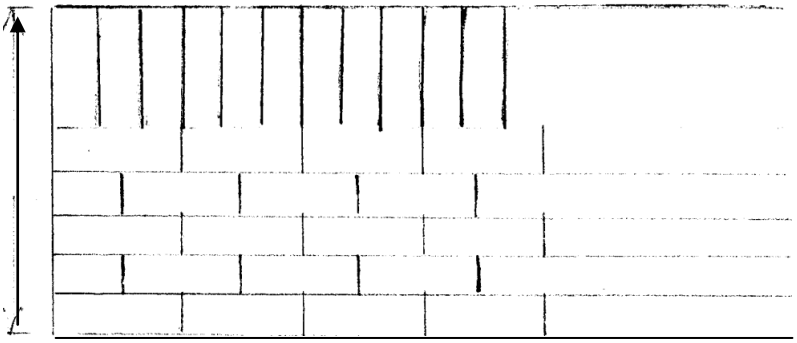
5 courses with soldier course to finish

9 bricks to 2 metres

Total length of wall 13 metres

57 bricks per course x 5 = 285
Soldier course 171
Total 456 per raised bed

456 x 4 (raised beds) = 1824 (Total bricks Required).



Aprox height 24 " or 60cm

We decided to use raised beds for the planting of vegetables as they were practical and also they were at the ideal height for wheelchair users to access.

ECO MEETING minutes

09/10/2009

PRESENT

David Saddington

Sarah Hall

Deryck Forrest

Grace Littler

Matthew Stainthorpe

Matthew Caygill

During the first part of the meeting, Deryck introduced himself and told us about his background and some of the projects that he is involved in such as the Billingham Environmental Link Project and The Billingham Carnival and Garden Show.

David then explained the plans for the garden, which included:

- A pond
- Vegetable patches
- A seating area
- Encouragement of wildlife

David also gave Deryck some copies of plans and documents, and planned to photocopy the others he did not have copies of.

Topics that were brought up in the meeting included funding where people suggested different ideas such as donations, college fundraisers, staff sponsorships and sponsorships from companies such as Peter Barrats and B&Q.

Deryck suggested that we look further into opening a bank account for funds and that we consider making ourselves an official name, logo and constitution.

David said that there are no outside taps near the garden area and this could cause problems to which Deryck said that we should look into rainwater collection instead.

Deryck also suggested some websites and companies for us to look into:

- The foundation for social entrepreneurs
- www.unltd.org.uk
- The soil association
- The perma culture association
- Garden organics
- The wildlife trust
- Food for life partnership

It was also suggested that recycled railway sleeper could be used for flower and vegetable beds, Sarah thought that she might be able to get some from her Father, who works for network rail, but found out that their railway sleepers are treated with carnogenical creosote which is of course unsuitable.

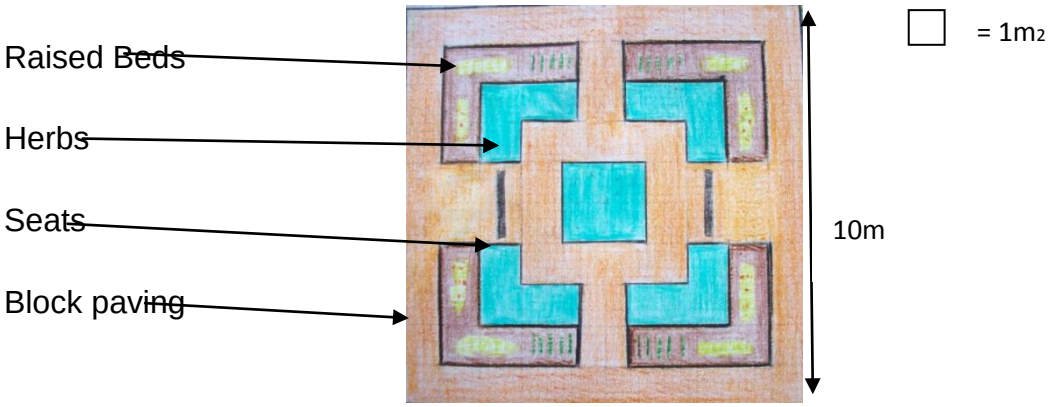
Section 3: Blooming marvellous-Explaining the biodiversity enhancing features and horticultural plans

The main focus of the planting for the eco garden was to increase bio-diversity so plants that attracted wildlife were a key feature in the horticultural plans. However we wanted different planting schemes for different areas of the garden but still fulfilling the biodiversity need.

In the main seating area a quadrangle design with four corner 'L' shape raised beds which we decided to be constructed from brick.These raised beds were to plant vegetables in which could be used by the college and the community. The four beds were to be split into legumes, salad crops, root vegetables and a raised bed for strawberries. Three of the beds were to be rotated every year so a different crop was planted in the successive year; this was because the legumes replenish the soil with nitrates as they have nitrogen fixing bacteria in their root nodules. This fertilises the soil and helps the plants produce a larger yield. *Swift J, (2009) Joe's Allotment, London, BBC Books, pages 9-74 and 191-221*

The dark green area on the plan in the centre and around the base of the brick raise beds were designated the area for the herbs such as lavender, sage, rosemary, thyme and chives. By keeping the design in a formal style in keeping with the formal brick surroundings we decided have one type of plant per area. The rest of the garden was going to be full of informal borders with multiple plants and colours per bed but we wanted to make this are different and decided on this style. Some of the herbs we intended to plant were Mediterranean herbs and would look at home in the brick patio surroundings. Chives and lavender two purple flowing plants were ideal for attracting bees into the garden. These plants situated next to the vegetable crops were a form of companion planting as attracting bees to the area would help pollinate the food crop. Planting marigolds net to brassica's is also companion planting as marigolds attract the birds which eat the caterpillar that usually eat the crop.

Plan of raised bed area:



By looking at the gardeners colour wheel and deciding the 'mood' we wanted to create in a particular part of the garden we could then choose the plants. In the formal raised bed area we wanted to keep the planting formal and simple with only one or two colours per area. By choosing adjacent colours and the wheel you can create a harmonious effect. Chives (Allium schoenoprasum) are a violet colour and we decided to choose English lavender (Lavandula angustifolia) to plant in the adjacent bed as this was a darker colour, blue-violet, as French lavender was generally slightly lighter in colour. Common sage (Salvia officinalis) has a light green/silver tinge to the leaves but also certain varieties also flower violet. Wild thyme (Thymus polytrichus) also has a pink/purplish coloured flower and rosemary (Rosmarinus officinalis) flowers are quite a deep blue/ purple. So all of the plants in this area were chosen because of flower colour which would make a strong purple display in summer. *Wong J, (2009) Grow your own drugs, London, BBC Books, pages 154-219*

Clockwise from Right-left: Rosemary, English lavender, sage, wild thyme and chives- centre.

At the Blakeston eco garden which I had developed before I started the Bede eco garden we had a similar arrangement for the herb wheel. A less informal area made of willow with a willow centre piece. Each quarter of the circle had a different type of herb, within each of these quarters several different varieties of the herb were planted. The four sections were marjoram, basil, thyme and sage. An example of the different varieties include: golden thyme(Thymus pulegioides), silver thyme(Thymus Argenteus) , common thyme(Thymus vulgaris), lemon thyme (Thymus citriodorus) and orange thyme (Thymus citriodorus fragrantissimus). There were hundreds of

varieties to choose from but these five we chose included types with interesting foliage, smell and shape-some were creeping and some formed mounds. We also planted a common mint plant (Mentha spicata) in each quarter but we planted it in the pot as it is very evasive and can spread out of control.
There were four lavender planted at the centre of each section encircling the willow cone and also around the edge of the entire circle were chives.

Pictures of herb wheel from Blakeston Eco Garden

For the remainder of the garden we wanted a colourful, informal cottage garden style that would bring all year round interest, provide vivid colour and attract wildlife into the garden. We wanted an interesting display of plants of different heights providing lots of colour. These are some of the taller plants that we decided to introduce into garden (Appendix 12):

Buddleia- the butterfly bush, as the name suggests a brilliant plant for attracting butterflies. This is a tall plant that was going too placed along the back of the border near the fence.

Echinacea purpurea- Cone Flower, can grow to 1.2m and also another plant great to attract butterflies. To be planted at the back of the borders to add height.

Rudbeckia, coneflower- very closely related to Echinacea another tall brightly flowing plant ideal for attracting butterflies and insects.

Hebe- A medium sized shrub which has attractive foliage all year round and flowers in a range of colours from white to deep purple. Another favourite with butterflies and bees.

McHoy P, (2004) The Complete Garden Planning Book, London, Lorenz Books

We planned to leave parts of the garden 'wild' and natural as left to its own devices many plants that attract insects grow naturally. Thistles, clover-trifolium, oxy daisy, cornflower, buttercups and also many seeds that have naturally been fetched to the site can grow. Even large plants like digitalis purpurea-foxglove can grow naturally. Sweet Williams a plant that is very easily grown from seed is brilliant for attracting wildlife and they flower in a variety of bright colours (Appendix 13). *Titchmarsh A, (2003) How to be a gardener- secrets of success book 2, London, BBC Books*

Picture: sweet Williams at Blakeston Eco Garden

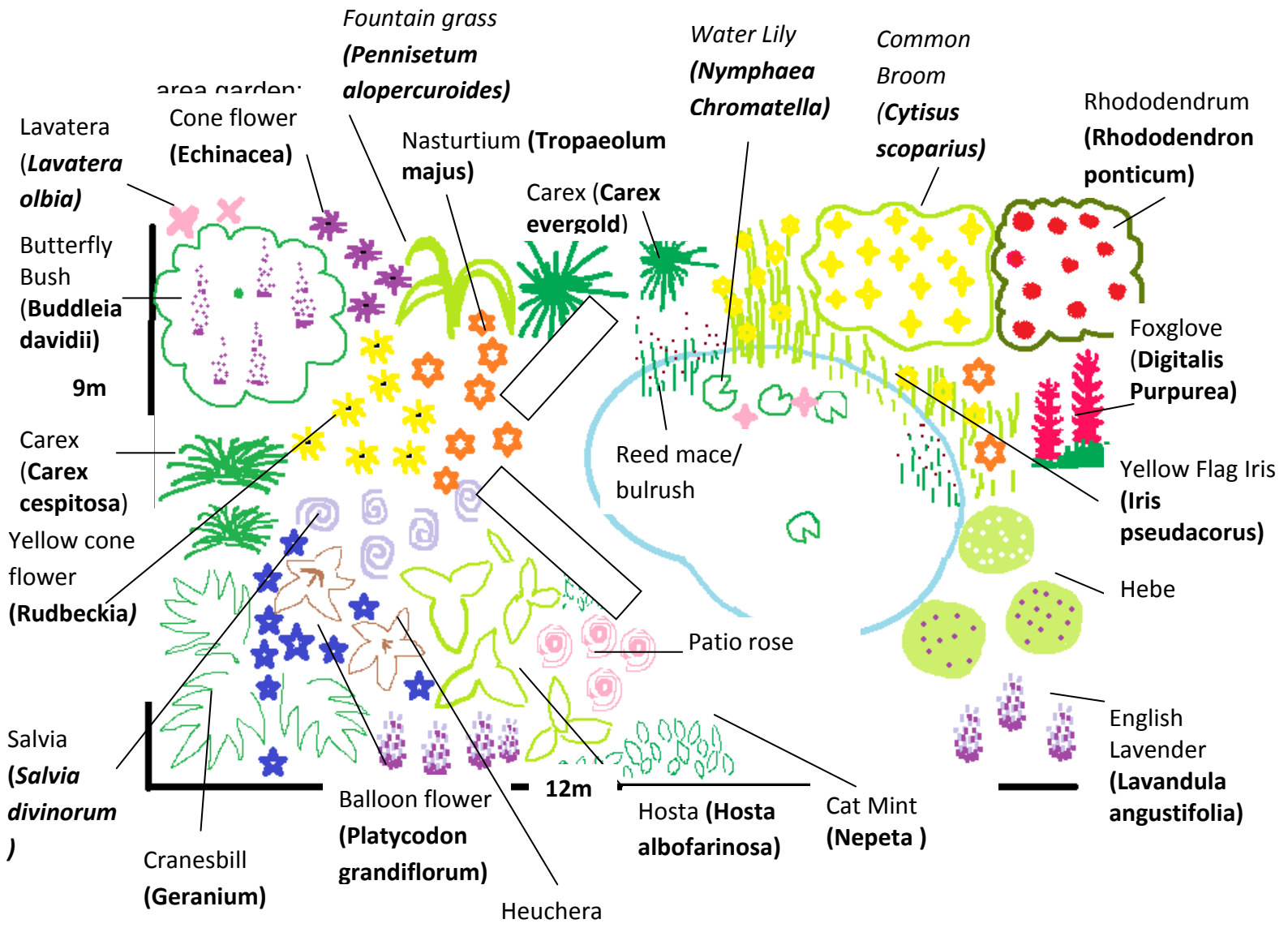
We aimed to keep the maintenance of the garden to a minimum and planned to plant low maintenance plants so we decided to use many bulbs as we did in Blakeston eco garden. By planting large groups of daffodils, tulips and muscari-grape hyacinth you can create bright and bold displays of colour that flower at the start of the spring and the start of the gardening year (Appendix 13).

A pond area was planned and we had to think of the best plants to stock the pond with to attract the most wildlife. Yellow flag irises, bog primulas, hostas, were used as marginal plants at the Blakeston eco garden as were water lilies. Also

oxygenating plants were used to keep the pond from going stagnant. Once the pond was left for a few months and the plants started to grow it looked very natural and frogs were found in the newly created habitat.

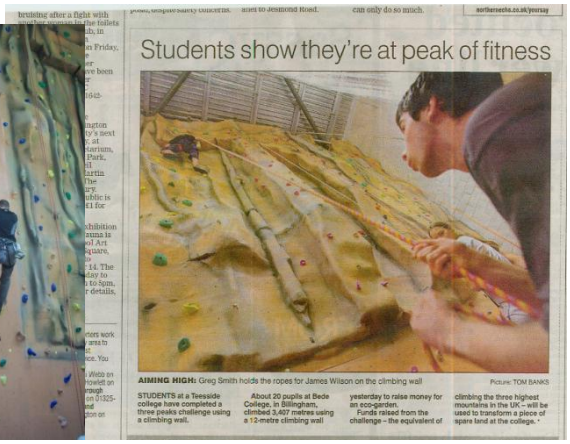
Pictures of the bog garden and pond at Blakeston eco garden, left picture was taken the day it was developed and planted and right is 6 months after.

This is the planting plan for the pond of the Bede eco:



Funding

To raise money for the eco garden project we did a fundraiser that was suggested by a teacher, we were to climb the equivalent height of the three peaks challenge – Ben Nevis 1344m, Snowdon 1085m and Scafell Pike 978m, a total of 3407m on the college climbing wall(Appendix 17). It was a sponsored event and we managed to raise over £200 from this event. It also was publicised in local newspapers (Appendix 18).



Students show they're at peak of fitness

AIMING HIGH: Greg Smith holds the ropes for James Wilson on the climbing wall

From the meeting and presentation to the governors we received a £250 donation from Teesside University towards the eco garden and we also received a further £250 donation from Deryck Forrest at the Billingham Dahlia and Chrysanthemum society. Deryck also offered to help us with the development of the project and attended several planning meetings. Staff at the college offered donations of benches, tools, plants and a pond liner.

We also received an offer for a donation from an American singer and songwriter- Taja Sevelle who runs a project called Urban Farming in the USA (Appendix 22). I had met her when I represented the UK and a We are Family peace conference in New York and when she heard of this new project I was involved in she offered help.

Vandalism

From looking at data from Cleveland police and the office of national statistics I can see there were 13746 cases of criminal damage Cleveland area in 2009. And in 2007 Cleveland was the 7th highest area in the country for ASBO's being issued.

To minimise the risk of criminal damage of theft from the eco garden at Bede College, Billingham, this is covered in the Cleveland area, we asked if the college would install a gate to make the site enclosed and secure. The other sides of the garden are enclosed by fences and there are also security cameras which monitor the college site. This was approved and the garden was made secure.

END