Planning for a Low Carbon Economy

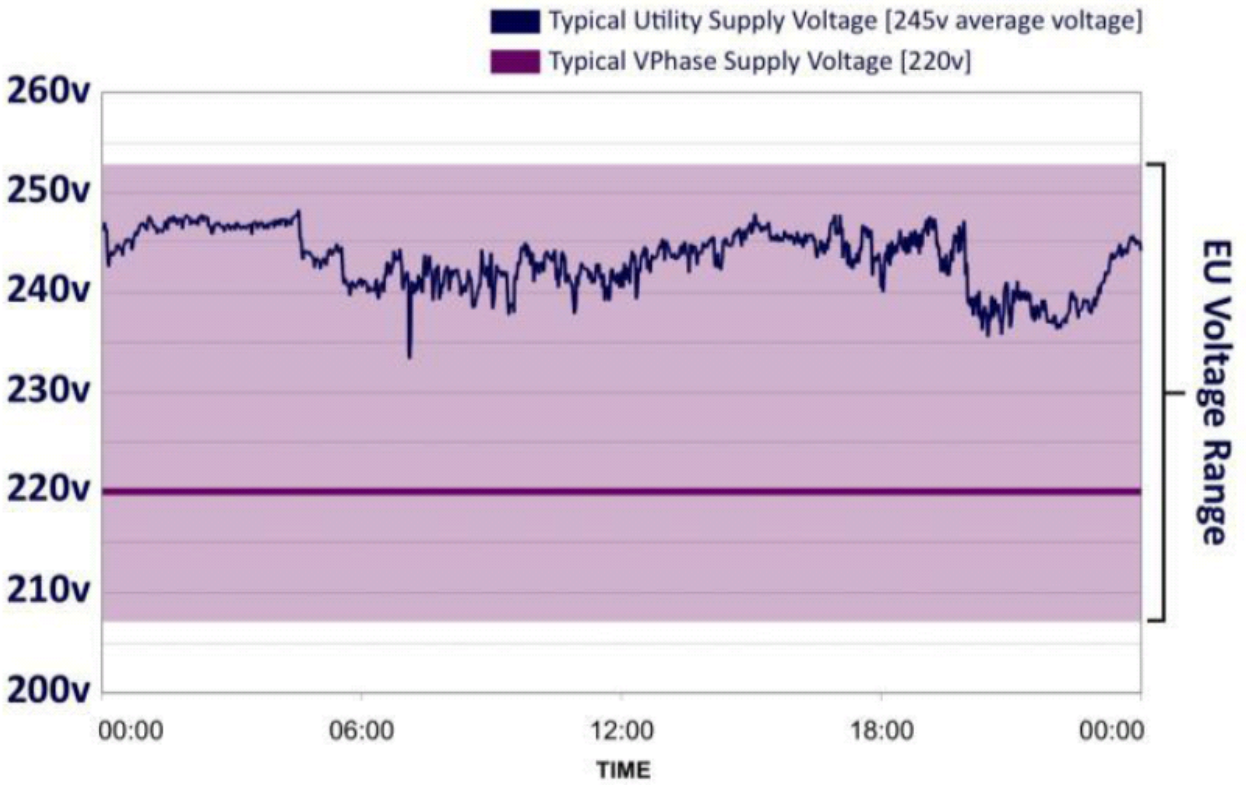
Reducing carbon emissions from new development

Keith Wheaton-Green

Technologies that will make a difference

VPhase
An Energetix Group Company

Voltage Optimisation



- UK and EU legal voltage limits are 207V to 253V.
- Appliances are designed to operate over this complete voltage range.
- Properties often fluctuate between 240V and 250V.

VPhase
An Energetix Group Company

Example Energy Savings

Appliance	VPhase Energy Saving
Incandescent lighting	15%
CFL lighting	11%
“A rated” freezer	17%
Vacuum cleaner	19%
“AA rated” washing machine	Up to 10% (14% standby)
3 speed central heating pump	15% to 18%
Television	3% (5% standby)
DECT Cordless Phone	30% (44% standby)
Computer and monitor	4%
ADSL modem and wireless router	5%
DAB Digital Radio	5% (15% standby)

£299 inc VAT

£150 to fit

VPhase
An Energetix Group Company

Carbon-busting technology that saves homeowners money and energy.

Fit, forget and save instantly, no lifestyle or habit changes.

Already saving large companies millions each year. This is the first time it has been available on a domestic scale.

Many appliances will work more efficiently and use less electricity at a lower voltage.

Available to buy now.

Technologies that will make a difference

LED lighting

Technologies that will make a difference

Potential sites for PV at Yeovil Business Parks (Owner of these tenanted buildings engaged)

All would be above 50 kW so owner no longer interested.

Technologies that will make a difference

500 kW – 5 MW PV
"orchards"

Technologies that will make a difference

Retrofit
PV 2-4 kW

on
residential
properties

Technologies that will make a difference

15 kW wind turbine

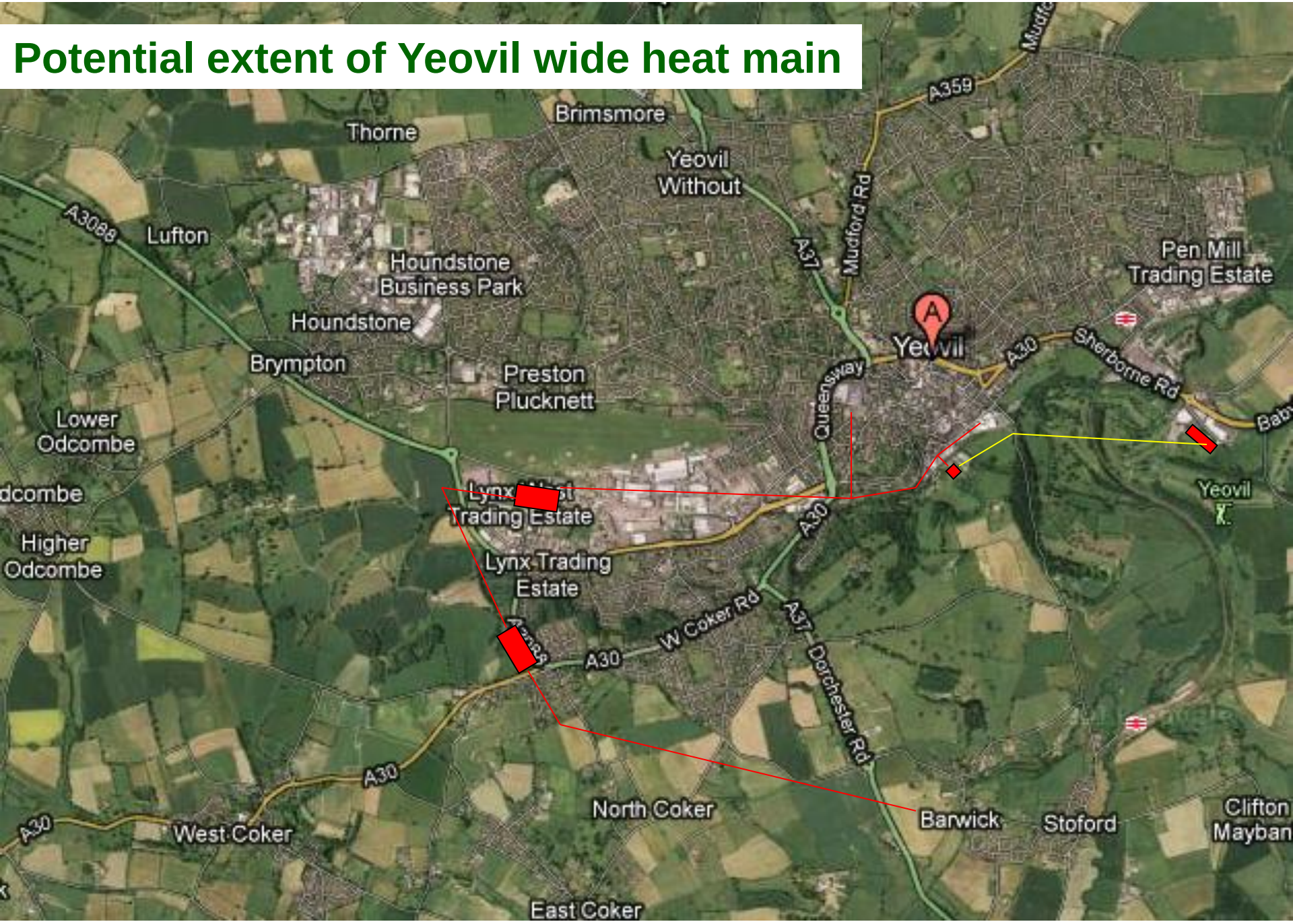
At

Yeovil Innovation Centre

Technologies that will make a difference

Anaerobic Digestion and Wood Chip CHP

Potential extent of Yeovil wide heat main



Wood chip district heating system

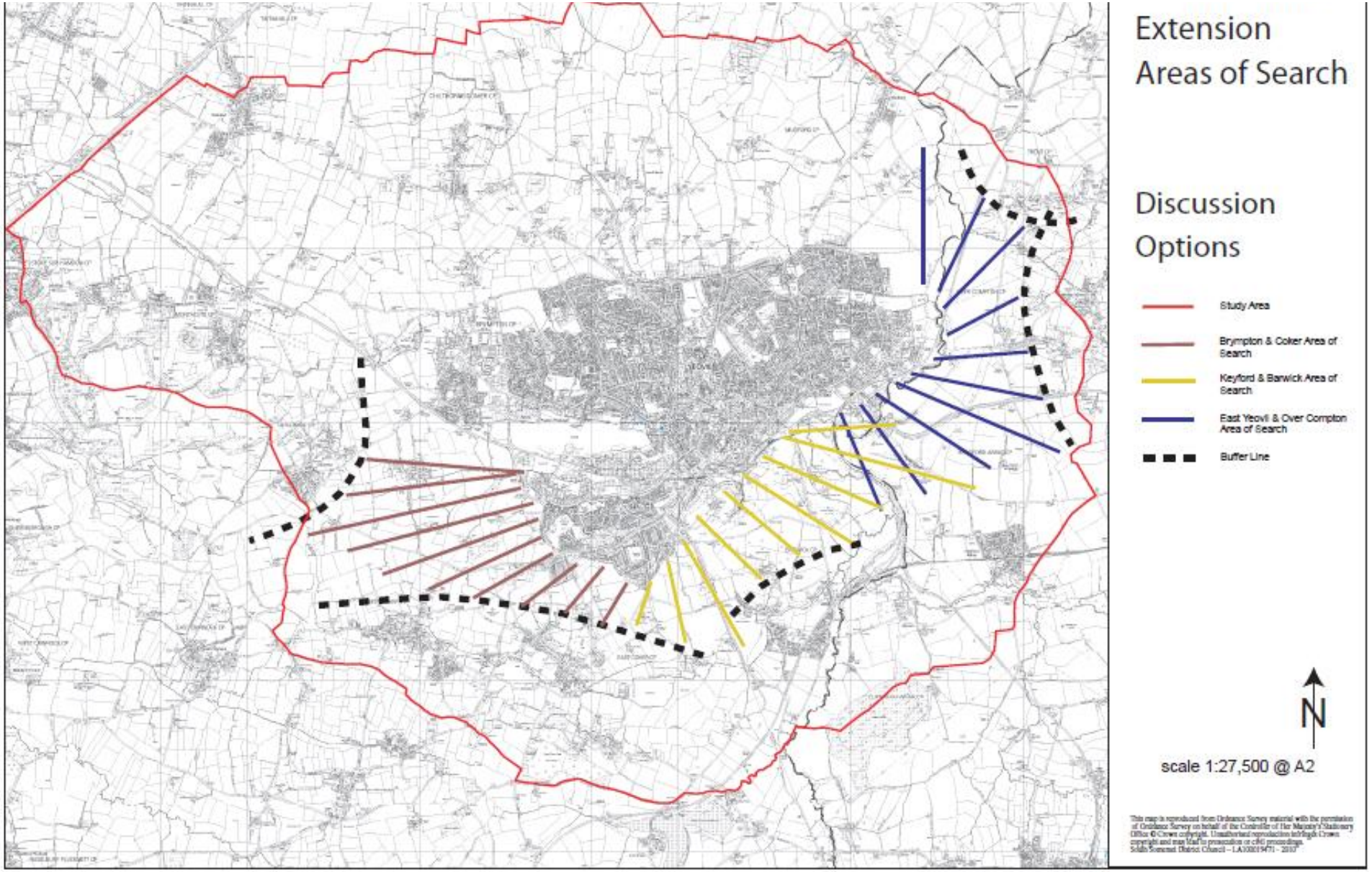
91 new affordable homes at Ludlow commissioned by the South Shropshire Housing Association

Under-floor heating to reduce the size of heat mains required since with a reduced return temperature and smaller heat mains can be used to transfer the heat.

Mains gas was available, it was decided to avoid the connection charge and distribution costs by omitting gas from the site, and invest this resource in a carbon neutral heating scheme.

Separate boiler house to house the two 150kW KWB TDS Powerfire wood chip boilers and a standby oil boiler together with buffer tanks and an integral fuel store.

Potential locations for Ecotown Extension



Identifying growth opportunities in energy generation

2002 scoping to match wind resource to landowner interests

8 installed in SS but still a few hydro applications to come. Steady but slow expansion of hydro. Environment Agency expectations add cost to provision of information.

Identifying growth opportunities in energy generation

South Somerset Hydropower Group

South Somerset Mills involved in the project

Cutterne Mill
Gants Mill
Bruton
Cole Manor Mill
Wincanton
Hainbury Mill
Thorney Mill
Hinton Mill
Careys Mill
Yeovil
Nimmer Mill
Court Mill
Chard
Clapton Mill

Identifying growth opportunities in energy generation

Yeovil Urban Village CHP – energy demands and feedstock supply

Heat User	Heat requirement (MWhy)	Electricity (MWhy)
200 dwellings (assuming passivhaus and 60 m^2)	541	472
Nuffield Health	1,142.4	740.5
80 bed hotel	110	
Bowlplex		380 (10kW baseload)
Cinema World		
Goldenstones swimming pool	1,550	
Pizza Hut		
Frankie and Benny's		
Neo's		
Goldenstones swimming pool	1,550	664.8
Totals	**3233**	2257.3

Potential waste food collection from Yeovil

Source	**Tonnes/year**
Eateries	1540
Primary Schools	115
Secondary schools and colleges	70
South Somerset households (from PB EfW study)	13235
Supermarkets	150 - 360
Total	**15110**

Renewable Energy Within the Yeovil Urban Village – Meeting Eco town Standards.

Recommendations

- Reduce space heat demand through pasivhaus construction.
- Reduce electricity use through specification of voltage optimisation, A rated white goods, LED lighting throughout, induction hobs, private outdoor space with retractable drying lines or condensing tumble dyers.
- Facilitate provider of wood heat to install and operate district heat main, central wood chip boiler and building level heat exchangers.
- Design buildings to maximise south facing roof space and install photovoltaics to all.

Identifying growth opportunities in energy generation

Renewable energy study for Urban Village

Photovoltaics and a district heating system (AD CHP or wood heat)

Large heat anchors either end of site

Identifying growth opportunities in energy generation

Energy Demand at Westland, Urban Village with adjacent energy anchors and Eco extension

Location	Heat MWhy	Electricity MWhy
Agusta Westland	55,000	700,000
Urban Village and energy anchors	3,233	2,257
Bunford Employment site	?	?
Eco extension	3,950	2,700
Totals	**62183**	**704,957**

Major planning applications / Consultations with developers

Existing policy agreed by members April 2008 based on interpretation of RSS

A carbon emissions saving – as compared to compliance with Part L of the Building Regulations 2006 – of at least 10% should be made through the installation of renewable energy generation equipment in large developments of more than 10 dwellings or 1000 m^2 of non residential floor space.

Core Strategy Policy EQ1

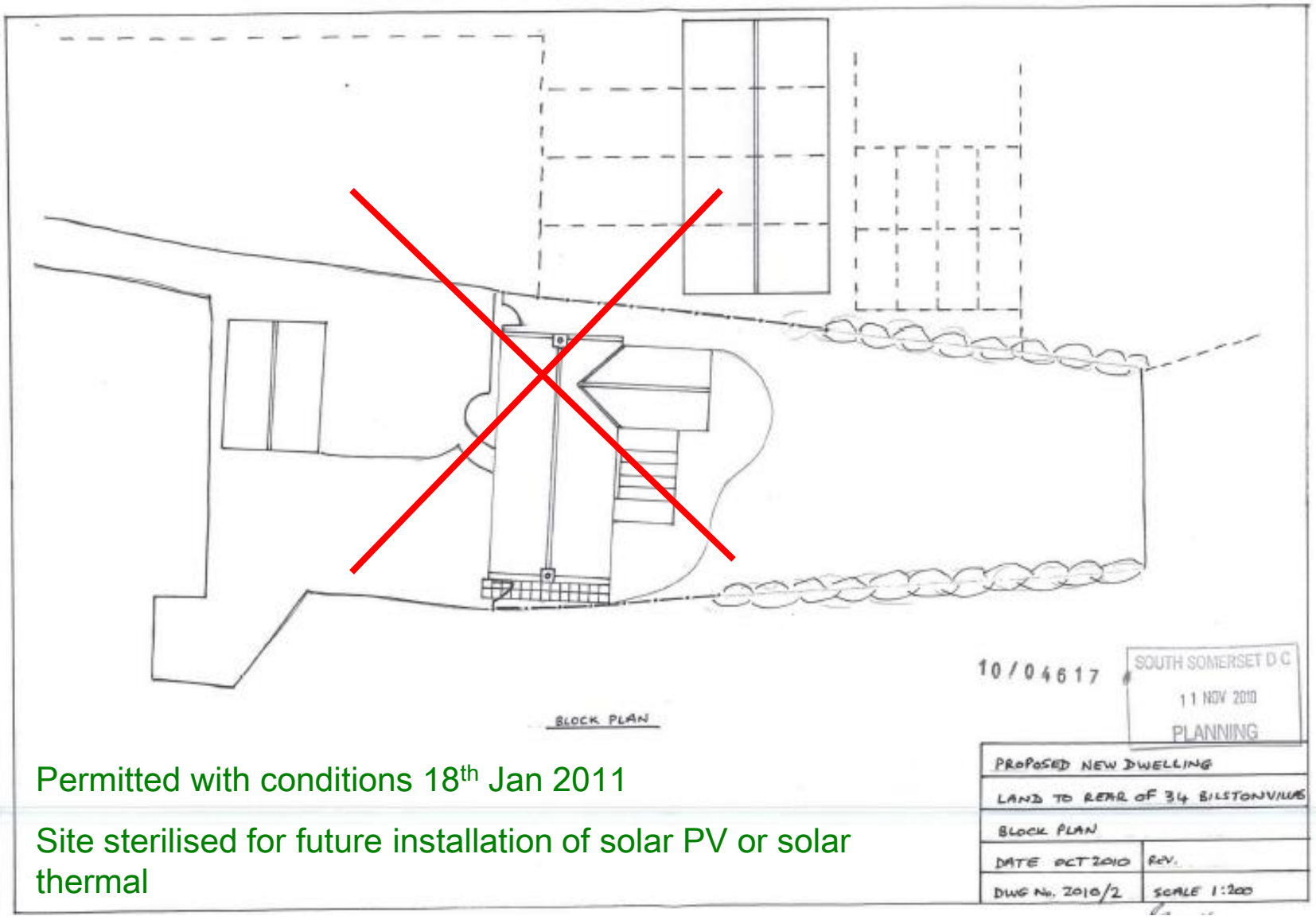
As an interim measures until 2013, in large-scale development, the provision of decentralised and renewable or low carbon energy should ensure that carbon dioxide emissions are reduced by at least 10% (compared to Building Regulations 2006) unless, having regard to the type of development involved and its design, this is not feasible or viable.

Current Situation

Consult Climate Change Officer on all large applications and other applications that you think might relate to renewable energy ***(i.e. where opportunities exist for PV or district heat)***

Major planning applications / Consultations with developers

Solar orientation

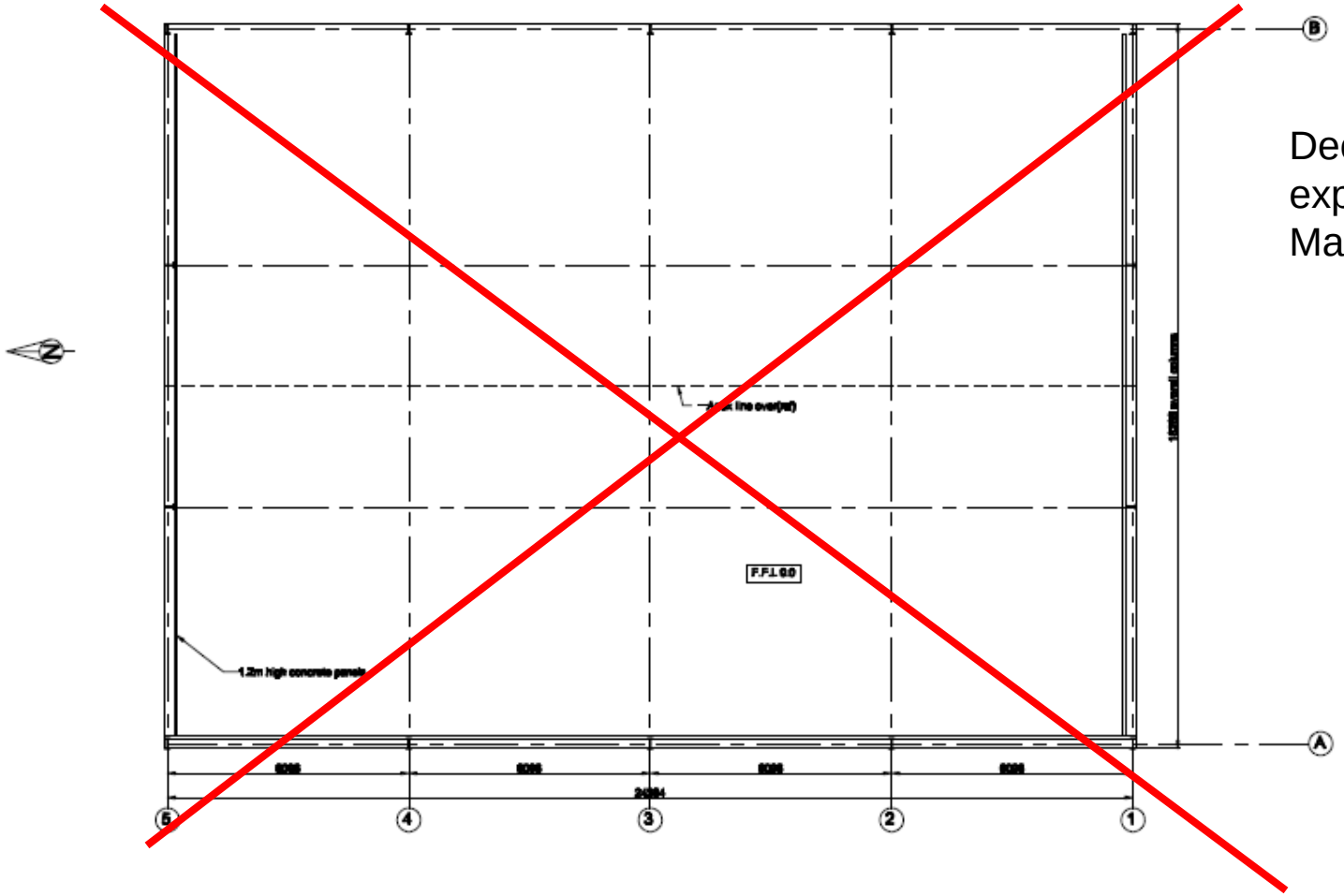


Permitted with conditions 18th Jan 2011

Site sterilised for future installation of solar PV or solar thermal

Major planning applications / Consultations with developers

Solar orientation



Decision expected 28th March 2011

Building could and should be re-orientated to give south facing roof to allow for future (or current) PV installation

Major planning applications / Consultations with developers

Highfield Road, Yeovil

Erection of 14 houses and

commercial/industrial buildings

Consultation Advice

- District heat from Wood chip boiler
- Individual Solar thermal
- Photovoltaics

Applicant choice

- Individual Solar thermal for dwellings (achieving about 15% carbon emissions reduction)
- Air source heat pumps for employment buildings (achieving 41% carbon emissions reduction – from SBEM calcs)

Identifying growth opportunities in energy generation

Predicted energy demand of Yeovil Eco town Extension (3700 dwellings and 50,000 m² non residential building)

Carbon Model - Passivhaus standards for all buildings, no gas on site, district heating biomass

Quantity	m2 (note 1)	kWh/m2/yr		mWh/pa	CO2/kWh	CO2/pa	CO2/house/pa
Housing							
3,700	277,500					-	
Space Heating (biomass)		15	4,162,500	4,163	0.013	54,113	
DHW (biomass)		23	6,382,500	6,383	0.013	82,973	
Electrical (grid)		26	7,215,000	7,215	0.517	3,730,155	
				17,760		3,867,240	1,045.20
Commercial							
All	50,000						
Heating (biomass)		79	3,950,000	3,950	0.013	51,350	
Electricity (grid)		54	2,700,000	2,700	0.517	1,395,900	
				6,650.00		1,447,250	
			Grand Total			5,314,490 kg/	5,314.49 tonnes/p.a.

Major planning applications / Consultations with developers

- 42 pre application enquiries in SS for solar parks
- 20% deemed inappropriate in landscape terms
- 3 permissions to date
- Announcement that FITs rates for solar parks changing from Aug 2011; since when interest in bringing forward new PV had disappeared
- An industry that will suffer boom and bust

Community engagement - what does localism mean for the low carbon economy. / Community benefits and opportunities

Who are the local community?

- Residents who meet to discuss subjects of mutual interest
- Parish councils
- Hydro power group
- Transition town groups (with key individuals)
- Save our area from change groups (also with key individuals - walking backwards into the future)
- Local property development mafia (development options with landowners, financial drivers,)
- ECOS Trust – formation and development
- Eco motivated developers – Zero C
- Which groups are strengthened by localism bill?

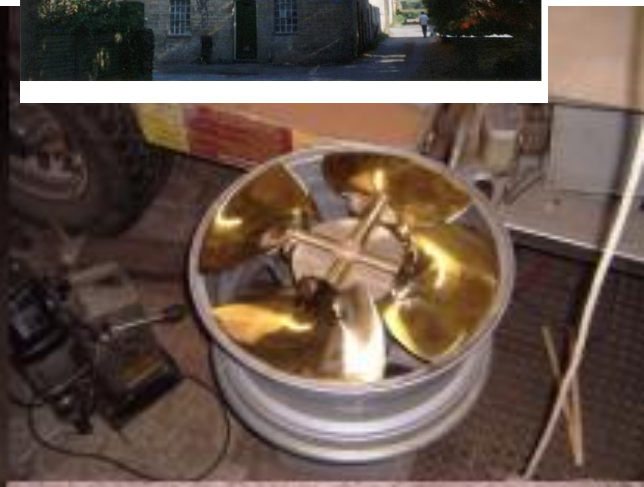
Community engagement - what does localism mean for the low carbon economy. / Community benefits and opportunities

Parish councils / interested residents

- South Somerset District Council awarded £20,000 through Government trial, Neighbourhood Planning Front Runners Scheme (for handful of communities across the country piloting a new way of neighbourhood planning.)
- It will be used to help the village of Queen Camel produce its own draft plan, which could be adopted under new powers contained in the Localism Bill.
- They will draw up their own development plans, with wide scale, local involvement and hold a referendum to test the support of residents. If backed by local people the district council would then arrange a formal public inspection before adopting the plans.
- The plan must also comply and fit in with the district council's local 'core strategy' which sets out appropriate levels of growth, national planning policy and law.
- With district council help, Queen Camel will create their own development plan, showing there they would like new houses, businesses and facilities to go, and ultimately making a masterplan that matches what local people want for the growth and improvement of their village"
- Logical expansion of parish planning, where growth and development are needed providing methodology for the district council and the community.
- Anticipated that Queen Camel neighbourhood plan will include aspirations for a more modern school in a new complex, some affordable housing for local people, additional public parking, better uses of the Memorial Hall, an upgraded pavilion, and improvements that benefit small businesses.

Community engagement - what does localism mean for the low carbon economy. / Community benefits and opportunities

South Somerset Mills DIY Propeller Turbine



Maintaining positive relationships between planning authorities and private developers and communities

- Get to know them.
- Invite them to your events.
- Invite yourself to their events.
- E-mail them with news of opportunities for them to install renewables and build passivhaus at low cost.

Burning coal

Burning gas

Burning oil

CO_2