Appendix 9 - Economic Modelling[1] in support of Children's Centre Business Case for Leeds

Cost Benefit Analysis

Using the Unit Cost Database (v.1.4) which was updated March 2015 cost benefit analysis has been carried out. The initial version of this cost database was developed as part of work under the Investment Agreement and Partnerships Exemplar project to produce a framework to assist local partners in reforming the way they deliver public services. The project was funded by the Department for Communities and Local Government's (DCLG) Troubled Families Unit, and delivered by Greater Manchester and Birmingham City Council, although it is relevant nationally. Work to develop and update the database is being undertaken by New Economy, with further support from DCLG and other government departments.

The costs can be broken down into three types of values. These are:

- Fiscal value: costs or savings to the public sector that are due to a specific project (e.g. delivery of additional services or reduced health service, police or education costs)
- Economic value: net increase in earnings or growth in the local economy
- Social value: wider gains to society such as improvements to health; educational attainment; access to transport or public services; safety; or reduced crime

When looking at the financial case for a project, only the fiscal values should be considered, and an assessment of 'cashability' of any savings also considered (based on New Economy Model). When looking at the economic or public value case for a project, all three benefits should be considered. For the purposes of this business case we have concentrated on the fiscal values particularly as we have current fiscal costs to compare.

Parental, infant and child mental health and wellbeing

Poor maternal mental health is linked with poor early attachment, relationships and inequality. According to a recent national report maternal perinatal depression, anxiety and psychosis carry a long term cost to society of about £8.1 billion each year with 72% of the costs relating to adverse impacts on the child (CentreForum's Mental Health Commission, 2015)

The Leeds Mental Health Needs Assessment (NHS 2011) suggests that public mental health, prevention and early intervention should be prioritised. It is suggested that 30-40% of mothers and babies will suffer from insecure attachment between mother and child with the potential for mental health issues for both. Over the last three years Leeds has sought to address this issue.

Following the integration of Heath Visiting Service and Children's Centres into 25 locally based Early Start Teams, we have jointly (LCH, Public Health Children's Services) developed the Maternal Mood pathway). As a response to this a number of perinatal and adult-parent mental health services have been commissioned and are in development. These include:

- Early screening for maternal mood both during pregnancy and in the early years;
- Access to 'Preparation, Birth and Beyond', a programme of perinatal education and support.

[1] Including high level assumptions and levels of confidence - for each section

- Baby-Steps: This is a 'programme of perinatal education and support targeted at families with complex needs
- Infant Mental Health Service: Developing staff skills and awareness around early attachment, bonding and attunement; consultancy support for staff working with families and direct CAMHS support for mothers with the most complex difficulties.
- Swift and easy access to parent counselling services and developing centres as the 'hub' for providing support to bereaved families with young children, thereby supporting both parents and young children with their loss.

The international evidence base around the first 2 years of parenting suggests that enriching the early environments of children in low income families produces significant financial returns .

The Incredible Babies/Years programmes demonstrate a good cost-benefit ratio. Long-term studies show that model programs for three- and four-year-olds living in poverty can produce significant benefit-cost ratios and annualised internal rates of return of 18% over 35 years, with most of the benefits from these investments accruing to the general public.

Topic Area/Program	Monetary Benefits	Cost	Benefit to Cost ratio	Return on Investment
Incredible Years: Parent Training and Child Training	$15,571	$2,085	7.5	12%

(Wave 2013)

A small team of Children's Centres staff have been trained in the Incredible Babies/Years programmes and have piloted the 'Incredible Babies' parent-child group training. Early Indications from four pilot courses completed by around 50 families in Leeds demonstrated similar gains to the national and international evidence base.

The 'Tool to Measure Parenting Efficacy' (TOPSE: used to evaluate parenting programmes nationally and internationally) identified the around 12% gains for parents completing the training in the areas of emotion and affection, play and enjoyment, empathy and understanding, with a 12% reduction in perceived pressure in family life.

We have a high level of confidence in the return of investment.

Analysis

Average cost of service provision for adults suffering from depression and/or anxiety disorders, per person per year - fiscal (£977) and economic (£4522) costs [measured as per person per year – HE11.0] Reference - Paying the Price: the cost of mental health care in England to 2026 (King's Fund, 2008), p.118

This is the average annual fiscal cost of service provision per adult suffering from depression and anxiety disorders. In addition, the economic value quoted is related to lost earnings; other social costs (e.g. from reduced well-being) are not monetised in the King's Fund report. The fiscal cost

includes the following service areas: prescribed drugs; inpatient care; GP costs; other NHS services; supported accommodation; and social services costs. As shown in the constituent measures below, ***the cost falls predominantly to the NHS (92%)***, followed by the local authority (8%).

Note that the source quotes research that found that around one third of working age adults with depression and half of those with an anxiety disorder are not in contact with services (i.e. not accessing provision or diagnosed by a GP with a mental health condition) - this cost is an average across all adults suffering from depression and/or anxiety disorders, regardless of whether they are in contact with services or not.

The source also provides costs for a range of other adult mental health conditions, including dementia, and for child and adolescent disorders - these are outlined in the subsidiary and constituent costs detailed below. Research from elsewhere (Mental Health Promotion and Mental Illness Prevention: the economic case, Knapp et al, 2011) suggests that the cost (to employers) of work-based screening for depression and anxiety disorders is £31 per employee (2009-10 prices), comprising completion of a screening questionnaire, follow-up assessment to confirm depression, and care management costs; subsequent delivery of six sessions of face-to-face CBT can cost some £240 per course. The relatively low cost of such interventions, compared to the potential savings demonstrated in the data quoted here, demonstrate their cost-effectiveness.

From our data the following calculations have been made:

- The number of children aged 0-5 in total in Leeds = 37,605[2]
- From our data the percentage of targeted families engaged in the centres is 80%
- The Leeds Mental Health Needs Assessment (NHS 2011) suggests that public mental health, prevention and early intervention should be prioritised. It is suggested that 30-40% of mothers and babies will suffer from insecure attachment between mother and child with the potential for mental health issues for both.
- Assuming that 30% of mothers (on a per child basis) benefit from the mental health support afforded by Children's Centres this could equate to an individual saving of £977 per annum, which would mean a **£8.82M return on investment (ROI)**

Accident prevention and first aid training

RoSPA recently commissioned research from the Transport Research Laboratory (TRL)5 to look into the cost of home accidents. Its findings were shocking: the total annual cost of home accident casualties who are treated for their injuries at hospital – around 2.7million people each year – is estimated to be £45.63billion (£45,630million), based on an average cost of £16,900 per victim (all ages). The children most at risk from a home accident are the 0–4 years age group. Falls account for the majority of non-fatal accidents while the highest number of deaths are due to fire. Most of these accidents are preventable through increased awareness, improvements in the home environment and greater product safety.

[2] Figures taken from the NHS Leeds and Leeds LA Early Start Dashboard dated 14 May 2015

Children's Centres have been trained and undertaking ROSPA home safety assessments for 5 years. However funding for equipment fitting has reduced from £120k per year to around £30k per year reducing the impact of the programme.

A pilot has been undertaken, funded by Children's Services, clusters and CCG's for paediatric first aid training for parents. 12 courses have been run with 87 parents completing the course. The course has sustained a 95% completion rate with 15% of attended going on to take additional sessions and gain accreditation. The parent evaluation (TOPSE) demonstrates similar impact measure demonstrated in national evaluation (Incredible Years 2012)

Analysis

The benefits of first aid training in terms of number of accidents prevented and cost of those accidents could be measured by reduction in A&E attendances and Ambulance call outs:

A&E attendance (all scenarios) per incident HE4.0 [fiscal = £117]

Ambulance services - average cost of call out, per incident HE3.0 [fiscal =£223]

Reference -National Schedule of Reference Costs 2011-12 for NHS trusts and NHS foundation trusts (weighted average of values against HRG codes VB01Z to VB11Z)

This cost is sourced from NHS Reference Costs 2011-12 (an updated cost is not available from the 2013 Reference Costs publication), and is a weighted average cost for A&E attendance (using values from HRG codes VB01Z-VB11Z), covering all attendances including scenarios both where investigation and treatment are received, and where they are not received (see related headline measures below for unit costs for each of these scenarios). The unit cost varies by type of A&E setting as follows: A&E attendance at an NHS foundation trust or NHS trust hospital: admission £157, non-admission £108; A&E minor injury units: admission £74; non-admission £60; A&E walk-in centres: admission and non-admission, both £42; non-24 hour A&E/Casualty departments, admission £100, non-admission £53). Subsidiary costs (see below) have been calculated across all settings for A&E attendance that (a) leads to hospital admission, and (b) does not lead to admission (see below) [all costs in this cell are quoted at 2011-12 prices].

From our data the following calculations have been made:

- 12 courses have been run with 87 parents completing the course. The course has sustained a 95% completion rate with 15% of attended going on to take additional sessions and gain accreditation.
- If all of those parents who completed the course avoid at least one A&E attendance as a result of this training (87 x 95%) **this equates to £9,711 ROI per annum**
- If all of those parents who completed the course avoid at least one Ambulance call out as a result of this training (87 x 95%) **this equates to £18,509 ROI per annum**

This would be a total of £28,220 per annum recurrent saving

There is a medium level of confidence in this return of investment as we would require further analysis to confirm whether there is any evidence of use of first aid training and loan of safety

equipment to impact on A&E attendance/admission. This is one of the high level assumptions that needs testing out.

Healthy eating and obesity reduction

Leeds Children's Centres are working to implement two key evidence based strands of work around health eating and obesity reduction; namely the UNICEF Baby Friendly accreditation and city wide roll out of the Healthy Eating and Nutrition for the Really Young (HENRY).

Breastfeeding

The evidence around breastfeeding suggests (UNICEF 2012) that if 45% of women exclusively breastfed for four months and if 75% of babies in neonatal units were breastfed at discharge, every year there could be an estimated:

- 3285 fewer gastrointestinal infection-related hospital admissions and 10,637 fewer GP consultations with over £3.6m saved in treatment costs annually;
- 5,916 fewer lower respiratory tract infection related hospital admissions and 22,248 fewer GP consultations with around £6.7m saved in treatment costs annually;
- 21,045 fewer acute otitis media related GP consultations, with over £750,000 saved in treatment costs annually;
- 361 fewer cases of NEC with over £6m saved in treatment costs annually

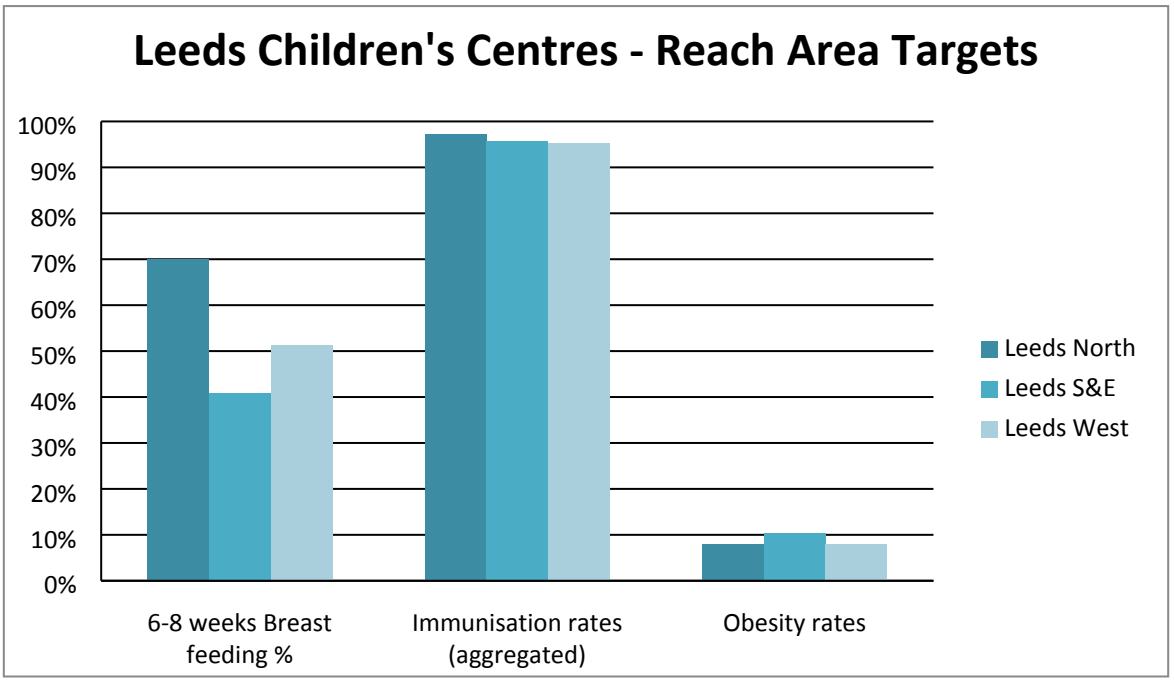
Also the constituents of breast milk support brain growth and development by improving white matter structure and better visual, motor, language and cognitive performance. Oxytocin levels are high when breastfeeding which support the responsive mothering behaviours leading to better cognitive and psychosocial development. Breastfed babies were 1 to 6 months ahead of never breast fed babies (Millennium Cohort Study).

The Leeds rates for breastfeeding suggest that initiation rates in Leeds are at around 70%, and by 4-6 weeks have fallen to around 50%. This compares poorly with parts of Europe such as Norway where 99% of mothers breastfeed and 70% are exclusively breastfeeding at 3 months. The evidence suggests that implementing the UNICEF Baby Friendly Initiative, particularly for young white women can have an impact on improving rates. Leeds Children's Centres have been working towards the BFI since 2012 and expect to achieve it in 2016. Maternity and Health Visiting Services in Leeds achieved the UNICEF BFI in 2014.

Analysis

Modelling for health – impact of increase in breastfeeding in Leeds for health

Achievement of recognised health and wellbeing 'early years' improvements in breast feeding and immunisation rates, and reduction in obesity rates for pre-school children. This is shown below using data recorded across the three CCG reach areas for 2014-15.



The current registration rates for families in the Leeds area are very high; in some cases 100% of families are registered. In addition, the target groups are all over 80% with very similar levels of engagement. The percentage of all families engaged with the Children's Centres remains over 70%.

Healthy Eating in the Really Young (HENRY)

Developed in Leeds the HENRY programme has one of the strongest evidence bases of any early years obesity prevention programme (Willis et Al. 2013). The HENRY programme has been developing in Leeds since November 2008 and the HENRY approach is an integral part of the Care Pathway for the Management of overweight and very overweight babies and preschool children (0 - 4), see Appendix 5.

The incidence of obesity in children has reached epidemic levels. Despite the need to combat this, health professionals report a lack of confidence in working with parents around lifestyle change. HENRY- Health Exercise Nutrition for the Really Young - aims to tackle childhood obesity through training health professionals to work more effectively with parents of preschool children around obesity and lifestyle issues. The 2-day Core Training was developed and piloted in 2007 and has since been adopted nationwide. Over 800 members of the Early Years and Health Visiting service teams have participated in the HENRY core 2 day training and over 40 completing the 2 day Group Facilitation Training. As a result parents throughout the city are able to access support individually or in a group setting. Impact of HENRY is noted in Willis et al. 2013 where significant changes were observed, with most sustained at follow-up. These included increased self-efficacy and ability to encourage good behaviour. Increased consumption of fruits and vegetables was reported in both children and adults, together with reduced consumption of sweets, cakes and fizzy drinks in adults.

There were also positive changes in eating behaviours (e.g. frequency of family mealtimes and eating while watching television or in response to negative emotion and reduced screen time in adults.

Analysis

The National Child Measurement Programme (NCMP) is a national initiative designed to gather valuable data. From April 2013 local authorities in England took over this duty and the NCMP delivery infrastructure which was already in place within local public health teams has continued to effectively deliver the programme. The key findings for Leeds from analysis of the data for the academic year 2012-2013 are now published and summary of findings are as follows:

- 13,836 children were weighed and measured and their BMI calculated. 3,727 of these children were overweight and obese. This suggests approximately 27% of children surveyed are overweight or obese.
- Coverage was 93.4% in reception and 74% in Year 6.
- Just less than one in eleven children in Reception is obese (8.7%, 755 children). ***Obesity rates in reception show a slight downward trend year on year since 2008/9***.
- Just less than one in five children in Year 6 is obese (19.7%, 1022 children), which is double the proportion for reception and this level has remained static over the last two years.
- Underweight prevalence remains low with the rate for reception being 1% and for Year 6 being1.6%.
- As in previous years ***more children from 'Deprived Leeds' are obese (12.1%) than from 'Non-deprived Leeds' (8.4%)***. From 2009/10 to 2012/13 there is a consistent downward trend in the gap between deprived and non-deprived Leeds in obesity rates at reception however this trend is not evident at Year 6.
- In comparison with other core cities ***Leeds now has one of the lowest childhood obesity rates, significantly lower than five of the seven core cities[3]***.
- Differences between rates of obesity in girls and boys in both years were not shown to be statistically significant.
- The Leeds NCMP data on ethnicity shows similar trends to national data with higher levels of obesity amongst most ethnic populations, as compared to the White British population.
- Some localities are showing consistently high rates of childhood obesity year on year and this primarily reflects the higher levels of deprivation in some localities.
- ***The data provides supporting evidence for focusing interventions at young children, both at pre-school e.g. Children's Centres and in primary schools; and for prioritising prevention***.

If these facilities were removed and or reduced it would have a significant and detrimental impact on these children.

The challenge for partners in Leeds is to work together to prevent and tackle childhood obesity; providing specialist services where appropriate and establishing broad community focused preventative interventions. A range of effective prevention programmes are underway including Food For Life, Leeds Infant Feeding Plan, and HENRY(Health Exercise and Nutrition for the Really

[3] The Core Cities Group is a self-selected and self-financed collaborative advocacy group of large regional cities in England and outside Greater London. The group was formed in 1995 as a partnership of eight city councils: Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham, and Sheffield.

Young ,offering 1 to 1 and group support to families in the early years . More recently the PE and School Sport Premium have been used to fund the Active Schools programme, and Universal Free School Meals have been introduced at Key Stage 1. The Active4Life programme continues to provide physical activity opportunities for families living in many of our most deprived areas.

In summary, the analysis indicates that all of these benefits outweigh the cost of retaining and further developing the Leeds City Children's Centres.

Looked After Children

Other potential areas for consideration:

It could be possible to investigate the avoidance of certain costs as a benefit such as those for '**Child taken into care - average fiscal cost across different types of care setting, England, per year**'

This headline cost for looked after children (LAC) should only be used in the absence of more specific data on the type of placement provided to individual children. If such data are available, it is advised using the more specific costs provided for foster care and residential care homes (see entries SS2.0, SS3.0, or variants provided in the underlying cost lines SS2.0.1 - SS2.9 and SS3.1).

The cost is derived from Department for Education (DfE) Section 251 outturn data on net current expenditure on LAC in England in 2013/14, and DfE 903 return data on the number of LAC in England in March 2014; the Section 251 data were divided by the 903 return number to calculate a national average unit cost per LAC. The Section 251 data encompasses the following areas of LAC expenditure: residential care; fostering services; adoption services; special guardianship support; other children looked after services; short breaks (respite) for looked after disabled children; children placed with family and friends; education of LAC; leaving care support services; and asylum seeker services - children. The method was chosen over other types of calculation and sources of potential headline data, as it considers expenditure across a range of placement types, and provides an average across all English local authorities.

In practice, as demonstrated by some of the subsidiary costs below (many of which are based on particular scenarios that outline LAC with varying degrees of need), expenditure on LAC varies widely depending on the needs of the child and the local context (for example, areas with high numbers of LAC but fewer available foster care places may have a higher proportion of LAC provision in residential homes, which are considerably more expensive than fostering provision). This variance is demonstrated when using the same methodology to derive data for individual localities/areas. Although there may be a longer-term economic impact associated with a child being taken into care e.g. in terms of future earning potential, in the shorter-term this does not apply.

A calculation could also be made if we knew how many children who would otherwise have been taken into care if families had not benefited from the support and services provided by the Children's Centres. This equates to an annual cost of £52,676 per child saved as a direct fiscal benefit.

There is a medium level of confidence in this measure due to further analysis being required to define assumptions.

Education - Benefits

One of the key benefits from the introduction of the Children's Centres is **School Readiness**. This is described as fiscal savings associated with improved school readiness on entry to reception year (age 4-5)

The Agency bearing the cost / making the fiscal saving is schools and the latest updated **cost/saving for 2012/13 is £1053 per child per year**. This has been derived from Department of Education (2013): Illustrative Examples: Constructing the Notional SEN Budget for a Mainstream School or Academy.

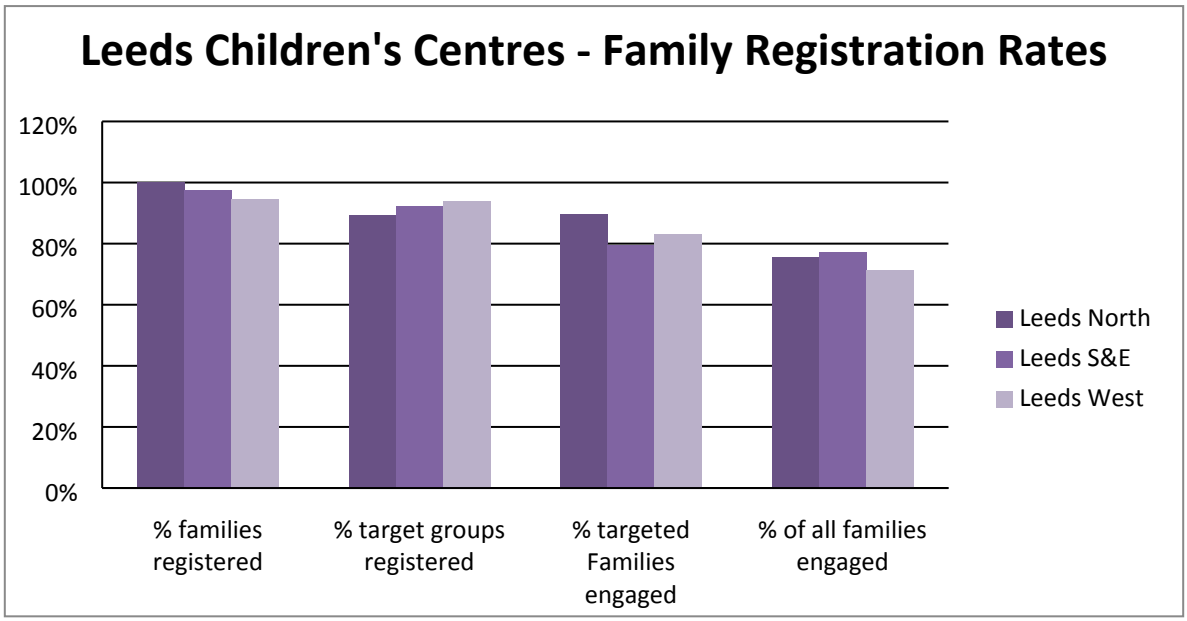
This is an estimated value for the annual fiscal savings derived by schools as a result of entrants to reception year (at age 4-5) achieving a 'good' level of development at the Early Years Foundation Stage. The cost is based on Department for Education illustrative examples for calculating school budgets, and is premised on the link between increased school readiness and a reduction in the cost of special education needs provision. However, as funding mechanisms for schools are based on local funding arrangements and the way that Local Authorities allocate Dedicated Schools Grant (DSG) funding, the actual fiscal benefit will depend upon local arrangements. There will also be longer-term economic impacts for individual children who have an improved education.

From our data the following calculations have been made:

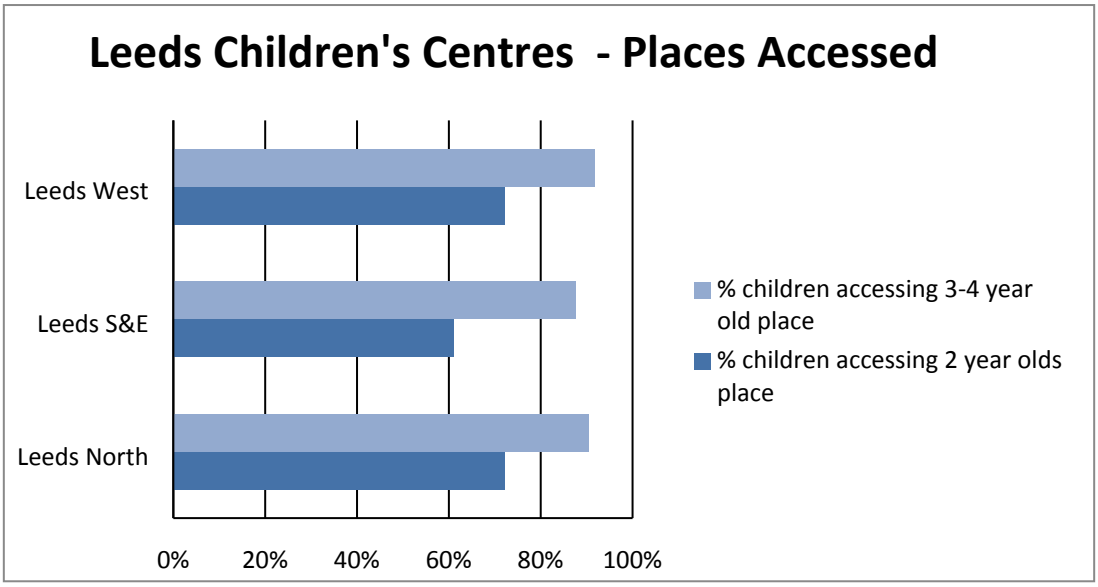
- The number of children aged 0-5 in total in Leeds = 37,605[4] this equates on a flat line scale to 7,521 of reception age children
- Assuming the benefit is a saving for each child of £1053 per annum (if £100% achieve school readiness) this would mean a **£7.9M return on investment (ROI)**
- Currently our success rate is running at 58.2% of children achieving this target [as defined by 'GOOD' status in Early Year Stage Assessment]. This has been measured for the past seven years
- Adjusting the ROI to this percentage still gives £4.5M per annum cost saving benefit.
- If there is a **predicted increase from 58.2% to 70% target this would result in £5.5M return**, 80% target would equate to £6.2M and 90% would realise £7.1M per annum

We have a high level of confidence in this return on investment

[4] Figures taken from the NHS Leeds and Leeds LA Early Start Dashboard dated 14 May 2015



All Children's Centres have high rates of places being accessed. In relation to the school readiness benefit both the 2 year old places and 3-4 year places are important. All are recorded as over 60% for two year olds and as high as 90% for the three and four year olds. This supports the return on investment (ROI) calculations and potential for improving this further. **The current target for improvement of take up of 2 year old places is to increase from 62% to 80%**

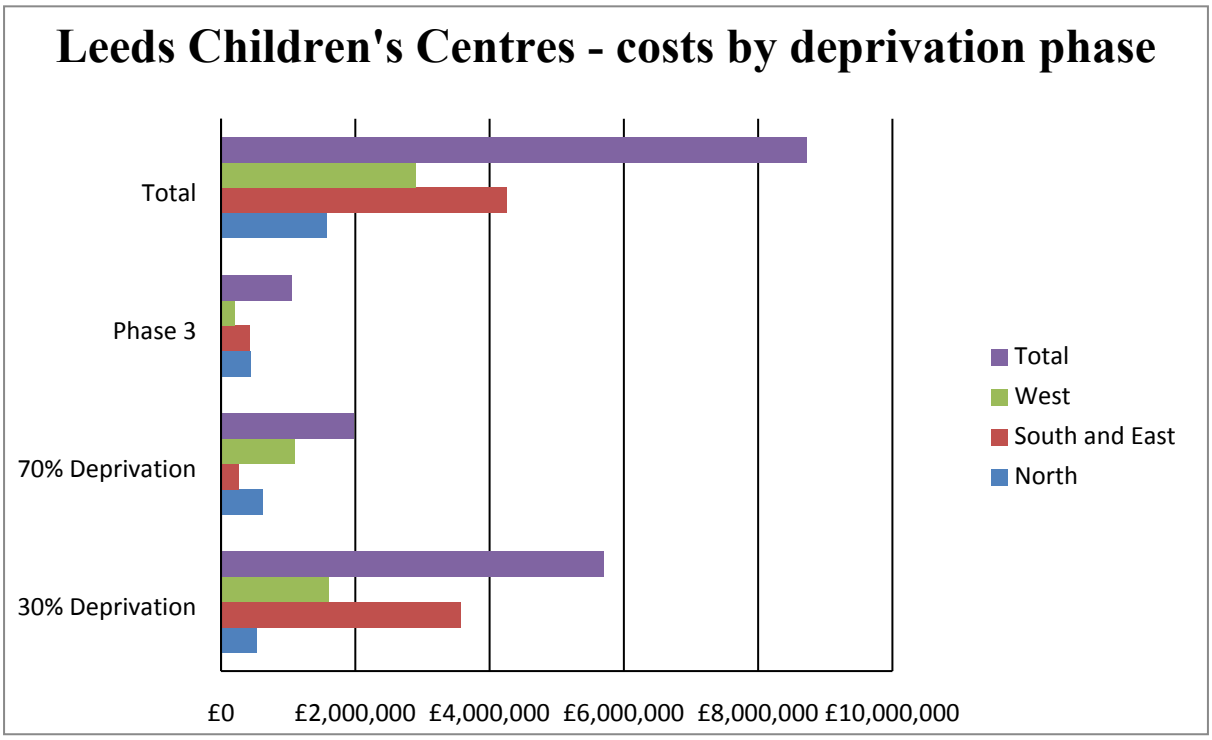


Costs

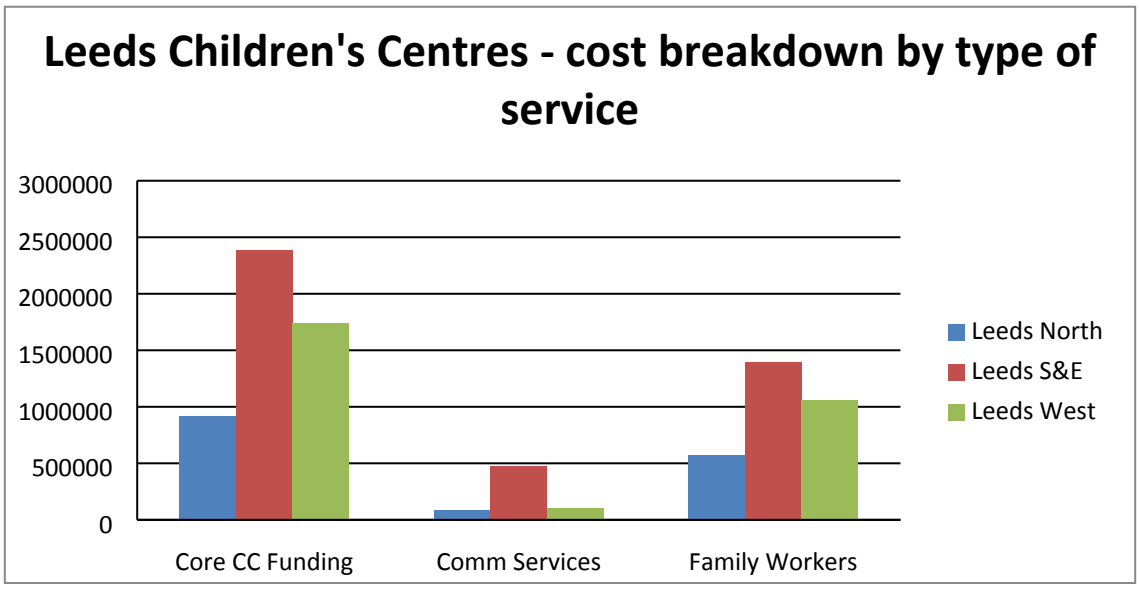
The current cost per annum for the whole of Leeds are described below for Children's Centres Spend 2015-16 - analysed by CCG Region. They are broken down by Clinical Commissioning Group (CCG) region as well as by 'Area of Deprivation'. This is particularly relevant if using a targeted model for tackling the most deprived areas (30%) first, followed by 70% and then the Phase 3.

CCG Region	30% Deprivation	70% Deprivation	Phase 3	Total
North	£526,530	£610,730	£436,810	£1,574,070

South and East	£3,571,020	£261,350	£419,680	£4,252,050
West	£1,606,670	£1,095,450	£199,500	£2,901,620
Total	£5,704,220	£1,967,530	£1,055,990	£8,727,740



This can further broken down by type of service; core City Council Funding, Community Services and Family Workers:



Points to note that in addition, Leeds City Council spend over £300k directly managing the above services, and the Family Support and Parenting Team is budgeted to cost £386k in 2015-16, so the overall programme cost is circa £9.42M

Some centres have merged their funding to ensure their current sustainability. The City Council Community Service costs are allocated on the number of children weighted for level of deprivation. Public Health have agreed to fund £1.5m and Early Help are utilising £1m of 2 yr old FEEE 14-15 under spend to fund the above costs. In addition, schools forum are being requested to use £1.1m of DSG 14-15 under spend to fund the above costs.