

**Agenda Item No.7 (a)****DERBYSHIRE COUNTY COUNCIL****CABINET****5 May 2015****Report of the Chief Executive**

**SUSTAINABLE ENERGY – GROUND MOUNTED SOLAR  
PHOTOVOLTAIC (PV)  
(STRATEGIC POLICY, ECONOMIC DEVELOPMENT AND BUDGET)**

**1. Purpose of Report**

- To inform Cabinet of the outcome of the public consultation on proposals for ground mounted solar PV installations on six Council owned sites.
- To seek approval to submit full planning applications for preferred sites.
- To inform Cabinet of a joint procurement approach being developed in conjunction with Northumberland County Council.

**2. Information and Analysis****2.1 Background**

On 3 March 2015, Cabinet considered a report on proposals for a Council ground mounted solar PV project and approved public consultation on six Council owned sites in relation to developing them for ground mounted solar PV (Minute No 82/15 refers).

<b>Site Ref</b>	<b>Site Name</b>
0021-01	Westthorpe Hills (Westthorpe Colliery), Killamarsh
1801-01	Pye Bridge Recreation Area, Alfreton
2699-01	Former Swanwick Colliery Reclamation Land, Swanwick
2924-01	Agricultural Land at Swathwick Lane, Wingerworth
4269-01	Land at Mansfield Road, Temple Normanton
4273-01	Former Williamthorpe Colliery Land, Holmewood

Ground-mounted solar PV installations, often referred to as solar farms, are installations used to generate renewable energy by absorbing light and

converting it to electricity. These installations result in a local zero carbon energy source.

## 2.2 Public Consultation

A public consultation on the proposals to develop the six sites for ground mounted solar PV took place between 10 March and 21 April 2015. An online questionnaire was produced and paper copies were made available in libraries and Parish Council offices. Additionally there were six roadshow events held in close proximity to the sites proposed, which are detailed below along with the number of attendees at each event:

Site Name	Parish Council	Venue and date	No. of attendees
Westthorpe Hills (Westthorpe Colliery)	Killamarsh	Killamarsh Sports Centre Friday 27 <sup>th</sup> March	6
Pye Bridge Recreation Area	Somercotes	Somercotes Church Hall Thursday 19 <sup>th</sup> March	8
Former Swanwick Colliery Reclamation Land	Swanwick	Swanwick Methodist Church – Community Room. Tuesday 31 <sup>st</sup> March	Approx. 20
Agricultural Land at Swathwick Lane	Wingerworth	Wingerworth Parish Hall, Friday 20 <sup>th</sup> March	Approx. 110
Land at Mansfield Road, Temple Normanton	Temple Normanton	St James Church, Monday 13 <sup>th</sup> April	4
Former Williamthorpe Colliery Land	Heath and Holmewood	St Albans Centre, Holmewood, Monday 23 <sup>rd</sup> March	8

Awareness of the consultation programme was raised through the Council's website and via extensive media coverage in the local press. Social Media was also used to raise the profile of the consultation.

There were 176 respondents to the online/paper questionnaire and the headline results from the questionnaire are included in Appendix A of this report. A map showing the location of the proposed sites and also the location of questionnaire respondents is included in Appendix B.

56% of respondents to the questionnaire were male, which is higher than expected, as at mid-2013 only 49% of Derbyshire's total population was male. The average age of respondents to the questionnaires was 56 years. There was also a higher than expected number of respondents aged 45-64. 46% were in this age band compared to only 34% of Derbyshire's population at mid-2013. The tables below shows the age and gender of respondents to the questionnaire compared to Derbyshire's population at mid-2013:

Gender	Number of respondents		ONS Mid-2013 Population estimate
	Number	%	
Male	97	56%	49%
Female	75	44%	51%
<b>Total</b>	<b>172</b>	<b>100%</b>	<b>100%</b>

Age group	Number of respondents		ONS Mid-2013 Population estimate (aged 16+)
	Number	%	
16 - 24 years	2	1%	12%
25 to 44 years	36	22%	29%
45 to 64 years	75	46%	34%
65 or over	49	30%	24%
<b>Total</b>	<b>162</b>	<b>100%</b>	<b>100%</b>

The questionnaire asked respondents how strongly they agreed or disagreed with a number of statements. Most respondents agreed with the statements and detailed responses to each question are shown in the tables below:

Q1. Do you agree or disagree that:					
	Agree	Neither agree nor disagree	Disagree	Don't know	Total
The panels should be located on non-agricultural or low agricultural quality land	82%	5%	10%	2%	100%
The location of the panels should be sensitive to nationally and locally protected landscapes and nature conservation areas	91%	3%	5%	1%	100%
The panels should enhance the ecological value of the land	75%	15%	7%	4%	100%
The visual impact of the panels should be minimised	80%	11%	8%	1%	100%
The land on which the panels are located should continue to be used for agriculture	62%	21%	10%	7%	100%

<b>Q2. Do you agree or disagree that:</b>					
	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Don't know</b>	<b>Total</b>
The equipment used should be sourced locally	76%	16%	4%	4%	<b>100%</b>
Local people should be employed on the panels whenever possible	89%	7%	2%	3%	<b>100%</b>
We should act considerately during construction and demonstrate best practice solar panel installation and maintenance	93%	4%	2%	2%	<b>100%</b>
We should use the solar farm as an educational opportunity where appropriate	85%	9%	5%	1%	<b>100%</b>

<b>Q3. Do you agree or disagree that:</b>					
	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Don't know</b>	<b>Total</b>
Consult with the local community before submitting a planning application	94%	2%	3%	1%	<b>100%</b>
Seek the support of the local community and listen to their views and suggestions	94%	2%	3%	1%	<b>100%</b>

To ensure people were allowed to express any concerns or support for the proposals at the various sites, an open ended text question was included where respondents could make any further comments about the solar farm proposals. 124 of the respondents made comments which covered a range of topics including solar farms generally, comments on specific sites and also about maximising opportunities to exploit other renewable technologies. Some of the comments supported the proposals whilst others expressed concerns.

47 (38%) of the 124 who commented, provided negative comments on the proposals, of which 34 were specifically regarding the proposed site at Swathwick Lane, Wingerworth, representing 27% of overall comments. 5 people were generally against the proposals with a further 2 citing visual impact as an issue and 4 people commented against the proposals at Swanwick. The proposed sites at Westhorpe Hills and Former Williamthorpe Colliery received one negative comment each.

7 (6%) of the 124, commented that they felt the consultation process was not appropriate either from the questions being asked or the timing of the public consultation events. 5 (4%) of the 124 respondents wanted more information on the financing of the proposed schemes.

The roadshow events provided drop-in sessions to allow the public the opportunity to learn more about the proposals and the specific site locations. Comments received from those who attended the events at Westthorpe Hills, Pye Bridge, Land at Mansfield Road and the former Williamthorpe Colliery Land were positive with attendees supporting the proposals. Whilst many attendees who attended the roadshow for the proposed site at Swathwick Lane, Wingerworth supported renewable energy generation, only a few supported the proposed location and a large majority raised objections. The roadshow at Swanwick was relatively well attended, there was support for the proposed location and renewable energy generation in general, there were also several objections raised to the proposed site as it is felt to be designated open space.

Based on these responses it is considered that proposals for ground mounted solar PV at the former Swanwick Colliery Reclamation Land, former Williamthorpe Colliery Land, Land at Mansfield Road, Temple Normanton, Westthorpe Hills (Westthorpe Colliery) and Pye Bridge Recreation Area should be taken forward. It is also considered that Swathwick Lane, Wingerworth should be removed from the programme.

## **2.3 Planning Applications**

If Cabinet agrees to proceed with the project, it is anticipated that applications for full planning consent will be submitted during May 2015. The Building Research Establishment (BRE) National Solar Centre has been appointed as planning consultants for the project and will be developing the detailed drawings for the planning submissions.

## **2.4 Grid Applications**

Grid connection approval is a vital component for each of the sites detailed; this allows the power generated to be transferred into the national grid. Asset Utilities have been appointed as grid consultants for the project. Initial grid connection applications have been submitted to Western Power, with 'grid offers' anticipated in May 2015.

## **2.5 Procurement approach**

The Association of Public Service Excellence (APSE) is facilitating a joint procurement exercise to establish a framework for local authority ground mounted solar PV schemes, which is being led by Northumberland County Council. Subject to Cabinet approval of the recommendations in this report, Derbyshire County Council and the Council's proposed sites will be named in the framework procurement documentation following which a further Cabinet

report will seek approval to appoint a contractor(s) from the framework contract in autumn 2015.

## **2.6 Governance Structure**

The Ground Mounted Solar PV Working Group will continue to manage the programme, led by Principal Policy Officer, Policy and Research and Carbon and Energy Manager, Corporate Property. In addition the Corporate Management Team has agreed to act as the overarching governance group for the project.

## **3. Financial Considerations**

Due to the construction and commissioning deadline of 31 March 2016, initial revenue expenditure to fund planning and grid consultants was required to be met by the Council's Carbon Reduction Initiative Fund (CRIF) revenue budget, up to a value of £33,000. A recent bid to the Derbyshire Challenge Fund for £125,000 of development costs was agreed by Cabinet at their meeting on 14 April 2015 and as such the CRIF will be reimbursed. Whilst the track record of organisations in delivering renewable energy schemes is generally good and the Council should be optimistic about being able to recover these set up costs there is a possibility that they may prove irrecoverable.

It is recommended that the five sites outlined above should be developed with a view to them being built and commissioned before 31 March 2016, when the current Feed in Tariff (FiT) regime for large scale solar PV installations changes. This would ensure that the maximum rates of return on any potential investment are obtained.

Costing models have been developed using information provided by the authority's consultants, APSE Energy. The income streams are influenced by the level of the relevant inflation indices applied to them, and because of the difficulty of predicting these over the life time of a project of this length, sensitivity analysis has been carried out to ensure the viability of the scheme. The analysis shows that net revenue after financing costs could potentially range from £10.9m to £42m over the life of the scheme, with the average annual net revenue ranging from £0.4m to £1.6m. The length of time taken to recover the initial capital expenditure ranges from 11 years 5 months to 8 years 5 months.

The costings in Appendix C include all 6 sites, including the Swathwick Lane, Wingerworth site. If this site is removed from the scheme, the overall impact on the project would be relatively small, with the income over the life of the project ranging from £10.5m to £41m and the average annual net revenue ranging from £0.4m to £1.577m.

The Council is awaiting formal grid connection offers from Western Power, which will determine the amount of generating capacity to be installed and the grid connection costs. Whilst these are currently unknown, cost modelling has been based on industry standards, which has also been applied to the contract prices for the Design and Build and Operation and Maintenance contracts. Once these are known, final cost models and business cases for each site will be submitted to Cabinet in the autumn to enable a decision to be made on whether to proceed to appoint a contractor.

Appendix C provides an overview of 3 scenarios based on a number of variables including borrowing interest rates, energy inflation and RPI inflation.

Scenario 1 – summarises cost modelling based on current FiT rates; cost of borrowing and average energy inflation rates.

Scenario 2 – summarises cost modelling based on a lower RPI; a reduced rate FiT and reduced energy inflation.

Scenario 3 – summarises cost modelling based on the current FiT rate; an increase in energy inflation and reduced cost of borrowing.

Based on current projections the scenarios set out in Appendix C are accurate at the time of reporting.

#### **4. Legal Considerations**

Protocol 2 of the Council's Financial Regulations applies to the use of a framework which has not been procured by the County Council. Officers from Finance, Procurement and Legal Services are working with colleagues at Northumberland County Council on the terms and conditions of the framework contract to ensure that the requirements of Protocol 2 are met.

#### **5. Environmental Considerations**

This proposal directly supports the objectives set within the Council Plan and Climate Change Charter to invest in renewable energy technologies to help mitigate against climate change and provide local, green sources of energy.

#### **6. Other Considerations**

In preparing this report the relevance of the following factors has been considered; prevention of crime and disorder, equality and diversity, health, human resources, property and transport considerations.

## 7. Background Papers

Report of the Chief Executive, Cabinet, 2 December 2014, Derbyshire Climate Change Charter.

Report of the Vice Chair of the Improvement and Scrutiny Committee – Resources, Cabinet, 17 June 2014; Review of Sustainable Energy Potential. Report of the Chief Executive, Cabinet, 3 March 2015, Sustainable Energy – Ground Mounted Solar PV.

Consultation responses held in Policy and Research, Chief Executives.

## 8. Key Decision

No.

## 9. OFFICER'S RECOMMENDATIONS

That Cabinet:

- 9.1 Considers the responses to the public consultation on proposed ground mounted solar PV installations on six Council owned sites.
- 9.2 Notes the financial models for the project and that detailed business cases will be submitted to Cabinet in autumn 2015.
- 9.3 Approves submission of full planning applications for;
  - Former Swanwick Colliery Reclamation Land
  - Former Williamthorpe Colliery Land
  - Land at Mansfield Road, Temple Normanton
  - Westthorpe Hills (Westthorpe Colliery)
  - Pye Bridge Recreation Area
- 9.4 Approves the County Council's participation in the joint procurement exercise to establish a framework of contractors for local authority ground mounted solar PV schemes being led by Northumberland County Council.
- 9.5 Notes that Corporate Management Team will act as the overarching governance group for the project.

**Ian Stephenson**  
**Chief Executive**

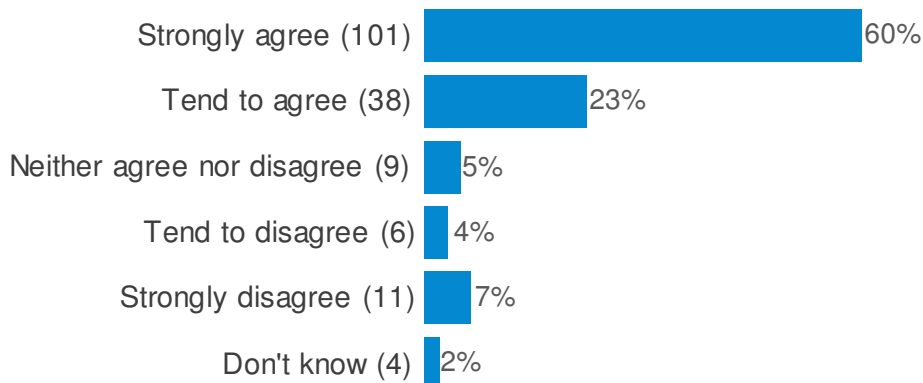


## 2015 Solar Farm Survey

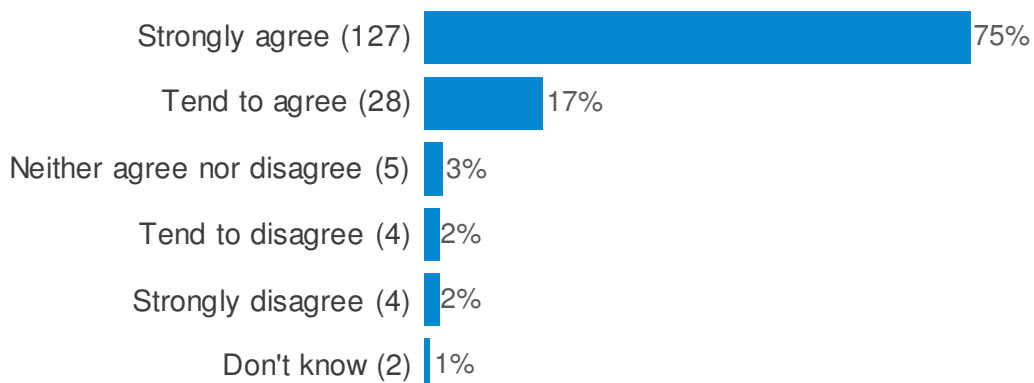
Overall 176 respondents completed the Solar Farm Survey.

*Please note respondents did not answer all the questions so the total number of responses to individual questions may not sum to 176.*

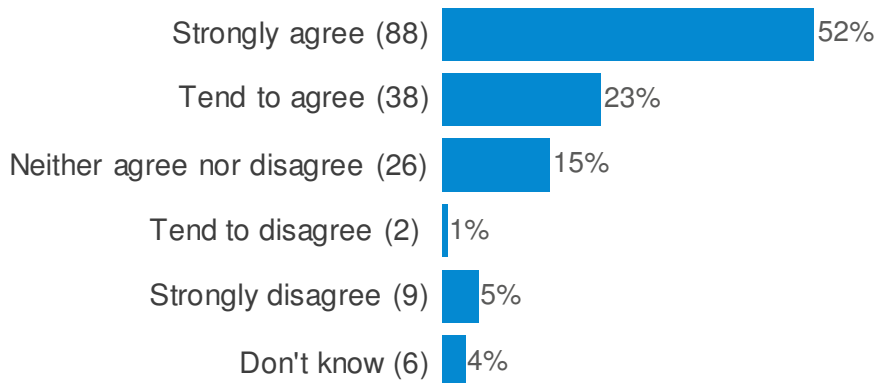
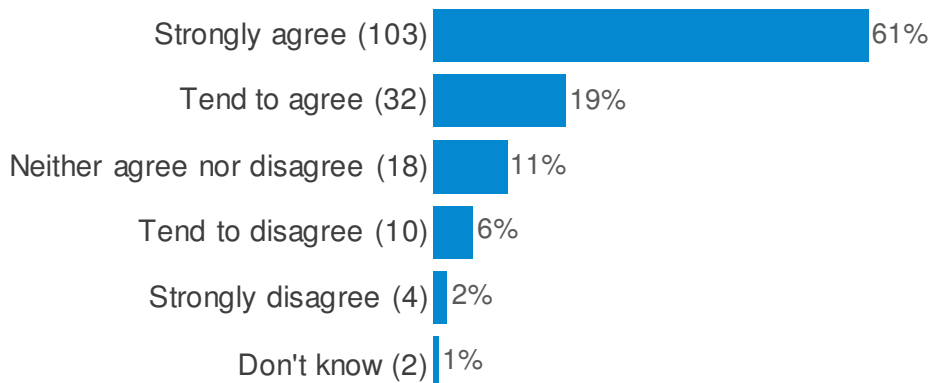
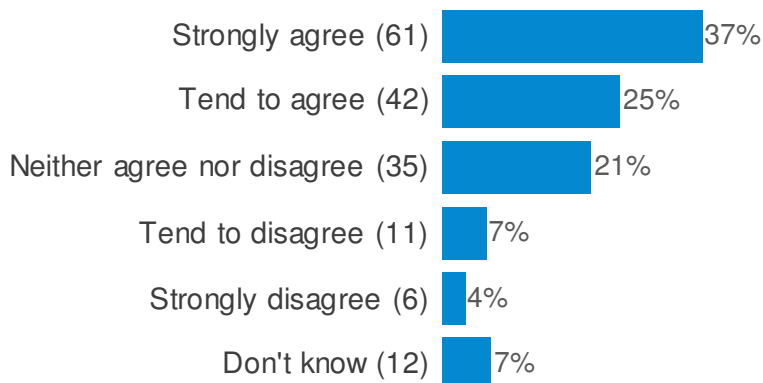
### **How strongly do you agree or disagree that the panels should be located on non-agricultural or low agricultural quality land?**



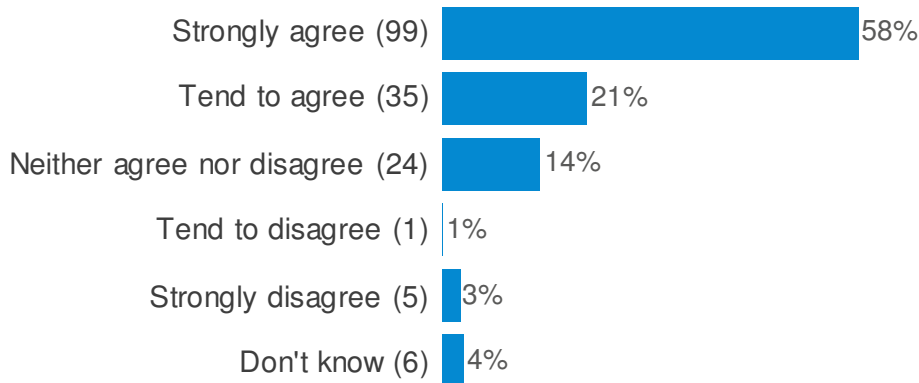
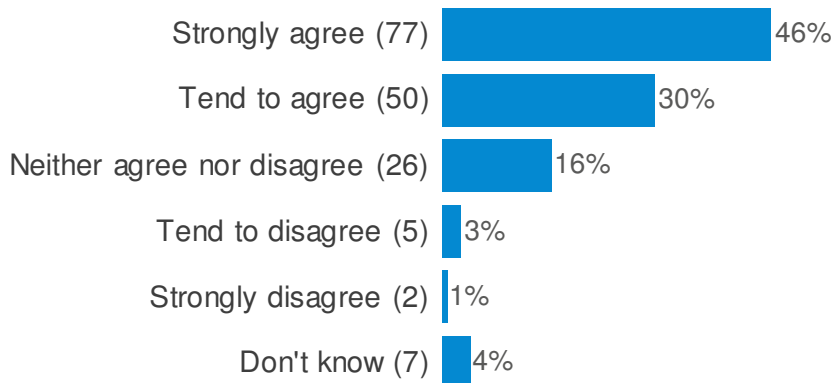
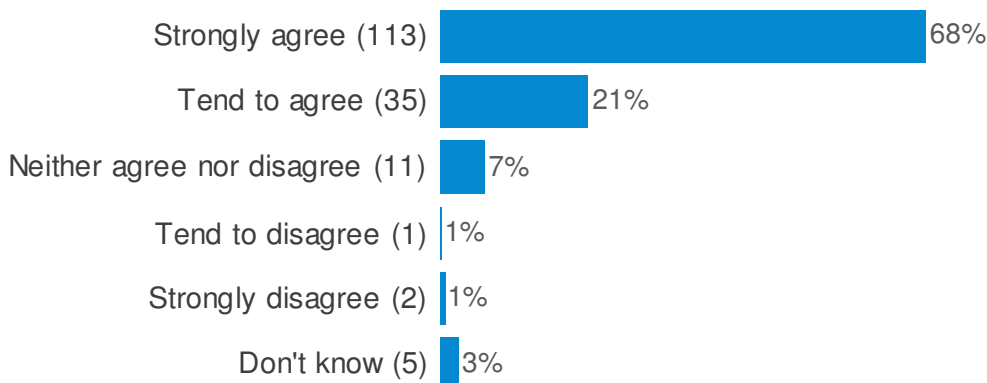
### **How strongly do you agree or disagree that the location of the panels should be sensitive to nationally and locally protected landscapes and nature conservation areas?**



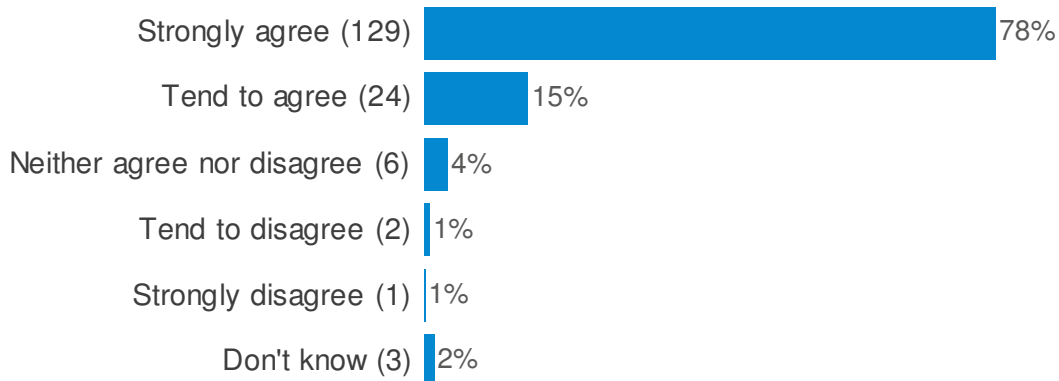
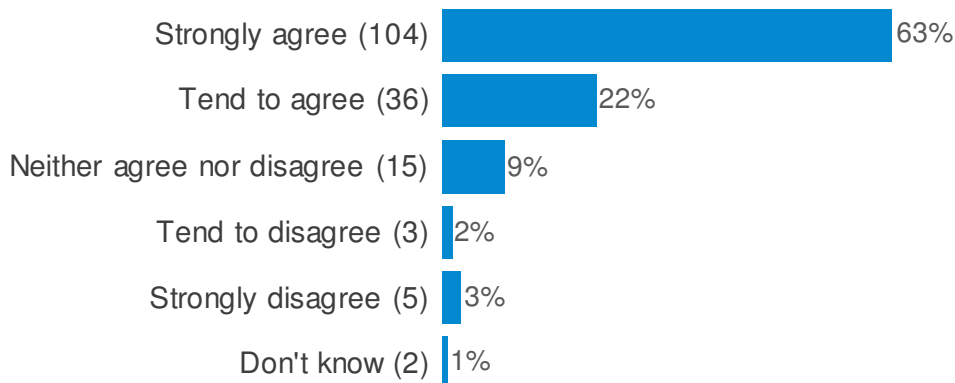
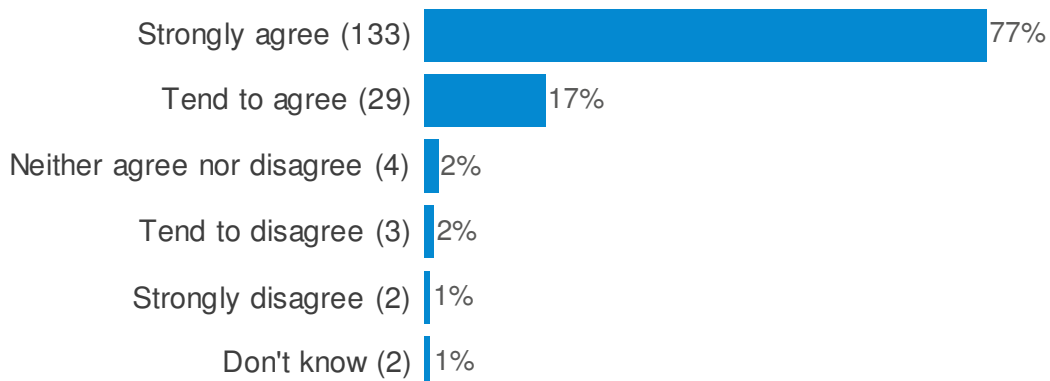
## 2015 Solar Farm Survey

**How strongly do you agree or disagree that the panels should enhance the ecological value of the land?****How strongly do you agree or disagree that the visual impact of the panels should be minimized?****How strongly do you agree or disagree that the land on which the panels are located should continue to be used for agriculture?**

## 2015 Solar Farm Survey

**How strongly do you agree or disagree that at the end of the project life the land should return to its former use?****How strongly do you agree or disagree that the equipment used should be sourced locally?****How strongly do you agree or disagree that local people should be employed on the panels whenever possible?**

## 2015 Solar Farm Survey

**How strongly do you agree or disagree that we should act considerately during construction and demonstrate best practice solar panel installation and maintenance?****How strongly do you agree or disagree that we should use the solar farm as an educational opportunity where appropriate?****How strongly do you agree or disagree that we should consult with the local community before submitting a planning application**

## 2015 Solar Farm Survey

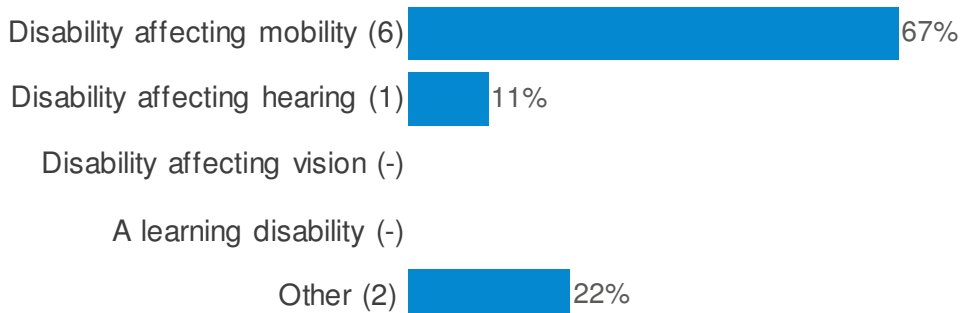
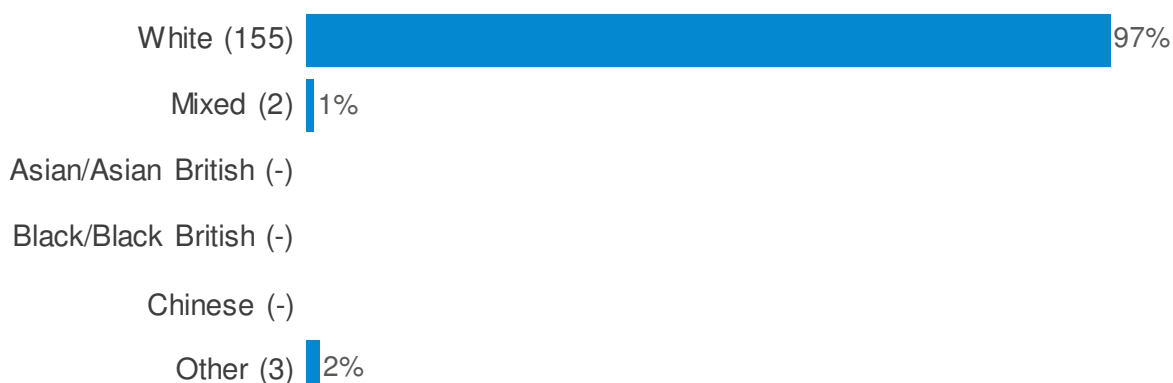
**Are you:****What was your age at your last birthday?**

The average age of respondents was 56 years with ages ranging from 20 to 89 years.

**What is your home postcode?**

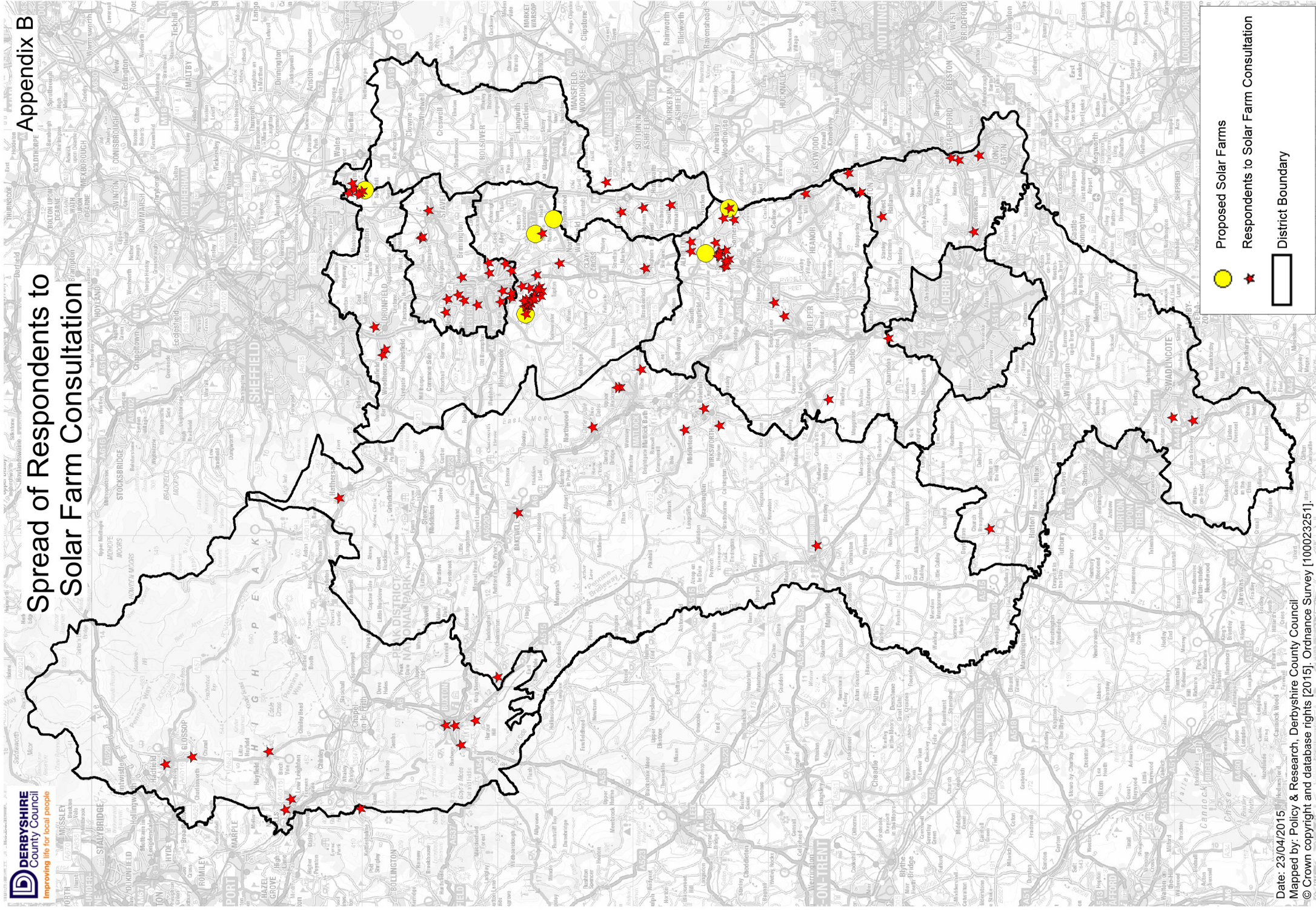
Respondents were asked to provide their home postcode to illustrate the geographic spread of respondents.

**A disabled person is someone who has a physical or mental impairment which has a substantial and long term adverse effect on their ability to carry out normal day-to-day activities. Do you consider yourself disabled?**

**If you do consider yourself disabled, what type of disability do you have? (Please select all that apply)****What is your ethnic group?**



# Spread of Respondents to Solar Farm Consultation





## Appendix C

### Comparison of solar PV models

	Scenario 1	Scenario 2	Scenario 3
Approx. capacity of sites (kWp)	14,998	14,998	14,998
Est. total generation (kWh)	320,407,307	320,407,307	320,407,307
Capital expenditure (£)	14,387,581	14,387,581	14,387,581
<b>Costs</b>	<b>£</b>	<b>£</b>	<b>£</b>
Operating expenditure	10,108,283	8,809,734	10,108,283
Debt repayment (incl. capital)	22,371,123	22,371,123	19,341,429
<b>TOTAL COST</b>	<b>32,479,406</b>	<b>31,180,857</b>	<b>29,449,712</b>
<b>Income</b>			
Feed in Tariff	20,874,394	13,969,848	20,874,394
Power Purchase Agreement	37,963,791	28,115,096	50,993,819
<b>TOTAL INCOME</b>	<b>58,838,185</b>	<b>42,084,944</b>	<b>71,868,213</b>
<b>Net revenue after financing costs</b>	<b>26,358,779</b>	<b>10,904,087</b>	<b>42,418,501</b>
NPV of net revenue	10,106,644	3,120,165	16,493,790
Pay back period	8 yrs 10 months	11 yrs 5 months	8 yrs 5 months
<b>Key Assumptions</b>			
Feed in Tariff	6.16p	4.59p	6.16p
Power Purchase Agreement tariff	6.00p	0.55p	6.00p
Retail Price Index	2.50%	1.50%	2.50%
Energy inflation	5.00%	3.50%	7.00%
20 yr annuity rate	4.63%	4.63%	3.00%

#### Footnote;

RPI - impacts on operating expenditure and FiT income projections

Energy inflation - impacts on Power Purchase Agreement tariffs