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Project Proposal form

Learner Name _____ Learner number _____

Centre Name _____ Centre Number _____

Teacher Assessor _____ Date 27/11/08

Unit 2

Proposed project title Sustainable Community

Section One: Title, objective, responsibilities

Title or working title of project (in the form of a question)
What makes a sustainable community and what makes it work?

Project objectives (e.g., what is the question you want to answer? What do you want to learn how to do? What do you want to find out?):
What things do you need to make a community sustainable and why do they work and what do they need to work.

If it is a group project, what will your responsibilities be?

Section Two: Reasons for choosing this project

Reasons for choosing the project (eg, links to other subjects you are studying, personal interest, future plans, knowledge/skills you want to improve, why the topic is important):
It has links to other subject and allows me to find more out about this subject.

Section Three: Activities and timescales	
Activities to be carried out during the project (e.g., research, analysis, writing, preparing for the presentation, etc): Research Analysis Writing Preparation	How long this will take: 3 - 4 weeks 2 - 2½ weeks 2 weeks 1½ - 2 weeks

Milestone one:
Get the Objectives complete and written up.

Target date (set by tutor-assessor): Dec 2008

Milestone two:
Complete analysis and get presentation ready.

Target date (set by tutor-assessor): April 2009.

Section Four: Resources

What resources will you need for your research, write up and presentation (eg, libraries, books, journals, equipment):

Libraries
Computers
Books
Journals
Internet
Newspapers
Magazines
Teachers/ Lectures
Local People

What your areas of research will cover?

Comments and agreement from tutor-assessor

Is the learner taking this project as part of the Diploma? Yes/No

If yes, which Diploma are they taking? Construction and the Built Environment.

Comments (optional):

Would like to move into this area following work Experience.

Is project derived from work which has been/will be submitted for another qualification? Yes/No

Which qualification (title and unit)? _____

Comments (optional):

I confirm that the project is not work which has been or will be submitted for another qualification and is appropriate.

Agreed: (name) (date) 27/11/09

Comments and agreement from project proposal checker

Comments (optional):

I confirm that the project is appropriate.

Agreed: (name) (date) 27/4/09.

Project Activity Log

Learner Name _____ Learner number _____

Centre Name _____ Centre Number _____

Unit Name Investigation Unit number 2

Teacher Assessor _____

Proposed project title Sustainable Communities

This form should be used to record the process of your project and be submitted as evidence with the final piece of work.
You may want to discuss:

- what you have done (e.g. from one week to the next)
- if you are working in a group, what discussions you have had
- any changes that you have or will need to make to your plans
- what resources you have found or hope to find
- what problems you are encountering and how you are solving them
- what you are going to do next

Date	Comments
26/11/08	By Wednesday 3rd of December proposal forms to be completed and handed in.
03/12/08	Trip to Gravesend Grammar (unable to hand in Proposal From). Hand in date 10th December.
10/12/08	Proposal form handed in. Introduction to be written by 12th January.
07/01/09	Introduction to be finished, by Wednesday 14th January, start to research into sustainable communities. And collect information for the 1st paragraph.
11/02/09	Draft introduction finished and handed in. research into sustainable communities.

04/03/09	Start main section of project, collect information and pictures of ideal sustainable communities, compare and review there sustainability factor. Went to Eco-Build to seek further information.
11/03/09	Started main part of Extended project, able to gather more information on good examples of sustainable construction. Visit to Woking to look at sustainability.
18/03/09	Finished first, example of Good sustainable communities, and started a new paragraph on a second example of good sustainable construction.
25/03/09	Peer assessment, James has given peer feedback on the Extended project.
14/03/09	Collection of all my data and progression of my project.
22/04/09	Completion of project, to be handed in for marking and to be given feedback.
29/04/09	Project to be handed in completed with amendments. Presentation to also be complete.

Extended Project

Sustainable Communities

What makes a Sustainable community and what makes it work?

Contents

What makes a Sustainable community and what makes it work?

A sustainable community is '*a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*' Sustainable communities are becoming more common not only across the United Kingdom but across the world. These communities provide affordable homes to cater for human needs but the main objective of these communities is to provide environmentally friendly living, this is to cut down on carbon emission being released into the ozone. These environmental communities have been designed combat environmental concerns.

As a planet we are not even meeting the need of the present time, let alone the future. That is why we need to question the way we live, this is why we have to move to sustainable communities to not only benefit us, but to benefit the planet as a whole as well. Our homes account for 27% of the carbon emissions from the UK. This shows that we need to cut down on our carbon emissions, the way we are moving towards this is by

creating sustainable communities, this will allow us to cut down on our carbon emissions and allow people in live in a carbon free country. 'We need to make communities in which people want to live which:

- Are economically prosperous.
- Have decent homes at a price people can afford.
- Safeguard the countryside.
- Enjoy a well-designed, accessible and pleasant living and working environment.
- Are effectively and fairly governed with a strong sense of community.'

The above is what the government states the new sustainable communities must provide for people to live in. This is stated in the governments 'Sustainable Communities in the South East, Building for the future'. The United kingdoms aims and targets are to achieve 5% of the UK energy supply form renewable's in 2003 and 10% by 2010, Scotland's current target is 18% by 2010. The government have released new legalisation that must be followed by contractors when building new properties to try and bring the idea of sustainable living into all our lives

A consumer guide to healthy living looks at seven sections. The first section looks at 'ground', which includes whether there may be gases, pesticides or other harmful air-borne substances in the area, either occurring naturally, or through

agricultural or Industrial work. Some neighbourhoods in a particular town or City may be more affected by air-borne substances, and it is important that a prospective house purchaser or renter is aware of this. Also, if people in the area don't already know of this issue, it is important that they do.

The second section covers 'air', which examines both the outdoor air quality; looking at possible air pollution from transportation, incineration, or Industry, and indoor air quality. This could include potential pollution from a building's structure and any materials used in its construction, or EMR, or electro-magnetic radiation. Other issues may include cellular radiation, asbestos, and the potential in the neighbourhood for noise pollution, which is a rising problem across the UK.

The third section looks at 'water', and any issues arising from that: these might include the potential for water recycling, rainwater collection, and the quality of water in the area.

The fourth section, 'neighbourhood access and movement', covers a lot of issues, and is of importance when considering the desirability of a neighbourhood for residential purpose. Potential householders should consider the following issues: walk ability, availability of neighbourhood shops, public transportation, schools, community and entertainment or cultural centres, proximity to centres of work, bike and walking

trails, disability access issues, and nearby sporting and other recreational facilities.

Other sections in a guide could include a detailed look at 'parks and green spaces', 'waste management issues and recycling initiatives', and 'personal/neighbourhood carbon footprint issues'. This last section would look at insulation and energy efficiency, and any use of solar panels in the neighbourhood, or the potential for the installation of solar panels, and possibly wind turbines, to generate electricity.

The government are setting new standards that new construction projects must follow, these is stated in the code for sustainable homes. The code uses a star rating system to rate the overall sustainability of a home, the home can achieve a rating of anywhere between one star to a six star. These ratings are going to be used on every home from now on, the government are also talking about proving this information in the

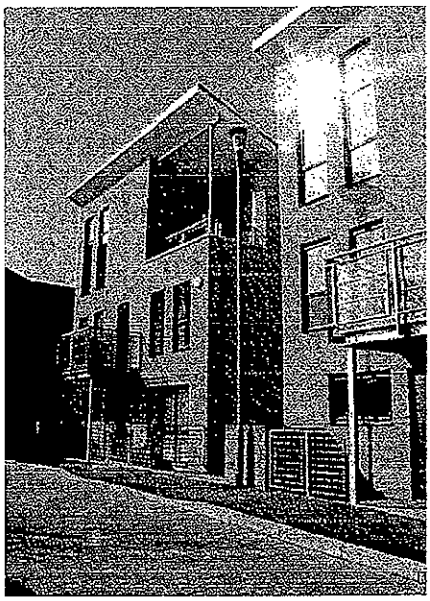
Minimum Standard					
	Energy		Water		
Code Level	Standard	Points Awarded	Standard (litres per day)	Points Awarded	Other Points Required
1 (★)	10	1.2	120	1.5	33.3
2 (★★)	18	3.5	120	1.5	43
3 (★★★)	25	5.8	105	4.5	46.7
4 (★★★★)	44	9.4	105	4.5	54.1
5 (★★★★★)	100	16.4	80	7.5	60.1
6 (★★★★★★)	Zero Carbon	17.6	80	7.5	64.9

home packs. The table above shows the minimum standards that have been set for each star rating.

The table shows the minimum standards that have been set in the code. This document sets the minimum standards for a sustainable community to be built on. This could also be used as an outline for the building of sustainable homes; the whole idea of a sustainable community is not only to benefit the community but to benefit the people working in that community and the people that are going to be living there afterwards. This will not only allow the people living there to have a better lifestyle, but this will hopefully will also create a better atmosphere to live in for these people. Due to this sudden need of sustainable home, for my project I will be questioning what a sustainable community is, what it consists of and why all these factors make it work, I will have examples of different sustainable communities. Some of the sustainable communities around this area of Kent include, Ingress Park, Waterstone Park and Springhead Park. I will be visiting these areas as part of my project to get an insight into what a different level of sustainable homes consist of and to see if they do what they are designed to do, e.g. lower energy bill, conserve water and allow for a better style of living for the homeowner. I will also try to talk to some of the people who live in these areas to try

and understand if life in these homes is any different, I would also like to find out if the homeowners moved into the homes due to the fact they are sustainable or just because they liked the area.

The first example of a good sustainable community in our local area is Waterstone Park. Waterstone Park achieved a level 5 in the code for sustainable homes, this means that Waterstone Park is a very sustainable community. This is achieved by:



- 30% affordable homes
- Paths and cycles lanes through 7 acres of park and woodland.

These are just a few of the things that have been put into place at Waterstone park to allow for the idea of a sustainable community, Waterstone Park also allows for easy access to Bluewater shopping centre and to Greenhithe and Dartford, this allows for use of public transport such as the fastrack buses and trains. The area was described as 'very brave and bold, a really interesting out-of-town development' by the Building for life judges.

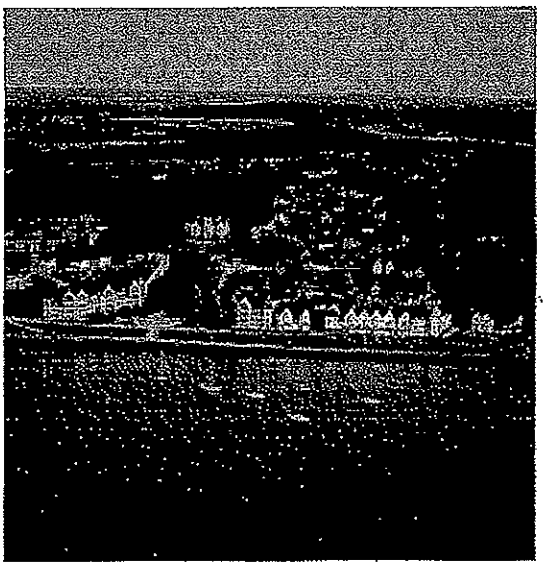
Waterstone Park is built on a former brownfield site, the ideas for the designs of Waterstone Park were generated around the Grade two listed Castle. There are plans to create a village type community within Waterstone Park, with plans to provide small shops and cafés to provide for the local community.

Ingress park is another example of a Sustainable community, although it scored higher overall on the code for sustainable homes than Waterstone park, my views are that Waterstone Park would make a better area to live, as you can see from the picture on the left, Ingress park is very eye catching. However, more could be done throughout Ingress park to create a sustainable community, the homes are made to look uniform, residents of Ingress park have been told they are not allowed to place satellite dishes on the outside of there houses, this is to keep the uniform look. Ingress Park has won a series of awards from the day

work started, these include:

- What House? Silver award for Best Brownfield Development.
- Mail on Sunday commendation for Best Brownfield Development
- Evening Standard's Best New Development.
- CABE Gold Building for Life Standard in 2005
- Mail On Sunday award for Best Landscaped Development.

Ingress Park has won forty-seven awards since 2002, for design, architecture and sustainability. Sustainability was a priority for Ingress Park, any materials that were recyclable were to be incorporated into the new development. For example, any old timbers that's could be

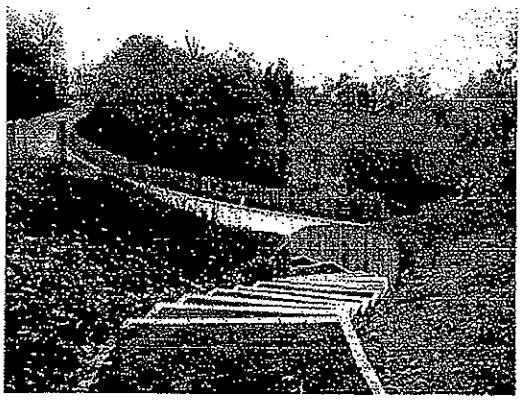


recycled were to be used for the street furniture around the new homes. Another feature of Ingress Park is the landscaping, trees were planted all over the area, to give back to the community and to create a nicer area to live in. Another feature at Ingress park is the idea of less

parking spaces, they have only allocated one parking space to each home, this means that there is more of an urge to use public transport, Ingress park have released plans to run Fastrack buses through the Development, this will therefore make it easier for residents to use public transport. There are plans to build a new school in the area as well, this is an instinctive to bring more families into the community, at the moment Ingress Park is not very child friendly, apart from some small open areas, and there is nothing for children. The project was included:

- The restoration of the grade II Abbey.
- Relocation of all the trees in the area.
- A riverside walk to Greenhithe village.

The idea of the riverside walks and the footpaths around the area is to promote less use of cars, this will allow for the residents to use the paths to visit other areas within Ingress parks, or other area within walking distance such as Dartford or Greenhithe. One way that Ingress park rates as a sustainable community is the glass conservatories and glass structures on the back of the



buildings, this will cut down on heating and cooling bills, the heat will build up in this area and allow for the storage of warm air, that can be let into the home when it is needed, where in the winter, it will allow for people to keep the cold out by using it as a barrier to separate the hot and cold air.

Sustainable Communities Plan

The Deputy Prime Minister launched the Sustainable Communities Plan (Sustainable Communities: Building for the future) on 5 February 2003. The Plan sets out a long-term programme for delivering sustainable communities in both urban and rural areas. It aims to tackle housing supply issues in the South East, low demand in other parts of the country, and the quality of our public spaces.

The Plan includes not just a significant increase in resources and major reforms of housing and planning, but a new approach to how we build and what we build.

The programme of action aims to focus the attention and co-ordinate the efforts of all levels of Government and stakeholders in bringing about development that meets the economic, social and environmental needs of future generations as well as succeeding now.

Sustainable Materials

'What Makes Materials Sustainable?'

A sustainable Material is an object that will allow for minimal use of energy, during its transportation, and instillation, and thereafter. The sustainable materials should also be able to give something back to the community; some materials are able to do this whereas others are not. Most of these materials can also be recycled once they have been taken down.

Refuse-based fuels

This option too seems a tremendous possibility - burning our rubbish and using its by-product. Again, this is also in its infancy. It is known to have a low sulphur dioxide emission, but the by-product created, known as Fly ash, can contain metals such as cadmium and lead.

Another example of Sustainable materials, is locally sourced materials, this will allow for a cut down on pollution, due to the fact that there will not need to be so much transportation involved, as they will be locally sourced, the closer the materials are sourced from the less energy is used during

transportation, and less pollution is caused during transportation.

There are four main questions asked when choosing a sustainable material, these are:

1. What is the resource base? - Where is it from and how much is left?
2. What is the embodied pollution? - What has been done to it and by whom? - There is often an ethical component.
3. What is its impact in use? - What effects does it have on people and the wider environment?
4. What is its final destination? What will happen to it at the end of its life?

<u>The regulations/policies that are increasing their use:</u>

Due to the recent rise in use of fossil fuels and non-renewable fuel sources, actions have been taken into account to put regulations and policies into place to promote the use of these new sustainable materials.

There is a concept of responsibility to suppliers, this is where such things as low impact manufacturing takes place to produce low embodied energy components (carbon neutral) or where they have systems like carbon offsetting in place to ensure they achieve government CO2 targets and who use local

materials from sustainable sources to manufacture their product.

- Select materials in the form that is closest to their natural state. This avoids impacts associated with energy intensive manufacturing processes.
- Select local materials to avoid the environmental impact of transport.
- Choose products with a higher level of recycled materials used in their production.
- Use long-lasting materials as they may not need to be replaced as much.
- Use materials whose sourcing does not result in destruction of habitats
- Try to reuse existing building components and salvaged materials.
- Try to use construction types that require fewer materials such as lightweight systems and smaller foundations although consideration should be given to their inputs on other issues such as energy.

'Green' timber involves constructing part of the building with timber that has only recently been felled and machined. The use of 'Green' timber cuts out the need for kiln drying and saves energy, 'visually it is likely to result in an organic look'.

What are the advantages and disadvantages of using sustainable materials?

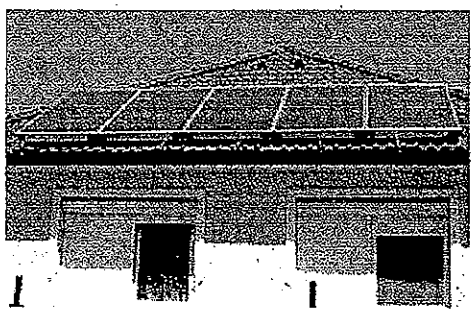
There are many advantages and disadvantages of using Sustainable materials, the advantages are:

- The usage of locally sourced Materials allows for the cut down of CO_2 emissions and other pollution.
- It will allow for use of locally sourced materials.
- It will allow for the use of renewable sources to be used in the construction.
- It will allow for cut downs on the amount of waste that is produced annually.

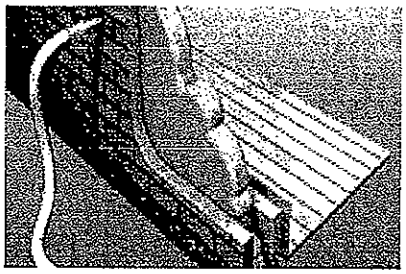
The disadvantages are:

- Sometimes it can be more expensive to create these sustainable communities, this will therefore mean there is less chance that people will be able to afford these ways of living and construction.
- Another disadvantage is the fact that people are not accustomed to this type of building and many people are not willing to try this new method.

Sustainable factors



There are many objects that can be used in the construction in the new sustainable communities, if these are used in the construction of new homes then it will allow for more sustainable communities, solar panels can be used in the construction of new buildings, There are two main forms of solar cells in existence today, and these are; "solar electricity panels" and "solar hot water panels". The solar electricity panels convert the sunlight into electricity, this will allow for the cut down on the amount of electricity being used from the grid. There is also a chance that if during the summer months more electricity is produced than is used you can sell some of the unused electricity back to the grid. Photovoltaic cells can be aligned as an array, as shown in the image to the top of this page. There are many advantages of using a solar cell array, with various panels fitted along a mounting system. One of the main advantages is that we are able to combine various numbers of cells to provide a greater output of electricity, and this method makes solar electricity a viable option to power small homes and businesses.



The solar hot water panels are used to heat the homes water, this will therefore cut down on the heating bills for the home. The use of solar panels to heat water is becoming increasingly popular around the world due to the energy and money saving associated with this method. A good solar hot water panel with give a home almost 1/3 of its water for a year, a combination of both solar hot water panels and solar electricity panels will allow for a large saving on bills throughout the year. Wind turbines can be used to create a renewable energy source for your home or business. Depending on your location, you can implement an efficient renewable energy system using a combination of both wind power, and solar power. Solar panels can be much more effective than a regular home wind turbine, yet both devices offer an easy method of generating renewable electricity in a wide variety of locations. Cavity wall insulation is another way of saving money in your home, it will allow for heat to be kept inside the home, Cavity wall insulation is so cost effective that it will pay for itself over and over again.

Measure	Annual Saving (£)	Installed cost (£)	Installed Payback	CO_2 saving per year
Cavity wall	App. £160 per year	App. £250	Around 2 Years	Around 800kg

The better insulated your home, the less energy you need to keep it warm - and the more money you'll save. In fact, by insulating your cavity walls you could cut your heating costs by up to 15%. By saving energy, your household will produce less CO_2. So, insulating your cavity walls is a great way to help fight climate change. Most heat in the home is lost through the roof, or through windows, most homes are laying double thickness insulation in there lofts or roof space. It saves a lot of heat loss from the home, and will also cut down on energy bills.

Government scientists have also proven that wind power could generate almost enough power to half of the UK.

Some homes could also be powered off hydro power, it will mean a lot of energy will be made from the stream, it will also allow for a cut on bills, and will allow for a source of renewable energy.

Water conservation

Water conservation in homes is quite easy to control, this can be done by using certain types of taps and switches, these taps can be used at 50% of there normal working power, this will allow for less water to be used, also there are duel flush buttons on toilets, this are used for different things, if only a slight amount of water is needed to flush the toilet then the

smaller button should be used, where if a larger amount is needed then the bigger button is to be used. Also another way of reusing water it to collect rainwater, this will allow for people to use the rainwater and clean it, although this water will not be clean enough to drink it will be clean enough to flush toilets, wash cars and water plants. This will therefore work out cost effective as you will be regenerating your own water.

Transport

Transport plays a big part in global warming, this is therefore a big problem that needs to be controlled. This can be done by providing better and cheaper public transport, this will therefore cut down on the CO_2 being released into the atmosphere. Also with the idea of a sustainable community in mind, reducing the amount of parking spaces involved in the build will allow for less cars to be used in that area, this will therefore mean less cars on the road, and will encourage more people to use public transport such as trains, buses, etc.

Lighting

Energy efficient lights are in high demand at the moment, this is a good sign, this is because the are not only cheap to buy but they are also cheap to run, they also show signs that they are working by reducing the energy consumption and lowering the bill from the start. Natural light is best to use if it is possible, many people are installing skylights and other things to let natural light flow through the home so that they do not have to keep turning lights on and off. Lighting accounts for around 15% of the energy bill in most homes, and around 25% in commercial buildings. It is supplied by electrical power plants using fossil fuels, and is responsible for a significant percentage of carbon dioxide emissions, a leading cause of global climate change. Because of this, the building industry has targeted lighting as a key element in sustainable design, and there is now a global movement to develop and implement lighting solutions that meet people's needs and concerns, and address environmental regulations.

Day lighting Design

The most sustainable lighting is natural daylight. It is not only a free renewable resource but it also has well-documented health benefits. Careful architectural design is required to maximise natural light in a building while maintaining indoor temperature regulation and reducing direct light glare. The

strategic placement of windows, skylights, light shafts, atriums and translucent panels in harmony with other building components, such that light is reflected evenly throughout internal spaces, is known as day lighting design.

Sunlight Transportation Systems

An emerging new technology is that of sunlight transportation. Natural sunlight is collected on roof panels and transported into a building via fibre optic cables for distances up to 15 metres. These sunlight-piping systems can be used in combination with solar panels to integrate natural and artificial light systems, so that there is always light in the home.

Energy Efficient Light Bulbs

The sustainable building industry is primarily focused on energy efficient lighting solutions. Standard light bulbs, known as incandescent bulbs, are known to be highly inefficient. Electricity is passed through a metal (tungsten) filament that heats to over 2000° Celsius and glows to give off light. Only 10% of the electrical energy is converted to light; 90% is wasted as heat. Halogen bulbs are similar but instead have a small pocket of halogen gas that reacts with tungsten to produce light. They burn brighter, use less electricity and last twice as long as a standard bulb, but are still inefficient compared with other forms of bulbs.

Energy efficient light bulbs use significantly less energy than incandescent bulbs, and also last longer. There are two main kinds: Compact Fluorescent Lights and Light Emitting Diodes.

Compact Fluorescent Lights (CFL)

These are small versions of full fluorescent lights, and consist of a glass tube coated with phosphor, filled with gas and a small amount of mercury. Electricity jumps off electrodes on the end of each tube, and excites the mercury molecules to emit ultraviolet light. This excites the phosphor coating, which emits visible light that shines out of the tube. CFLs give off the same amount of light as incandescent bulbs, but they are up to 80% cooler, are 4 times more energy efficient (to replace a 60-watt incandescent, you only need a 15-watt CFL), last 10 times longer (up to 20,000 hours), and are responsible for the emission of 70% less carbon dioxide.

Ventilation

If natural ventilation can be used then that is the best that thing that can be done, the best kind of mechanical ventilation

is one fitted with heat recovery, this will therefore allow for the ventilation to be cheaper to run that most other types of mechanical ventilation. The other types of ventilations are:

- Passive cooling strategies
- Mechanical cooling strategies
- Absorption cooling
- Evaporative cooling
- Night cooling
- Ground cooling
- Culvert systems
- Desiccant cooling

Eden Project

The Eden project is constructed of plastic sheets referred to as biomes, the Eden project is mainly self heating each of the biomes is largely self-heating, according to the designation set for it: either warm, temperate or humid. They are fantastic environments to visit, both in the scale and the environments that they have been designed to contain. Knowing that the design of them came from a living creature only adds to the sense of wonder and enjoyment at being inside one of the structures. Tim Smit and the team who run the Eden Project have designed the horticultural life of each biome, as well as how humans can interact with the space and the environment.

There are hands-on displays of how different cultures adapt and survive in hot and humid conditions, including how agriculture and water saving and use is adapted and managed.

Overall sustainable construction needs to take place in everyday life, people need to do more in everyday life. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In short, there has been a fundamental shift in the way that many people relate to, and experience, the world. As a planet we are living beyond our means. We have not been able to create on any scale ways of living in the world that allow people to share properly, and that do not damage the well-being of future generations. Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all.

For communities to be sustainable, they must offer:

- decent homes at prices people can afford

- good public transport
- schools
- hospitals
- shops
- a clean, safe environment.

People also need open public space where they can relax and interact and the ability to have a say on the way their neighbourhood is run.

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Word Count

Introduction

671/600

Research Review

1192/1600

Discussion/ Development Analysis

2300/2300

Conclusion

218/400

Bibliography

11 Websites

Appendices (PPF, Activity records, Raw data)

Extended Project

What makes a Sustainable Community and what makes it work?

By

Introduction

- Consists of what my project includes.
- Gives an understanding of what I am going to be talking about during my project.

Research Review

- During my research review, I talked about the governments views and ideas for these new sustainable communities.
- Also Ingress Park and Waterstone park were mentioned as the two main topic areas that I was going to compare.

Discussion

- For the discussion I compared the two case studies, which were Ingress Park and Waterstone Park.
- How the new Sustainable homes are measured was also mentioned in this section.

Conclusion

- My conclusion just gives an overview of what my extended project allow me to find out and learn. It also allowed me to and my question of 'What makes a sustainable community and what makes it work'.

Bibliography

- My bibliography shows what website and other materials I have used to help me with my project.