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Exceptional spaces for sustainable living: the regulation of One Planet Developments in the open countryside

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Abstract

This paper explores the 'regime of practices' that are put in place when novel forms of sustainable living in the countryside are proposed that nevertheless contrast with established planning rationalities of urban containment and countryside protection. The article uses Foucault's concept of governmentality to explore the innovative and arguably progressive One Planet Development policy in Wales. The paper focuses in particular on the Ecological Footprint and its associated data and monitoring requirements as a way of demonstrating One Planet Living. The analysis highlights the tensions between enabling One Planet Development and the governance of individuals' lives and behaviours.

Key words: planning, governmentality, One Planet Development, low impact development, Ecological Footprint

Introduction: environmental limits and One Planet Development

There has in recent years been a revival in planning and environmental policy of the concept of environmental limits (Owens and Cowell, 2011). This resurrects historical concerns that present consumption patterns could see society approach limits to growth, and a decline in social, economic and environmental conditions (Meadows et al, 1972, p. 23). This paper focuses on One Planet Living as a recent conceptualisation of living within environmental limits (Honig et al, 2015; Desai, 2010; Holden et al, 2015). One Planet Living entails living within the capacity of the Earth's resources and demands that we start to live quite differently, focusing on reducing consumption of resources, understanding the demands our everyday practices place on the environment, and not exceeding our fair share of the Earth's resources. Individuals, families and communities increasingly propose alternative forms of development to facilitate their progress towards One Planet living. These 'One Planet Developments' take different forms, ranging from modern, technologically-driven exemplars of sustainable living to land-based low impact developments. One Planet Developments, depending on where they are located in the world, will be subject to varying degrees of land use regulation. Some will be subject to minimal controls over land use and development, and communities will be relatively free to pursue One Planet Developments. Other areas operate detailed systems for managing development, and establishing a One Planet Development may be challenging or controversial.

This paper examines One Planet Developments in open countryside, which are usually permaculture-based low impact developments outside of established settlement boundaries (Fairlie, 1996; Pickerill and Maxey, 2009a; Thorpe, 2015). The study explores One Planet Developments in Wales, in the United Kingdom, where there is a well-established system of planning controls. A One Planet Development is defined in this context as “development that through its low impact either enhances or does not significantly diminish environmental quality” (Welsh Government, 2010a, p. 24). It is the location of residential One Planet Developments in open countryside that is academically interesting and controversial in practice, given that they are exceptional forms of development contrary to established planning rationalities of urban containment. The emergence of new ‘forms’ of development can challenge - and help us to understand - the discourses and rationalities embedded in planning systems (Murdoch and Abram, 2002). The planning system is a key site where these controversies are played out, yet the planning system is also “a powerful mechanism for learning to live within limits” (Owens and Cowell, 2011, p. 18) and a framework for driving society towards sustainable development (Thorpe, 2015). The central aim of the paper is to explore, using Foucault’s concept of governmentality, how the planning system promotes and regulates new and novel forms of sustainable development, such as One Planet Development, that nevertheless conflict with established planning rationalities.

This introduction has briefly introduced the principle of One Planet Living. The next section explains the theoretical framing of the paper using Foucault’s concept of governmentality as a means of exploring how government - through the planning system - conducts and regulates not only land uses, but also lifestyles and behaviours. The paper then outlines the context and methodology for the empirical parts of the paper. The methodology is followed by an account of how a rationality of urban containment and countryside protection has shaped the way the planning system deals with new development in the countryside. Wales’ One Planet Development planning policy is introduced as a recent exception to the rationality of urban containment, alongside an account of stakeholders’ reactions to this policy. The empirical sections examine the ‘regime of practices’ designed to enable and regulate One Planet Developments in the open countryside. These include the Ecological Footprint as a means of measuring resource and consumption use, and mechanisms for ensuring compliance with planning restrictions, often involving residents of One Planet Development gathering detailed information on their daily practices. The penultimate section brings together these elements in a discussion of how a Foucauldian governmentality framework helps us to understand the regulation of One Planet Developments. A concluding section reflects on the One Planet Development

policy itself and summarises the paper's contribution to critical Foucauldian analyses of land use planning.

Governmentality and land-use planning

The theoretical lens articulated in this paper for exploring One Planet Developments in open countryside is Foucault's concept of governmentality. The paper therefore contributes to critical studies of land-use regulation using Foucault's work (see Huxley, 2018). The paper is a theoretically-informed analysis of planning regulation and is therefore characteristic of the 'practice turn' in planning theory (Inch, 2018, p. 205). Foucauldian analyses of planning are typically associated with a 'dark side of planning theory' emphasising social control, surveillance and subjection (Inch, 2018; Huxley, 2018; Yiftachel, 1998; Flyvbjerg, 1996; Certomà, 2015). Yet this reflects a partial account of Foucault's work (Huxley, 2018) and an increasing range of studies focus on expanding Foucault's concepts applied to planning, including the concept of governmentality (Certomà, 2015). This study reinforces two of the key approaches that Huxley (2018, pp. 216-7) identifies to the use of Foucault in critical planning studies. The first of these is that which explores the dark side of planning regulation, focusing on surveillance and disciplinary mechanisms of control. The empirical sections of this paper illustrate how surveillance and disciplinary mechanisms feature prominently in the regulation of One Planet Developments in the open countryside. The second in Huxley's (2018) categorisation of planning academics' use of Foucault is focused on governmentality. This paper uses the Foucauldian concept of governmentality to explore One Planet Developments as a vehicle for *enabling* individuals, *subject to a series of conditions and constraints*, to live a low impact lifestyle in the open countryside (Foucault, 1977, 1978, 2007; see also Dean, 2010; Rose, 1999). Foucault introduced the concept of governmentality to address 'the issue of population' and 'the problematic of government' (1994a, p. 201), and identified the critical questions to be asked in exploring governmentality:

"How to govern oneself, how to be governed, how to govern others, by whom the people will accept being governed" (Foucault, 1994a, p, 202).

Foucault (1994a, pp. 219-220) defined governmentality as "the ensemble formed by the institutions, procedures, analyses, and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population". Governmentality is often characterised as the 'conduct of conduct' (Dean, 2010, p. 18) and land use planning is one of a myriad

different ways in which people's behaviours and actions are shaped via disciplinary and regulatory techniques (Certomà, 2015, p. 29-30). Planning is a form of 'policing' in a Foucauldian sense (Gordon, 1991, p. 10), which controls *where* the population can live, and to some extent *how* and *under what conditions* they can live there.

There are several advantages to adopting a governmentality perspective for the exploration of One Planet Developments in the open countryside. The first is that One Planet Developments *challenge established discourses* of restricting new residential in open countryside. Huxley (2018) highlights Foucault's work as being especially valuable for analysing "the different rationalities at work in different regimes of discourses, rules and procedures" (Huxley, 2018, p. 218). Foucault's writings and lectures on governmentality were also produced at a time when a variety of post-war orthodoxies were being challenged (Gordon, 1991, p. 6), and so his work is especially well suited to exploring the post-war planning rationality of urban containment, and the ways in which One Planet Development challenges this.

The second advantage to adopting a governmentality framework for exploring One Planet Development is because governmentality focuses on "the distributions of activities and population" (Huxley, 2018, p. 223) – that is, it is concerned with *spatial distributions*, practices and settings (see also Certomà, 2015, p. 28, and Elden and Crampton, 2007). Huxley (2008, p. 1644) identifies the centrality of space to the functioning of power in Foucault's work. The empirical sections of this paper highlight the significance of the spatial context of One Planet Developments in open countryside to enabling the exercise of specific forms of power. Foucault's early works also illuminated various practices of confinement – to the asylum, clinic, and prison (Faubion, 2014, p. 3) – and this paper explores development in open countryside that challenges the discourse of confining the population to urban areas. Foucault defined government as "the right disposition of things" (Foucault, 1994a, p. 208). Foucault's concepts of spatial ordering and rationalities therefore seem particularly insightful for a policy that challenges 'appropriate' locations for development, given One Planet Developments in the countryside may be considered by some stakeholders to be 'out of place' (see Huxley, 2002, p. 145).

A third advantage to adopting a governmentality perspective is its focus on the 'regime of practices' that enable the practice of land use planning and control (Foucault, 1991a, p. 75). One Planet Developments are subject to extraordinary mechanisms for monitoring and compliance through the planning system because they are an exception to controls over development in open countryside.

Jones (2015, p. 151) recognised the potential of a Foucauldian approach to understanding the monitoring and data collection associated with low impact developments. This paper extends this by exploring Ecological Footprint tools used to regulate One Planet Developments. The Ecological Footprint, when allied to the planning system's various management practices, can be read as a disciplinary mechanism designed to shape the behaviours of individuals (Foucault, 1977, p. 18).

The final advantage to adopting a Foucauldian perspective in this paper is that it directs attention to both the controlling *and productive* aspects of governmentality. It provides a framework for understanding how new forms of living in the countryside are established, while demanding that individuals are subject to monitoring of aspects of their lives that do not apply to others. A study of One Planet Development provides opportunity to explore the "*productive projects of subjectification*" that Huxley (2018, p. 208, italics in original) claims as missing from many Foucauldian analyses in planning, while also attending to the more conventional elements of discipline, regulation and control. So, while the Welsh Government's One Planet Development policy is arguably a progressive planning policy – it enables people to live a low impact, land-based livelihood in the countryside - "any form of classification and regulation and any reform or policy, *no matter how progressive*, is inescapably enmeshed in control and normalisation" (Huxley, 2002, p. 146, emphasis added). This paper therefore examines how a progressive policy - designed to legitimise sustainable means of living in the countryside - is nevertheless closely regulated by the planning system.

Context and methodology

This paper explores One Planet Development in Wales. Planning in Wales shares many similarities with England, although with some distinctive characteristics. The Welsh Government – a devolved administration of the United Kingdom – sets out the legislative and policy framework within which local planning authorities carry out their everyday planning functions. Local planning authorities are democratically-elected organisations and so their decisions are political ones informed by professional expertise. Their functions include preparing a Local Development Plan, which is a statutory document setting out land use requirements over a 10-15 year period, and making decisions on planning applications. The Local Development Plan has significant influence over planning decisions, yet the system is characterised by a high degree of decision-maker discretion. Consequently, national planning policies can have significant influence on individual decisions. This is especially so for new or novel forms of development. Planning applications for development may be approved or refused. Planning permission is typically granted subject to a series of conditions that control how a

development is delivered or used. Applicants for planning permission have a merit-based right of appeal through which they can challenge the decisions of local planning authorities. These appeals are usually decided by an executive agency called The Planning Inspectorate, and the appeal decisions can influence how policy is to be applied and how similar proposals are decided.

The empirical sections of this paper are based on documentary analysis of proposals for One Planet Developments, supplemented by stakeholder interviews. The One Planet Council - an independent and voluntary body - maintains a list of One Planet Developments with planning permission or have applied for planning permission. The Council identified that by early 2017 eleven separate applications, totalling 24 OPD smallholdings, had been approved in Wales. A further four One Planet Developments secured planning permission between late 2017 and early 2018 (see figure 2), and several others are at mid-2018 being considered or are in pre-application stage. The research focused on all eleven developments approved by early 2017. The review of applications and permissions is based on several sources of data. The first is documentary analysis of information submitted with and generated by consideration of planning applications for One Planet Developments. This information includes for each planning application a management plan that sets out how the One Planet Development is to be delivered and managed. This is a critical document in setting out how a proposal will meet the specific criteria for One Planet Development. The documentary analysis also included local planning authorities' committee reports. These reports identify how policy has shaped the decision, weighs up the various impacts of the proposals, and what the community and any specialists have said about the proposal. Additional material was available for some planning applications in the form of local letters or reports objecting to or supporting the proposal. Several early proposals for One Planet Development in Wales were also subject to appeal or planning applications were made retrospectively following enforcement action. In these cases, Planning Inspectors' decision letters on appeals against non-determination and refusal of planning permission were also reviewed, and documentation related to appeals against enforcement notices. The Planning Inspectorate assisted with identifying and providing documentation for all appeal cases for One Planet Developments, and similar proposals. This produced a total of 12 appeal decision notices. A search of Welsh media coverage of One Planet Developments identified a small selection of newspaper articles. The research explored a total of over 50 separate documents. The documentary data was complemented by eight in-depth telephone and face-to-face interviews with key stakeholders, including professional planners, applicants, prospective applicants and residents of One Planet Developments. Interviewees were identified through planning applications and related documents, or with assistance from the One Planet Council. Interviews typically lasted between 45 and 60 minutes, were audio-recorded and

selectively transcribed. Contextual data was also acquired through attendance at two seminars on intentional communities and One Planet Developments.

Rationalities of urban containment and countryside protection

There have been celebrated attempts to integrate the characteristics of town and country (Howard, 1898), yet various accounts point to the continuing portrayal of town and country as binaries (Fairlie, 1996, pp. 8-11; Gallent et al, 2015, pp. 297-8). This conceptual separation of town and country has led to particular rationalities of planning regulation in the countryside. Countryside planning in Britain was based in the later twentieth century on agricultural fundamentalism, supported by strong conceptions of the countryside as an idyllic and symbolic space (Bishop and Phillips, 2004, p. 4; Gallent et al, 2015, p. 302; Hodge, 1999, p. 91). Certomà (2015, p. 26) highlights that planning rationalities take on ‘a spatial form’, and in this case planning protected the countryside from ‘inappropriate development’ through urban containment:

“The idea [of urban containment] now began to involve the spatial limitation of urban growth, giving a firm edge to the city to allow the preservation of rural landscapes for scenic and recreational enjoyment and retention of agricultural land” (Ward, 2004, p. 52).

This discourse of containment applied also to towns and smaller settlements. Post-war planning legislation “was largely designed to protect the countryside and agricultural land from urban encroachment”, while simultaneously limiting planning controls over agricultural activities (Bishop and Phillips, 2004, p. 4). Fairlie (1996, p. x) described these simultaneously permissive and restrictive controls as a ‘twisted logic’ - restricting low impact developments in the countryside, while exempting agricultural buildings with significant environmental and visual impact from planning control.

The restriction of new housing in open countryside is a key feature of the British planning systems (Hodge, 1999, p. 92). Planning has operated on the principle that “in the open countryside *only the most exceptional need* should lead to planning permission being granted for new housing” (Gilg, 1991, p. 178, emphasis added). The term ‘open countryside’ is usually interpreted as any rural land outside of defined settlement boundaries. Planning policies allow selected *exceptions* to this principle. The most common exception is for agricultural or forestry workers’ dwellings where there is a clear justification to live on site (Gilg and Kelly, 1997; Fairlie, 1996, p. 39). Another exception is affordable rural housing sites immediately outside of village settlement boundaries that would not secure planning permission for market housing (Gallent and Bell, 2000; Gallent et al, 2015, pp. 221-222). A

further exception in England is for residential proposals of truly outstanding architectural quality (see Fairlie, 1996, p. 146 and Department for Communities and Local Government, 2012, paragraph 55). These exceptions, by their very definition, reinforce the established rationalities of urban containment and countryside protection, yet they also point to carefully justified circumstances in which exceptional forms of development can be approved. Later sections of the paper identify that the making of exceptions to a prevailing rationality is often met with extensive regulation.

Many have recognised the changing role of the countryside, especially the growth in the use of the countryside for recreation and leisure, and the increasing importance of the countryside as a site of energy production. Bishop and Phillips (2004, p. 6) argue that sustainability concepts have also 'broken down' the post-war consensus on the countryside (see also Hodge, 1999, p. 98). Marsden et al (1993, p. 4) interpreted these changing patterns of production and consumption in the countryside as part of a restructuring of rural spaces. They pointed to displacement of agricultural productivity by "a fragmentation of localistic orientations as individual rural communities express their specific consumption or rural development needs" (Marsden et al, 1993, p. 13; see also Halfacree, 2007). They pointed to an increasingly 'differentiated countryside' in which land use planning decisions play a key role. The planning system has been criticised as slow to respond to this differentiated countryside. Hodge argued:

"The world in 1947 was very different from that in 1997, and yet in many respects the basic framework which was established after the war for countryside planning has remained intact" (1999, p. 91).

The next section outlines the Welsh Government's planning policy on One Planet Development and how it challenges the dominant rationality of urban containment.

One Planet Development in Wales

The Welsh Government has a duty to promote sustainable development and has adopted a 'One Planet' "vision, based on using only our fair share of the earth's resources" (2009, p. 4). The Government called for Wales to live within its fair share of resources 'within the lifetime of a generation' (p. 13) and achieve an ecological footprint of 1.88 gha per capita by 2050 (p. 23), a figure equivalent to a fair share of the Earth's resources¹. The challenge is significant, and equates to

¹ Galli et al (2012) explain The Ecological Footprint as an accounting tool that enables comparison of direct and indirect human resource use and emissions with the planet's ecological or bio-capacity, and its capacity for renewable resource production and assimilation. The Ecological Footprint and biocapacity are expressed in

reducing resource use by around two thirds. This created an opportunity for a more innovative approach to planning for the countryside. The Welsh Government was exploring how the planning system could adapt to the changing dynamics of the countryside and accommodate “more divergent and contested development paths” (Welsh Government, 2004, p. 20). Research identified tension between significant public support for protection of the countryside from over-development, and the need to find space to accommodate new forms of development in rural areas (p. 75). Welsh Government also witnessed local attempts at embedding low impact development policies in local plans in Wales and elsewhere (Scott, 2001, p. 275) and commissioned research specifically on low impact development (Land Use Consultants, 2002). The Welsh Government’s then Environment Minister engaged with low impact communities, and is claimed as central to low impact development being embedded in planning policy (Jones, 2015, p. 162). A particularly important actor framing the introduction of One Planet Development policy was Lamma, the low impact development community in West Wales that secured permission under a localised ‘low impact development’ planning policy (Wimbush, 2012). Lamma actively campaigned for change in the planning system:

“The key to understanding our approach lies in questioning the core premise of the planning system...[it] separates out human habitation from land management; it reserves the open countryside for agriculture (and forestry) and directs the remainder of the population to live within town and village boundaries” (Wimbush, 2014).

These factors set the scene for Welsh Government to revise its planning policies (Welsh Government, 2010a, 2010b). Welsh Government added One Planet Developments to the exceptions to restriction of new residential development in open countryside. Technical advice defined One Planet Development as “development that through its low impact either enhances or does not significantly diminish environmental quality” (p. 24). The phrasing is close to Fairlie’s (1996, p. xiii) early definition of a low impact development, although Fairlie revised this to include reference to LID being “allowed in locations where conventional development is not permitted” (Fairlie, 2009, p.2; see also Jones, 2015, p. 119). Technical advice set out Ecological Footprint measures that developments should achieve initially and move towards over time. Welsh Government envisioned One Planet Development as “potentially an exemplar form of sustainable development” (2010a, p. 24), given its capacity to demonstrate ways in which society might live within environmental limits.

global hectares (gha). The WWF (2016, p. 77) identify that accounts calculate the Earth’s biocapacity in 2012 as 1.7 gha per person. This figure is then often interpreted as a figure to be attained for ‘One Planet Living’. The figure changes over time depending on various factors.

The effect of these documents was to introduce One Planet Developments as a new ‘form’ of development supported by national planning policy. The Welsh Government’s OPD policy does not establish a new ‘permaculture land use’ (Fairlie, 1996, pp. 51-2), although it does legitimise new, land-based living in open countryside. Howlett (2017) captures the significance of these changes:

“[The Welsh Government’s] policy even included provision for allowing certain low impact developments in open countryside! Not just anything, though – these would be something special: trailblazers, prototyping ways to live within our environmental means” (p. 29)...“this is brave planning that isn’t about planning” (p. 31).

The novelty of the policy led Welsh Government to commission a practice guidance document to support the policy and assist applicants and planners in preparing and evaluating planning applications for One Planet Development (Welsh Government, 2012). The practice guidance is extensive at over 70 pages, a reflection of the detailed and careful consideration, and extensive regulatory control, that One Planet Developments are subject to. The practice guidance focuses on the Ecological Footprint, the centrality of a management plan to consideration of planning applications and ongoing monitoring of approved developments, and an exit strategy should a development fail to achieve a required ecological footprint. The empirical sections of this paper focus on this ‘regime of practices’ (Foucault, 1991a, p. 75) associated with the approval and ongoing compliance of One Planet Developments with a management plan.

Professional and community reactions to One Planet Developments

“Attempts to exploit rural space will in some areas provoke intense controversy and in others will not, but the focus for representations will nearly always be the planning system.” (Marsden et al, 1993, p. 127).

Planning systems play an important function of managing contrasting rationalities and reconciling competing claims over land – an especially challenging task when stakeholders attach differing cultural meanings to land (Owens and Cowell, 2011, p. 22). One Planet Developments, as a way to ‘exploit rural space’, raise particularly interesting differences in how land is understood. Proponents of One Planet Developments, and low impact developments generally, exhibit strong cultural attachment to land as custodians (Dobson, 2007; Wrench, 2001, p. 3). This may contrast with the views of opponents to One Planet Developments in open countryside. This section documents these professional, political and community responses to proposals for One Planet Developments.

The Welsh Government policy was warmly welcomed by advocates of One Planet Development, and is described by one applicant as “an amazing policy, really, and I can’t quite believe it exists given the political resistance to open countryside development”. The wider response from professionals has been more measured. Fairlie (1996) argues that planners are conditioned to react sceptically to low impact proposals. He states:

“However favourably planners may view a low impact project in the open countryside, however much they accept that the project is a worthy one and a warranted exception to the...plan, they will still be inclined to refuse it.” (Fairlie, 1996, p. 114).

Fairlie’s reasons are that (1) planners want to ensure that low impact development proposals remain low impact following approval, and (2) an approval becomes a precedent, a basis for similar decisions in future. Planners, he argues, are “rightly wary about granting planning permission for agricultural and low impact dwellings” (p. 115). Professional planners’ reactions to One Planet Development have been varied. Some see the policy as open to similar abuse to other exceptions to new residential development in open countryside (Gilg and Kelly, 1997). Other planners are genuinely interested in exploring a way of sustaining vibrant rural communities, or meeting specific housing needs. One applicant recalled their experience of working with their planning case officer:

“when we first started this...it seemed like she was being very difficult, but we’ve since realised it’s as big a step for her to recommend a One Planet Development [for approval] as it is for us to apply”

Communities’ reactions have been similarly varied, from support for people trying to establish more sustainable lives and businesses, to active resistance to development in the open countryside. There are examples where low impact developments in Wales have provoked local community opposition, often attributed to a lack of mutual understanding and connection between existing communities and new ones (Pickerill, 2016, p. 117; Jones, 2015, p. 137; Scott, 2001, p. 282). Others have documented locals’ concern for ‘outsiders’ coming in to build low impact developments (Jones, 2015, p. 162). These concerns become particularly acute when locals have been refused planning permission for new dwellings in or adjacent to villages, and find it difficult to understand why the planning system fails to protect their ‘local’ interests (Fairlie, 1996, p. 116).

[Insert figure 1 around here]

Figure 1. Photographs of plot 1 of the four-unit Rhiw Las One Planet Development, now named Dan y Berllan (Welsh for Under the Orchard). The dwelling is an oak-framed building with straw hay bale walls and lime plaster, clad with Welsh larch. The building is zero-carbon in construction and use. It is designed to achieve passive solar gain, includes a photovoltaic roof, composting toilet, and biomass stove. Beekeeping and orchard produce form the land-based enterprise for this unit. The polytunnel seen in the photograph existed on site prior to planning permission for the One Planet Development. The building has a more conventional and modern appearance than some other One Planet Developments, despite its traditional construction methods. Photograph by Erica Thompson and One Planet Council.

The Rhiw Las OPD (see figure 1) usefully illustrates the nature of political and community opposition to One Planet Developments, as well as the tensions in introducing a new form of development contra to a prevailing rationality. The proposal generated objection from the local community council arguing that, despite *national* planning policy supporting One Planet Development, the proposal conflicted with *local* planning policies and set a precedent for residential development in the open countryside. Local objectors raised concerns about the development being ‘out of character’ – or effectively out of place - in open countryside, and contributing to fragmented patterns of development. The officer’s report to planning committee also referred to the local Assembly Member’s concern for “sporadic developments across West Wales”. The proposal was refused locally against the professional recommendation of the case officer. The concerns from some existing residents that new residents would ‘fail to integrate with the wider community’ were also noted in the successful planning appeal for Rhiw Las. The Planning Inspector reported:

“I am aware that some opponents of the [Rhiw Las] proposal feel it unfair that development of this kind can be permitted in the countryside, whilst strict controls apply to the location of other housing”

The Planning Inspector’s decision letter noted that “The view was expressed that the OPD policy should not give rise to sporadic developments across rural Wales. However, there is no expression of a restriction on the consideration of OPD proposals in these terms within OPD policy” (PINS appeal decision 3139036). This makes clear the Inspector’s view that so long as a proposal is compliant with

national planning policy, and other factors of access and design are appropriate, that there is no policy reason to prevent One Planet Developments from being approved in number across rural Wales. In other appeal decisions, Planning Inspectors emphasised OPD as a legitimate exception to restriction of new residential development in the open countryside. Councils that have resisted OPD proposals have often argued that the proposals conflict with local plan policies on either countryside protection or sustainable locations for development based on accessibility and public transport provision. Inspectors have nevertheless generally interpreted these concerns about isolated One Planet Developments ‘in the context of land-based OPD’ – in other words, the Welsh Government’s national planning policy has created a strong framework enabling the possibility of One Planet Developments. It has successfully and swiftly created an exception to an established planning rationality. A number of proposals have nevertheless been allowed at appeal, given the balance of local political opposition to and support for such proposals. One Planet Developments – as for low impact developments generally - therefore appear initially to have had greater success in securing planning permission at appeal than through local decision-making (Fairlie, 2009, p. 3). The author of the Welsh Government’s (2012) practice guidance on One Planet Developments stated in interview that local planning authorities were increasingly understanding of what One Planet Developments are trying to achieve. This, alongside the sharing of experience among applicants and potential applicants, may lead to increased success in securing planning permission for One Planet Developments through local decision-making processes. Recent decisions appear to support this (see figure 2).

The Ecological Footprint: ‘measuring’ One Planet Living

This section focuses on one of the principal ‘techniques, instrumentalities and mechanisms’ (Dean, 2010, p. 31) used in the governance of One Planet Development – the Ecological Footprint. The Ecological Footprint is a measure of resource use increasingly used by government at a variety of spatial scales to inform policy development (Galli et al, 2012). Environmental and conservation organisations also use the Ecological Footprint to monitor global human impact (WWF, 2016). The Ecological Footprint has resonated with government in the United Kingdom, and especially in Wales (Collins and Flynn, 2015, p. 92; Flynn, 2010). The Ecological Footprint is a land-focused measure of resource use, measured in global hectares (gha). This makes it simpler to grasp than other tools measuring environmental capacity – “it makes complex problems understandable” (Collins and Flynn, 2015, p. 9; see also Desai, 2010, p. 16). The Ecological Footprint also has potential for traction in disciplines such as planning as it uses *units of land* as a measurement, although interviewees referred to the Ecological Footprint as ‘novel’ and not encountered beyond One Planet Developments. Collins and Flynn (2015, p. 126) nevertheless point out that The Ecological Footprint is sometimes criticised,

particularly as a planning tool. The use of the Ecological Footprint as a *regulatory* tool, as is the case in One Planet Developments, is also arguably unusual and departs from its typical use in informing policy (Galli et al, 2012, p. 109). The extension of the Ecological Footprint into regulatory spheres reinforces the significance of some criticisms of it as a tool. Some critics note the Ecological Footprint's "crude simplification of nature" (Chambers et al, 2000, p. 32). There has also been criticism of 'reductionist targets' used in local policies on low impact developments (Jones, 2015, p. 159). Similarly, a tool that conveys a sense of technical measurement, objectivity, and precision may obscure the fact that selecting any technique for 'measuring sustainability' involves power struggles between actors (Owens and Cowell, 2011, p. 81). Other critics challenge the application of conventional ecological footprint calculators to low impact developments, arguing that land-based living is organised along very different lines to the rest of society (Vale and Vale, 2013, p. 264). This criticism points to the need for ecological footprint analyses to be adapted to different purposes and land uses (Thorpe, 2015). A further challenge is that in regulatory processes such as planning, it is applicants rather than experts that are responsible for calculating an Ecological Footprint, which can be challenging given the various data and assumptions that underpin the tool. The Ecological Footprint has despite these criticisms become central to One Planet Development planning policy in Wales, given that it offers an 'empirical' means of measuring sustainability to justify development in open countryside (Scott, 2001; Jones 2015, p. 163). The principal interest in this Foucauldian reading of One Planet Developments is the use of The Ecological Footprint as a tool of state governance and surveillance of individuals, as well as the self-regulating activities of individuals.

Welsh Government planning policy sets out footprint thresholds that a One Planet Development must meet. A One Planet Development 'should initially achieve an ecological footprint of 2.4 gha per person or less in terms of consumption and demonstrate clear potential to move towards 1.88 global hectares over time' (Welsh Government, 2010a). This is a defining characteristic of OPD policy – the ability to measure a development against a specific benchmark and address the challenge of defining a 'low impact development' (Fairlie, 1996, p. xiii). A One Planet ecological footprint is challenging to achieve in a Western societal context - it requires the average person living a 'three planet lifestyle' in the United Kingdom to reduce their consumption by around two thirds (Desai, 2010, p. 19). Projects in England demonstrate the ability to reduce a per capita footprint to around 50% below the UK average, yet this still exceeds a One Planet earth share (Vale and Vale, 2013, p. 266). Other case studies of low carbon communities demonstrate footprints of 2.71 gha (Talbot, 1996), which exceeds the initial level required to constitute One Planet Development in Wales.

The Welsh Government commissioned a One Planet Development ecological footprint calculator to support its policy (Thorpe, 2015). This is a critical tool in the regime of practices that regulate One

Planet Developments. Applicants can use the spreadsheet-based calculator to calculate a per capita footprint as part of a planning application. Ecological footprint data using the calculator has been key in informing decisions. The calculator works on basic data entry – based on amounts of money spent on consumption of goods and services, including travel – yet the detailed workings and assumptions of the model are not always made transparent. Collins and Flynn (2015, p. 12) contrast the simplicity with which ecological footprint measures can be grasped with the lack of transparency in the design of footprint tools. The detailed workings and assumptions of these tools are not often challenged – the ‘technical’ calculator promotes a belief in the correctness of the numbers produced (see Owens et al, 2004). Recent exploration of the Welsh Government’s One Planet Development calculator, for example, reveals an error that may underestimate the ecological footprint of approved developments². There is a risk that some schemes have been approved as One Planet Development based on an incorrect ecological footprint, and may find it challenging to demonstrate a One Planet ecological footprint in future monitoring.

There is a strong sense of environmental citizenship among proponents and occupants of One Planet Developments (Dobson, 2007), with a clear desire to reduce their environmental impact. This is acknowledged by planners who speak of proposers of One Planet Developments as genuine and committed. The critical test for a One Planet Development, however, is achieving 2.4 gha per capita initially and adhering to 1.88 gha per capita over time. These compare with an average ecological footprint in Wales of 3.28 gha per capita (Stockholm Environment Institute, 2015). Footprint figures for One Planet Developments vary considerably (see figure 2), and in some cases widely varying figures are reported for the same development. A dismissed appeal at Llechryd claimed EFA figures of 2.22 gha per capita and potential to reach 1.93 gha per person. Documentation for other OPDs shows significantly lower gha per capita figures. An appeal was allowed at Trecwnc for an OPD with an estimated EFA figure of 1.34 gha per person. The information submitted with the multi-unit Rhiw Las planning application identified an existing per capita ecological footprint of 3.86 gha for one unit, reducing to 2.38 gha on first habitation – marginally under the Welsh Government threshold - and progressing to 1.05-1.09 gha once the OPD was fully established. The Rhiw Las applicants, appreciating the importance of evidence to planning decisions, had for years already monitored their consumption and expenditure. Their figures therefore assumed greater credibility. Documents for Rhiw Las also explained why projected EFA figures were so low, arguing that limited household income from land-based activities of £3000-£5000 per annum dictated limited consumption (see also Pickerill and

² The calculator erroneously takes a national *per capita* footprint measure for ‘shared services’ which everyone in society bears the footprint for – e.g. defence spending – and divides it by the number of people proposing to live in the One Planet Development. The figure should not be divided as a per capita figure. Welsh Government commissioned some sensitivity analysis of the error.

Maxey, 2009b, p. 1533). Low ecological footprints for OPDs have not necessarily attracted scrutiny, yet some cases have caused planners to question the basis on which figures are calculated. For example, a report for the retrospective planning application for a single unit OPD at Nant y Cwm Farm adjusted EFA figures from an initial planned 1.75 gha per person to 0.98 gha per person. The Council's planning committee expressed concern that the extent of the adjustment "casts considerable doubt over the accuracy of the figures used to calculate their footprint per capita" (13/0164/RET).

[Insert figure 2 around here]

In addition to the ecological footprint figures and forecasts, applicants for One Planet Developments are also required to expend 'considerable time and resources' generating the evidence required to make a planning application for a One Planet Development (PINS appeal reference 2197634). Other appeal decisions have also emphasised the need for evidence to be given by 'a competent person' or to be independently verified:

"Whilst I acknowledge that OPD by its nature does not provide a large income and the cost of professional surveys are expensive, I consider that some aspects of the Management Plan require input from competent persons such as ecologists and transport experts to provide the robust data that is required" (PINS appeal reference 2226200 and 2226208).

In the case at Llanon the appellant had prepared supporting evidence themselves with a degree of professional support. The Planning Inspector nevertheless questioned "the lack of impartial professional input" to the material presented, which the Inspector noted "raises doubts about possible over-optimism" in relation to the performance of the development, and its likely Ecological Footprint (PINS reference 2184276). Jones (2015, p. 14) similarly identified the tendency of the planning system to depend on consultants to produce or verify knowledge. She also points out the seemingly insatiable appetite of planners for ever more information prior to making a decision to approve a low impact development (p. 169).

The Ecological Footprint, then, has been adopted as a critical tool in the governance of One Planet Developments. It offers a means of addressing an individual's or a family's consumption and environmental impacts and renders these visible into a single measurable and calculable figure. That figure is then a critical element in a proposal qualifying as a One Planet Development when assessed

against planning policy. Later sections identify that the calculator does not only play a role in the securing of planning permission, but becomes a tool for the ongoing self-governance of individuals' lives. In governmentality terms, the Ecological Footprint and its associated tools become critical instruments in shaping individuals' conduct.

Lifestyles, norms and standards

“government entails any attempt to shape with some degree of deliberation aspects of our behaviour *according to particular sets of norms*” (Dean, 2010, p. 18, emphasis added).

Achieving a One Planet ecological footprint is closely associated with lifestyle factors (Wackernagel and Rees, 1996, p. 11; Holden et al, 2015, p. 11420). Living within a One Planet ecological footprint implies adopting a lifestyle – or more accurately a livelihood - that is radically different from typical high-consumption, Western lifestyles (Thorpe, 2015). Indeed, one of the more interesting facets of One Planet Development in directing people towards more sustainable lifestyles is its direct address of and intervention in the detailed behaviours and activities of individuals and families. It shapes or ‘conducts’ people’s conduct in a very direct way. It contrasts with other forms of encouraging more sustainable behaviours, such as providing more sustainable opportunities for travel. These may enable a more sustainable lifestyle, yet they do not *direct it* in the way that One Planet Developments can. Nevertheless, lifestyle is reflected in and shaped by the form of housing typical of One Planet Developments. Housing design has in some cases caused planners concern. For example, the Nant y Cwm Farm OPD was initially recommended for refusal by planners for a variety of reasons, including that “proposed living arrangements...fail to meet minimum housing standards” (13/0164/RET). Council planners acknowledged the ‘unconventional’ design of the dwelling, yet argued that basic health and well-being standards needed to be adhered to. External toilet and washing facilities, separate to the main dwelling, have caused Planning Inspectors concern, as have other aspects of the physical and living arrangements of planned OPD dwellings. These concerns were evident in early appeal decisions on Corner Wood where the Inspector noted “the provision of facilities for personal hygiene would be inadequate *by any reasonable standards*” (PINS appeal reference 2179373, emphasis added). The same Inspector also explored what constitutes “adequate space for living and sleeping as a family”, and concluded that there was inadequate privacy in the home “particularly as adults and children would live and sleep in the same space”. The Inspector noted that a One Planet life may mean living quite differently, yet this “does not mean that poor quality homes are acceptable”. The Inspector’s report reveals a series of norms about privacy and how people should

live within their homes (see Foucault, 1978, p. 144, and also Howell, 2007, p. 299) – in this case implying that it is not appropriate for children of a certain age to sleep in the same room as adults, presumably due to other (sexual) activities that also take place in bedrooms. We see in these cases an example of state concern for the living arrangements, behaviour and well-being of individuals, even though they occur in the private spaces of the home (Huxley, 2018, p. 219). This is illustrative of the pastoral power that Foucault identified, and that finds its expression in the modern concern for individuals' well-being, health and protection, and welfare (Foucault, 1994b, p. 332-334). These illustrations highlight that planning and governmentality is an ethical and “an intensely moral activity” (Dean, 2010, p. 19) in which individuals and their lifestyles are measured against benchmarks or normalised practices of how we think people *should* live, behave and conduct themselves (see Huxley, 2002, p. 145).

Compliance, monitoring and exit strategies

“Whilst the Welsh Government supports the principle of low impact development, it places emphasis on the need to ensure it is *properly controlled*” (PINS appeal reference 2190452, emphasis added).

The earlier section of this paper outlined Foucault's expression of governmentality as being concerned with “how to be ruled, how strictly, by whom, to what end, by what methods” (Foucault, 1994, p. 202). This section explores three issues related to compliance of One Planet Developments with requirements set out in planning policy. These each address questions of control, but also speak to the matter of how planning shapes the conduct of those living in One Planet Developments, the methods and tools used, and the state's preparedness to apply these methods. The first issue is the potential for the Welsh Government's planning policy to promote a shift from retrospective to prospective planning applications for low impact and permaculture developments. The second issue focuses on the processes and mechanisms required to provide evidence of ongoing compliance of a development with One Planet Ecological Footprint thresholds. The third issue explores the potential outcomes if a One Planet Development repeatedly fails to meet the threshold Ecological Footprint measures to constitute a 'One Planet Development'. The emphasis in all three sections is on planning as a form of governmentality designed to shape the regulated and self-regulated activities and behaviours of individuals, and a questioning of the capacity of government to regulate such behaviours (Dean, 2010, p. 18)

Embracing counter-conduct: from retrospective to prospective planning regulation

“Planning both encounters and calls forth resistances to its particular exercises of governmentality, inciting and enacting counter-conducts that are refusals to be governed ‘like that’” (Huxley, 2018, p. 222).

Many eco-homes in Britain have been constructed without planning permission “by people hoping that they will not be discovered” (Pickerill, 2016, p. 130). In the Brithdir Mawr case, West Wales, its owner argued he “would certainly have been denied permission, had we asked for it” (Wrench, 2001, p. 3; see also Scott, 2001, p. 277). Some low impact developers choose not to engage with the planning system, dissuaded by the considerable investment and uncertainty associated with it (Jones, 2015, p. 230). Even in cases where supportive low impact development planning policies are in place, developers have opted for the “tried and tested route of building first and seeking retrospective planning permission” due to restrictive interpretation of those policies (Maxey, 2009a, p. 69). These actions can be read as forms of ‘counter-conduct’ and resistance to planning’s efforts to control land use (Huxley, 2018, p. 211), and in this case confine the population to designated settlement boundaries. The retrospective pathway of many low impact development applications also reinforces planners’ views that policies are open to abuse and exploitation. In governmentality terms, people exploring low impact living in the countryside may fall into planners’ definitions of “individuals and populations problematized as chaotic and uncontrolled” (Huxley, 2006, p. 774; see also Cohen, 1985, p. 1). There are instances where unauthorised low impact dwellings in the countryside have escalated into protracted disputes between the residents and planners. The One Planet Development Policy is especially interesting in this sense when viewed through a Foucauldian lens – the policy can read as a means of extending the reach and sphere of government to a form of development and a population that has historically been problematic for planning. The policy offers the scope for living in open countryside, and doing so legitimately, but at the cost of the extension of regulation into the details of individuals’ everyday lives.

Some recent schemes have applied for planning permission prospectively. Lammas is often celebrated as the United Kingdom’s first eco-village to secure planning permission prospectively (Maxey, 2009b, p. 21; Pickerill, 2016, pp. 127-8; Jones, 2015). The Welsh Government’s planning policy may promote more low impact developments to be made in advance of development, and provides a legitimate, yet challenging route to low impact living. One interviewee referred to this challenge and how planners were:

“dealing with people that they think are trying to buck the system, but anyone that reads One Planet knows you can’t buck the system...and when planners realise that, they become very respectful of it”

The applicant’s statement refers to how the policy makes considerable demands on applicants and residents. It places emphasis on proving in advance that a development will meet stringent criteria – what one applicant referred to as the significant challenge of *‘trying to prove the future’* - and then requires evidence of compliance on an ongoing basis.

Recording evidence of compliance with a One Planet lifestyle

The challenge of *‘trying to prove the future’* –providing assurance about how one will live on and manage a One Planet Development - is complemented by an additional requirement of providing regular evidence that a development is a One Planet Development. The management plan is an important document in considering an OPD planning application, and performs a central role in its ongoing compliance and monitoring. The management plan – aligned to Ecological Footprint measures – has in several cases been a way of enabling a OPD to proceed despite regulators’ uncertainties about whether the development will be successful, given that failure of the scheme at some future point means that an exit strategy can be implemented. For example, the Nant y Cwm application and the Corner Wood appeal included deliberations over the future life cycle of the family involved and whether a One Planet ecological footprint could be maintained in future, focusing on the possibility of increasing consumption as younger members of the family grew up, or the impact on the per capita Ecological Footprint as children departed. The management plan, ecological footprint and exit strategy enabled uncertainties to be deferred to some future point for consideration. It allows some of the challenges on the applicant of *‘trying to prove the future’* to be addressed at later stages, and it also allows a development to proceed despite incomplete knowledge or understanding on the part of decision makers, given that the risk falls principally on the applicant or occupant to prove compliance with the policy’s requirements. It is the indefinite annual reporting and monitoring of One Planet Developments that requires significant input from both occupants and the local planning authority. Figure 3 shows a selection of the annual monitoring requirements for a One Planet Development, and illustrates “the penetration of regulation into even the smallest details of everyday life” (Foucault, 1977, p. 198). The management plan and self-completion reporting mechanisms are

illustrative of subjects becoming active in their own government (Rose, 1999, p. 142; Dean, 2010, p. 19; Faubion (2014, p. 6).

[Insert figure 3 around here]

People's expectations and experiences of monitoring varied considerably. Some interpreted the monitoring requirements as onerous, excessive and ultimately impractical:

“if there had been another way to do it...we may not have chosen to do the One Planet policy because there's so much record keeping and monitoring...I can't possibly be writing down every item of food that I buy for five years, every day – you'd never get anything else done”

Other interviewees shared such concerns initially, yet by exploring with others the practical day-to-day requirements of recording details of their Ecological Footprint had arrived at a more pragmatic understanding of what the planning system demands:

“one of the worries was about keeping records, the footprinting tool you've got to complete...Now I've seen it, I realise it's just like doing your tax, if you keep on top of it. At first there were a lot of rumours, 'oh, you've got to weigh and record every vegetable'. In reality, it doesn't work like that. You have to monitor, but that would be impossible”

Documenting evidence of living a One Planet lifestyle was identified as important as actually living it – it demands that occupants not only have the capacity to live a One Planet life, but also have the capacity to assemble the evidence for it. Jones (2015, p. 171) has described this as the demand to 'feed the bureaucratic machine' of the planning system. Pickerill (2016, p. 235) similarly argues that the Lammas eco-village, while not a One Planet Development, remains “under heavy surveillance from the state” to ensure compliance with planning requirements. There is an irony that in seeking simplicity and freedom by adopting a low-impact, land-based livelihood (Wrench, 2001, p. 108), OPD residents subject themselves to a level of monitoring by the planning system that exceeds probably any other form of residential property. An applicant captured this point:

“the measurement side [of OPD] is really important, but the measurement side is also the really challenging bit for people because you've got to measure what you do, you

know, and we're not used to being measured. *We like to think we're free*" (emphasis added)

The interviewee echoes Anderson's (2017, p. 193) questioning of whether 'ecosophical' communities can ever really escape "away from the cultural values and superstructural disciplinary measures (including surveillance and monitoring) of the mainstream". Applicants and occupants nevertheless accepted that the restrictions and monitoring were part of living in an exceptional form of development, and even comprised 'justification to everyone else' for living in open countryside. Faubion (2014, p. 6), drawing upon Foucault, reminds us that our freedom is always conditioned and sometimes constrained by power relations – a freedom that in this case is *literally* conditioned by planning regulations. The applicant's quote above also resonates with Dean's (2010, p. 46) argument that "government works through practices of freedom *and* states of domination". Another occupant of a One Planet Development identified that annual monitoring was fundamental to achieving One Planet Developments - that it *enabled* a particular form of living in the countryside:

"I could say, 'oh, I don't think it's fair that we're monitored annually', but then if you're not monitored annually how on earth could you possibly put that policy in place?...It's totally ridiculous *and* totally necessary."

The significant emphasis placed on compliance with the management plan is likely to be moderated by the capacity of the planning system to monitor compliance. Planning authorities will require the resource and expertise to effectively monitor compliance of a One Planet Development. The monitoring will need to be carried out effectively if any failure to comply is to be the basis for exit or enforcement action. The capacity of the planning system to ensure compliance with the requirements of a One Planet Development may be affected by the ineffectiveness of organisations in implementing systems for monitoring and surveillance (Harris, 2011; Ball and Haggerty, 2005, p. 136). In the Nant y Cwm retrospective application, the Council noted "that the key issue is whether the Local Planning Authority can reliably monitor their progress if consent is given so that a true One Planet Development lifestyle is practiced" (Committee report 13/1064/RET). One potential consequence of monitoring is that it reveals that a development is failing to achieve One Planet living, and thereby does not meet the thresholds for being an exception to the restriction on new houses in the countryside, which is addressed in the next section.

Exit strategies: anticipating 'failure' of a One Planet Development

Planning permission provides important security for One Planet Development occupants (Maxey, 2009a, p. 22). Interviewees referred to the importance of One Planet Development policy as a way of living *legally* on the land. This security has become increasingly important as low impact developments are more commonly undertaken on a permanent basis (Pickerill and Maxey, 2009b, p. 1521). A planning permission for OPD is a full planning permission and not a temporary permission, sometimes used to cater for experimental proposals (Fairlie, 1996, p. 116). A One Planet Development is nevertheless conceptually similar to temporary use by being tied on a continuing basis to compliance with a One Planet ecological footprint. In the words of one applicant, "you have to be monitored forever, basically, you never get permanent permission for these kinds of developments". The security that planning permission provides for an approved One Planet Development is therefore always contingent. A One Planet Development does not have the enduring property rights enjoyed by more conventional forms of housing. Residents of One Planet Developments therefore face sizeable risks, including 'exit potential' triggered by repeated failure to adhere to the management plan and threshold ecological footprints (Pickerill, 2016, p. 235; Howlett, 2017, p. 30). A planner argued that for One Planet Developments:

"there's always that threat of it having to stop...what you're basically saying to the applicant is 'you've got to invest in this, you're investing your life into this. You always have that axe hanging over your head, because if you don't make it work, it might have to go'"

This leaves open the question that Foucault raised of 'how strictly' one is to be governed (Foucault, 1994a, p. 202). The decision whether to enforce against a failing One Planet Development is primarily one for local councils. It is a discretionary consideration and a local planning authority can decide whether and to what extent to enforce. Some interviewees anticipated planners would be flexible in dealing with 'failures', expecting planners to be 'agreeable' and see that people were 'making an effort'. Others argued that the policy is innovative and recent, and that flexibility will be needed to address unforeseen issues arising as developments take place. The Welsh Government practice guidance includes opportunity for OPD residents whose development is indicating failure to get their schemes 'back on track', rather than face abrupt action to invoke an exit strategy. This echoes Foucault's (1977, p. 170) reference to discipline, correction and training, enabling individuals and communities in this case to correct their behaviours and achieve a One Planet footprint. Actions in the

event of repeated failure of a One Planet Development are anticipated in the applicant's management plan. Exit strategies do not necessarily have to return land to its condition prior to the development, particularly as the quality of the land will often have improved due to the development. A key focus for exit strategies is dealing with the residential or business component of the development, rather than any agricultural or permaculture elements. The Rhiw Las exit strategy, for example, proposed returning land to agricultural use should the exit strategy be triggered. The applicants pointed out that this would necessitate regular vehicular trips to the site, and therefore be *less* sustainable than residential One Planet Living on site. The uncertainty about future actions to secure compliance is further compounded by other uncertainties about how such a recent policy and novel form of development will work out in future – for example, interviewees expressed uncertainty about the ability to remain on the land in older age, or the ability to sell on a One Planet Development at some future point. This highlights that a One Planet Development is always contingent on future circumstances, and in a way that occupants of other forms of residential development do not usually have to consider.

Discussion: One Planet Development as an exercise in governmentality

The Welsh Government's planning policy is an exceptional policy in more than one sense. It provides an exception to a well-established rationality that restricts new residential development in open countryside, and has enabled a legitimate way for people to live a sustainable livelihood previously constrained by the planning system. This discussion section draws together the various themes, insights and interpretations that a Foucauldian governmentality perspective offers in relation to One Planet Development. The first of these is the exploration of how established planning rationalities work. One Planet Development Policy both challenges and reinforces the long-established rationality of urban containment. One Planet Development is an 'exception' to that rationality, yet it is a carefully defined exception that enables new forms of development to be located in open countryside without undermining the overall rationality of containment. It is difficult to anticipate what the policy may mean for the long-term future of living in the countryside, yet it does experiment with and open up the possibility or potential for a radically different countryside. Foucault was famously resistant to prediction in his work, arguing that his work often only explored potentials rather than predictions, and emphasised the importance of contingent factors (see Foucault, 1991b, pp. 58-60). Nevertheless, the case study reveals some success in at least challenging and reconstituting the dominant rationality of urban containment. The second theme is the importance of the spatial context of One Planet development in explaining the tools and techniques used to regulate it. Huxley (2008, p. 1644) identifies the centrality of space to the functioning of power in Foucault's work (see also Foucault,

1994b, p. 352). The spatial location of One Planet Development in the open countryside and contrary to the rationality of urban containment is critical to explaining the various tools and instruments planning applies to the residents of One Planet Developments. One resident captured this issue particularly well:

“If you want to build a house on a piece of land where it’s been restricted for the past century, *there have to be extraordinary circumstances* that allow that to happen, and so I guess they’ve created the extraordinary circumstances that you have to meet”
(*emphasis added*)

So, it is the exception to a spatial and distributive ‘rule’ that legitimises the exceptional and extraordinary means by which One Planet Developments are controlled. This exceptional regime of controls is the third key theme. The Ecological Footprint measure, the associated footprint calculator, and the requirement for annual monitoring clearly enhance what Dean (2010, p. 41) describes as the ‘field of visibility of government’. The management plans for each One Planet Development provide detailed insight into the consumption and other practices of the intended residents – from what food they will grow and eat, how much energy they will use, how often and to where they will travel, how many people will live there and visit, as well as the means by which they will manage and assimilate their waste products. This is an extraordinary set of arrangements for the conducting of others and the self, a remarkable form of “administration over the way people live” (Foucault, 1994c, p. 329). These tools and techniques also enable a form of pastoral power to be exerted by regulators, reinforcing the idea of planning as an intensely ethical and moral activity. The final theme of this section is the productive, rather than controlling, feature of governmentality. The One Planet Development policy echoes Certomà’s (2015, p. 28) description of governmentality as “a process that – while controlling things and people up to the finest detail – is not necessarily repressive or predatory in kind”. One Planet Development policy and the schemes it has enabled on the ground exemplify the ‘double-edged’ nature of the state and the ‘tension between oppression and reform’ (Huxley, 2018, p. 217, citing Yiftachel, 1998, p. 400). The One Planet Development policy can be interpreted as a progressive policy, prompted in part by earlier instances of ‘counter-conduct’ (Huxley, 2018) as the planning system worked out how to address unauthorised developments in open countryside that contravened established planning rationalities of containment, yet nevertheless aligned with various policy goals of a government with a statutory duty to pursue sustainable development. Foucault (1977, p. 194) was keen to emphasise that power is not simply negative, but also productive in that “power produces” (see also Flyvbjerg and Richardson, 2002, p. 45). Power in this case has produced a legitimate and authorised means of living a permaculture existence in open countryside, subject to

the acceptance of restrictions and monitoring. Foucauldian analysis focuses our attention on the simultaneously controlling and enabling character of governmental rationalities (Huxley, 2007, p. 195). Welsh Government OPD policy has effectively side-lined the argument used to refuse many earlier LID proposals that they contravened strict local planning policies, yet has done so by producing a form or order on a previously problematic form of development that has conflicted with established planning discourses. It has done this by establishing at national level a policy framework that legitimises OPD in the open countryside. This framework enables people proposing One Planet Developments – and wanting to live a One Planet life - to argue their case within the context of planning principles and criteria. They can now justify their schemes within the parameters of the planning system (see Scott, 2001, p. 282) and live sustainably on the land, even if it is under ‘extraordinary circumstances’.

Conclusion

The central aim of this paper was to explore how the planning system regulates new and novel forms of sustainable development, and ways of sustainable living, that nevertheless conflict with established planning rationalities. This closing section concludes with two key points. The first is the potential of One Planet Development to provide wider lessons about progress towards sustainability, and living within environmental limits (Thorpe, 2015). The Welsh Government claims One Planet Development to potentially be ‘an exemplar form of sustainable development’ (2010a, p. 24). There are nevertheless important limitations to One Planet Development as an interpretation of sustainability that can challenge current practices (Owens and Cowell, 2011, p. 21). The very specific requirements placed on One Planet Developments in Wales arise from the exception to the traditional constraints on new residential development in the open countryside. The requirements are considered so challenging that only a small number of proposals are likely to come forward, with few people having the energy, skills and commitment to promote a successful One Planet Development through the planning system. The number of One Planet Developments in Wales is presently small, yet the Welsh Government’s policy illustrates an alternative vision of a sustainable countryside, a countryside where people are ‘back on the land’, living within the planet’s resources, and enhancing the biodiversity and landscape qualities of the countryside. Yet the traditional conception of the countryside that has dominated planning ideas for the past seventy years still shows itself as embedded in the views of some elected members and local communities. The policy has usefully established living sustainably and within a One Planet ecological footprint as a legitimate exception to long-established planning

controls over new residential development in open countryside. The Welsh Government's policy has, to an extent, managed to shift debate beyond the stage "where experiments in low impact development are strangled at birth by planning measures which are designed to prevent the proliferation of high impact development" (Fairlie, 1996, p. 128). Yet, to use Fairlie's language here, we need to examine the planning system's role in preventing or promoting high impact development. One Planet Development in Wales underlines the stark difference between those trying to limit their environmental impacts through One Planet Living – and their acceptance of extraordinary scrutiny and regulation of their lifestyles through the planning system to achieve this – and the freedoms that others have to continue pursue unsustainable, three-planet lifestyles and behaviours. There is still a great deal to do to transform One Planet Development beyond the examples highlighted above if it is to genuinely become 'an exemplar form of sustainable development'.

The second key point relates to the paper's academic contribution. The paper was positioned as one that explored the policy and practice of One Planet Development using a critical, Foucauldian lens. Using this lens, and adopting the concept of governmentality in particular, has shown that it can be a useful way of interrogating practices that challenge dominant rationalities within the planning system. The framework makes clear that planning is a 'regime of practices' – policies, processes, tools, evaluations, evidence gathering, and monitoring - concerned as much with people's conduct and behaviour as it is with the simple control of land use and development. Foucault's work brings together the analysis of discourses and rationalities with exploration of these detailed tools, mechanisms and practices used to articulate them, alongside the impacts these have on people's behaviours. Indeed, one of the key contributions of the paper has been to relate established rationalities – and, more importantly, exceptions to them – to detailed instruments of scrutiny, monitoring and control, including those that require individuals and families to extraordinarily account for their lifestyles and consumption practices. There is scope for further critical exploration of how 'exceptions' can be used to create space to do things differently, and how such exceptions open up opportunities to regulate lives in different ways. Inch (2018, p. 204) refers to Foucault's works as providing a 'toolbox' for planning theory. We need to continue to use that toolbox as a way of unpacking what goes on in planning policy and practice, and better understanding the 'arts of government' (Faubion, 2014, p. 6) in situations where established planning rationalities are contested and challenged.

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References

- Anderson, J. 2017. Retreat or re-connect: how effective can ecosophical communities be in transforming the mainstream? *Geografiska Annaler: Series B Human Geography*, 99(2) 192-206.
- Ball, K. and Haggerty, K. 2005. Editorial. Doing Surveillance Studies. *Surveillance and Society* 3(2/3), pp. 129-138.
- Bishop, K. and Phillips, A. 2004. Then and Now: Planning for Countryside Conservation. In: Bishop, K. and Phillips, A. (eds) *Countryside Planning: New Approaches to Management and Conservation*. London: Earthscan, pp. 1-15.
- Certomà, C. 2015. Expanding the 'dark side of planning': governmentality and biopolitics in urban garden planning. *Planning Theory*, 14(1), 23-43.
- Chambers, N, Simmons, C. and Wackernagel, M. 2000. *Sharing Natures' Interest. Ecological Footprints as an Indicator of Sustainability*. London: Earthscan.
- Cohen, S. 1985. *Visions of Social Control. Crime, Punishment and Classification*. Cambridge: Polity Press.
- Collins, A. and Flynn, A. 2015. *The Ecological Footprint: New Developments in Policy and Practice*. Cheltenham: Edward Elgar.
- Dean, M. 2010. *Governmentality. Power and Rule in Modern Society*. Second edition. London: Sage.
- Department for Communities and Local Government. 2012. *National Planning Policy Framework*. London: DCLG.
- Desai, P. 2010. *One Planet Communities. A real-life guide to sustainable living*. Chichester: Wiley.
- Dobson, A. 2007. *Environmental Citizenship: Towards Sustainable Development*. London: Wiley InterScience.
- Elden, S. and Crampton, J. 2007. Introduction. Space, Knowledge and Power: Foucault and Geography. In: Crampton, J. and Elden, S. (eds). *Space, Knowledge and Power: Foucault and Geography*. Aldershot: Ashgate, pp. 1-16.
- Fairlie, S. 1996. *Low Impact Development. Planning and People in a Sustainable Countryside*. Charlbury: Jon Carpenter Publishing.
- Fairlie, S. 2009. Foreword. In: Pickerill, J. and Maxey, L. (eds). *Low Impact Development. The Future in our Hands*, pp. 1-5.
- Faubion, J.D. 2014. Introduction: The Use of Foucault. In: Faubion, J.D. (ed) *Foucault Now: Current Perspectives in Foucault Studies*. Cambridge: Polity, pp. 1-20
- Flynn, A. 2010. Environmental Policy. In: Jones, B. and Norton, P. (eds) *Politics UK*. Seventh edition. Pearson, pp. 581-613.
- Flyvbjerg, B. 1998. *Rationality and Power: Democracy in Practice*. Chicago: University of Chicago Press.
- Flyvbjerg, B. and Richardson, T. 2002. Planning and Foucault: in search of the dark side of planning theory. In: Allmendinger, P. and Tewdwr-Jones, M. (eds.) *Planning Futures: New Directions in Planning Theory*. London: Routledge, pp. 44-62.

- Foucault, M. 1977. *Discipline and Punish. The Birth of the Prison*. Translated from the French by Alan Sheridan. First published as 'Surveillet et Punir: naissance de la prison' by Editions Gallimard in 1975. London: Penguin Books.
- Foucault, M. 1978. *The History of Sexuality. Volume 1*. London: Penguin.
- Foucault, M. 1991a. Questions of Method. In: Burchell, G, Gordon, C. and Miller, P. (eds). *The Foucault Effect: studies in governmentality*. Chicago: Chicago University Press, pp. 73-86.
- Foucault, M. 1991b. Politics and the study of discourse. In: Burchell, G., Gordon, C., and Miller, P. (eds) *The Foucault Effect: Studies in Governmentality, with two lectures by and an interview with Michel Foucault*. Chicago: University of Chicago Press, pp. 53-72.
- Foucault, M. 1994a. Governmentality. In: Faubion, J.D. (ed.) Michel Foucault. *Power. Essential works of Foucault 1954-1984. Volume Three*, pp. 201-222.
- Foucault, M. 1994b. Space, knowledge, and power. In: Faubion, J.D. (ed.) Michel Foucault. *Power. Essential works of Foucault 1954-1984. Volume Three*, pp. 349-364.
- Foucault, M. 1994c. The Subject and Power. In: Faubion, J.D. (ed.) Michel Foucault. *Power. Essential works of Foucault 1954-1984. Volume Three*, pp. 326-348.
- Foucault, M. 2007. *Security, Territory, Population. Lectures at the College de France, 1977*. London: Palgrave Macmillan.
- Gallent, N. and Bell, A. 2000. Planning exceptions in rural England: past, present and future. *Planning Practice and Research*, 15(4), 375-384.
- Gallent, N., Hamiduddin, I., Juntti, M., Kidd, S. and Shaw D. 2015. *Introduction to Rural Planning. Economies, Communities and Landscapes*. London: Routledge. Second edition.
- Galli, A., Wiedmann, T., Ercin, E, Knoblauch, D., Ewing, B and Giljum, S. 2012. Integrating Ecological, Carbon and Water footprinting into a 'Footprint Family' of indicators: definition and role in tracking human pressure on the planet. *Ecological Indicators* 16(1), pp. 100-112
- Gilg, A.W. 1991. *Countryside Planning Policies for the 1990s*. Wallingford: CAB International.
- Gilg, A.W. and Kelly, M. 1997. Rural Planning in Practice: the case of agricultural dwellings. *Progress in Planning*, 47(2), 75-157
- Gordon, C. 1991. Governmental rationality: an introduction. In: Burchell, G., Gordon, C., and Miller, P. (eds) *The Foucault Effect: Studies in Governmentality, with two lectures by and an interview with Michel Foucault*. Chicago: University of Chicago Press, pp. 1-51.
- Halfacree, K. 2007. Trial by space for a 'radical rural': introducing alternative localities, representations and lives. *Journal of Rural Studies*, 23, 125-141.
- Harris, N. 2011. Discipline, surveillance, control: a Foucaultian perspective on the enforcement of planning regulations. *Planning Theory and Practice*, 12(1), pp. 57-76.
- Hodge, I. 1999. Countryside Planning: from urban containment to sustainable development. In: Cullingworth, J.B. (ed). *British Planning.: 50 Years of Urban and Regional Planning*. London: Athlone, pp. 91-104

- Holden, M., Li, C. and Molina, A. 2015. The emergence and spread of eco-urban neighbourhoods around the world. *Sustainability*, 7(9), pp. 11418-11437.
- Honig, M., Petersen, S., Herbstein, T., Roux, S., Nel, D. and Shearing, C. 2015. A conceptual framework to enable the changes required for a One-Planet Future. *Environmental Values*, 24(5) pp. 663-688.
- Howard, E. 1898. *To-morrow: peaceful path to real reform*. London: Swann Schonenstein.
- Howell, P. 2007. Foucault, Sexuality, Geography. . In: Crampton, J. and Elden, S. (eds) 2007. *Space, Knowledge and Power: Foucault and Geography*. Aldershot: Ashgate, pp. 291-315.
- Howlett, M. 2017. Planet Plain Speaking. *Touchstone*, 29-31.
- Huxley, M. 2002. Governmentality, gender and planning: a Foucauldian perspective. In Allmendinger, P, and Tewdwr-Jones, M. (eds) *Planning Futures: new directions in planning theory*, pp. 136-153. London: Routledge.
- Huxley, M. 2006. Spatial rationalities: order, environment, evolution and government. *Social and Cultural Geography* 7(5), pp. 771-787.
- Huxley, M. 2007. Geographies of governmentality. In: Crampton, J. and Elden, S. (eds) 2007. *Space, Knowledge and Power: Foucault and Geography*. Aldershot: Ashgate, pp. 185-204.
- Huxley, M. 2008. Space and government: governmentality and geography. *Geography Compass* 2(5), 1635-1658.
- Huxley, M. 2018. Countering 'the dark side' of planning. Power, governmentality, counter-conduct. In: Gunder, M., Madanipour, A. and Watson, V. (eds) *The Routledge Handbook of Planning Theory*. London: Routledge, pp. 207-220
- Inch, A. 2018. 'Cultural work' and the remaking of planning's 'apparatus of truth'. In: Gunder, M., Madanipour, A., and Watson, V. (eds). *The Routledge Handbook of Planning Theory*. London: Routledge, pp. 203-214.
- Jones, K. 2015. *Mainstreaming the Alternative: The Lammas Eco-Village and the Governance of Sustainable Development in Wales*. Thesis submitted for the degree of Doctor of Philosophy, Department of Geography and Earth Sciences, Aberystwyth University.
- Land Use Consultants. 2002. *Low Impact Development – Planning Policy and Practice Final Report*. Cardiff: Welsh Government.
- Marsden, T., Murdoch, J., Lowe, P., Munton, R. and Flynn, A. 1993. *Constructing the Countryside*. London: UCL Press.
- Maxey, L. 2009a. Planning and Policy for Low Impact Development. In: Pickerill, J. and Maxey, L. (eds). *Low Impact Development. The Future in our Hands*, pp. 67-70.
- Maxey, L. 2009b. Bringing low impact development into the mainstream. In: Pickerill, J. and Maxey, L. (eds). *Low Impact Development. The Future in our Hands*, pp. 20-23.
- Meadows, D., Meadows, D., Randers, J. and Behrens, W. 1972. *The Limits to Growth. A report for the Club of Rome's project on the predicament of mankind*. London: Earth Island Limited.
- Murdoch, J. and Abram, S. 2002. *Rationalities of Planning: development versus environment in planning for housing*. London: Routledge.

- Owens, S. and Cowell, R. 2011. *Land and Limits. Interpreting Sustainability in the Planning Process*. London: Routledge. RTPI Library Series. Second edition.
- Owens, S., Rayner, T. and Bina, O. 2004. New agendas for appraisal: reflections on theory, practice and research. *Environment and Planning A*, 36, pp. 1943-1959
- Pickerill, J. 2016. *Eco-Homes. People, Place and Politics*. London: Zed Books.
- Pickerill, J. and Maxey, L. 2009a. *Low Impact Development: The Future in our Hands*.
- Pickerill, J. and Maxey, L. 2009b. Geographies of Sustainability: low impact developments and spaces of radical innovation. *Geography Compass*, 3(4), 1515-1539.
- Rose, N. 1999. *Powers of Freedom. Reframing political thought*. Cambridge: Cambridge University Press.
- Scott, A. 2001. Contesting sustainable development: low-impact development in Pembrokeshire Coast National Park. *Journal of Environmental Policy and Planning*, 3, 273-287.
- Stockholm Environment Institute and GHD. 2015. *Ecological and carbon footprints of Wales. Update to 2011*. Stockholm: SEI
- Talbott, J. 1996. The Findhorn Community. In: Conrad, J. (ed.) *Eco-villages and sustainable communities. Models for 21st century living*. Findhorn: Findhorn Press.
- Thorpe, D. 2015. *The 'One Planet' Life: a blueprint for low impact development*. London: Routledge.
- Vale, B. and Vale, R. 2013. The Hockerton Housing Project, England. In: Vale, R. and Vale, B. (eds) *Living within a fair share ecological footprint*. New York: Routledge Earthscan, pp. 262-274.
- Wackernagel, M. and Rees, W. 1996. *Our Ecological Footprint. Reducing Human Impact on the Earth*. Gabriola Island: New Society Publishers.
- Ward, S. V. 2004. *Planning and Urban Change*. London: Sage.
- Welsh Assembly Government. 2004. *What kind of countryside do we want?* Wales Planning Research Programme. Final report by University of Wales, Aberystwyth, and Land Use Consultants. Cardiff: Welsh Assembly Government.
- Welsh Assembly Government. 2009. *One Wales, One Planet. The Sustainable Development Scheme of the Welsh Assembly Government*. Cardiff: Welsh Assembly Government.
- Welsh Government. 2010a. *Planning Policy Wales*. Edition 3. Cardiff: Welsh Government.
- Welsh Government. 2010b. *Technical Advice Note 6: Planning for Sustainable Rural Communities*. Cardiff: Welsh Government.
- Welsh Government. 2012. *Practice Guidance. One Planet Development. Technical Advice Note 6. Planning for Sustainable Rural Communities*. Cardiff: Welsh Government.
- Wimbush, P. 2012. *The Birth of an Eco-village. Adventures in an alternative world*.
- Wimbush, P. 2014. *Sustainable Land Management Consultation – Response*. Available at www.oneplanetcouncil.org, visited 16 June 2017.
- Wrench, T. 2001. *Building a low impact roundhouse*. Second edition. East Meon: Permanent Publications.

WWF. 2016. *Living Planet Report 2016. Risk and resilience in a new era*. WWF International, Gland, Switzerland.

Yiftachel, O. 1998. Planning and social control: exploring the dark side. *Journal of Planning Literature*, 12(4), 395-406

Figure 2. One Planet Developments in Wales to June 2018 in chronological order. The table is based on information collated by the One Planet Council and supplemented by information from each proposal's management plan

One Planet Development	Planning History	Number of units	Form of development, activity, business etc	Ecological footprint estimates per capita
Tir Sisial, Cwm Wyre, Llanrhystud	Temporary permission in November 2011, full permission secured in 2017	One household unit of two people	45 acre site, timber and woodcrafts, horticulture, livestock, land-based photography	Various calculators with varying outputs – 2.4 gha to 3.37 gha on occupation, reducing to 1.88 gha
Nant y Cwm Farm, Rudry, Caerphilly	Retrospective planning permission April 2014	Single family household with children	6.6 hectares of mixed pasture and woodland, livestock and produce agricultural business	1.54 gha existing reducing to 1.17 gha
Parc y Dwr, Glandwr, Pembrokeshire	Prospective planning permission, approved November 2014	Single family household of four, two adults and two children	7.5 acre plot. Various activities including bee-keeping, honey and preserves, cut flowers, agricultural produce, educational activity etc.	2.32 gha on application and planned reduction to 0.5gha once settled on site
Gardd-y-Gafel, Glandwr, Pembrokeshire	Approved by local planning authority in February 2015	Single household, two persons	5.1 acre smallholding of two fields. Agro-forestry. Tree planting and seeds, educational activity, horticulture, natural crafts.	Present 3.71gha, 2.76gha after year one on site, anticipating 1.83 gha by year 5
Pwll Broga, Trecnwc, Glandwr, Pembrokeshire	Retrospective planning permission granted at appeal in July 2015	Single household of two adults and a child, living adjacent to extended family in a separate property	Permaculture and horticulture, fish, fruit, livestock, vegetables, woodcrafts, fruit desserts	Estimated at 1.34 gha at present and continuing or reducing
Hebron Farm, Hebron, Carmarthenshire	Planning permission granted by local planning authority in January 2016	Single household of two adults	4 acres, organic plant-based products, apples, soft fruit, cosmetics, chocolates, land-based courses	Estimated at 2.33 gha currently, reducing to 1.2 gha at year 5

Rhiw Las, Whitland, Carmarthenshire	Refused contrary to officer-recommendation and then allowed at appeal in June 2016	Multiple unit proposal of four separate units. One household of two adults, and three households of two adults and between one and three children. Total of 13 people.	Different activities for each plot, including range of bee-keeping and bee products, cheese-making, instrument-making, organic vegetable box scheme.	Varies by household, but anticipated average of 1.63 gha at first habitation, and average of 0.91 gha at year 5
Golwg y Gwenyn	Prospective application approved by local planning authority in July 2016	Single household of two adults and one child, reference to up to two children	3 acre smallholding, egg production and honey production, training and consultancy for land-based enterprises	Baseline of 2.27 gha, 1.64 gha at first habitation and 1.08 gha in year 5
Hafan y Coed, Glandwr, Pembrokeshire	Prospective application approved by local planning authority in August 2016	Single household of two adults	4.1 acre smallholding, horticultural produce including mushroom growing, tree-growing, bee-keeping, dove rental for special occasions	Baseline of 5.22 gha, 3.23 gha at year one and 1.40 gha at year 5
Bryn yr Blodau, Llanycefn, Pembrokeshire	Retrospective planning application refused and approved on an appeal against enforcement action in November 2016	Single household of one adult and two children	Former part of farm, with proposal comprising 6.73 acres, proposed smallholding and permaculture activities. Goats cheese, seeds, training in land-based management with horses.	Baseline of 1.85 gha and reducing to 1.25 gha at year 5
Gelli y Gafel, Glandwr, Pembrokeshire	Prospective application approved by the local planning authority in December 2016.	Single household of two adults	3.32 hectares smallholding, woodcrafts, edible wild foods, fruit-based wine and cider, courses and workshops	2.03 gha at year one, and 1.52 gha at year 5
Willow Farm, Jameston, near Tenby, Pembrokeshire	Prospective application approved by the local planning authority in September 2017	Single household of two adults	2.1 acre site, willow production, garlic and mushroom production, crafts and soaps, education and training	Baseline of 3.34 gha reducing to 1.98 gha on first habitation and 1.42 gha at year 5

Ty Coed, Glyndyfrdwy, Denbighshire	Prospective application approved by local planning authority in March 2018	Single household of two adults	Site of 1.96 acres, linked to 15 acres of woodland. Woodland business, timber production, charcoal production, tree nursery, woodland management training, woodland ecotherapy	Baseline of 1.43 gha, reducing over time to 1.28 gha
Pencoed, Llechryd, Cardigan, Ceredigion	Prospective application approved by local planning authority in March 2018	Single household of two adults and two children	Site of 5.1 hectares, apple juice, soft fruits, tree nursery, beekeeping, natural aromatics and skincare products	Baseline of 2.23 gha, reducing at year 5 to 1.2 gha
Coed Allt Goch, Llanddewi Brefi, Ceredigion	Prospective application approved by local planning authority in March 2018	Single person	8.5 acres of land comprising grazing land and woodland. Woodland management, coppicing, rustic furniture production, craft and drum making courses	Ecological footprint figures not clearly evident from the management plan

Target	Indicator
The minimum food needs (at least 65%) of all occupants are met from produce grown and reared on the site or purchased using income derived from other products grown and reared on the site	(a) Annual reporting of food production consumed by household (b) Annual reporting of spend on other food
The minimum income needs of all occupants are met from income derived from land use activities on the site	(a) Annual household income and costs reporting
Income derived from other land-based enterprises, such as training and education courses of consultancy, remain subsidiary to the primary activity of growing and rearing produce	(a) Annual reporting on the total value of produce grown and reared on the site compared with income derived from other land-based enterprises
All water needs are met from water available on-site (unless there is a more sustainable alternative)	(a) Annual reporting on use of water sources (amount used from each source), including abstraction from water bodies (surface and ground water) (b) Annual reporting on ground and surface water levels (reported every month)
There is a significant reduction in transport impacts from all activities on site in comparison with 'typical' levels for the number of occupants and activities on site	(a) Annual monitoring of all trips to and from the site by purpose, distance, mode, and any transport sharing (b) Annual assessment of the transport impact of the site against the Transport Assessment Strategy and Travel Plan.

Figure 3. Selected targets and indicators used in annual monitoring reports for One Planet Developments, extracted from the Welsh Government (2012) practice guidance on One Planet Developments. The practice guidance has over 30 targets, as well as over 20 indicators which require annual monitoring, reporting or assessment. The practice guidance was viewed as 'draconian' initially, including by its author, yet is now considered to have proven itself as a robust framework for devising, assessing and approving One Planet Developments.