

Proposed Creagh Housing SHD

Ballowen/Ramsfortpark, Gorey, Co. Wexford

Stage 1 Road Safety Audit

Final Report

23rd January 2019

Prepared for

AMIL Properties Ltd

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Contents

Document Control Sheet.....	i
1 Introduction.....	1
2 Scheme Background.....	2
3 Stage 1 Road Safety Audit Findings.....	4
4 Audit Statement.....	10

Appendix A – Road Safety Audit Brief

Appendix B – Road Safety Audit Feedback Form

1 Introduction

This report presents the findings of a Stage 1 Road Safety Audit (RSA) of the site layout design of a proposed residential development comprising 232 dwellings and 65 apartments including a crèche facility which will access onto Fort Road within the townlands of Ballowen/Ramsfortpark in Gorey, Co. Wexford.

This RSA was commissioned by Strutec on behalf of AMIL Properties. The roads and traffic element of the design of the proposed development was prepared by Strutec.

The RSA has been undertaken by Traffic Transport and Road Safety Associates Limited (TTRSA) in accordance with the requirements of Transport Infrastructure Ireland (TII) GE-STY-01024 Road Safety Audit standard. The Audit Team members comprised: Matthew Steele (TII Auditor Ref. No. MS88315) and Pamela Townley (TII Auditor Ref. No. PT90300). A brief for this audit, in accordance with the requirements of TII GE-STY-01024, is included as Appendix A of this report.

A site visit for this RSA was undertaken by both Audit Team members during the morning peak hour on 19th October 2018. During the audit site visit the weather was dry with good visibility and the road surface was dry.

This RSA examines the documents relating to the proposed scheme and on-site observations at the time of the audit site visit, and identifies issues which have an adverse impact on road safety. The RSA does not examine or verify the proposed scheme for compliance with any other standards or criteria. Issues which impact on road safety are listed as problems within this report, and relate to the documentation provided upon commencement of the safety audit.

Feedback and any revisions to the scheme design provided by the designer and/or scheme employer, in relation to the issues identified or recommendations made within the audit report, are detailed within the Road Safety Audit Feedback Form contained as Appendix B of this report.

2 Scheme Background

2.1 The proposed scheme

The scheme comprises the design of the site layout of a proposed residential development comprising 232 dwellings and 65 apartments including a crèche facility which will access onto the north-eastern side of the carriageway of Fort Road in Gorey. A single site access junction for this proposed development will be created at a location approximately 276m northwards of the existing Ashwood Grove junction with Fort Road. The proposed development will be constructed in 5-7 phases with approximately 60 units constructed per year. The drawings provided for the audit indicated that a mixed/medical centre site, nursing home and sheltered housing all could be developed in the south-western sector of the site in the future, in addition to a future pedestrian and vehicular connection link onto the carriageway of Ashwood Grove to the south, and a future roadway connection into future residential developments to the north.

The design of the development site incorporates a 6m wide spine road which extends into the site from the site access junction towards the central area of the site and then forks both the north-east and to the south-west in a straight alignment. Vehicle link routes 6m/4.8m in width extend from this spine route to serve access to blocks of residential units (with route access around the perimeter of the blocks of units) and a 4.8m wide link route is also provided to serve access to the residential units located opposite/adjacent to the perimeter to the site. Corner radii of the spine route will be 4.5m whilst link routes will have corner radii of 1-3m. The section of spine route extending eastwards from the site access junction and then southwards is proposed to be accessed by buses with a bus lay-by provided in the south-western sector of the development to the south of the proposed crèche facility. Parking for each of the residential units is proposed to access onto/align the internal road network.

Pedestrian access is proposed internally adjacent to the internal roadway network. A 2m wide footpath and 2m wide cycle route is proposed to align the south-eastern side of the carriageway of Fort Road from the site access junction. A foot/cycle path is proposed to link between the carriageway of Fort Road at the south-western extent of the site into the site to the south-western extent of the residential units, this cycle path then extending northwards and westwards to align the spine road to connect to the site access junction. A 1.8m wide cycle route will be provided between the site access junction locality and the internal north-western extent of the site. Junction speed tables are proposed at several internal junctions. A central area of neighbourhood open space is provided central and mid-east of the residential development. A crèche facility is provided in the central-western area of the site served by a 6.0m wide access junction which links to parking and a turning head for this crèche facility.

2.2 The existing situation

The characteristics of Fort Road in the vicinity of the proposed site access junction for the development include the following:

- The carriageway has a sealed width of approximately 4.8m bounded by a 2.3m wide bermed drainage ditch located on the eastern side of the carriageway and a 2.6m wide bermed drainage ditch located on the corresponding western side of the carriageway. The drainage ditches are backed by hedge/tree vegetation boundaries. No road markings are present. An existing lane access is located approximately 13m northwards on the south-western side of the carriageway opposite the proposed site access junction. A residential property access is located immediately adjacent (northwards) of this lane access.
- The carriageway has a gradual vertical grade south to north from the Ashwood Grove/Fort Road junction, and curves northbound from this junction in a short sweeping right-hand curve to a relatively straight alignment northwards. Visibility splays at the proposed site access junction from the sealed edge of

carriageway without setback (due to the presence of the bermed drainage ditch and existing hedge boundary vegetation) are approximately 94.5m to the south and approximately 189m to the north.

- The development site is a greenfield site, existing residential developments are located to the south and south-west of the proposed development. Several single dwelling properties are present northwards of the proposed site access junction, mainly on the western side of the carriageway of Fort Road.
- No formal surface water drainage gullies are present on this section of the carriageway (bermed ditch drainage is present both sides of the carriageway).
- No street lighting is present with the exception of an existing lamp column located in the immediately vicinity of the former site access point.
- A service utility box (EMR monitor) is present in the locality of the junction mouth of the proposed development site access.
- The posted speed limit for the section of Fort Road which the proposed development site will access onto is 80km/h.

2.3 Departure from Design Standards

No departures from standards were reported to the audit team. The audit team has been informed that site access will be designed in accordance with DMURS.

2.4 Traffic Collision Information

Consultation of the Road Safety Authority online collision data (for the period 2005 to 2014 inclusive) available to the date of this report indicates that one minor single vehicle (car) collision resulting in injury to one casualty occurred on Fort Road within the vicinity of the proposed development between 2300-0300 hours on a Monday in 2005.

2.5 Information provided for the audit

Documents and information provided for this audit are detailed with the RSA brief contained in Appendix A.

3 Stage 1 Road Safety Audit Findings

3.1 Problem: Lack of priority control of proposed junctions

It is unclear from the drawing information provided for the audit of the priority of the proposed site access junction onto Fort Road and the proposed internal junctions. Lack of priority-control at junctions can lead to road-user confusion or lack of awareness of the right-of-way of road users, creating the potential for a range of collision types in the vicinity of these junctions.

Recommendation:

Provide priority stop control with associated road signing and road markings for the proposed junctions of the development including the crèche access junction.

3.2 Problem: Visibility splays of proposed junctions

It is unclear from the drawings provided for the audit of the visibility splays of the proposed site access junction onto Fort Road and the internal junctions of the site. Landscape tree vegetation as proposed in the vicinity and along the frontage of the site (and adjacent site) and also in the vicinity of junctions can obstruct visibility splays of junctions in the vertical and horizontal planes. Inadequate visibility splays of junctions increases the potential for loss-of control type collisions, collisions with other road-users and collisions with road-side infrastructure.

Recommendation:

Provide clear adequate visibility splays on both the horizontal and vertical planes for these junctions, taking full account of the speed limit and the vertical and horizontal profile of the carriageway of Fort Road and the boundary treatment of the adjacent northern site, and the proposed horizontal and vertical alignment of the internal site access routes and junctions, ensuring that junction visibility splays are not obstructed by proposed landscaped vegetation.

3.3 Problem: Bus vehicle access

It is unclear from the information provided for the audit of the routing or type of bus vehicle to access the development. Inadequate safe access including swept path access for buses can lead to conflict and injury collision with other road-users or direct collision with road-side infrastructure and stationary vehicles.

Recommendation:

Provide safe access for buses within the development, including safe swept path access at the site access junction.

3.4 Problem: Lack of road markings for crèche facility

The lack of road markings/signage for the proposed crèche facility can lead to driver confusion or inappropriate parking within the crèche turning head/drop-off area, obstructing safe access for vehicle manoeuvres and pedestrian access to/from vehicles. This situation increases the potential for collisions resulting in injury.

Recommendation:

Provide appropriate road markings and signage for the crèche facility. Provide safe access for the turning head/drop-off area ensuring that adequate access/egress tapers are provided for the drop-off area.

3.5 **Problem:**

The proposed sections of dropped kerbs for parking bay access at the terminal ends of on-street parking areas could be misinterpreted as the junction radii alignment by left-turning road-users, leading to the potential for these left-turn road-users to access onto these dropped kerbs and directly collide with pedestrians or road-side infrastructure.

Recommendation:

Revise the alignment of these dropped kerbs for parking bay access, ensuring that they do not conflict with the alignment or vertical profile of dropped kerbs for pedestrian/cyclist access. Ensure that full delineation of junction radii are provided.

3.6 **Problem: Inappropriate vehicle speeds within the development site**

Whilst it is acknowledged that the development site will accord with DMURS design standards, road-users may apply inappropriate vehicle speeds on a number of internal route sections, including the route section located between the site access junction and the junction immediately eastwards of this junction. Inappropriate vehicle speeds increases the risk of a range of collision types including high severity injury collisions involving pedestrian.

Recommendation:

Provide appropriate traffic calming measures throughout the proposed development site including provision of vertical speed reduction measures on the spine road westwards of the internal junction located immediately east of the site access junction, taking account of cyclists crossing north-south for the cycle route in this locality.

3.7 **Problem: Lack of crossing facilities/guidance for pedestrians with visual/mobility impairments**

With the exception of access points near on-street disabled parking bays, the drawings do not indicate the provision of access points for cycle routes or crossing points for pedestrian routes, noting that there is a discrepancy between the drawing information which indicate both a kerbed carriageway and a level shared surface.

Lack of dropped kerb access points for cycle route access increases the risk of cyclist injury through forced dismount over inappropriate kerb height or conflict and collision with pedestrian through inappropriate use of pedestrian routes. Lack of dropped kerb crossing points with tactile paving to access pedestrian routes including for those pedestrians with visual and mobility impairments, increases the risk of pedestrian injuries related to tripping unguided on high kerbs or misguided to step into the path of vehicles. Shared surfaces without guidance delineation for pedestrians with visual impairments can lead to these pedestrians walking into the path of traffic or walking into parked vehicles, with resultant high severity injury collisions.

Recommendation:

Provide dropped kerb access for cycle routes and provide dropped kerb crossing points with aligned tactile paving at safe locations for pedestrian access of the development site, including routes within the open spaces areas of the site. Ensure that cycle route access and pedestrian crossing points have clear inter-visibility splays with vehicle routes, parking bays and bus bays, and ensure that the cycle access points and pedestrian dropped kerb crossing points do not conflict with the positions of surface water gullies, utility covers or vehicle access points. Dropped kerb points for disabled parking bays should not be configured to misguide those with visual impairments into vehicle routes. Shared surfaces should be appropriately delineated for safe access for those with visual impairments. A Stage 2 RSA should be undertaken for pedestrian and cyclists access to and within the proposed development site.

3.8 Problem: Lack of visibility splay for cycle access at site access junction

The proposed infrastructure in the vicinity of the northern radius of the site access junction will restrict visibility splays for cyclists using the proposed cycle route to cross the site access junction, increasing the risk of high severity injury collisions involving these cyclists.

Recommendation:

Revise this infrastructure to provide clear visibility splays for cyclists crossing at this location.

3.9 Problem: Lack of tie-in of cycle routes

It is unclear from the drawing information provided for this audit of how the proposed cycle routes for the development site will tie-in to the road network on the southern sector of the site and Fort Road/Ashwood Grove junction or tie-in with the internal north-western extent of the site. Inadequate tie-in can reduce safe access for cyclists by forcing cyclists onto the carriageway at hazardous locations or to use grassed/kerbed verges increasing the risk of conflict, forced dismount and high severity injury collision with other road-users.

Recommendation:

Provide safe access points including access onto the carriageway for cyclists at the tie-in/terminal points of proposed cycle routes, ensuring that adequate visibility splays are provided for access to/from vehicle routes, and adequate turning area is provided at terminal points of routes with associated signing indicating end of cycle route/direction of on-road route.

3.10 Problem: Vehicle manoeuvring into junction mouths to access on-street parking bays

There are a number of on-street parking bays which are located directly opposite/within the vicinity of junction which will require manoeuvring within close proximity to/into the mouths of these junctions, creating the potential for conflict and collision with other road-users.

Recommendation:

Relocate these on-street parking bays to safer locations, ensuring that vehicles will not need to manoeuvre within the immediate vicinity of/within junction mouths to access these parking bays.

3.11 Problem: Access to off-street parking bays

It is unclear from the drawing information provided for this audit of how safe access onto the routes of the development site will be provided for off-street disabled parking and for several off-street non-disabled parking bays (e.g. north east of Block 9) clear of inadvertent/inappropriate parking road-side to these parking bays.

Recommendation:

Provide road marking/signing to ensure that safe access is provided for these off-street parking bays.

3.12 Problem: Definition of on-street parking bays

It is unclear from the drawing information provided for this audit of how the on-street parking bays located immediately adjacent to the northern extent of the north-western (north-south aligned) internal access route will be defined or will be accessed safely (when this route is extended in the future), increasing the risk of road-users misinterpreting the alignment of the carriageway and colliding with parked vehicles, and for those manoeuvring to/from these parking bays to collide with through traffic.

Recommendation:

Revise the position of these parking bays to ensure that they can be accessed safely and are fully defined. Ensure that the carriageway alignment of this access route is adequately defined for future through traffic.

3.13 Problem: Hazardous access at north-eastern route (between Blocks 2 and 3)

Vehicles with the exception of motorcycles will not be able to safely undertake a u-turn manoeuvre within the north-eastern route of the development, leading to vehicles either having to mount the footway or to reverse blind from this access route to the junction and into the pass of through traffic. This situation increases the risk of a wide range of collision types with other road-users.

Recommendation:

Provide infrastructure to close this access route from being accessed by vehicles (except emergency services).

3.14 Problem: Tree vegetation proposed within and adjacent to bus bay

The drawing information provided for the audit indicates that tree vegetation is proposed both within the bus bay and adjacent to the tapers of the bus bay located on the southern section of the spine road. This will impede safe access for bus vehicles (including overhang of tree vegetation with the bus vehicle path), create the potential for conflict and collision with other road-users and create hazardous access for pedestrians alighting/disembarking the bus vehicle with increased risk of pedestrian trip/fall type injuries.

Recommendation:

Remove tree vegetation from the bus bay area including adjacent to the tapers of the bus bay.

3.15 Problem: Inappropriate positioning of proposed tree vegetation

The tree vegetation proposed immediately adjacent to the internal spine road and cycle route, adjacent to crossing points, and adjacent to parking bays including disabled parking bays, can increase the risk of a wide range of collision types including: reducing safe access for road-users through potential for overhang and cause injury to passing cyclists and pedestrians; cause vehicles to veer and collide with other road-users or highway infrastructure when manoeuvring to avoid tree vegetation; mask inter-visibility splays at pedestrian or cyclist crossing points; and mask inter-visibility splays for vehicles accessing from parking bays. Several lamp columns are proposed in the immediate vicinity of tree vegetation which will reduce the effectiveness of the public lighting for road-user access and safety particularly when the tree canopy is in leaf.

Recommendation:

Remove tree vegetation proposed adjacent to pedestrian and cyclists crossing points, parking bays and cycle routes, providing alternative low height vegetation if required (ensuring that visibility splays from these crossing points/parking bays is provided). A Stage 2 RSA should be undertaken of the proposed landscaping design, taking full account of the proposed positioning of any signing and lighting columns and the effect on luminance levels of proposed landscaping.

3.16 Problem: Potential for inappropriate parking on southern extent of spine road

As the proposed southern extent of the internal spine road does not connect to the future proposed vehicle route onto Ashwood Grove, this section length of road may be used as a parking area which can lead to hazardous vehicle reverse manoeuvres within this section of route/at the nearby internal junction or physically block safe pedestrian and cycle access. This situation increases the risk of collision between road-users including those pedestrians and cyclists accessing to/from the proposed east-west pedestrian and cycle route.

Recommendation:

Provide infrastructure to temporarily close this route section to ensure that it cannot be accessed by vehicles (except to emergency services) until the future roadway link to Ashwood Grove is constructed whilst maintaining access for those accessing/egressing the proposed east-west pedestrian and cycle route.

3.17 Problem: Proximity of C&E site compound access with pedestrian and cycle route access point

The drawings provided for this audit indicate that the western access point of the proposed east-west pedestrian and cycle route in the south-western extent of the site will be located immediately adjacent to the C&E site compound access. The proximity of these access points and potential for large vehicle turning movements for the C&E site compound increases the risk of conflict and high severity injury collision between accessing/egressing pedestrians/cyclists and site compound turning traffic.

Recommendation:

Increase the physical distance (separation) between the C& E site compound access point/radius and the adjacent pedestrian and cycle route point. Provide distinction and definition of these two access points ensuring that inter-visibility splay is provided and maintained between these two access points. Provide public lighting for these access points and ensure that traffic management is provided for the C&E site compound which takes full account of the presence of the adjacent pedestrian and cycle route access point.

3.18 Problem: Positioning of proposed lighting columns

The proposed boundary fencing for residential units will mask visibility splays for vehicles egressing from the adjacent off-street parking bays (e.g. Block 7), increasing the risk of vehicles egressing from these parking bays into pedestrians (including child/youth pedestrians) on the adjacent footpath and into through traffic, with resultant high collision injuries.

Recommendation:

Revise this proposed boundary fencing to ensure that clear inter-visibility splays are provided for off-street parking bays, taking full account of the vertical profile of proposed off-street parking bays.

3.19 Problem: Positioning of proposed lighting columns

Vehicles accessing those off-street car parking spaces located immediately adjacent to the proposed lighting columns may directly collide with these lighting columns causing injury to vehicle occupants.

Recommendation:

Revise the positioning of these lighting columns to ensure that vehicles do not manoeuvre adjacent to lighting column infrastructure.

3.20 Problem: Lack of design detail

As no details of the proposed development site relating to: surface levels; site topography/long sections; surface textures including tactile paving; residential unit vehicle access points; kerbing levels; junction tables; surface water drainage; road signing; road markings; directional/destination signing; pedestrian route dimensions; public lighting of public open space/crèche access and parking/site access junction carriageway/access route between Blocks 6 and 7; the luminance levels of public lighting; or details of any proposed changes to the lane access located on the opposite side of Fort Road to the north of the proposed development site access and associated distance of stagger of junctions, have been provided for this stage of audit. The associated road safety impact of these design elements on vehicular, pedestrian and cyclist traffic has not been assessed within this RSA.

Recommendation:

A Stage 2 RSA should be undertaken on the detailed design of these elements of the proposed development site.

4 Audit Statement

We certify that we have examined the documentation provided for the audit as detailed in Section 2 of this report. The examination has been carried out in accordance with TII GE-STY-01024 with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme. The problems identified have been noted in this report together with associated safety improvement suggestions, which we recommend should be studied for implementation. The Audit has been conducted by the persons named below who have not been involved with the design of the scheme.

Matthew Steele
(Audit Team Leader)

Signed:



Date:

7th November 2018

Pamela Townley
(Audit Team Member)

Signed:



Date:

7th November 2018

Appendix A - Stage 1 Road Safety

Proposed Creagh Housing SHD - Ballowen/Ramsfortpark, Gorey, Co. Wexford

TII Checklist Item	Yes/No/Not Applicable (N/A)	Comment
Design Brief	Yes	Undertake a Stage 1 Road Safety Audit (RSA) of the site layout design of a proposed residential development comprising 232 dwellings and 65 apartments including a crèche facility accessing onto Fort Road in Gorey, Co. Wexford.
Design Standard Applied	Yes	The Design Manual for Urban Roads and Streets (DMURS)
Design Speed Applied	Yes	30km/h
Departures from Standard	No	
Scheme Drawings	Yes	<p>Documents provided by Strutec:</p> <ul style="list-style-type: none"> • Drawing Title: Site Plan: General Arrangement; Drawing Number: PR-010 Rev B dated 11/08/2018; prepared by Strutec (received on 25/09/2018) • Document: Transportation and Traffic Assessment for proposed residential development at Ballyowen, Gorey, Co. Wexford; dated April 2018; prepared by Roadplan Consulting (received 25/09/2018) • Drawing Title: Boundary Details; Drawing Number 1706_PL_DD_01 Rev A dated 11/09/2018; prepared by Murray and Associates (received on 28/09/2018) • Drawing Title: Landscape Masterplan; Drawing Number 1706_PL_P_01 Rev I dated 11/09/2018; prepared by Murray and Associates (received on 28/09/2018) • Drawing Title: Site Plan: Phasing/Part V Plan; Drawing Number: PL-030 Rev B dated 07/09/2018; prepared by Strutec (received on 28/09/2018) • Drawing Title: Site Sections; Drawing Number: PR-020 dated 10/08/2018; prepared by Strutec (received on 28/09/2018) • Drawing Title: Site Elevations; Drawing Number: PR-021 dated 10/08/2018; prepared by Strutec (received on 28/09/2018) • Drawing Title: Site Elevations; Drawing Number: PR-022 dated 10/08/2018; prepared by Strutec (received on 28/09/2018) • Drawing Title: Site Elevations; Drawing Number: PR-023 dated 10/08/2018; prepared by Strutec (received on 20/09/2018) • Drawing Title: Site Elevations; Drawing Number: PR-024 dated 20/09/2018; prepared by Strutec (received on 28/09/2018) • Drawing Title: Site Sections; Drawing Number: PR-025 dated 20/09/2018; prepared by Strutec (received on 28/09/2018)
Other scheme details, e.g.	No	

signs schedules, traffic signal staging		
Collision data for existing roads affected by the scheme	Yes	Consultation of the Road Safety Authority online collision data (for the period 2005 to 2014 inclusive) available to the date of this report indicates that one minor head-on car collision resulting in injury to one casualty occurred on Fort Road within the vicinity of the proposed development between 1900-2300 hours on a Thursday in 2005.
Traffic surveys	Yes	A Traffic Impact Assessment report was produced for this proposed residential development. This report states that the development would generate the following traffic levels: 76 arrivals and 137 departures within the AM peak period; and, 120 arrivals and 89 departures during the PM peak period. The access junction for this proposed development site is predicated to operate within capacity.
Previous Road Safety Audit Reports and Designer Responses /Feedback Form	No	
Previous Exception Reports	N/A	
Start date for construction and expected opening date	Yes	If planning is granted, construction for the proposed development is anticipated to commence summer 2019 with construction of 60 units per year in 5-7 phases.
Any elements to be excluded from audit	No	
Any other information (list separately)	Yes	The site will incorporate gradients of 1:12 in places, roads and footpath. For cambers and curvature appropriate measures will be applied. The design intent with the narrower roads is for a shared space strategy with a lot of pavers and eased kerbs with low profile gullies. This has not been incorporated within the design drawings.

Appendix B - Road Safety Audit Feedback Form

Scheme: Proposed Residential Development

Location: Fort Road, Ballyowen/Ramsfortpark, Gorey, Co. Wexford

Audit Stage: 1

Paragraph Number in Safety Audit Report	Problem Accepted (Yes / No)	Recommended Measures(s) Accepted (Yes/ No)	Alternative Measures/ Comments (Describe)	Alternative Measures Accepted by Audit Team (Yes / No)
3.1	Yes	Yes		
3.2	Yes	Yes		
3.3	Yes	Yes		
3.4	Yes	Yes		
3.5	Yes	Yes		
3.6	Yes	Yes		
3.7	Yes	Yes		
3.8	Yes	Yes		
3.9	Yes	Yes		
3.10	Yes	Yes		
3.11	Yes	Yes		
3.12	Yes	Yes		
3.13	Yes	Yes		
3.14	Yes	Yes		
3.15	Yes	Yes		
3.16	Yes	Yes		
3.17	Yes	No	Works to the C&E site shall not conflict with the proposed residential works. Works shall be phased and coordinated so that the compound access in question shall not be in operation once the pedestrian/cycle route in question has been developed. There is a second proposed compound access north of the location in question for use in this situation.	Yes

3.18	Yes	Yes		
3.19	Yes	Yes		
3.20	Yes	Yes		

Design Team Representative
(Strutec)

Name:

LIAM MINOGUE

Signature:

Liam Minogue

Date: 23/1/19

Scheme Client
(AMIL Properties Ltd)

Name:

AUAW WALSH

Signature:

Auaw Walsh

Date: 23/1/19

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Matthew Steele
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Matthew Steele

(Audit Team Leader)

Date: 23rd January 2019