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TECHNICAL ASSESSMENT FOR INFRASTRUCTURE IMPROVEMENTS: ISSUES FOR CONSIDERATION

This list addresses the most common considerations and is by no means an exhaustive list of issues.

1. OVERVIEW

One of the most important obstacles for ECD partial care registration proved to be the fact that most of the centres are unable to meet basic infrastructure health and safety norms and standards. The aim is therefore to assist and upgrade community based ECD centres, established over the years with their own resources, to meet the minimum norms and standards for ECD partial care registration. It is not possible to replace all existing ECD centres with new builds as it will firstly ignore the enormous efforts by the communities across the country to provide care and education to their young and secondly it will be totally unaffordable for the country to do so. The main focus is thus on the improvement of ECD infrastructure that includes services e.g. water, sanitation, and building improvements that can include minor and major improvements, extensions and new builds as a last option.

The purpose of the document is to provide a few brief pointers to help municipalities understand which type of improvements should be considered and under what conditions. There is a clear distinction between the improvements to ECD Centres that can be funded on land owned by government (municipalities, state departments and parastatals), land owned/ managed by traditional authorities, land owned and managed by Non Profit Organisations(NPOs) and land owned by / allocated to private individuals. Generally speaking, all types of improvements can be made to ECD Centres owned by government, traditional authorities and NPOs. Municipalities can however only assist with basic services e.g. water, sanitation, electricity, storm water, fencing for centres owned by private individuals. The document also tries to guide on site decisions by the technical assessor, the Environmental Health Practitioner (EHP) accompanying him/ her to come up with the most optimal and affordable improvements.

Site Selection

Sites are selected for infrastructure improvements according to a fixed set of eligibility criteria agreed upon by the municipal ECD multi – Stakeholder Project Steering Committee. These following criteria was used in 6 municipalities in KZN and two in the Eastern Cape.

Unregistered and conditionally registered ECD Centres:

- Category A, B1, B2 centres[1]
- Potential (Capacity/ governance + Programme) of 50% and more[2]

[1] Categorisation is a systematic framework in terms of which all ECD centres are assessed in respect of their operational capacity and potentials so as to determine the appropriate types of support which may be appropriate. There are 5 categories: Category A: Well functioning usually DSD registered, may have minor infrastructural deficiencies: Category B1: Basic functioning with good potential can usually achieve DSD registration if there is some support and infrastructure improvement; B2 Low functioning with potential: may take more time to achieve DSD registration than B1 and greater flexibility and more support may be required; C1 Low functioning with limited potential often providing only basic "child minding"; C2 High risk and dysfunctional, may need to be closed down and children accommodated elsewhere.

[2] Potential rating score – this provides an indication of the potential of a centre to improve and provide acceptable ECD services and therefore excludes the functional area of infrastructure and health and safety threats which can often be resolved by means of infrastructure improvements (i.e. only the functional areas of capacity/governance and ECD programme quality are scored).

- 20 children[3] plus
- 5 years + operational

Fully registered ECD Centres

- Without DSD grant & 20 + children
- With DSD grant, 20 + children and infrastructure problems

2. IMPROVEMENTS

Worthy centres for 20+ children and operating for 5 years plus should be assisted to "silver status"[4] regardless whether or not they are unregistered, conditionally or fully registered. The purpose of Infrastructure upgrading enables centres to meet basic norms and standards - not to "beautify" the centre. It is t not a complete "make over" but a selected number of improvements that will allow the centre to meet the norms and standards.

Rationale:
It is unlikely that state funding will be allocated incrementally. There is a huge need and it would be impractical to revisit centres every few years. Escalation needs to be taken into account. It will always be cheaper to do improvements sooner than later.

Note:
Quite a number of unused / empty / vandalised / storm damaged ECD centres were found in rural areas in KZN where ECD surveys were undertaken. Many of these centres were built with government funding and all efforts should be made to use these facilities for ECD. Both the DSD and the Municipality must take responsibility to determine why the centre is not used, if there is a need, how big the needs is etc. A feasibility study must be undertaken to see if and how such centre can become operational again.

3. NUMBER OF CHILDREN

Determining the real number of children at an ECD centre is not as easy as one would think it is. The numbers differ sometimes quite dramatically when recorded as per the survey, the infrastructure assessment, when checked against DSD records for registration and the numbers subsidized by the DSD. There is also a definite difference between the numbers enrolled and the number of children attending on a regular basis. It is imperative that the correct number of children be determined, especially when decisions have to be taken about possible extensions and new builds. All these decisions have to be made in close cooperation with the local social worker and EHP responsible for ECD centre partial care registration.

[3] 20 is used as minimum. The minimum can be increased to 30 or 40 but local stakeholders felt that 20 is a reasonable number for some small villages and in informal settlements where space is an issue. A higher number of children e.g. 40 may be preferable in more established urban areas. One could may be work on the number of 3-5 year olds per km as provided by Wazimap to determine optimum centre sizes

[4] The DSD is working on an incremental partial care registration framework that provides for gold, silver and bronze status - gold being the highest status that can be achieved, silver provides for acceptable ECD facilities and services and bronze being the lowest possible entry level which aims to include most of those that would otherwise not be have been able to register and be included in the DSD system.

It is quite difficult to decide if a new building or extension should be provided for the existing number of children and or children that may in future be attending.

Where the village is very small and where there is limited scope for increasing the number of children that can attend the centre and or where there are quite a number of ECD centres in the neighbourhood, it is recommended that extensions only be considered if the average number of children attending the centre on a regular basis, exceeds the capacity with at least 10 children for a set period, e.g. 6 months or a year. It is not viable to spend about R200 000 for an additional playroom for only 3 or 4 children. Few ECD centre can afford to appoint an additional practitioner for 3 or 4 children. Many of the centres in rural and informal areas charge between R0 and R150 per child which will not be enough to remunerate a trained practitioner. So in reality the additional children will be added to the existing playroom and the chances are good that an extended playroom will stand open until such time that there are enough children to support a practitioner's salary.

However, where there is a high demand for ECD services, it is recommended that provision be made for future growth. Some ECD centres reported an increase in enrolments after the centres have been improved.

There are also some centres that are hugely underutilised – e.g. the building may make provision for 100 children but may only be attended by 25 children. No additional facilities e.g. extra toilets etc. should be provided if the current number of toilets provided are sufficient for the number of children it accommodates. Also should such centre lack some facilities e.g. a sick bay, it should make use of existing space (e.g. using drywalls) to create a sick bay in a practical way so that the sick bay can be used even if the centre is later filled to capacity in other words improvements should not be temporary and it should not be done in such a way that it will require rework at a later stage.

4. CENTRE SPACE

4.1. KITCHEN

Well established centres for 20+ children operating for more than 5 years should have a separate space for food preparation whether the food is provided by parents or not.

Rationale:
Once centres are registered and DSD funded they are expected to provide food. NGOs providing food to ECD Centres will only consider those centres with separate lockable food preparation areas.

- **Scn 1**: **no kitchen but enough space in playroom** – subdivide with drywall and lockable door - children may not have access to the kitchen.

- **Scn 2: No kitchen and no space in playroom** - consider a) other spaces - e.g. closing of portion of veranda or b) consider standard standalone extension for a kitchen, store and office (building plan and costing available) or c) adapted container though option b) may be better value for money

Some kitchens are unnecessary big - e.g. 36m^2 while space is needed for other purposes (e.g. for the playroom or a sick bay). Such kitchen can be partitioned **-** there is no need for a kitchen bigger than 14m^2 for a small to medium sized crèche.

4.2. OFFICE AND SICKBAY

Well established centres for 20+ children operating for more than 5 years should have a minimum of an office cum sick bay.

Rationale:
Centres requires space for practitioners to attend to administrative functions, meetings, etc and to separate sick children from others.

- **Scn 1: no office or sickbay in centre with less than 50 children but enough space in playroom** – subdivide with drywall and provide space for office cum sick bay with enough space for a bed / double bunk in the office

- **Scn 2: No office cum sick bay and no space in playroom –** consider other spaces – e.g. closing of veranda or b) consider extension but bear in mind that the practitioners must be able to keep an eye on sick children preferably through a glass pane.

- **Scn 3: No office or sickbay at centre with more than 50 children. W**here no space - consider extension for separate office and separate sickbay when the number of children exceed 50 children. Since attendance fluctuates it is recommended that an extension only be considered where the number of children exceeds 50 with about 10 children for some time (e.g. 6 months or a year) . It will not be cost effective to do an extension for 2 or 3 children only. This issue should be discussed with the local EHP and SW.

4.3. PLAYROOMS

All playrooms should create spaces conducive for learning.

Many centres have one big playroom accommodating 30 to 70+ children. This is unacceptable – It is imperative to determine the number of playrooms based on the number of kids, the age group, 1,5m^2 internal space per child (i.e. in the playrooms), etc.

Where possible children should be separated by age groups. The table below also indicates the number of practitioners required per number of children per age group

	Age groups	**Space per child**	**Ratio of staff members to children**
1	Children younger than 18 months -	2m^2 per child, Also provide additional 2m^2 for nappy changing	1 care giver to 6 children
2	Children between 18 months and 36 months	1,5 m^2 in the playroom	1 practitioner to 12 children
3	Children between 3 to 4 years	1,5 m^2 in the playroom	1 practitioner to 20 children
4	Children aged 4 to 5 years	1,5 m^2 in the playroom	1 practitioner to 30 children

All proposed partitions MUST be discussed with the centre - some centres are used by the community over weekends or in evenings for meetings for an extra income. One should in those cases consider safe, sound proof, stable easily movable partitioning that can be safely secured when moved.
Where there are 6 babies or more, it is recommended that a nursery be partitioned. Some big centres are not filled to capacity. For instance, they may have 50 children while there is space for 100; Many of the centres then put all the children in 1 big room – this is not ideal they should utilise the available space. No partitioning should be done where other space is available.

Overcrowded playrooms: Some flexibility can be applied for a limited period of time but it is unacceptable that a child would have less than 1 - 1,2m^2 internal space. Alternative space must be considered - e.g. closing of a veranda. If there is no other option, an extension must be considered.

4.4. BUILDING

4.4.1. Foundation & slab cracks

The reason why foundations crack is usually soil movement compounded by poor workmanship / construction practices, in appropriate foundation type for clay conditions, lack of reinforcement, poor compaction, rising damp from not using Damp Proof Course (DPC) plastic, etc. Foundation footings carry the weight of the walls and roof and so cracks in foundations will almost always result in wall cracks also.[5]

Many areas in SA have expansive clayey soils which means it expands in rainy seasons and contracts in dry times. "Some indications that you are dealing with expansive soils are:

- Cracked foundations.
- Heaving and cracking of walls and floor slabs.
- Jammed windows and doors.
- Ruptured pipes
- Heaving and cracking of paving"[6]

Existing foundations are most likely to be strip foundations and is unlikely in many cases to have been designed according to the site's specific soil conditions especially in deep rural areas. This cannot be changed.

Other reasons for foundation problems may be because of rainwater discharging at the base of walls through down pipes or leaking drainage can result in foundation subsidence over time.

4.4.2. Wall problems: cracks and rising damp

4.4.2.1. Cracks

There are many types of cracks. The assessor / building inspector needs to determine if wall cracks are superficial or structural. If in doubt, obtain the opinion of a structural engineer. Remedial action must be specified by the engineer for structural cracks.

[5] https://www.housecheck.co.za/understanding-cracks-in-your-house/
[6] https://www.housecheck.co.za/understanding-cracks-in-your-house/

The most common reasons for cracking of brick walls are settlement, thermal expansion, moisture penetration and roof movement. The National Home Builders Registration Council (NHBRC) classifies cracks[7] as follows:

Crack Width	Category	Possible repairs
Less than 1mm	Very slight	Normal decoration
1 to 5mm	Minor	Normal decoration
5 to 15mm	Moderate	Normal repairs / minor masonry replacement
15 to 25mm	Severe	Extensive repair work / replacing sections of walls
Over 25mm	Very severe	Major repair work / partial rebuilding

This classification should guide the assessor in determining what intervention would be required and what the estimated cost of such intervention would be.
The basics of crack repair are to remove all debris and excavate the crack down to firm material. After that a suitable, flexible, crack filler or mortar mix can be used to fill the crack.

If it is thought that the crack has resulted from movement which is likely to continue, then an attempt can be made to reinforce the wall across the cracked area. This can be done by strengthening the plastered area with a plaster lathe (metal or plastic mesh) or by a technique known as "metal stitching". Here lengths of metal rod (rebar) are fixed across the crack with epoxy before the crack is filled and the area plastered (perhaps with the use of plaster lathe) [8]

Cracks sometimes originate in the top corner of doors / windows – these often develop where no lintels were used. Replace doors and windows where damaged and add lintels. Remember to make provision for plastering and painting around these windows/ doors. Paint to match existing or can be contrasting colour that 'frames" the door / window. This needs to be discussed with the principal.

4.4.2.2. Rising damp

Rising damp is a condition where moisture from the ground travels up through the pores in the bricks and mortar of a building. Such dampness cause problems such as damp patches, mould or salt like patches on walls, peeling paint/wallpaper and eventually plaster falling away from the wall. In the longer term, it will lead to structural damage to the building, if left unchecked. Understanding the possible reasons for dampness will help the assessor to determine the intervention and to arrive at a realistic cost.

Rising damp can indicate that the original builder forgot to install a damp proof course (DPC) or installed it incorrectly or has deteriorated for some reason. It is often also because the DPC has been "bridged" e.g. by soil being heaped for some reason against the building to a higher level than where the damp course has been installed. If the latter be the case - level the soil and add an apron.

Dampness may also be the result of

- cracks or damage to walls. These cracks and damage to walls need to be fixed.
- a damaged connector water or sewer pipes or an overflowing septic tank. These things need to be checked thoroughly and fixed immediately

[7] https://www.housecheck.co.za/understanding-cracks-in-your-house/
[8] https://www.housecheck.co.za/understanding-cracks-in-your-house/

- broken gutters and downpipes. Check this and ensure that all gutters and down pipes are repaired and channelled to rain water tanks. Make sure there are no cracks / damage to rainwater tanks or taps next to the building.
- storm water problems. This is a municipal function and should be attended to as soon as the problem is reported. The municipality should considera V-drain (either gravel, stones, or concrete lining) or berm to channel the water away from the building. It is imperative that a storm water solution be found to keep water away from the foundations.
- Condensation caused by closed doors and windows that trap the heat resulting in excessive build-up of moisture. This often causes mould on the walls and damp. Cross ventilation is very important and the windows should be opened even in the winter for at least a few hours per day. The mould needs to be killed - there are many products that can be used. If not removed successfully the mould will reappear on the newly painted walls.

Where fixing of walls is done - make provision for the painting of the whole wall or at least those parts that were affected.

4.4.3. Apron

Specify the casting of an apron right around the centre to keep water from damming up against the building. Measure the required length. Check that the soil was not “raised” above the damp course level. If so specify the levelling of the soil below the damp course level and add the apron right around the building.

4.4.4. Plastering and Painting

General painting of all centres are not specified as this is quite an expensive exercise. It is not a minimum requirement for ECD partial care registration.

The exception would be in cases where

- the walls are really extremely dirty
- the walls need to be re-plastered and painted.

Where repair work or renovations were made, plaster and paint that wall – either the full wall or just the half the wall (e.g. 1or 1,2 high) depending on the work that was done. Where doors / windows are replaced or new ones installed - discuss with the centre principal to see if one can “frame the windows or doors with a contrasting colour so that one does not have to paint the whole wall internally / externally.

It is imperative that the assessor measure the area that needs to be plastered and painted and that the description of the work is clear

4.4.5. Floor

4.4.5.1. Cracks

Some floors have nasty cracks. Cracks are usually either the results of inferior materials and poor workmanship e.g. the result of incorrect placement and compaction of the fill beneath the concrete slab. Nothing much can be done except for filling up of these cracks with silicon products. If really severe it is

recommended that a structural engineer inspect the centre and provide guidance on how to rectify the problem.

4.4.5.2. Floor covering

Cracked tiling may not look good but should not be replaced unless it has dangerous / sharp edges that can cut the children. Where missing tiles need to be replaced it needs to match existing size and colour or at least contrasting colour if agreed to by the ECD centre principal. Remember same tiles may not be found.

A smooth floor topping can be considered to remedy uneven floors. Take note that the doors may have to be resized when a topping is required. Floors can be painted in

Where tiling is essential or where there are floor problems, e.g. cracks or holes in a concrete floor, it is recommended that Interlocking PVC flooring be provided and that the centre be provided with at least 1 sqm floor tiles for back up purposes. PVC tiling is warmer and more practical than ceramic tiles. It is also faster to lay and easier and cheaper to replace.
The assessor needs to measure and specify the type of floor covering and the extent.

4.4.6. Steps / veranda/ wheel chair access

Fix steps / ramp and or veranda where broken / damaged and where it c**reates an unsafe /dangerous situation**. Some cracks may not look good but are not creating any dangerous situation - leave it then as is. Check if balustrades are safe. Children tend to climb on / lean on to these things - make sure it is sturdy not rusting and safe. Specify what remedial steps should be undertaken.

4.4.7. Doors

Some external doors are in poor condition and needs to be replaced. Other are looking bad but can be sanded and varnished.

Consider adding a canopy to protect external door against rain.

Specify the adding of lintels where not provided

Stable doors can assist with light and ventilation - especially where these doors open directly in playrooms but some centres prefer solid doors for safety reasons.

Doors for external toilets: Do not provide solid wooden doors / hollow doors for conventionally built toilets, prefab buildings or corrugated VIP structures - rather use braced batten doors where applicable and ensure it is primed and painted.

Centres with more than one room should have a second door to escape in case of fire.

Replace damaged / broken door handles and 3 lever locks with new ones.

4.4.8. Windows

Many centres are struggling with vandalism and many windows are broken. Depending on the condition of the windows itself it will require either glazing or the replacement of a whole window.

There are cases where there is nothing broken and where the windows will not be replaced, the putty may however look scruffy. This is not normally replaced or painted as it is a time consuming job which the centre can do themselves – it is not expensive. The putty will only be replaced when the glazing needs to be replaced and even then not all the windows will be repainted.

Some windows are buckling under weight of the wall in absence of lintels – provide temporary support and replace windows in these cases - add lintels, plaster and remember to make provision for paint internally and externally.

4.4.8.1. Adequate light

Each centre should have adequate natural light so that children can see without the light being put on.

4.4.8.2. Cross ventilation

All centres should have more than one window or a door opposite each other to ensure adequate cross ventilation.

4.4.9. Roof

The roof is one of the most important aspects to check. Roof inspections takes a while and should cover a perimeter inspection to get an idea of the roof structure and to check for loose, missing or damaged roof sheets/ tiles, cracks in fibre cement roof sheets or tiles, missing, damaged or loose roof ridge, inadequate roof sheet overlap; an external inspection to check external fixtures such as the eaves to look for dry rot or water damage, missing barge boards and facia boards; gutter inspection to see if some gutters were incorrectly installed, buckled or warped or portions of the gutters are gone, or have debris build up inside; internal inspection to check the condition of ceilings where provided and / or condition of exposed roof trusses, rafters, purlins, check fastening of roof ties if possible to ensure it is correctly done, if there are water leaks and if there are missing roof screws.

Where roofs are blown off repeatedly - make provision for a roof consultant like Mitech or a structural engineer to inspect the roof and advise on what should be done to ensure structural integrity

Measure the parts of the roof that needs upgrading or replacement and provide good description that will enable the contractor to correctly fix the roof.

4.4.10. Ceilings

No new ceilings are provided if not installed before. In other words, attention is only given to the fixing or replacement of damaged ceilings and cornices.

Where a portion of the ceiling has to be replaced, the whole ceiling need to be painted in that particular room

4.5. SERVICES

4.5.1. Water

A sustainable source of water should be available for all ECD Centres - a stand pipe on site and or sustainable bore hole is the ideal.

Where a centre has to fetch water from a communal stand pipe, consult the Municipality to determine if it would be possible for them to extend the pipe to the ECD Centre.

Whether the centre is dependent on municipal water on site, a communal tap, a municipal water truck, rivers or springs - provide for at least two (2) rain water tanks, tank stands, guttering, etc. and if possible specify that the two rain water tanks be linked so that the level of water can be equalised. An empty tank can easily be damaged.

Some ECD centres have to pay the municipality about a R1000 to fill up a water tank. This is unaffordable for most centres and they often prefer to fetch water from a fountain or river. This is not a healthy option as no one knows if that water is safe to drink.

Determine how best to provide for water tanks where the roof does not allow for guttering - e.g. rondavels, thatched roofs.

4.5.2. Toilets

All ECD Centres should have separate and safe toilets for children and staff.

The norm of one toilet per 20 children should be applied. Babies under 2 using potties are not counted in when determining the number of children per toilet

Children should not share toilets with members of households living on the premises / afterschool kids neighbours or close by public facilities - this is unacceptable and alternative toilets should be provided

There is **no need to separate toilets for boys and girls** under the age of 6 years old but where it is already provided in this fashion, improvements should be made accordingly.

The following toilet types are considered acceptable: pour flush toilets, municipal VIPs/Urine Divider toilets, flush toilets connected to municipal sewer reticulation or septic tanks, chemical toilets, Enviro loos. **Unlined pit latrines or buckets are not acceptable** and should be replaced.

Filled up pits of old pit latrines should be covered in a safe manner. Coverings should be sturdy and able to carry the weight of a normal man. Engineering departments of the Municipality should be asked to advise in this regard

Flush toilets (porcelain / plastic base) without a wooden / plastic seats are not considered to be in a poor condition. Toilet seats are affordable and will be replaced by the centre if it really bothers the users.

Cisterns without a lids and broken flush mechanism should be fixed.

Adult size flush toilets in good condition currently used by children should not be demolished to provide smaller size toilets. That will be a waste of money. It is recommended that small toilet seats be provided as well as a sturdy step.

Some VIP toilets have in-situ masonry pedestals which are safe (kids cannot fall through) but it is extremely unhygienic since the "seat" is made of roughly casted cement. The raw cement makes it difficult if not impossible to clean. These should be removed and replaced with safe plastic funnel type pedestals suitable for children. (it is not expensive)

4.5.3. Hand wash facilities / basins

The minimum norm for the provision of hand wash facilities requires one hand wash facility for every 20 children and a separate one for staff.

Very few centres in rural / informal areas have running water and thus make use of tippy taps. Tippy taps are ideal for use by children for various reasons but are often placed outside - this is fine when the sun shines but not so great when it rains. It is therefore recommended that at least some hand wash facilities be provided under cover.

4.6. SITE AND OUTDOOR PLAY AREA

4.6.1. Fencing

Fencing must be worked out according to number of children x $5m^2$ external space excluding the foot print of the buildings. It is not affordable to fence the whole site in rural areas as these can easily be up to 2 hectares big. It is also not safe to have such a big site as the children should be in sight at all times. There should also be space for a food garden and for an on-site refuse site, the covering of old pit latrines, parking if required, possible extension later on, etc. All new fencing should be at least 1,8m high with treated timber or steel poles well secured. A lockable pedestrian gate should be provided. Onsite parking is not recommended as children can easily be run over by taxi's, but if provided should also have a 1,8m lockable gate.

Internal fencing of an onsite refuse trench can be 1.5m with a gate.

Fencing of 1,5 m height should not be removed / replaced in rural areas. It will be too expensive

No new fencing should be erected of less than 1,8 m high

4.6.2. Playground equipment

4.6.2.1. Jungle gym

It is suggested that a small Jungle gym be utilised for centres under 40 children and a large jungle gym for centres with more than 40 children.

A Jungle gym is considered basic and essential equipment.

4.6.2.2. Other playground equipment

Play equipment is often not maintained and may be missing swings, may be broken or rusted etc. Provision should be made to fix the equipment.

4.6.3. Storm water

Check for evidence of storm water damage and make provision for storm water solution

4.6.4. Health and safety issues

Make provision for the mitigation of health and safety issues on site - e.g. removal of sharp objects, fencing of open water sources, closing of old pits and septic tanks.