
Review of Pupil Numbers in Regions 6 and 10, with Particular Focus on Clarifying Whether There is Demand for a Further New Secondary School in Region 10

A consultancy on behalf of the UK Department for International
Development and the Centre for British Teachers

**Dr Mark Pelling
Professor William Gould**

6-18 September 2000

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Terms of Reference

The consultant will:

1. Meet relevant MoE planning officials in order to understand the background against which planning for future increases in secondary school enrolment is set.
2. Assess the current MoE information on secondary pupil numbers, covering both national and regional databases, with particular focus (at the Regional level) on the project areas of Regions 6 and 10.
3. Assess the work carried out to date by GEAP on the identification of, and factors influencing, secondary pupil numbers in the different school locations.
4. Identify a range of factors impacting on pupil numbers, agreeing with MoE and GEAP the importance of and/or weighting for such factors.
5. Draw up a set of guidelines with agreed assumptions, methodology, procedures and templates so that such an exercise can be replicated in other regions.
6. Produce a report the key purpose of which is to set out clearly the proposed numbers for the years 2005 and 2010 for the MoE/GEAP to use as a basis for deciding on school accommodation demands in the 8/9 schools.

The consultant will produce a draft report within two weeks of the completion of the consultancy visit. The report must:

1. Present proposed school enrolment figures for the 8/9 schools for the years 2005 and 2010, with explanations of methodology and procedures used.
2. Draw up a set of guidelines with agreed assumptions, methodology, procedures and templates so that such an exercise can be replicated in other regions in due course.

Executive Summary

The principal findings of this consultancy are:

1. It has been verified on the advice of the Chief Planning Officer and Permanent Secretary, Ministry of Education, that **planning guidance excludes special teaching rooms (e.g. laboratories, home economics rooms, craft-work rooms) from calculations of school capacity**. Only general teaching rooms should be included.
2. **Computer-based population modelling is not yet an appropriate tool for educational microplanning in contemporary Guyana**. The data requirements for such models exceed that data which is currently available. Such models also require high levels of confidence in the quality and comparability of data sets, these conditions are also unlikely to be met.
3. **It is recommended that current nursery, primary and secondary school enrolment be used as a basis for projecting future secondary school demand**. Age specific death rates are also available from regional health returns and should be taken into account. Local qualitative knowledge or supporting social survey data will increase the confidence placed in sub-regional projections. Local data should be collected by expert interview or social survey on two themes: firstly, local population dynamics (in- and out-migration and population movement within the study area by place, gender, ethnicity and age groups); secondly, the proportion of children of nursery, primary and secondary school age who enrol for and attend school. Where possible, enrolment projections should be supported by projections drawing from other data-sets such as the National Population and Housing census.
4. There is demand for a fifth school in the GEAP project area of Region 10. A conservative estimation method was used, that is likely to have underestimated demand by around 10%. It is assumed that 3350 secondary school places will be available under the current four school extension programme. **In the GEAP area of Region 10, total predicted demand for forms 1-5 is 4126 in 2005 and 3839 in 2010, of which unmet demand will be 766 and 489 respectively. Projections for forms 1-6 are 4744 in 2005 and 4682 in 2010, with unmet demand predicted to be 1394 and 1332 respectively.**
5. **If a fifth secondary school is to be built in Linden Town, the site of greatest equity in physical accessibility terms would be on the west bank of the River Demerara**. The strongest argument for such a location is that, following amalgamation, there will be a loss of four primary tops on the west bank compared to only two on the east bank.
6. For the GEAP area in Region 6 high rates of out-migration and low rates of secondary school attendance mean that it can not be assumed that 100% of potential students will enrol for secondary school in 2005 and 2010. Given a mean attendance rate per form in secondary schools of under 50% a more reasonable assumption is that 75% of potential students will enrol for and attend secondary

education in 2005 and 2010. **For the GEAP area in Region 6, with an assumption of 75% enrolment, predicted demand for forms 1-5 in 2005 is 2780 and in 2010 is 2764, from which unmet demand will be 680 and 664 respectively. Demand projections for forms 1-6 are 3199 in 2005 and 3413 in 2010, with unmet demand predicted to be 1099 and 1313 respectively.**

7. **In GEAP area Region 6, the possibility of meeting predicted demand by extending capacity on the sites of existing secondary schools should be considered before a decision to build a new school in the region is taken.** Current capacity could be expanded by 1050 places across the existing secondary school system without breaching planning guidance. A combination of expanding capacity of existing schools in the short-term, followed by a new school as enrolment and attendance rates rise should be considered. This purely technical argument will have to be balanced at a strategic level by the UK Department for International Development and the Ministry of Education, Government of Guyana.

1. Introduction

1.1 Acknowledgements

The fieldwork of this consultancy was conducted by Dr Pelling over a 12 day period and included meetings with education officers in the Ministry of Education and GEAP/DfID project officers in Georgetown, and regional educational officers, headteachers and community leaders in the GEAP project areas in Regions 6 and 10. Many thanks to all those who gave of their valuable time and expertise to contribute to this report.

1.2 Structure of the Report

The body of this report is divided into six sections, including this proem. In the next section planning norms are presented which are then used to guide the assessment of secondary school capacity. This is followed by an examination of future secondary school demand and capacity in the GEAP project area, Region 10. A number of methods for deriving projected student demand in 2005 and 2010 are appraised and a projection using the most appropriate method is presented. This demand is matched with current secondary school capacity and various scenarios and school locations for coping with increasing demand are discussed. In the next section secondary school provision in the GEAP project area, Region 6 is addressed. School demand and capacity for 2005 and 2010 are assessed using the preferred method identified in the study of Region 10, locational aspects of provision are also discussed. Finally, recommendations are made for the appropriateness of population models in educational microplanning in contemporary Guyana. All data used to calculate demand projections can be found in the Appendices

2. Assessing School Capacity

In this section planning norms to guide assessments of school capacity are set out. The material presented in this section was obtained from official documentation and from interviews with senior staff at the Education Planning Unit, Ministry of Education and Education Officers at the Regional Democratic Councils for Regions 6 and 10.

2.1 Planning Norms

The following norms demand to be considered when calculating capacity for secondary schools.

Enrolment

Class Size:

Minimum:	20 students
Optimum:	35 students
Maximum:	45 students

School Size

Minimum:	200 students
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Optimum:	350 students: 2 streams
	525 students: 3 streams
	700 students: 4 streams
Maximum:	1050 students: 5/6 streams

Source: Meeting of The Senior Policy-Making Group Non-Academic Education Norms, Ministry of Education, Government of Guyana, June 2000, p 10.

Space Per Student

Classrooms should provide at least 14.4ft² of floor space per student.

Source: Standards for the Design and Development of Secondary Age schools in Guyana, South America, MOE-SSRP (IDA/GOG) 1997, p1.

Distance/Catchment

Maximum distance: 7km by foot, 20km by road transport.

Source: Educational Microplanning and School Mapping: A Technical Manual, Educational Planning Unit, Ministry of Education, February 2000, p19.

Definition of Classroom

There has been some debate over the categorisation of non-teaching rooms when determining school capacity. Following discussions with the Chief Planning Officer, Permanent Secretary, and Chief Education Officer (Ag), Ministry of Education and with Regional Education Officers in Regions 10 and 6, it has been made clear that only standard classrooms should be considered when calculating secondary school capacity. Any laboratories or special teaching rooms should be excluded. There are three reasons for this decision. First, special teaching rooms are used by split classes in parallel with standard teaching rooms; for example a class may be split between those studying accounts (taught in a standard classroom) and those studying science or woodwork (taught in a special classroom). This means that special classrooms do not act as independent teaching spaces for the school timetable. Secondly, there are health and safety implications for using special teaching rooms as standard classrooms. Thirdly, special teaching rooms should be perceived by students as a place to conduct themselves as they would in a professional workshop or laboratory. This element of the educational process would be undermined if special rooms were to be used as standard classrooms.

A Note on Terminology: Demand

It is useful to define 'demand', which is used throughout this report:

Demand refers to the number of school places that are required to satisfy the requirements of the target population. In GEAP area Region 10, demand is equivalent to the total secondary school age population as it is assumed that all children will be attending school. In GEAP area, Region 6, final predicted demand is equivalent to 75% of the total school age population to take into account high non-enrolment rates.

3. Assessment in GEAP Project Area, Region 10

3.1 Selecting a Baseline for a Secondary School Demand Projection

Three different baselines are considered here. The first draws regional data from the 1991 National Population and Housing Census. The second uses the 1999 GEAP Housing Income and Expenditure Survey. The third method develops a projection based on September 2000 nursery, primary and secondary enrolments. The methods are explained and reviewed for their accuracy and appropriateness as general approaches to obtaining projections for secondary school demand that can be applied in subsequent educational microplanning exercises in Guyana.

3.1.1 1991 Population and Housing Census Baseline

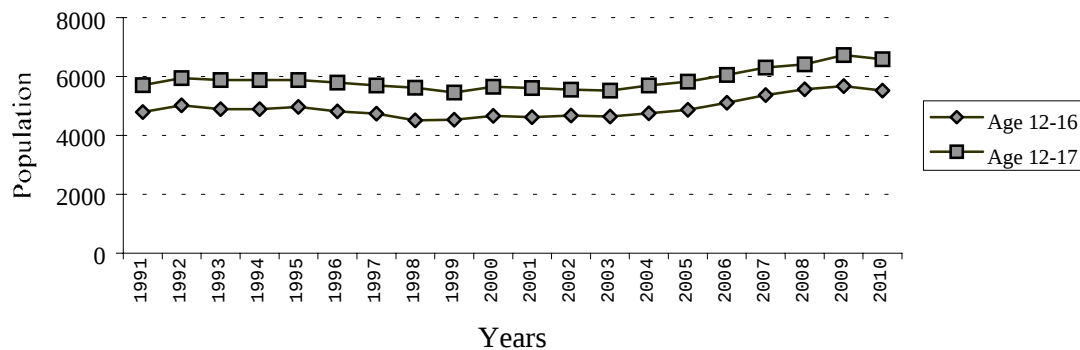
This method is based on projections from the 1991 Population and Housing Census. From the census it is possible to extract the population of Region 10 and to break this down into single year groups from age 0 (before the first birthday) to 99. Projecting from this base line requires three kinds of data, all of which must be available on an annual basis for the population under study: total live births, deaths by age and inward and outward migration by age. Currently in Guyana data is available for total live births and deaths by age from hospital records and Regional Health Department annual reports. Unfortunately there is no formal record of migration flows at a sub-regional or regional level.

Despite the lack of migration data an estimate for projected population change can still be arrived at. By subtracting annual mean death rates to the previous years population for each age group the subsequent years population can be calculated for each cohort as they age. This has been done from 1991 to 2010 (Appendix 1 for data and mean death rates).

It should be noted that this test draws on data for Region 10 as a whole and not Linden Town. However, according to the 1991 Housing and Population Census, Linden Town makes up 85% of Region 10's population. Consequently, the test can be used as a guideline to population trends within Linden Town. As noted above, the test is further weakened by the absence of migration data. Thus the final projection takes only births and deaths into account. This is perhaps a more serious omission. The 1991 National Population and Housing Census indicates that both migration into and out of Region 10 are likely to impact on population trends over the medium to long term. At the time of the 1991 Population and Housing Census some 27% of Region 10's population had been born elsewhere in Guyana, and of the population born in Region 10, some 15% resided outside of the Region in 1991.

For this projection total annual births were collected from the Region 10 Annual Health Reports (1990-1999) and age specific annual death rates were collected from the Mackenzie and Wismar hospitals (January 1 1990 to December 31 1999). The mean number of deaths per annum for each age group from 1990 to 1999 were used as death rate estimates for 2000 to 2010. The population between the ages of 12-16 and 12-17 inclusive were thus calculated and summed for each year from 1991 to 2010. The results of these calculations are shown in Figure 1 and Appendix 1.

Figure 1: Secondary School Age Population (Age 12-16 and 12-17), Region 10, 1991-2010



Data Source: 1991 National Population and Housing Census, Region 10 Annual Health Reports, Mackenzie Hospital Death Records, Wismar Health Centre Death Records

Figure 1 shows a fluctuating pattern of demand for secondary school places assuming 100% enrolment. Demand increases most rapidly between 2004 and 2009. Between 1999-2004 mean annual demand is 5698 (minimum 5455, 1999; maximum 5941, 1993), from 2004 to 2010 mean annual demand is 6319 (minimum 5691, 2004; maximum 6730, 2009). This abrupt increase in demand should be viewed with caution and is influenced by stochastic variability. The data for live births per annum were consistently one or two hundred cases higher than the age cohort sizes recorded in the 1991 census (see Appendix 1). This suggests that live births were an over count or that population was undercounted in the 1991 census. The effect of this bias is to increase the age cohorts for age 0 from 1992 onwards. In 2004 the first of these larger cohorts have worked through to age 12 and are included in the summing for overall secondary school demand. By 2009 all secondary school demand is derived from the larger year cohorts. The drop in in secondary school age population from 2009 to 2010 reflects an underlying fall off in birth rates suggesting that the downward trend will continue in the short-term, reflecting the overall cyclical pattern to the region's population (for a discussion of birth rates in Region 10 see Appendix 2).

There are serious limitations on the confidence that can be placed on this method for predicting secondary school demand in the GEAP project area:

- Migration is not considered.
- The regional health records and the 1991 census do not form a continuous data set, this may have led to differences in measurement opening the projection to error.
- The data presented is for Region 10 and not for Linden Town.

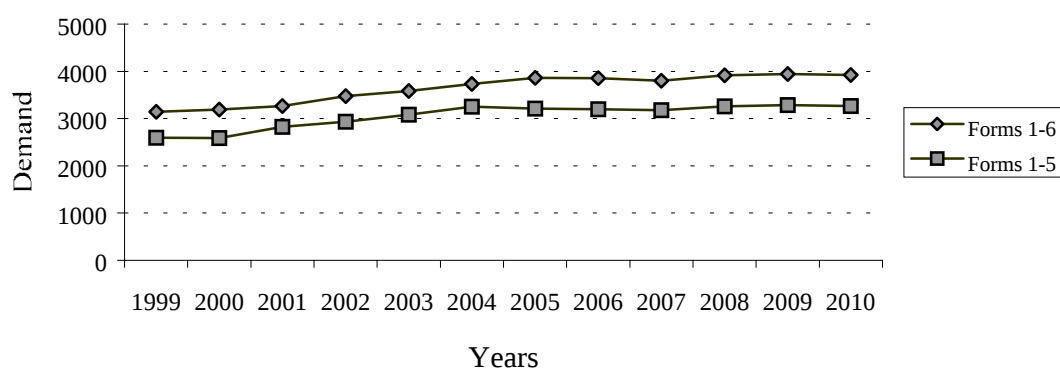
Despite these significant caveats the analysis does show that population in Region 10 is fluctuating rather than in rapid decline or expansion and this is important for the planning of educational infrastructure.

We can tentatively conclude that there will be a small increase in demand from 1999 to 2005 with demand continuing to increase, reaching a peak at around 2009/2010 – notwithstanding changes in migration or other mitigating circumstances.

3.1.2 1999 GEAP Housing Income and Expenditure Survey Baseline

From the 1999 GEAP Housing Income and Expenditure Survey it is possible to disaggregate total population by age group for Linden Town. This data set has the advantage of being more recent than the 1991 census but is weakened by its use of 1991 census enumeration districts as a sampling frame. This approach also excludes population residing in areas that had been developed since the 1991 census was undertaken. Discussions in Linden with community members and officers of the Regional Democratic Council suggested that some few hundred households, mostly from the south west of Linden Town (eg, One Mile and Half Mile settlements) will have been excluded from this projection.

Figure 2: Secondary School Demand Projection, (Forms 1-6 and 1-7), Linden Town (Partial), 1999-2010



Data Source: GEAP Household Income and Expenditure Survey, 1999; Death Rates calculated from Mackenzie Hospital and Wismar Health Centre annual records

Despite this survey's under-recording of population, it may still be used to indicate the direction of population growth and as a validity check to the findings of section 3.1.1. Figure 2, shows the results of a population projection that was calculated using the same methodology as that employed in section 3.1.1 (original data is in Appendix 3). From the 1999 baseline yearly age groups were identified and by deducting mean annual age specific death rates subsequent year group sizes were determined up to 2010. For each year (1999-2010) those cohorts falling between the ages of 12-16 and 12-17 inclusive were summed to provide the annual secondary school demand.

Figure 2 reinforces the findings of Figure 1. Both reveal a slow increase in the number of secondary school places that will be demanded in Linden Town up to 2005 with the rate of increase slowing towards 2010. Also, like Figure 1, Figure 2 does not account for migration flows and so should not be interpreted as an accurate predictor of secondary school demand in absolute terms, but rather as a useful indicator of the trend in future demand.

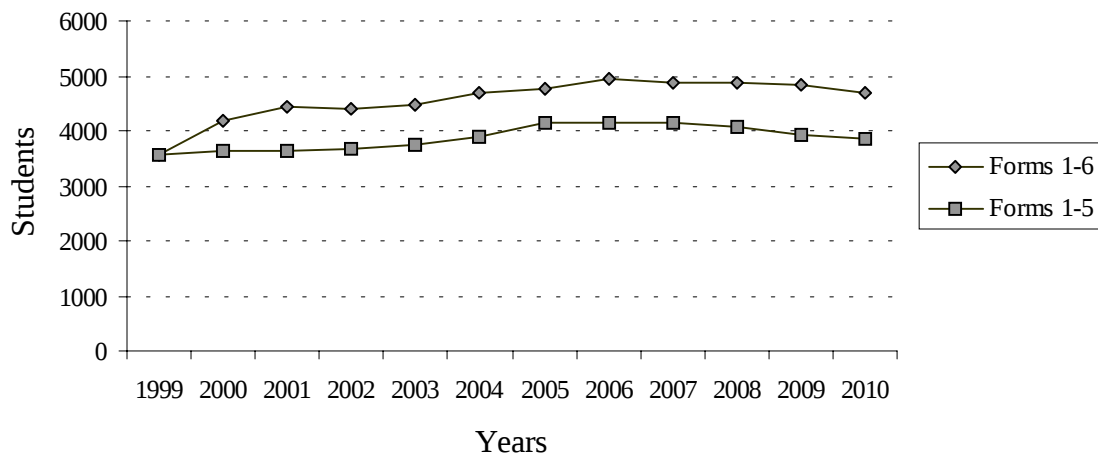
3.1.3 Current School Enrolment Baseline

If we assume that current primary and nursery school enrolments are 100% of demand (i.e. that all children of nursery and primary school age are enrolled) then present enrolments can be used to predict future secondary school demand as successive age cohorts progress through the school system. Such an assumption is made in the

Educational Microplanning and School Mapping Technical Manual. Furthermore, in the GEAP Household Income and Expenditure Survey it was found that 98.4% of 4-5 year olds attended nursery school and 91.2% of 6-11 year olds attended primary school in Linden Town suggesting that a projection based on current enrolment would at most underestimate total demand by 10%.

This is the only approach that can capture the GEAP target population and should be considered the most accurate and the method of preference.

Figure 3: Projected Demand, School Enrolment Baseline, Linden Town



Data Sources: Educational Planning Unit Annual School Returns, Regional Education Officer Region 10

It is more accurate than both the overestimated 1991 census baseline projection and the underestimated 1999 GEAP survey baseline projection. The projection, shown in Figure 3 (and Appendix 4), used a baseline of 1999 enrolment for primary and secondary level education. Primary top classes were counted as secondary. 2000 enrolments were available for nursery and Prep A primary, and these cohorts were also used. As with the previous projections, the demand for secondary school places was determined by the projected population of 12-16 and 12-17 year olds (forms 1-5 and 1-6), with actual enrolment figures used for 1999 and 2000. It was necessary to calculate the values for Form 1 in 2009 and 2010 and Form 2 in 2010, and this was done using the mean enrolment of preceding years up to 1999 for each class in question. For this reason confidence in the projection is lower for 2009 and 2010. The low total demand for 1999 is partly explained by the absence of Form 6 (year 17) students in the GEAP project area at the time of this assessment. The number of secondary school age students has been calculated up to 2010 for form 1-5 and form 1-6 groups.

The shape of the projection in Figure 3 is supported by similar trends in the two methods demonstrated above. Figure 3 is the only measure that can provide an indication of the size as well as the trend in future demand for secondary school places. Overall, it appears that there will be a steady increase in demand up to 2005 but that this may begin to enter a more undulating phase of demand from 2006 to 2010. As with the preceding methods, migration has not been factored into this model.

Indeed, it should be noted that with each of the three methods there is an in-built bias towards a reduction in demand with time. This is the product of successive death rates reducing age cohorts in each subsequent year. For this reason, and because the 5-10% of children excluded from nursery and primary education in 1999 were not included in the projection, the projection should be seen as a conservative estimate of demand.

3.2 Capacity and Demand in GEAP Project Area, Region 10 (Linden Town)

Current secondary education in the GEAP area is provided by four secondary schools and six primary schools with secondary tops. Under the GEAP project secondary tops will be closed and provision concentrated in the secondary schools. In 1999 a little under half of all secondary students were on the roll of secondary tops (55% of Form 1, 43% of Form 2, 44% of Form 3, 41% of Form 4, 5% of Form 5). The demand for secondary school places will also increase through the expansion of annual enrolments as all secondary school age children are offered secondary school places. The GEAP Household Income and Expenditure Survey found that 21% of secondary school age pupils were not attending secondary school in 1999. Thus, as a rough estimate, expected additional demand for secondary school places would be in the order of 80-90% above current supply.

Figure 4 shows predicted increase in demand under two different scenarios and compares this with capacity, also under two different scenarios. Demand is calculated first for all students aged 12–17 (forms 1 to 6), and secondly, for students aged 12–16 (forms 1 to 5). The data on which these projections has been calculated can be seen in Appendix 5.

Capacity is projected based on the assumption that current school expansion plans under the GEAP project will be completed in 2000. This will increase availability from a current total of 2122 places to 3350 places. The breakdown of expansion works by school are:

- Christianburg Secondary School will expand from 800 to 1015 places,
- New Silver City Secondary School will expand from 490 to 560 places,
- Linden Foundation Secondary School will expand from 272 to 1015 places,
- Mackenzie High School will expand from 560 to 760 places.

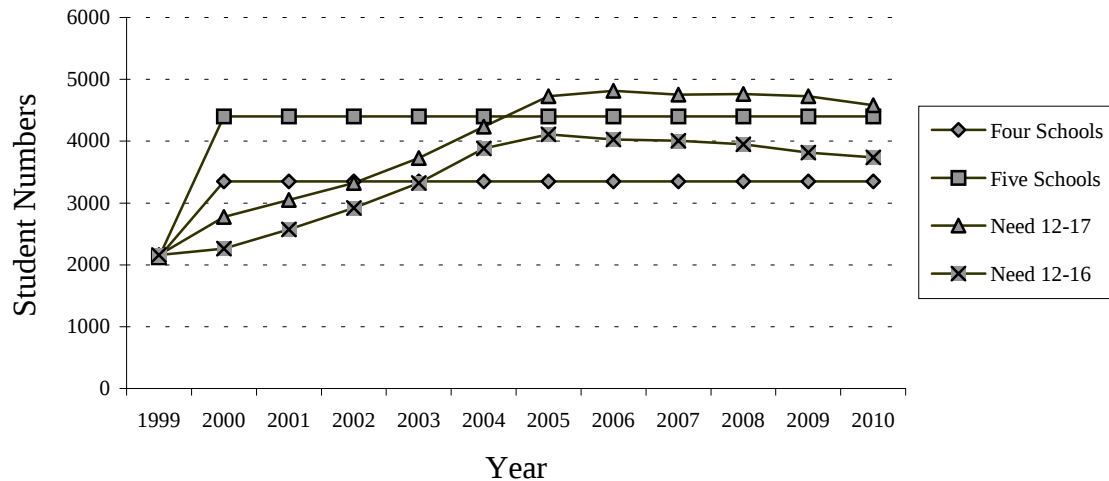
This is a total of 1775 places on the east bank (Mackenzie High and Linden Foundation) and 1575 places on the west bank (Christianburg and New Silver City).

In the first scenario it is assumed that a new, fifth school will be constructed with a capacity of 1050 places, giving a total secondary school capacity of 4400. In the second scenario it is assumed that secondary education will be provided by the four existing secondary schools, albeit in their expanded states with a total school capacity of 3350.

The rapid initial expansion in both demand projections from 2001 is the result of successive, undivided age cohorts entering secondary school education at Form 1. This assumes that students within the secondary top system in 2000 will remain in place, and only those students entering secondary education at Form 1 from 2001

onwards will universally attend secondary schools. The rate of transfer from the secondary top to the secondary school system will of course effect the gradient of this projection and must be harmonised with secondary school extension and construction.

Figure 4: Predicted Demand and Capacity, GEAP area, Region 10



Source: Educational Planning Unit Annual School Returns, Regional Educational Officer Region 10, GEAP project officer, Region 10.

Whether we assume demand to be based on the 12-16 (Form 1-5) or 12-17 (Form 1-6) age groups, it appears that four schools will not have sufficient capacity, even following extension and renovation works, to meet predicted demand. It should be noted that the projected demand is a conservative estimate, with up to 10% of demand concealed. Inadequacy in capacity is sustained from 2002/2003 to 2010 and beyond. Given the fluctuating pattern of the base population in Linden (Figures 1, 2 and 3) it would be unwise to interpret the declining demand from 2005 to 2010 as a trend that will continue. Without any large scale in- or out-migration (which have not been factored into these assessments) it is more likely that demand will fluctuate than decline in the long-term.

The predicted shortfalls in capacity are shown in Table 1. Demand projections are shown for both the 12 – 17 and 12 – 16 age groups. Capacity is based on the current extended four school system. Negative values for unmet demand show a surplus of school provision.

Taking the most conservative scenario, provision for Forms 1-5:

- Total demand is 4126 in 2005 and 3839 in 2010
- Unmet demand is 766 in 2005 and 489 in 2010,
- Unmet demand is the equivalent of 22 and 14 classes respectively in 2005 and 2010.

If education is to be provided for forms 1-6,

- Total demand is 4744 in 2005 and 4682 in 2010

- Unmet demand is 1394 in 2005 and 1332 in 2010,
- Unmet demand is the equivalent of 40 and 38 classes respectively in 2005 and 2010.

Table 1: Demand, Capacity and Shortfalls in Provision with a Four School System with a Staggered Entry

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
4 school Capacity	2122	3350	3350	3350	3350	3350	3350	3350	3350	3350	3350	3350
Demand 12-17	2158	2776	3051	3321	3723	4259	4744	4939	4875	4875	4853	4682
Unmet demand 12-17	36	-547	-299	-29	373	909	1394	1589	1525	1525	1503	1332
Demand 12-16	2158	2261	2575	2918	3320	3906	4126	4139	4130	4080	3924	3839
Unmet demand 12-16	36	-1089	-775	-432	-30	556	776	789	780	730	574	489

Planning guidance states that the minimum intake for a secondary school should be 200 students. With a minimum intake in 2005 of 766 and in 2010 of 489 this guideline is well met. This indicates that the construction of a new secondary school would be appropriate.

An alternative option for secondary school provision in the GEAP area was discussed during this consultancy. The third option is to refurbish and extend the existing New Silver City school:

- The present capacity of the school is 490 and this is planned to increase to 560.
- Under this third option the expansion will go up from 560 to 1050 providing an additional 500 spaces.

This option is worthy of further interrogation. Three issues for consideration are:

- The additional capacity that this option provides will not meet demand in 2005, although it will for 2010.
- The site is already crowded and is likely to fail the planning guidelines for space per pupil once the planned expansion for 560 students has been implemented, further construction on this already constricted site might be unwise.
- The school lies in the path of the smoke plume from Linmine. Health risks are clear with large amounts of dust accumulating in the school. The health risk of this site alone is sufficient to caution against further expansion.

3.3 Locating a New Secondary School

Assuming that the data presented in Figure 5 and Table 1 are correct, there is justified demand for a fifth secondary school in Linden. This section presents the main arguments to be considered when reviewing the location of a new school in Linden. Arguments were identified through site visits and interviews with regional education

officers, community leaders and GEAP project area staff. Four principal arguments were made and these are presented below:

- Loss of secondary tops. Six primary schools that cater for secondary school demand will be lost in the amalgamation process. Four of these are located on the west bank. The enrolment for 1999 can be used to assess lost capacity from the two banks, this is presented in Table 2. A seventh primary school, Coomacka, with a secondary top of 53 students in 1999, is also included in the GEAP project area, but is some distance from Linden Town and so was excluded from this analysis as it was assumed that students will have to travel to Linden regardless of the location of secondary provision within the town.

Table 2: 1999 Enrolments in Secondary Tops, West and East Bank

School and Location	Total Enrolments in secondary forms, 1999
West Bank	
One Mile	283
Wismar Hill	290
St. Aiden's	229
Christianburg Primary	116
Total	918
East Bank	
Mackenzie Primary	346
Amelia's Ward	93
Total	439

Assuming that current provision of secondary tops reflects population distribution, then the data in Table 2 supports a location for the fifth secondary school on the west bank, where 918 places will be lost in amalgamation, as against only 439 on the east bank.

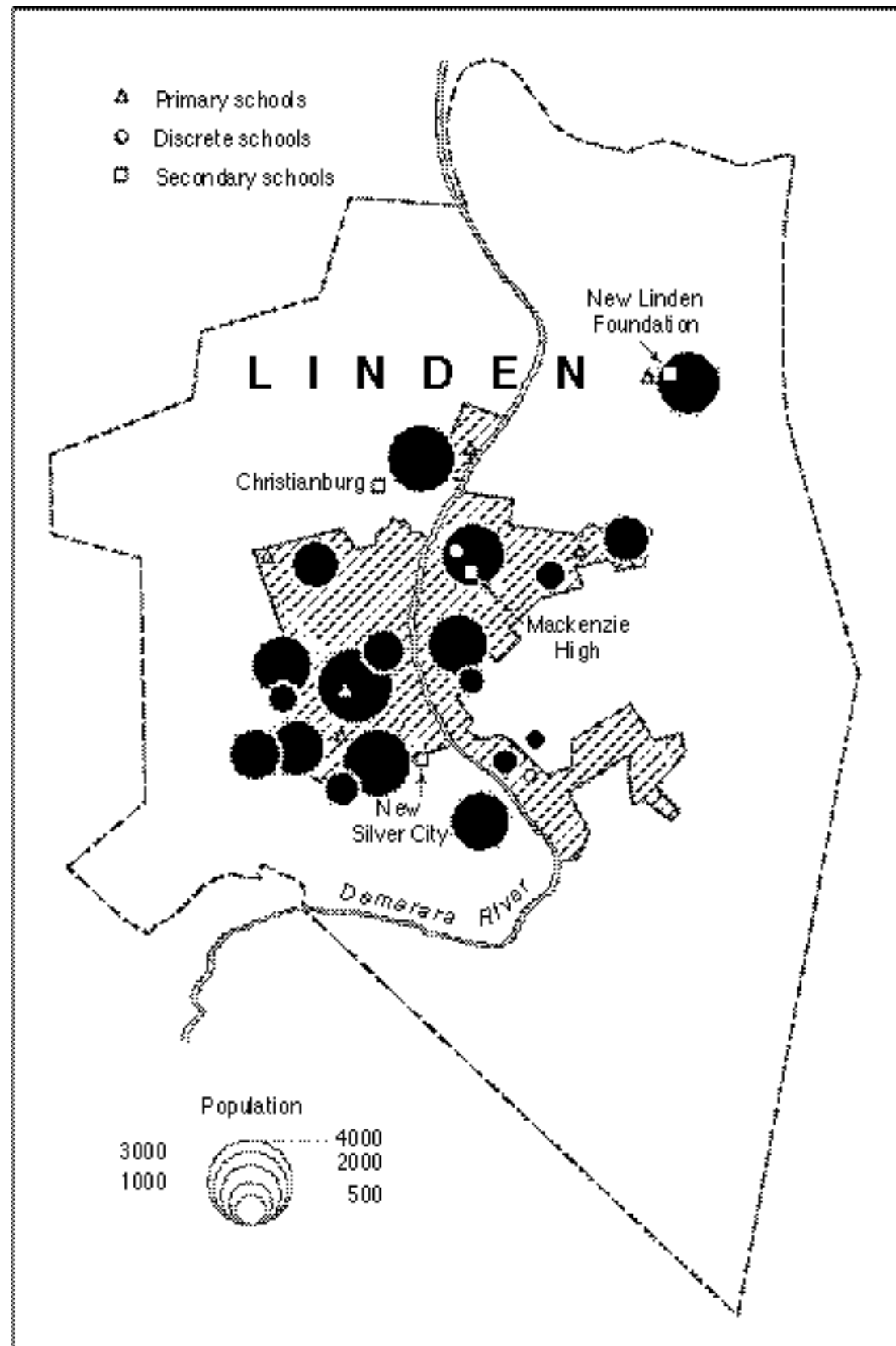
- Recent and future changes in the geographical spread of population in Linden Town. Most recent expansion has been located in the south western section of Linden in the vicinity of Half Mile, One Mile and Victory Valley. New housing here is informal and no records exist to allow an estimation of population. A site visit and interview with community leaders suggest that growth is gradual with little impact expected on secondary school demand. An important future housing scheme is planned for Amelia's Ward, to the north-east of Linden Town, with up to 3,000 lots to be sold by 2003. This development has been co-ordinated by the Regional Democratic Council and officers expect that the majority of new houses will be built by people already resident in Linden Town. It can be assumed that the development will pull some population from the West to the East Bank, although the scale of this movement can not yet be estimated. Additional local demand for secondary school places will be partly, if not wholly, met by the relocation of the New Linden Foundation Secondary School, which is temporarily sited at Watooka in the south-east of Linden. Overall, population movements and growth have a variable and indeterminate impact on secondary school demand and siting priority.

- Costs of travel. Within Linden Town public transport is readily available and all areas (with the possible exception of some current students on the role of Coomacka School) lie within the planning maximum of 20km by road transport. Equity issues would support a site on the west bank which has a number of lower-income communities and who would be least likely to be able to bear the costs of public transport or of the ferry crossing on the River Demerara. Safety issues for students travelling between home and school are a consideration, particularly for those children who will have to cross the Demerara River.
- Community support. An important component of the GEAP project is to encourage local community support for schools as a mechanism to enhance project sustainability. It has been argued that higher-income communities will be able to offer more assistance to a secondary school in terms of skills, time and economic resources. It has also been argued by DfID that parents from lower-income families will be more prepared to send their children to schools located in higher-income areas, whilst parents of higher-income families will be less willing for their children to be on the role of schools in lower-income areas. These are important considerations and suggest that a school should be located on the east bank, possibly close to the current site of the Mackenzie High School. Land for a new school is not currently available.

Map 1 shows the location of all primary and secondary schools and also indicates the proportion of Linden Town's population on each side of the Demerara River. Population data is from the 1991 Census and is likely to be an underestimation of population on the west bank by about 2%.

Map 1 supports the view that following amalgamation the greatest demand for secondary education will come from the west bank of the River Demerara. A site on the west bank will respond to the clear loss of provision which will result from the amalgamation of primary tops and to the equity considerations of provision. Increasing demand on the east bank is likely to be met by the expanded and relocated New Linden Foundation Secondary School. Issues relating to community support are harder to resolve and this suggests that the fifth school should be supported by efforts to strengthen community attachment to the school and to facilitate the transfer of organisational skills into the host community through a community development initiative – GEAP has already invested in community development in Linden and an extension of this service to support the fifth school should be achievable.

Map 1: Linden Town, Schools and Population



4. Assessment in GEAP Project Area, Region 6

This section presents the methodology and findings of two assessments. First is an assessment of demand for secondary school places projected to 2005 and 2010. As part of this assessment the benefits of a new, fourth school for secondary educational provision are discussed. Secondly, the alternative strategies to meet predicted demand are reviewed. Data presented here came from national and regional educational data bases, interviews with Ministry of Education, Regional Democratic Council education officers and headteachers and was supported by interviews with GEAP project staff and the DfID Guyana field officer.

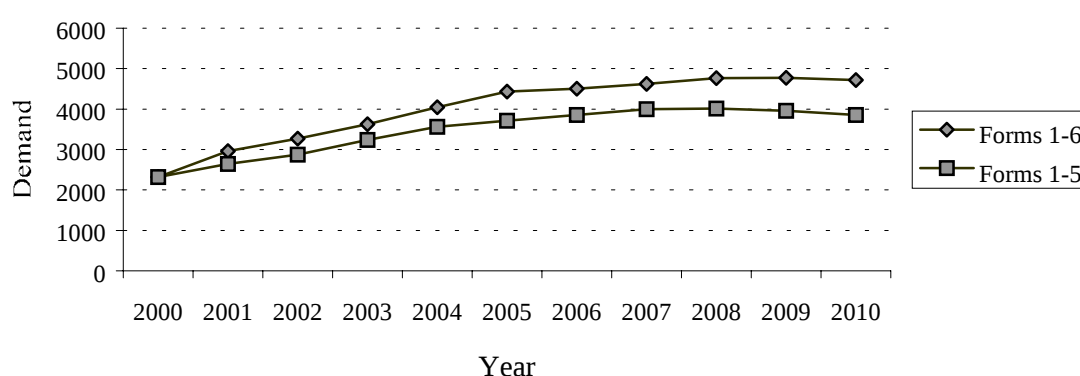
4.1 Projecting Secondary School Demand and Capacity

The following demands and capacity assessment follows the methodology developed in section 3. Demands projections were generated from a baseline of nursery, primary and secondary school enrolments for 2000. Two projections have been made. The first is based on the assumption that 100% of potential secondary school students will enrol in 2005 and 2010. The second, and most probable scenario, assumes that 75% of the secondary school age population will be enrolled in secondary school in 2005 and 2010.

4.1.1 Predicted Demand Based on 100% Enrolment

In Figure 5, the total number of secondary school places required by year is presented (see Appendix 6 for full data). Enrolments for secondary school and primary tops were combined to generate totals for secondary class cohorts in 2000.

Figure 5: Demand For Secondary School Places (forms 1-6 and 1-7), Based on 2000 Enrolments for Primary and Secondary Schools in the GEAP area

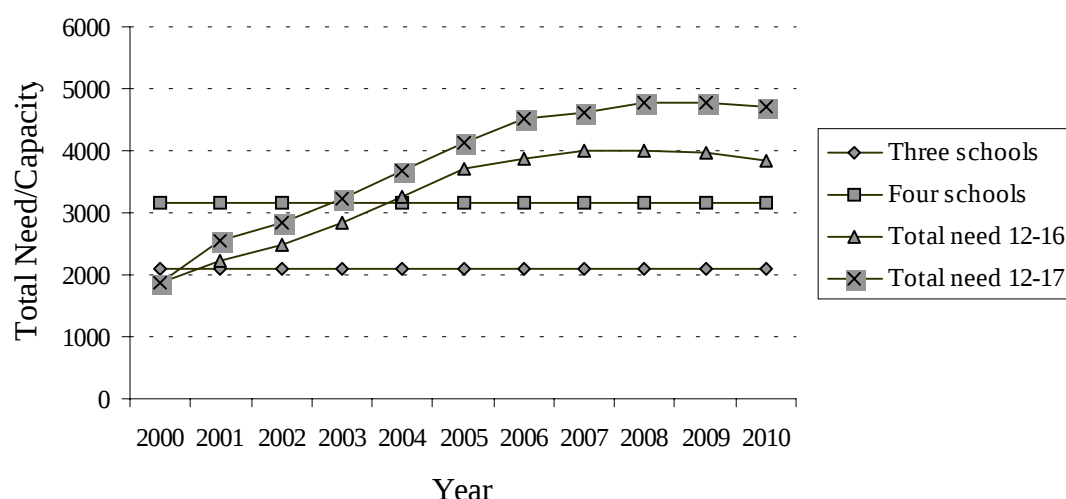


Data Sources: Counterpart to the Regional Officer (GEAP)

The steep rise in enrolments from 2000 to 2005 reflects the low number of 12-17 year olds currently enrolled in the region. As new cohorts enter secondary education from primary forms it has been assumed that drop out will be zero. The GEAP Household Income and Expenditure Survey found that whilst 93.5% of 6-11 year olds attended primary schools, only 55.6% of 12-17 year olds attended secondary classes. As with

the assessment in Region 10, this projection does not include the 25% of students excluded from nursery and the 7% excluded from primary education and so should be seen as a conservative estimate of total demand.

Figure 6: Predicted Secondary School Demand and Capacity. GEAP Area Region 6



Data Sources: Counterpart to the Regional Officer (GEAP)

Figure 6 presents an extension of the above analysis (see Appendix 7 for full data). Demand is calculated for two scenarios, education to be provided for all 12-16 year olds in scenario 1, and for all 12-17 year olds in scenario 2. Figure 6 also shows the capacity for secondary school places that will be available if only the present three secondary schools are available and if a fourth school is made available.

Table 3: Demand, Capacity and Shortfalls in Provision with a Three School System with a Staggered Transition from Secondary Tops to Secondary School

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
3 school Capacity	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100
Demand 12-17	1885	2534	2840	3222	3664	4135	4507	4622	4762	4774	4721
Unmet demand 12-17	-215	434	740	1122	1564	2035	2407	2522	2662	2674	2621
Demand 12-16	1885	2217	2471	2849	3267	3715	3858	3999	4011	3958	3853
Unmet demand 12-16	-215	117	371	749	1162	1615	1758	1899	1911	1858	1753

The predicted shortfalls in capacity are shown in Table 3 (base data in Appendix 7). Demand projections are shown for both the 12 – 17 and 12 – 16 age groups. Capacity is based on the current three school system. Taking the most conservative scenario (provision for Forms 1-5 only) unmet demand fluctuates but is 1615 in 2005 and 1753 in 2010, the equivalent of forty and fifty-five classes.

4.1.2 Predicted Demand Based on 75% Enrolment

There is clearly much unmet potential demand in this region, if all secondary school age students were to enrol and attend school it would be necessary to provide two new secondary schools. But this scenario is unlikely given the high drop out and absenteeism rates in this region. There remains some doubt as to the principal causes of non-attendance and to the social and spatial distribution of exclusion. This is a major hindrance in recommending planning options which must necessarily remain flexible.

Is the high level of secondary school non-attendance principally the result of a lack of secondary school capacity, or some other factor? The 1999 GEAP Household Income and Expenditure survey indicates that 'poor performance', 'employment' and 'marriage' were the most frequently given reasons for non-attendance. An internal GEAP report entitled 'Survey of why children leave primary tops classes' found 43% (27 from 63) respondents dropped out of primary tops for financial reasons. The importance of non-supply factors on low school attendance is also supported by the higher proportion of students who drop-out of education from age 14 onwards (based on school enrolment records). This older group of students is most likely to be forced to leave education because of having married or needing to find income earning opportunities.

Available evidence indicates that lack of capacity is not the sole, reason for low enrolment and attendance. Reported reasons for non-attendance suggest that structural characteristics in the local economy (need for young people to work/lack of formal employment requiring school education) and society (young age at marriage for girls/women) are of overriding concern, rather than lack of secondary school capacity *per se*. This said, it would be unwise to place an overemphasis on the available survey data. The feeling of the local GEAP project team is that capacity remains a principal factor.

Without any clear evidence to the contrary, and with high contemporary dropout rates, it would not be reasonable to expect 100% of presently excluded potential students to enter education following the provision of new school capacity. A transition to greater inclusion is probable but is likely to be slow. Because of this a more reasonable scenario is that from the current base of 48% attendance (calculated as mean of attendance from ages 13-17, data from the Household Income and Expenditure survey), an increase of up to 75% of students enrolling in 2005 and 2010 can be assumed.

Table 4 shows the level of demand that would be expected based on the assumption that only 75% of potential students would enrol in secondary education by 2005/2010. Unmet demand is still high enough to warrant the consideration of the construction of a fourth school (full data in Appendix 8).

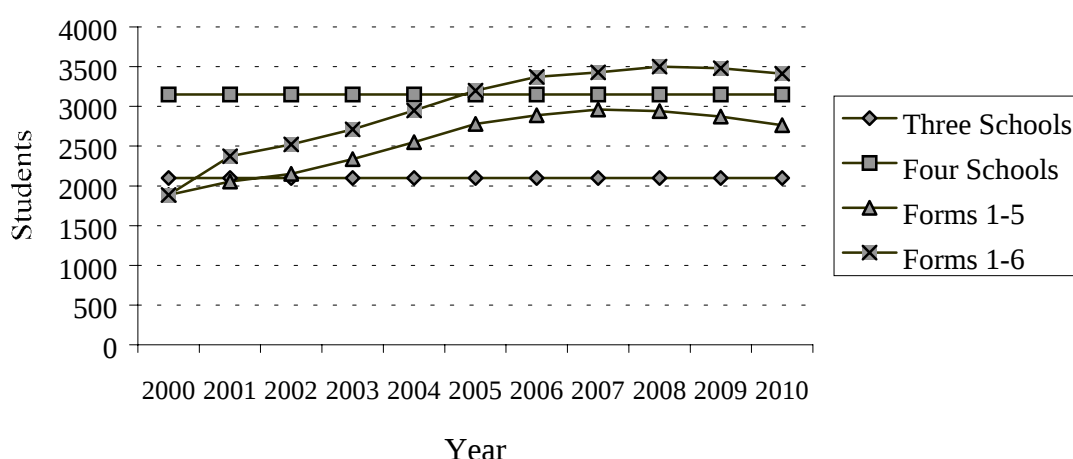
Table 4: Demand, Capacity and Shortfalls in Provision with a Three School System for 75% of Potential Demand in GEAP area, Region 6 Using Staggered Entry to Secondary School

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
3 school	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100

Capacity											
Demand 12-17	1885	2371	2520	2711	2947	3199	3372	3427	3501	3481	3413
Unmet demand 12-17	-215	271	420	611	847	1099	1272	1327	1401	1381	1313
Demand 12-16	1885	2054	2151	2338	2550	2780	2887	2961	2941	2872	2764
Unmet demand 12-16	-215	-46	51	238	450	680	787	861	8418	772	664

In Figure 7, demand at a level of 75% is predicted on the basis of a staggered entry into any new school from 2001 onwards and using the same method developed in the assessment of the GEAP area in Region 10. It is assumed that as new age cohorts move up from primary to secondary education all students will be catered for in secondary schools. The declining demand from 2008 reflects a general decline in school age population. Even with a staggered entry and for forms 1 to 5 demand at 75% still supports the argument for a possible fourth school.

Figure 7: Predicted Secondary School Demand at 75% and with a Staggered Entry, against 3 and 4 School Capacity, GEAP area Region 6



Data Source: Counterpart to the Regional Officer (GEAP)

The Life-table used to generate Figure 1 is in Appendix 8. At 75% of demand the expected demand secondary school places in GEAP region 6 for 2005 and 2010 are:

Demand from forms 1-5:

- Total demand is 2780 in 2005 and 2764 in 2010
- Unmet demand with three secondary schools is 680 in 2005 and 664 in 2010
- This is equivalent to 19 and 19 new classes in 2005 and 2010 respectively, based on a class of 35 students.

Demand for forms 1-6:

- Total demand is 3199 in 2005 and 3413 in 2010

- Unmet demand with three secondary schools is 1099 in 2005 and 1313 in 2010
- This is equivalent to 32 and 38 new classes in 2005 and 2010 respectively, based on a class of 35 students.

4.2 Meeting Demand in GEAP Region 6

The GEAP project area can be divided into two sections (see Map 2). The eastern half of the area, from Tagore secondary school to Crabwood Creek, contains the area's three secondary schools: Tagore Memorial, Skeldon Line Path and Skeldon High, and 67% of the area's population (1991 National Population and Housing census). No contemporary data exists for population distribution or for rates of migration into, out of or within the Region, however, interviews with Neighbourhood District Council and Regional District

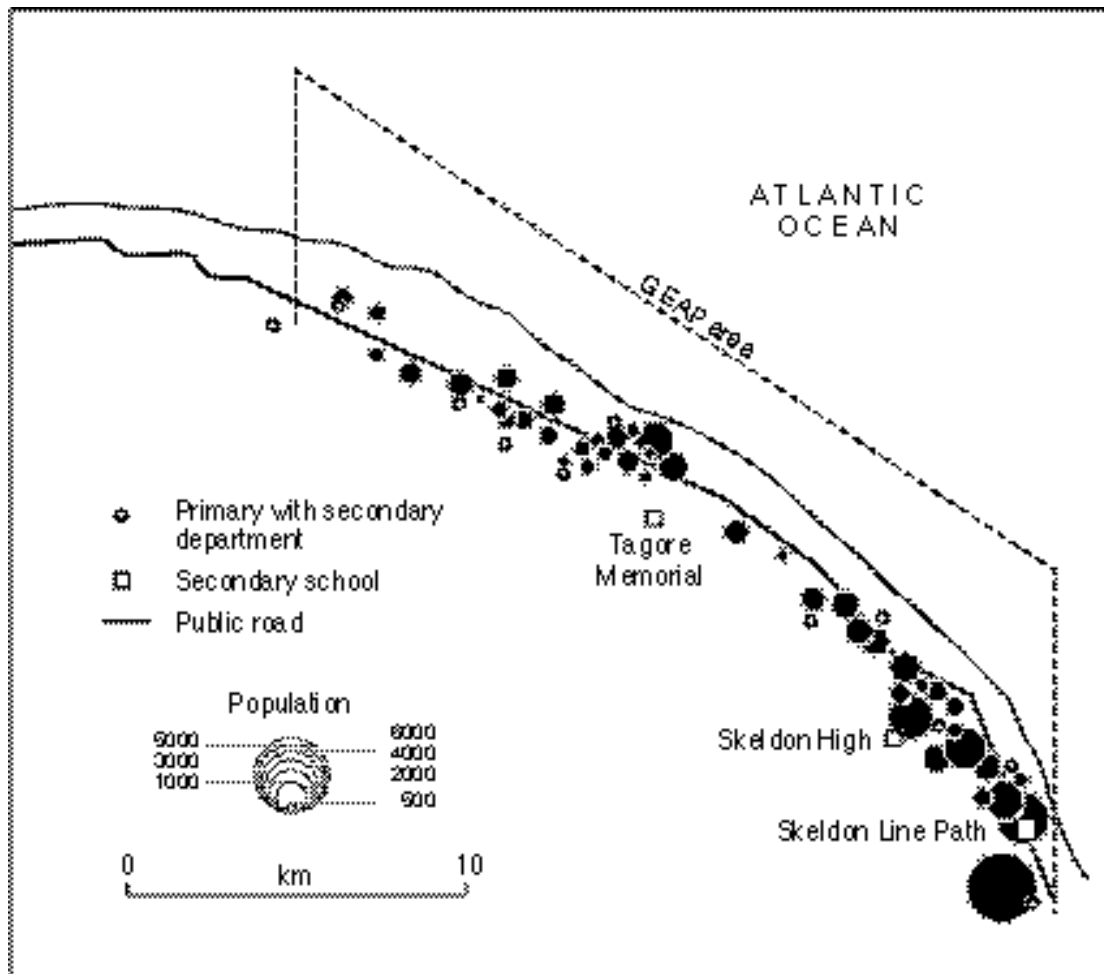
Council officers suggest that any population expansion since the 1991 census has been by squatting and has been restricted to the already built up areas around Corriverton (Little India has approximately 62 lots, Little Africa has approximately 86 lots and Scotspool has approximately 10 lots) and Crabwood Creek (approximately 50 lots). A formal housing scheme by GUYSUCO is planned for Springlands, and due to commence in 2003. These post-1991 developments further increase the population density of the eastern half of the project area.

Contemporary school provision responds to this skewed geography of demand. Skeldon Line Path and Skeldon High School are within 7 km of the centre of Corriverton and Tagore memorial a little over 10km to the north of Corriverton. All are well within the 20km catchment limit in planning guidance. The largest physical area of unmet demand lies to the west of Tagore memorial to the GEAP area limits at Joppa, also called Village 43. The present proposal is to locate a possible new school in Village 45, at the extreme north of the GEAP area in response to the lack of physical access in this half of the GEAP area.

The GEAP team should consider this location carefully.

Another option would be to increase the capacity of the existing secondary schools. Total current capacity is 2100. This could be increased to 3450 without exceeding planning guidelines. If the 75% level of demand is accepted then this becomes a realistic option. A maximum of 19 classes will have to be catered for. If spread evenly between the schools, 6 or 7 new classes per school will be required. This approach to provision has the advantage of flexibility. If new capacity is quickly consumed by latent demand then this would strengthen the argument for a new school. Flexibility also responds to the lack of evidence to show the distribution of poverty and exclusion from education within the GEAP area.

Map 2: GEAP project area, Region 6, Schools and Population Distribution



Given that all of the GEAP population is within 15km of a secondary school at present commuting to the existing sites is acceptable by planning guidelines. This weakens the argument for a new school at Village 45. There is no data to ascertain the spatial distribution of currently excluded children and without this it is not possible to argue that Village 45 represents an optimal location. It is as reasonable to assume that the majority population located to the east of Tagore Memorial (67% by the 1991 census) is under-served as it is to assume that the smaller population (33% by the 1991 census) to the west lacks provision. There are additional concerns that demand to be considered in deciding upon the best way of meeting predicted demand.

- Is it better to concentrate resources on improving provision within the existing secondary school system or to develop a new catchment area?
- With the low attendance records of this area will attendance be increased by providing a new school or by extending provision at already existing locations?
- Will potential students from the more densely populated east be prepared to travel to a new school in the west?
- Would potential students in the west be more prepared to travel to new facilities in the east?
- Would a new school located in the west have a knock on effect, bringing students in from the east and releasing capacity in the existing schools? If a new school located to the west of Tagore Memorial is likely to draw students in from the west

(outside the GEAP area) then this will limit its ability to ease capacity in the existing secondary schools.

A combination of extending provision at the existing schools and building a school will be likely to appropriately meet the GEAP areas long term educational demands deficit. In the shorter term planners should review the assumption of the necessity for a new school and consider the possibility of extending provision at the existing sites.

If a decision is made to build a new school to the west of Tagore Memorial, then Village 45 is an appropriate location. In addition to serving that group of potential students that have furthest to travel within the GEAP area a school located in Village 45 or its environs would also provide an educational resource for two under-served communities that lie outside, but adjacent to the GEAP area. Students from Eversham village presently commute over 7km to attend Central Corentyne High and students at Yakasari primary school have to make a similar commute to reach Black Bush secondary school.

An earlier proposal for a new school to be located at Leeds possesses many of the advantages of the Village 45 site in terms of provision within the GEAP project area, but will not contribute to increasing accessibility to secondary provision for students in Eversham or Yakasari.

5. Population Modelling for Educational Microplanning

It would be advantageous if simple population models could be developed to help guide secondary school provision decision-making in the future. However, it is the opinion of this report that formal models would not yet be appropriate for educational microplanning in Guyana. The quality of data required for any formal modelling procedure is not available in Guyana. In particular the absence of any data on migration within Guyana or on any local level data on international migration reduces the validity of long-term population projections that might be derived from such models. Indeed, the apparent scientific accuracy that might be attached to the outputs of such models is likely to encourage their being given undue weight in microplanning exercises.

The most accurate and flexible source of demand prediction comes from present school enrolment data supported by local knowledge of population changes. Primary and nursery school enrolment is very high in Guyana. Over 90% in Regions 6 and 10 and data on annual enrolments is collected centrally by the Planning Unit of the Ministry of Education, making it easily accessible. Current enrolments are the best available guide to future secondary school demand. By adjusting for mean age specific death rates losses through successive age groups can be determined and school demand derived. Annual death rates between 4 and 18 are low, under 1/1,000 and if death rate data is not available it may be excluded. Appendix 1 shows the death rates used here which were calculated from Region 10's annual health records. The principal weakness of this approach is that it does not take migration into account. Again the planner must turn to local knowledge to help interpret and refine aggregates projections. Where possible projections for demand based on current school

enrolments should be supported by projections based on Regional census data as explained below and demonstrated in section 3.1.2.

It is possible to project populations based on the 1991 National Housing and Population census using post-1991 annual birth and death rates available from regional health returns and hospital records. The methodology for such an approach has been described above. Despite the statistical validity of such a method, the use of a historical 1991 baseline demands to be supported by local knowledge on housing development (both formal and informal) and perceived patterns of population movement since the 1991 survey. The National Housing and Population Census is only useful as a direct guide to educational microplanning when the area under study coincides exactly with the area for which records have been kept. Once the 2001 Population and Housing Census has been undertaken more confident population predictions can be made at the Regional level. Health data records are kept at the regional level - and even here there will be some variability as residents cross borders to obtain medical services including the registering of births and deaths. Thus, projections based on extended census data should be used only for rough guidance when a project area is other than a region.