

CONSULTATION DOCUMENT

**Regarding the application of the Transmission
Network Use of System charging methodology for
determining generation charging zones for the price
control period beginning 2007/8**

September 2006

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1 Executive summary

This consultation document does not propose to modify the Transmission Network Use of System (TNUoS) charging methodology, but seeks industry views regarding the application of the methodology when determining generation charging zones for the price control period beginning 2007/8, given that forward-looking information is now available in the form of the Condition 5 information paper.

The document has been published on the National Grid charging website at the following address:

<http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/>

2 Introduction

National Grid is obliged under its Transmission Licence:

- (i) to make revisions to the Charging Statements in order that the information set out in the statements shall continue to be accurate in all material respects;
- (ii) to keep the Use of System charging methodology at all times under review;
- (iii) to make such modifications of the Use of System charging methodology as may be requisite for the purpose of better achieving the relevant objectives, which are:
 - (a) to facilitate effective competition in the generation and supply of electricity and (so far as is consistent therewith) to facilitate competition in the sale, distribution and purchase of electricity;
 - (b) to result in charges which reflect, as far as reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and in accordance with the STC) incurred by transmission licensees in their transmission businesses; and
 - (c) that, so far as is consistent with sub-paragraphs (a) and (b), the Use of System charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses.

The purpose of this document is to invite views from the industry regarding the application of the TNUoS charging methodology when determining generation zones for the price control period beginning 2007/8, when considering the relevant objectives in Standard Licence Condition C5 5(a) of facilitating effective competition, Standard Licence Condition C5 5(b) of calculating charges which reflect the costs incurred by the transmission licensees in their transmission businesses and also, Standard Licence Condition C5 5(c) of taking account of the developments in the transmission licensees' transmission businesses.

3 Background

The TNUoS tariff comprises two elements. Firstly, a locationally varying element derived from the Direct Current Load Flow (DCLF) Investment Cost Related Pricing (ICRP) Transport Model to reflect the costs of capital investment in, and the maintenance and operation of, a transmission system to provide bulk transport of power to and from different locations. Secondly, a non-locationally varying element related to the provision of residual revenue recovery. The combination of both these elements forms the TNUoS tariff.

The DCLF ICRP Transport Model calculates the marginal costs of investment in the transmission system which would be required as a consequence of an increase in demand or generation at each connection point or node on the transmission system, based on a study of peak conditions. The model uses the concept of MWkm as the measure of the marginal costs of investment. Hence, marginal costs are estimated initially in terms of increases or decreases in units of kilometres of the transmission system for a 1 MW injection onto the system.

Given the requirement for relatively stable cost messages through the ICRP methodology, generation and demand nodes are assigned to zones and the nodal marginal km are amalgamated into these zones by weighting them by their relevant generation or demand capacity.

Demand zone boundaries are fixed and relate to the Grid Supply Point (GSP) groups used for energy market settlement purposes, whilst the following criteria are used to determine the definition of TNUoS generation charging zones:

- i. Zones should contain relevant nodes whose marginal costs (as determined from the output from the DCLF Transport Model, the relevant expansion constant and the locational security factor, see below) are all within +/- £1.00/kW (nominal prices) across the zone. This means a maximum spread of £2.00/kW in nominal prices across the zone.
- ii. The nodes within zones should be geographically and electrically proximate.
- iii. Relevant nodes are considered to be those with generation connected to them as these are the only nodes which contribute to the calculation of the zonal generation tariff.

The process behind the criteria described above, is driven by initially applying the nodal marginal costs from the DCLF Transport Model onto the appropriate areas of a substation line diagram and grouping the generation nodes into initial zones using the +/-£1.00/kW range. All nodes within each zone are then checked to ensure that the geographically and electrically proximate criteria have been met using the substation line diagram. The established zones are then inspected to ensure that the least number of zones are used with minimal change from previously established zonal boundaries. The zonal boundaries are finally confirmed using the demand nodal costs for guidance.

The zoning criteria are applied to a reasonable range of DCLF Transport Model scenarios, the inputs to which are determined by National Grid to create appropriate TNUoS generation charging zones. The minimum number of zones which meet the stated criteria are then used. If there is more than one feasible zonal definition of a

generation charging zone, National Grid determines and uses that which best reflects the physical transmission system boundaries.

Zones are typically not reviewed more frequently than once every price control period to provide stability of TNUoS charges. However, in exceptional circumstances, it may be necessary to review zoning more frequently to maintain appropriate, cost reflective, locational cost signals. For example, if a new generator connecting to the transmission system would cause the creation of a new generation zone for that generator alone, it may not be appropriate from a cost reflective perspective to wait until the next price control period to undertake this rezoning. If any such rezoning is required, it will be undertaken against a background of minimal change to existing generation zones and in line with the notification process set out in the Transmission Licence and CUSC.

4 Issues

The application of the existing zoning criteria could very much depend on the how the information that is available to National Grid at the time of re-zoning is used in the zoning process.

In March 2005, the Authority approved National Grid's Great Britain (GB) TNUoS charging methodology subject to National Grid taking forward a set of five conditions, which might reasonably be expected to further attain the relevant licence objectives of the methodology. The fifth of these conditions related to the publication by National Grid of the forecast future path of tariffs at least once a year, under a range of credible demand and generation scenarios.

Following the requirement of 'Condition 5', National Grid has subsequently published two information papers¹ predicting the future path of the locational element of the TNUoS tariff under a range of credible demand, generation and transmission system reinforcement scenarios consistent with those contained in the GB Seven Year Statement (SYS). Both papers predicted the future path of tariffs over a five-year period and were based on a set of generation zones for the price control period beginning 2007/8, determined in accordance with the generation zoning criteria identified in Section 3 above.

Whilst the existing zoning criteria already incorporates the application of a range of scenarios when determining TNUoS generation charging zones, the annual publication of the Condition 5 information paper now provides a much greater insight into how generation charging zones might 'evolve' over a price control period.

Section 5 of the September 2006 information paper, highlighted a number of examples during the period of analysis where it may be necessary to modify the indicative 2007/8 generation charging zones throughout the five-year price control period to ensure that the generation zones continue to meet the relevant zoning criteria. Generically, these issues identified in the information paper included:

- i. The commissioning of new generation which does not meet the zoning criteria for any of the existing generation zones.

¹ <http://www.nationalgrid.com/uk/Electricity/Charges/gbchargingapprovalconditions/5/>

- ii. The commissioning of additional generation at an existing location (or node in the case of the DCLF Transport Model) which has an impact on the generation zone within which it is located, such that either that node or other nodes within that zone no longer meet the required generation zoning criteria of +/-£1.00/kW.
- iii. The decommissioning of generation which has an impact on the generation zone in which it was located, such that another node within that zone no longer meets the existing generation zoning criteria.
- iv. The allocating of a node to a generation zone which only marginally meets the zoning criteria of +/-£1.00/kW. Only very slight changes in the demand and generation background, or the transmission system itself might then result in the node failing to meet the criteria in a subsequent year.

It could be considered that the criteria of using the minimum number of zones and that which produces minimal changes to TNUoS generation zones year on year do not necessarily go hand in hand and, in fact, have the potential to conflict with one another. By arriving at the minimum number of generation zones from the nodal marginal km data produced by the DCLF Transport Model, it could be the case that only a minor change in the generation and demand background or reinforcement of the transmission system may impact on the marginal km of any relevant node, such that changes to the TNUoS generation zones are required on an annual basis.

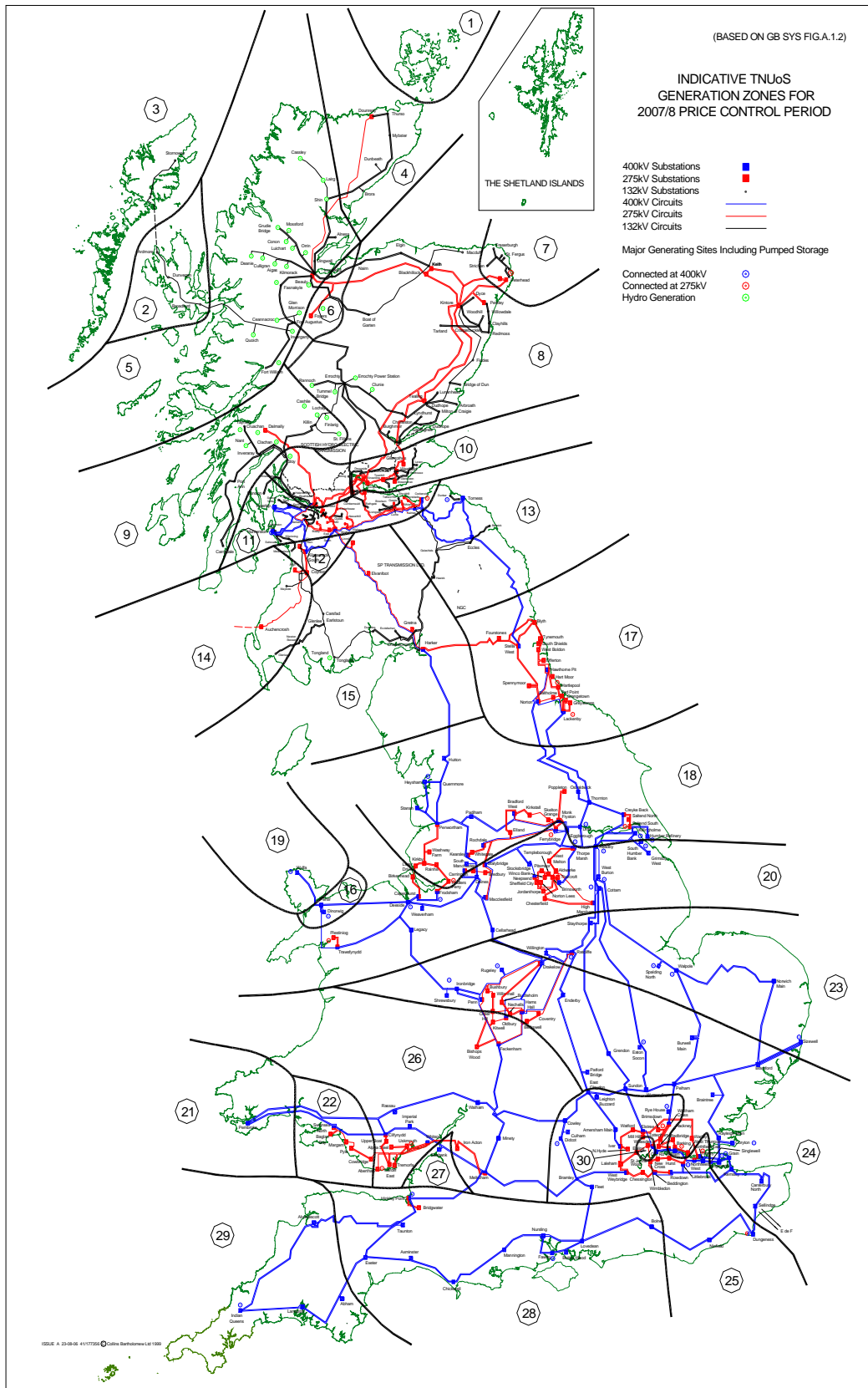
Similarly, it could be perceived that by determining TNUoS generation zones on the basis of providing minimal change to the existing generation zones is a short-term view of providing stability in charging zones, based on historical and current year information.

Currently, neither criteria take a longer-term view of providing stability of TNUoS generation charging zones throughout an entire price control period and are both likely to result in incremental change to the TNUoS generation charging zones on an annual basis, should the demand and generation background or GB transmission system be subject to change.

Considering that the additional information of how generation charging zones may evolve over time is now available in the form of the Condition 5 information paper, it may be appropriate to consider the adoption of a more forward-looking approach to generation zoning.

Based on the analysis undertaken in preparation of the Condition 5 information paper, it can be forecast that in order to arrive at a set of generation charging zones which are likely to remain stable and robust over the entirety of the price control period beginning 2007/8, some 30 generation charging zones would be required. These illustrative charging zones are provided in Figure 1. Additionally, Appendix 1 contains a detailed list of the power stations that would be located in each of the charging zones.

Figure 1 Illustrative 2007/8 TNUoS Generation Charging Zones



5 Responses to this consultation

The 2007/8 charging year is the first year of a new price control period and as such, it will be necessary to review the existing TNUoS generation charging zones that will be effective from 01 April 2007. Considering this, and the additional information that presents itself in the form of the Condition 5 information paper, National Grid considers that it may now be an appropriate time to consider in more detail, how the existing generation zoning criteria is applied at the beginning of a price control period.

The illustrative zones provided in the previous section have been forecast using the DCLF Transport Model and those generation and demand backgrounds and transmission system reinforcements identified in the GB SYS. The GB SYS data reflects National Grid's contracted position with regard to the generation and transmission system reinforcements and the demand forecasts submitted by the Distribution Network Operators (DNOs). No further assumptions with regard to the commissioning or decommissioning of generation, demand profile, or system developments other than those specifically included in the GB SYS have been made.

Considering this, National Grid seeks views from the industry on whether it might be an appropriate opportunity to take a more forward-looking approach when determining TNUoS generation zones for the forthcoming price control period, especially when considering that zones are periodically set in the first year of a price control period with the aim of providing the minimum change to generation zones over that price control period or, whether TNUoS generation zones should be determined using current year data rather than those forecast in the Condition 5 information paper which include a degree of uncertainty and could be subject to change.

Specifically, National Grid would like to invite views on the following:

- Whether the primary criteria for determining generation charging zones for 2007/8 should be that of having the least number of TNUoS generation charging zones in 2007/8, based only on 2007/8 Transport Model data; or
- Whether the primary criteria for determining generation charging zones for 2007/8 should be that of producing the least change on the previous years charging zones; or
- Whether the primary zoning criteria for determining generation charging zones for 2007/8 should be that of determining zones which could be expected to remain stable and robust over the entirety of the next price control period, taking into consideration the analysis undertaken in the Condition 5 information paper. Additionally, given that the generation and demand background of latter years of the analysis is perhaps less certain, it may also be worth considering as to whether a 'weighting' system may be appropriate when determining charging zones in 2007/8, to reflect the increased certainty of information in the earlier years.

Comments and views are invited on all of the issues raised in this consultation document by **Friday 13 October**. There will be an opportunity to discuss the issues at the next Charging Issues Standing Group (CISG) meeting on Wednesday 27 September.

If you wish to provide comments on this consultation document, responses are preferred via email to: Craig.Maloney@uk.ngrid.com

Alternatively, Users can send their comments in writing, addressed to:

Craig Maloney
Electricity Charging & Access Development
National Grid Electricity Transmission plc
National Grid House
Warwick Technology Park
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Warwick
CV34 6DA

It is anticipated that the conclusions drawn from the consultation will be presented to the Transmission Charging Methodologies Forum (TCMF) on Tuesday 24 October.

If you have further queries, please do not hesitate to contact Craig on 01926 655896.

Appendix 1 Illustrative TNUoS Generation Zones

Zone	Zone Name	Power Station	Generation (MW)				
			2007/8	2008/9	2009/10	2010/11	2011/12
1	Orkney	Fairwind (Orkney) Ltd	-	-	-	126	126
2	Skye	Edinbane Wind, Skye	56	56	56	56	56
3	Western Isles	Eishken Estate, Isle of Lewis	-	-	250	550	550
4	Caithness	Gordonbush Wind	-	88	88	88	88
		Strath Brora Wind, Brora	67	67	67	67	67
		Strathy North & South Wind	-	226	226	226	226
5	Northern Scotland	Aigas	20	20	20	20	20
		Culligran	19	19	19	19	19
		Deanie	38	38	38	38	38
		Farr Windfarm, Tomatin	92	92	92	92	92
		Fasnakyle G1 & G3	46	46	46	46	46
		Glendoe, Fort Augustus	-	100	100	100	100
		Glenmorrison	37	37	37	37	37
		Invergarry	20	20	20	20	20
		Kilmorack	20	20	20	20	20
		Luichart	34	34	34	34	34
		Millennium Wind, Ceannacroc	65	65	65	65	65
		Mossford	19	19	19	19	19
		Orrin	18	18	18	18	18
Quoich	18	18	18	18	18		
6	Northern Highlands	Abercairny Wind	-	66	66	66	66
		Calliachar Wind	-	-	-	62	62
		Foyers	300	300	300	300	300
7	Peterhead	Peterhead	1,524	1,524	1,524	1,524	1,524
8	Central Highlands	Aultmore Windfarm	-	60	60	60	60
		Clashindarroch Wind, Huntly	-	113	113	113	113
		Clunie	61	61	61	61	61
		Errochty	75	75	75	75	75
		Griffin Windfarm	216	216	216	216	216

9	Argyll	Carraig Gheal (Fernocho)	-	75	75	75	75
		Eredine Forest Wind, Argyll	30	30	30	30	30
		Finlarig	17	17	17	17	17
		Lochay	47	47	47	47	47
		Nant	15	15	15	15	15
10	Stirlingshire	Cruachan	440	440	440	440	440
		Fife Energy	123	123	123	123	123
		Longannet	2,304	2,304	2,304	2,304	2,304
		Sloy G2 & G3	80	80	80	80	80
		Waterhead Moor	-	-	120	120	120
11	Central Scotland	Black law	136	136	136	136	136
		BP Grangemouth	120	120	120	120	120
		Cockenzie	1,152	1,152	1,152	1,152	1,152
		Harrow's Law	-	-	140	140	140
		Hunterston	1,210	1,210	1,210	1,210	1,210
12	South West Scotland	Hadyard Hill	130	130	130	130	130
		Whitelee	322	322	322	322	322
		Windy Standard 2	-	-	60	60	60
13	South East Scotland	Sell Moor	-	48	48	48	48
		Torness	1,200	1,200	1,200	1,200	1,200
14	Auchencrosh	Mark's Hill	-	99	99	99	99
		Moyle Interconnector	80	80	80	80	80
15	Border	Clyde	-	519	519	519	519
		Harestanes	-	282	282	282	282
16	Dinorwig	Dinorwig	1,200	1,644	1,644	1,644	1,644
17	North East England	Hartlepool	1,207	1,207	1,207	1,207	1,207
		Teesside	1,875	1,875	1,875	1,875	1,875

18	Northern England	Drax	3,885	3,885	3,885	3,885	3,885
		Eggborough	1,940	1,940	1,940	1,940	1,940
		Fiddlers Ferry	1,987	1,987	1,987	1,987	1,987
		Heysham 1	1,203	1,203	1,203	1,203	1,203
		Heysham 2	1,203	1,203	1,203	1,203	1,203
		Heysham Offshore Windfarm	140	140	140	140	140
		Immingham Stage 1	719	719	719	719	719
		Immingham Stage 2	-	601	601	601	601
		Killingholme 1	900	900	900	900	900
		Killingholme 2	665	665	665	665	665
		Roosecote	229	229	229	229	229
		Saltend	1,100	1,100	1,100	1,100	1,100
		Sellafield	155	155	155	155	155
		Shell Flats	-	315	315	315	315
		South Humber Bank 1	769	769	769	769	769
		South Humber Bank 2	516	516	516	516	516
Westermost Rough	-	-	240	240	240		
19	Anglesey	Wylfa	980	980	980	-	-
20	Lancashire & Yorkshire	Brigg	268	268	268	268	268
		CDCL	395	395	395	395	395
		Connah's Quay	1,400	1,400	1,400	1,400	1,400
		Cottam	2,000	2,000	2,000	2,000	2,000
		Deesside	475	475	475	475	475
		Ferrybridge	1,981	1,981	1,981	1,981	1,981
		Ffestiniog	360	360	360	360	360
		Keadby	735	735	735	735	735
		Rocksavage	748	748	748	748	748
		Scunthorpe	-	294	294	294	294
		Shotton	210	210	210	210	210
		West Burton	1,987	1,987	1,987	1,987	1,987
21	Pembroke	Pembroke 1	800	2,000	2,000	2,000	2,000
		Pembroke 2	-	-	-	400	2,000
22	South West Wales	Aberthaw	1,692	1,692	1,692	1,692	1,692
		Baglan Bay	552	552	552	552	552

23	Midlands & East Anglia	Derwent	228	228	228	228	228
		Docking Shoal Windfarm	-	-	500	500	500
		Great Yarmouth	420	420	420	420	420
		Greater Gabbard Offshore Windfarm	-	500	500	500	500
		Kings Lynn	340	340	340	340	340
		Lincs Offshore Windfarm	-	250	250	250	250
		Peterborough	405	405	405	405	405
		Race Bank Windfarm	-	-	-	500	500
		Ratcliffe-on-Soar	2,021	2,021	2,021	2,021	2,021
		Sizewell B	1,190	1,190	1,190	1,190	1,190
		Spalding	870	870	870	870	870
		Sutton Bridge	800	800	800	800	800
		24	Shropshire & South East	Barking	1,000	1,000	1,000
Corby	401			401	401	401	401
Coryton	743			743	743	743	743
Damhead Creek	805			805	805	805	805
Drakelow D	-			1,230	1,230	1,230	1,230
French Interconnector	1,988			1,988	1,988	1,988	1,988
Grain	1,355			1,355	1,355	1,355	1,355
Grain Repowering Stage 1	-			-	-	590	590
Grain Repowering Stage 2	-			-	-	-	590
Ironbridge	964			964	964	964	964
Kingsnorth	1,966			1,966	1,966	1,966	1,966
Little Barford	665			665	665	665	665
London Array Stage 1	-			200	200	200	200
London Array Stage 2	-			800	800	800	800
Medway	700			700	700	700	700
Netherlands Interconnector	-			600	800	1,320	1,320
Rugeley B	1,018			1,018	1,018	1,018	1,018
Tilbury	1,076			1,076	1,076	1,076	1,076

25	Greater London & Oxfordshire	Didcot A	2,109	2,109	2,109	2,109	2,109
		Didcot B	1,500	1,500	1,500	1,500	1,500
		Dungeness B	1,081	1,081	1,081	1,081	1,081
		Enfield	390	390	390	390	390
		Littlebrook	1,105	1,105	1,105	1,105	1,105
		Rye House	715	715	715	715	715
26	Southern Wales	Barry	245	245	245	245	245
		Oldbury	470	-	-	-	-
		Uskmouth 1	363	363	363	363	363
		Uskmouth 2	-	-	425	850	850
27	Seabank	Seabank 1	820	820	820	820	820
		Seabank 2	414	414	414	414	414
28	South Coast	Cowes	145	145	145	145	145
		Fawley	530	530	530	530	530
		Fawley CHP	158	158	158	158	158
		Hinkley Point	1,261	1,261	1,261	1,261	1,261
		Marchwood	-	900	900	900	900
		Shoreham	420	420	420	420	420
29	Peninsula	Indian Queens	140	140	140	140	140
		Langage Stage 1	850	850	850	850	850
		Langage Stage 2	-	-	-	400	400
30	Central London	Taylor's Lane	144	144	144	144	144
			76241	84780	86715	89058	91248