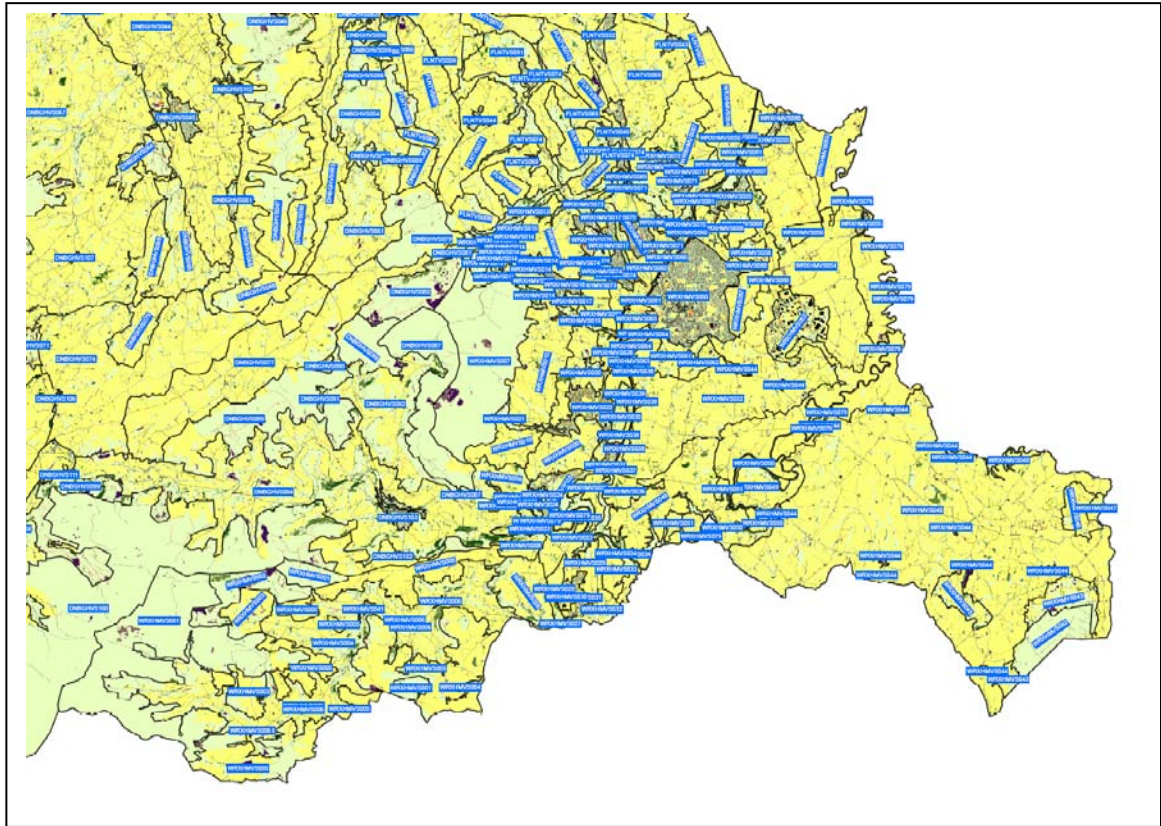


# INTERPRETATION OF LANDMAP VISUAL & SENSORY CHANGE DETECTION PACKS: WREXHAM



Final Report

for

Natural Resources Wales

February 2014

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## CONTENTS

|                                              |   |
|----------------------------------------------|---|
| 1. Introduction .....                        | 2 |
| 2. Potential changes in the study area ..... | 3 |

### Appendix

LANDMAP visual and sensory data change detection sheets

## 1. Introduction

1.1. Natural Resources Wales commissioned White Consultants in August 2013 to undertake the interpretation of LANDMAP Visual & Sensory aspect change detection packs for Powys and North Wales excluding the Isle of Anglesey. The study is intended to provide the desk study evidence base to understand where changes may have occurred since the original LANDMAP assessments.

1.2. The tasks set out in the brief are as follows:

### Stage 1

- Desk study of the Change Detection Pack data using techniques derived from the pilot study and the technical report guidance provided.
- Identification of areas of significant landscape change.
- Preparation of a tabulated excel table filling in columns 1-4 and 8.
- Map extracts to show potential boundary changes if appropriate for clarity

### Stage 2a

- Review change questionnaire responses from local authorities provided by NRW.
- Preparation of a tabulated excel table filling in column 5 and amending 8 as necessary.

### Stage 2b

- Review changes from other resources provided by NRW.
- Preparation of a tabulated excel table filling in column 6 and amending 8 as necessary.

### Stage 2- report and check for Consistency report changes

- Checking if any changes have already been implemented in Consistency report changes on latest LANDMAP dataset
- Prepare a short summary report of key changes and influences for each authority.

1.3. The Change Detection Pack data provided includes the following:

- OS maps
- Existing Visual and Sensory layer
- Aerial photographs dated 2001 and 2009.
- Phase 1 Habitat Survey 2008/9
- Tranquillity Map of Wales
- Normalised Difference Vegetation Index [NDVI]
- Mastermap road and building change maps
- Segment Density/Complexity Maps [SD]
- Seasonal change derived from Phase 1 mapping
- Mega Change Map - incorporating key changes in a single map (based on simplified NDVI and Mastermap)

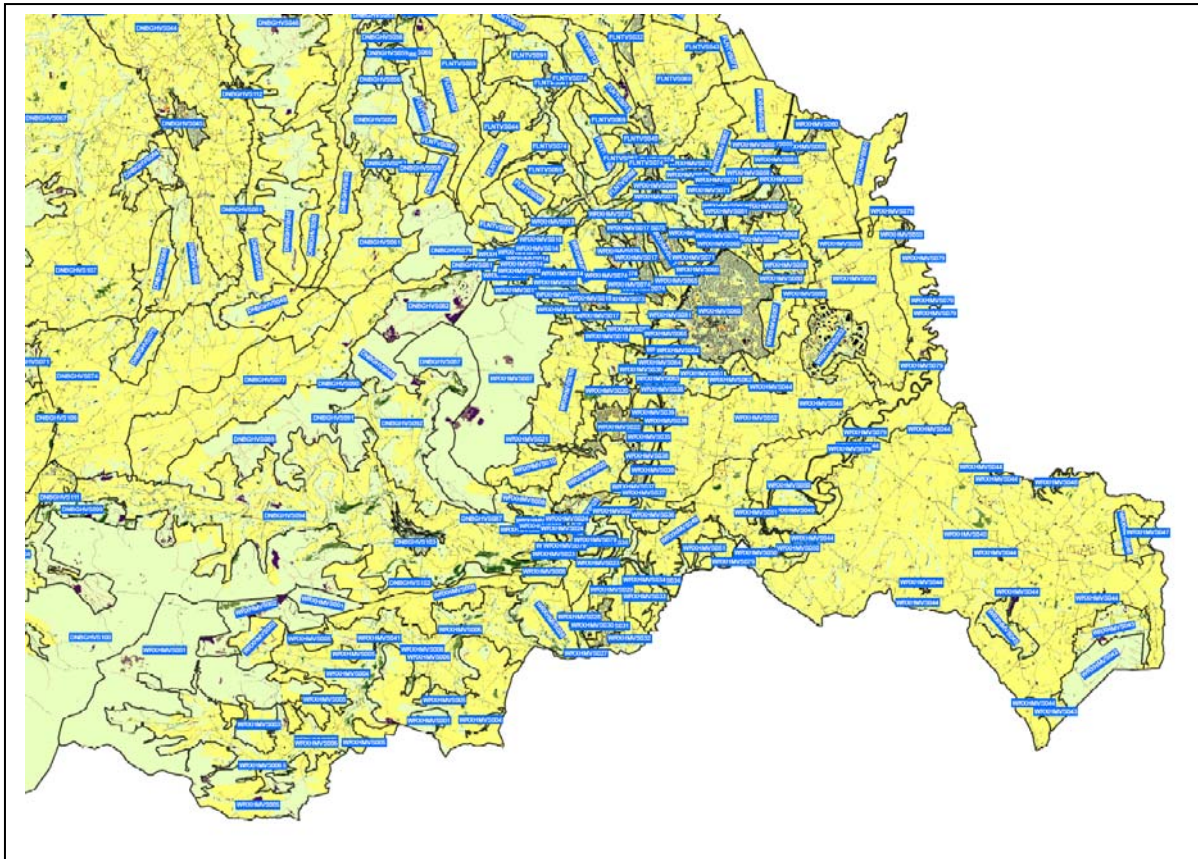
The information is in hard copy form and in GIS.

- 1.4. Other GIS data has been obtained including broadleaf planting from NRW which have proved invaluable in places.
- 1.5. Simon White has liaised with the client and Environment Systems on the data and inputs from various local planning authorities. The method has been derived from the guidance and from previous monitoring experience in South Wales.
- 1.6. The most useful data used in the study have been the Mastermap road and built form change, NDVI, the Mega change map (see Figure) and 2001 and 2009/2010 aerial photographs. This has allowed assessment at a broad and detailed level with small scale changes to be identified in places.
- 1.7. The most detailed data are the aerial photos which have been used to verify indications of change in other data. The 2001 and 2009/10 photos are the most useful to identify and verify significant change but they have a different colour balance and degree of contrast, and were flown at different times of year. This makes identification of change more difficult.
- 1.8. The input of Local Authority staff has been found to be very useful, especially to identify changes which would not necessarily be able to be detected remotely or which have occurred since the datasets were captured.
- 1.9. The purpose of the study is not to refine/improve the current Collector text or aspect area GIS boundaries. It is only to monitor and note potential change. This can then be verified in the field. There are limitations to this desk based stage. It is possible that some noted changes may not be perceptible, eg young broadleaf planting in conifer plantations, and some may not be regarded as significant at the Level 3 scale of the assessment/aspect area. Other changes may affect a wider area than noted at the desk study eg the effect of prominent new structures on nearby aspect areas. Some changes may not be perceptible at the desk study level but are apparent on site. An example could be single wind turbines. Therefore, the site survey element of the study is essential, particularly for the visual and sensory aspect, where perception and changes at key points for public access can be very important.
- 1.10. The tabulated list of potential changes drawn from the analysis for each relevant aspect area is set out in the Appendix and is available as a separate excel table.
- 1.11. The issues that have arisen from the study of this specific area are discussed in Section 2.0.

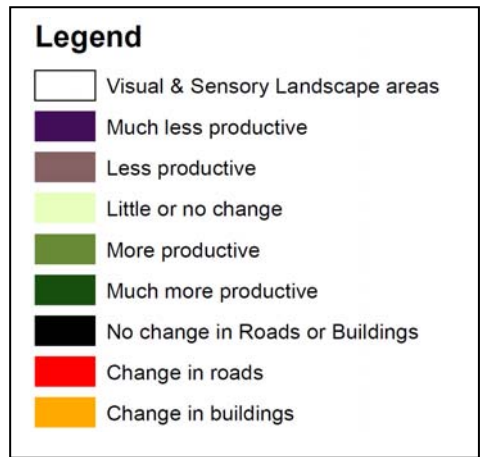
## **2. Potential changes in the study area**


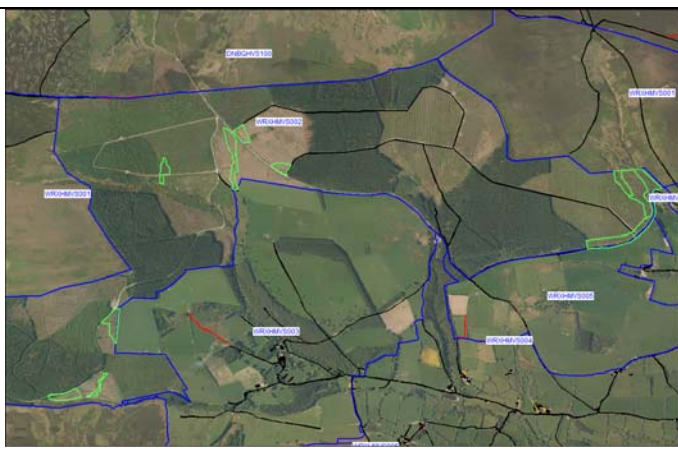
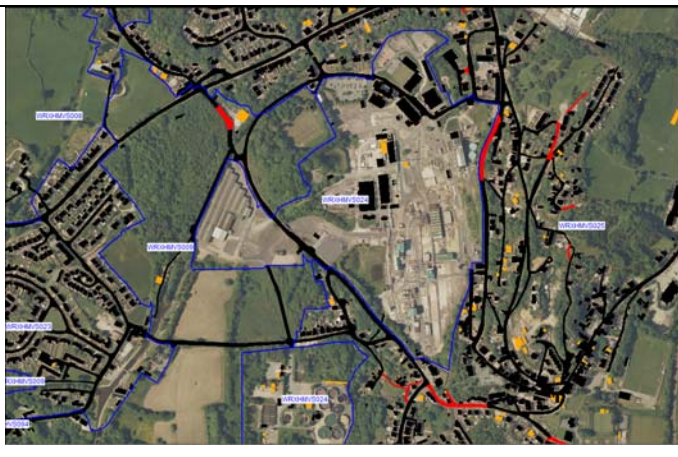

- 2.1. Within the study area the key changes appear to be:
  - Expansion of settlements in places such as Wrexham and redevelopment of industrial sites such as Brymbo steelworks.
  - Discontinuation of use of chemical works at Cefn Mawr- potential improvement with removal of chimneys
  - Expansion of commercial development areas with associated roads- eg to Wrexham Industrial Estate.
  - Restoration of landfill- improving the landscape character.
  - Forest plantation felling and broadleaf plantings which may change the character eg Ceiriog Forest.
  - Possible development of wind energy in Berwyn Mountains.

These are illustrated by maps and aerial photos on the following pages.



*Mega change map*



| Aerial view of change                                                               | Potential/actual change                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>WRXHMVS001</p> <p>Berwyn Mountains- change in landcover to improved pasture from moorland vegetation in parts- also anemometer mast for potential wind energy development</p> |
|   | <p>WRXHMVS002</p> <p>Ceiriog Forest- felling of conifer plantation and some replanting with broadleaves (green lines)</p>                                                        |
|  | <p>WRXHMVS024</p> <p>Cefn Mawr chemical works site now derelict with chimneys removed- reduced visual impact on surroundings</p>                                                 |
|  | <p>WRXHMVS060 and WRXHMVS 065</p> <p>Expansion of Wrexham west (west of A483)</p>                                                                                                |



WRXHMVS060 and WRXHMVS 065  
Expansion of Wrexham west  
(east of A483)



WRXHMVS057  
Landfill site before reclamation  
2001- north of Wrexham



WRXHMVS057  
Landfill site after reclamation  
2001- north of Wrexham



WRXHMVS074 and WRXHMVS 065  
Expansion of Brymbo



WRXHMVS076

Former Brymbo Steelworks now being developed on a phased basis



**APPENDIX**  
**LANDMAP VISUAL AND SENSORY DATA CHANGE DETECTION SHEETS:**  
**WREXHAM**

| Aspect area |                              | Change- indicated by:                                              |                                            |                             |                                                                                           |                                                                                  | Stage 2c   |                                                                                                                                                                                                                                        |
|-------------|------------------------------|--------------------------------------------------------------------|--------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UID         | Name                         | OS data, aerial photos and roads and buildings                     | Complexity maps (segment density) and NVDI | Phase 1 and seasonal change | LPA workshop/questionnaire                                                                | Other resources                                                                  | Field-work | Recommended LANDMAP amendment- GIS or survey or both                                                                                                                                                                                   |
| WRXHM VS001 | Berwyn Mountains             | aerial- confirms change in landcover partially to improved pasture | Segment density- indicates less complex    |                             | LPA states the area has been fenced and drained and anemometer mast located here          |                                                                                  |            | Survey- Consider amending description to state some areas being fenced, drained and improved to pasture, as well as anemometer mast. Consider including patch of 001 in adjacent 005 area as evolving into improved pasture over time. |
| WRXHM VS002 | Ceiriog Forest               | aerials- indicate large areas of felling                           | NDVI less productive and more productive   |                             |                                                                                           | NRW- broadleaf planting plans indicate some planting, especially on eastern edge |            | Survey- Consider amending description of area to mixed woodland/plantation with associated guidelines                                                                                                                                  |
| WRXHM VS017 | West Wrexham hill slopes     | roads and buildings, aerials, indicate new housing                 |                                            |                             |                                                                                           |                                                                                  |            | GIS-Amend boundary to the east                                                                                                                                                                                                         |
| WRXHM VS024 | Chemical works- Cefn mawr    |                                                                    |                                            |                             | LPA states former industrial site is now derelict. The chimneys were removed around 2008. |                                                                                  |            | Survey- Consider amending description to reflect current appearance along with guidelines for any redevelopment                                                                                                                        |
| WRXHM VS029 | A5 corridor north an east of | aerial confirms intensifying of use                                |                                            |                             | LPA states car boot sale area adjacent to                                                 |                                                                                  |            | Survey- Consider amending description to include apparently intensified use of a field as car boot sale area which erodes                                                                                                              |

|             |                                   |                                                 |                                            |                             |                                                                                           |                                                                              |            |                                                                                                                                                                                                                                    |
|-------------|-----------------------------------|-------------------------------------------------|--------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | Chirk                             |                                                 |                                            |                             | the A5                                                                                    |                                                                              |            | rural character and adds to A5 corridor disturbance.                                                                                                                                                                               |
| Aspect area |                                   | Change- indicated by:                           |                                            |                             |                                                                                           |                                                                              | Stage 2c   |                                                                                                                                                                                                                                    |
| UID         | Name                              | OS data, aerial photos and roads and buildings  | Complexity maps (segment density) and NVDI | Phase 1 and seasonal change | LPA workshop/questionnaire                                                                | Other resources                                                              | Field-work | Recommended LANDMAP amendment- GIS or survey or both                                                                                                                                                                               |
| WRXHM VS034 | Dee and Ceiriog river valleys     | aerials indicate growth of broadleaf tree cover |                                            |                             |                                                                                           | NRW- broadleaf planting plans indicate extensive replanting in wooded valley |            | Survey- Consider amending description of area to indicate some replanting taking place with associated guidelines                                                                                                                  |
| WRXHM VS052 | Maelor south of Wrexham           |                                                 |                                            |                             | LPA states new road constructed- Wrexham Industrial Estate Access Road - dual carriageway |                                                                              |            | Survey- Consider amending description of area as road will create new component with major earthworks in landscape with associated disturbance and movement.                                                                       |
| WRXHM VS054 | Dee Terraces                      |                                                 |                                            |                             | LPA states new road constructed- Wrexham Industrial Estate Access Road - dual carriageway |                                                                              |            | Survey- Consider amending description of area as road will create new component with major earthworks in landscape with associated disturbance and movement.                                                                       |
| WRXHM VS057 | Terrace north and east of Wrexham | aerial confirms reclamation of site             |                                            |                             | LPA states Penley former landfill site, now capped and planted and in the                 |                                                                              |            | Survey- Consider amending description to include reclaimed tip is locally evident as a raised green landform, contrasting with the prevailing large scale gentle slopes of the Dee Terraces. Also consider altering description to |

|             |                          |                                                                                    |                                            |                             | early stages of regeneration for woodland habitats. Also the new Wrexham Industrial estate access road.                            |                 |            | mention Industrial Estate access road and associated character and effects.                                                                                                                                                                       |
|-------------|--------------------------|------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aspect area |                          | Change- indicated by:                                                              |                                            |                             |                                                                                                                                    |                 | Stage 2c   |                                                                                                                                                                                                                                                   |
| UID         | Name                     | OS data, aerial photos and roads and buildings                                     | Complexity maps (segment density) and NVDI | Phase 1 and seasonal change | LPA workshop/questionnaire                                                                                                         | Other resources | Field-work | Recommended LANDMAP amendment- GIS or survey or both                                                                                                                                                                                              |
| WRXHM VS060 | Wrexham                  | aerial- indicates expansion of housing west of Wrexham                             |                                            |                             |                                                                                                                                    |                 |            | GIS-Amend boundary                                                                                                                                                                                                                                |
| WRXHM VS065 | A483 Mold Road Corridor  | aerial- indicates expansion of housing west of Wrexham to east and west of A483    |                                            |                             |                                                                                                                                    |                 |            | GIS-Amend boundary                                                                                                                                                                                                                                |
| WRXHM VS074 | Brymbo                   | roads and buildings, aerials, indicate new housing                                 |                                            |                             |                                                                                                                                    |                 |            | GIS-Amend boundary                                                                                                                                                                                                                                |
| WRXHM VS076 | Former Brymbo Steelworks | roads and buildings, aerials, indicate new housing /redevelopment of derelict site |                                            |                             | LPA notes poorly reclaimed slopes for woodland/public open space will take many years to naturalise. The area has only partly been |                 |            | Survey- Amend description of area to partial redevelopment/housing site with associated guidelines. Assess area for changes in vegetation cover possibly due to grazing regimes and alter Description and Management recommendations if required. |

|             |                                     |                                                |                                            |                             | regenerated and therefore has an incongruous mix of settlement and disturbed neglected character within a semi-upland and exposed location |                 |            |                                                                                                                                                               |
|-------------|-------------------------------------|------------------------------------------------|--------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aspect area |                                     | Change- indicated by:                          |                                            |                             |                                                                                                                                            |                 | Stage 2c   |                                                                                                                                                               |
| UID         | Name                                | OS data, aerial photos and roads and buildings | Complexity maps (segment density) and NVDI | Phase 1 and seasonal change | LPA workshop/questionnaire                                                                                                                 | Other resources | Field-work | Recommended LANDMAP amendment- GIS or survey or both                                                                                                          |
| WRXHM VS080 | Clays Farm and Lavister Golf centre |                                                |                                            |                             | LPA states new road constructed- Wrexham Industrial Estate Access Road - dual carriageway                                                  |                 |            | Survey- Consider amending description of area as road will create new componenet with major earthworks in landscape with associated disturbance and movement. |